

# Targeting Employment Services: A Field Experiment Evaluation

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# Purpose of Presentation

- Describe the design, implementation, and evaluation of a recently completed field experiment that targets program resources to participants
- Demonstrate the use of statistical methods to identify the needs of customers and to refer them to services
- Show how to conduct a random assignment evaluation of the effectiveness of targeting services, which is part of the intake process

# Motivation

- The field experiment targeted resources to participants of a welfare-to-work program-- Work First.
- Most Work First type provide the same services to participants, even though their skills, aptitudes, and motivations vary widely
- Studies have shown that more targeted services are more effective in employment and retention rates
- Yet, Work First programs have little additional funds to hire case managers

# Field Experiment

- The statistical assessment and referral system (SA&R) provides staff with the means to quickly assess customers' needs and refer them to services
- SA&R uses statistical methods based on readily available administrative records and the tools are designed to be integrated into existing intake process at little additional cost
- Field experiment conducted at the Kalamazoo/St. Joseph WDB with funds from USDOL

# Research & Operations

- Uses administrative data available at intake
- Statistical assessment tool uses logit estimation to predict the probability that a welfare recipient will find and retain a job
- Analysis of the flow of welfare recipients into and out of a Work First program
- Evaluation based on a random assignment design to determine effectiveness of various matches of welfare recipients with services

# Work First

- Purpose: *Assist TANF (welfare) recipients transition into employment opportunities to achieve economic self sufficiency*
- Program:
  - Orientation
  - Short-term job-search assistance
  - Seek employment as quickly as possible
  - Limited post training for employed who desire it

# SA & R System

- Purpose: *To use information commonly collected at intake to identify WF participants according to their likelihood of finding a job*
- Uses a statistical technique based on individual characteristics and employment history to assign employment probabilities to enrollees
- Uses assigned probabilities to refer enrollees to services that best fit their needs

# Process

- Statistical assessment tool is estimated using attributes and work histories of participants who have recently completed Work First
- Coefficients of assessment model included in computer program (spreadsheet format)
- Customer information entered into PCs
- Probability is calculated and used to assign customer to service provider
- Client assigned to service providers and assigned to control and treatment groups

# Data

- Uses administrative data collected by WDBs
- For example, all Michigan WDBs collect demographic characteristics, educational attainment, work history, and prior program activities during the intake process
- Other agencies collect additional information
  - Can be integrated with data sharing agreement

# Information

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- Parental status
- Education
- AFDC/TANF history
- Target group
- Provider
- Employment history
- Compliance history
- Program activities
- Employment barriers
- Labor Market Info

# Variables

Variable	Mean
Single parent	82.7%
Age at time of enrollment	29.7 yrs
Completed 12 <sup>th</sup> grade	38.7%
Earned GED certification	16.1%
Received AFDC 36 of last 60 months	34.3%
Previously terminated as non-compliant	5.7%
Employment prior to assignment	19.0%
Employed in qualified job	41.7%
Employed 90 consecutive days (retention)	26.0%

# Logit Estimates of Job Retention

Variable	Coefficient	Std. Error	z
Single parent	0.223	0.156	1.429
Age	0.115	0.041	2.790
Age2	-0.002	0.001	-2.602
No school	-1.801	0.555	-3.244
Grade less than 9	-0.44	0.304	-1.495
Grade 9	-0.167	0.252	-0.662
Grade 10	-0.775	0.218	-3.553
Grade 11	-0.431	0.157	-2.744
GED	0.174	0.162	1.074
VOCED	-0.591	0.487	-1.212
Post secondary 1 yr	0.079	0.501	0.159
Post secondary 2 yrs	0.016	0.438	0.371
Post secondary 3 yrs	0.011	0.884	.013
Goodwill	-0.463	0.187	-2.485
Foundation	-0.560	0.164	-3.406
No target	0.064	0.116	0.555
Admission date	-0.003	0.001	-5.424
Code20_1	1.107	0.144	7.683
Code20_2	-0.393	1.055	-0.373
Non compliance	-0.750	0.281	-2.672
constant	36.921	7.26	5.086

# Assigned Probabilities

Characteristics	Person A	Person B	Person C
single parent (=1)	1	1	1
age	22	35	38
no formal schooling	1	0	0
9 <sup>th</sup> grade or less	0	0	0
9 <sup>th</sup> grade	0	0	0
12 <sup>th</sup> grade	0	0	1
Ged	0	1	0
Voced	0	0	0
Not in target group (=1)	1	0	0
Prior employment	0	1	1
Not in compliance	1	0	0
Predicted probability	1.6	88.4	88.0
Employed 90 days (=1)	0	1	1

