Washington State Institute for Public Policy

June 2023

Involuntary Treatment for Substance Abuse:
Client Outcomes

Before 2016, two separate systems existed for the involuntary commitment of individuals in crisis due to mental health or substance use disorders. In 2016, the Washington State Legislature passed legislation—called Ricky's Law—to integrate both conditions into a statewide behavioral health system within Washington's Involuntary Treatment Act (ITA).[1]

The legislation required the Washington State Institute for Public Policy (WSIPP) to evaluate the changes resulting from Ricky's Law, including the following:

- Client outcomes, such as treatment for substance use disorder (SUD), hospital care, employment, housing, and mental health services;
- System outcomes; and
- Cost-effectiveness and efficiency of an integrated involuntary behavioral health treatment system.

This report is the third and final report in the series. The first report described the integration of mental health and substance abuse treatments.[2] The second described findings from interviews with professionals responsible for implementing the law.[3]

Summary

In 2016, E3SHB 1713 (Ricky's Law) modified the Involuntary Treatment Act. The Act integrated crisis response for mental health and substance use disorders (SUD), created a new classification of mental health professionals, and mandated the creation of Secure Withdrawal Management and Stabilization (SWMS) facilities to serve those detained for SUD.

The law also directed WSIPP to evaluate the effects of the law. We evaluated the outcomes for those detained to SWMS, comparing them to people never detained but who had received detoxification treatment in the same period.

In the six months following treatment, SWMS clients were less likely to:

- Receive SUD treatment;
- Experience homelessness;
- Be treated in the emergency department or be hospitalized;
- Receive any state financial supports.

We found no significant difference in rates of mental health treatment, arrest, or employment.

Our benefit-cost analysis found that, compared to the detox group, SWMS returns $0.19 per dollar spent. We estimate that benefits will exceed costs 6% of the time. That is, compared to the detox-only group, the cost of the program exceeds the benefits we are able to estimate.

[1] Engrossed Third Substitute House Bill 1713, Chapter 29, Laws of 2016 and RCW 71.05.

[2] Drake, E., Ellis, A. & Miller, M. (2020). *Involuntary Treatment Act for substance use disorders: First preliminary report* (Doc. No. 20-12-3401). Olympia: Washington State Institute for Public Policy.

[3] Bales, D., Ellis, A., Drake, E., & Miller, M. (2021). *Designated crisis responders and Ricky's Law: Involuntary treatment investigation, decision, and placement* (Doc. No.23-06-3401). Olympia: Washington State Institute for Public Policy.

Here, we provide information about the outcomes of people served by the newly created Secure Withdrawal Management and Stabilization (SWMS) facilities. We also present a benefit-cost analysis of the new intervention.

Section I of this report first provides background on the Involuntary Treatment Act and Ricky's Law. We then give a brief overview of our previous reports and discuss what pieces of the legislative assignment are addressed in this report. Section II describes how the law is currently implemented. Section III describes our research methods. Section IV presents our findings on the outcomes of those detained for substance use disorder (SUD) under Ricky's Law. Section V presents the results of our benefit-cost analysis. Finally, Section VI outlines the study's limitations and key takeaways.

WSIPP Study Assignment

Evaluate the effect of the integration of the involuntary treatment systems for substance use disorders and mental health and make preliminary reports to appropriate committees of the legislature by December 1, 2020, and June 30, 2021, and a final report by June 30, 2023.

The evaluation must include an assessment of whether the integrated system:

a) *Has increased efficiency of evaluation and treatment of persons involuntarily detained for substance use disorders;*

b) *Is cost-effective, including impacts on health care, housing, employment, and criminal justice costs;*

c) *Results in better outcomes for persons involuntarily detained;*

d) *Increases the effectiveness of the crisis response system statewide;*

e) *Has an impact on commitments based upon mental disorders;*

f) *Has been sufficiently resourced with enough involuntary treatment beds, less restrictive alternative treatment options, and state funds to provide timely and appropriate treatment for all individuals interacting with the integrated involuntary treatment system; and*

g) *Has diverted from the mental health involuntary treatment system a significant number of individuals whose risk results from substance abuse, including an estimate of the net savings from serving these clients into the appropriate substance abuse treatment system.*

E3SHB 1713, Section 202 (emphasis added)

I. Background

Involuntary Treatment Act

Washington State's 1973 Involuntary Treatment Act (ITA) defines the legal process and criteria under which individuals may be detained and civilly committed when found to be **gravely disabled**[4] or a **danger** to themselves, others, or the property of others due to a behavioral health condition.[5]

Before the enactment of Ricky's Law in 2016, the state had well-established Evaluation and Treatment (E&T) facilities for treating mental illness across the state. However, such facilities did not provide substance use disorder (SUD) treatment.

The Washington State Department of Social and Health Serves (DSHS) established two pilot sites of an Integrated Crisis Response program, allowing designated crisis responders (DCR) to detain persons in crisis due to substance abuse or mental illness. The pilots ran from April 2006 through June 2009. A WSIPP evaluation of the pilots found that participants in the program experienced fewer admissions to psychiatric hospitals, greater participation in inpatient substance abuse treatment, and higher employment rates.[6]

Ricky's Law

This new law created a single ITA system that employed DCRs to evaluate people in crisis. The DCRs determine whether the person meets the grave disability or danger criteria and if they need mental health or substance use disorder care.

The law also authorized the creation of secure detoxification facilities, later called Secure Withdrawal Management and Stabilization (SWMS) facilities. Two SWMS facilities opened in April 2018, and a third opened in March 2020.

Report Plan

Ricky's Law also directed WSIPP to evaluate the effectiveness of the changes to the ITA.

As mentioned, our first report provides additional background on behavioral health integration in Washington. The second report includes findings from interviews with DCRs and takeaways about challenges and successes.

Our legislative assignment includes seven parts (see inset on the previous page). We address parts (a) and (c) in Section IV of this report and address part (b) in Section V. We partially address parts (d), (e), (f), and (g) in Section II. We are unable to fully address these parts and discuss the challenges in speaking to these questions.

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[4] RCW 71.05.020 defines gravely disabled as ...*a condition in which a person, as a result of a behavioral health disorder: (a) is in danger of serious physical harm resulting from a failure to provide for his or her essential human needs of health or safety; or (b) manifests severe deterioration in routine functioning evidenced by repeated and escalating loss of cognitive or volitional control over his or her actions and is not*

receiving such care as is essential for his or her health or safety.
[5] RCW 71.05 and RCW 71.34 for minors.
[6] Mayfield, J. (2011). *Integrated crisis response pilots: Long-term outcomes of clients admitted to secure detox* (Doc. No. 11-05-3902). Olympia: Washington State Institute for Public Policy.

II. Implementation

In this section, we briefly describe how involuntary treatment has changed over time. This section partially addresses parts (d), (e), (f), and (g) of the legislative assignment.

As directed by the legislature, the first SWMS facilities opened in Chehalis and Spokane in April 2018. A third facility in Kent opened in March 2020.[7] Since the publication of our 2020 report, the Spokane facility has closed, and another opened in Wenatchee.[8] Currently, there are 53 beds in SWMS facilities across the state.

Plans for SWMS facilities include a 16-bed facility in Clark County, scheduled to open in 2023, and a 16-bed facility in Benton County, projected to open in 2025.[9]

Additionally, there are plans to open a 16-bed facility in Whatcom and Walla Walla counties. However, these facilities do not have projected opening dates. Exhibit 1 displays the sites of past, present, and projected future SWMS facilities, which are widely dispersed across the state.

