April 2013 | RDA Report 3.39
Olympia, Washington

Outpatient Mental Health Services and Medical Cost Offsets

David Mancuso, PhD, Daniel J. Nordlund, PhD, Barbara E.M. Felver, MES, MPA

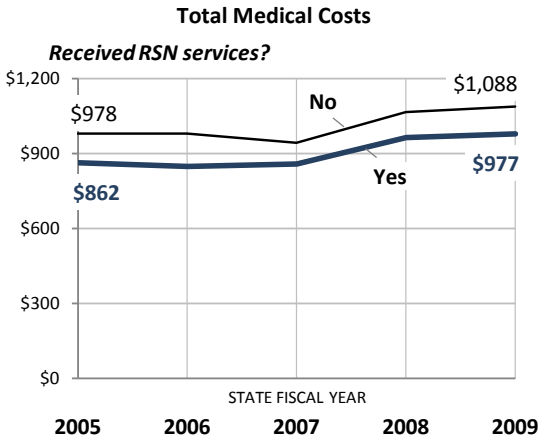
In collaboration with the Washington State Department of Social and Health Services, Behavioral Health and Service Integration Administration, Division of Behavioral Health and Recovery, Alice Huber, Chief, Decision Support and Evaluation

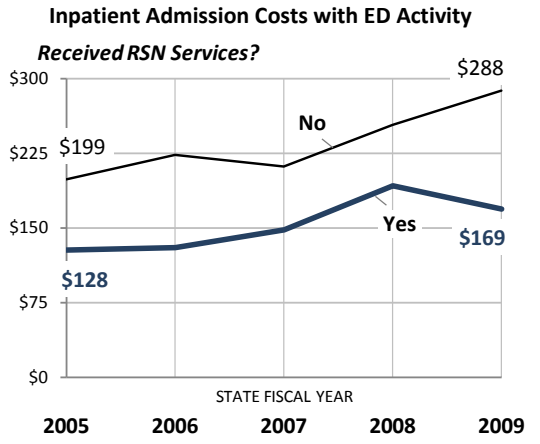
Mental health services for Medicaid enrollees in Washington State are provided through a tiered delivery system. Regional Support Networks (RSNs) manage outpatient and inpatient mental health services for Medicaid enrollees who meet access to care standards defined by diagnosis and level of functioning criteria. Medicaid enrollees who have mental health needs but do not meet the access to care standard may access a limited number of mental health therapy visits through their Medicaid medical benefit. This study compares medical cost and mortality outcomes for Disabled Medicaid adults with mental health needs served in the RSN system with outcomes for clients with similar mental health conditions who are served outside of the RSN system. The primary objective is to examine whether receipt of RSN outpatient services is associated with medical cost savings.

Key Findings

- Disabled Medicaid adults with depression or anxiety treated in the RSN system have significantly lower medical costs over a 5-year follow-up period, compared to similar Disabled Medicaid adults not served in the RSN system (see charts below).
- The lower costs for adults with depression or anxiety treated in the RSN system are driven by significantly lower inpatient medical costs associated with emergency department (ED) activity.
- Eighty-three percent of the cost of RSN services for adults with depression or anxiety is directly offset by savings in medical costs. The average net cost of RSN outpatient services received over the five-year period was $132 PMPM, with an average medical cost offset of $109 PMPM.

Lower Medical Costs for Clients with Depression or Anxiety Receiving RSN Services





Key Findings *continued*

- The odds of death over the 5-year follow-up period were 23 percent lower for Disabled Medicaid adults with depression or anxiety treated in the RSN system, relative to Disabled Medicaid adults with depression or anxiety not treated in the RSN system.
- It is difficult to create a non-RSN comparison group for adults with schizophrenia or mania/bipolar disorders. This is because the vast majority of Disabled Medicaid adults with these conditions are treated in the RSN system, and adults diagnosed with these conditions who are treated in the RSN system experience greater baseline functional challenges than clients with these conditions *not* served in the RSN system. These differences are evidenced by higher baseline rates of criminal justice involvement, housing instability, and co-occurring alcohol/drug problems in the population meeting RSN access to care standards.
- Segmentation of the highest-risk clients with schizophrenia or mania/bipolar disorders into RSN services is the expected result of the application of the access to care standards, but it makes it difficult to address the "selection bias" issue in trying to make inferences about the impact of RSN-funded treatment on health outcomes. Nevertheless, we see lower odds of death over the 5-year follow-up period for Disabled Medicaid adults with psychotic disorders treated in the RSN system, and point estimates of lower ED-related IP medical expenditures over most years in the study period.