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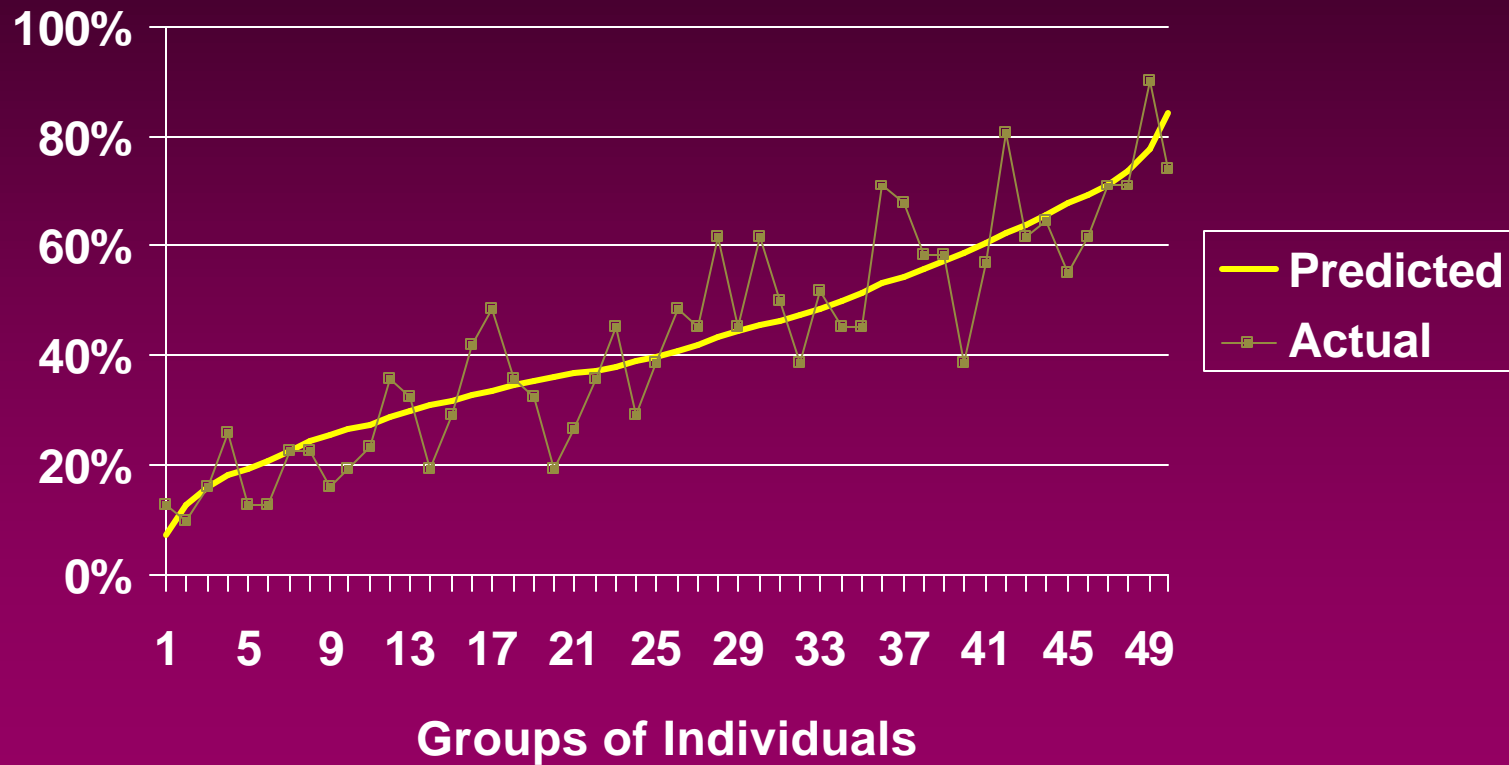
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