As of the third quarter of 2022, the facilities appear underutilized. Between June and September 2022, the facilities were at 48% capacity. A facility cannot operate at its full bed capacity without full staffing of qualified medical professionals. In discussions with operators of SWMS facilities, this seems to be a key factor in the underutilization. Exhibit 2 displays the month-to-month usage of all facilities statewide as a percentage of the total capacity, using the average daily census data published by the Washington State Health Care Authority (HCA).[10]

Exhibit 1
SWMS Locations

● Current Locations   ○ Past Locations   ╲ Future Plans

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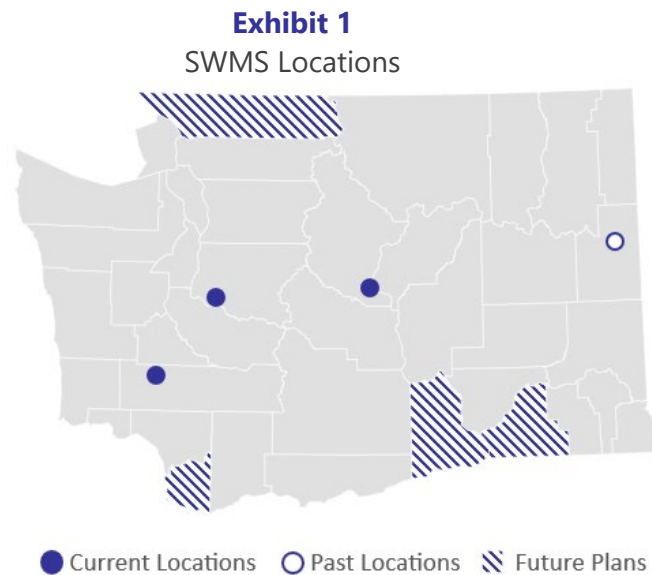
[7] More information on behavioral health integration and Ricky's Law is available in Drake et al. (2020).
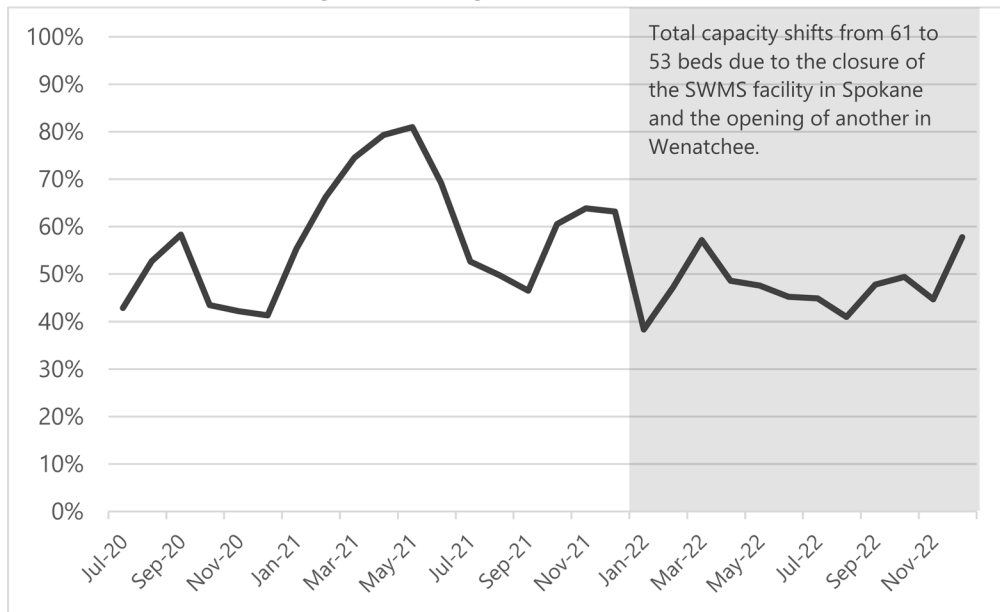[8] The decision to close the Spokane facility (ABHS Cozza) in favor of a facility in Wenatchee (ABHS Parkside) was due to the more favorable labor pool of nurses that exists in Wenatchee.
[9] Z. Forest, SWMS Coordinator, Health Care Authority, email correspondence, April 4, 2023.
[10] See HCA quarterly reports.

Exhibit 2
Average Percentage of SWMS Beds Filled

Total capacity shifts from 61 to 53 beds due to the closure of the SWMS facility in Spokane and the opening of another in Wenatchee.

Note:
Data taken from HCA's published quarterly reports.

As noted in Report 1, SWMS facilities do not accept all potential clients. Clients who are suicidal, homicidal, violent, or have co-occurring, complex medical conditions may be declined services at the SWMS facility. SWMS may also decline to serve a patient if there are no available beds when the decision to detain is made. In cases where clients are turned away, DCRs file a "no-bed report" with HCA. In those cases, people are released.

In cases where an individual is admitted to SWMS, they are held on an initial detention for 120 hours.[11] At the end of the initial detention, individuals are either 1) discharged without a hearing, 2) discharged on a less restrictive alternative treatment order, 3) allowed to stay voluntarily, or 4) ordered to an additional 14-

day inpatient treatment. If the 14-day order is granted,[12] a SWMS facility can hold the individual for up to 14 additional days but may discharge earlier.[13] The average stay in SWMS is 11 days.[14]

We received information on persons detained at a SWMS facility between April 2018, when the first facility opened, through December 2020. Initially, monthly admissions increased. However, admissions declined sharply during the early months of the COVID-19 outbreak. Exhibit 3 summarizes SWMS admissions and no-bed reports filed from data we received for 2018-2021, aggregated to the statewide and yearly levels.[15]

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[11] This is exclusive of weekends and holidays.
[12] A. Wedin, Health Care Authority, email correspondence, May 1, 2023.
[13] The individual could also convert to staying voluntarily during that time.

[14] WA State Health Care Authority. *Involuntary Treatment Act for Substance Use Disorders, July 1 to September 30, 2022.*
[15] We discuss these data in further detail in Section III.

Exhibit 3
SWMS Admissions and
No-Bed Reports (NBR)
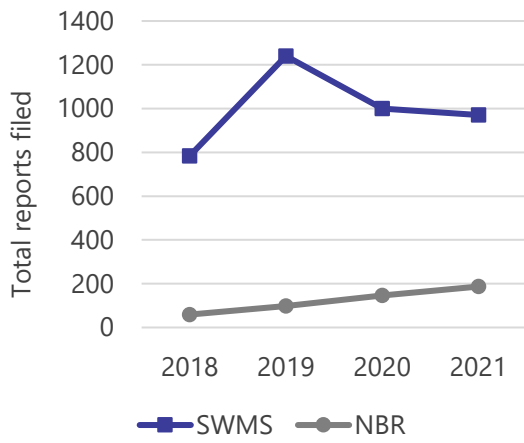
In part (d) of our legislative assignment, we were asked to determine whether Ricky's Law increased "the effectiveness of the crisis response system statewide." As a direct result of this law, three SWMS facilities now serve those in crisis due to SUD, and DCRs statewide evaluate people in behavioral health crises. However, the crisis response systems are primarily local, and we have limited information about them. Therefore, we can only address the piece of the statewide crisis response system for which we have data. We address the impact of involuntary treatment for SUD in Section IV.

Similarly, for part (e), we cannot address the impact on commitments for mental disorders and, for part (g), whether Ricky's Law has diverted people from involuntary mental health treatment.[16]

Commitments, in contrast to short-term, involuntary detention ordered by DCRs, are decisions of the Superior Courts.

Information on commitments for mental health is limited to case reports from the Administrative Office of the Courts. Those reports do not distinguish between commitments for mental health and those for substance abuse. Thus, we are unable to determine how or whether Ricky's Law has had an impact on commitments for mental disorders.

Similarly, we do not have information prior to Ricky's Law on the numbers of individuals involuntarily detained for mental illness when their crisis would have been better served by a SWMS detention had it been available.

In addition to speaking to available beds, part (f) of our assignment also directed us to speak to the adequacy of less restrictive alternatives to detention. DCRs and SWMS facilities told us they encourage clients to agree to voluntary treatment in the community. According to DCRs, this varies by location. Some communities have excellent facilities while others have none— or none within a reasonable distance. However, we do not have access to data that would enable us to determine whether there are enough of these alternatives.

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[16] We are unable to calculate cost savings resulting from individuals diverted from mental health involuntary treatment to SUD involuntary treatment under Ricky's Law.

With the data available to us, it is not possible to determine which individuals detained in SWMS facilities would have been detained in MH facilities in the absence of Ricky's Law.

It is also difficult to address whether the system is sufficiently resourced. The number of empty beds in SWMS facilities suggests that there are enough resources for individuals. However, there are other reasons why these beds may be empty, unrelated to state funding. For example, detention means depriving individuals of their civil rights. In our second report, DCRs told us this is a serious consideration, and they choose to detain only as a last resort. In some jurisdictions, detention has been challenged in court on these grounds.

Also, patients are typically transported to SWMS via ambulance. With only three SWMS facilities statewide, DCRs have faced persistent challenges in arranging patients' transportation from distant areas of the state. In addition, we recently learned that the SWMS facilities have had staffing issues. One facility closed due to a shortage of nurses and another is staffing for only eight beds rather than 16.

III. Methods and Data

We now look at the outcomes of individuals involuntarily detained by Ricky's Law. Parts (a) and (c) of our legislative assignment directed WSIPP to report on whether Ricky's Law has increased the efficiency of evaluating and treating people involuntarily detained for substance use disorders and whether the law has improved outcomes for those detained.

We focus on estimating the effectiveness of involuntary treatments since Ricky's Law. Unfortunately, we cannot address how Ricky's Law has *changed* the effect of involuntary treatments for substance use disorders since we have little information on the involuntary SUD treatments that occurred before Ricky's Law.

