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Findings from the Drug Abuse Treatment Outcome Study

(DATOS)

National Institute on Drug Abuse
Health Services Research Seminar Series

DATOS Overview and Treatment Outcomes

Bennett W. Fletcher

National Institute on Drug Abuse
Health Services Research Seminar Series

The Cooperative Study

NDRI-NC	**Health services studies: Need, access, and utilization of services; change in treatment system.**
TCU/IBR	**Treatment process studies: Factors related to retention, engagement, and behavior change.**
UCLA	**Life course of treated addicts. Relationship of addiction and treatment over time.**
NIDA	**Policy-relevant research: Effectiveness and cost-effectiveness; impact of systemic changes.**

Standard Acronyms

Treatment Studies

DARP	Drug Abuse Reporting Program
TOPS	Treatment Outcome Prospective Study
DATOS	Drug Abuse Treatment Outcome Study

Treatment Modalities

OMT	Outpatient Methadone Treatment
LTR	Long-Term Residential
ODF	Outpatient Drug-Free
STI	Short-Term Inpatient

Psychiatric Co-Morbidity

Flynn, P.M. et al. (1996) Comorbidity of antisocial personality and mood disorders among psychoactive substance-dependent treatment clients. J Personality Disorders 10:56-67.

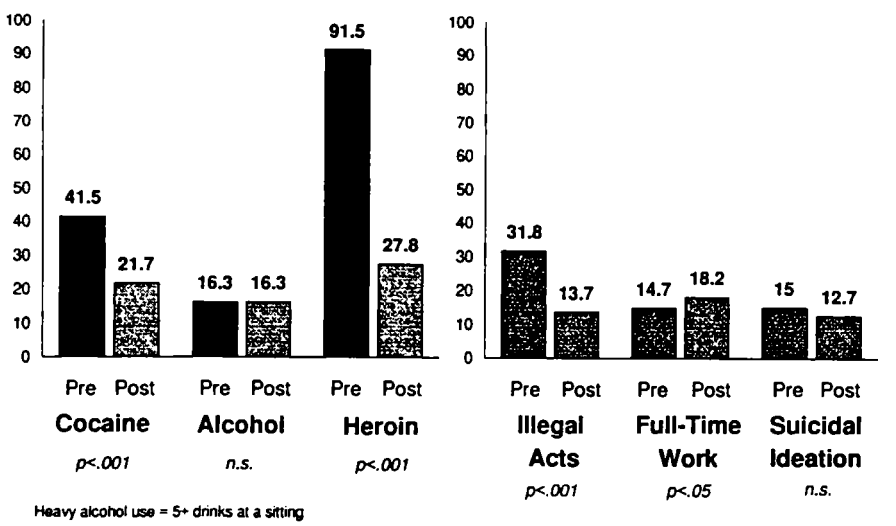
Treatment Services

Etheridge, R.M. et al. (1995) Treatment services in two national studies of community-based drug abuse treatment programs. J Substance Abuse 7:9-26.

Outpatient Methadone Treatment

Weekly Substance Use and Other Behaviors Before and After Treatment

(N=727)

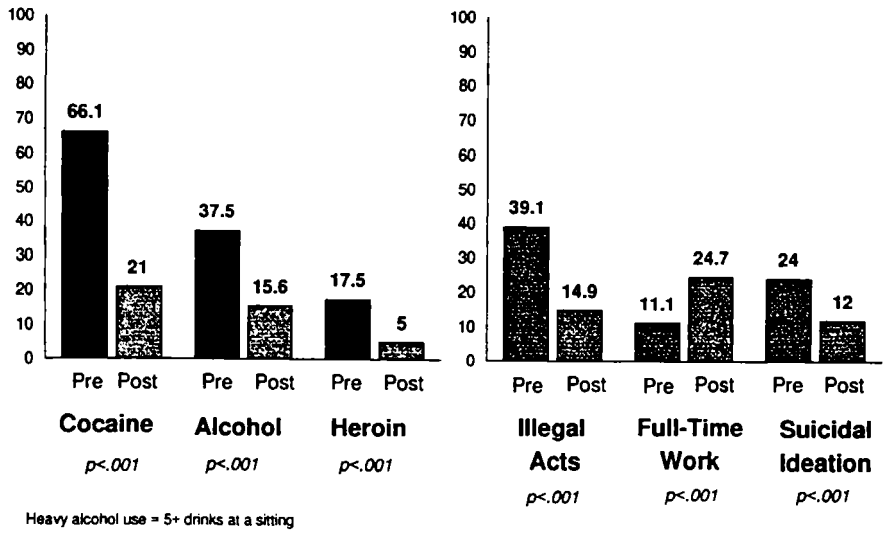


Heavy alcohol use = 5+ drinks at a sitting

Long-Term Residential Treatment

Weekly Substance Use and Other Behaviors Before and After Treatment

(N=676)

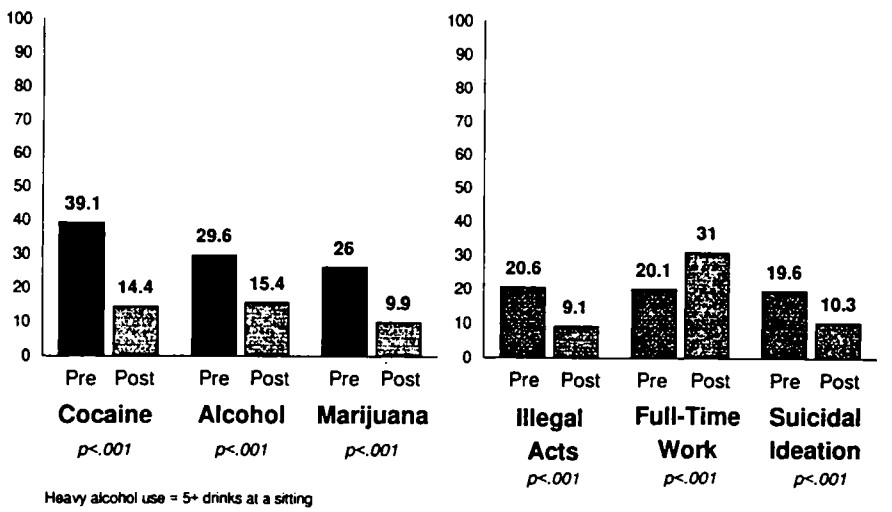


Heavy alcohol use = 5+ drinks at a sitting

Outpatient Drug-Free Treatment

Weekly Substance Use and Other Behaviors Before and After Treatment

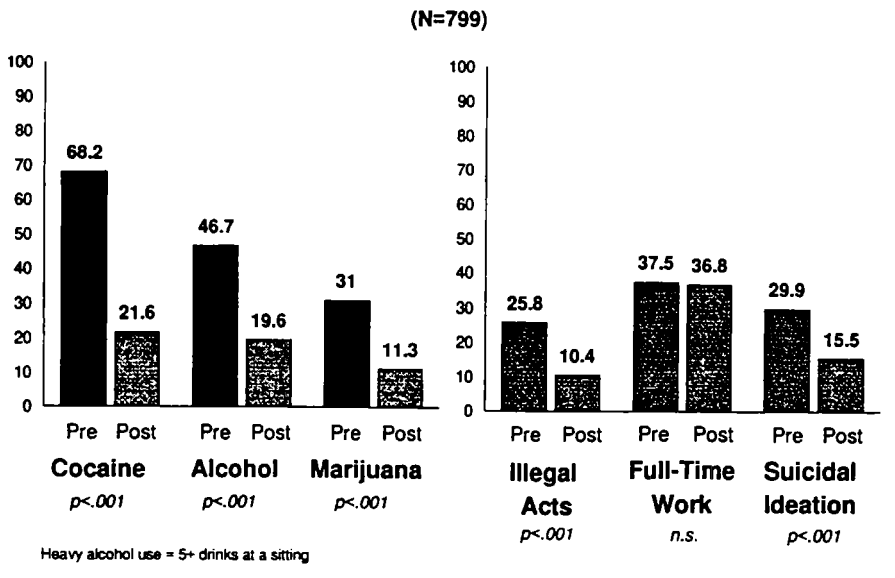
(N=764)



Heavy alcohol use = 5+ drinks at a sitting

Short-Term Inpatient Treatment

Weekly Substance Use and Other Behaviors Before and After Treatment



Heavy alcohol use = 5+ drinks at a sitting

Conclusions

- Patients that enter drug abuse treatment show significant reductions in illicit drug use.
- In several modalities, there are significant improvements in other outcome indicators.

Changes in Clients, Treatments, and Outcomes in a Health Services Context

Robert L. Hubbard
Principal Investigator
National Development and Research Institutes, Inc.

Research Team: Jill Anderson, Gail Craddock, Rose Etheridge, Patrick Flynn

Presentation to the National Institute on Drug Abuse
April 7, 1997

Key Questions

- **What are the stable, enduring characteristics and interrelationships of clients, treatment, environment, and outcome?**
- **What are the changing, emerging characteristics and relationships of clients, treatment, environment, and outcome?**
- **How do the changing factors interact with the stable factors to affect outcomes?**

Distinguishing Features of Drug Abuse Treatment Within the DATOS Modalities

(1 of 4)

Long-Term Residential (LTR)

- community treatment milieu of peer counselors and fellow addicts
- use of confrontation of dysfunctional behavior and denial
- traditional emphasis on long-term treatment
- heavy reliance on recovering staff as counselors

Distinguishing Features of Drug Abuse Treatment Within the DATOS Modalities
(2 of 4)

Outpatient Methadone (OMT)

- use of methadone to reduce opiate craving and block effects of opiates
- use of counseling, vocational skills development, services and case management to stabilize functioning
- program philosophies emphasizing either long-term methadone maintenance or maintenance-to-abstinence
- use of counselors, paraprofessionals and medical staff

Distinguishing Features of Drug Abuse Treatment Within the DATOS Modalities
(3 of 4)

Outpatient Drug-Free (ODF)

