

NEDS ANALYTIC SUMMARY

Highlights

- Substance abuse treatment appears to positively impact client employment and income.
- Among clients who were in treatment for six or more months, average earnings increased by 50 percent.
- The proportion of clients receiving welfare and SSI payments declined. While the decreases were modest, they stand in contrast to overall national increases.



Economic Impact of Substance Abuse Treatment on Client Income



NEDS Analytic Summary Series

The Center for Substance Abuse Treatment (CSAT) works to improve the lives of those affected by alcohol and other substance abuse, and, through treatment, to reduce the ill effects of substance abuse on individuals, families, communities, and society at large. Thus, one important CSAT mission is to expand the knowledge about effective substance abuse treatment and recovery services. In support of these efforts, CSAT established the National Evaluation Data Services (NEDS) contract to provide a wide array of secondary data analysis products to the substance abuse treatment field.

Specifically, the NEDS project is focused upon providing CSAT with an analytic capability to use existing data to address policy- and practice-relevant topics as well as future research and evaluation activities. NEDS has developed several product lines designed to provide analytic findings to substance abuse treatment policy makers, service providers, services researchers and evaluators in a format that is most useful to the end user.

The Analytic Summary is one of the NEDS product lines. The purpose of the Analytic Summary is to provide a brief summary of each technical report produced by NEDS written in non-technical language. Readers who find the Analytic Summary results of interest can contact the original NEDS technical report authors for more detailed information. Through this process, the NEDS Analytic Summaries provide information to the substance abuse treatment field and promote linkages among different areas in the field.

This Analytic Summary

This particular NEDS Analytic Summary is based on the NEDS Technical Report titled *The Costs and Benefits of Substance Abuse Treatment: Findings from the National Treatment Improvement Evaluation Study* (Koenig, L., Denmead, G., Nguyen, R., Harrison, M., & Harwood, H.J., 1999). For a more thorough discussion of the analysis and findings, please obtain a copy of the complete Technical Report. Information for doing so is provided on the last page of this summary.

Contents

Analytic Importance	2
Analytic Approach	2
Findings	3
Implications	8
Future Steps	9

Economic Impact of Substance Abuse Treatment on Client Income

Analytic Importance

One important function of CSAT is to expand knowledge about the impact of treatment on people affected by substance abuse. In sponsoring secondary analyses, CSAT is attempting to gain useful insight into the fundamental question: *What is the economic impact of treatment not only on clients but also on society as a whole?*

Among the potential ill effects of substance abuse is the impaired ability of clients to find and maintain employment. Substance abusers have lower earning abilities and receive higher welfare payments than non-substance abusers. Reducing the incidence of substance abuse through treatment may improve the “employability” and social functioning of substance abusers, thereby increasing their earning potential. While previous studies have examined the impact of treatment on client health and level of abuse, there is limited knowledge of its potential economic benefits to clients and society through increased employability and client earnings.

Analytic Purpose

The purpose of this analysis was to assess the impact of substance abuse treatment on the income of clients. Using data from the National Treatment Improvement Evaluation Study (NTIES), we addressed the following questions:

- How does client income (e.g., employment earnings, welfare and SSI payments) in the year prior to treatment differ from their income in the year following treatment?

- What are the economic benefits of substance abuse treatment in terms of increased earnings and changes in welfare payments?

Economic benefits are estimated as the difference between pre-treatment and post-treatment earnings and welfare payments.

Analytic Approach

Data sources. Client-level data for this analysis were derived from the NTIES data set. Specifically, we analyzed data from the intake questionnaire that gathers baseline data and the post-treatment discharge questionnaire that gathers follow-up data. To allow for comparison across modality of care, the data were grouped into the following categories:

- Short-term hospital
- Short-term residential
- Long-term residential
- Outpatient Methadone
- Non-methadone Outpatient.