Methodology

To determine where involuntary treatment improved outcomes for those served, we need to understand what would have happened to these individuals without Ricky's Law. In an ideal experiment, we would randomly assign people to ITA or treatment as usual (the services they would get without Ricky's Law). However, in addition to the ethical considerations involved in denying treatment to those needing care, random assignment was impossible in this case.

Instead, we identified groups similarly in need of treatment but not admitted to SWMS to serve as a comparison for those admitted to SWMS. Specifically, we identified two potential pools of individuals who had *never* been admitted to SWMS.

1) Those who were referred to SWMS but were denied admission. We identified 135 people in this group. This group is referred to as the NBR group because they received a "no-bed report."

2) Those who received voluntary detoxification (hereafter, "detox") treatment but were not admitted to SWMS. We identified 18,988 people in this group.

We selected the detox treatment group as our preferred comparison group for two reasons. First, the sample size was much larger, leading to more reliable estimates. Second, individuals in the NBR group may have been denied a treatment bed because they were not good candidates for SWMS. For example, individuals needing urgent medical care may be declined by SWMS facilities and given an NBR even if a bed was available. This suggests that this group may not be an appropriate comparison group, as they may exhibit higher risk than those admitted to SWMS.

The detox group is not a perfect comparison because of differences in motivation inherent in voluntary programs. In addition, most people in the detox group would not meet the definition of "gravely disabled or serious risk of harm." However, it is still an appropriate comparison group because participants in both the SWMS and detox groups may have similar levels of addiction and treatment needs.

We conduct analyses on both groups as a check on our findings.

Because we could not conduct random assignment for this study, we matched those in the comparison group on prior history using propensity score matching (PSM).[17] This method provided a one-to-one match of people in the comparison group to those in the SWMS group.[18] We created separate matches for each gender in each calendar quarter to account for differences in individuals seeking treatment over time.[19]

Although there were many differences between the groups before matching, the groups were much more similar after completing our matching procedure.[20]

After matching, we performed regression analyses for each outcome, controlling for multiple demographic characteristics and service use in the previous year. In the charts presented here, the probabilities presented for SWMS are predicted probabilities resulting from our regression results.

Throughout this section, we identify whether group differences in outcomes are statistically significant.[21]

We also conduct subgroup analysis by gender and by race. In the results section, we only report the results of these subgroup analyses if we find statistical significance. We fully report these results in Appendix II.

Data

We used administrative data from DSHS Research and Data's (RDA) integrated client database (ICDB). The ICDB links clients served by multiple agencies, providing information on health care, social services, homelessness, arrests, and employment. We identified 2,155 people admitted to SWMS from the program's start in April 2018 up to January 1, 2021. The comparison group consisted of individuals who received detox treatment during the same period.

To understand the effect of the law on outcomes for those detained to SWMS, we studied the following outcomes in the six months following detention.

- SUD treatment (inpatient, outpatient, detoxification, medication-assisted treatment),
- emergency department use,
- hospitalization,
- psychiatric hospitalization,
- mental health treatment in the community,
- employment,
- arrests,
- homelessness,
- receipt of the Supplemental Nutrition Assistance Program (SNAP), and
- receipt of cash assistance through the Aged, Blind, Disabled Program (ABD).

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[17] In addition to PSM, we also repeat the analysis using a technique called entropy balancing. We find similar results for the detox sample regardless of methodology. See Appendix II for more details on our methodology.
[18] For the NBR comparison group, we use propensity score weighting instead of matching, due to the small sample size.
[19] Notably, individuals receiving treatment during the COVID-19 pandemic may have been different from those receiving treatment before the pandemic.

[20] See Appendix II for more information on the matching protocol.
[21] For this designation, we rely on the "p-value," which can be considered a measure of confidence in the estimated difference. For example, a p-value of 0.05 means we might observe that difference merely by chance 5% of the time, even if there was no effect. P-values less than 0.05 are considered statistically significant.

Our final dataset contained 4,310 people with equal numbers in the SWMS and comparison groups. Because available data for outcomes did not extend beyond June 2021, we examined outcomes that occurred in the six months following the SWMS or detox event. For two outcomes, data were not available through June 2021. Therefore, to allow for the six-month follow-up, samples are smaller. For the homelessness outcome, we had a total of 4,218 individuals; for the arrest outcome, we had 4,036 individuals.

IV. Effectiveness of Involuntary Treatment

Next, we present the findings from our analyses for each outcome.

SUD Treatment

Detox treatment, like that received by the comparison group, is typically the first stage of any SUD inpatient treatment. DCRs and SWMS facilities have indicated that a goal of treatment is to discharge the person to further treatment. Exhibit 4 shows differences in inpatient, outpatient, medication-assisted treatment (MAT), and voluntary detox episodes in the follow-up period for SWMS and our detox comparison group.

After treatment, SWMS clients were significantly less likely to receive further inpatient, outpatient, or MAT than individuals going through voluntary detox. These differences are relatively large—rates for individuals in SWMS were roughly 38%, 35%, and 33% less likely to experience these three outcomes.

However, it is important to note that inpatient and outpatient treatment use increased between the pre and post-treatment periods for both groups. These results suggest that the *increase* in seeking additional treatment was greater for those who received detox than those in SWMS, perhaps because the voluntary nature of detox is associated with motivation to change.[22] In other words, this does not necessarily suggest that SWMS discourages further treatment, just that SWMS participants are less likely than detox participants to seek further treatment.

We observe no difference in the percentage of each group undergoing voluntary detox after the initial admission.

Readmission

Because SWMS and voluntary detox provide similar treatments, we also looked at the readmission to SWMS in the follow-up period. Although not shown in Exhibit 4, we found that 12% of those in the SWMS group were detained to SWMS at least one more time in the follow-up period. Some people were both detained and experienced voluntary detox. Thus, 26% of SWMS clients were either detained or had a detox event. As a reminder, no one in the detox group was ever detained to SWMS. This suggests that, compared to the comparison group, SWMS clients were more likely to receive any subsequent detox (either voluntary or involuntary).

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[22] For percentages before and after the interventions, see Appendix II.

Exhibit 4

Predicted Probability of Additional Substance Abuse Treatment Within Six Months
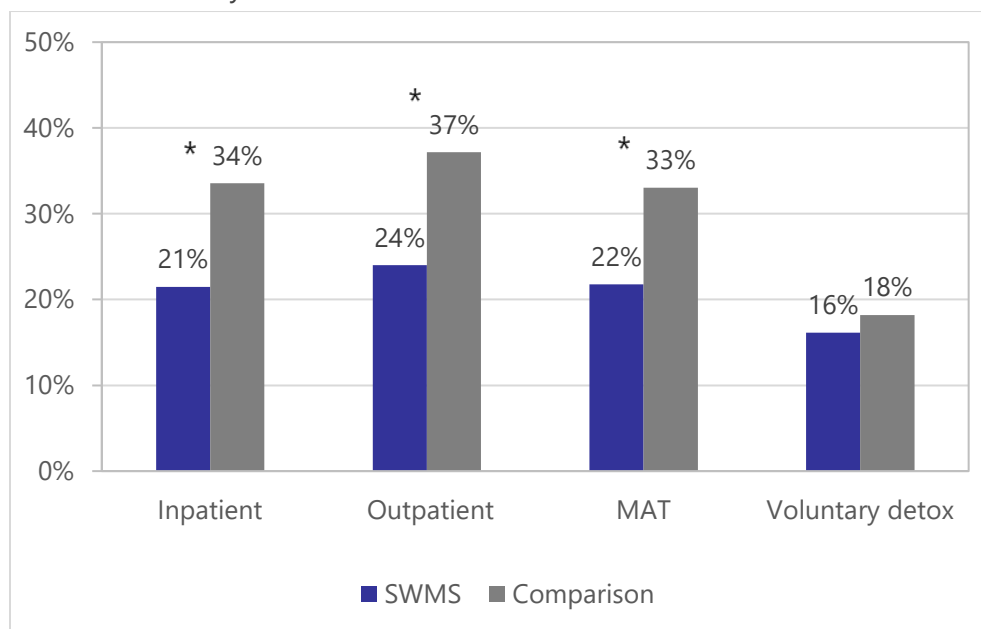
Notes:
N = 4,310.
* Significant at the 0.05 level.
SWMS participants were significantly less likely to receive inpatient, outpatient, or medically assisted treatment at p < 0.001. There was no significant difference in the rate of use of detox.

Hospital Medical Care

We next examine two measures of medical care from hospitals—emergency department (ED) visits and inpatient hospital admissions. People with SUD are more likely to be frequent users of an ED and to be hospitalized.[23] Therefore, a reduction in the rates of hospital use may indicate recovery from SUD.

As shown in Exhibit 5, we find that, compared to those who received detox treatment in the same period, SWMS clients were less likely to use the emergency department and less likely to be hospitalized. In percentage terms, those in SWMS were 8% less likely to visit an ED and 22% less likely to be admitted as an inpatient to the hospital.