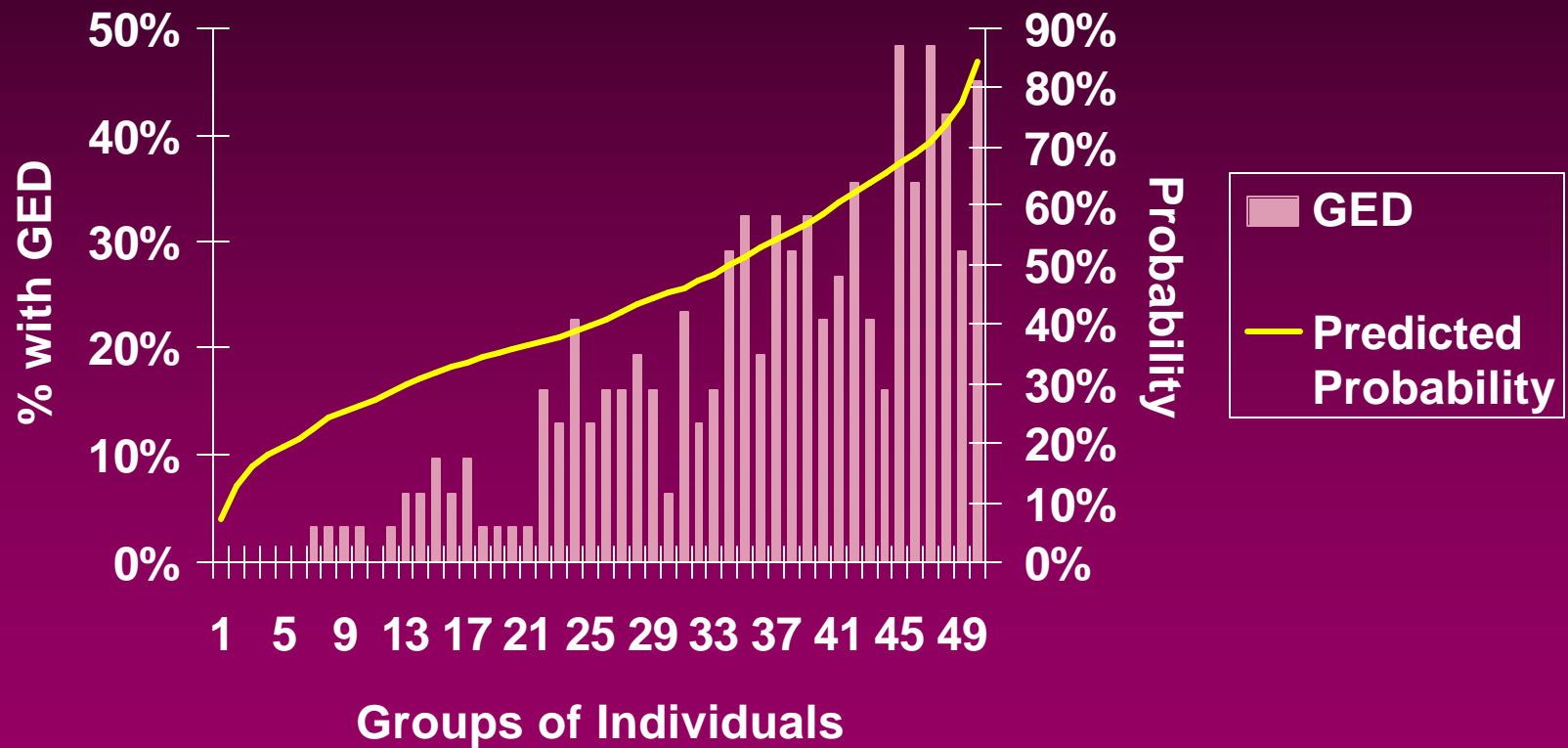
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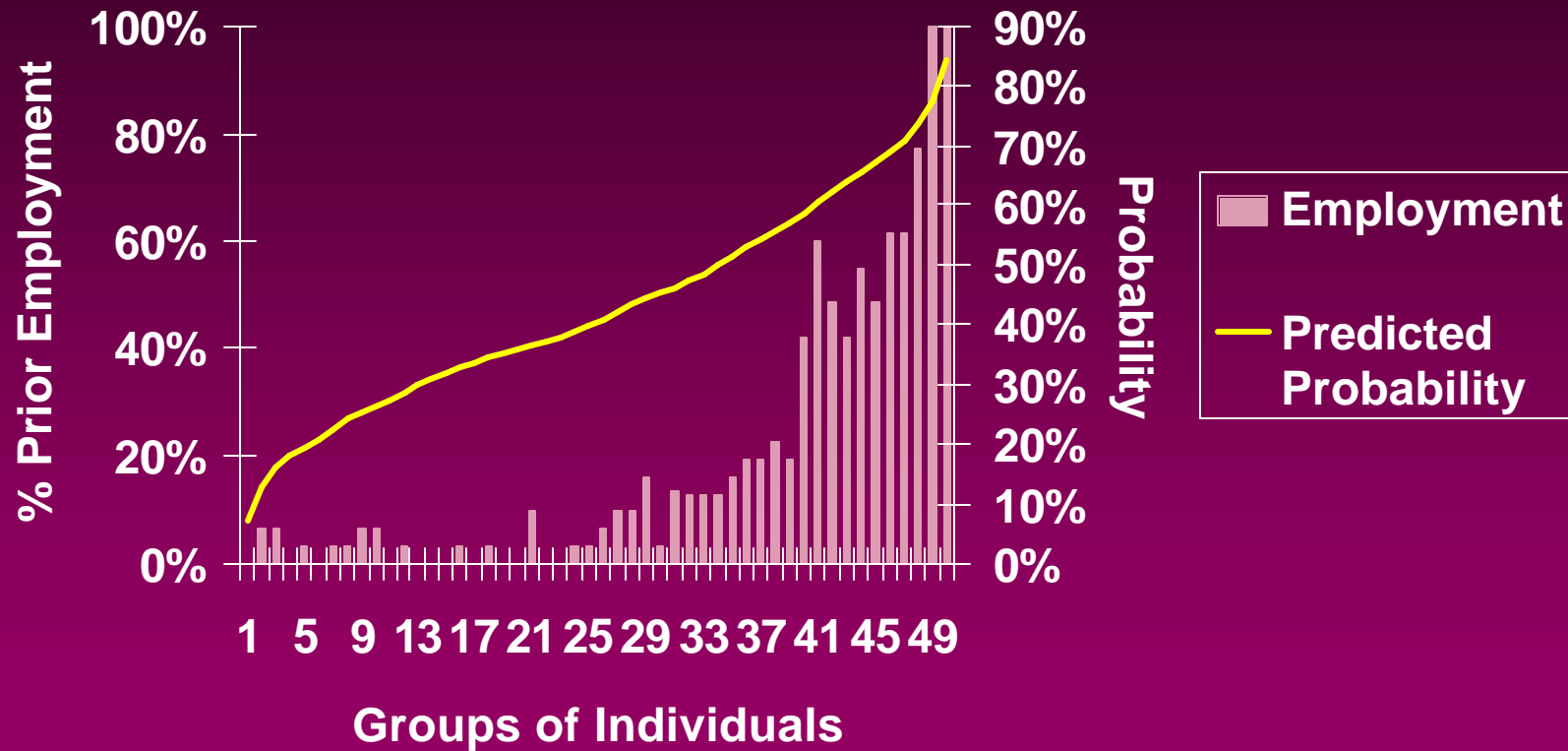
# Actual and Predicted Probability



