CSAT Publications -- TAP 25, The Impact of Substance Abuse Treatment on Employment Outcomes Among AFDC Clients in Washington State

Table of Contents

The Impact of Substance Abuse Treatment on Employment Outcomes Among AFDC Clients in Washington State

Acknowledgement

Foreword

Executive Summary

A. Introduction

B. Methods, Data, and Analytical Procedures

C. Results

D. Conclusions and Implications

CHAPTER I-Introduction

CHAPTER II-Methods, Data, and Analytic Procedures

A. Sample Selection Criteria and Description of the Study Population

B. Treatment Modalities Analyzed and Assignment of Clients to Treatment and Comparison Groups

C. Data Sources and Construction of Analytic Files

D. Measures

E. Descriptive and Statistical Analytical Procedures

CHAPTER III-Results: The Impact of Substance Abuse Treatment on Employment Outcomes Among AFDC Clients

A. Descriptive Analysis: AFDC Clients' Earnings and Welfare Payments Before and After Substance Abuse Treatment

B. Statistical Analysis: The Effects of Substance Abuse Treatment on AFDC Clients' Employment and Earnings

C. Descriptive Analysis: AFDC Clients' Employment and Earnings in the First Year of TANF's Implementation

CHAPTER IV-Conclusions and Implications
A. The Effects of Substance Abuse Treatment on AFDC Clients' Employment Outcomes

B. The Utility of Computerized State Administrative Databases for Tracking Client Outcomes and Performing Evaluation Research

List of Tables and Figures

Table ES-1. Distribution of Washington State AFDC Clients Across the Three Substance Abuse Treatment Modalities

Table A-1. Likelihood of Any Employment

Table A-2. Likelihood of Earnings $1,500 or More in 1 Out of 8 Quarters

Table A-3. Adjusted Aggregate Earnings in the 8-Quarter Followup Period

Table A-4. Differences in Post-Treatment Aggregate Earnings Among Outpatient Clients Having Different Amounts of Time on Welfare

Table II-1. Selected Characteristics of the AFDC Study Population in Washington State

Table II-2. Admissions of AFDC Clients to Substance Abuse Treatment by Treatment Modality at Index Admission

Table II-3. Distribution of AFDC Clients Across the Three Substance Abuse Treatment Modalities

Table II-4. Descriptive Information on Selected Dependent Measures for AFDC Clients

Table III-1. Distribution of Aggregate Income Levels Among AFDC Clients in the 8 Quarters Following Substance Abuse Treatment

Figure III-1. AFDC Clients' Quarterly Earnings Before and After Substance Abuse Treatment

Figure III-2. AFDC Clients' Quarterly Earnings Before and After Substance Abuse Treatment by Education Level

Figure III-3. AFDC Clients' Quarterly Earnings Before and After Substance Abuse Treatment by Racial/Ethnic Group

Figure III-4a. Percentage of AFDC Clients With Positive Earnings in the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups

Figure III-4b. Aggregate Earnings Among AFDC Clients Obtaining at Least Part-Time Employment During the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups
Figure III-5. AFDC Clients' Quarterly Welfare Payments Before and After Substance Abuse Treatment

Figure III-6. Length of Time on Welfare Among AFDC Clients: Number of Quarters out of 10 Quarters That Clients Received Cash Grants

Figure III-7. Quarterly Welfare Payments to AFDC Clients Following Outpatient Treatment: Treatment and Comparison Groups

Figure III-8. Quarterly Welfare Payments to AFDC Clients Following Intensive Inpatient Treatment: Treatment and Comparison Groups

Figure III-9. Quarterly Welfare Payments to AFDC Clients Following Methadone Treatment: Treatment and Comparison Groups

Figure III-10. Adjusted Odds Ratios of AFDC Clients Having Any Earned Income During the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups

Figure III-11. Adjusted Odds Ratios of AFDC Clients Having Earned Income of $1,500 or More During the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups

Figure III-12. AFDC Clients' Adjusted Aggregate Earnings in the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups

Figure III-13. Differences in Aggregate Earnings in the 8-Quarter Followup Period Among AFDC Outpatient Clients by Time on Welfare: Treatment and Comparison Groups

Figure III-14. Percentage of AFDC Clients With Quarterly Earned Income of $100 or More, 1993 to 1998

Figure III-15. AFDC Clients' Quarterly Earnings, 1993 to 1998

References

Technical Appendix
The Impact of Substance Abuse Treatment on Employment Outcomes Among AFDC Clients in Washington State

Technical Assistance Publication Series
25

Thomas M. Wickizer, Ph.D., M.P.H.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Substance Abuse and Mental Health Services Administration
Center for Substance Abuse Treatment

Rockwall II, 5600 Fishers Lane
Rockville, MD 20857

This publication is part of the Substance Abuse Prevention and Treatment Block Grant technical assistance program. All material appearing in this volume except quoted passages from copyrighted sources is in the public domain and may be reproduced or copied without permission from the Center for Substance Abuse Treatment (CSAT) or the author. Citation of the sources is appreciated.

This publication was written by Thomas M. Wickizer, Ph.D., M.P.H., Rohm and Haas Professor of Public Health Sciences, School of Public Health and Community Medicine, University of Washington. It was edited and revised for publication under contracts 270-95-0023 and 270-00-7071 from the Center for Substance Abuse Treatment of the Substance Abuse and Mental Health Services Administration (SAMHSA). Terrence Schomburg, Ph.D., of CSAT, served as the Government Project Officer.

The opinions expressed herein are the views of the author and do not necessarily reflect the official position of CSAT or any other part of Department of Health and Human Services (DHHS).

DHHS Publication No. (SMA) 01-3508
NCADI Inventory No. BKD367
Printed 2001
Acknowledgement

A number of persons assisted in the planning and implementation of the study reported in this document. Kenneth Stark, Director of the Washington State Division of Alcohol and Substance Abuse, and Antoinette Krupski, Ph.D., Research Administrator at the Division of Alcohol and Substance Abuse, provided important input in planning the study. Kevin Campbell, also with the Division of Alcohol and Substance Abuse, provided critical assistance in gathering the data and constructing the initial set of data files. The study also benefitted from assistance provided by Dori Shoji, Fred Fiedler, Kathryn Beall, and John Yoachim.

Staff of Health Systems Research, Inc., provided important guidance and support for the project. Technical Assistance Manager Barbara Spoor provided thoughtful and patient oversight for the project. Project Director William Ford, Ph.D., provided support and guidance, especially in the final phase of the project. Administrative Assistant Natalie Solomon coordinated the production of this document, and Editor Kerry Kemp added important feedback on content as the document was finalized.

Finally, Jeffrey Merrill and Robert Poresky, Ph.D., provided helpful suggestions on the manuscript.

Foreword

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (Public Law 104-193) replaced the Aid to Families With Dependent Children (AFDC) program with the Temporary Assistance to Needy Families (TANF) program. Under TANF, welfare recipients are required to work, and States are responsible for designing and operating their own welfare-to-work plans. However, if welfare reform is to succeed, States must develop policies and programs to address the effects of substance abuse on the employability of TANF recipients.

Many States allow the use of TANF funds to support substance abuse treatment for recipients as part of work-readiness efforts. To ensure implementation of sound welfare-to-work policies and programs and to justify allocation of TANF resources to substance abuse services, State officials need reliable and timely information on the effects of substance abuse treatment on employment outcomes for welfare recipients.

This document responds to this information need by analyzing the effects of substance abuse treatment on employment outcomes among AFDC recipients in Washington State. It presents findings regarding the general patterns of employment and earnings for Washington State AFDC recipients before and after substance abuse treatment; the extent of welfare dependence before and after treatment; the impact of different substance abuse treatment modalities on employment outcomes; and whether the amount of time on welfare before being treated for substance abuse affects employment outcomes.

The document presents an analysis of the pattern of employment and earnings before and after the implementation of TANF. The document also discusses the value of developing the capacity to use State computer databases for evaluating clients and tracking client outcomes.
The Center for Substance Abuse Treatment (CSAT), Substance Abuse and Mental Health Services Administration (SAMHSA), are pleased to disseminate this document to State substance abuse agencies, State welfare agencies, State health planning authorities, State advisory committees, providers, consumers, and other stakeholders. The document should serve as a tool as stakeholders confront the ramifications of welfare reform for substance abuse treatment.

