Access to Recovery
Impact of Recovery Support Services on Outcomes

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THE ACCESS TO RECOVERY (ATR) PROGRAM provides support services to promote recovery from substance use disorders (SUD). Evaluations of the first federally funded ATR program in Washington State found that ATR services were associated with increased length of stay in SUD treatment, increased completion of SUD treatment, increased employment rates (Krupski *et al.*, 2009) and decreased Medicaid costs (Wickizer *et al.*, 2008; 2009). To further explore the potential benefits of recovery support services, this report focuses on outcomes associated with Washington's third federally funded ATR program. In addition to serving clients who were receiving SUD treatment, this program provided services to those who were not in SUD treatment but were addressing their substance use problems through 12-step programs, Oxford House or other means (Collins, 2011).

Changes in outcomes between a one-year baseline and one-year outcome period were examined for ATR recipients relative to statistically matched clients of the Washington State Department of Social and Health Services (DSHS). In analyses of SUD treatment use, employment and arrest rates, ATR and non-ATR clients were subdivided into those who received SUD treatment during the baseline year and those who did not, in order to assess whether outcomes differed according to recent receipt of SUD treatment. Analyses of medical utilization focused on comparing rates of emergency department visits and hospitalizations for matched ATR and comparison group members enrolled in Medicaid or other publicly funded medical programs for at least three months in the baseline and outcome years.

Key Findings

- $6.3 million was spent on ATR services for clients in this study, with one-third ($2.2 million) spent on housing support.

- ATR clients—both those with recent SUD treatment and those without—were more likely than matched DSHS clients who did not get ATR services to experience:
  - Increased days of outpatient treatment,
  - Increased rates of employment, and
  - Decreased rates of total and gross misdemeanor arrests.

- Statistically significant declines were found in rates of hospitalization from Emergency Department (ED) admissions and for other hospitalizations among ATR clients with at least three months of medical coverage, relative to their non-ATR counterparts. No difference was found between the ATR and non-ATR groups in rates of outpatient ED visits, which declined in the outcome period for both groups.

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ATR Recovery Support Services

Since 2004, the Washington State Department of Social and Health Services' Division of Behavioral Health and Recovery (DBHR) received $40 million of federal funding from the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration for ATR in three successive grant cycles. These funds were used to support community-level recovery support services in six Washington State counties (Clark, King, Pierce, Snohomish, Spokane and Yakima). The third ATR program, effective from October 2010 to September 2014, expanded services to include people not in treatment who were addressing recovery through 12-step programs, Oxford House, or other SUD recovery programs (Collins, 2011).

The study population includes 4,735 adults (ages 18 to 65) who received their first ATR service between October 1, 2010 and June 31, 2013, the study period for this report, and could be linked to administrative data to be used in study analyses. During this time, $6.3 million ATR funds were spent on these clients. Based on ATR program data, the top five expenditure categories were Recovery Focused Housing Supports, Recovery Case Management, Other Recovery Services (such as addressing basic needs and employment services), Medical Supports and Transportation. On average, each ATR client received 11 recovery support services (some of which may have been the same type of service but provided on different days). In total, these services cost about $1,341 per person. One-third (34.8 percent) of the total expenditures were for housing supports or transitional drug-free housing.

FIGURE 1.

Access to Recovery Services and Expenditures
Services received by 4,735 study population, October 1, 2010 – June 30, 2013

	Total Services Provided ▼	Number of Clients Served ▼	
Recovery Focused Housing Supports	7,326	2,563	$2,206,261
Recovery Case Management	16,555	4,661	$1,407,899
Other Recovery Services	13,958	2,689	$1,336,465
Medical Supports (not covered by insurance)	1,096	570	$566,195
Transportation	10,215	2,058	$448,420
Peer Services	3,340	1,277	$256,000
Spiritual Support	544	278	$81,266
Social Work Services	477	301	$46,324
TOTAL	**53,511**	**4,735**	

Services and Expenditures

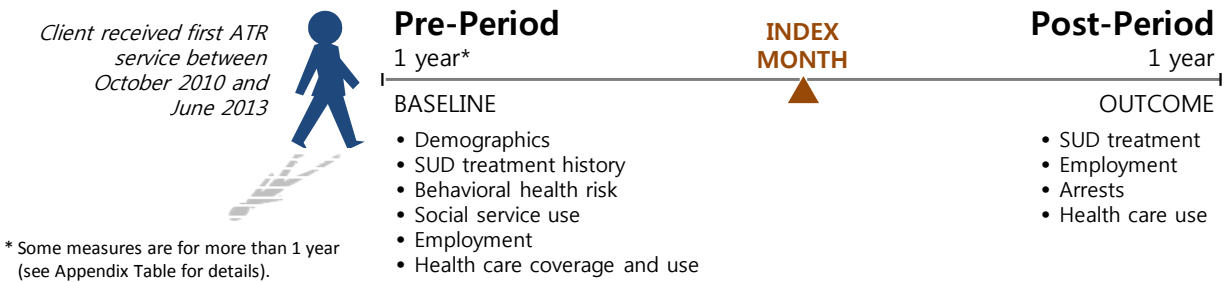|	
Number of Services Provided *Average Per Person*	**11**
Expenditures *Average Per Person*	**$1,341**
Total Number of Services Provided	**53,511**
TOTAL EXPENDITURES	**$6.3 million**

NOTE. General service categories used in this chart were created by combining more detailed services, as follows:
- **Recovery Focused Housing Support** includes housing supports and supportive transitional drug-free housing. Funding for participation in a recovery-focused shared housing model requires abstinence.
- **Recovery Case Management** includes information and referral, intake, and RSS (Recovery Support Specialists). Case management services were involved in setting up the recovery plan and associated vouchers.
- **Other Recovery Services** includes a broad range of supports that eliminate identified barriers to recovery, such as services to meet basic needs, specialized employment tools, child care, alcohol and drug-free social activities, alcohol and drug information school and other services.
- **Medical Support** (not covered by insurance) includes primary medical (doctors, dentists), secondary medical services (lab tests or other services), prescriptions, urine analysis, tuberculosis testing, and other clinical services to support a recovery plan.
- **Peer Services** includes peer coaching or mentoring and other peer-to-peer services.
- **Social Work Services** includes family services, brief intervention and mental health assessment.