We conducted subgroup analyses and found no difference by race or gender for hospitalization. We also found no effect of SWMS on ED use for men. However, among women, SWMS clients were significantly less likely than comparison clients to use the ED (45% vs 53%).

[23] See, for example, Zhang, X., Wang, N., Hou, F., Ali, Y., Dora-Laskey, A., Dahlem, C.H., & McCabe, S.E. (2021). Emergency department visits by patients with substance use disorder in the United States. *The Western Journal of Emergency Medicine*, *22*(5), 1076–1085 and Suen, L.W., Makam, A.N., Snyder, H.R., Repplinger, D., Kushel, M.B., Martin, M., & Nguyen, O.K. (2022). National prevalence of alcohol and other substance use disorders among emergency department visits and hospitalizations: NHAMCS 2014-2018. *Journal of General Internal Medicine*, *37*(10), 2420–2428.

Exhibit 5
Predicted Probability of Hospital Medical
Care Within Six Months
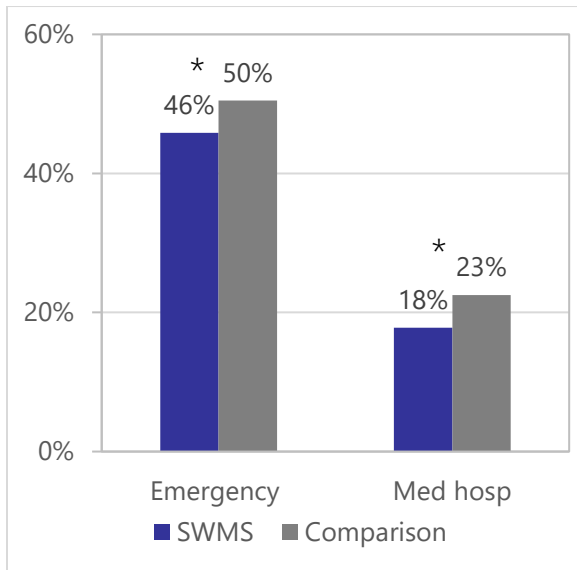
Notes:
N = 4,310.
* Significant at the 0.05 level.
Both comparisons between SWMS and comparison are
significant at p < 0.0001.
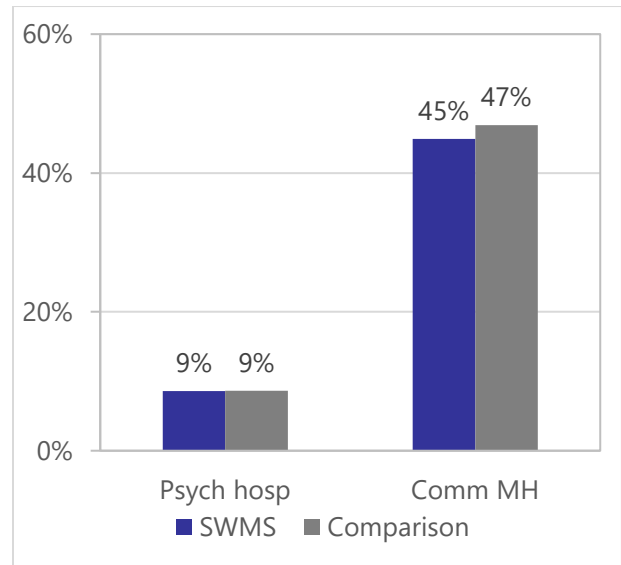
Mental Health Treatment

We learned from the DCRs that many
people they evaluate have both SUD and
mental illness. Persons in crisis for mental
health may receive psychiatric treatment in
community hospitals.

Exhibit 6 summarizes rates of mental health
treatment, both in hospitals and as
outpatients in the community, following the
interventions.

We observed no difference between groups
in the rates of psychiatric hospitalization or
mental health treatment in the community.

Exhibit 6
Predicted Probability of Mental Health
Treatment Within Six Months

Notes:
N = 4,310.
There was no statistical difference between groups on the
use of mental health treatment.

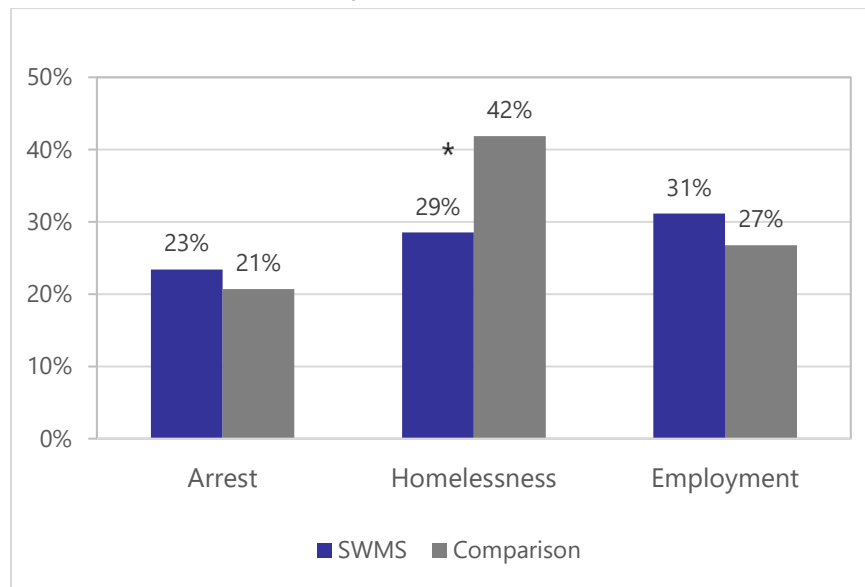## Arrests, Homelessness, and Employment

Findings for this group of outcomes are
summarized in Exhibit 7.

SWMS participants were slightly more likely
to be arrested in the follow-up period,
although the difference was not statistically
significant (p = 0.051). Analysis by gender
revealed that SWMS women were
significantly more likely to be arrested than
women in the comparison group (24% vs.
17%, p < 0.02). We observe no difference
between the groups of men.

Those in the SWMS group were less likely to
experience homelessness following the
intervention than the comparison group
(29% vs 34%). This represents a difference of
15% in rates of homelessness. This effect
was statistically significant.

Exhibit 7

Predicted Probability of Arrest, Homelessness,
and Employment Within Six Months

In the two calendar quarters following the intervention, SWMS clients and those in the comparison group were equally likely to be employed.[24]

However, analysis by gender revealed that among women, SWMS clients were significantly more likely to work in the follow-up period than women in the comparison group (32% vs. 25%, p = 0.03). We observed no difference between the groups for men.[25]

Financial Supports

The Supplemental Nutrition Assistance Program (SNAP) provides financial assistance to purchase food. It may serve as an indicator of subsequent financial need. An increase in the use of SNAP may also be considered a measure of how well clients are referred to services.

The Aged, Blind, Disabled (ABD) Program provides cash assistance to those applying for Supplemental Security Income.

As displayed in Exhibit 8, SWMS clients were significantly less likely to receive either SNAP or ABD in the six-month follow-up period.

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[24] Any hours worked for wages.

[25] Analysis of outcomes by gender are provided in Exhibit A5 in the Appendix.

For ABD, this translates to a 40% lower probability of receiving ABD and a 22% lower probability of receiving SNAP.

It is unclear whether these lower rates should be interpreted as a decrease in receiving services despite a need for them or a decrease in individuals' need for those services.

Exhibit 8

Predicted Probability of Use of Financial Supports Within Six Months
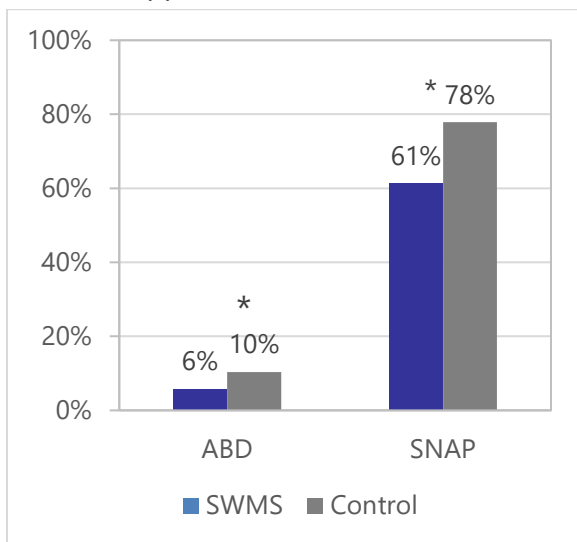
Notes:
N = 4,310.
* Significant at the 0.05 level.
Comparisons between SWMS and control are significant at p < 0.0001.
ABD = Aged, Blind, Disabled Program.
SNAP = Supplemental Nutrition Assistance Program.