Joseph H. Autry, III, M.D.
Acting Administrator
Substance Abuse and Mental Health Services Administration

H. Westley Clark, M.D., J.D., M.P.H.
Director
Center for Substance Abuse Treatment
Substance Abuse and Mental Health Services Administration

Executive Summary

A. Introduction vii
B. Methods, Data, and Analytical Procedures viii
C. Results vii
D. Conclusions and Implications ix

A. Introduction

Questions about the effects of substance abuse treatment have recently been given new urgency by welfare reforms enacted by Congress in the last 4 years. In 1996, Congress enacted the Personal Responsibility and Work Opportunity Reconciliation Act (Public Law 104-193) in an effort to move people off welfare and to establish strong incentives to work. The new law replaced the Aid to Families With Dependent Children (AFDC) program with Federal block grants to States to provide temporary assistance to needy families (TANF); it also imposed a 5-year lifetime limit on welfare payments to families with a minor child.* A key assumption underlying the 5-year lifetime limit is that most welfare recipients can obtain jobs that enable them to move from welfare dependency to economic self-sufficiency.

Obtaining a job and achieving economic self-sufficiency is especially difficult for welfare recipients with substance abuse problems. At a minimum, they need treatment for their substance abuse problems. Substance abuse treatment works, but little is known about the effects of substance abuse treatment on employment outcomes for welfare recipients with substance abuse problems.

The primary purpose of this study was to assess the effect of substance abuse treatment on employment outcomes and earnings among AFDC clients admitted to treatment in Washington State. A second purpose was to illustrate the potential for States to use data from State administrative databases for tracking client outcomes and conducting timely evaluation research. The first chapter of this report discusses the context and purpose of the study. The second chapter outlines the methods, data, and analytical procedures. The third chapter presents the
study results, including findings from statistical analyses of the effects of substance abuse treatment on employment outcomes among 5,664 Washington State AFDC clients admitted to substance abuse treatment. The report closes with a chapter on conclusions and implications. A technical appendix presents additional details on the statistical analyses. (Refer Chapter I for details)

**B. Methods, Data, and Analytical Procedures**

The study sample consisted of 5,664 individuals admitted to substance abuse treatment in Washington State from July 1994 to June 1996 who were receiving financial assistance from AFDC at the time of their admission. Data on these individuals' treatment and employment outcomes—employment, earnings, and welfare payments—were obtained from administrative databases maintained by the State of Washington. Employment data for the study spanned 5 years, and welfare payment data spanned 4 years, both beginning in July 1993. The evaluation of the effects of substance abuse treatment on employment outcomes focused on three treatment modalities (see Table ES-1).

<table>
<thead>
<tr>
<th>Table ES-1. Distribution of Washington State AFDC Clients Across the Three Substance Abuse Treatment Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outpatient treatment:</strong></td>
</tr>
<tr>
<td>Treatment group—received 90 days or more of treatment (n = 870)</td>
</tr>
<tr>
<td>Comparison group—received under 21 days of treatment (n = 1,131)</td>
</tr>
<tr>
<td><strong>Intensive inpatient (21- or 28-day non-hospital) treatment:</strong></td>
</tr>
<tr>
<td>Treatment group—completed treatment (n = 1,139)</td>
</tr>
<tr>
<td>Comparison group—detoxification clients with no other treatment (n = 261)</td>
</tr>
<tr>
<td><strong>Methadone maintenance:</strong></td>
</tr>
<tr>
<td>Treatment group—received 120 days or more of treatment (n = 143)</td>
</tr>
<tr>
<td>Comparison group—received under 60 days of treatment (n = 240)</td>
</tr>
</tbody>
</table>

Analytic procedures included a descriptive analysis and a multivariate statistical analysis. Results from both analyses are summarized below. (Refer Chapter II for details)
C. Results

In the descriptive analysis, the 5,664 Washington State AFDC clients' earnings and welfare payments were profiled for several quarters before and after substance abuse treatment.

- **Earnings levels among AFDC clients in the sample were very modest. In the year before substance abuse treatment, the clients' quarterly earnings declined. In the 2 years after treatment, their quarterly earnings increased.**

- **Welfare payments to the AFDC clients, in contrast to earnings, increased in the year before the clients entered substance abuse treatment. In the 1½ -year period after treatment, welfare payments declined. More than one-fourth (27 percent) of the AFDC clients in the sample remained on welfare throughout the 2½-year tracking period.**

Because descriptive information does not take into account differences in age, gender, education, or other factors that may affect treatment outcomes, conclusions about the effects of substance abuse treatment on AFDC clients' earnings and welfare payments should not be made on the basis of descriptive information alone. To adjust the data for those factors, statistical analyses were performed.

Statistical analyses of the effects of substance abuse treatment on employment outcomes among the 5,664 AFDC clients in the sample demonstrated that substance abuse treatment had a significant positive effect on employment outcomes:

- **AFDC clients in the three substance abuse treatment groups were 50 to 100 percent more likely (p < .05) to become employed in the 2-year post-treatment period than their counterparts in the comparison groups.**

- **AFDC clients in the three substance abuse treatment groups had adjusted aggregate earned income levels in the 2-year post-treatment period that were approximately $1,700 to $3,200 (p < .05) higher than the income levels among their counterparts in comparison groups.**

- **AFDC clients who had been on welfare for more quarters earned substantially less than clients who had been on welfare for less time. Nevertheless, substance abuse treatment was associated with significant gains in earnings for all AFDC clients, regardless of the length of time they were on welfare.**

The finding that substance abuse treatment had positive effects on AFDC clients' employment and earnings was robust across all three of the treatment modalities analyzed: outpatient treatment, intensive inpatient treatment, and methadone maintenance (Refer Chapter III for details)

D. Conclusions and Implications

1. The Effects of Substance Abuse Treatment on AFDC Clients' Employment Outcomes
This study's finding that substance abuse treatment had positive effects on employment and earnings among AFDC clients in Washington State is notable, especially because the primary goal of substance abuse treatment is rehabilitation, not employment. It is important to emphasize, however, that despite gains in income following substance abuse treatment, earnings among the AFDC clients in the sample remained quite low-too low for most clients to achieve economic self-sufficiency. Unless these welfare clients receive vocational services in conjunction with substance abuse treatment, they will probably be unable to become economically self-sufficient.

2. The Utility of Computerized State Administrative Databases for Tracking Client Outcomes and Performing Evaluation Research

Few States have the resources or time to conduct studies involving large-scale primary data collection. Such studies may take years to complete and may produce information of diminished value given the rapid policy and programmatic changes taking place in many States.

This study in Washington State illustrates a useful approach to performing evaluation research—that is, analyzing data provided by computerized State administrative databases. State databases contain client-level data representing important outcome indicators of substance abuse treatment—including employment, public assistance payments, Medicaid utilization and expenditures, and criminal justice information. By utilizing such information, States can greatly improve their capacity to perform timely evaluation and outcome studies. (Refer Chapter IV for details)

Executive Summary

A. Introduction vii
B. Methods, Data, and Analytical Procedures vii
C. Results viii
D. Conclusions and Implications ix

A. Introduction

Questions about the effects of substance abuse treatment have recently been given new urgency by welfare reforms enacted by Congress in the last 4 years. In 1996, Congress enacted the Personal Responsibility and Work Opportunity Reconciliation Act (Public Law 104-193) in an effort to move people off welfare and to establish strong incentives to work. The new law replaced the Aid to Families With Dependent Children (AFDC) program with Federal block grants to States to provide temporary assistance to needy families (TANF); it also imposed a 5-year lifetime limit on welfare payments to families with a minor child.* A key assumption underlying the 5-year lifetime limit is that most welfare recipients can obtain jobs that enable them to move from welfare dependency to economic self-sufficiency.

Obtaining a job and achieving economic self-sufficiency is especially difficult for welfare recipients with substance abuse problems. At a minimum, they need treatment for their substance abuse problems. Substance abuse treatment works, but little is known about the effects of substance abuse treatment on employment outcomes for welfare recipients with substance abuse problems.
The primary purpose of this study was to assess the effect of substance abuse treatment on employment outcomes and earnings among AFDC clients admitted to treatment in Washington State. A second purpose was to illustrate the potential for States to use data from State administrative databases for tracking client outcomes and conducting timely evaluation research. The first chapter of this report discusses the context and purpose of the study. The second chapter outlines the methods, data, and analytical procedures. The third chapter presents the study results, including findings from statistical analyses of the effects of substance abuse treatment on employment outcomes among 5,664 Washington State AFDC clients admitted to substance abuse treatment. The report closes with a chapter on conclusions and implications. A technical appendix presents additional details on the statistical analyses. (Refer Chapter 1 for details)

B. Methods, Data, and Analytical Procedures

The study sample consisted of 5,664 individuals admitted to substance abuse treatment in Washington State from July 1994 to June 1996 who were receiving financial assistance from AFDC at the time of their admission. Data on these individuals' treatment and employment outcomes—employment, earnings, and welfare payments—were obtained from administrative databases maintained by the State of Washington. Employment data for the study spanned 5 years, and welfare payment data spanned 4 years, both beginning in July 1993. The evaluation of the effects of substance abuse treatment on employment outcomes focused on three treatment modalities (see Table ES-1).