Methods

Study Timeline

The month in which a person first received an ATR service during the 33-month study period from October 2010 through June 2013 was identified as the "index" month for each ATR client. A multi-step process was used to identify similar DSHS clients to serve as comparison group members and to choose a comparable index month for each of these clients based on SUD risk and treatment history. Analyses were based on administrative data from DBHR and the DSHS Research and Data Analysis Division's (RDA) Integrated Client Database (Mancuso, 2014).

Client received first ATR service between October 2010 and June 2013

Pre-Period
1 year*

INDEX MONTH

Post-Period
1 year

BASELINE

- Demographics
- SUD treatment history
- Behavioral health risk
- Social service use
- Employment
- Health care coverage and use

OUTCOME

- SUD treatment
- Employment
- Arrests
- Health care use

* Some measures are for more than 1 year (see Appendix Table for details).

Study Samples

Of the 4,735 clients in the total study population who received their first non-administrative ATR service between October 2010 and June 2013, an overall sample of 4,149 clients was selected who could be matched statistically to an equal number of non-ATR clients who serve as a control group using a multi-step selection process and statistical matching (see Technical Notes). The samples were matched on various baseline characteristics, including SUD treatment history, behavioral and health risk indicators, social service use, employment, arrests, housing instability, medical coverage, health care use and county-level population characteristics. The overall matched samples were used for analyses of several major outcomes: days of SUD treatment, employment rates and arrest rates. Since the effects of ATR services may depend on recently receiving SUD treatment, we created two subgroups using an exact match on this characteristic: 2,986 in both the ATR and non-ATR groups who had received some SUD treatment in the baseline year and 1,163 in each group who had not.

For analyses of medical care use, we matched ATR clients who had at least three months of enrollment in Medicaid or another state-funded medical program in both the 12-month pre- and post-periods with non-ATR clients who met the same enrollment criteria. The medical assistance sample included 2,101 ATR recipients and a matched group of 2,101 DSHS clients without ATR services chosen based on statistical matching on a number of baseline characteristics. (See Technical Notes for details on matching and sample selection.)

Statistical Techniques

To test whether the receipt of ATR services may be associated with favorable outcomes, we used the difference-in-difference approach which is also known as an untreated control group design with pre-test and post-test (Shadish *et al.*, 2002). This approach is often used to help control for expected changes that might occur given "treatment as usual." It compares the change in outcomes between the pre- and post-periods for persons who receive treatment enhancements, like ATR recovery support services, relative to the change for the "treatment as usual" group. In this case, the "treatment as usual" group is our matched, non-ATR comparison groups. (See the explanatory note on the next page for how to calculate a difference-in-difference coefficient.)

Baseline characteristics were examined for the ATR study population, the overall matched samples of ATR and non-ATR clients (n = 4,149 × 2), and the medical assistance matched samples (n = 2,101 × 2) (see Appendix, Baseline Characteristics and Appendix Table for details). To determine whether or not the non-ATR clients selected for these matched samples, as well as the subgroups with and without SUD treatment in the baseline year, were adequately matched to the ATR clients, we calculated the Absolute Standardized Mean Difference (ASMD) for each of the baseline characteristics. The ASMD was less than 0.20 for all baseline measures—which indicates good balance on those variables—within the overall matched sample, the subgroup with SUD treatment in the baseline year, and the matched medical assistance sample. In the subgroup with no SUD treatment in the baseline year, the ASMDs were less than 0.20 on all characteristics except for three counties of residence. Given the good balance across all the samples, the report presents unadjusted results. Robustness checks which control for the three remaining imbalances in the no SUD treatment subgroup yield similar findings (see Technical Notes for details).

What is a Difference-in-Difference?

Calculating the difference-in-difference between ATR and non-ATR clients' change in arrest rates between the 1-year pre-period and the 1-year post-period.

- Change in arrest rates for ATR clients:
    25.8% in post-period – 45.6% arrested in pre-period= **– 19.8%**

- Change in arrest rates for non-ATR clients:
    30.5% in post-period – 45.1% arrested in pre-period = **– 14.6%**

- Difference-in-difference (unadjusted):
    (– 19.8%) – (– 14.6%) = **– 5.2%**

Interpretation

The decrease in arrest rates among ATR clients was 5.2 percentage points greater than the decrease in arrest rates among non-ATR clients, over the same time period.
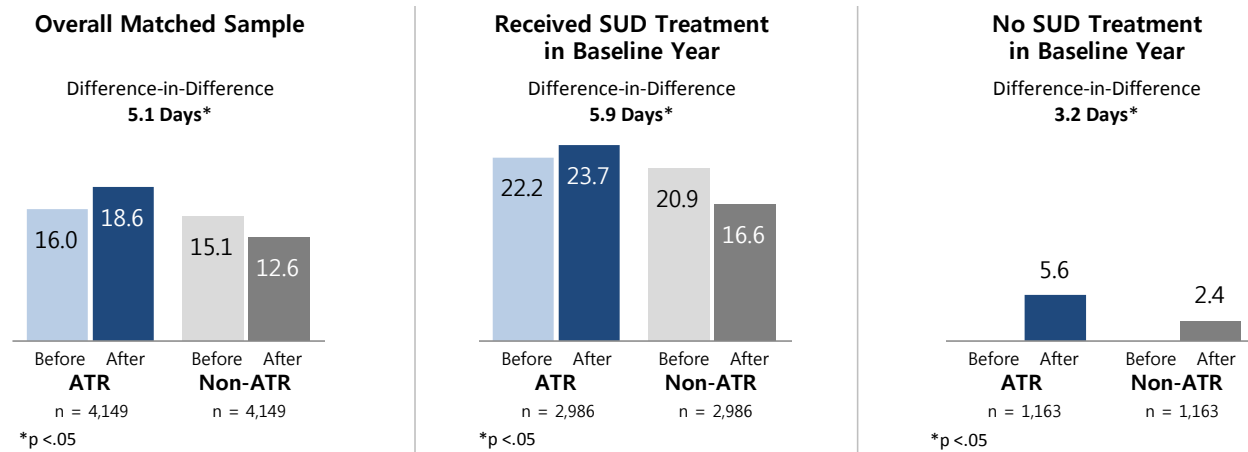
Outcomes for Overall Sample