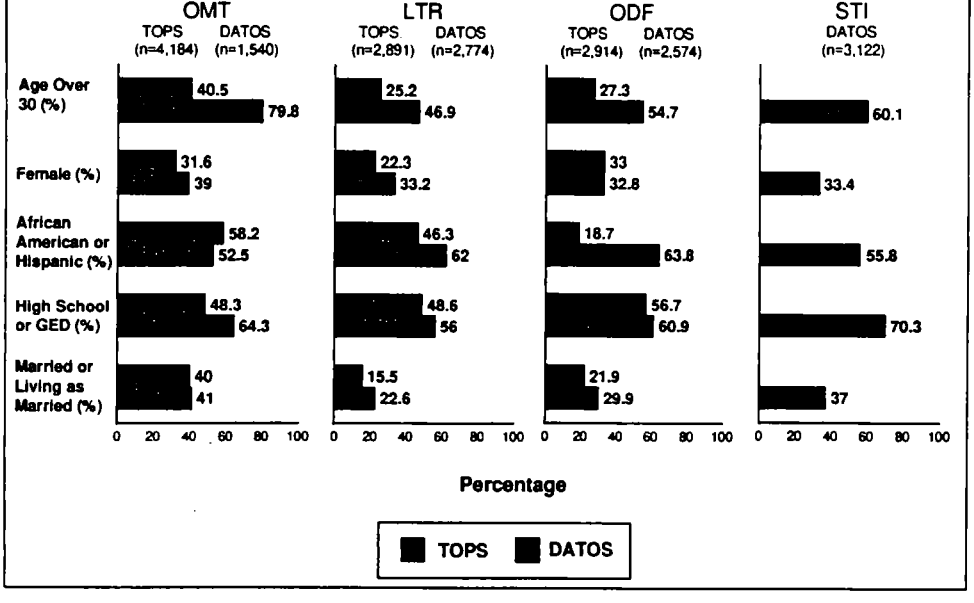
- diversity of treatment approaches
- therapeutic interventions ranging from problem-solving groups and 12-Steps to specialized therapies such as insight-oriented psychotherapy and cognitive-behavioral therapy
- reliance on staff with professional degrees

Distinguishing Features of Drug Abuse Treatment Within the DATOS Modalities
(4 of 4)

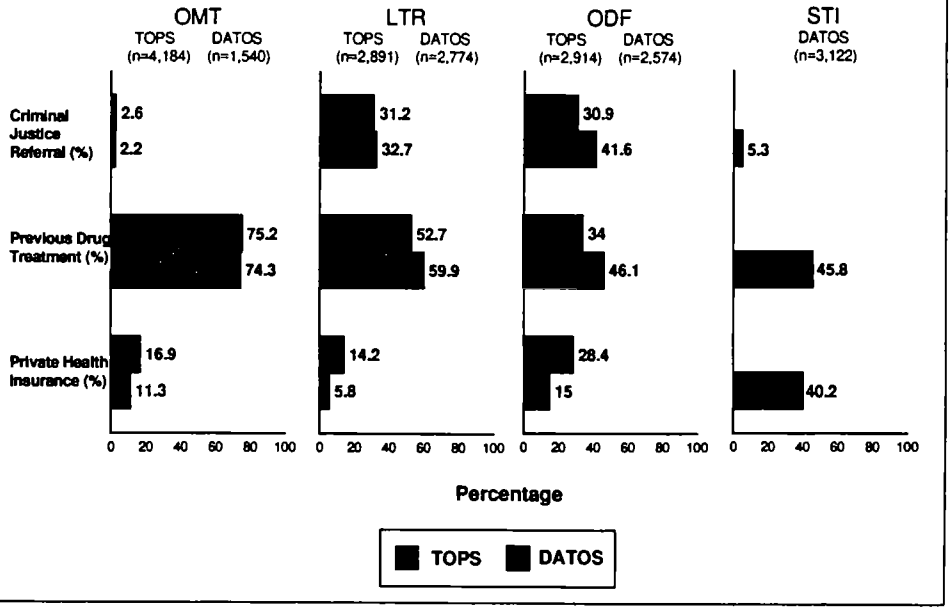
Short-Term Inpatient (STI)

- 12-Step approach
- based on the traditional 28-day inpatient chemical dependency model
- emphasis on medical stabilization
- staffed primarily with medical professionals and counselors

Client Characteristics at Admission in TOPS (1979-1981) and DATOS (1991-1993)

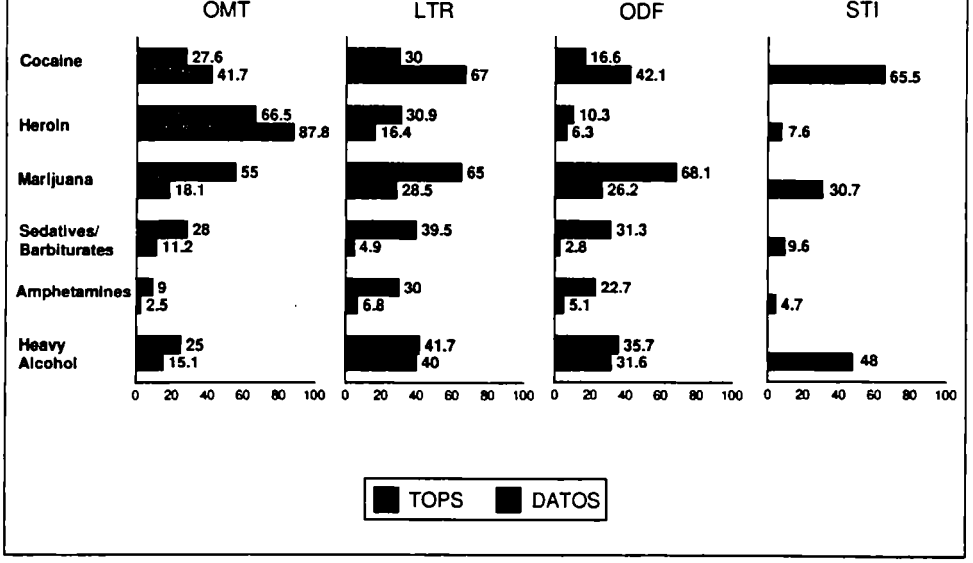


Admission Characteristics in TOPS (1979-1981) and DATOS (1991-1993)

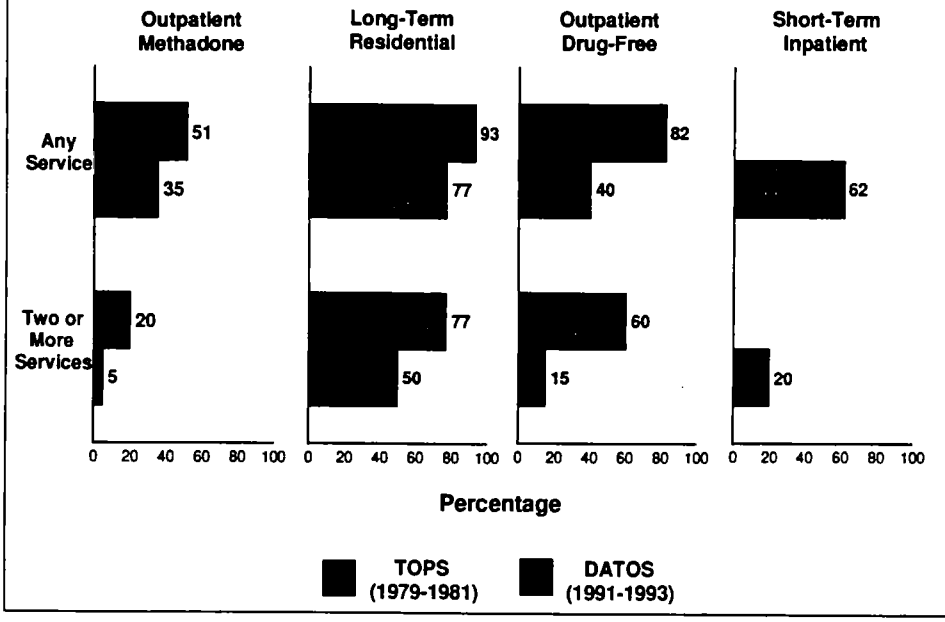


Drug Use in the Year Before Admission

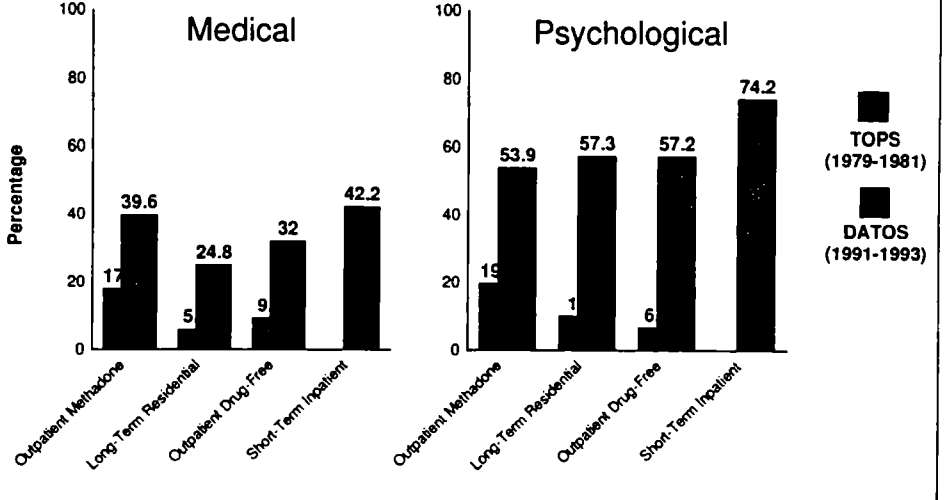
Comparison of TOPS (1979-1981) and DATOS (1991-1993)



TOPS and DATOS Client Self-Reports of Number of Services Received During Treatment, by Modality (%)

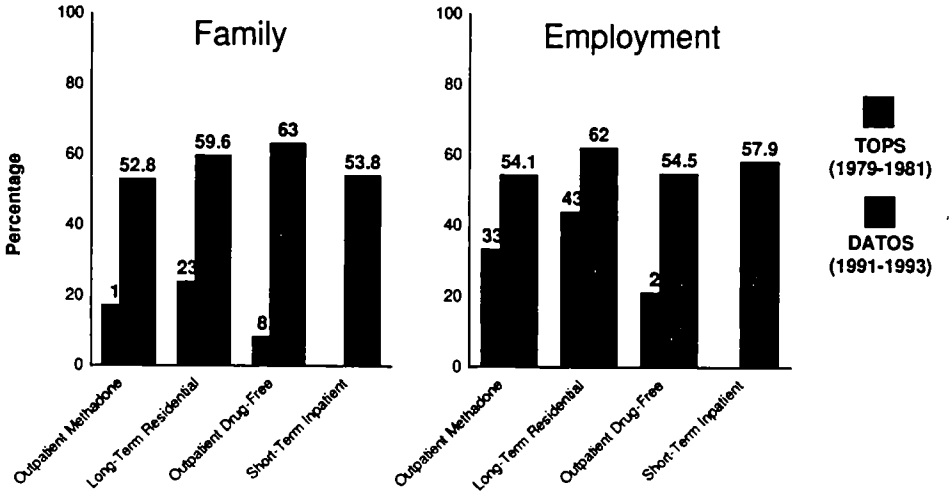


Unmet Service Needs Reported by TOPS and DATOS Clients in Drug Abuse Treatment, by Modality (%) (1 of 2)



Note: The 3-month client intreatment interview supplied data for the figure except for the DATOS short-term inpatient modality where service and unmet needs data were taken from the 1-month intreatment interview. The short-term inpatient modality was not available in TOPS.