Death

Because many people detained under Ricky's Law are considered dangerous to themselves or others, we attempted to get information on death following the interventions. Unfortunately, due in part to the pandemic, requests for data from the Department of Health have been delayed, and we could not obtain that information for this report.

NBR Comparison Group Results

As mentioned earlier, we also compared those admitted to SWMS to those referred to SWMS who were denied a bed and issued a no-bed report (NBR).[26]

Our analyses of the SWMS-NBR comparison generally yielded similar results to those observed with the detox comparison.[27] The small sample size meant we were less likely to find statistical significance. However, one notable difference arose when examining the receipt of SUD outpatient treatment. In the SWMS-detox comparison, SWMS clients were significantly **less** likely to receive treatment. However, the SWMS group was **more** likely to receive additional treatment compared to the NBR comparison group.

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[26] Because of the difference in sample sizes (N = 135 for NBR and N = 2,155 for SWMS), we chose to weight the NBR group rather than a one-to-one match to avoid omitting anyone from the comparison group.

[27] See Appendix II for more information on our approach to weighting and all results of this comparison.

Our two comparison groups differed from SWMS in important ways. Because they had not been deemed "gravely disabled or at a serious risk of harm," the detox group was likely at lower risk. Conversely, the NBR group was likely at greater risk since a DCR had determined they were at serious risk of harm and gravely disabled, but they did not receive the treatment. The consistent trends we observe using these two comparisons suggest that the effects we observe may be caused by SWMS treatment.[28]

Limitations

Interpreting these results is challenging because it is not always clear whether the outcome represents a positive or negative result. For example, if individuals are less likely to receive SNAP, this could mean they do not need assistance in purchasing food. Alternatively, it could mean they are less likely to be referred to this assistance.

The types of individuals who are involuntarily committed may be different than those who voluntarily go into a detox facility. Our analysis cannot fully capture why our comparison group may not be a good match for our treatment group. For example, involuntarily treated individuals may, by definition, be those with the most treatment need and the most likely to need services. In this scenario, we would underestimate the effectiveness of the program. Similarly, if individuals in the voluntary detox program are more motivated, this would lead to an underestimate of the effectiveness of SWMS.

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[28] See Appendix II for a full comparison. Note that while the direction of the effect is similar across most outcomes, the magnitudes of the effects are generally larger under the NBR comparison. This suggests our matching method is unable to fully account for all selection bias, but the consistency in sign does suggest we are estimating a true direction of the effect.

V. Benefit-Cost Analysis

WSIPP has developed a benefit-cost model that estimates potential long-run returns on state investment in social programs or interventions on a per-participant basis relative to program costs. This economic model provides a standardized and internally consistent method for applying a monetary value to a range of outcomes associated with program participation across a range of program and policy areas.[29]

The results from our analyses in this report can be input into that model to obtain an estimate of the overall monetary value of Ricky's Law on a per-participant basis. This section addresses part (b) of the legislative assignment.

In Section IV, we described the differences between SWMS clients and detox participants on ten different outcomes during the six months after they received initial treatment. Of those outcomes measured, WSIPP's benefit-cost model can value the following:

- employment,
- receipt of SNAP,
- psychiatric hospitalization,
- emergency department use,
- general hospitalization, and
- arrests.

Our benefit-cost analysis for this study incorporates specific information about those in involuntary treatment in Washington State by adjusting certain assumptions in the model to match what we observe in the comparison group (those in voluntary detox). Appendix III describes the method of adjustments for this special analysis.

The six-month follow-up period for this study was relatively short, so we cannot be certain about the persistence of these effects over time. Therefore, we chose to only monetize effects for one year. A follow-up study over a longer period may allow for a more comprehensive estimate of the lifetime benefits and costs associated with involuntary treatment.

Costs

We used information from the Health Care Authority to estimate the cost of involuntary treatment services. The daily allowable charges for those in SWMS is a $650 flat fee per day, plus $11.64 for room and board per day.[30] The average length of stay is 11 days.[31] Thus, the average cost per stay is $7,298.

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[29] For more information on the benefit-cost model, see WSIPP's technical documentation. Washington State Institute for Public Policy. (2019). *Benefit-cost technical documentation.* Olympia, WA: Author.
[30] Health Care Authority. Substance Use Disorder Fee Schedule.

[31] Washington State Health Care Authority (2022). *Involuntary Treatment for Substance Use Disorders, Secure Withdrawal Management Report, July 1 to September 30, 2022.*

Exhibit 9
Detailed Monetary Benefits Results per Participant

	Participants	Taxpayer	Federal	State	Local	Other	Indirect	Total
Employment	$1,184	$504	$323	$102	$79	$0	$0	$1,688
Receipt of SNAP	($2,445)	$2,763	$2,582	$181	$0	$0	$1,382	$1,700
Psychiatric hospitalization	$2	$155	$113	$42	$0	$35	$77	$269
Emergency department use	$36	$132	$108	$24	$0	$195	$66	$430
General hospitalization	$1	$34	$30	$4	$0	$33	$17	$85
Arrests	$0	($164)	$0	($114)	($50)	($309)	($82)	($555)
Adjustment for deadweight cost of program							($2,605)	($2,605)
Total	($1,222)	$3,424	$3,156	$239	$29	($46)	($1,145)	$1,011

The comparison group of individuals who received detox treatment had a $298.36[32] reimbursable rate for an estimated average of seven days, resulting in an average cost of $2,088. Thus, the average annual cost of involuntary treatment in SWMS facilities is $5,210 higher than those undergoing detox. To make these program cost comparisons, we assume only one treatment per year for the treatment group and one for the comparison group.

Benefits

In Exhibit 9, we display the benefits we expect to accrue from each of the following monetizable outcomes: employment, food assistance, crime, emergency room visits, hospitalization, and psychiatric hospitalization.

We categorize estimates of benefits and costs into four distinct perspectives:

1) The benefits and costs that accrue solely to program participants;

2) Those received by taxpayers: federal, state, and local;

3) Those received by other members of society; and

4) Those that are more indirect.

In WSIPP's analyses, the participant perspective includes monetary benefits that accrue directly to the participant, such as increases in earnings and decreases in out-of-pocket health care costs. The taxpayer perspective reflects benefits like the taxes paid on additional earnings and decreased spending of taxpayer dollars in systems like public assistance or criminal justice.

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[32] Health Care Authority, Substance Use Disorder Fee Schedule.

Other members of society might also benefit from an intervention through, for example, reduced costs for private healthcare insurers or reduced likelihood of criminal victimization. For the "Indirect" perspective, we consider estimates of the net changes in the value of statistical life and deadweight taxation costs.[33]

In our analysis of SWMS compared to voluntary detox, we estimate that changes in employment result in an estimated increased benefit to society of $1,688 per participant. Of this, $1,184 goes to the participant and $504 to taxpayers (in the form of taxes paid on the additional earnings).

We also observed fewer food assistance payments after involuntary treatment. While participants received $2,445 *fewer* benefits, those dollars not paid out resulted in a benefit from the taxpayer's perspective. In addition, reduced SNAP payments also reduce administrative costs for the government, resulting in net monetary benefits of $1,700 in the year following treatment.

On average, healthcare costs were lower following SWMS treatment as compared to voluntary detox. Involuntary treatment was associated with expected benefits to society of $269 in psychiatric hospitalization, $430 in emergency room visits, and $85 in health care utilization compared to the control group.

Our model also includes the possibility of higher criminal justice system and crime victimization costs, as indicated by a slightly higher level of arrests in the treatment group relative to the control group. The expected value of that difference is $555 per participant and includes costs to the criminal justice system as well as costs to victims of crime.

Benefit-Cost Results

Finally, we combine all the costs and benefits to estimate the specific monetary value the model predicts would accrue to federal, state, and local governments from providing involuntary treatment services. While we could only predict results within the first year after treatment, benefits to society are positive.

We expect $3,424 in total benefits to state, local, and federal taxpayers, but a loss of $1,222 to participants. The benefits are also offset by costs that accrue to other members of society and through indirect sources, leading to a total benefit of $1,011 per participant.

As mentioned earlier, the costs of involuntary treatment are higher than for detoxification only. Thus, after accounting for the program cost, the total net benefits are -$4,199 in the first year following treatment. These numbers suggest that, on balance, the program is not cost-beneficial; that is, the costs of involuntary treatment are greater than the average expected benefit to society.

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[33] Deadweight costs estimate the possible loss (or gain) of other uses of taxpayer dollars and hence act as a counterbalance to net benefits.