Substance Use Disorder Treatment Use

Days of outpatient SUD treatment increased for ATR recipients in the post-period but decreased for non-ATR clients, resulting in a statistically significant difference-in-difference of 5.1 days (p < .05) in the overall sample and 5.9 days (p < .05) for those with SUD treatment during the baseline year. Among those who had no SUD treatment in the baseline year, ATR service recipients had more days of outpatient SUD treatment in the post-period than the non-ATR clients (DID = 3.2 days, p < .05).
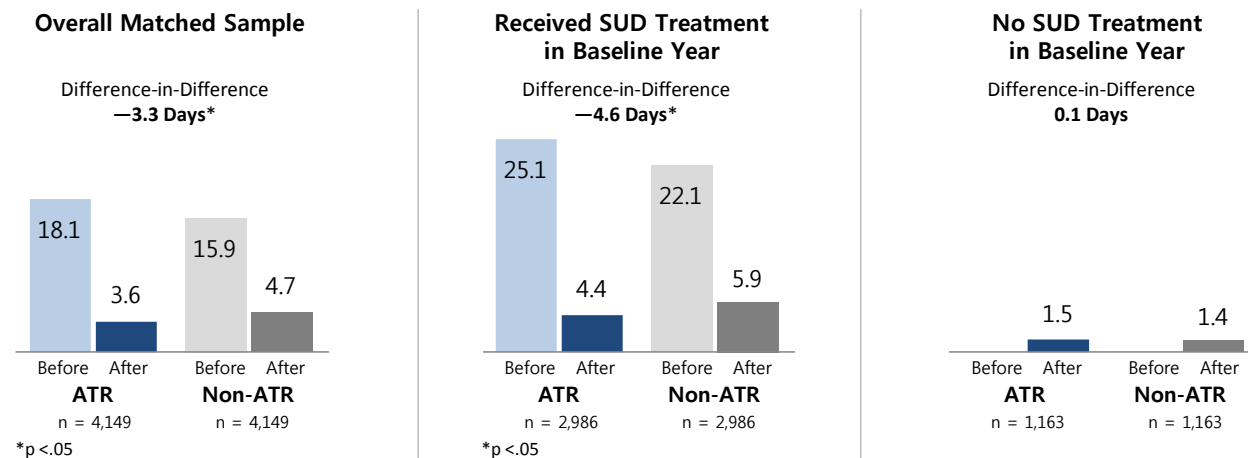
FIGURE 2.

Outpatient SUD Treatment *Average Number of Days*

Overall Matched Sample

Difference-in-Difference
5.1 Days*

16.0 | 18.6 | 15.1 | 12.6
Before After | Before After
ATR | **Non-ATR**
n = 4,149 | n = 4,149
*p <.05

Received SUD Treatment in Baseline Year

Difference-in-Difference
5.9 Days*

22.2 | 23.7 | 20.9 | 16.6
Before After | Before After
ATR | **Non-ATR**
n = 2,986 | n = 2,986
*p <.05

No SUD Treatment in Baseline Year

Difference-in-Difference
3.2 Days*

5.6 | 2.4
Before After | Before After
ATR | **Non-ATR**
n = 1,163 | n = 1,163
*p <.05

Days in residential SUD treatment declined for *both* ATR and non-ATR clients, but the decline was greater among ATR clients in the overall matched sample (DID = − 3.3 days, p < .05) and among those with SUD treatment in the baseline year (DID = − 4.6 days, p < .05). No difference was found for clients without SUD treatment during the baseline.
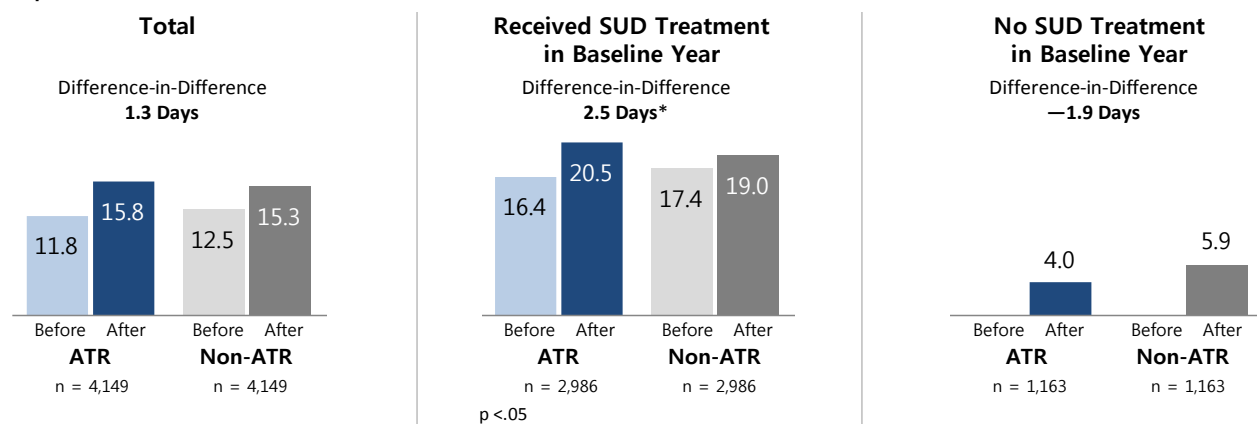
FIGURE 3.