<table>
<thead>
<tr>
<th>Table ES-1. Distribution of Washington State AFDC Clients Across the Three Substance Abuse Treatment Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outpatient treatment:</strong></td>
</tr>
<tr>
<td>Treatment group—received 90 days or more of treatment (n = 870)</td>
</tr>
<tr>
<td>Comparison group—received under 21 days of treatment (n = 1,131)</td>
</tr>
<tr>
<td><strong>Intensive inpatient (21- or 28-day non-hospital) treatment:</strong></td>
</tr>
<tr>
<td>Treatment group—completed treatment (n = 1,139)</td>
</tr>
<tr>
<td>Comparison group—detoxification clients with no other treatment (n = 261)</td>
</tr>
<tr>
<td><strong>Methadone maintenance:</strong></td>
</tr>
<tr>
<td>Treatment group—received 120 days or more of treatment (n = 143)</td>
</tr>
</tbody>
</table>
Analytic procedures included a descriptive analysis and a multivariate statistical analysis. Results from both analyses are summarized below. (Refer Chapter II for details)

C. Results

In the descriptive analysis, the 5,664 Washington State AFDC clients' earnings and welfare payments were profiled for several quarters before and after substance abuse treatment.

- *Earnings levels among AFDC clients in the sample were very modest. In the year before substance abuse treatment, the clients' quarterly earnings declined. In the 2 years after treatment, their quarterly earnings increased.*

- *Welfare payments to the AFDC clients, in contrast to earnings, increased in the year before the clients entered substance abuse treatment. In the 1½-year period after treatment, welfare payments declined. More than one-fourth (27 percent) of the AFDC clients in the sample remained on welfare throughout the 2½-year tracking period.*

Because descriptive information does not take into account differences in age, gender, education, or other factors that may affect treatment outcomes, conclusions about the effects of substance abuse treatment on AFDC clients' earnings and welfare payments should not be made on the basis of descriptive information alone. To adjust the data for those factors, statistical analyses were performed.

Statistical analyses of the effects of substance abuse treatment on employment outcomes among the 5,664 AFDC clients in the sample demonstrated that substance abuse treatment had a significant positive effect on employment outcomes:

- *AFDC clients in the three substance abuse treatment groups were 50 to 100 percent more likely (p < .05) to become employed in the 2-year post-treatment period than their counterparts in the comparison groups.*

- *AFDC clients in the three substance abuse treatment groups had adjusted aggregate earned income levels in the 2-year post-treatment period that were approximately $1,700 to $3,200 (p < .05) higher than the income levels among their counterparts in comparison groups.*

- *AFDC clients who had been on welfare for more quarters earned substantially less than clients who had been on welfare for less time. Nevertheless, substance abuse treatment was associated with significant gains in earnings for all AFDC clients, regardless of the length of time they were on welfare.*

The finding that substance abuse treatment had positive effects on AFDC clients' employment and earnings was robust across all three of the treatment modalities analyzed: outpatient...
treatment, intensive inpatient treatment, and methadone maintenance (Refer Chapter III for details)

D. Conclusions and Implications

1. The Effects of Substance Abuse Treatment on AFDC Clients' Employment Outcomes

This study's finding that substance abuse treatment had positive effects on employment and earnings among AFDC clients in Washington State is notable, especially because the primary goal of substance abuse treatment is rehabilitation, not employment. It is important to emphasize, however, that despite gains in income following substance abuse treatment, earnings among the AFDC clients in the sample remained quite low-too low for most clients to achieve economic self-sufficiency. Unless these welfare clients receive vocational services in conjunction with substance abuse treatment, they will probably be unable to become economically self-sufficient.

2. The Utility of Computerized State Administrative Databases for Tracking Client Outcomes and Performing Evaluation Research

Few States have the resources or time to conduct studies involving large-scale primary data collection. Such studies may take years to complete and may produce information of diminished value given the rapid policy and programmatic changes taking place in many States.

This study in Washington State illustrates a useful approach to performing evaluation research-that is, analyzing data provided by computerized State administrative databases. State databases contain client-level data representing important outcome indicators of substance abuse treatment-including employment, public assistance payments, Medicaid utilization and expenditures, and criminal justice information. By utilizing such information, States can greatly improve their capacity to perform timely evaluation and outcome studies. (Refer Chapter IV for details)

Chapter II - Methods, Data, and Analytic Procedures

a. Sample Selection Criteria and Description of the Study Population

b. Treatment Modalities Analyzed and Assignment of Clients to Treatment and Comparison groups

c. Data Sources and Construction of Analytic Files

d. Measures

e. Descriptive and Statistical Analytical Procedures

A. Sample Selection Criteria and Description of the Study Population

The study sample consisted of 5,664 individuals who (1) were admitted to substance abuse treatment in Washington State from July 1994 to June 1996; and (2) were receiving financial
assistance from AFDC at the time of treatment admission. The client treatment database maintained by the Washington State Division of Alcohol and Substance Abuse was used to identify all persons admitted to substance abuse treatment from July 1994 through June 1996. Substance abuse treatment units serving publicly funded (Federal or State) clients in Washington State are required to report to this database, and approximately half of all treatment programs do so. Once individuals admitted to substance abuse treatment from July 1994 to June 1996 were identified, the database was searched again to identify individuals who were receiving financial support from AFDC at time of their admission to treatment.

This two-step procedure resulted in the initial identification of 6,140 individuals in Washington State, admitted to substance abuse treatment from July 1994 through June 1996 and receiving financial assistance from AFDC at the time of their admission. Subsequently, 476 (7.7 percent) of these 6,140 clients were dropped from the study because either (1) they had a dual diagnosis (mental illness and substance abuse); or (2) data on key variables (e.g., discharge date or treatment modality) were missing for the individuals.

The final study population, therefore, included 5,664 individuals admitted to substance abuse treatment from July 1994 through June 1996 who were receiving financial aid from AFDC at the time of their admission. Selected characteristics of the study population are shown in Table II-1.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Percent of total study population or mean (Standard deviation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children in household</td>
<td></td>
</tr>
<tr>
<td>0 - 1</td>
<td>55.6%</td>
</tr>
<tr>
<td>2 - 3</td>
<td>37.9%</td>
</tr>
<tr>
<td>$ 4</td>
<td>6.4%</td>
</tr>
<tr>
<td>Self-reported household monthly income</td>
<td></td>
</tr>
<tr>
<td>(including AFDC income)</td>
<td>$474 ($366)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Age at admission</strong></td>
<td>31.1</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>72.2%</td>
</tr>
<tr>
<td>Black</td>
<td>12.3%</td>
</tr>
<tr>
<td>Native American</td>
<td>8.1%</td>
</tr>
<tr>
<td>Asian and other (includes a</td>
<td>7.3%</td>
</tr>
<tr>
<td>small percentage of Hispanic</td>
<td></td>
</tr>
<tr>
<td>clients)</td>
<td></td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td>75.7%</td>
</tr>
<tr>
<td><strong>Single, divorced, widowed, or</strong></td>
<td>79.7%</td>
</tr>
<tr>
<td>separated</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>No high school degree</td>
<td>37.5%</td>
</tr>
<tr>
<td>High school degree only</td>
<td>52.7%</td>
</tr>
<tr>
<td>Vocational training or post-</td>
<td>7.7%</td>
</tr>
<tr>
<td>high school education</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2.1%</td>
</tr>
<tr>
<td><strong>Primary substance of abuse</strong></td>
<td></td>
</tr>
<tr>
<td>Heroin</td>
<td>11.2%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>15.7%</td>
</tr>
<tr>
<td>Methamphetamines</td>
<td>12.2%</td>
</tr>
<tr>
<td>Alcohol</td>
<td>48.6%</td>
</tr>
<tr>
<td>Other drugs</td>
<td>12.2%</td>
</tr>
<tr>
<td>**Frequency of drug/alcohol</td>
<td></td>
</tr>
<tr>
<td>use**</td>
<td></td>
</tr>
<tr>
<td>Daily use</td>
<td>31.9%</td>
</tr>
</tbody>
</table>
Weekly use | 35.4%  
Less than weekly use | 32.6%

*All of the 5,664 AFDC clients in the sample were admitted to publicly funded substance abuse treatment in Washington State from July 1994 through June 1996 and were receiving financial assistance from AFDC at the time of their admission to treatment.

About 38 percent of the AFDC client households had two to three children, and 6.4 percent had four or more children. Slightly over half (56 percent) of the clients had one or no children (pregnant clients who meet income eligibility requirements qualify for AFDC). The self-reported monthly household income of AFDC clients averaged $474. Approximately 72 percent of the AFDC clients were white, 12 percent were black, 8 percent were Native American, and 7 percent were Asian, Hispanic, or other. More than one-third (38 percent) had no high school degree. Almost half reported alcohol as their primary substance of abuse; the others reported heroin, cocaine, methamphetamines or other drugs as their primary substance of abuse. About two-thirds reported abusing their primary substance on a daily or weekly basis.