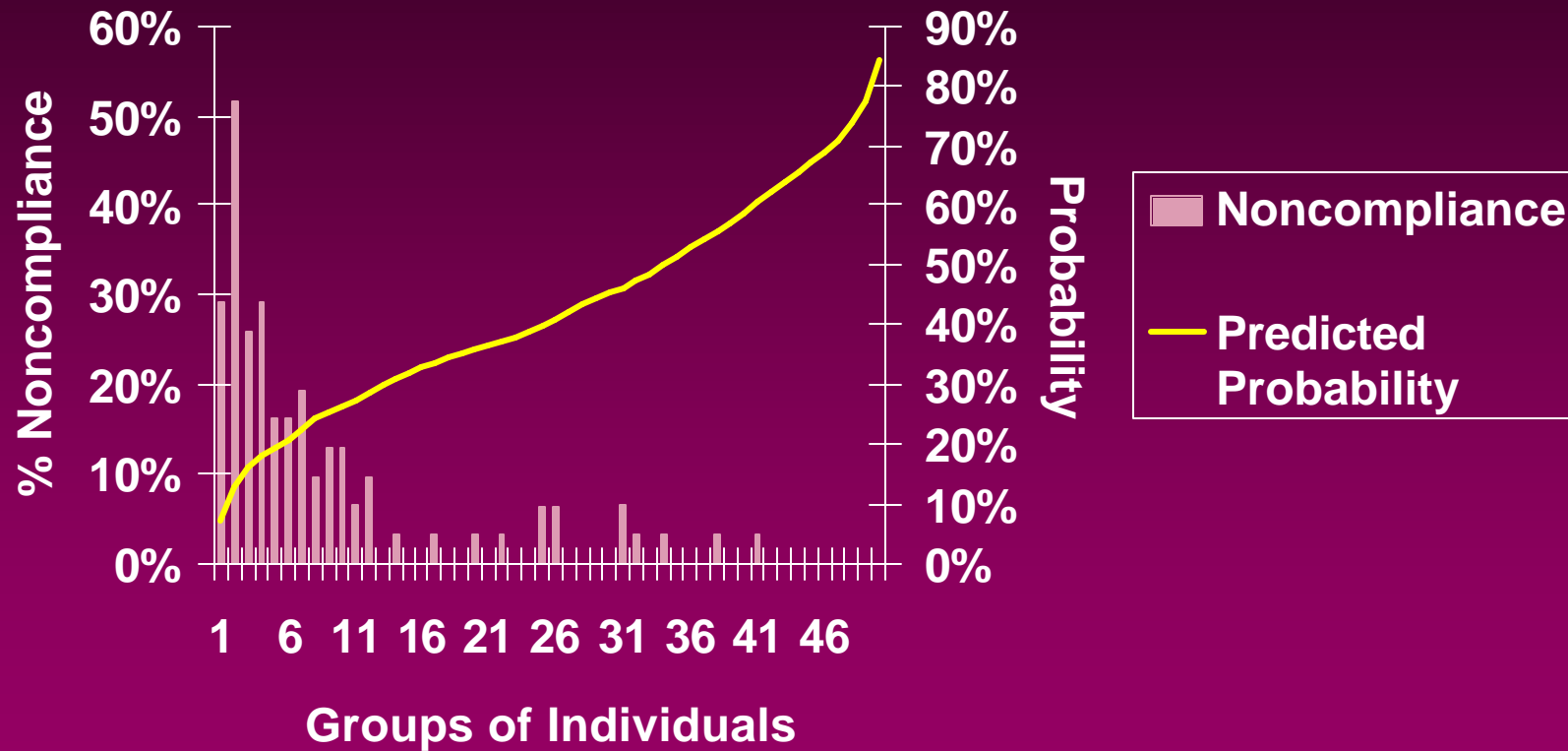
# GED



# Prior Employment



# Noncompliance



# Services

- Three providers
  - Behavioral Foundation (k)
  - Youth Opportunities Unlimited (YOU) (y)
  - Goodwill Industries (g)
- Each pursues a different approach to assisting clients ranging from self-help to providing in-depth services
- Participants spend different amounts of time in services
- Offers opportunity to target services

# Selected Activities

Activity	Mean	Std Dev
Unsubsidized employment	0.53	0.50
Job readiness	0.09	0.28
Assessment and employability planning	0.83	0.37
Job Search	0.55	0.50
Part-time employment	0.06	0.24
Employment prior to assignment	0.19	0.39
Community Service	0.01	0.11
Vocational training	0.01	0.09