Residential SUD Treatment *Average Number of Days*

Overall Matched Sample

Difference-in-Difference
—3.3 Days*

18.1 | 3.6 | 15.9 | 4.7
Before After | Before After
ATR | **Non-ATR**
n = 4,149 | n = 4,149
*p <.05

Received SUD Treatment in Baseline Year

Difference-in-Difference
—4.6 Days*

25.1 | 4.4 | 22.1 | 5.9
Before After | Before After
ATR | **Non-ATR**
n = 2,986 | n = 2,986
*p <.05

No SUD Treatment in Baseline Year

Difference-in-Difference
0.1 Days

1.5 | 1.4
Before After | Before After
ATR | **Non-ATR**
n = 1,163 | n = 1,163

Days of opiate substitution treatment increased more for ATR than non-ATR clients, but only among those with SUD treatment during the baseline period (DID = 2.5 days, p < .05).

Opiate Substitution Treatment *Average Number of Days*

Total

Difference-in-Difference
1.3 Days

11.8 — 15.8 (ATR, Before/After) n = 4,149
12.5 — 15.3 (Non-ATR, Before/After) n = 4,149

Received SUD Treatment in Baseline Year

Difference-in-Difference
2.5 Days*

16.4 — 20.5 (ATR, Before/After) n = 2,986
17.4 — 19.0 (Non-ATR, Before/After) n = 2,986

p <.05

No SUD Treatment in Baseline Year

Difference-in-Difference
—1.9 Days

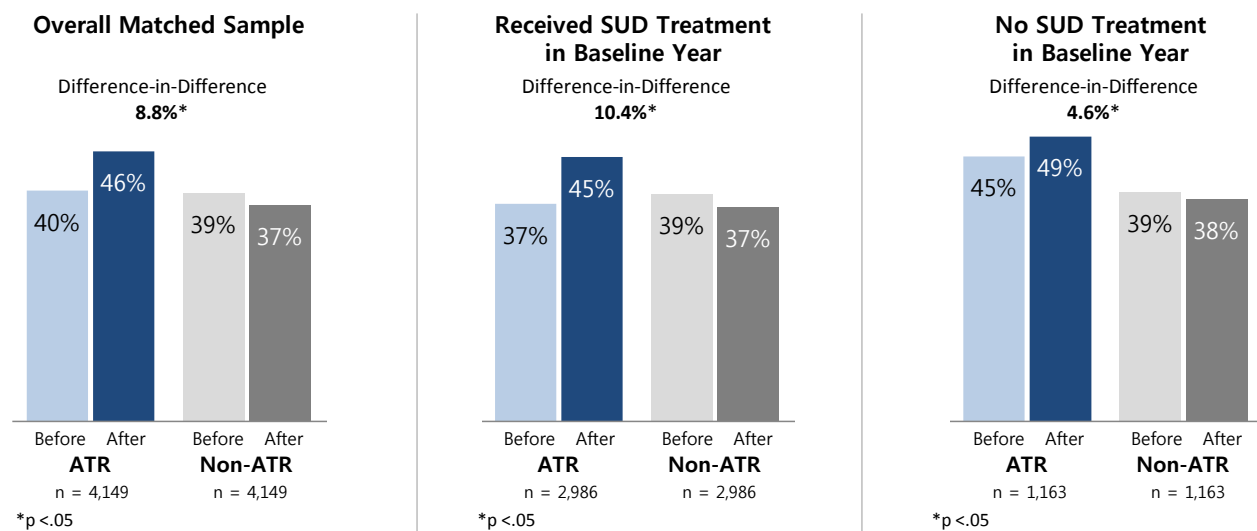4.0 (ATR, After) n = 1,163
5.9 (Non-ATR, After) n = 1,163

Employment Rates

Employment rates increased among the ATR recipients but declined among the matched comparison group, resulting in statistically significant differences in the overall matched sample (DID= 8.8 percent, p < .05); the subgroup that received SUD treatment during the baseline year (DID = 10.4 percent, p < .05); and the subgroup with no SUD treatment during the baseline (DID = 4.6 percent, p < .05).

Annual Employment Rate

Overall Matched Sample

Difference-in-Difference
8.8%*

40% — 46% (ATR, Before/After) n = 4,149
39% — 37% (Non-ATR, Before/After) n = 4,149

*p <.05

Received SUD Treatment in Baseline Year

Difference-in-Difference
10.4%*

37% — 45% (ATR, Before/After) n = 2,986
39% — 37% (Non-ATR, Before/After) n = 2,986

*p <.05

No SUD Treatment in Baseline Year

Difference-in-Difference
4.6%*

45% — 49% (ATR, Before/After) n = 1,163
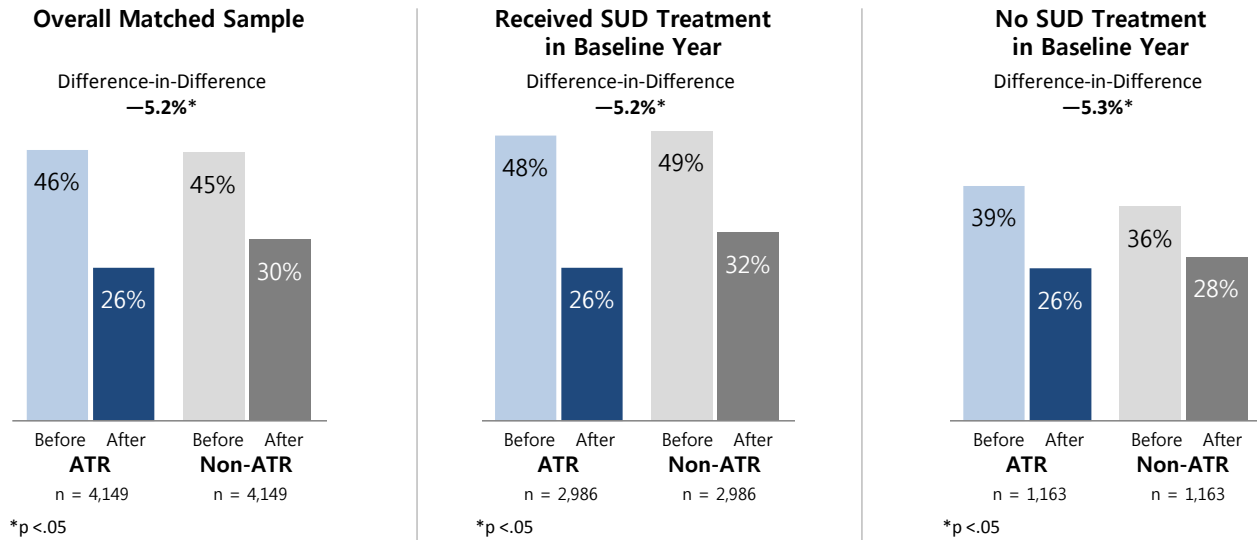39% — 38% (Non-ATR, Before/After) n = 1,163