B. Treatment Modalities Analyzed and Assignment of Clients to Treatment and Comparison Groups

The 5,664 AFDC recipients in the study population were admitted to a range of substance abuse treatment modalities, reflecting their different treatment needs (see Table II-2).

<table>
<thead>
<tr>
<th>Treatment modality</th>
<th>Number of admissions</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient treatment</td>
<td>3,784</td>
<td>66.7%</td>
</tr>
<tr>
<td>Intensive inpatient (21- or 28-day non-hospital) treatment</td>
<td>706</td>
<td>12.5%</td>
</tr>
<tr>
<td>Detoxification</td>
<td>626</td>
<td>11.1%</td>
</tr>
<tr>
<td>Methadone maintenance</td>
<td>299</td>
<td>5.3%</td>
</tr>
<tr>
<td>Long-term residential treatment</td>
<td>131</td>
<td>2.3%</td>
</tr>
<tr>
<td>Extended care</td>
<td>60</td>
<td>1.1%</td>
</tr>
<tr>
<td>Recovery house</td>
<td>58</td>
<td>1.0%</td>
</tr>
</tbody>
</table>
A client's initial admission to substance abuse treatment is referred to as the index admission. As shown, about two-thirds (3,784) of the study population were initially admitted to an outpatient substance treatment program. Although all 5,664 AFDC clients were admitted to treatment at least once from July 1994 to June 1996, nearly half (46 percent) of the clients had more than one admission to treatment during this period. Specifically, 24 percent (1,369) had two admissions, 12 percent (675) had three admissions, 6 percent (315) had four admissions, and the remaining 4 percent (224) had more than four admissions. Overall, study population clients accounted for 10,417 separate admissions to substance abuse treatment during the study period.

Three substance abuse treatment modalities were selected for in-depth analysis: (1) outpatient treatment; (2) intensive inpatient (21- or 28-day non-hospital) treatment; and (3) methadone maintenance. Complicating the process of selecting specific treatment episodes for analysis, some clients in the study population were admitted to different modalities at different times. For example, a client could have an initial admission to outpatient treatment and a subsequent admission to methadone maintenance. To address this situation, a series of decision rules was established to define treatment episodes for specific modalities.

- **Outpatient treatment episodes.** Treatment episodes for outpatient treatment were limited to clients who received outpatient treatment at their index (first) admission. This rule ensured that the analysis focused on outpatient treatment provided as the primary modality, excluding outpatient treatment provided as followup to earlier inpatient treatment.

- **Intensive inpatient and methadone maintenance treatment episodes.** For intensive inpatient treatment and methadone maintenance, treatment episodes were selected for analysis regardless of whether they represented the index admission. Thus, for example, a client receiving detoxification initially who was later admitted to intensive inpatient treatment would be classified as an inpatient client.

AFDC clients were assigned to treatment and comparison groups for each of the three substance abuse treatment modalities being considered. Because all of 5,664 AFDC clients in the study population were admitted to substance abuse treatment, it was not possible to identify a "pure" comparison group that had no treatment. Comparison groups, therefore, consisted of clients who received minimal treatment or clients who received detoxification but no other treatment. For each modality of treatment, the treatment groups included clients who either completed treatment or stayed in treatment for substantial time.

- **Treatment and comparison groups for outpatient treatment.** Clients staying in outpatient treatment a minimum of 90 days during their index admission formed the treatment group. Clients remaining in outpatient treatment fewer than 21 days during their index admission formed the comparison group.
• Treatment and comparison groups for intensive inpatient (21- or 28-day non-hospital) treatment. Clients whose inpatient discharge record indicated "treatment completed" for either a 21- or 28-day treatment regimen formed the treatment group. It was not feasible to construct a comparison group for the inpatient analysis consisting of clients with minimal inpatient treatment. Instead, detoxification clients who had three or fewer detoxification treatments and no other treatment were used for the comparison group.

• Treatment and comparison groups for methadone treatment. Methadone maintenance clients staying in treatment for a minimum of 120 days formed the methadone maintenance treatment group. Methadone clients staying in treatment fewer than 60 days formed the comparison group.

The numbers of AFDC clients in the substance abuse treatment and comparison groups for each treatment modality are shown in Table II-3 below. On average, AFDC clients in the outpatient treatment group stayed in treatment 148 days; their counterparts in the outpatient comparison group stayed 9 days. AFDC clients in the methadone maintenance treatment group stayed in treatment for 262 days; their counterparts in the methadone maintenance comparison group stayed 29 days.

<table>
<thead>
<tr>
<th>Table II-3. Distribution of AFDC Clients Across the Three Substance Abuse Treatment Modalities (N = 5,664)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outpatient treatment:</strong> (n = 1,131)</td>
</tr>
<tr>
<td><strong>Intensive inpatient (21- or 28-day non-hospital) treatment:</strong></td>
</tr>
<tr>
<td><strong>Methadone maintenance:</strong></td>
</tr>
</tbody>
</table>

C. Data Sources and Construction of Analytic Files

Data for the 5,664 AFDC clients treated for substance abuse from July 1994 through June 1996 were obtained from three computer databases maintained by Washington State agencies:

• Data for clients receiving substance abuse treatment. The Washington State Division of Alcohol and Substance Abuse client database has information on the characteristics of individuals receiving substance abuse treatment and on their admission to treatment, discharge, and treatment activity. It includes data on age, gender, race, education, primary substance of abuse, frequency of use, past mental health treatment, probationary status, referral source, living arrangement, number of children in household, marital status, disability status, general health status, types of crimes committed, and household income.
• Data for employment and earnings. A database maintained by the Washington State Department of Employment Security includes wage data submitted by employers in the State each quarter.

• Data for welfare payments. A database maintained by the Economic Services Administration within the Washington State Department of Social and Health Services has data on monthly cash amounts distributed to welfare recipients in the State.

The Division of Alcohol and Substance Abuse client database was used to obtain activity data for individuals in outpatient or methadone treatment, including date and type of service provided. The Department of Employment Security database was used to obtain data on quarterly earnings for each of the AFDC clients in the study for the period from July 1993 through September 1998. The Economic Services Administration database was used to obtain data on the monthly cash grant amounts paid to each of the AFDC clients in the study over the 48-month period from July 1993 to June 1997.

These data from the three State administrative databases were entered into separate Access databases and then uploaded into SPSS data files. The individual SPSS data files were then combined into a master file that contained client, treatment, employment, and welfare payment data. The master file used for this study contained 10,417 records representing each treatment episode, or admission, for the 5,664 AFDC clients in the study population.

D. Measures

1. Dependent Variables

Key dependent study measures were employment and welfare payment measures constructed using data from the Washington State administrative databases described above. The monthly welfare payment data were aggregated to reflect quarterly data to facilitate the analysis.

• Employment outcome measures. Employment outcome data covering nearly 5 years (July 1993 to September 1998) allowed the construction of outcome measures representing 8 quarters of post-treatment followup. Three employment outcome variables were examined: (1) a binary variable set equal to 1 if a client had any positive earnings (> $0) during the 8 quarters following treatment and 0 otherwise; (2) a binary variable set equal to 1 if a client had earnings of at least $1,500 or more in at least 1 of the 8 quarters following treatment (the approximate equivalent of having a half-time job for a quarter at an hourly rate of $6) and 0 otherwise; and (3) total aggregate earnings in the 8 quarters following treatment, which reflected the combined effects of the number of hours worked and the hourly rate of pay.

• Welfare payment outcome measures. Welfare payment outcome measures for clients in the study included quarterly welfare payment amount and number of quarters during which welfare payments were received. Welfare payment data covered a shorter time period (July 1993 to June 1997) than the employment data, necessitating a followup period for welfare payments of only 6 quarters. Consequently, the welfare payment analysis was limited to AFDC clients (n = 4,320) discharged from substance abuse treatment by January 1996.
Information on selected employment and welfare payment measures for AFDC clients in the study population is shown in Table II-4.