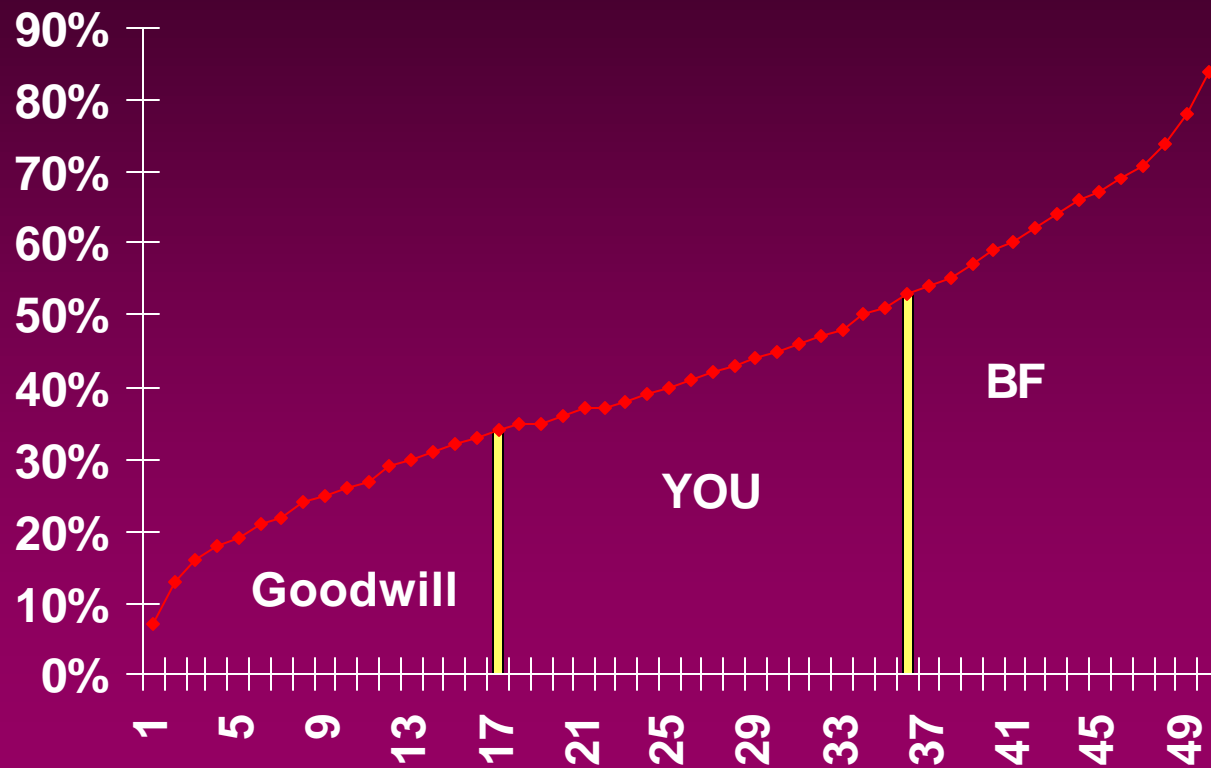
# Assessment and Employability Planning

Number of hours	BF	Goodwill	YOU
1	1.9	1.9	14.6
2	38.3	19.0	52.8
16	19.6	0.9	1.9
20	26.9	76.8	27.7

# Assignment to Providers

- Under preexisting contracts, the three service organizations provided employment services to Work First customers
- Employability scores were divided into three groups: low, middle and high
- Based on prior analysis and WDB staff input, it was determined which employability group would be referred to which service provider

# Assigning Clients to Providers



# Operations



- FIA refers clients to Work First Program
- Intake and orientation take place twice a week at one site
- Job search assistance at three sites



# Intake/Registration

- Welfare recipients report to intake manager
- FIA provides personal information prior to intake
- Missing information is highlighted and client asked to fill in



# Orientation



- Clients attend orientation

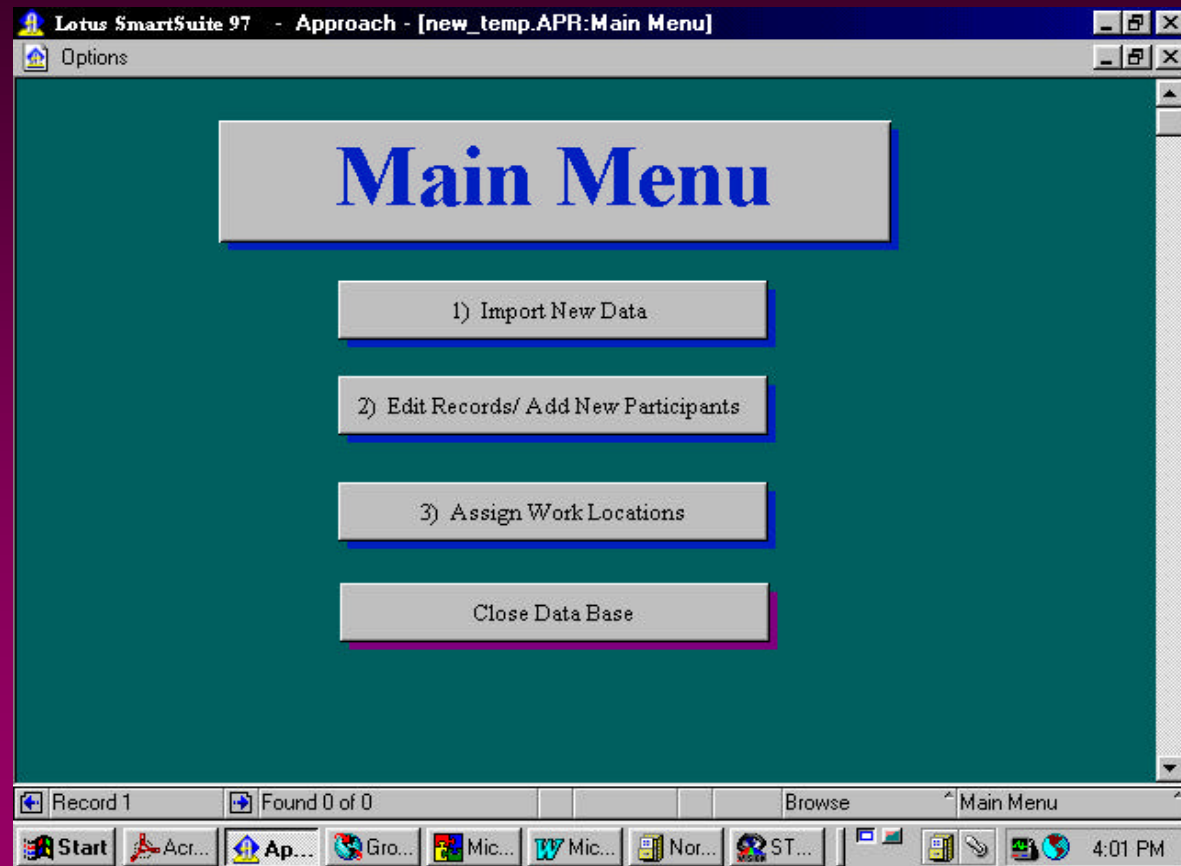
# Data Input

- Missing data entered while clients are in orientation
- Most data entered prior to day of intake



# Automated Processing

- Import
- Edit and add
- Compute
- Assign
- Refer





# Participant Record

Soc Sec #	Seq	Last Name	First Name	Age	PRG	Ed Level
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Target	Code20	Date Atd. Or.				
<input type="text"/>	<input type="text"/>	<input type="text"/>				