Unmet Service Needs Reported by TOPS and DATOS Clients in Drug Abuse Treatment, by Modality (%) (2 of 2)



Note: The 3-month client intreatment interview supplied data for the figure except for the DATOS short-term inpatient modality where service and unmet needs data were taken from the 1-month intreatment interview. The short-term inpatient modality was not available in TOPS.

OMT

Both DATOS and *TOPS* clients who were still in treatment at follow-up had less than one-fourth the odds (.24, $p<.01$; .23, $p<.01$) for weekly or more frequent (regular) **heroin** use than clients staying in OMT less than 3 months.

In DATOS, the odds of regular **marijuana** use for longer-term clients was one-half the odds (.49, $p<.05$) of shorter-term clients. In *TOPS* there were no differences.

DATOS analyses did not replicate the *TOPS* findings of significant effects of long-term maintenance on **predatory illegal activity** and **full-time employment**

LTR

Both DATOS and *TOPS* clients showed a progressively greater reduction in the likelihood of regular **cocaine** use after treatment as the length of stay in treatment increased. The evidence of progressive effects by time in treatment were much greater in DATOS than *TOPS*.

Results for regular **marijuana** use mirrored the treatment effects for cocaine in both DATOS and *TOPS*. There was a progressively greater reduction in the likelihood of regular use after treatment as the length of stay increased.

Both DATOS and *TOPS* showed decreases in **predatory illegal activity** as lengths of stay in treatment increased.

DATOS treatment stays of more than 6 months increased the odds of **full-time employment** after treatment by 2 1/2 ($p<.05$). This finding replicated the *TOPS* effect for lengths of stays greater than 1 year.

ODF

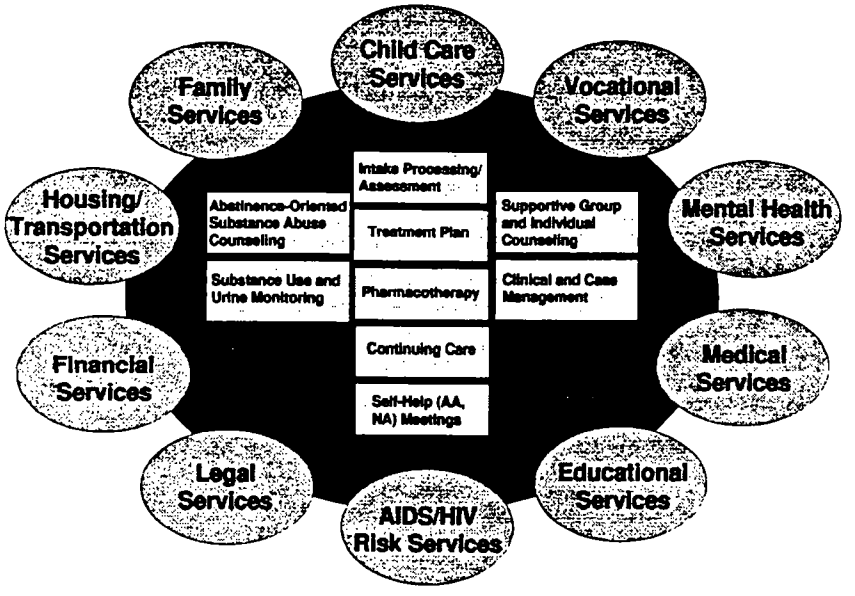
In DATOS, clients showed a progressively greater reduction in the likelihood of regular **cocaine** use after treatment as the length of stay increased. This evidence of the contribution of time in treatment to reduced use was not found in *TOPS*.

The odds of regular **marijuana** use after treatment for longer-term DATOS clients was .29 ($p<.01$) of the odds of clients staying in treatment less than 3 months. In *TOPS* there were no differences.

DATOS clients showed a nonsignificant odds ratio (.58) for reductions in after-treatment **predatory illegal activity** after 6 months of treatment, whereas *TOPS* revealed a significant effect for lengths of stay greater than 6 months (.47, $p<.01$).

Lengths of stay of 6 months or more in DATOS almost doubled the odds of **full-time employment** after treatment (1.79, $p<.05$). This finding replicated the *TOPS* effect for lengths of stay greater than 6 months (1.95, $p<.05$).

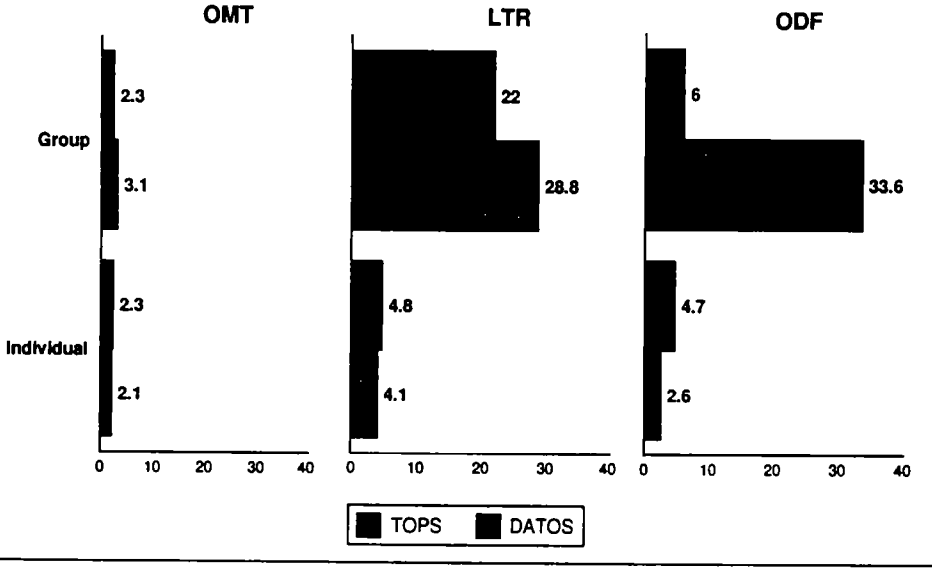
Drug Abuse Treatment Core Components and Comprehensive Services



Core Components of Drug Abuse Treatment

- written treatment plans with client involvement
- abstinence-oriented drug abuse counseling
- supportive group and individual counseling
- urine monitoring during treatment

Average Hours of Individual and Group Counseling Per Client Scheduled Each Month by Programs



Methadone Dose

1. *TOPS* programs reflected a mixed philosophy toward methadone maintenance, some favoring maintenance, others favoring maintenance-to-abstinence. DATOS programs were more strongly maintenance oriented.

2. Approximately half of *TOPS* programs and two-thirds of DATOS programs had at least 75% of clients in long-term methadone maintenance.

3. DATOS clients were receiving higher doses of methadone than *TOPS* clients at admission and during the maintenance phase.

4. More than 70% of DATOS clients were enrolled in programs that provided a maintenance dose of 60 mg/day or more. No DATOS programs provided a maintenance dose of less than 30 mg/day. In contrast, approximately 40% of *TOPS* clients received a maintenance dose of less than 30 mg/day.

Environmental Changes

	1969-1973	1979-1981	1991-1993
Client/ Community	Opioid Use	Multiple Drug Use	Cocaine
	Predatory Crime	Predatory Crime	Violent Crime; Distribution System Crime
	Employment	Mental Health	Mental Health
			HIV/AIDS
Program/ System	Federal Funding for Drug Abuse Treatment	Transition to State Block Grant Funding	Rapid Change to Cost Containment/ Fee for Service
	Stable Social & Health Services	Transition in Social & Health Services	Rapid Change in Social & Health Services

Summary of Treatment Findings Across Modalities

TOPS and DATOS

- **Compared with TOPS clients, a larger proportion of DATOS clients were aware of their treatment plans.**
- **Planned counseling contact hours reported by DATOS programs were higher than reported by TOPS programs.**
- **There was a high level of program-report need for aftercare in DATOS programs in all but the OMT modality.**
- **12-Step participation (AA/CA/NA) was high in DATOS, except in OMT programs.**
- **Over half of clients report that their service needs were discussed during drug abuse counseling (with the exception of legal service and housing service needs).**
- **Overall satisfaction with drug abuse treatment was higher in DATOS compared to TOPS despite the decline in services and increase in unmet service needs reported in DATOS.**

Logistic Comparison of Modality Differences in TOPS (1979-1981) and DATOS (1991-1993)

Logistic regressions were performed to compare drug use and other key behaviors **within the same treatment modalities** across two eras of treatment—TOPS and DATOS. After controlling for demographic and admissions characteristics of each treatment modality, the following differences were found:

- **OMT clients in DATOS have 4 times the odds of weekly heroin use and twice the odds of cocaine use than TOPS clients.**
- **Compared to TOPS LTR, DATOS LTR clients had 6 1/2 times the odds of weekly or more cocaine use.**
- **Compared to TOPS ODF, DATOS ODF clients had triple the odds of weekly or more frequent cocaine use.**
- **In DATOS OMT, LTR, and ODF modalities, there were less than half the odds of suicidal thoughts and attempts than in the respective TOPS modalities.**
- **The odds of predatory criminal activity were lower in DATOS compared to TOPS (from 0.47 in LTR to 0.80 in OMT).**
- **Clients in DATOS modalities had 1/2 to 3/4 the odds of full-time work in the year before treatment compared to TOPS clients in the same modality.**

Outpatient Methadone (OMT)

Core Drug Abuse Treatment

- **Only 2 in 10 TOPS OMT clients reported having a treatment plan compared with about 4 in 10 DATOS OMT clients.**
- **For both TOPS and DATOS, the overall planned hours of counseling contact remained low (averaging about 4 to 5 hours/month). DATOS OMT had shifted more hours to group sessions.**
- **Fewer than half of the DATOS OMT programs prescribed pharmacological agents as adjuncts to methadone treatment and drug abuse counseling.**
- **Although most DATOS OMT programs placed a great emphasis on 12-Step involvement among their clients, only 1/4 of the clients reported attending a 12-Step group during treatment.**

Outpatient Methadone (OMT)

Comprehensive Services

- Directors of DATOS OMT programs reported medical care as the service most needed by their clients, followed by psychological services.
- About 2/3 of DATOS and TOPS OMT programs reported providing aftercare. However, only one-third of TOPS clients reported actually attending aftercare counseling.
- Most clients reported that their service needs had been discussed in drug abuse counseling.
- About 2/3 of clients reported having discussed AIDS and hepatitis risk reduction during treatment, the highest percentage of the four modalities of treatment.

Outpatient Methadone (OMT)

Methadone Dose

- TOPS programs reflected a mixed philosophy toward methadone maintenance, some favoring maintenance, others favoring maintenance-to-abstinence. DATOS programs were more strongly maintenance-oriented.
- Approximately half of TOPS programs and 2/3 of DATOS programs had at least 75% of clients in long-term methadone maintenance.
- TOPS clients were receiving lower doses of methadone than DATOS clients at admission and during the maintenance phase.
- Approximately 40% of TOPS clients received a maintenance dose of less than 30 mg/day. In contrast, more than 70% of DATOS clients were enrolled in programs that provided a maintenance dose of 60 mg/day or more. No DATOS programs provided a maintenance dose of less than 30 mg/day.