<table>
<thead>
<tr>
<th>Dependent measure</th>
<th>Mean or percent</th>
<th>Standard deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment measures</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggregate earnings in 8-quarter followup period (n = 5,664)</td>
<td>$4,811</td>
<td>$9,581</td>
<td>$0 - $83,251</td>
</tr>
<tr>
<td>Any employment (earnings &gt; $0) in 8-quarter followup period</td>
<td>58%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n = 5,664)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment with earnings &gt; $1,500 in at least 1 quarter of 8-</td>
<td>39%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quarter followup period</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Welfare measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarterly AFDC payments in 6-quarter followup period (n = 4,320)</td>
<td>$911</td>
<td>$633</td>
<td>$0 - $3,900</td>
</tr>
<tr>
<td>Number of quarters (out of 6 possible) with AFDC payments</td>
<td>3.1</td>
<td>2.6</td>
<td>0 - 6</td>
</tr>
<tr>
<td>(n = 4,320)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Independent Variables

Because assignment to treatment and comparison groups was not random, differences between the two groups of AFDC clients were controlled through statistical analysis. Independent client variables included (1) demographic variables (age, gender, race, years of education, marital status, number of children in household); (2) substance abuse variables (primary substance of abuse; frequency of use, severity of dependence, mode of drug intake-needle use versus other modes, number of previous admissions to substance abuse treatment before July 1994, number of admissions to substance abuse treatment from July 1994 to June 1996, and quarter of discharge), (3) general health variables (disabled, past hospitalization for mental illness, under current
treatment for mental health problem, and pregnant); and (4) employment and earnings variables (unemployed but seeking employment at time of admission, and baseline earnings-average quarterly earnings during the 4 quarters before substance abuse treatment).

E. Descriptive and Statistical Analytical Procedures

Both descriptive and multivariate statistical analyses of the data were performed, as described below.

1. Descriptive Analysis

The descriptive analysis identified patterns and trends in the 5,664 AFDC clients' earnings and welfare payments over time, both before and after substance abuse treatment. It also examined the pattern of employment and earnings among welfare recipients in the first year following TANF's implementation in Washington State.

2. Statistical Analysis

The statistical analysis determined the effects of substance abuse treatment on AFDC clients' employment outcomes, making statistical adjustments for client characteristics (age, sex, race, education, primary substance of abuse, frequency of use, disability status, past mental health treatment, marital status, number of children in household, number of admissions prior to July 1994, number of treatment episodes during the study period, and baseline earnings) that might affect these outcomes. A significance level of \( p = .05 \) was used for the analysis based on one-tail tests. Earnings and welfare payment data analyzed represented nominal dollars.

In the statistical analysis, both logistic and multiple linear regression models were used:

- Logistic regression was used to evaluate employment measures for AFDC clients in binary form (e.g., any post-treatment employment versus no employment). This type of regression model provides information on the odds (likelihood) of the occurrence of an event in relation to some independent variable of interest. For example, in the context of the current study, there is interest in knowing whether AFDC clients who stayed in outpatient treatment for more than 90 days were more likely to become employed than clients who stayed less than 21 days. Logistic regression provides information to address this question. But it is also important to know whether treatment had some effect on the level of earnings for clients who became employed.

- Ordinary least squares (OLS) regression was used to determine the effects of treatment on the amount of earnings for clients who became employed at least part time. Because the earnings data exhibited some skewness, the OLS regressions were re-estimated using log-transformed data. The estimates were unchanged, so the original results (based on the untransformed data) are reported.

A separate subanalysis was performed to determine the effects of substance abuse treatment on post-treatment earnings among AFDC clients who had been on welfare for different lengths of
time during the pretreatment period. Because of a larger number of cases were required, only outpatient clients were analyzed. In this analysis, the pretreatment baseline period was extended from 4 to 6 quarters by limiting the period of admission to substance abuse treatment to 1 ½ years (January 1995 to June 1996). Although this approach reduced the number of AFDC clients that could be analyzed, it made it possible to create a better stratification of pretreatment time on welfare.

For the subanalysis, AFDC outpatient clients in the study population were divided into two groups depending on the number of quarters they received welfare payments during the 6-quarter baseline period. Clients who had received welfare payments for 4 or more quarters were included in one group, and clients who had received welfare payments for 3 or fewer quarters were included the second group. A binary variable representing the two groups was created, and this variable was then interacted with the treatment variable. Including this interactive term in the regression models made it possible to examine the effects of treatment for clients with different levels of time on welfare.

Chapter III - Results: The Impact of Substance Abuse Treatment on Employment Outcomes Among AFDC Clients

This chapter presents findings from the descriptive and statistical analysis regarding the effects of substance abuse treatment on employment outcomes for 5,664 AFDC clients who were admitted to publicly funded substance abuse treatment in Washington State.

a. AFDC Clients' Earnings and Welfare Payments Before and After Substance Abuse Treatment

b. Statistical Analysis

c. Descriptive Analysis

A. AFDC Clients' Earnings and Welfare Payments Before and After Substance Abuse Treatment:

Trends and patterns in earnings and welfare payments for the study's 5,664 AFDC clients over time are noted below. Because the data are not adjusted to account for differences in age, gender, education, or other factors that may affect treatment outcomes, conclusions about the effects of substance abuse treatment on AFDC clients' earnings and welfare payments should not be made on the basis of this information alone. Results of the multivariate statistical analysis, controlling for independent variables, are presented in the section that follows.

1. Profile of AFDC Clients' Earnings Before and After Substance Abuse Treatment

As shown in Figure III-1, quarterly earnings for the AFDC clients in the study population were modest both before and after substance abuse treatment. Average quarterly earnings for all 5,664 clients as well as for the 3,884 clients who had any earnings, initially declined before substance abuse treatment and then rose after treatment.
The bottom line in Figure III-1 indicates that average quarterly earnings for the population of all 5,664 AFDC clients rose every quarter after substance abuse treatment. Even at their maximum, however, average quarterly earnings for the 5,664 clients were only $800, or just $267 per month.

Among the 3,884 AFDC clients with any earnings whatsoever (earnings > $0) in the tracking period, average quarterly earnings increased by approximately 30 to 40 percent after treatment, as shown by the upper line in Figure III-1. Even for this subgroup of AFDC clients, though, average quarterly earnings were still very modest 8 quarters after substance abuse treatment-on the order of $1,200, or $400 per month.
Figure III-1. AFDC Clients' Quarterly Earnings Before and After Substance Abuse Treatment

Figure III-2. AFDC Clients' Quarterly Earnings Before and After Substance Abuse Treatment by Education Level
Average quarterly earnings among the 5,664 AFDC clients varied by education level, as illustrated in Figure III-2. Before substance abuse treatment, the clients with a high school degree or post-high school training earned more than clients without a high school degree. The differential grew after substance abuse treatment. By 8 quarters after treatment, AFDC clients with a high school degree earned 35 percent more than the clients without a high school degree. Earnings also varied by racial/ethnic group. Both before and after substance abuse treatment, average quarterly earnings were higher for some racial/ethnic groups than for others. As shown in Figure III-3, Asian and other clients (including a small percentage of Hispanics) had the highest average quarterly earnings; white clients had the second highest average quarterly earnings; and black and Native American clients had the lowest average quarterly earnings.

The distribution of aggregate income levels among the 5,664 AFDC clients over the 8-quarter period following substance abuse treatment is shown in Table III-1. Forty-two percent of the clients had no earned income; 14 percent earned between $1 and $1,000; and another 11 percent earned between $1,001 and $3,000. Only 11 percent of the 5,664 AFDC clients had aggregate earned income exceeding $15,000 during the 8-quarter period following treatment.
$3,001 to $8,000  13%
$8,000 to $15,000  9%
$15,001 +  11%

Figures III-4a and III-4b present employment and earnings data for substance abuse treatment and comparison groups for each of the three treatment modalities. The percentage of AFDC clients obtaining at least part-time employment (indicated by positive earnings in the 8-quarter followup period) was greater among AFDC clients in treatment groups than among clients in comparison groups (Figure III-4a). Almost 66 percent of AFDC clients in the intensive inpatient treatment group had earnings, compared with 49 percent of clients in the inpatient comparison group. Employment status differences between treatment and comparison groups for the other modalities (outpatient and methadone maintenance) were smaller.

Aggregate earnings among the AFDC clients obtaining at least part-time employment were substantially greater for treatment group clients than for comparison group clients (Figure III-4b). For example, the average aggregate income for clients in the outpatient treatment group was $10,718, compared with $6,954 for clients in the outpatient comparison group.

Figure III-4a. Percentage of AFDC Clients With Positive Earnings in the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups

<table>
<thead>
<tr>
<th>Treatment Modality</th>
<th>Treatment Group</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive Inpatient</td>
<td>65.7%</td>
<td>49.4%</td>
</tr>
<tr>
<td>Outpatient</td>
<td>60.8%</td>
<td>56.7%</td>
</tr>
<tr>
<td>Methadone</td>
<td>46.9%</td>
<td>41.7%</td>
</tr>
</tbody>
</table>
2. Profile of Welfare Payments to AFDC Clients Before and After Substance Abuse Treatment

The analysis of welfare payments was restricted to the 4,320 AFDC clients discharged from substance abuse treatment in Washington State by January 1996. Since welfare payment data were available only through June 1997, clients discharged after January 1996 would have had fewer than 6 quarters of welfare data available.