Find Record

New Record

To Main Menu

Set Orientation Date = Today

## Work First Assignment

**Soc Sec #:**

**Case Number:**

**First Name:**

**Last Name:**

**Address:**

**Today's Date:**

**The Michigan Family Independence Agency has assigned you to the Work First Program. You are scheduled to report to the following agency for services:**

**Work First Site: Kalamazoo Job Club**

**Work First Site Address: 328 Stockbridge Avenue, Suite 350, Kalamazoo**

**Phone Number: 342-1400**

**Date to Report:**

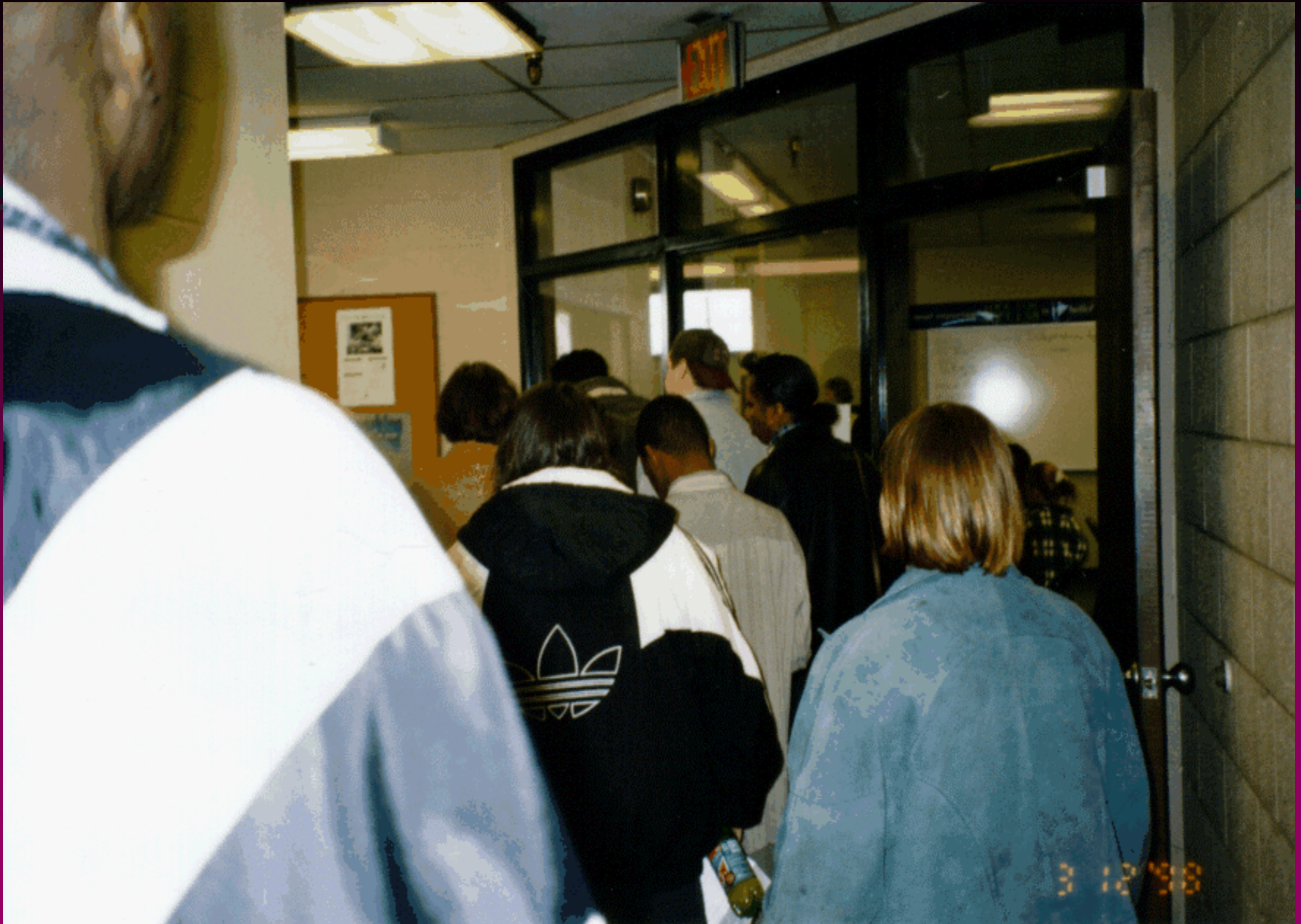
**Time to Report:**

**The meeting will last 1-2 hours.**

**The primary purpose of the Work First program is to assist you in locating and obtaining gainful employment. We will begin the assessment of your needs at the above location and time. We do not have daycare on site. You will need to find child care for your child/children. If you have any questions, cannot make the appointment, or are currently working, please contact the above person immediately.**

**If you fail or refuse to appear for this scheduled appointment, action may be taken to reduce or cancel your FIA grant.**