Long-Term Residential (LTR)

Core Drug Abuse Treatment

- Less than half of TOPS LTR clients reported having a treatment plan compared with about 3/4 of DATOS LTR clients.
- Counseling in LTR programs is delivered primarily in groups. TOPS programs reported fewer planned counseling hours than DATOS programs (27 versus 33 hours/month).
- Nearly 3/4 of DATOS LTR programs reported prescribing pharmacological agents as adjuncts to drug abuse treatment and counseling.
- All but two DATOS LTR programs reported a great emphasis on 12-Step involvement. Nearly 8 in 10 clients reported attending a 12-Step group during treatment.

Long-Term Residential (LTR)

Comprehensive Services

- Nearly all programs reported aftercare as the service most needed by their clients.
- 9 out of 10 DATOS LTR programs indicated that they provide aftercare for their clients. TOPS programs reported a similar emphasis on aftercare, although few LTR clients reported aftercare attendance.
- More than half of DATOS LTR clients reported that their service needs had been discussed in drug abuse counseling.
- Just over half of LTR clients reported having discussed AIDS and hepatitis risk reduction during treatment.

Outpatient Drug-Free (ODF)

Core Drug Abuse Treatment

- 2 in 10 TOPS clients reported having a treatment plan compared with about 4 in 10 of DATOS clients.
- Drug abuse counseling in DATOS ODF programs was delivered primarily in groups. Planned outpatient counseling contact hours more than tripled from TOPS to DATOS (36 versus 11 hours/month).
- Fewer than half of the DATOS ODF programs prescribed pharmacological agents as adjuncts to drug abuse treatment and counseling.
- Three-quarters of DATOS ODF programs reported a great emphasis on 12-Step involvement, but less than half of the clients reported attending a 12-Step group during treatment.

Outpatient Drug-Free (ODF)

Comprehensive Services

- Three-quarters of DATOS ODF programs reported aftercare as the service most needed by their clients, followed by family services.
- Fewer than half of the TOPS ODF programs indicated that they provide aftercare for their clients compared with 8 in 10 DATOS ODF programs. In addition, the number of ODF clients receiving aftercare declined over the TOPS study period.
- In the nine service areas measured, more than half of DATOS ODF clients (60% - 90%) reported that these service needs had been discussed in drug abuse counseling.
- Approximately 6 in 10 ODF clients reported having discussed AIDS and hepatitis risk reduction during treatment.

Short-Term Inpatient (STI)

Core Drug Abuse Treatment

- Half of DATOS STI clients reported having a treatment plan.
- The total hours of planned client counseling were the highest in STI (58 hours/month) compared to other DATOS modalities. Group sessions accounted for most of these hours.
- All DATOS STI programs prescribed pharmacological agents as adjuncts to drug abuse treatment and counseling.
- All DATOS STI programs reported a great emphasis on 12-Step involvement (AA/NA/CA) among their clients. Nearly all reported attending 12-Step groups during treatment, the highest 12-Step participation level of the four modalities of treatment.

Short-Term Inpatient (STI)

Comprehensive Services

- DATOS STI programs reported aftercare as the service most needed by their clients, followed by psychological and family services.
- Just over half of DATOS STI programs indicated that they provide aftercare for their clients.
- Only half of STI clients reported having discussed AIDS and hepatitis risk reduction during treatment.

Treatment Engagement and Retention: DATOS Research Center at TCU

D. Dwayne Simpson, Ph.D.
Principal Investigator
and
George W. Joe, Ed.D.
Co-Principal Investigator
Institute for Behavioral Research, Texas Christian University

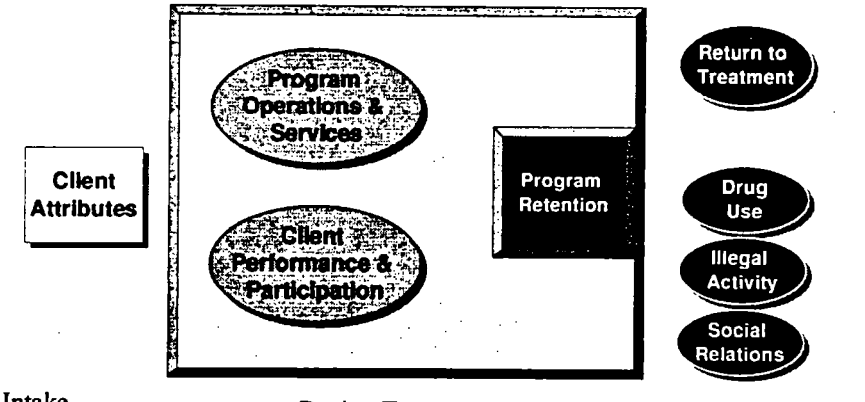
Research Team: Kirk Broome, Matthew Hiller, Kevin Knight, and Grace Rowan-Szal

Presentation to the National Institute on Drug Abuse
April 7, 1997

Treatment Engagement and Retention: DATOS Research Center at TCU

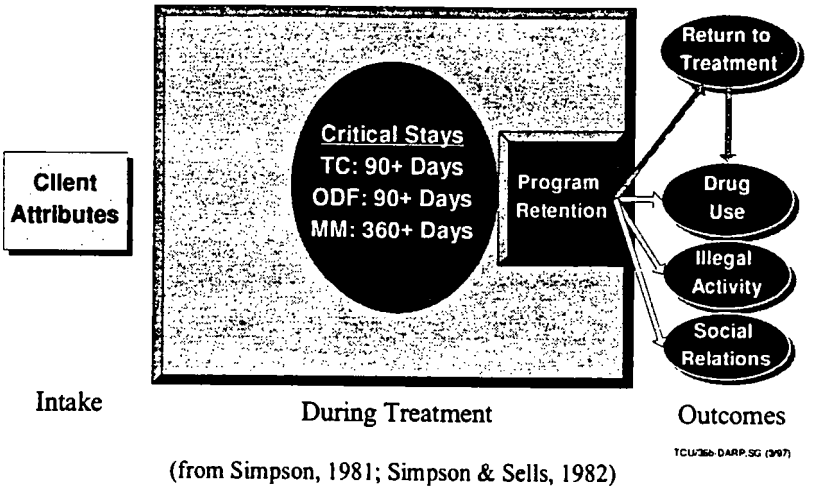
- **Treatment Process and Outcomes Models**
  - Assessments and conceptual development
- **Patient Retention Rates for Programs in DATOS**
  - Patient versus program effects on outcomes
- **Special Issues Impacting Program Retention**
  - Patient needs and functioning levels
- **Implications of Field Research Findings**
  - Program monitoring, treatment stages

Treatment Process and Outcomes Model: DARP Measurement Domains



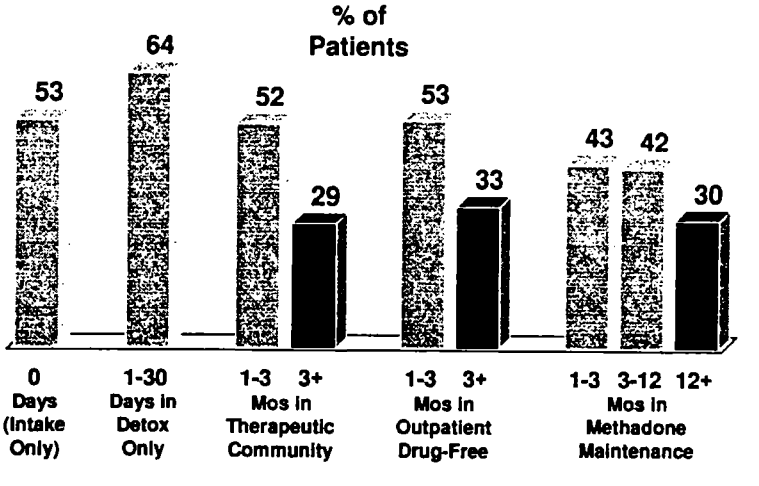
(from Sells, Demaree, Simpson, Joe, & Gorsuch, 1977)

Treatment Process and Outcomes Model:
Length of Stay in DARP Treatment



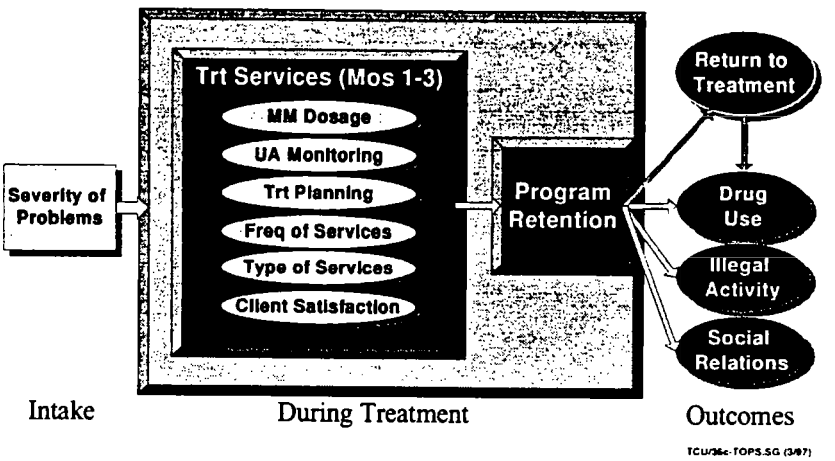
(from Simpson, 1981; Simpson & Sells, 1982)

Daily Opioid Use in Year 1 after DARP



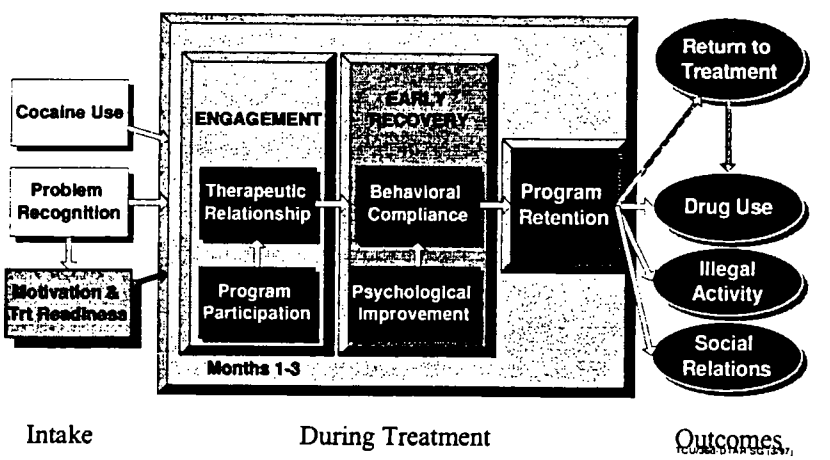
(from Simpson & Sells, 1982; n = 3,248)