Exhibit 10
Net Benefits Results

Benefit-Cost Summary Statistics Per Participant			
Benefits to:			
Taxpayers	$3,424	Benefits minus costs	($4,199)
Participants	($1,222)	Benefit to cost ratio	$0.19
Others	($46)	Chance the program will produce	
Indirect	($1,145)	benefits greater than the costs	6%
Total benefits	$1,011		
Net program cost	($5,210)		
Benefits minus cost	($4,199)		

Exhibit 10 summarizes the benefit-cost results and includes information on how likely the program's benefits will exceed its costs. We conducted a Monte Carlo simulation, rerunning the model 10,000 times, each time allowing several assumptions of the model to vary. Six percent of those runs resulted in benefits that outweighed the costs.

Limitations

The benefit-cost model is not able to monetize every possible outcome. For example, although we observed that SWMS participants were less likely to experience homelessness than detox participants in the six months following treatment, we are currently unable to put a monetary value on that outcome. In addition, the model does not project additional benefits beyond those that could be monetized with one year of information.

VI. Summary

Ricky's Law integrated SUD and mental health involuntary treatment. The law created a single category of mental health professionals to evaluate people in a behavioral health crisis and determine whether the current crisis is best served by SUD or mental health detention. It also mandated establishing SWMS facilities.

This is the third and final report in a series examining this law. Our first report detailed the effect of Ricky's Law on the integration of the behavioral health system. Our second report described findings from interviews with DCRs and described their challenges and successes.

As was the case in 2020 when we published our first report, there are only three facilities in the state, with a current total capacity of 53 beds. In 2022, the percentage of beds occupied ranged between 40% and 60%, suggesting underutilization. We heard from providers that staffing SWMS facilities has been challenging. One facility closed and was moved to another location due to difficulties in hiring nurses.

The challenge in evaluating the effect of Ricky's Law on outcomes for those detained to SWMS is the identification of a comparison group with similar characteristics and at similar risk. We identified two groups that were never detained to SWMS: those who had a detox episode and those with a no-bed report (NBR).

Compared to the detox-only group, SWMS clients were less likely to receive SUD inpatient or outpatient treatment in the six-month period following detainment. However, compared to the NBR group, SWMS clients were more likely to receive SUD outpatient treatment.

Compared to the detox group, we observed that the SWMS group was less likely to:

- Receive SUD treatment;
- Be treated in the emergency department or be hospitalized;
- Receive ABD or SNAP benefits; and
- Experience homelessness.

Compared to the detox group, SWMS clients were about as likely to:

- Receive mental health treatment either in a psychiatric hospital or as an outpatient in the community;
- Be arrested; and
- Be employed.

Because both comparison groups are dissimilar to the SWMS group in important ways, we cannot be sure that they are representative of what outcomes might have been in the absence of Ricky's Law. For this reason, we cannot be certain that our findings are the result of Ricky's Law.

Our benefit-cost analysis found that, compared to the detox-only group, SWMS returns $0.19 per dollar spent. We estimate that benefits will exceed costs 6% of the time. That is, compared to the detox-only group, the cost of the program exceeds the benefits we are able to estimate.

I. Data Cleaning

The Research and Data Analysis (RDA) division at the Department of Social and Health Services has created an integrated client database (ICDB) that links people across data systems for multiple state services. This database was a valuable resource for the outcome evaluation. The Health Care Authority (HCA) provided a list of all clients detained at a Secure Withdrawal Management and Stabilization (SWMS) facility or who had a no-bed report (NBR) between April 2018 and June 2021. RDA matched the lists to people in the database.

RDA provided information from the following—

Medicaid records
- Monthly indicators for:

    o   Diagnoses

    o   Mental health outpatient treatment

    o   Psychiatric hospitalization

    o   SUD outpatient treatment

    o   SUD inpatient treatment

    o   SUD detox

    o   Medication-assisted treatment (for SUD)

    o   Emergency department visits

    o   Medical hospitalization

Financial indicators
- Monthly indicators for:

    o   Supplemental Nutrition Assistance Program (SNAP)

    o   Aged, Blind, Disabled (ABD) cash assistance

    o   Homelessness (unhoused)

- Quarterly employment (hours worked and wages earned)

Criminal justice involvement
- Monthly indicators for:
    - Arrests
    - Misdemeanor charges
    - Gross misdemeanor charges
    - Felony charges

RDA removed names and created a unique research ID for each person in the data but did provide demographic information (date of birth, gender, race/ethnicity) where it was unambiguous. We received a list of 3,030 people. Demographic information was unavailable for a small proportion of SWMS and comparison group clients. Those people were removed from the analysis for a final sample through June 2021 of 2,976.

For analysis, RDA supplied us with information on all individuals eligible for Medicaid throughout our study period. From this group, we identified those who had a detox event during the study period who were never admitted to SWMS or had an NBR.

NBRs are filed whenever a person is unable to find a bed in a mental health crisis facility (MH) or SWMS. Occasionally, we see an NBR for both types of facilities indicated. After removing people who also received a SWMS detention, we identified 179 individuals where the facility was designated for SUD or MH/SUD. All demographic information was missing for 39 people, leaving 135 in the NBR comparison.[34]

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[34] This small sample size was the main reason why we selected those in voluntary detox as our comparison group, despite a statement in an earlier report that we would not look at this group. See Drake, E., Ellis, A. & Miller, M. (2020). *Involuntary treatment act for substance use disorders: First preliminary report* (Doc. No. 20-12-3401). Olympia: Washington State Institute for Public Policy.

II. Outcome Evaluation

Methodology and Main Results

In our main analysis, we conduct propensity score matching. This method allows us to match those in the treated group (SWMS) to the comparison pool on characteristics associated with detention to SWMS. The analytic dataset is balanced on observed variables. We match on variables that indicate whether an individual experienced each outcome in the prior calendar year for the following outcomes:

- Inpatient SUD treatment
- Detoxification treatment
- Medication-assisted treatment
- Psychiatric hospitalization
- Emergency department visit
- Employment
- Homelessness
- Alcohol dependence disorder diagnosis
- Drug dependence disorder diagnosis
- Depression diagnosis
- Psychosis diagnosis
- Gender
- Race (Black, American Indian/Alaskan Native, Asian, Native Hawaiian/Pacific Islander, White)
- Hispanic Ethnicity
- Year of birth (1940-1959, 1960-1969, 1970-1980, 1980-1990, 1990-2003)

We use the standardized mean difference effect (Cohen's D) to measure the group balance. Values of Cohen's D greater than 0.1 usually indicate a moderate imbalance, while greater than 0.25 indicates a severe imbalance.[35] Percentages before and after matching and values of Cohen's D are shown in Exhibit A1. Before matching, seven of the 23 variables exhibit moderate imbalance and five exhibit severe imbalance. After matching, six variables exhibit moderate imbalance, and none exhibit severe imbalance. Because this match cannot eliminate every imbalance, we conduct entropy balancing as a check on our methodology.

In both the matched and weighted samples, we further controlled for covariates in our final analysis.[36] In addition to controlling for all covariates used in the match, each regression also controlled for the following services used in the prior calendar year:

- Arrest
- Medical hospitalization
- Receipt of Aged, Blind, Disabled (ABD) benefits
- Receipt of Supplemental Nutrition Assistance Program (SNAP)

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[35] Austin, P.C. (2009). Balance diagnostics for comparing the distribution of baseline covariates between treatment groups in propensity- score matched samples. *Statistics in Medicine, 28*(25), 3083-3107 and Stuart, E.A. (2010). Matching methods for causal inference: A review and a look forward. Statistical Science: A Review Journal of the Institute of Mathematical Statistics, 25(1), 1–21

[36] Regression results are available from the authors.

Exhibit A1
Group Characteristics Before and After Propensity Score Matching

Outcome	SWMS	Comparison		SWMS	Comparison	
	Before matching			After Matching		
	N = 2,155	N = 18,988		N = 2,155	N = 2,155	
	Mean (%)	Mean (%)	Cohen's D	Mean (%)	Mean (%)	Cohen's D
Substance abuse treatment						
Inpatient	16%	13%	0.12	16%	14%	0.07
Voluntary detox	24%	14%	0.40	24%	20%	0.11
Medication-assisted treatment	21%	20%	0.06	21%	19%	0.10
Mental health treatment						
Psychiatric hospital	9%	5%	0.43	9%	8%	0.10
Other medical treatment						
Emergency department	56%	51%	0.12	56%	53%	0.01
Employment	40%	46%	-0.14	40%	40%	0.01
Homelessness	33%	35%	-0.05	33%	30%	0.06
Behavioral health diagnoses						
Alcohol dependence	39%	31%	0.21	39%	35%	0.10
Drug dependence	55%	49%	0.15	55%	50%	0.13
Depression	43%	32%	0.28	43%	39%	0.11
Psychosis	20%	9%	0.54	20%	17%	0.12
Gender						
Male	58%	59%	-0.02	58%	58%	0.00
Race and Ethnicity						
Black	6%	9%	-0.30	6%	5%	0.08
American Indian/Alaskan Native	16%	14%	0.07	16%	15%	0.05
Asian	3%	3%	-0.10	3%	3%	0.00
Native Hawaiian/Pacific Islander	2%	2%	-0.12	2%	2%	0.11
Hispanic	12%	12%	0.01	12%	11%	0.06
White	62%	59%	0.07	62%	65%	-0.08
Year of birth						
1940-1959	6%	5%	0.03	6%	6%	0.00
1960-1969	15%	15%	0.01	15%	15%	0.00
1970-1980	20%	18%	0.07	20%	20%	0.00
1980-1990	33%	35%	-0.04	33%	33%	0.00
1990-2003	27%	27%	-0.01	27%	27%	0.00

Entropy balancing is a data preprocessing method similar to propensity score matching. However, instead of finding a match for each individual in the treatment group, the entropy balancing procedure calculates weights to be applied to the control group individuals such that the covariates are balanced across treatment and control. In other words, if the entropy balancing procedure completes, you are guaranteed a balance of every covariate.[37] As a result, there is no need to present a table of balance as every covariate is exactly balanced in this methodology.