Background

In Washington State, community mental health services are currently delivered through 11 Regional Support Networks (RSNs) operating as Prepaid Inpatient Health Plans. Community mental health services include outpatient, inpatient, and residential treatment; crisis and commitment services; medication management; peer supports; and employment and housing supports. RSN services are typically limited to Medicaid enrollees who meet access to care standards defined by diagnosis and level of functioning criteria.

In addition to the RSN services (primarily for persons in crisis and persons with serious mental illness), the Health Care Authority provides a limited mental health outpatient benefit for Medicaid enrollees through managed care and fee-for-service medical coverage. Any Medicaid client may also receive psychotropic medication management services through their primary care physician or other providers. The medical benefit covers psychotropic medications such as antidepressants and antipsychotics, whether they are prescribed by RSN-affiliated providers or other medical providers.

This study compares medical cost and mortality outcomes for Disabled Medicaid adults with mental health needs served in the RSN system with outcomes for clients with similar mental health conditions who are served outside of the RSN system. The primary objective is to assess whether receipt of RSN outpatient services is associated with medical cost savings. This study is an update and extension of the Washington State Mental Health Services Cost Offset and Client Outcome Study, which examined the effects of publicly funded mental health care on medical costs and mortality for Disabled or Aged Medicaid clients over the two year period from July 2000 to June 2002.[1] The earlier study found that RSN-funded outpatient mental health services were associated with medical cost savings that offset 41 percent to 50 percent of the cost of the outpatient mental health services, depending on the follow-up year. The study also found that the odds of dying were 23 percent lower in a two-year period for Disabled or Aged Medicaid clients who received RSN-funded outpatient mental health treatment, compared to clients with similar mental illness conditions who did not receive RSN-funded treatment.

[1] Mancuso D and Estee S. Washington State Mental Health Services: Cost Offsets and Client Outcomes Fact Sheet. Olympia, WA: WA State Dept. of Social and Health Services, Research and Data Analysis Division. Dec 2003.

Identifying the Study Population

This report focuses on a cohort of Disabled Medicaid adults with mental health needs who were enrolled in Medicaid in SFY 2004 and SFY 2005. These early cohorts are used to allow for a longer follow-up period over which to track health care costs and mortality risk. We imposed the following restrictions to define our initial study population.

- The RSN group includes adults age 21 to 60 as of June 2005 who received RSN outpatient services and had a mental illness diagnosis in one of the following 3 categories in SFY 2005:
  - Psychotic disorder such as schizophrenia,
  - Mania or bipolar disorder, or
  - Depression or anxiety.
- The non-RSN group includes clients meeting comparable age and mental illness criteria in SFY 2005, but who did not receive RSN outpatient services in SFY 2004 or SFY 2005.

In addition, all clients were required to have at least 6 months of Disabled Medicaid coverage in both SFY 2004 and SFY 2005 while not dually enrolled in Medicare. Finally, clients who used community psychiatric or State Mental Hospital inpatient services in either SFY 2004 or SFY 2005 were excluded from the analysis. This exclusion was imposed because the vast majority of Disabled Medicaid adults using psychiatric inpatient services are served by an RSN, rendering it effectively impossible to create a reasonable non-RSN comparison group for adults with this level of acuity. Table 1 presents baseline SFY 2004 service use and risk data for the RSN and non-RSN client groups, prior to conducting the statistical sampling described in the next section to better balance the characteristics of the RSN "treatment group" and the non-RSN "comparison group."