Treatment Process and Outcomes Model:
TOPS Outpatient Methadone Treatment



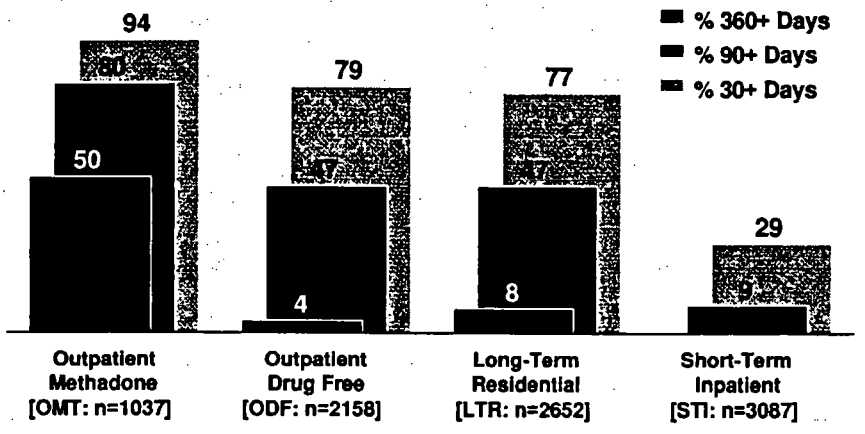
(from Joe, Simpson, & Hubbard, 1991; Joe, Simpson, & Sells, 1994)

Treatment Process and Outcomes Model:
DATAR Outpatient Methadone Treatment

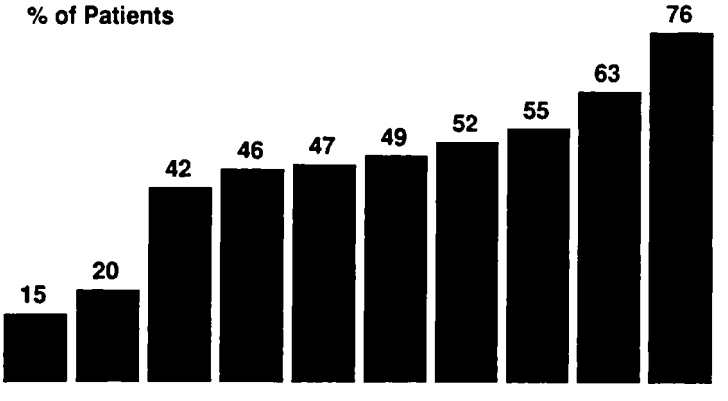


(from Simpson, Joe, Dansereau, & Chatham, 1997)

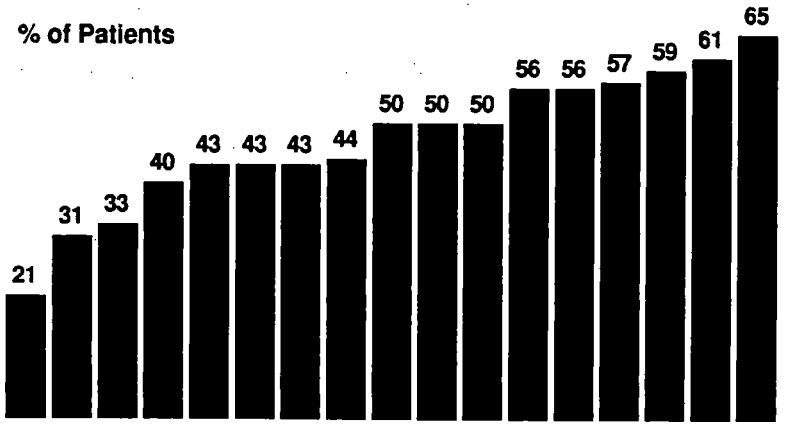
Patient Retention Rates in DATOS Treatment Modalities



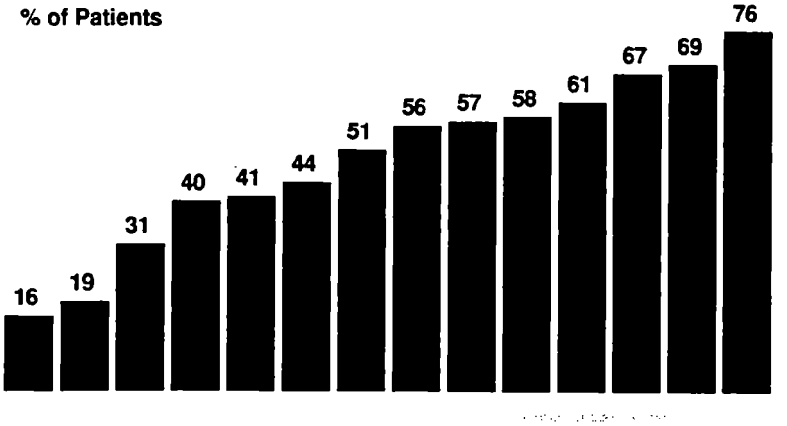
OMT Programs in DATOS:
360-Day Retention Rates



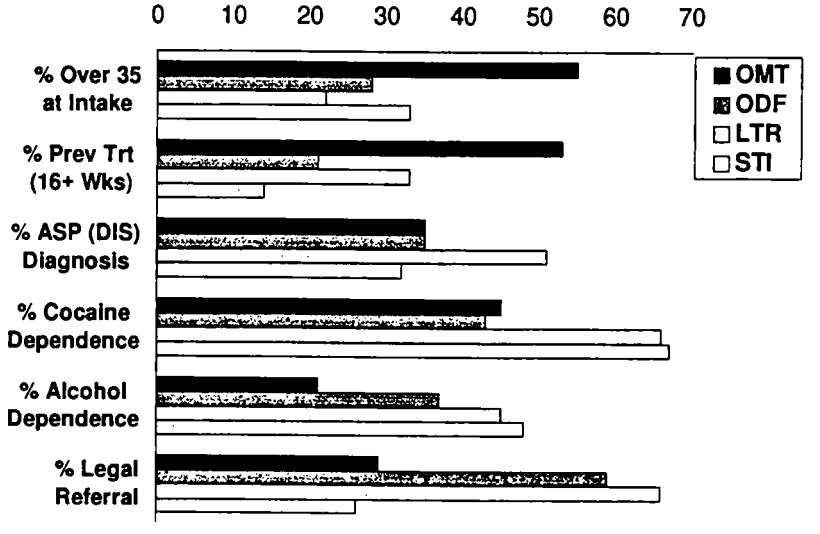
LTR Programs in DATOS:
90-Day Retention Rates



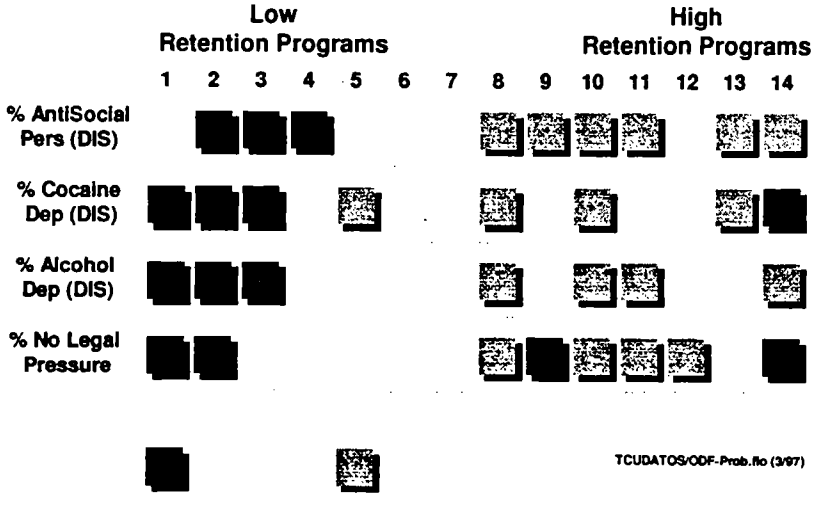
ODF Programs in DATOS:
90-Day Retention Rates