*Average Quarterly Welfare Payment Amounts to AFDC Clients.* Figure III-5 shows the actual welfare payment amounts per quarter over the 10-quarter tracking period for the 4,320 AFDC clients. Quarterly welfare payments to these clients increased from $848 to $976 during the 4-quarter period before substance abuse treatment, reached $1,079 in the first quarter after treatment, then gradually declined to $762 in the 6 quarters after treatment.

At the time of this study, the average AFDC payment in Washington State was $349 per month for a two-person family (one parent and one child) and $440 per month for a three-person family. Beneficiaries could earn up to double their monthly welfare payment and still remain eligible for cash grants, food stamps, and medical assistance, but their cash payment would be reduced, depending upon the level of income they reported.
Number of Quarters That AFDC Clients Spent on Welfare. The 4,320 AFDC clients varied with respect to the amount of time they spent on welfare, as shown in Figure III-6. During the 10-quarter tracking period (4 quarters before treatment and 6 quarters after treatment), about 14 percent of the clients received cash grants for only 1 or 2 quarters, 30 percent received payments for 3 to 6 quarters, nearly 30 percent received payments for 7 to 9 quarters; and 27 percent remained on welfare continuously.
Trends in Quarterly Welfare Payments to AFDC Clients in the 6 Quarters Following Substance Abuse Treatment. The three figures below show trends in quarterly welfare payments during the 6-quarter period after substance abuse treatment for AFDC clients in treatment and comparison groups for outpatient treatment (Figure III-7), intensive (non-hospital) inpatient treatment (Figure III-8), and methadone maintenance (Figure III-9).

Figure III-6. Length of Time on Welfare Among AFDC Clients: Number of Quarters out of 10 Quarters That Clients Received Cash Grants (n = 4,320)
Figure III-7. Quarterly Welfare Payments to AFDC Clients Following Outpatient Treatment: Treatment and Comparison Groups

Figure III-8. Quarterly Welfare Payments to AFDC Clients Following Intensive Inpatient Treatment: Treatment and Comparison Groups
Welfare payments to AFDC clients in the treatment groups declined by 25 to 35 percent in the 6 quarters following substance abuse treatment. For clients in the outpatient treatment group, quarterly welfare payments declined by 31 percent in the 6-quarter followup period, from $1,130 per quarter to $785 per quarter. For clients in the inpatient treatment and methadone groups, the respective reductions were 27 percent and 25 percent. The pattern of declining welfare payments was similar for comparison group clients.

This pattern of reduced welfare payments to AFDC clients in the 6-quarter post-treatment period is consistent with the pattern of increased post-treatment earnings shown in Figure III-1. Statistical analysis showed that post-treatment earnings and welfare payments were negatively correlated \( r = -0.24, p < .01 \). It is important to note however, that factors besides income affected clients' welfare payments. First, AFDC clients in Washington State were subject to certain work requirements during the study period; failure to meet these requirements could result in a sanction and suspension of welfare payments. Second, a change in AFDC clients' living arrangement or housing situation could also affect the clients' cash grants. Third, some AFDC clients may have moved out of the State or died.

Information on these conditions and changes was unavailable at the time of this study. Given their existence, however, readers should use caution in interpreting the welfare payment data presented in this report. It was not possible to control for these unmeasured factors, so assessing the effects of treatment on welfare payments through formal statistical analysis was viewed as inappropriate.
B. Statistical Analysis:

The Effects of Substance Abuse Treatment on AFDC Clients' Employment and Earnings

Statistical techniques (logistic and multiple linear regression) were used to determine the effects of substance abuse treatment on employment outcomes among the AFDC clients adjusting for various client characteristics identified previously. The major findings of the statistical analysis are presented below. More detailed results are presented in the technical appendix at the end of this document.

1. Effects of Substance Abuse Treatment on AFDC Clients' Employment Outcomes

Regression analysis, using two different measures of employment outcomes, indicated that substance abuse treatment had a positive effect on employment outcomes for AFDC clients in the study population.

In the first logistic regression analysis, employment was defined as *any earned income whatsoever*. Figure III-10 shows the results, presented as adjusted odds ratios that AFDC clients who received substance abuse treatment would have *any* earned income during the 8-quarter period following substance abuse treatment. By definition, a comparison group has an odds ratio of 1.00. Thus, an odds ratio of 1.64 for a treatment group indicates that the average client in the treatment group is 64 percent more likely than a counterpart in the comparison group to have earned income, other factors held constant. Although only one comparison group is illustrated in the figure, the odds ratios presented are based upon analyses of separate comparison groups corresponding to the three treatment groups (see Appendix).

<table>
<thead>
<tr>
<th>Treatment Modality</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison Group</td>
<td>1.00</td>
</tr>
<tr>
<td>Intensive Inpatient</td>
<td>1.64</td>
</tr>
<tr>
<td>Outpatient</td>
<td>1.26</td>
</tr>
<tr>
<td>Methadone</td>
<td>1.50</td>
</tr>
</tbody>
</table>

*Figure III-10. Adjusted Odds Ratios of AFDC Clients Having Any Earned Income During the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups*
As shown in Figure III-10, AFDC clients in each of three substance abuse treatment groups—intensive inpatient, outpatient, and methadone maintenance—were more likely than their counterparts in the comparison groups to have some earned income in the 8-quarter period following substance abuse treatment. Clients completing intensive inpatient treatment were 64 percent more likely to have earned income than their comparison group counterparts. Clients in the outpatient treatment group (clients staying in outpatient treatment for 90 days or more) were 26 percent more likely to have earned income than their comparison group counterparts (clients staying in outpatient treatment less than 21 days). Clients in the methadone treatment group (clients completing at least 120 days of methadone treatment) were 50 percent more likely to have earned income than their comparison group counterparts (clients staying in methadone treatment less than 60 days). Each of the odds ratios shown in the figure achieved statistical significance (p < .05).

Figure III-11 shows the results of a second logistic regression analysis, with employment defined as earnings of at least $1,500 in 1 of the 8 followup quarters. (An income of $1,500 in a quarter is roughly equivalent to working half time at an hourly rate of $6.) The magnitude of the substance abuse treatment effect is somewhat larger when this measure of employment is used.

![Figure III-11. Adjusted Odds Ratios of AFDC Clients Having Earned Income of $1,500 or More During the 8-Quarter Followup Period by Treatment Modality: Treatment and Comparison Groups](image)

AFDC clients in the three substance abuse treatment groups were 60 to 100 percent more likely than their counterparts in the comparison groups to have earned at least $1,500 in 1 or more quarters in the 8-quarter followup period. Clients in the inpatient and outpatient treatment groups were about 65 percent more likely than their counterparts in comparison groups to obtain work and earn at least $1,500 in 1 of the followup quarters (p < .05). Clients in the methadone treatment group were twice as likely as their counterparts in the comparison group to have earned $1,500 in a quarter (p < .05).
2. Effects of Substance Abuse Treatment on Aggregate Earnings Among AFDC Clients Who Became Employed at Least Part Time

The 58 percent of AFDC clients in the study population who had at least some earnings in the 8 quarters following substance abuse treatment (see Table III-1 presented earlier) were included in the earnings analysis. (Data on the actual number of hours worked by these individuals were unavailable.)

An OLS regression analysis was performed to examine the impact of treatment on aggregate earnings for AFDC clients (see Appendix). The results are depicted in Figure III-12, which shows the adjusted aggregate earned income of the average AFDC client in treatment and comparison groups for each of the three treatment modalities. In this context, average means having characteristics representative of the majority of clients within a given treatment modality (i.e., being white, a woman, single, of average age and education, with a primary substance of abuse of alcohol, and having other representative characteristics).

![Figure III-12. AFDC Clients' Adjusted Aggregate Earnings in the 8-Quarter Follow-up Period by Treatment Modality: Treatment and Comparison Groups](image)

Aggregate earned income was higher for the average AFDC client in each of the three substance abuse treatment groups than for the average AFDC client in the comparison groups. Differences in earnings for clients in treatment and comparison groups ranged from $1,723 for clients in intensive inpatient treatment to $3,280 for clients in outpatient treatment (p-value range, .001 to .05).

3. Effects of Time on Welfare on AFDC Clients' Post-Substance Abuse Treatment Earnings

The question of whether AFDC clients' time on welfare prior to receiving substance abuse treatment affected post-treatment employment and earnings was examined through a subanalysis
of AFDC clients in outpatient treatment (there were too few clients in the other two modalities to permit analysis). Time on welfare was found to have an effect on post-treatment earnings.

AFDC clients in the study population were divided into two groups, depending on the number of quarters they received welfare cash grants in the 6-quarter period prior to receiving substance abuse treatment. The first group included AFDC clients who had received welfare payments in 4 or more of the 6 quarters (57 percent of clients); the second included clients who had received welfare payments for 3 or fewer of the 6 quarters (43 percent of clients). The analysis then compared aggregate earnings in the 2 years following treatment for clients in these two groups (see Appendix).