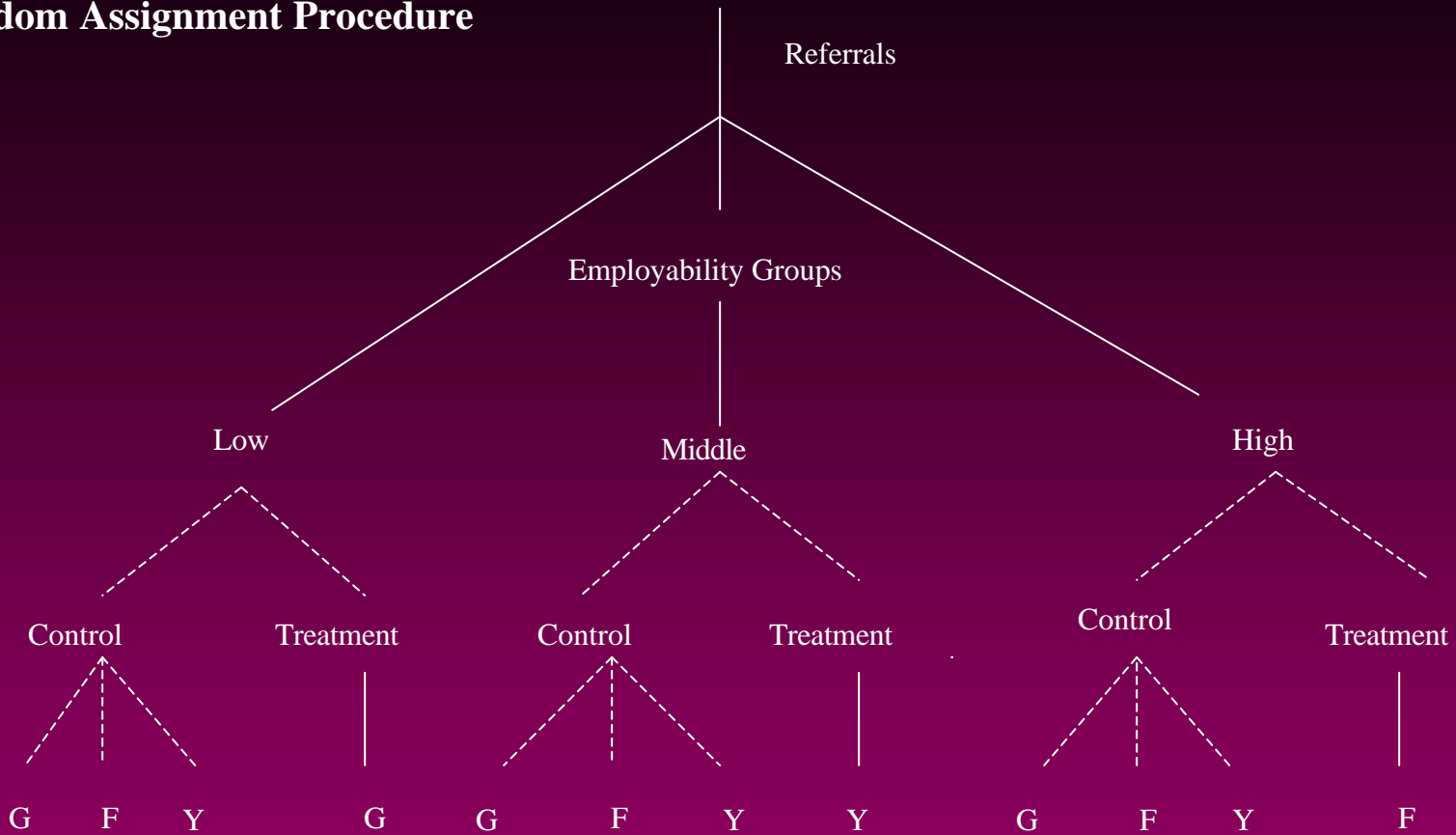
**In accordance with the Americans with Disabilities Act, this information will be made available in alternative format upon request. Michigan Relay Center, 1-800-649-3777 (Voice and TDD).**



# Evaluation

- Random assignment design
- Outcome is job retention for 90 consecutive days
- “Treatment” is whether or not assigning participants to different providers based on employability score affects outcome

## Random Assignment Procedure



Dashed lines indicate that participants were randomly assigned to the next stage of the process.

G refers to Goodwill, F to Foundations, Y to Youth Opportunities Unlimited.

**Number of Participants Assigned to Each Provider**

Provider	Employability Group							
	Low		Middle		High		Total	
	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment
Goodwill	144	402	73		164		381	402
Foundation	177		83		211	402	471	402
YOU	59		26	194	54		140	194
Total	380	402	183	194	429	402	992	998

**Number of Participants Employed 90 Consecutive Days by Combination of Providers**

Combination of Providers		Employability Group			Total	Ranking
		Low	Middle	High		
1	gyk	58	68	96	221	1
2	gky	58	26	72	156	5
3	ygk	52	40	96	187	3
4	ykg	52	26	97	175	4
5	kyg	30	68	97	195	2
6	kyg	30	40	72	142	6

*Note.* Providers are designated as letters: “g” Goodwill; “k” foundation; and “y” YOU. The combination “gyk” refers to low employability group assigned to Goodwill, the middle employability group to YOU, and the high employability group to the Foundation.

**Retention Rates by Provider and Employability Group**

Provider	Employability Group					
	Low		Middle		High	
	Control	Treatment	Control	Treatment	Control	Treatment
Goodwill	0.153	0.154	0.219		0.226	
Foundation	0.079		0.145		0.223	0.234
YOU	0.136		0.370	0.170	0.167	
Average	0.116		0.208		0.217	

**Upper and Lower Bounds of 95 Percent Confidence Intervals for the Retention Rates of Each Provider**

A. Control Group	Employability Groups								
	Low			Middle			High		
	Lower	Mean	Upper	Lower	Mean	Upper	Lower	Mean	Upper
Goodwill	0.094	0.153	0.212	0.124	0.219	0.314	0.162	0.226	0.290
Foundation	0.039	0.079	0.119	0.069	0.145	0.221	0.167	0.223	0.279
YOU	0.049	0.136	0.223	0.188	0.370	0.552	0.068	0.167	0.266