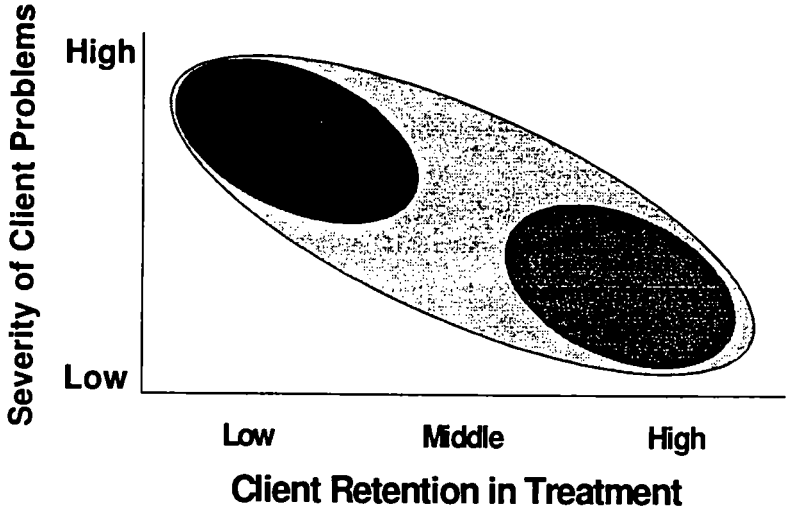
Patient Characteristics in 4 Modalities



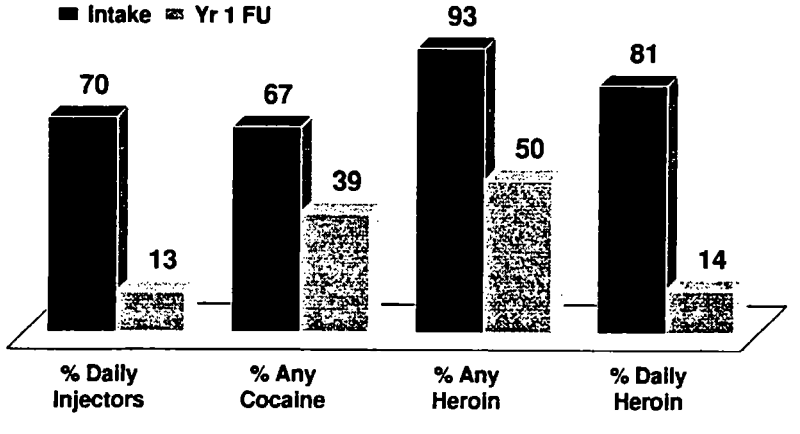
Patient Problems in 14 ODF Programs



Overall Relationship of Patient Problems with Retention

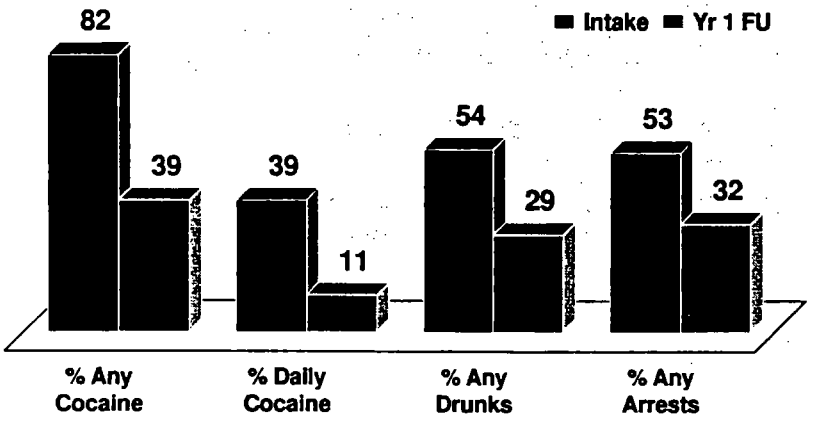


OMT Patient Outcomes at Year 1 Follow-up



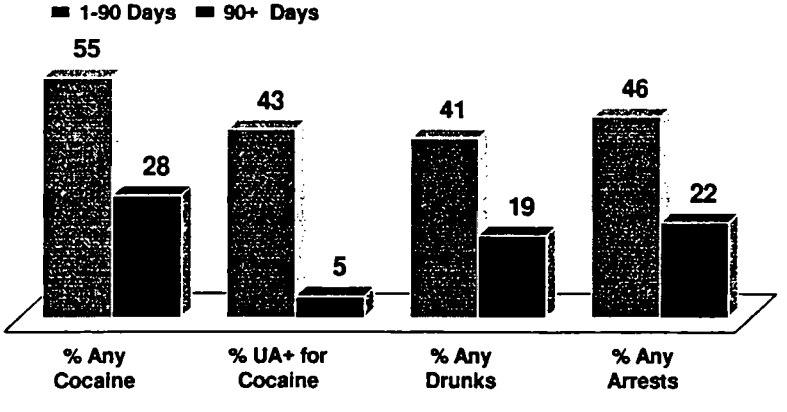
(Simpson, Joe, & Brown, 1997; n=244)

LTR Patient Outcomes at Year 1 Follow-up



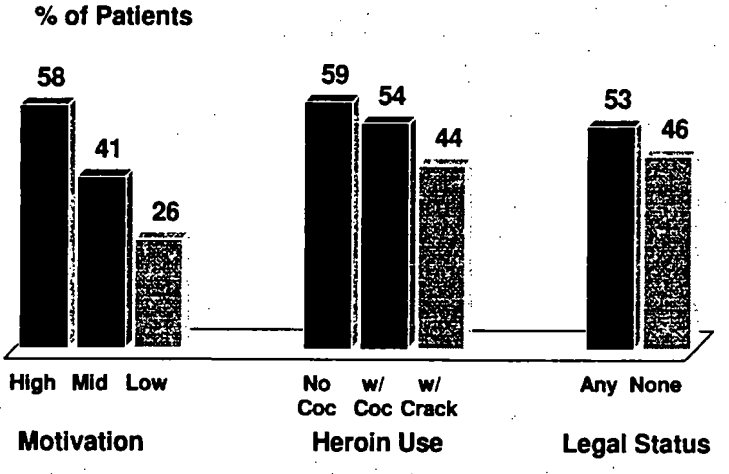
(Simpson, Joe, & Brown, 1997; n=342)

LTR Patient Outcomes at Year 1 by Length of Stay in Treatment



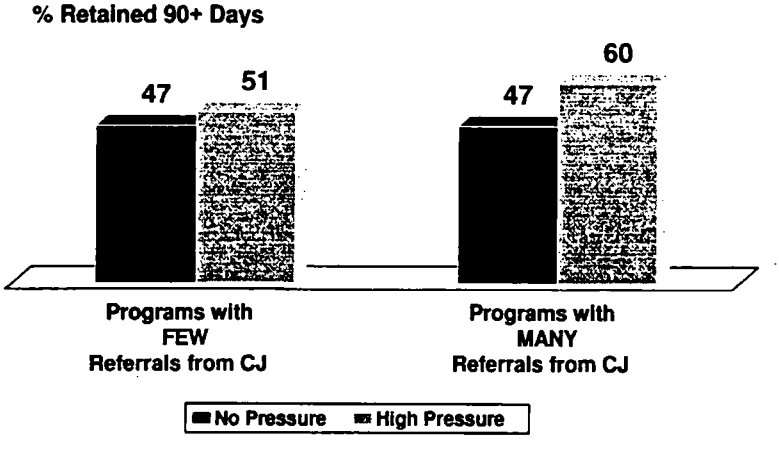
(Simpson, Joe, & Brown, 1997; n=342)

Predictors of 90-Day Retention in LTR

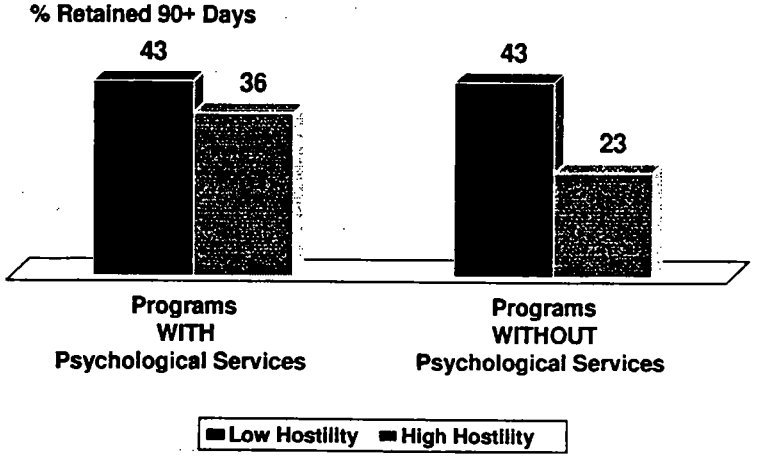


Interactions Between Program and Patient Factors that Affect Retention

Is there a differential impact of legal pressures?

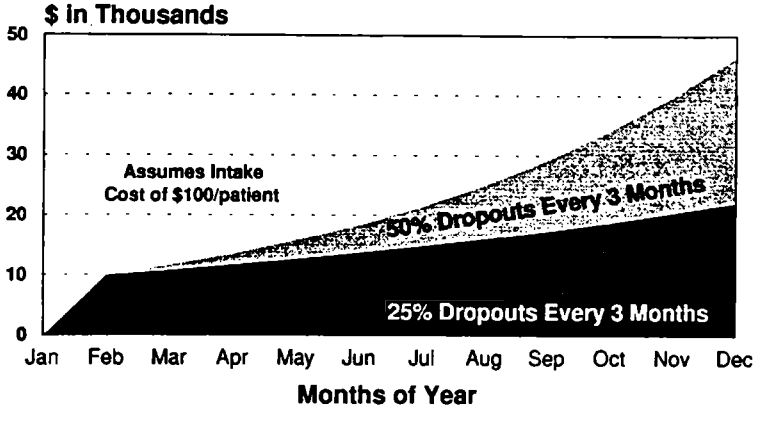


What are the implications of not offering services for psychological problems?

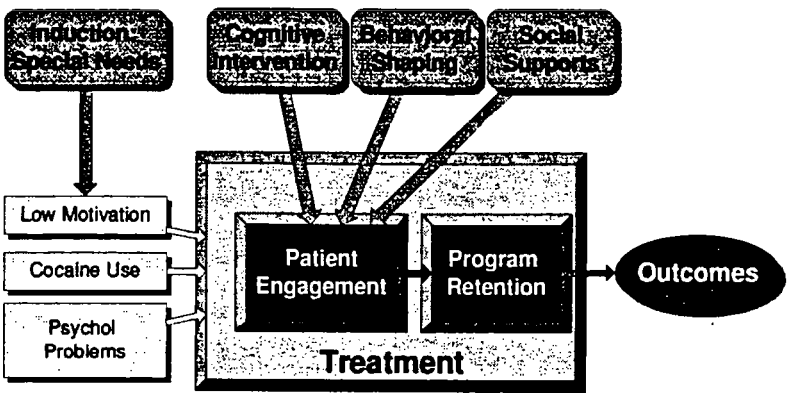


Intake Costs Related to Patient Dropouts

(Based on static capacity of 100 patients)



Treatment Process and Outcome Model



TCU/36e-DTAR.SG (3/97)

DATOS Outcomes in the Context of Treatment Careers

M. Douglas Anglin, Ph.D.
Principal Investigator
Drug Abuse Research Center
UCLA Neuropsychiatric Institute

Research Team: Kathleen Boyle, Christine Grella, Yih-Ing Hser, Douglas Longshore, Keiko Powers, Michael Prendergast and Jean Wellisch

Presentation to the National Institute on Drug Abuse
April 7, 1997

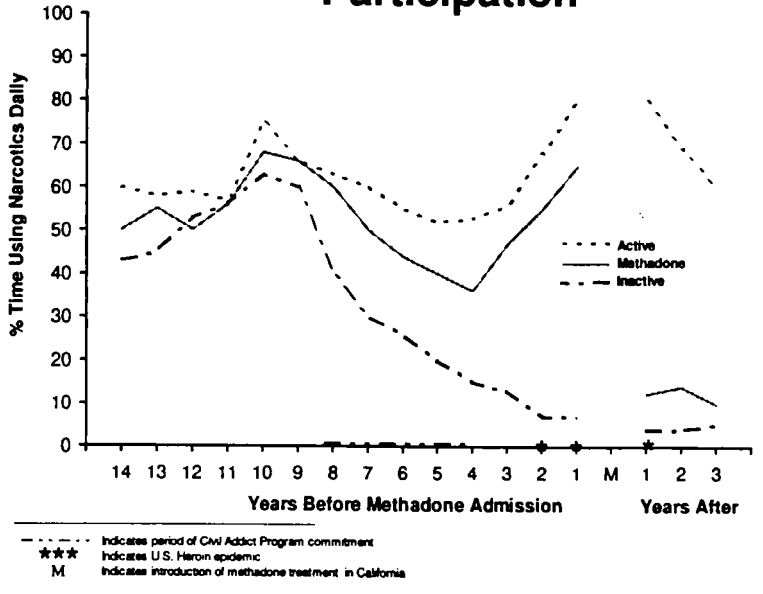
Why study drug treatment careers?