TABLE 1
Disabled Medicaid Adults Meeting inclusion criteria
Baseline Characteristics BEFORE Propensity-Score Sampling

	DIAGNOSTIC GROUP					
	Psychotic Disorders		Mania/Bipolar		Depression/Anxiety	
	Received RSN Outpatient Services in SFY 2005?		*Received RSN Outpatient Services in SFY 2005?*		*Received RSN Outpatient Services in SFY 2005?*	
	NO	YES	NO	YES	NO	YES
Number of Clients	1,193	4,702	1,320	3,435	9,450	6,464
DEMOGRAPHICS						
Age as of June 2005	43.3	42.0	41.8	41.4	45.2	43.3
Male	54%	55%	39%	34%	33%	37%
SFY 2004 SERVICE COSTS, PMPM						
RSN Outpatient Community Services	$0	$428	$0	$156	$0	$134
In-home Personal Care Services	$79	$42	$54	$30	$109	$51
Nursing Home Services	$132	$51	$16	$23	$45	$51
Outpatient Emergency Room	$39	$35	$41	$42	$41	$44
Inpatient Emergency Room	$302	$119	$148	$147	$239	$162
Pharmacy	$345	$443	$296	$338	$292	$280
Medical Services (Total)	$1,278	$802	$799	$798	$1,096	$833
SFY 2004 RISK INDICATORS						
Medical Risk Score	1.27	1.03	1.00	0.98	1.19	0.98
Arrests per 100 Clients	11.1	20.5	14.8	25.6	8.7	18.8
Alcohol/Drug Treatment Need Flag	14.2%	19.9%	19.2%	27.2%	13.5%	20.5%
Housing Instability (ACES)	5.8%	10.5%	12.3%	16.5%	6.5%	14.2%
SFY 2004 MEDICATION USE						
Antianxiety	24%	23%	26%	27%	30%	28%
Antipsychotic	52%	80%	32%	48%	6%	20%
Antidepressant	48%	55%	62%	69%	67%	72%
Antimania	5%	7%	17%	17%	1%	1%

Identifying the Study Population *continued*

The main difficulty in trying to estimate the impact of RSN services on health outcomes is accounting for the impact of the access to care standards on the mix of clients who are served in the RSN system. RSNs manage outpatient and inpatient mental health services for Medicaid enrollees who meet criteria defined by diagnosis severity and functional challenges. These standards are designed to ensure that Disabled Medicaid adults with serious mental illness are eligible for services in the RSN system, and the application of these standards leaves relatively few Disabled Medicaid adults with serious mental illness served only outside of the RSN system.

To show this, we grouped the study population into the three hierarchically unduplicated diagnostic groups presented in Table 1, based on mental health conditions in medical and behavioral health service claims and encounters. The variation in RSN service use across diagnostic groups in Table 1 illustrates the effect of the access to care standards. For example, 80 percent of persons diagnosed with psychotic disorders received RSN outpatient services in the fiscal year (4,702 of 5,895 adults). Among persons with mania or bipolar disorders, 72 percent (3,435 of 4,755) received RSN outpatient services in the fiscal year. In contrast, among clients with depression or anxiety, only 41 percent (6,464 of 15,914) used RSN services during the fiscal year. In addition, adults with psychotic disorders used a far greater volume of services ($428 per member per month (PMPM)), compared to adults with mania/bipolar disorders ($156 PMPM) or depression/anxiety ($134 PMPM).

Furthermore, Disabled Medicaid adults served in the RSN system have significantly higher baseline rates of occurrence of several risk factors indicating major functional impairments. Across each of the three diagnostic groups, clients served in the RSN system are more likely to have higher baseline rates of arrest, higher rates of co-occurring substance use disorders, and higher rates of housing instability as indicated by living arrangement information captured in the Automated Client Eligibility System (ACES). These results are expected given the functional impairment criteria that are part of the access to care standards. We note that among Disabled Medicaid adults with psychotic disorders or depression/anxiety, the non-RSN population has higher baseline levels of medical and long-term care expenditures.

These comparisons indicate that it will be extremely difficult to create non-RSN comparison groups for clients with serious mental illness, because few clients with these conditions are served only outside the RSN system, and those who are served only outside the RSN system are systematically different from those receiving RSN services. Creating a credible non-RSN comparison group is more likely to be achieved for the depression/anxiety group due to the large numbers of persons with these disorders being served outside the RSN system, primarily though primary care.