Exhibit A2 compares findings on all outcomes using the two methods. All results yield similar, but not identical, magnitudes. One outcome, arrests, changed from statistically insignificant under PSM to statistically significant under entropy balancing. However, this outcome was almost significant in the propensity score match (p = 0.051 compared to a threshold of 0.050), so this was still a minor change.

In general, we do not see large differences between the two methodologies, suggesting that our estimates are not sensitive to the choice of methodology.

Exhibit A2
Comparing Propensity Score Match with Entropy Balancing

Effect of SWMS within six months of treatment Relative to detox comparison				
Outcome	**Propensity score matching**		**Entropy balancing**	
	Estimate	*p-value*	Estimate	*p-value*
Inpatient SUD treatment	**-0.613**	*<0.0001*	**-0.556**	*<0.0001*
Outpatient SUD treatment	**-0.628**	*<0.0001*	**-0.609**	*<0.0001*
Medication-assisted treatment for alcohol or opioids	**-0.574**	*<0.0001*	**-0.495**	*<0.0001*
Voluntary detox	-0.146	*0.075*	-0.102	*0.099*
Emergency department visits	**-0.186**	*0.004*	**-0.171**	*0.000*
Hospital admittance	**-0.295**	*0.000*	**-0.263**	*<0.0001*
Psychiatric hospital inpatient treatment	-0.090	*0.454*	-0.060	*0.483*
Community mental health hospital treatment	-0.081	*0.214*	-0.042	*0.392*
Arrests	0.157	*0.051*	**0.186**	*0.002*
Homelessness	**-0.586**	*<0.0001*	**-0.431**	*<0.0001*
Employment	0.075	*0.321*	0.083	*0.133*
Aged, Blind, Disabled	**-0.620**	*<0.0001*	**-0.503**	*<0.0001*
SNAP	**-0.798**	*<0.0001*	**-0.735**	*<0.0001*

Notes:
Statistically significant outcomes (at a 0.05 level) are in bold.
For PSM, N = 4,310 for all outcomes except arrests (N = 4,036) and homelessness (N = 4,218).
For entropy balancing, N = 21,143 for all outcomes except arrests (N = 19,196) and homelessness (N = 20,486).
SNAP = Supplemental Nutrition Assistance Program.

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[37] For a full discussion of this method, see Hainmueller, J. (2012). Entropy balancing for casual effects: a multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis, 20,* 25-46.

Because our results are framed in terms of differences between the SWMS individuals and the comparison group individuals, it can be difficult to understand the changes that may have occurred during treatment. In other words, we found that SWMS participants were less likely to receive SUD outpatient treatment in the follow-up period than individuals in detox. However, this does not imply that SWMS participants experienced less SUD outpatient treatment—just less than the comparison group, balanced on observables. Therefore, to inform this distinction, we compare the service history six months before either intervention and the six-month follow-up. We do this by showing the percentage of individuals in the SWMS group and the comparison group who experienced each outcome before and after treatment.

From this table, we can see that rates of use generally increased in both groups for most outcomes. However, inpatient SUD, outpatient SUD, and MAT increased much more for the comparison group than the SWMS group. In conjunction with our main results, these results suggest that both programs may encourage individuals to receive treatment but that those in detoxification were more likely to receive additional treatment. However, the detox group exhibited worse outcomes in other areas, such as homelessness or employment, suggesting that the SWMS participants were better off in these dimensions.

Exhibit A3
Comparing Outcomes Six Months Before and Six Months After Treatment
(Unadjusted Percentages)

Outcomes	SWMS			Comparison		
	Pre	Post	Difference	Pre	Adjusted post	Difference
Inpatient SUD treatment	19%	21%	*2%*	17%	34%	*17%*
Outpatient SUD treatment	22%	24%	*2%*	26%	37%	*11%*
Medication-Assisted treatment for alcohol or opioids	20%	22%	*1%*	22%	33%	*11%*
Voluntary detox	17%	16%	*-1%*	18%	18%	*0%*
Emergency department visits	45%	46%	*0%*	51%	50%	*-1%*
Hospital admittance	16%	18%	*1%*	19%	23%	*4%*
Psychiatric hospital inpatient treatment	7%	9%	*2%*	7%	9%	*2%*
Community mental health hospital treatment	43%	45%	*2%*	37%	47%	*10%*
Arrests	23%	23%	*0%*	23%	21%	*-2%*
Homelessness	32%	29%	*-4%*	34%	42%	*8%*
Employment	31%	31%	*0%*	33%	27%	*-6%*
Aged, Blind, Disabled	6%	6%	*0%*	8%	10%	*3%*
SNAP	67%	67%	*0%*	71%	78%	*7%*

Note:
SNAP = Supplemental Nutrition Assistance Program.

Sensitivity Analysis

We next present various sensitivity and subgroup analyses. First, we present results using the no-bed report comparison group. Then we present heterogeneity by race and gender.

No-Bed Reports

We could not perform propensity score matching for the no-bed report (NBR) comparison group because of the limited sample size. There were few observations in this group, insufficient to find a match for each observation in the treatment group. For that reason, we conduct propensity score weighting instead. Propensity score weighting employs a similar procedure to propensity score matching, but instead of using covariates to find a match, the covariates are used to weight control group observations. We also conduct entropy balancing.

We present the results from these two analyses in Exhibit A4. The results across these two methods here are sometimes similar in magnitude but generally have the same sign. However, because of the small sample size, they are much more dissimilar to each other than they were in the detox analysis.

Exhibit A4
Comparing Propensity Score Weighting with Entropy Balancing

Outcome	Effect of SWMS within six months of treatment Relative to no-bed reports (NBRs)			
	Propensity score weighting		Entropy balancing	
	Estimate	p-Value	Estimate	p-Value
Inpatient SUD treatment	**-0.181**	*0.036*	0.122	*0.608*
Outpatient SUD treatment	**0.338**	*0.000*	0.443	*0.077*
Medication-assisted treatment for alcohol or opioids	0.163	*0.097*	0.354	*0.193*
Voluntary detox	0.148	*0.123*	0.075	*0.453*
Emergency department visits	**-0.601**	*<.0001*	-0.363	*0.084*
Hospital admittance	**-1.041**	*<.0001*	**-0.597**	*0.007*
Psychiatric hospital inpatient treatment	**-1.216**	*<.0001*	**-1.003**	*0.000*
Community mental health hospital treatment	**-0.534**	*<.0001*	-0.372	*0.069*
Arrests	**0.256**	*0.004*	0.379	*0.149*
Homelessness	**-0.276**	*0.009*	-0.316	*0.267*
Employment	**0.774**	*<.0001*	**0.619**	*0.020*
Aged, Blind, Disabled	**-0.428**	*0.028*	-0.370	*0.415*
SNAP	-0.178	*0.099*	0.024	*0.929*

Notes:
Statistically significant outcomes (at a 0.05 level) are in bold.
For both methods, N = 2,429 for all outcomes except arrests (N = 2,272) and homelessness (N = 2,377).
SNAP = Supplemental Nutrition Assistance Program.

The main difference between the two methods is that more results under PSM are statistically significant than under entropy balancing. The entropy balancing results are noisier due to the methodology forcing exact covariate balance. With few observations, forcing balance means that only a few individuals contribute to the weight, potentially leading to small sample bias.

For these reasons, we advise caution on interpreting these results—the estimates are too noisy to rely upon.