*p <.05

In accordance with the increases in employment rates, average annual wages increased (DID = $557, p < .05) and hours worked increased (DID = 56 hours per year, p < .05) for the overall sample of ATR recipients compared to the non-ATR group. Similar statistically significant results were found for wages and hours worked among those who had SUD treatment in the baseline year but only for hours worked among those who did not have SUD treatment during the baseline year. Further investigation revealed that these increases were due primarily to the increased rates of employment for the ATR clients relative to their non-ATR counterparts and not to improvements in the wages or hours worked among those employed.

Arrest Rates

The decrease in the arrest rates in the outcome period was significantly greater for recipients of ATR services than for the matched non-ATR groups in all three comparisons: overall sample (DID = − 5.2 percent, p < .05); those with SUD treatment during baseline (DID = − 5.2 percent, p < .05) and those with no SUD treatment during baseline (DID = − 5.3 percent, p < .05). These arrest rates are based on offenses reported to the Washington State Patrol; they include arrests for felonies, gross misdemeanors and warrants for probation violations but do not include arrests for less serious misdemeanors or non-criminal infractions handled by local law enforcement agencies.

FIGURE 6.

Annual Arrest Rate, Any Type of Offense

Overall Matched Sample

Difference-in-Difference
—5.2%*

46%	26%	45%	30%
Before	After	Before	After
ATR		**Non-ATR**	
n = 4,149		n = 4,149	

*p <.05

Received SUD Treatment in Baseline Year

Difference-in-Difference
—5.2%*

48%	26%	49%	32%
Before	After	Before	After
ATR		**Non-ATR**	
n = 2,986		n = 2,986	

*p <.05

No SUD Treatment in Baseline Year

Difference-in-Difference
—5.3%*

39%	26%	36%	28%
Before	After	Before	After
ATR		**Non-ATR**	
n = 1,163		n = 1,163	

*p <.05

Gross misdemeanor arrest rates decreased more in the outcome year for ATR recipients than for the non-ATR comparison groups, with statistically significant difference-in-difference coefficients in all three comparisons: overall sample (DID = − 4.1 percent, p < .05); received SUD treatment in the baseline period (DID = − 3.9 percent, p < .05) and no SUD treatment in the baseline period (DID = − 4.5 percent, p < .05). Although felony arrest rates declined in the outcome year for both ATR and non-ATR clients, the relative difference between ATR and non-ATR groups in the amount of decline was not statistically significant.

Outcomes for Medical Assistance Sample

Hospital Utilization Rates

We examined three measures of health care use within hospitals—outpatient Emergency Department (ED) visits, hospitalizations resulting from ED admissions, and other hospitalizations (which are normally due to scheduled procedures or surgery). While an earlier evaluation of outcomes associated with the first ATR program in Washington State examined changes in Medicaid costs for working age disabled clients who received medical care on a fee-for-service basis (Wickizer *et al.*, 2008; 2009), this evaluation examined utilization measures based on visits or admissions. We chose to use utilization rather than cost measures since much of this study population shifted from fee-for-service to managed care coverage starting in July 2012, which was during the outcome period for many clients.

The earlier evaluation found marginally significant decreases in medical costs for ATR clients with at least one month of medical coverage and greater reductions that reached statistical significance among clients with at least three months of coverage. Therefore, we focused on clients with at least three months of medical coverage in both the pre- and post-periods. Utilization measures were calculated as the number of visits or admissions per 1,000 member months in order to standardize for differences in the number of months of enrollment in Medicaid or other medical programs. For example, in the 12-month baseline period, ATR clients had 152.3 outpatient emergency department visits per 1,000 months of medical coverage.

As shown in the following figure, the rates of outpatient ED visits declined in the outcome year for both the ATR and non-ATR groups, but there was no significant difference between the groups in their relative rates of decline.

In contrast, the rates of hospitalizations stemming from ED admissions as well as other hospitalizations decreased for ATR recipients but remained fairly constant for the non-ATR comparison group, resulting in statistically significant difference-in-difference estimates (hospitalizations from ED admissions: DID = − 5.6 per 1,000 member months, $p < .05$; other hospitalizations: DID = − 5.2 per 1,000 member months, $p < .05$).

FIGURE 7.

Emergency Department Visits and Hospitalizations
Per 1,000 member months
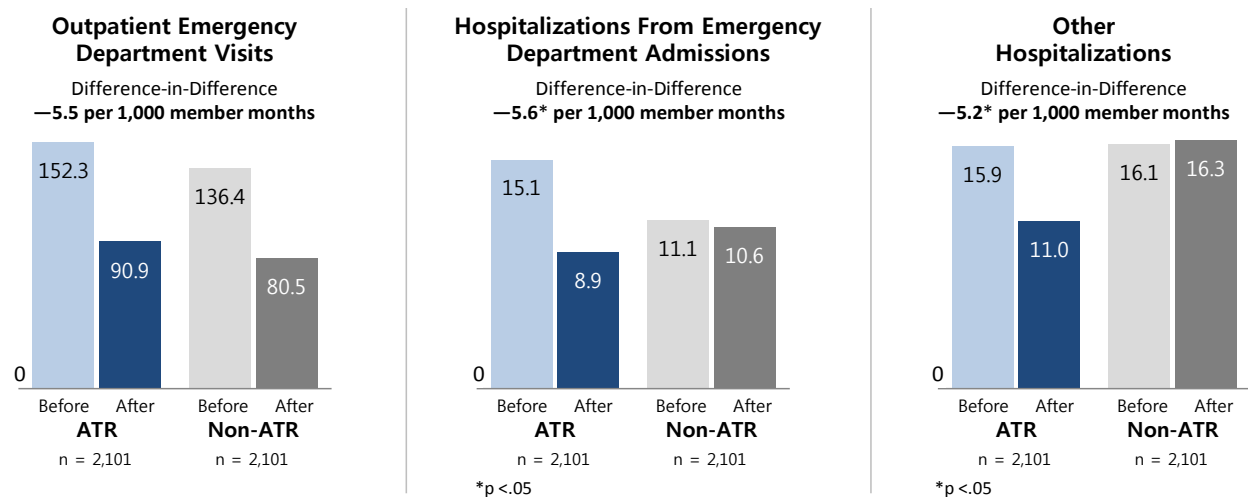
NOTE: The scale for Outpatient Emergency Department Visits is different from the other two measures.