Figure III-13 shows that outpatient AFDC clients' time on welfare in the 6-quarter pre-treatment period had a substantial effect on their aggregate earnings. Individuals who had been on welfare for 4 or more quarters in the 6-quarter pretreatment period had lower aggregate earnings in the 2-year post-treatment period than individuals who had been on welfare for 1 to 3 quarters in the 6-quarter pretreatment period. Clients in the outpatient treatment group who had been on welfare 4 to 6 quarters prior to treatment had predicted aggregate earnings of $3,993 over the 2-year post-treatment period; their comparison group counterparts had predicted aggregate earnings of only $1,615 over the same period (p < .05).

Comparable and statistically significant differences were found for AFDC clients who had been on welfare for fewer than 4 quarters in the pretreatment period. Clients in the treatment group who had been on welfare 1 to 3 quarters prior to treatment had predicted aggregate earnings of
$6,192 over the 2 years following treatment; their comparison group counterparts had predicted aggregate earnings of $3,814 for the same period.

C. Descriptive Analysis:

AFDC Clients' Employment and Earnings in the First Year of TANF's Implementation.

TANF was implemented in Washington State in the third quarter of 1997. Data from State administrative databases were used to perform a preliminary analysis of the pattern of employment and earnings among welfare recipients during the first year following implementation. For this analysis, no treatment/control-group comparisons were made; the data were treated as purely observational.

Figure III-14 shows trends in the percentage of AFDC clients in the study population who became employed-using as the measure of employment earned income of at least $100 in a given quarter-over the period from 1993 to 1998. The percentage of AFDC clients with quarterly earned income of at least $100 increased over time, but this trend began well before Washington State's implementation of TANF in the third quarter of 1997. Nonetheless, the positive trend.

![Figure III-14. Percentage of AFDC Clients With Quarterly Earned Income of $100 or More 1993 - 1998](image)

continued such that by the third quarter of 1998, 38 percent of the 5,664 AFDC clients in the study population had earned income of at least $100. Figure III-15 shows trends in average
quarterly earnings among AFDC clients in the study population—all 5,664 clients and the 2,793 clients with quarterly earnings of at least $500—over a 5-year tracking period from 1995 to 1998.

For both groups of AFDC clients, there is a trend of increasing earnings, but again the trend began well before TANF’s implementation in the third quarter of 1997. By the third quarter of 1998, the average quarterly earned income among all 5,664 AFDC clients (about 60 percent of whom had no income) was $1,004. Even among the 2,793 clients who participated in the labor force, as indicated by having earnings of at least $500, the average quarterly earned income in the third quarter of 1998 was a very modest amount—$1,689, or $563 per month.

![Figure III-15. AFDC Clients’ Quarterly Earnings 1993 - 1998](image)

Chapter IV - Conclusions and Implications

This study had two purposes. The primary purpose was to assess the effect of substance abuse treatment on employment and earnings among AFDC clients admitted to treatment in Washington State. A second purpose was to illustrate the potential utility of computerized State administrative databases for tracking client outcomes and conducting timely evaluation research.
a. The Effects of Substance Abuse Treatment on AFDC Clients' Employment Outcomes

b. The Utility of Computerized State Administrative Databases for Tracking Client Outcomes and Performing Evaluation Research

A. The Effects of Substance Abuse Treatment on AFDC Clients' Employment Outcomes

This study's finding that substance abuse treatment was associated with increased employment and earnings among AFDC clients during a 2-year post-treatment period is notable, especially in light of the fact that the primary goal of substance abuse treatment is rehabilitation, not employment. This finding was robust across the three treatment modalities examined: outpatient treatment, intensive inpatient (21- or 28-day non-hospital) treatment, and methadone maintenance. AFDC clients in these treatment groups were more likely than their counterparts in comparison groups to become employed—whether employment was measured in terms of any earnings whatsoever or quarterly earnings above $1,500. Among the subset of clients who were employed, those in treatment groups had aggregate income that exceeded by $1,700 to $3,200 (30 to 60 percent) aggregate income for clients in comparison groups.

Time on welfare proved to have a substantial effect on AFDC clients' earnings prospects. AFDC clients who had been on welfare for 4 to 6 quarters of the 6-quarter pretreatment period had lower aggregate earnings in the 8-quarter post-treatment period than clients who had been on welfare for only 1 to 3 quarters. Regardless of the amount of time AFDC clients had spent on welfare, however, outpatient substance abuse treatment was associated with a significant increase (p < .05) in earnings. Among AFDC clients who had been on welfare for 4 to 6 quarters in the pretreatment period, those who received outpatient substance abuse treatment had aggregate earnings of $3,993 in the 8 quarters following treatment; their counterparts in the outpatient comparison group earned only $1,615 in the same period. Among AFDC clients who had been on welfare for 1 to 3 quarters in the pretreatment period, those who received outpatient substance abuse treatment had aggregate earnings of $6,192 in the 8 quarters following treatment; their counterparts in the outpatient comparison group earned only $3,814 in the same period.

Because this study did not randomly assign subjects to treatment and comparison groups, an important question is whether there is selection bias. Random assignment of subjects is always highly desirable, but is not possible for studies that rely on secondary analysis of data obtained from administrative databases. Thus, appropriate caution must be used in the interpretation of the findings from this study (and similar studies).

The validity of a study such as this rests largely on the extent to which statistical analysis is able to control for factors that may affect outcomes and treatment classification. Although the study was able to control for a large number of factors—including differences in AFDC clients' pretreatment earnings—unmeasured selection effects could still have influenced the results in some unknown way.

The study's ability to control for differences in AFDC clients' pretreatment earnings, though not eliminating possible selection problems, does provide some measure of reassurance. The
measure of AFDC clients' (pretreatment) baseline earnings was consistently the most important independent predictor of post-treatment earnings. Regression models indicated that for every $1 of (pretreatment) baseline income, AFDC clients in this study earned approximately $2 to $4 in post-treatment income, other things being equal. In short, the AFDC clients who worked more before receiving treatment for substance abuse tended to work more after receiving such treatment.

The study's findings regarding the positive effects of substance abuse treatment on AFDC clients' employment and earnings need to be balanced with the observation that earnings were relatively low among the AFDC clients in the sample-too low for the clients to achieve self-sufficiency. Among the 5,664 AFDC clients in the study population, 42 percent had no earned income in the 8-quarter post-treatment period, and an additional 14 percent had aggregate earned income in that period of under $1,000.

TANF has introduced strong incentives to work. Thus, AFDC clients today may be earning somewhat more than the data presented in this report suggest. But as recently as the third quarter of 1998-1 year after TANF's implementation-the level of quarterly earnings among the Washington State AFDC clients in the study population was very modest (see Figure III-15), despite the incentives for employment.

Among individuals with substance abuse problems, the goals of employment and self-sufficiency underpinning TANF may be achievable for only a small minority unless ancillary vocational services are provided in conjunction with substance abuse treatment. Earlier studies from Washington State indicate that vocational services enhance employment and earnings when delivered in conjunction with treatment.20 Unless AFDC clients treated for substance abuse problems receive vocational services, there is little likelihood that many of them will be able to find jobs and become economically self-sufficient. There is a very real possibility that AFDC clients who are unable to obtain employment may be forced to rely on other local and State health and welfare systems once their time allotment for financial assistance under TANF is exhausted. If so, the costs of operating these health and welfare systems will certainly increase.

B. The Utility of Computerized State Administrative Databases for Tracking Client Outcomes and Performing Evaluation Research

State substance abuse agencies are under increasing pressure to demonstrate accountability for their budgets and must plan and administer substance abuse programs in the face of rapidly changing environments. These needs require the capability to perform timely analyses and outcome evaluations at a reasonable cost.

State computer databases contain client-level data representing important outcome indicators of substance abuse treatment—including employment, public assistance payments, Medicaid utilization and expenditures, and criminal justice information. This study in Washington State illustrates the potential utility of State administrative databases in tracking clients' outcomes and conducting timely evaluation research.
The experience of Washington State in conducting outcome studies demonstrates the important advantages of establishing a database infrastructure that can provide data in a timely and efficient manner for evaluation and research purposes. The advantages of using State administrative databases include the following:

- Clients can be tracked over extended periods of time.
- Baseline (pretreatment) data can be incorporated into the analysis, reducing problems of selection bias.
- Large numbers of clients can be studied at little extra cost.
- Problems of client recall and case attrition are reduced.

From the standpoint of performing evaluations, however, State databases do have inherent limitations. Since the information contained in computer databases is collected for administrative purposes, the desired measures may not be available in the preferred form. The types of information gathered and stored in State databases is subject to change, and changes may create problems for longitudinal analyses. Finally, information contained in State administrative databases may not be updated frequently enough to make the information as current as might be desired.