Analytical Approach—Propensity Score Sampling

To reduce the extent of measurable differences between the RSN and non-RSN study populations prior to estimating medical cost differences between the two groups, we used a propensity-score based sampling approach to identify separate comparison groups for RSN clients served in each of the three diagnostic groups. The method includes the following steps:

- Identify Medicaid clients meeting the initial study inclusion criteria described on page 3.
- Measure demographics (age, gender, race/ethnicity) and baseline service utilization, risk factors, mental illness conditions, and Medicaid coverage months for each client.
- Estimate statistical models over these populations that relate the probability the client is served in the RSN to their demographic and baseline service use, risk, diagnosis, and Medicaid coverage characteristics.
- Stratify the fitted probabilities from the statistical model (the “propensity score”) into deciles. Randomly sample comparison group members by deciles to match the propensity score distribution of target population.

Analytical Approach—Propensity Score Sampling

For the depression/anxiety group, we sampled non-RSN clients to better match the characteristics of adults served in the RSN system. Because there were so few Disabled Medicaid adults with psychotic or mania/bipolar disorders served only outside the RSN system, for these conditions we used the smaller non-RSN population as the target population in the sampling process. This means that for analyses of outcomes for adults with psychotic or mania/bipolar disorders, we are matching RSN clients who tend to be higher functioning (as indicated by lower baseline rates of arrests, housing instability, and substance use disorders) to the typically higher functioning non-RSN adults with these conditions. In contrast, for our analysis of adults with depression or anxiety, we are over-sampling lower-functioning non-RSN clients (as indicated by higher baseline rates of arrests, housing instability, and substance use disorders) to better match the characteristics of the RSN population.

The resulting comparison groups more closely align the baseline characteristics of RSN populations and the non-RSN comparison groups. However, as illustrated in Table 2 we are not able to achieve the desired level of balance across the full set of baseline risk factors. For example, in the mania/bipolar disorder group, bringing baseline arrest and substance use disorder rates into better alignment tends to disrupt the initial balance on baseline medical service utilization. Overall, while the sampling process was generally able to bring client demographics, baseline medical risk scores, baseline use of long-term care services, and baseline substance use disorder rates into better alignment, we were not able to achieve the same degree of balance on baseline medical service utilization and housing instability.

TABLE 2
Disabled Medicaid Adults Meeting inclusion criteria
Baseline Characteristics AFTER Propensity-Score Sampling