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DSHS

Discussion

Receiving recovery support services through the ATR program is associated with increased days of outpatient SUD treatment, increased employment rates and decreased arrest rates. These results occurred both for adults who had received SUD treatment in the baseline year, prior to ATR services, and those who had not. The findings are consistent with those from an evaluation of the first Washington State ATR program in which the receipt of recovery support services by clients in SUD treatment was associated with increased length of stay in treatment, increased likelihood of completing treatment and increased employment rates (Krupski et al., 2009). Similarly, providing drug court participants with recovery support services (excluding housing) was associated with an increase in average days of treatment, a greater likelihood of being employed and reduced arrest rates (Lucenko *et al.*, 2014). It is important to note that because ATR recipients without a record of SUD treatment history or an indicator of SUD treatment need could not be adequately matched to controls in the current study (and thus were dropped from the analytic sample), the effects of providing recovery support services to this group—nearly 10 percent of ATR recipients—remains unknown.

Receiving services through the most recent ATR program was associated with a statistically significant reduction in hospitalizations resulting from ED admissions and for other hospitalizations among persons with at least three months of medical coverage in the pre- and post-periods. Rates decreased in the outcome year for ATR recipients but remained fairly constant for the non-ATR comparison group. An earlier study found that ATR service receipt was associated with reductions in total hospital Medicaid costs paid on a fee-for-service basis for working age disabled clients who had at least three months of medical coverage (Wickizer *et al.*, 2009). Since the state's medical payment systems shifted from fee-for-service to managed care starting in July 2012, in the midst of the outcome period for many of our clients (37 percent of the ATR sample had an index month after this date), we were not able to examine medical cost outcomes in the current study. Our findings, nonetheless, are consistent with those from the earlier ATR evaluation since we found declines in hospitalizations from both ED and other types of admissions.

Recovery support services were provided to each person according to their specific needs, such that clients received, on average, 11 recovery support services (some of which may have been the same type of service but provided on different days) at a cost of about $1,341 per person. One of the major needs was for housing support. About two-thirds of the ATR clients appeared to be homeless or unstably housed during the baseline year, according to administrative records, and $2.3 million of ATR funds—one third of the dollars spent on the ATR clients—was for housing support or drug-free housing. Meeting the needs of clients with unstable living arrangements was clearly a priority for this ATR program and may have played an important role in the improved outcomes found for ATR clients.

Given the wide array of outcomes—use of outpatient SUD treatment, employment, arrests and hospitalizations—that appear to have been favorably impacted by the receipt of ATR services, providing recovery support services to more persons with substance use problems would likely be beneficial. Furthermore, this study reveals that recovery support services not only benefit people who have recently received SUD treatment, but also appear to benefit those who have not. Those without recent SUD treatment may have been using 12-step programs, Oxford House or other SUD recovery support practices. Thus, ATR program managers will need to consider how best to allocate scarce resources between those actively engaged in SUD treatment programs and those who are attempting to address their substance use disorder problems through other means. In the end, both groups are likely to benefit by receiving services to support their recovery.

APPENDIX

Baseline Characteristics

Baseline characteristics of 4,735 ATR clients in the study population, the overall matched sample of ATR and non-ATR clients (n = 4,149 × 2) and the medical assistance matched samples (n = 2,101 × 2) are shown in the accompanying Appendix Table. These characteristics were examined to determine if the ATR and non-ATR samples were well matched (see Methods, Study Samples) and to assess the degree to which the overall ATR sample appears similar to the full ATR study population.

The study population and the overall matched sample of ATR clients are very similar in baseline demographics such as age (slightly over 36 years of age, on average), gender (61 to 62 percent male) and race/ethnicity (69 to 70 percent white). The medical assistance sample, which represents those who meet the eligibility requirements for receiving Medicaid and other medical programs, are slightly older (average age of 37.1 years), less likely to be male (only 48 percent), but similar in race/ethnicity (68 percent white).

The study population and each of the samples differ in prior SUD treatment rates in accordance with the way the samples were selected. Specifically, to find comparators with similar substance abuse risk factors, persons in the ATR and non-ATR groups were matched on prior SUD treatment or indicators of need for SUD treatment.

A total of 460 clients from the study population (9.3 percent) were excluded from the overall sample because they did not have any SUD treatment, assessment, detoxification or indicator of treatment need to use for matching to potential comparators. Due to this matching requirement, 21 percent of ATR clients in the study population had no prior SUD treatment since SFY 2005 compared to only 13 percent of the overall matched sample. In the baseline year, the study population was somewhat less likely than the overall sample to have received SUD treatment (64 versus 72 percent). In earlier years, the study population and the overall ATR sample had similar rates, with 7 percent getting SUD treatment 1 - 5 years before the index month and 7 to 8 percent getting SUD treatment more than five years prior to the index month.

Rates of need for SUD treatment, based on prior treatment, diagnoses or arrests, are also consistent with the sample selection criteria. The percent with an SUD treatment need flag is lowest in the study population (82 percent), higher in the overall ATR sample (90 percent) and highest in the medical assistance ATR sample (97 percent), where access to medical care and SUD treatment is greatest.