Pre/post treatment comparisons. To estimate the impact of treatment on client employability, we compared the income of clients during the pre-treatment period (year prior to treatment) to their income during the post-treatment period (year following treatment discharge).

Three components of client income were assessed in the pre/post treatment comparisons:

- Earnings from gainful employment
- Welfare payments (General Assistance and AFDC)
- Supplemental Security Income (SSI) payments.

This analysis addresses two important questions:

- How does substance abuse treatment impact client income?
- What are the economic benefits of treatment in terms of increased earnings and lowered welfare payments?



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

The responses of clients included in this analysis were adjusted so as to make the data more comparable. We annualized the post-treatment measures of client income to account for the varying follow-up interview reference periods. We also adjusted the data to account and control for incomplete data and extreme values.

Sample size. For this analysis, we had to adjust the client sample size to eliminate any client ineligible for the pre/post analysis. We excluded any clients who were still in treatment at the time of the follow-up interview with the exception of clients receiving methadone. With these exclusions, we created a sample size of 5,264 clients.

Statistical analyses. The comparisons of pre- and post-treatment employment status and income employed t-tests to determine the statistical significance of the differences. These tests describe the extent to which differences of this specific magnitude could have occurred by chance. The difference scores were constructed as a percent change using the following formula: $(PRE-POST)/PRE$.

Findings

Changes in Annual Earnings and Social Welfare Payments

Average Client Income. Exhibit 1 presents data on average client income (e.g., earnings from work, welfare payments and SSI payments) during the pre- and post-treatment periods:

- According to our findings, the average total income per client rose by almost 7 percent. This increase in total income was largely due to the increase in average annual earnings per client (9%); there were minimal changes in welfare payments (up by 1%) and SSI payments (down by 1%).
- There was virtually no change in the composition of total income: average earnings per client comprised 75 percent of total income before treatment and 76 percent of total income after treatment. Average welfare payments per client constituted 14 percent of total income before treatment and 13 percent of total income after treatment. It should be noted, however, that changes in earned income post-treatment may take longer than one year to become noticeable.

Three components of income were assessed in the pre/post treatment comparisons:

- Earnings from gainful employment
- Welfare payments
- SSI payments.

Exhibit 1 Earnings, Welfare and SSI Before and After Treatment (n=5,264)				
	Average Earnings per Client	Average Welfare per Client	Average SSI per Client	Average Total Income Per Client
Pre-Treatment	\$ 3,915	\$ 724	\$ 587	\$ 5,226
Post-Treatment	\$ 4,266	\$ 732	\$ 582	\$ 5,580
Percent Change	9%	1%	-1%	7%

Note: Figures in bold were statistically significant at the 0.05 level.



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

Changes in Number of Earners/ Recipients and Average Earnings/ Payments. Exhibit 2 presents data on changes from pre- to post-treatment in the number of earners and welfare/SSI recipients as well as the average earnings per worker and average welfare payments per beneficiary.

Changes in income among clients can be divided into changes in the number of earners and welfare recipients and changes in the average earnings and welfare received by those with earnings and welfare/SSI benefits. Hence, earnings and social welfare payments were calculated at the client level to determine whether the relatively larger increases in average earnings were attributable to an increase in either the number of earners or the average earnings per earner.

- The number of clients participating in the workforce rose by 7 percent, while the average earnings per earner rose only 2 percent. These findings indicate that the increase in average earnings per client is primarily due to an increase in the number of earners.

- The average welfare and SSI payment per recipient increased 14 percent and 7 percent respectively.
- These increases in average payments mask the substantial reductions in the number of clients receiving welfare and SSI benefits. The number of welfare recipients decreased by 12 percent while the number of SSI recipients decreased by 7 percent.

It is important to note that in the early 1990s, there was a significant rise in the number of individuals who qualified for SSI due to disabilities associated with alcohol or drug abuse. The national number of "drug and alcohol abuse" (termed DA&A) SSI beneficiaries increased by more than 25 percent between 1993 and 1994.