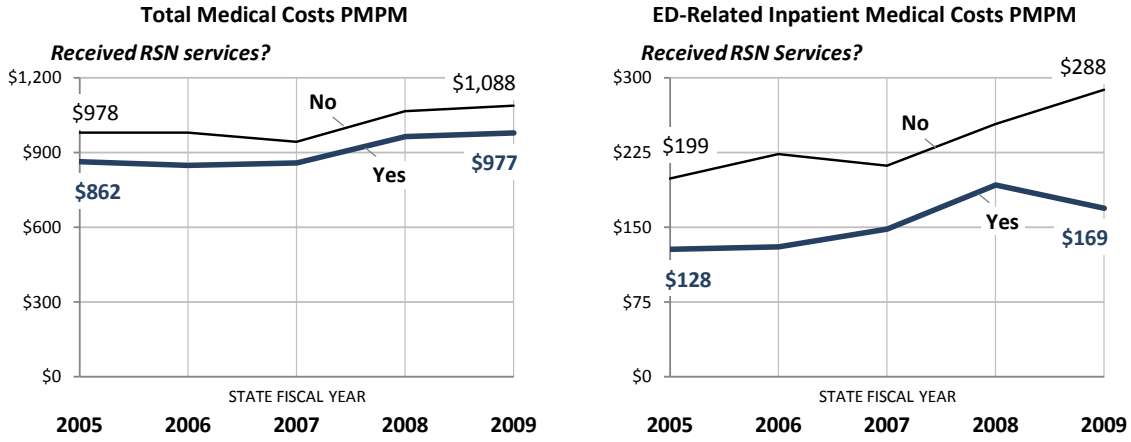
	DIAGNOSTIC GROUP					
	Psychotic Disorders		Mania/Bipolar		Depression/Anxiety	
	Received RSN Outpatient Services in SFY 2005?		*Received RSN Outpatient Services in SFY 2005?*		*Received RSN Outpatient Services in SFY 2005?*	
	NO	YES	NO	YES	NO	YES
Number of Clients	1,193	1,549	1,320	2,176	3,924	6,464
DEMOGRAPHICS						
Age as of June 2005	43.3	43.0	41.8	41.8	43.5	43.3
Male	54%	52%	39%	40%	36%	37%
SFY 2004 SERVICE COSTS, PMPM						
Community Services	$0	$449	$0	$158	$0	$134
In-home Services	$79	$76	$54	$36	$78	$51
Nursing Home Services	$132	$139	$16	$27	$28	$51
Emergency Room	$39	$40	$41	$36	$41	$44
Inpatient Emergency Room	$302	$252	$148	$72	$222	$162
Pharmacy	$345	$477	$296	$344	$246	$280
Medical Services (Total)	$1,278	$1,062	$799	$697	$942	$833
SFY 2004 RISK INDICATORS						
Medical Risk Score	1.27	1.22	1.00	0.99	1.04	0.98
Arrests per 100 Clients	11.1	12.3	14.8	17.3	17.4	18.8
Alcohol/Drug Treatment Need Flag	14.2%	13.4%	19.2%	20.0%	21.4%	20.5%
Housing Instability (ACES)	7.1%	10.0%	12.3%	14.7%	9.2%	14.2%
SFY 2004 MEDICATION USE						
Antianxiety	24%	25%	26%	26%	29%	28%
Antipsychotic	52%	80%	32%	49%	6%	20%
Antidepressant	48%	55%	62%	68%	64%	72%
Antimania	5%	6%	17%	17%	1%	1%

Adults with depression/anxiety treated in the RSN system have lower medical costs

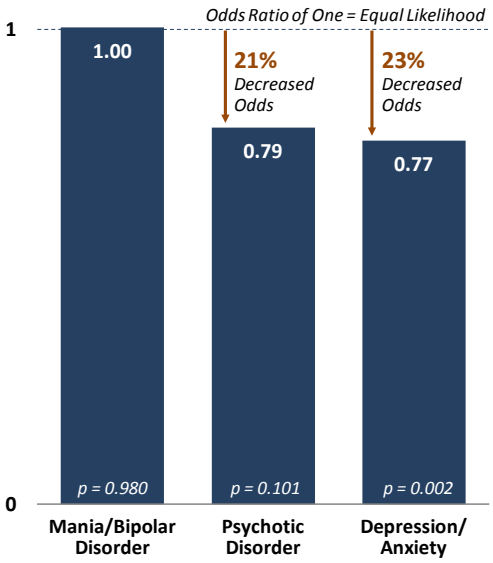
To estimate RSN impacts on medical costs, we used regression models that controlled for differences between groups that remained after propensity score sampling. The regression control variables included: age, gender, and race/ethnicity; baseline months of non-dual Disabled Medicaid coverage; number of arrests in SFY 2004; presence of a substance use disorder flag in SFY 2004; an indicator of housing instability in SFY 2004; the client's prospective medical cost risk score in SFY 2004; and the client's baseline SFY 2004 PMPM utilization of outpatient ED services, ED-related inpatient medical services, overall medical services, in-home personal care services, and nursing facility services.

We estimated separate sets of linear regression models examining overall medical costs and ED-related inpatient medical costs. We estimated separate regression models for each follow-up year, using the number of coverage months in the follow-up year as a regression weight. Over the five-year follow-up period the number of observations available for cost analyses declined over time. Attrition was caused by loss of non-dual Medicaid coverage resulting from migration out of state, enrollment in Medicare, death and other factors. We used logistic regression models to estimate the impact of RSN services on the likelihood of death over the SFY 2006 to SFY 2009 follow-up period.