A number of useful lessons emerged from this study that merit brief discussion:

- First, it is important that a person familiar with the different State databases either extract the data or serve as a communication link with others who will perform this function. Many detailed questions arise regarding the definition of variables and the organization and completeness of the information contained in databases that an outside researcher cannot anticipate. Addressing these questions early-before data extract files are created-helps to avoid subsequent analytical problems.
- Second, to the extent possible, data should be collected that will allow the triangulation of measures. As part of this study, detailed treatment activity data were collected and used to verify discharge-date information obtained from the client discharge records. This proved very useful in improving the reliability of the discharge information.
- Third, it is generally useful to obtain data on more cases than research design considerations (e.g., ensuring statistical power and external validity) may dictate. Inevitably some cases will have to be dropped because of incomplete or unreliable data. Further, the need for subanalyses that were not initially planned may emerge, which may require additional cases.

The increasing complexity of the policy and program environment of substance abuse treatment is placing more emphasis on timely evaluation and outcomes research. By utilizing information available in computer databases, States can greatly improve their capacity to perform timely evaluation and outcome studies.

References


21. **Technical Appendix**

22. This appendix provides additional information regarding the multivariate analyses presented in the body of the report. The findings of these analyses were presented in Figures III-10 through III-13 in Chapter III. Shown in Tables A-1 through A-4 below are the estimated regression coefficients generated by each of the multivariate analyses, along with the 95 percent confidence intervals and p-values.

23. Two type of multivariate analyses were conducted: (1) logistic regression, and (2) ordinary least squares (OLS) regression. To examine the effect of treatment on the likelihood of becoming employed, logistic regression was used. The general estimation model for the logistic regression is shown below:

24. **Logit Model:**

25. \[ \log \left( \frac{P_i}{1 - P_i} \right) = b_0 + b_1X_{1i} + b_2X_{2i} + \epsilon_i \] where \( b_0 \) is a constant term, \( X_1 \) is a variable denoting some treatment group (outpatient, inpatient or methadone treatment), \( X_2 \) is a vector of control variables and \( \epsilon \) is an error term. Figures III-10 and III-11 show the adjusted odds ratios generated from the \( b_1 \) logistic regression estimates. These estimates provide information about the likelihood of some employment outcome occurring holding other factors constant. The estimates generated are in the form of log odds and are exponentiated to obtain the estimated adjusted odds ratios (shown in the tables below). In addition to examining the effect of treatment on the likelihood of becoming employed, the study assessed the effect of treatment on earnings among those clients who became employed during the followup period (Figures III-12 and III-13). OLS regression was used to estimate the effect of treatment on the level of earnings. The general OLS model is shown below:

26. **OLS Model:**

27. \[ Y_i = b_0 + b_1X_{1i} + b_2X_{2i} + \epsilon_i \] where \( b_0 \) is a constant term, \( X_1 \) is a variable denoting some treatment group (outpatient, inpatient or methadone treatment), \( X_2 \) is a vector of control variables and \( \epsilon \) is an error term. Figure III-12 shows the \( b_1 \) OLS regression estimates. Figure III-13 presents the results of the interaction model constructed to estimate the
effects of outpatient treatment for clients with differing amounts of time on AFDC prior to treatment. This model is the same as the model depicted above, except that it includes an interaction term. The estimated OLS coefficients indicate the difference in earnings between the treatment and comparison groups holding other factors constant.

28. **A. Logistic Regression Estimates**

29. Tables A-1 and A-2 below show the estimated odds ratios depicted in Figures III-10 and III-11, respectively. The effects of other independent (control) variables and the statistical properties of the models are also described.

<table>
<thead>
<tr>
<th>Table A-1. Likelihood of Any Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Group</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Intensive Inpatient</td>
</tr>
<tr>
<td>Outpatient</td>
</tr>
<tr>
<td>Methadone</td>
</tr>
</tbody>
</table>

30. The $-2\text{LL}$ values for the intensive inpatient, outpatient and methadone treatment logistic models were, respectively, 1614, 2478 and 467. The associated $P^2$ values were 229, 245 and 57. The significance levels for the models overall were < .001. There was no clear pattern of findings with regard to the effects of other variables on the odds of achieving any employment.

31. The inpatient and outpatient treatment models had greater statistical power than the methadone model due to the greater numbers of observations. In the inpatient model, years of education, baseline earnings, Asian ethnicity and male gender were positively associated ($p < .05$) with the odds of achieving employment in the followup period. Native Americans were less likely to obtain employment compared to whites. Clients who used needles as the mode of drug taking and clients receiving mental health treatment at time of treatment intake were also less likely ($p < .05$) to obtain employment.

32. In the outpatient model, older clients, Native Americans, clients with chronic disease and clients with previous outpatient treatment in the past 12 months were less likely ($p < .05$) to become employed during the followup period. Baseline earnings were a strong (positive) predictor of post-treatment employment. Asian clients were more likely than white clients to achieve employment. The adjusted odds ratios, along with 95 percent confidence intervals and p-values, for Figure III-11 are presented in Table A-2.
### Table A-2. Likelihood of Earning $1,500 or More in 1 Out of 8 Quarters

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Adjusted Odds Ratio</th>
<th>95% Confidence Interval</th>
<th>P-Value (one-tailed test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive Inpatient</td>
<td>1.67</td>
<td>1.17 - 2.29</td>
<td>.005</td>
</tr>
<tr>
<td>Outpatient</td>
<td>1.64</td>
<td>1.37 - 1.97</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Methadone</td>
<td>2.01</td>
<td>1.53 - 2.69</td>
<td>.005</td>
</tr>
</tbody>
</table>

33. The -2LL values for the intensive inpatient, outpatient and methadone treatment logistic models were, respectively, 1519, 2273 and 379. The associated $P^2$ values were 219, 335 and 49. The significance levels for the models overall were $< .005$. The same general pattern of effects as discussed above for the initial logistic regression analysis was observed for this analysis. Compared to white clients, Native American clients were less likely to achieve earnings of $1,500 or more in 1 of the 8 followup quarters, while Asian clients were more likely than white clients to obtain this level of employment. Higher baseline earnings and male gender were associated with a greater likelihood of achieving employment at the specified earnings level. Outpatient and inpatient clients who used needles as their mode of drug taking were less likely ($p < .05$) to achieve employment than clients who did not use needles.

34. **B. OLS Regression Estimates**

35. Tables A-3 and A-4 below show the OLS results depicted in Figures III-12 and III-13, respectively.

### Table A-3. Adjusted Aggregate Earnings in the 8-Quarter Followup Period

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Estimated Coefficient</th>
<th>95% Confidence Interval</th>
<th>P-Value (one-tailed test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive Inpatient</td>
<td>$1,723</td>
<td>$18 - $3,428</td>
<td>.045</td>
</tr>
<tr>
<td>Outpatient</td>
<td>$3,280</td>
<td>$2,215 - $4,345</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Methadone</td>
<td>$2,929</td>
<td>$12 - $5,846</td>
<td>.048</td>
</tr>
</tbody>
</table>
36. The F statistics and adjusted $R^2$ for the three OLS models summarized in Table A-3 were as follows: Intensive Inpatient Treatment-$F = 20.8$ $(22,854)$, adjusted $R^2 = .33$; Outpatient Treatment-$F = 24.0$ $(22,1,147)$, adjusted $R^2 = .30$; and Methadone Treatment-$F = 2.2$ $(16,150)$, adjusted $R^2 = .11$. Among the control variables, baseline earnings was the strongest and most consistent predictor of post-treatment earnings. For every $1$ in the pretreatment baseline period, clients earned from approximately $1.65$ to $4.60$ more in the followup period, other things equal. Years of education was also a strong and consistent predictor of post-treatment earnings. Other than these two variables there were no other control variables consistently associated with post-treatment earnings. In the inpatient treatment equation, needle use was associated ($p = .03$) with lower earnings. Variables representing race/ethnic group were not related to post-treatment earnings. The explanatory power of the outpatient treatment interaction model (Table A-4 and Figure III-13) was modest: $F = 4.6(24,1282)$, $R^2 = .09$. The estimated treatment, time-on-welfare, and interaction coefficients are shown in the Table A-4.

<table>
<thead>
<tr>
<th>Table A-4. Differences in Post-Treatment Aggregate Earnings Among Outpatient Clients Having Different Amounts of Time on Welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure</td>
</tr>
<tr>
<td>Outpatient Treatment</td>
</tr>
<tr>
<td>Time on Welfare</td>
</tr>
<tr>
<td>Interaction Term</td>
</tr>
</tbody>
</table>

37. Few control variables were found to be associated with post-treatment earnings in the interaction model. Male gender was positively associated with earnings, as was years of education. Daily use of alcohol/drugs and previous mental health treatment were negatively associated with earnings.