Since the NTIES data collection efforts were conducted in 1993 and 1994, this trend is probably reflected in these findings. Thus, it is even more significant that within this treatment population, material reductions were achieved in the number of SSI and welfare recipients when all trends were moving in the opposite direction.

The following changes were reported in earnings, welfare and SSI payments after substance abuse treatment:

- Total income per client rose by 7 percent.
- Average earnings per client rose by 9 percent.
- The number of welfare and SSI recipients declined by 12 and 7 percent, respectively.

Exhibit 2			
Pre- and Post-Treatment Earnings, Welfare and SSI Payments (n=5,264)			
	Number of Earners	Number of Welfare Recipients	Number of SSI Recipients
Before Treatment	47%	36%*	14%
After Treatment	50%	31%*	13%
Percent Change	7%	- 12%**	- 7%
	Avg. Earnings per Earner	Avg. Welfare per Recipient	Avg. SSI per Recipient
Before Treatment	\$ 8,354	\$ 2,041	\$ 4,187
After Treatment	\$ 8,522	\$ 2,331	\$ 4,486
Percent Change	2%	14%	7%

Note: Figures in bold were statistically significant at the 0.05 level

*Rounded to nearest whole percent. **Percent calculated on un-rounded values.



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

Changes in Annual Earnings. In analyzing the data, we found that 30 percent of clients experienced an increase of over \$1,000 in annual earnings after treatment while 23 percent had a decrease of over \$1,000 in annual earnings. Movement in and out of the workforce may explain this level of change between the two reference periods. Similarly, approximately 17 percent of clients with no earnings in the pre-treatment period reported earnings after discharge, while 14 percent of clients reporting earnings prior to treatment reported no employment after discharge.

Clients employed prior to treatment may have had no earnings in the year after discharge for several reasons other than the deleterious effects of substance abuse, such as loss of employment due to demanding treatment schedules, or a decision to go back to school or vocational training.

Changes in Earnings and Social Welfare Payments by Treatment Characteristics

Exhibit 3 depicts the change in client income from the pre- to post-treatment periods by modality of care.

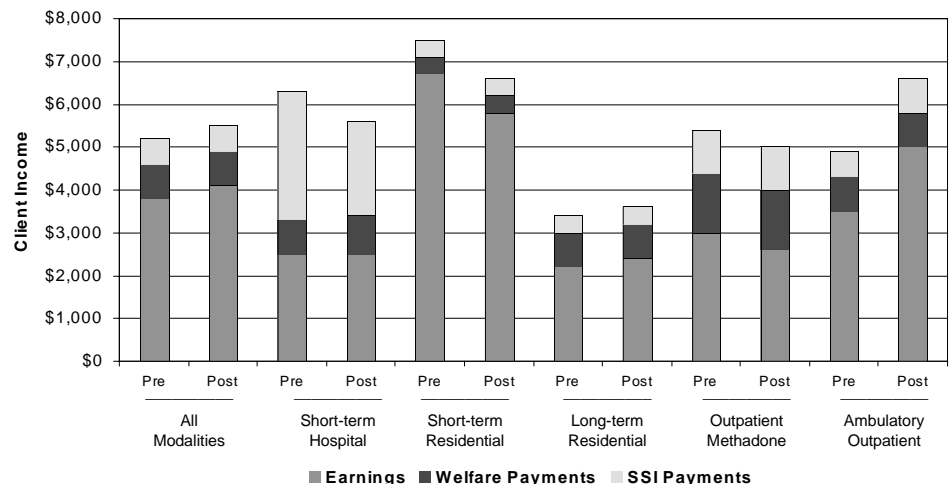
- While the overall average total income increased after treatment, the average income decreased after treatment among short-term hospital (9%), short-term residential (14%) and outpatient methadone clients (5%). With respect to the short-term hospital clients, the decrease in average total income was due to the drop in SSI payments. In contrast, the decrease in average total income for methadone clients and short-term residential clients was primarily due to decreases in their earnings.
- Clients who received treatment in the ambulatory outpatient setting experienced the most significant change in income from the pre- to

The number of earners and average earnings increased after substance abuse treatment:

- The number of earners increased by 7 percent.
- About 17 percent of clients with no legal earnings the year before treatment had earnings during the year after treatment discharge.
- Clients in an ambulatory outpatient setting had a 44 percent increase in average earnings per client.