Among persons with at least one month of medical coverage in the baseline year, two-thirds of both the ATR study population and the overall ATR sample had indications of mental health treatment need based on prior treatment, prescriptions or diagnoses for mental illness. Roughly three-fourths of the medical assistance ATR sample had a mental health flag, which could reflect a somewhat greater opportunity to receive treatment or a diagnosis with more months of medical coverage.

The ATR study population and the overall ATR sample appear quite similar on many other baseline characteristics, including chronic disease risk, Emergency Department use, hospitalizations, receipt of Basic Food and Temporary Assistance for Needy Families (TANF), arrest rates for felonies and gross misdemeanors, housing instability, employment rates, earnings, and county of residence.

Some of the remaining differences between the medical assistance ATR sample and both the study population and the overall ATR sample reflect characteristics one would expect based on eligibility requirements for medical assistance. They are more likely to receive other social services such as Basic Food and TANF, less likely to be employed, have higher rates of chronic disease that may reflect underlying disabilities, and higher rates of hospital use that may reflect poorer underlying health.

Key Baseline Measures for Selected ATR Recipients and Non-ATR Comparison Groups

First Receipt of ATR Services: October 2010 – June 2013 • Ages 18-65

	Study Population	Overall Matched Sample		Medical Assistance Matched Sample*	
	ATR n = 4,735	ATR n = 4,149	Non-ATR n = 4,149	ATR n = 2,101	Non-ATR n = 2,101
Age					
Average age	36.4	36.6	36.9	37.1	37.1
Gender					
Male	62%	61%	61%	48%	48%
Female	38%	39%	39%	52%	52%
Race/Ethnicity					
White only	70%	69%	68%	68%	67%
Any Minority	30%	31%	32%	32%	33%
Minority Group *Categories Not Mutually Exclusive*					
Black	9%	9%	10%	11%	11%
Asian/Pacific Islander	4%	4%	4%	5%	5%
Native American, Alaskan Native, Aleut	10%	11%	12%	13%	13%
Hispanic	11%	11%	9%	9%	9%
Fiscal Year of Index Month					
SFY 2011	24%	24%	24%	23%	23%
SFY 2012	38%	39%	38%	40%	40%
SFY 2013	38%	37%	37%	38%	37%
Substance Use Disorder (SUD) Treatment *From SFY 2005 to Index Month*					
Most Recent SUD Treatment					
None	21%	13%	12%	5%	5%
1 – 12 Months Before Index Month	64%	72%	72%	87%	87%
1 – 5 Years Before Index Month	7%	7%	7%	5%	5%
> 5 Years Before Index Month *Back to SFY 2005*	7%	8%	8%	3%	3%
Receipt of SUD Treatment *12-Month Baseline Period*					
Outpatient Treatment	52%	58%	58%	72%	72%
Residential Treatment	35%	38%	39%	47%	49%
Opiate Substitution Treatment	4%	5%	5%	8%	8%
Days of SUD Treatment *12-Month Baseline Period*					
Outpatient Treatment	14.4	16.0	15.1	20.3	19.6
Residential Treatment	16.5	18.1	15.9	25.6	22.0
Opiate Substitution Treatment	11.3	11.8	12.5	20.5	21.2
Receipt of SUD Treatment *1 – 5 Years Before Index Month*					
Outpatient Treatment	28%	30%	34%	37%	39%
Residential Treatment	19%	21%	21%	26%	25%
Opiate Substitution Treatment	4%	4%	4%	6%	6%
Days of SUD Treatment *1 – 5 Years Before Index Month*					
Outpatient Treatment	9.7	10.3	11.9	13.0	13.7
Residential Treatment	11.0	11.7	12.3	15.3	14.7
Opiate Substitution Treatment	19.0	19.2	24.6	31.8	36.4

	Study Population	Overall Matched Sample		Medical Assistance Matched Sample*	
	ATR n = 4,735	ATR n = 4,149	Non-ATR n = 4,149	ATR n = 2,101	Non-ATR n = 2,101
Behavioral Health Treatment Needs *24 Months Before Index Month*					
SUD Treatment Need	82%	90%	89%	97%	96%
Mental Health Treatment Need**	67%	67%	65%	78%	76%
Health Care Indicators *12-Month Baseline Period ** *					
Medical Assistance Enrollment *Percent*	68%	73%	73%	100%	100%
Medical Assistance Enrollment *Months per Enrollee*	7.4	7.3	7.6	8.9	8.9
Chronic Disease Indicator *Percent with Score ≥ 1*	22%	22%	21%	28%	26%
Outpatient Emergency Department Visits *Per 1,000 MM*	138.6	139.4	135.0	152.3	136.4
Hospitalizations from ED Admissions *Per 1,000 MM*	11.8	12.1	13.3	15.1	11.1
Other Hospitalizations *Per 1,000 MM*	11.6	11.6	11.4	15.9	16.1
Total Hospitalizations *Per 1,000 MM*	23.4	23.8	24.7	31.0	27.1
Other Baseline Indicators *12-Month Baseline Period*					
Social Service Use					
Basic Food *Percent*	87%	90%	91%	99%	99%
Basic Food *Months per Enrollee*	9.1	9.2	9.2	10.4	10.3
TANF *Percent*	14%	15%	13%	27%	25%
TANF *Months per Enrollee*	6.6	6.6	6.5	6.8	7.1
Criminal Justice Involvement					
Arrest *Any Type*	42%	46%	45%	44%	45%
Felony Arrest	17%	19%	18%	17%	17%
Gross Misdemeanor Arrest	25%	27%	27%	25%	28%
Housing					
Housing Instability or Homeless Indicator	62%	66%	64%	72%	69%
Employment and Earnings					
Employment *Part-time or Full-time*	39%	40%	39%	30%	30%
Annual Earnings *Average for All Persons*	$2,791	$2,691	$2,782	$1,353	$1,390
Annual Hours Worked *Average for All Persons*	212	206	209	112	115
County of Residence *Index Month*					
Clark	15%	14%	13%	10%	13%
King	18%	16%	18%	16%	18%
Pierce	10%	11%	11%	14%	14%
Snohomish	15%	17%	17%	21%	19%
Spokane	21%	21%	21%	22%	20%
Yakima	15%	17%	13%	15%	13%
Other***	6%	5%	6%	3%	4%
County-Level Indicators *Index Month*					
Urbanicity					
Urban High	28%	26%	29%	30%	32%
Urban Medium	51%	53%	52%	53%	52%
Urban Low	19%	19%	16%	16%	15%
Rural	2%	2%	2%	1%	2%
Unemployment Rate	9.0%	9.0%	8.9%	8.8%	8.9%
Arrest Rate *per 1000 Population*	27.7	27.7	27.1	27.5	26.9

* Based on persons with at least three months of medical assistance in the 12-month baseline and outcome periods.