However, we can compare general patterns across the detox and NBR comparison groups. In both groups, the sign of the effect is the same for almost every outcome. The only exceptions are outpatient SUD, medication-assisted treatment (MAT), and any detox—they are negative in the detox group and positive in the NBR groups. This suggests that while SWMS participants were worse off than detox participants for these outcomes, they were better off than the group that received no treatment. In addition, other outcomes exhibit a stronger effect compared to the NBR group than existed in the SWMS sample. For example, the positive effects on homelessness, hospital admittance, and psychiatric hospitalizations are much stronger for the NBR sample. This, again, suggests that SWMS participants experienced better outcomes than participants who received no treatment.

Gender

Next, we examine differences in our estimated effects by gender. The same patterns generally persist across men and women, but some differences exist. We summarized the main differences in the main text of the report. We show the full results in Exhibit A5.

Exhibit A5
Effect of SWMS by Gender

Outcome	Male		Female	
	Estimate	*p-value*	Estimate	*p-value*
Inpatient SUD treatment	**-0.836**	*<0.0001*	**-0.342**	*0.002*
Outpatient SUD treatment	**-0.649**	*<0.0001*	**-0.598**	*<0.0001*
Medication-assisted treatment for alcohol or opioids	**-0.612**	*<0.0001*	**-0.557**	*<0.0001*
Voluntary detox	**-0.245**	*0.022*	-0.014	*0.915*
Emergency department visits	-0.064	*0.455*	**-0.323**	*0.001*
Hospital admittance	**-0.273**	*0.010*	**-0.323**	*0.007*
Psychiatric hospital inpatient treatment	-0.249	*0.094*	0.181	*0.359*
Community mental health treatment	-0.034	*0.700*	-0.155	*0.122*
Arrests	-0.035	*0.742*	**0.410**	*0.002*
Homelessness	**-0.529**	*<0.0001*	**-0.699**	*<0.0001*
Employment	0.087	*0.514*	**0.359**	*0.003*
Aged, Blind, Disabled	**-0.724**	*<0.0001*	**-0.508**	*0.010*
SNAP	**-0.799**	*<0.0001*	**-0.769**	*<0.0001*

Notes:
Statistically significant outcomes (at the 0.05 level) are in bold.
SNAP = Supplemental Nutrition Assistance Program.

Race and Ethnicity

Finally, we examine differences in our estimated effects by race and ethnicity. As with gender, we summarize the main differences in the main text of the report but show the full results here in Exhibit A6. We excluded two groups from this analysis (Native Hawaiian/Pacific Islander and Asian) because of the small sample sizes.

Exhibit A6
Effect of SWMS by Race and Ethnicity

Outcome	Black		AI/AN		Hispanic		White	
	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value
Inpatient SUD treatment	-0.130	0.663	**-0.418**	0.014	**-0.514**	0.014	**-0.629**	<0.0001
Outpatient SUD treatment	-0.392	0.183	**-0.365**	0.033	-0.296	0.151	**-0.688**	<0.0001
Medication-assisted treatment for alcohol or opioids	-0.366	0.339	**-0.478**	0.007	-0.271	0.228	**-0.634**	<0.0001
Voluntary detox	0.064	0.859	0.073	0.723	-0.299	0.218	-0.135	0.171
Emergency department visits	-0.177	0.308	-0.307	0.063	-0.127	0.511	**-0.186**	0.018
Hospital admittance	-0.193	0.576	0.010	0.961	-0.274	0.319	-0.190	0.069
Psychiatric hospital inpatient treatment	-0.281	0.506	0.207	0.456	-0.219	0.547	-0.006	0.966
Community mental health treatment	0.457	0.310	0.094	0.565	0.029	0.882	**-0.167**	0.035
Arrests	0.694	0.033	-0.071	0.719	**0.579**	0.015	0.133	0.181
Homelessness	-0.513	0.095	-0.306	0.081	-0.268	0.222	**-0.633**	<0.0001
Employment	0.251	0.446	-0.360	0.090	**0.486**	0.031	0.090	0.330
Aged, Blind, Disabled	-0.680	0.180	-0.197	0.553	-0.813	0.035	-0.597	0.001
SNAP	**-1.564**	<0.001	**-0.945**	<.0001	**-0.485**	0.044	**-0.688**	<0.0001

Notes:
Statistically significant outcomes (at the p < 0.05 level) are in bold.
AI/AN are individuals classified as "American Indian or Alaskan Native."
SNAP = Supplemental Nutrition Assistance Program.

III. Benefit-Cost Model Adjustments

WSIPP's standard approach to benefit-cost analysis is to estimate a program's effects and monetary consequences in Washington, given what we know about the Washington population.[38] In this report, we observe outcomes for a specific population of individuals receiving involuntary treatment in a SWMS facility, and we compare these effects to those who receive detox treatment. Since the comparison group is a specific population with experiences that differ from our standard model approach, we adjusted our baselines using actual data from our comparison group analysis.

Exhibit A7 shows the effect sizes that we entered in our benefit-cost model. These effect sizes are calculated from the coefficients and standard errors reported in our preferred specification.

Exhibit A7
Effects Entered in the Primary Benefit-Cost Analysis

Outcome	Effect size	SE	N	p-value
Employment	+0.045	0.039	2,155	0.321
Receipt of SNAP	-0.484	0.041	2,155	<0.001
Psychiatric hospitalization	-0.054	0.065	2,155	0.454
Emergency department use	-0.113	0.037	2,155	0.004
General hospitalization	-0.178	0.046	2,155	<0.001
Arrests	+0.095	0.046	2,018	0.051

Note:
SNAP = Supplemental Nutrition Assistance Program.

To estimate the magnitude of these changes and, thereby, the monetary value, we adjusted our baseline to incorporate the pre-treatment experiences among people in the comparison group selected for this study. For example, individuals who undergo detoxification have a much lower rate of employment than the average Washingtonian but higher employment levels than are typically observed among all persons with a serious mental illness. Therefore, we used the specific employment rate observed for the comparison group before treatment for this study. A similar method was used to adjust other parameters as follows.

Employment and Earnings

WSIPP's benefit-cost model includes average expected employment benefits.[39] While the standard approach assumes an employment rate of 33.4% among those with a serious mental illness, our comparison group in this study showed a slightly higher employment rate. We measured employment as having any earnings reported to the Employment Security Department before treatment. Therefore, we adjusted the model to reflect the comparison group's pre-treatment employment of 42.0%, with a standard error of 0.49.

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[38] See WSIPP's Technical Documentation.
[39] Ibid, Exhibit 4.2.2.

Receipt of SNAP

Approximately 68.1% (std. error = 0.47) of the comparison group and 68.7% (std. error = 0.46) of the treatment group received benefits from the Supplemental Nutrition Assistance Program (SNAP). The benefit-cost model required no alteration to calculate the program's expected costs over the year following treatment.

Psychiatric Hospitalization

We replaced the average percentage of the population with a psychiatric hospitalization admission (8.3%) with the comparison group's percentage (9.7%, std. error = 0.28). We assumed that if psychiatric hospitalization occurs, this population incurs the same yearly cost as the seriously mentally ill population.[40]

Emergency Department Use

We replaced the percentage of the population with an emergency department visit in a given year among those with serious mental illness (50%) to reflect those in the comparison group with a slightly higher visitation rate of 51.5% (std. error = 0.50) in the year before treatment. We assumed that if the emergency department is used, this population incurs the same costs as frequent emergency department users.[41]

General Hospitalization

To capture additional hospitalizations that were not psychiatric admissions, we adjusted the hospitalization rate for the seriously mentally ill (24.3%) to the rate of other hospitalizations observed in the comparison group, 4.6% (std. error = 0.21) the year before treatment. We assumed that if hospitalization occurs, this population incurs the same yearly cost as the seriously mentally ill population.[42]

Crime (Arrests)

To measure expected effects on crime, our model requires that we identify the crime patterns that are likely to result. We did not have criminal history for the comparison group, but we could observe the number of arrests in the year before treatment. Approximately 30.2% (std. error = 0.46) of the individuals in the comparison group were arrested the year before treatment, with an average of 2.15 arrests per person. People in the involuntary treatment group had a similar arrest rate of 32.9% (std. error = 0.47) and 2.3 arrests per person arrested. Among all arrests occurring in 2018 in WSIPP's Criminal History Database, 47% resulted in a conviction or deferral within two years. Thus, we estimated that approximately 14.2% of people in the comparison group are likely to be convicted within two years. In our benefit-cost model, this most closely resembles the pattern observed for individuals in the "adult supervision, low risk" category. Therefore, this population was chosen as the appropriate group to model in our simulations.[43]

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[40] Ibid, Exhibit 4.6.5.
[41] Ibid, Exhibit 4.3.6.
[42] Ibid, Exhibit 4.6.5.
[43] Ibid, Exhibit 4.11.31.

Acknowledgments

Washington State Institute for Public Policy

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