Exhibit 3
Average Earnings and Social Welfare Benefits by Treatment Modality



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

Changes in income after substance abuse treatment differed by gender and age:

- Female clients had greater increases than males in employment (20% versus 3%) and average earnings (15% versus 8%).
- Male clients had a greater decline in the number of welfare and SSI recipients.
- Clients under 21 years of age increased earnings by 80 percent, compared to no change for those over 40 years.



the post-treatment periods, on average. The average earnings for these clients rose by 44 percent; this increase was responsible for the observed overall increase in average earnings across all modalities.

- Except for the ambulatory outpatient setting, there is very little change in the average earnings per client. There are several plausible explanations:
 - Residential or inpatient treatment may make it more difficult to earn income in the period immediately following treatment because clients may have had to quit their job to enter treatment.
 - Women with children may be more likely to be in long-term (e.g., 6-12 months) residential treatment and therefore less likely to have been in the job market at the 12 month follow-up.
 - Clients in residential or inpatient treatment may be more severely damaged by their substance abuse and therefore have fewer marketable skills.
 - Changes in average welfare payments were relatively small across all modalities with the exception of short-term hospital programs (19% increase).
 - With respect to SSI, the change in average payments per client varied across all modalities, ranging from a 33 percent drop for short-term residential clients

to a 23 percent increase for ambulatory outpatient clients. It is important to note that SSI payment levels were generally higher in short-term hospitals, possibly indicating a greater degree of disability among these clients.

Changes in Income by Client and Treatment Characteristics

Gender. Female clients had a higher increase in average earnings (15%) and number of annual earners (20%) than their male counterparts (8% and 3%, respectively). Women also had higher SSI payments after treatment (22% increase) while men experienced a 9 percent drop.

Compared to women, males had greater declines in the number of welfare recipients (16%) and SSI recipients (12%).

Race and Ethnicity. The percent increase in average annual earnings was highest among Hispanics (35%) and lower for white non-Hispanic and African American clients (10% and >1%, respectively). Hispanic clients also had the greatest change in welfare benefits and SSI benefits (7% and 29% increase, respectively).

White, non-Hispanic clients had the largest drop in SSI benefits (29%) and number of SSI recipients (28%). African American clients had moderate increases in annual earnings and number of earners, decreases in welfare benefits (0.4%) and number of welfare recipients (12%) and increases in SSI benefits (12%) and number of SSI recipients (5%).

Economic Impact of Substance Abuse Treatment on Client Income (cont.)

Age. The average annual earnings and number of earners increased by almost 80 percent and 15 percent, respectively, for clients under the age of 21. These increases might be due less to the effects of substance abuse treatment than to the fact that some of these clients might have recently joined the workforce for the first time.

The increases in average annual earnings tend to decrease across progressively older age subpopulations. Clients under the age of 21 experienced a 80 percent increase in earnings, while clients between the ages of 21 and 30 had a 15 percent increase and clients over 40 had a negligible increase (<1%).

Education. Clients with the lowest educational attainment (GED or less education) appear to have realized the greatest increases in earnings. There were minimal changes for those with high school diplomas or more education. There was no clear pattern of higher or lower receipt of welfare or SSI across the various educational attainment groups, however.

Type of Substance Abuse. Clients in treatment for marijuana abuse had the highest increase in average annual earnings—23 percent—compared to virtually no change for clients being treated for heroin or alcohol problems. Cocaine and polydrug clients fell between these two values.