Medical Cost Offsets for Clients with Depression or Anxiety Disorders



Odds of Death by End of SFY 2009
RSN Clients Relative to Non-RSN Clients



The charts above present regression-adjusted cost trends for Disabled Medicaid adults with depression or anxiety who received RSN outpatient services, relative to adults not served in the RSN system. The lower costs observed for adults served in the RSN system were statistically significant at the 5 percent level in all follow-up years, except for SFY 2008 where the p-values were 0.09 for overall medical costs and 0.11 for ED-related inpatient medical costs.

The chart at left reports the estimated impact of RSN services on mortality risk across the three diagnostic groups. Disabled Medicaid adults with depression or anxiety who received RSN services had 23 percent lower odds of death, relative to adults not served in the RSN system (p-value = 0.002). Adults with psychotic disorders had 21 percent lower odds of death (p-value = 0.101).

Discussion

Disabled Medicaid adults with depression or anxiety treated in the RSN system have significantly lower medical costs over a 5-year follow-up period, compared to Disabled Medicaid adults with similar baseline risk factors not served in the RSN system. The lower costs for adults with depression or anxiety treated in the RSN system are driven by significantly lower inpatient medical costs associated with emergency department activity. The average net cost of RSN outpatient services received over the five-year period was $132 PMPM. Over the five-year follow-up period the average medical cost offset was $109 PMPM, or 83 percent of the cost of the outpatient mental health services received.

The odds of death over the 5-year follow-up period were 23 percent lower for Disabled Medicaid adults with depression or anxiety treated in the RSN system, relative to Disabled Medicaid adults with depression or anxiety not treated in the RSN system. We note that the mortality findings add further weight to the medical cost offset findings, because lower attrition due to death among RSN clients tends to work against finding positive impacts of RSN services on medical cost savings over the long term. This is because high-cost non-RSN clients who died at higher rates drop out of the cost offset calculations in the years after their death.

It is difficult to create a non-RSN comparison group for adults with schizophrenia or mania/bipolar disorders. This is because the vast majority of Disabled Medicaid adults with these conditions are treated in the RSN system, and adults diagnosed with these conditions who are treated in the RSN system experience greater baseline functional challenges than clients with these conditions *not* served in the RSN system. These baseline differences are evidenced by higher baseline rates of criminal justice involvement, homelessness, and co-occurring alcohol/drug problems in the population meeting RSN access to care standards.

The segmentation of higher acuity clients with psychotic or mania/bipolar disorders into RSN services is the expected result of the application of the access to care standards, but makes it difficult to control for “selection bias” in making inferences about the impact of RSN-funded treatment on health outcomes. Nevertheless, we do see indications of positive findings in these populations, including lower odds of death over the five-year follow-up period for Disabled Medicaid adults with psychotic disorders treated in the RSN system, and point estimates of lower ED-related inpatient medical expenditures over most years in the study period (see the Technical Note for detail).

This study is an update and extension of the Washington State Mental Health Services Cost Offset and Client Outcome Study, which examined the effects of publicly funded mental health care on medical costs and mortality for Disabled or Aged Medicaid clients over the two year period from July 2000 to June 2002. The results of the earlier study were similar in several respects. In particular, the earlier study also found that RSN-funded outpatient mental health services were associated with partial medical cost offsets and reduced mortality risk.

The key difference between the current and prior studies is that the current study *finds larger and more persistent positive impacts* on clients with depression or anxiety. The stratified sampling methodology used in the current report probably creates a non-RSN comparison group that better represents the outcomes that RSN clients with depression or anxiety would have experienced if they were unable to access outpatient mental health services funded through the RSN system.

The interaction between mental health treatment and medical costs points to the desirability of better coordination of care across both delivery systems. Towards this end, DSHS and the Health Care Authority (HCA) are developing a pilot program jointly with the federal Centers for Medicare and Medicaid Services to implement in 2014 a voluntary-enrollment integrated managed care program for persons dually eligible for Medicare and Medicaid. This pilot will provide an important test of the ability of health plans to effectively manage integrated medical, mental health, substance abuse, and long-term services and support services. DSHS and HCA are also implementing health homes to better coordinate care for persons with care needs across multiple delivery systems.