- to examine heterogeneity of treatment utilization over time
- to improve understanding of the relationship between treatment utilization patterns and outcomes
- to contribute to clinical and policy decisions regarding the organization of treatment services for more effective and appropriate drug treatment

Addiction and Treatment Careers: Problems and Solutions

- between 40-50% of clients entering drug treatment have prior treatment experience
- the alternative to treatment utilization is continued drug use and criminal activity
- drug treatment is the most cost-effective intervention available

Differential Addiction Careers by Treatment Participation



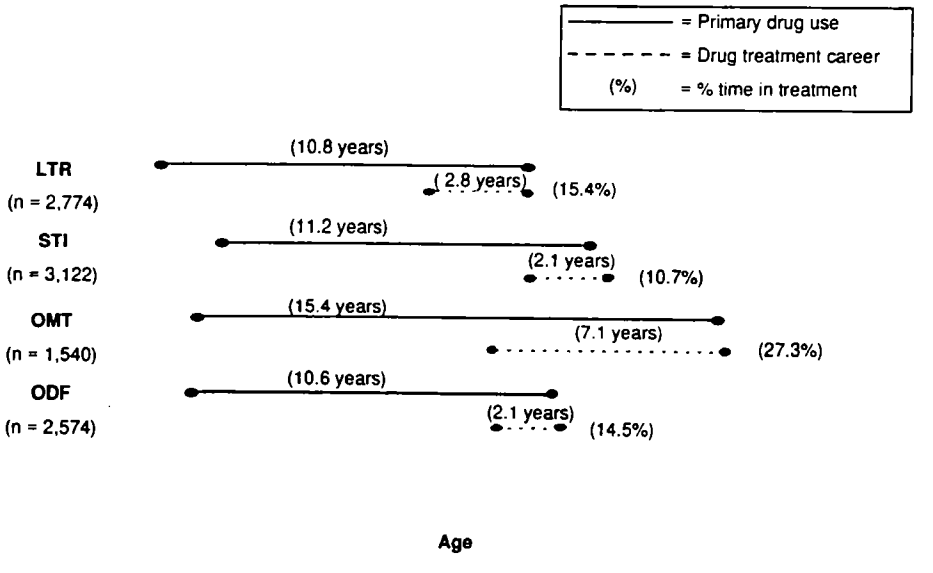
What has been learned from research on treatment careers?

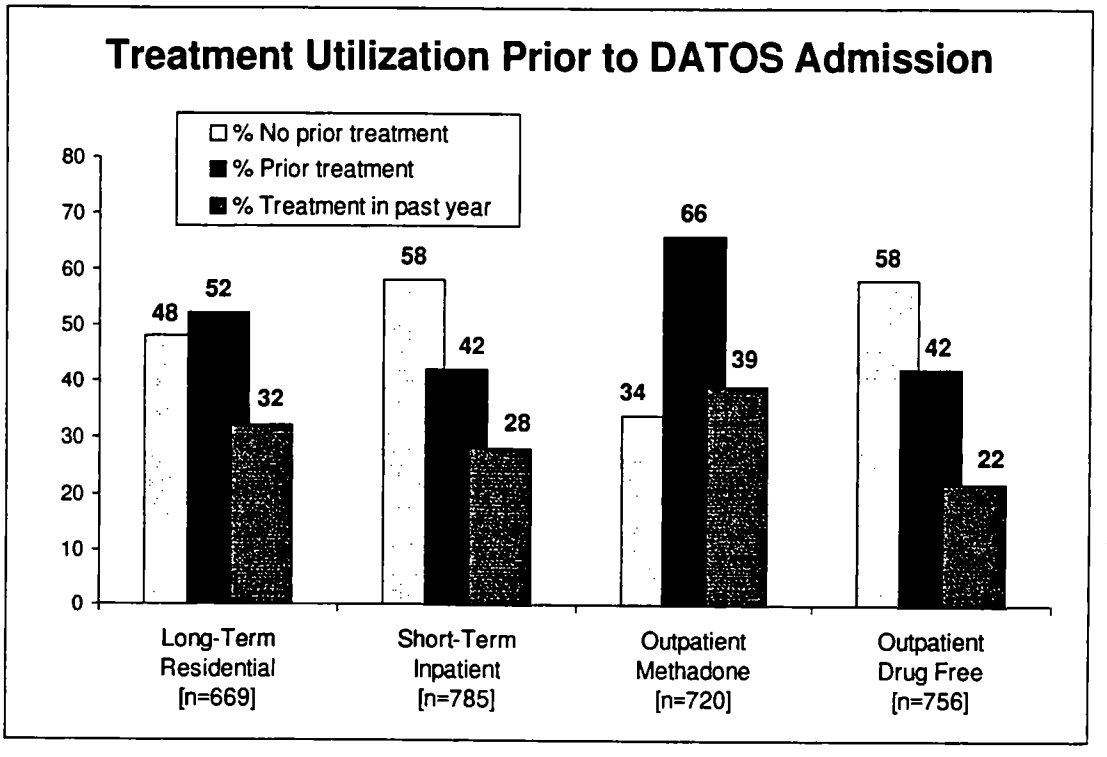
- more severe drug use is associated with earlier treatment initiation and multiple treatment episodes
- treatment utilization typically includes different types of modalities
- multiple treatment episodes are associated with a greater range of client problems and poorer treatment outcomes

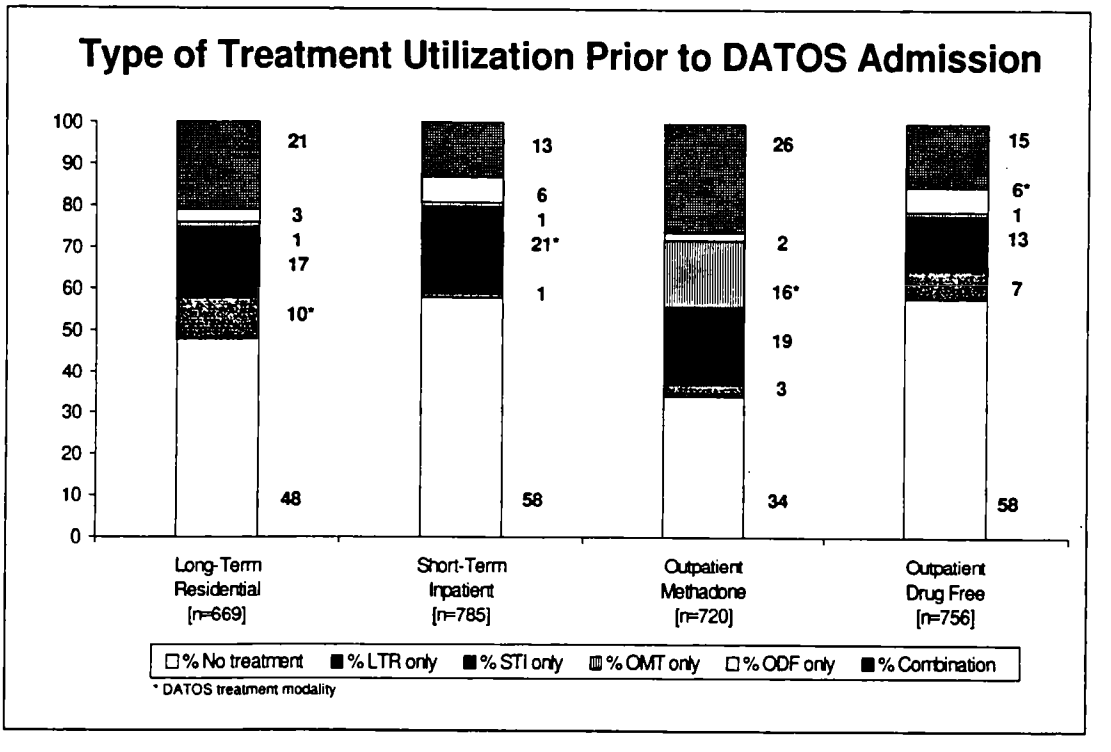
Career Parameters

	Addiction Career	Treatment Career
Participation	types of users	types of users
Frequency	use episodes	treatment episodes
Type	drugs	modality
Length	career duration	career duration
Intensity	cumulative use	cumulative treatment participation
Perception/ Attitude	perceived value & consequences of use	perceived costs/benefits of treatment
External factors	Drug Policies Treatment System Ecology Criminal Justice Policies	
Client factors	Motivation Comorbidity Criminal Justice Involvement	

Relationship of Addiction and Treatment Careers



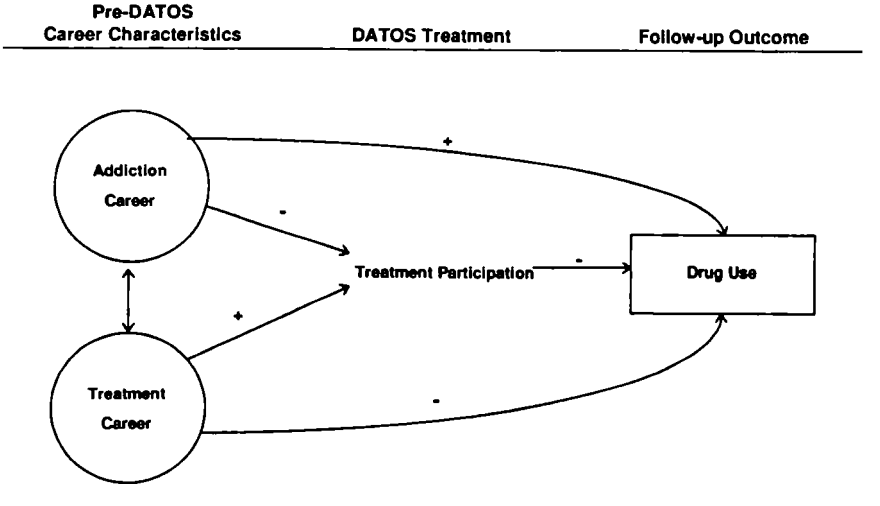

Treatment Utilization Prior to DATOS Admission
% No prior treatment
% Prior treatment
% Treatment in past year
80
70
60
50
40
30
20
10
0
48
52
32
58
42
28
34
66
39
58
42
22
Long-Term Residential [n=669]
Short-Term Inpatient [n=785]
Outpatient Methadone [n=720]
Outpatient Drug Free [n=756]


Type of Treatment Utilization Prior to DATOS Admission
100
90
80
70
60
50
40
30
20
10
0
21
3
1
17
10*
48
13
6
1
21*
1
58
26
2
16*
19
3
34
15
6*
1
13
7
58
Long-Term Residential [n=669]
Short-Term Inpatient [n=785]
Outpatient Methadone [n=720]
Outpatient Drug Free [n=756]
% No treatment
% LTR only
% STI only
% OMT only
% ODF only
% Combination
* DATOS treatment modality