With respect to welfare, the number of recipients decreased across all types of drug use, although the dollar magnitude of change was somewhat variable. There were reductions in the number of SSI recipients across all categories, excluding clients that abused multiple drugs (2% increase). The dollar value

of the change ranged from moderate increases to moderate decreases (-18% to +5%, respectively). Small numbers of observations made the changes in values more variable than estimates of the number of benefit recipients.

Time in Treatment. Findings suggest that greater length of treatment increases a client's earning potential following treatment discharge. The average earnings increased by 50 percent for clients who were in treatment for 6 or more months. Clients in treatment for less than 1 month actually had a 4 percent decrease in earnings; and clients in treatment for three to four months had an 11 percent increase in average earnings.

The proportion of clients with earnings (as opposed to the amount of earnings) increased after treatment for all durations, excluding clients in treatment for three to four months (3% drop). Increases in proportion of earners ranged from 5 percent for treatment lasting 1 to 2 months to 25 percent for treatment lasting 4 to 5 months.

More people moved off of welfare after treatment the longer they stayed in treatment. As length of treatment increased, the percent change in number of welfare recipients decreased (5% drop for 0-1 months to 19% drop for 6+ months).

Implications

Substance abuse treatment appears to have material impacts on client employment and income. Across the various treatment and client groups, the most consistent and significant changes occurred in average earnings per client and the number of earners. There were also decreases in the proportion of

Changes in income related to time in treatment:

- Average earnings increased by 50 percent for clients who were in treatment for 6 or more months, compared to no change in earnings for clients in treatment for 1 to 2 months.
- There was an 18 to 20 percent drop in receipt of welfare among clients staying at least 90 days in treatment, versus about a 6 percent drop among those with shorter stays.



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

clients receiving welfare and SSI, however this was offset by similar increases in the amount received per beneficiary.

Implications for Research/Analysis

A high proportion of clients entering treatment are unemployed, or have histories of low wages or unstable employment. Because it is felt that clients without meaningful social roles (e.g., a job, in school, parenting) are at high risk for relapse, providers usually address educational and employment deficits in treatment plans. A major finding of this analysis is that longer treatment retention is positively related to better outcomes for employment and receipt of welfare. These findings suggest additional questions that could be explored through further analysis:

- **Why do some clients achieve greater improvements in employment and earnings than others? Do some patterns of substance abuse impair employment outcomes more than others? Is more improvement achieved by clients with weaker or stronger prior employment histories?**
- **Do providers that address client deficits in literacy and job skills yield better outcomes—both with respect to substance use/abuse and in employment and receipt of welfare?**
- **Would matching of clients to modalities improve the overall functioning of the treatment system, and if so, how?**

Implications for Policy-Makers

The findings from this analysis suggest that the benefits of substance abuse treatment offset many of the costs of treatment through increased client employment and/or earnings and are, thus, an important consideration for policy makers. Client dependence on welfare and SSI also decreased moderately, although benefits received per eligible client increased.

The findings must be viewed in the light of several additional considerations:

- **Factors other than substance abuse treatment impact the ability of clients to achieve economic independence.** It must be recognized at the outset that the ability to find and maintain a job is influenced by other factors including the state of the economy, supply and demand for jobs, and availability of employment rehabilitation services.
- **Many clients realize several years—if not a lifetime—of benefits from a particular treatment episode.** The short post-treatment follow-up period (about 1 year) used in this study may not be long enough to allow the full economic impact of treatment to be captured.
- **Increased employment and/or earnings is not the only benefit that may be realized as a result of substance abuse treatment.** The overall effectiveness of treatment should only be evaluated from the broader perspective by considering other outcomes, such as health care and crime reduction. When the findings reported from this study are

Receipt of SSI in the NTIES sample decreased by 7 percent. In strong contrast, national SSI enrollment of substance abusers increased by more than 25 percent during the same time period.

Longer length of stay appears to be positively related to both improvements in employment and reduced welfare and SSI payments.