SUMMARY OF ANALYTICAL APPROACH

This report focuses on a cohort of Disabled Medicaid adults with mental health needs who were enrolled in Medicaid in SFY 2004 and SFY 2005. We imposed the following restrictions to define our initial study population.

- The RSN group includes adults age 21 to 60 as of June 2005 who received RSN outpatient services and had a mental illness diagnosis in one of the following 3 categories in SFY 2005: psychotic disorder such as schizophrenia; mania or bipolar disorder; or depression or anxiety.
- The non-RSN group includes clients meeting comparable age and mental illness criteria in SFY 2005, but who did not receive RSN outpatient services in SFY 2004 or SFY 2005.
- All clients were required to have at least 6 months of Disabled Medicaid coverage in both SFY 2004 and SFY 2005 while not dually enrolled in Medicare.
- Clients who used community psychiatric or State Mental Hospital inpatient services in either SFY 2004 or SFY 2005 were excluded from the analysis.

To reduce the extent of measurable differences between the RSN and non-RSN study populations prior to estimating RSN service impacts, we used propensity-score based sampling to identify comparison groups for RSN clients served in each of the three diagnostic groups. The method includes the following steps:

- Identify Medicaid clients meeting initial study inclusion criteria.
- Measure demographics (age, gender, race/ethnicity) and baseline service utilization, risk factors, mental illness conditions, and Medicaid coverage months for each client.
- Estimate statistical models over these populations that relate the probability the client is served in the RSN to their demographic and baseline service use, risk, diagnosis, and Medicaid coverage characteristics.
- Stratify the fitted probabilities from the statistical model into deciles. Randomly sample comparison group members by deciles to match the propensity score distribution of target population.

For the depression/anxiety group, we sampled non-RSN clients to better match the characteristics of adults served in the RSN system. Because so few Disabled Medicaid adults with psychotic or mania/bipolar disorders were served only outside the RSN system, we used the smaller non-RSN population as the target population for sampling.

REGRESSION ANALYSIS DETAIL: EFFECTS ASSOCIATED WITH RECEIPT OF RSN SERVICES

Total Medical Costs

PSYCHOTIC DISORDER GROUP

YEAR	OBS	COEFFICIENT	P-VALUE
2005	2,742	-$176	0.033
2006	2,387	$25	0.761
2007	2,114	-$43	0.622
2008	1,964	-$4	0.969
2009	1,838	-$88	0.446

MANIA/BIPOLAR DISORDER GROUP

YEAR	OBS	COEFFICIENT	P-VALUE
2005	3,496	$15	0.735
2006	2,892	-$49	0.444
2007	2,513	-$66	0.286
2008	2,333	-$79	0.230
2009	2,223	$33	0.599

DEPRESSION/ANXIETY GROUP

YEAR	OBS	COEFFICIENT	P-VALUE
2005	10,388	-$116	0.001
2006	8,521	-$133	0.001
2007	7,387	-$85	0.032
2008	6,816	-$101	0.094
2009	6,470	-$111	0.038

Inpatient Emergency Room Costs

PSYCHOTIC DISORDER GROUP

YEAR	OBS	COEFFICIENT	P-VALUE
2005	2,742	-$81	0.033
2006	2,387	-$71	0.114
2007	2,114	-$53	0.379
2008	1,964	-$87	0.141
2009	1,838	-$46	0.411

MANIA/BIPOLAR DISORDER GROUP

YEAR	OBS	COEFFICIENT	P-VALUE
2005	3,496	-$13	0.597
2006	2,892	-$87	0.053
2007	2,513	-$62	0.106
2008	2,333	-$22	0.625
2009	2,223	$10	0.764

DEPRESSION/ANXIETY GROUP

YEAR	OBS	COEFFICIENT	P-VALUE
2005	10,388	-$71	0.000
2006	8,521	-$94	0.000
2007	7,387	-$64	0.008
2008	6,816	-$61	0.119
2009	6,470	-$119	0.001