** Based on persons with at least 1 month of medical assistance in the 12-month baseline (except percent enrolled).

*** ATR programs in the six counties occasionally provided services to clients who lived in other counties, including veterans and persons who met other criteria.

Access to Recovery
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DSHS

ATR Study Population and Sample Selection

A total of 5,686 clients received ATR services between October 1, 2010 and June 30, 2013, the interval chosen as the study period for these analyses in order to provide adequate time for outcome analyses. Since we focused analyses on first-time adult (age 18-65) recipients of non-administrative ATR services we excluded clients who did not meet these criteria: 656 clients who had received ATR services prior to the study period, 79 who had received only administrative services and 16 who were younger than 18 or over 65. This resulted in 4,935 ATR clients who met study population selection criteria. Of these, 200 clients were dropped from the study since they could not be linked to the Integrated Client Database used in outcome analyses. Thus, the study population used in this report included 4,735 clients aged 18 to 65 years who received at least one non-administrative ATR support service for the first time between October 1, 2010 and June 30, 2013 and who could be linked to the underlying administrative database used in analyses.

Through a multi-step process, we identified 4,149 ATR service recipients (84.1 percent) who could be included in the overall study sample. First, they had to have an administrative record of prior SUD treatment, assessments, detoxification or SUD risk indicators (e.g., SUD-related arrest, medical diagnosis or prescription to treat SUD). Second, they had to be matched to a comparable DSHS client who had *not* received ATR services.

ATR clients were dropped during the matching process the following reasons: (1) 460 ATR clients (9.7 percent of the 4,735 study population) were dropped since they had no prior indicator of SUD treatment, assessment, detoxification, or risk in available administrative data and, therefore, could not be adequately matched with potential comparators and (2) 126 (2.7 percent) could not be linked to a potential comparator due to non-matching treatment sequences, or missing data on matching variables like county of residence.

The selected 4,149 ATR clients served as the overall study sample in analyses of SUD treatment, employment and arrest outcomes. This group was divided into 2,986 who received SUD treatment in the 1-year baseline period and 1,163 who did not and corresponding comparison groups were created. In addition, since an earlier evaluation of ATR's impact on Medicaid costs (Wickizer *et al.*, 2008; 2009) found statistically significant results only for those with at least *three* months of Medicaid coverage in the 12-month pre- and post-periods, we focused the analyses of medical utilization on 2,101 ATR clients who met this criterion.

Comparison Group Selection

Since ATR recipients included many individuals who had received publicly funded SUD treatment before their ATR services began, the first stage of identifying potential comparators involved the selection of individuals with very similar SUD treatment histories. In particular, following a methodology used in two prior evaluations of ATR services (Krupski et al., 2009; Wickizer et al., 2009), we identified a pool of potential comparators whose most recent SUD treatment episode matched that of individual ATR recipients on three criteria: (1) comparable start date of the most recent SUD treatment episode; (2) matched sequence on SUD treatment modality (i.e., outpatient, residential, or opiate substitution); and (3) length of the most recent SUD treatment episode for the potential comparator had to be at least as long as that for the ATR client in question.

For ATR clients who did not have any publicly funded SUD treatment since SFY 2005, we selected a pool of potential comparators based on the most recent, prior SUD assessment or detoxification since SFY 2005 or some other indicator of SUD treatment need since SFY 1989. For each potential comparator, an index month for use in pre/post analyses was chosen to correspond to the interval between the corresponding ATR client's first month of receiving an ATR service and their prior SUD treatment episode start date, assessment, detoxification or SUD treatment need indicator.

A propensity score matching process was used to select the ATR and non-ATR clients with comparable demographics, SUD treatment history, behavioral and health risk indicators, social service use, employment, arrests, housing instability, medical coverage, health care use and county-level measures. Two separate propensity score models were used to select the overall matched sample of ATR and non-ATR clients (including subgroups with and without SUD treatment in the baseline year) and the medical assistance matched sample.

The baseline characteristics used to assess the comparability between the ATR groups and their respective non-ATR comparison groups in both matched samples are shown in the Appendix Table. For each of these characteristics, good balance was determined by an Absolute Standardized Mean Difference (ASMD) between the ATR treatment group and the non-ATR control group that was less than or equal to 0.20 (Cohen, 1992). Balance was checked for all four samples used in the analysis—the overall matched sample of ATR and non-ATR clients, the subgroups with and without SUD treatment in the baseline year, and the medical assistance matched sample. For all of these except the subgroup without SUD treatment in the baseline year, we found that the ASMD was less than 0.20 on each characteristic, which indicated that the groups were well-balanced (Cohen, 1992; Ramchand *et al.*, 2015).

For the subgroup of clients without SUD treatment in the baseline year, all baseline measures had ASMDs across the ATR and non-ATR groups of less than 0.20, except for three county-of-residence variables (Clark, Pierce, and Snohomish). To determine the possible effect of this imbalance on difference-in-difference estimates, we conducted robustness tests in which we re-ran outcome analyses, including these three variables as controls (Ramchand *et al.*, 2015). The adjusted difference-in-differences (Adj. DID) were similar to the unadjusted DIDs used in the body of this report with the exception that the increase in employment rates for ATR clients compared to non-ATR clients in this subgroup dropped to marginal statistical significance (Adj. DID = 4.1 percent, p = .07).

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