B. Treatment Group	Employability Groups								
	Low			Middle			High		
	Lower	Mean	Upper	Lower	Mean	Upper	Lower	Mean	Upper
	0.119	0.154	0.189	0.117	0.170	0.223	0.193	0.234	0.275

**Differences in Retention Rates Between Pairs of Combinations of Providers**

A. Differences in Retention Rates		1	2	3	4	5	6
1	gyk	-	0.066	0.034	0.046	0.026	0.080
2	gky		-	-0.031	-0.019	-0.039	0.014
3	ygk			-	0.012	-0.008	0.045
4	ykg				-	-0.020	0.033
5	kyg					-	0.053
6	kyg						-

B. T-Test of Difference in Retention Rates		1	2	3	4	5	6
1	gyk	-	5.260	2.671	3.654	2.028	6.487
2	gky		-	-2.603	-1.618	-3.245	1.244
3	ygk			-	0.986	-0.644	3.842
4	ykg				-	-1.630	2.860
5	kyg					-	4.481
6	kyg						-

*Note:* Standard deviation derived according to the following formula:

$$\sqrt{\hat{p}\hat{q}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}$$

**Retention Rates by Combination of Providers**

	Employability Group					
	A		B		C	
	Actual	Rank	Adjusted	Rank	Combined	Rank
gyk	0.223	1	0.231	1	0.206	1
gky	0.157	5	0.171	5	0.157	5
ygk	0.189	3	0.205	2	0.202	2
ykg	0.176	4	0.188	4	0.177	4
kyg	0.197	2	0.200	3	0.192	3
kyg	0.143	6	0.157	6	0.143	6

*Note:* “Actual” refers to all means from random assignment; “adjusted” refers to logit estimates using admission date; and “combined” refers to including both control and treatment groups to compute all means.

**Differences in Retention Rates Between Pairs of Combinations of Providers Using Logit Estimates  
Controlling for Admission Date**

A. Differences in Retention Rates		1	2	3	4	5	6
1	gyk	-	0.060	0.026	0.043	0.031	0.074
2	gky		-	-0.034	-0.017	-0.029	0.014
3	ygk			-	0.017	0.005	0.048
4	ykg				-	-0.012	0.031
5	kyg					-	0.043
6	kyg						-

B. T-test of Difference in Retention Rates		1	2	3	4	5	6
1	gyk	-	4.726	1.986	3.334	2.379	5.905
2	gky		-	-2.745	-1.397	-2.355	1.193
3	ygk			-	1.349	0.392	3.931
4	ykg				-	-0.957	2.588
5	kyg					-	3.550
6	kyg						-

*Note:* T-statistics greater than 1.96 indicates that the null hypothesis the difference in retention rates can be rejected at the 95 percent significance level. See Table 20 note for the standard deviation formula.

# Hourly Wages and Weekly Hours of Participants Working 90 Days

	Employability Group					
	Low		Middle		High	
	Wage	Hours	Wage	Hours	Wage	Hours
Good-will	\$7.02	32.9	\$6.08	25.9	\$6.02	28.2
BF	\$5.04	24.6	\$5.14	25.8	\$7.43	32.2
YOU	\$7.03	31.9	\$6.23	32.0	\$7.21	32.3
All	\$6.39	30.1	\$5.82	27.5	\$6.85	30.6

# Average Weekly Earnings by Provider Combinations

Provider Combination	Average Weekly Earnings
gyk (treatment)	\$192
gky	\$211
ygk	\$181
ykg	\$175
kyg	\$165
kyg	\$189
randomly assigned	\$195

# Net Effect of Field Experiment

Net effect is the difference in the earnings of the treatment group ( $B_T$ ) and the earnings of the control group ( $B_C$ )

$$B_T - B_C = [(R_T - R_C) \cdot E_C] + [(E_T - E_C) \cdot R_C] \\ + [(R_T - R_C) \cdot (E_T - E_C)]$$

R: Number who retained jobs

E: Average weekly earnings during 90 days

# Two Scenarios

- First Scenario: Assumes that the difference in number of participants retaining their jobs for 90 days persists throughout 8 quarters
- Second Scenario: Assumes that the difference in job retention narrows throughout the 8-quarter period
- Both scenarios assume wages grow by 3% per year use a 10% annual discount rate when computing net present value

# Difference in Earnings: First Scenario

Quarters after leaving program	$B_T - B_C$	$R_T$	$R_C$	$E_T$	$E_C$
1	\$112,179	222	175	\$192	\$195
2	113,666	222	175	193	196
3	115,165	222	175	195	197
4	116,675	222	175	196	198
5	118,197	222	175	197	199
6	119,730	222	175	199	201
7	121,274	222	175	201	202
8	122,830	222	175	202	203
NPV	\$840,827				
B/C	5.8	(Program cost=\$145,000)			

# Difference in Earnings: Second Scenario

Quarters after leaving program	$B_T - B_C$	$R_T$	$R_C$	$E_T$	$E_C$
1	\$112,179	222	175	\$192	\$195
2	98,706	216	175	193	196
3	85,073	210	175	195	197
4	71,279	204	175	196	198
5	57,321	198	175	197	199
6	43,197	193	175	199	201
7	28,906	187	175	201	202
8	14,445	181	175	202	203
NPV	\$471,054				
B/C	3.3	(Program cost=\$145,000)			

# Conclusion

- Statistical model exhibited sufficient precision to distinguish among participants by job retention
- Considerable variation in retention rates among various combinations of participants with providers
  - Difference in highest and lowest retention rates among providers was 56%
  - 28% between highest and average
- A priori assignment of participants to providers in treatment group was same combination that yielded highest retention rate
- Targeting resources effective: Benefit-to-cost ratio ranged from 3.3 to 5.8