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

added to the treatment benefits in other outcome domains, the benefits of treatment for the NTIES population are estimated to more than offset the cost of treatment. Therefore, the benefits of treatment to society are as great or greater than the benefits to clients and their families.

Implications for Treatment Providers and Clients

This analysis indicates that client employment and earnings increase as treatment length increases. One possibility is that longer periods of treatment might allow providers to offer rehabilitative services, such as vocational counseling, which could increase employability and earnings of clients. Understanding the relationship between length of treatment and increased employability is important.

These issues are particularly important for the provider community and for payers of treatment, who must decide what types of treatment services to assign. Different types of treatment are generally thought to be appropriate for different clients; some clients may benefit greatly from services designed to increase their employability.

Future Steps

While the analysis has answered some important questions, it has also raised other issues that are worth investigating further.

Is outpatient treatment actually more effective at improving the employability of clients than other treatment settings? According to our findings, the increase in average annual earnings was primarily due to the increase in earnings among clients in an ambulatory outpatient setting. This finding is important and should be studied further to see whether the relationship holds after accounting for differences in characteristics of clients, providers and types of services.

How does the length of substance abuse treatment impact client income? According to our findings, the average earnings per client grow as length of treatment increases. The following questions arise:

- Does the relationship between length of time and treatment hold after accounting for differences in characteristics of clients, providers and types of services received?

This analysis indicates that after substance abuse treatment discharge client employment and earnings increase as the length of treatment increases.



Economic Impact of Substance Abuse Treatment on Client Income (cont.)

- Do the benefits from increasing the length of treatment offset the additional costs of treatment?

The answers to questions like these will increase our ability to obtain maximum benefit to society, as well as to clients, in return for investing in substance abuse treatment.

References

Koenig, L., Denmead, G., Nguyen, R., Harwood, R., & Harrison, M., *The Costs and Benefits of Substance Abuse Treatment: Findings from NTIES*. August 1999. Prepared under the NEDS contract.

National Opinion Research Center, *Final Report: National Treatment Improvement Evaluation Study*. March 1997. Prepared for the Center for Substance Abuse Treatment, U.S. Department of Health and Human Services, under contract 270-92-0002.

Nguyen, R., Koenig, L., & Harwood, R. "Economic Impact of Substance Abuse Treatment on Health Care Costs." NEDS Analytic Summary #6, April 2000.

Ringel, D., Koenig, L., & Harwood, R. "Economic Impact of Substance Abuse Treatment on Crime," NEDS Analytic Summary #5, April 2000.

For more information, please contact the National Evaluation Data Services analysis team at (703) 385-3200, or visit the NEDS Web site.

**Find more on the web
<http://neds.calib.com>**

The authors of this Analytic Summary are Deborah Ringel, Robert Nguyen, Ph.D., Lane Koenig, Ph.D., and Rick Harwood.

The analytic summary was produced by the Lewin Group under the NEDS contract (270-97-7016). We wish to thank Dr. Ron Smith, CSAT Program Evaluation Branch, GPO for the NEDS contract, for his overall guidance and direction. In addition, we wish to recognize the many Lewin Group and Caliber staff who contributed to production of this analytic summary and the technical report upon which it is based.

National Treatment Improvement Evaluation Study (NTIES)

This analysis was performed on data derived from the National Treatment Improvement Evaluation Study (NTIES). The NTIES was a national evaluation of the effectiveness of substance abuse treatment services delivered in comprehensive treatment demonstration programs supported by the Center for Substance Abuse Treatment (CSAT). The NTIES project

collected longitudinal data between FY 1992 and FY 1995 on a purposive sample of clients in treatment programs receiving demonstration grant funding from CSAT. Data are derived from client interviews conducted at three points in time: treatment intake, treatment exit, and 12 months after treatment exit.



The perspective offered in this document is solely that of the author(s) and does not reflect the policies or views of the Federal government, or any of its Departments or Agencies.