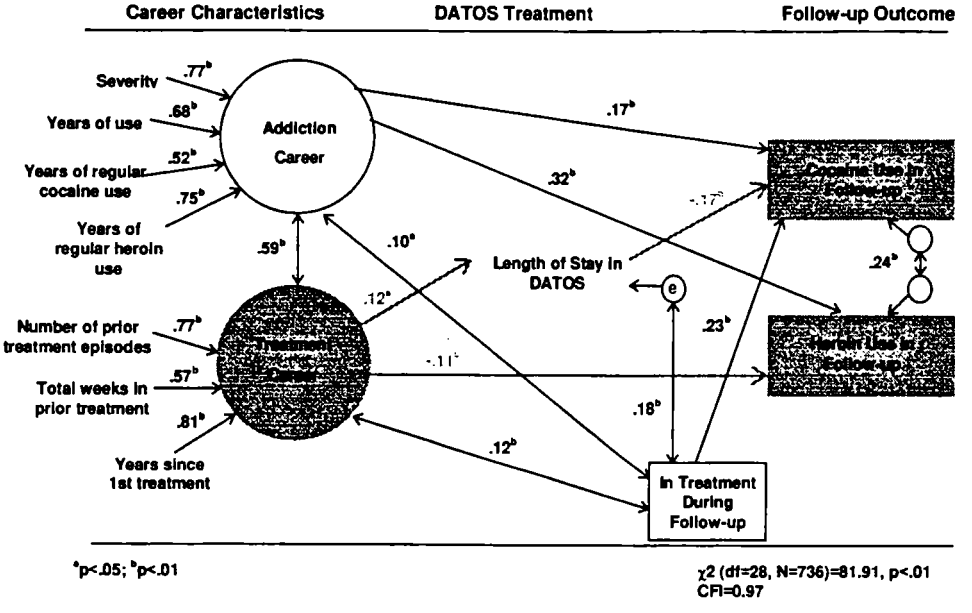
Patterns of Treatment Modality Utilization and Outcomes at Follow-up

	DATOS Modality	N	Follow-up Status: Abstinent (%)	Received Treatment (%)	Non-abstinent/ No treatment (%)
No prior treatment	LTR	300	42.7	18.3	39.0
	STI	442	39.8	16.5	43.7
	OMT	238	10.9	67.2	21.9
	ODF	430	50.5	11.9	37.7
Prior treatment in past year only STI	LTR	104	31.7	29.8	38.5
	STI	159	32.1	22.6	45.3
	OMT	130	9.2	67.7	23.1
	ODF	97	38.1	27.8	34.0
Prior treatment in past year only LTR	ODF	48	35.4	31.3	33.3
Prior treatment in past year only ODF	LTR	22	31.8	31.8	36.4
Prior treatment in past year only OMT	OMT	113	11.5	66.4	22.1
Other combinations		731	26.4	39.7	33.9

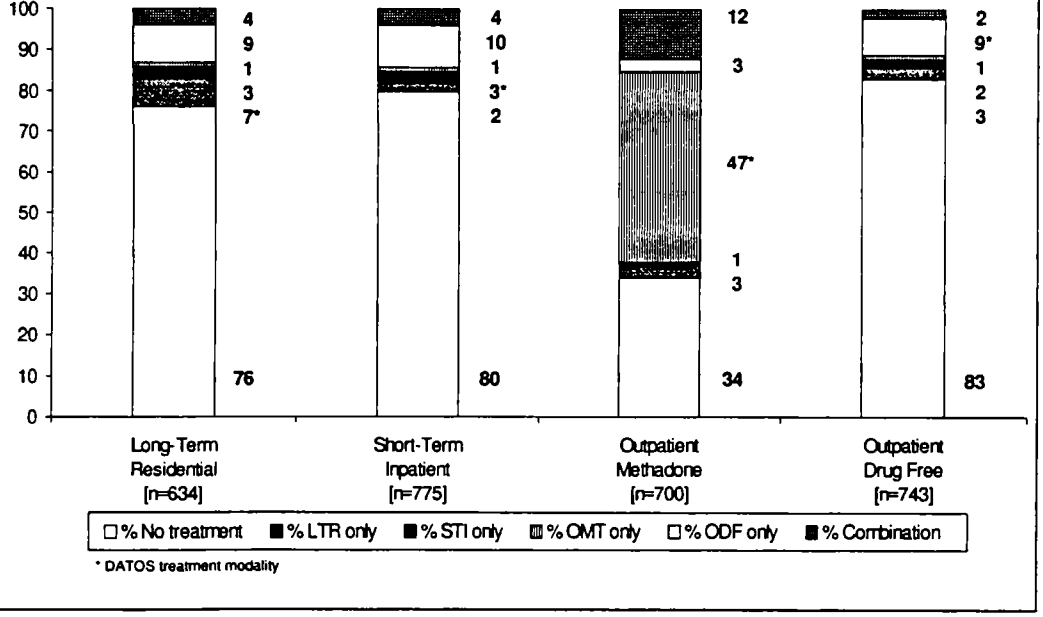
A Conceptual Model on Relationships among Addiction and Treatment Careers, Treatment Participation, and Follow-up Outcome



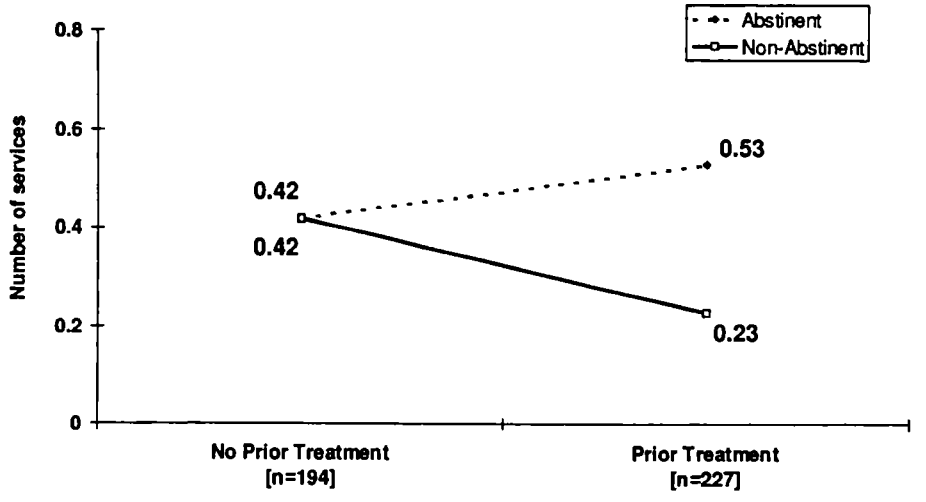
Structural Equation Model for Outpatient Drug Free



Type of Treatment Utilization During Follow-up Period

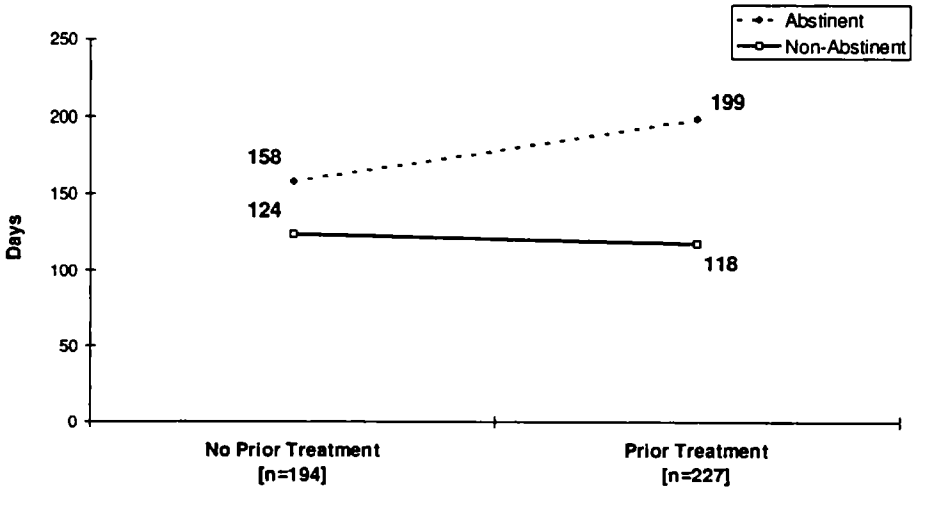


Ancillary Services Received[1] in DATOS Outpatient Drug Free Treatment by Outcome Status and Prior Treatment History



[1]On a scale ranging from 0-6; services include HIV prevention, emotional/psychological, medical, family, vocational, educational, legal, financial, crisis intervention

Retention in DATOS Outpatient Drug Free Treatment by Outcome Status and Prior Treatment History



	Treatment Utilization Prior to DATOS Logistic Regression (N = 8,672) Odds Ratio*	Age at First Drug Treatment Multiple Regression (N = 2,323) Standardized Estimate*
Background Characteristics		
Male	0.83	—
African American (referent is white)	1.16	—
Highest grade completed	1.03	—
Addiction Career Characteristics		
Drug dependence (referent = not dependent on heroin or cocaine)		
Dependent on heroin and cocaine	**1.90**	**-0.11**
Dependent on heroin only	**2.08**	**-0.04**
Dependent on cocaine only	**1.74**	**-0.09**
Years of heroin use	**1.03**	**0.09**
Years of cocaine use	**1.03**	**0.20**
Number of drugs ever used	—	**0.08**
Onset of heroin/cocaine use prior to age 21	—	**-0.28**
Age first tried any drug	—	**0.24**
Other Prior Treatment		
Treatment for alcohol problem	0.76	0.08
Treatment for mental health problem	1.24	—
HIV-Risk Behavior		
Injection usual route of administration	1.48	—
Exchange sex for money or drugs	1.49	—
Criminal Career		
Number of times ever arrested	1.07	—
Number of types of illegal activities committed	1.06	-0.08
*all variables p < .05		Adjusted R^2 = .36

Logistic Regression Predicting Abstinence at Follow-up

	All (n=2,324)	LTR (n=543)	ODF (n=561)	OMT (n=587)	STI (n=633)
Background Characteristics					
Married/Living as married (referent = single)	—	—	—	—	1.47
Duration of longest full time job	1.05	—	—	—	—
Addiction Career Characteristics					
Years of cocaine use	—	—	0.95	—	—
Number of drugs ever used	0.88	0.80	—	0.77	0.88
Smokes cigarettes	0.69	—	—	—	—
Treatment Career Characteristics					
Age at first drug treatment	—	—	—	**0.97**	—
Number of prior drug treatment episodes (referent = none)					
1-3	—	—	—	—	**0.57**
4-5	**0.59**	—	—	—	**0.27**
6 or more	—	—	—	—	—
Number of days in DATOS	**1.29**	**2.05**	**1.79**	—	—
Number of services received while in DATOS	**1.18**	—	—	—	—
Drug treatment during follow-up	**0.50**	—	**0.50**	**0.55**	—

All variables with odds ratio reported, p < .05

Program Applications of the Treatment Career Approach

- Treatment providers can improve treatment outcomes and reduce social costs from continued drug use by:
  - ➤ engaging clients in treatment earlier in their addiction career
  - ➤ providing more comprehensive services to address the multiple problems of clients with long prior treatment histories
  - ➤ coordinating treatment episodes for a continuity of care

Policy Implications of the Treatment Career Approach

- policy decisions can be better informed by evaluations of treatment effectiveness that address variations in treatment utilization over time
- drug treatment system needs to provide a range of approaches and services to address client heterogeneity
- drug treatment system needs to identify most effective combination of services and modalities to maximize outcomes