W.E. UPJOHN INSTITUTE
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Do the Determinants of Program Participation Data Provide Evidence of Cream Skimming?

James J. Heckman
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This chapter considers the extent to which detailed data on the process of participation in a social program can provide researchers and policymakers with meaningful evidence on the nature and extent of cream skimming caused by a performance-management system. We illustrate our discussion with an empirical analysis of data collected as part of the National JTPA Study (NJS). These data allow us to empirically decompose the process of participation in the JTPA program into a series of stages: eligibility for the program, awareness of the program, application to the program, acceptance into the program, and enrollment into the program. This chapter reframes and reinterprets the analysis in Heckman and Smith (2004) for this volume.[1]

Conceptually, this chapter contributes to the literature by clarifying how and when data on multiple stages of the program participation process provide credible evidence on the effect of performance standards on program participation. Decomposing the process into stages allows researchers to compare the determinants of participation across stages. Dividing the stages into those on which program staff (and thus performance standards) have an important influence and those on which they do not provides suggestive evidence on the importance of performance standards for program participation.

Empirically, we make two major contributions. First, we document the importance of factors other than cream skimming induced by performance standards in accounting for differences in JTPA participation among subgroups. In particular, the eligibility rules for JTPA play a major role in driving subgroup differences. Conditional on eligibility,

further subgroup differences emerge at the stage of program aware-
ness, something over which program staff have at most limited control.
These findings suggest caution regarding the conclusions from existing
analyses that presume strong effects of cream skimming based solely
on comparisons of the characteristics of program eligibles and program
participants.

Second, our analysis of the determinants of program enrollment
conditional on application and acceptance into the program (the stage
where we expect program staff to have the most control over the pro-
cess) yields some suggestive evidence consistent with cream skimming.

The remainder of the chapter proceeds as follows. First we put
this chapter into the context of the broader literature. We then present
a framework for analyzing data on multiple stages of the program par-
ticipation process and discuss what such data can reveal regarding the
empirical importance of cream skimming induced by performance
standards in determining who gets served. The next section documents
aspects of the JTPA program relevant for our analysis but not covered
in Chapter 2. We then describe the data we use and the four training
centers from the National JTPA Study at which much of the data were
collected, followed by a detailed examination of four stages in the JTPA
participation process: eligibility, program awareness, application and
acceptance into the program, and formal enrollment. We decompose the
program participation process in order to focus on how overall differ-
ences in participation probabilities across subgroups break down into
effects at each stage of the participation process. The last section re-
views our conclusions and places them in the context of the volume as
a whole.

CONTEXT

Our analysis fits into two broader literatures, one on the determi-
nants of participation in social programs and the other on the effects of
performance management systems in social programs in general and in
active labor market programs in particular. Currie (1996) surveys the
literature on the determinants of participation in social programs; see
also the long list of references in Heckman and Smith (2004).[2]

The majority of this literature focuses on participation in U.S. entitlement programs such as Temporary Aid to Needy Families (TANF), Food Stamps, and Unemployment Insurance. Persons eligible for such programs are legally entitled to their benefits. In addition to the decisions of potential participants, bureaucratic discretion plays a role even in entitlement programs as program staff can affect eligibility decisions—see, e.g., Parsons (1991) for the case of disability insurance—and can affect the information available to potential participants as well as the hassle costs of participation in other program contexts. Empirical analyses of participation in entitlement programs typically focus on the demand side and analyze the effects of variation in the costs and benefits of participation among eligibles.

A smaller literature considers U.S. nonentitlement programs, such as many employment and training programs, where participation conditional on eligibility depends explicitly on both decisions by potential participants and decisions by program gatekeepers; we call such programs mutually voluntary programs. The JTPA program that we study represents such a program, as do National Science Foundation grants and admission to (selective) state colleges and universities (and many other programs). As noted in Chapter 2, under WIA (JTPA's successor), so-called core services, such as job search assistance, represent an entitlement while more expensive services, such as classroom training, require participant interest, program staff approval, and meeting eligibility requirements. Analyses of the determinants of participation in mutually voluntary programs have many purposes, including informing, developing, and implementing econometric evaluation estimators; documenting or explaining differences in participation rates across groups; and examining the role of performance standards (and, in our case, the cream skimming they encourage) on participation patterns. Recent analyses in the context of active labor market programs include Mitnik (2009), Skedinger and Widerstedt (2007), and Weber (2008); see also the earlier references in Heckman and Smith (2004).[3]

A vast general literature on the effects of performance management systems in government has arisen in the past two decades. Osborne and Gaebler (1992) and Osborne and Plastrik (1997) provide important popular treatments, while Heinrich and Lynn (2000), Forsythe (2001), and Radin (2006), among others, offer more scholarly overviews. In the narrower context of active labor market programs, the chapters in

this volume touch on many of the major strands of the literature, including analyses of participation and service assignment patterns (as in this chapter), analyses of the effects of cross-sectional and time-series variation in the nature or presence of performance incentives on outcomes (as in Chapter 7), studies of performance-based contracting (as in Chapter 8), and the correlation of performance measures with experimental or econometric estimates of the causal effects of programs (as in Chapter 9). Chapters 7, 8, and 9 review the corresponding literatures in depth.

Our analysis in this chapter takes its inspiration from both of these literatures. The literature on participation in employment and training programs influences our choice of variables, including our examination of recent labor force status patterns. It also influences our interpretation of the results. The broader literature on program participation motivates our emphasis on variation across individuals in the expected costs and benefits of participation and our concern with program awareness. As discussed in more detail in the next section, the literature on the effects of performance management systems influences our thoughts on the evidentiary value of our analysis.

A FRAMEWORK FOR ANALYZING PARTICIPATION IN SOCIAL PROGRAMS

This section outlines a descriptive framework for analyzing the determinants of participation in a social program using data on the characteristics of random samples of individuals observed at each stage of the process and considers its analytic value. The framework follows individuals through multiple stages of a linear participation process, in which participation requires passing through a sequence of stages in a specific order. The particular stages in our framework spring from the data available to us and the (not unrelated) institutional details of the JTPA program examined in our empirical application. Generalizing our framework to allow for a nonlinear participation process (say, by explicitly accounting for the small fraction of JTPA participants sentenced to participate in the program by a judge or for individuals who reach JTPA via a referral from a service provider) or for a larger number or

smaller number of stages is straightforward. Moreover, our framework, and our discussion of the evidence it provides, both generalize well beyond JTPA and well beyond the context of active labor market policies.

In order for a person to participate in JTPA, he or she must be eligible for it, must be aware of it, must apply for it, must be accepted into it, and must be formally enrolled in it. Figure 6.1 depicts the process of selection into the program. Different factors govern each stage of the process. Legislators define the eligibility criteria that program staff members apply to each applicant. Program awareness depends on outreach efforts by program operators, on other aspects of the informational environment surrounding potential participants, such as friends who have participated or interaction with staff from other programs, and on potential participants' prior beliefs about the costs and benefits of learning about employment and training programs.

Potential participants make application decisions based on the expected benefits and perceived costs of participation. Acceptance into a program depends on bureaucratic preferences over applicant types, which in many programs are determined in part by formal performance standards systems. Acceptance also depends on the willingness of the applicant to pursue the application process to its conclusion and on further changes in opportunity costs, such as sudden illnesses or the arrival of job offers, during the application process.

Formal enrollment depends on both bureaucratic and personal preferences. For example, as noted in Chapter 4, the JTPA performance

Figure 6.1 The JTPA Selection Process

Eligibility for JTPA
↓
Awareness of JTPA
↓
Application to JTPA
↓
Acceptance into JTPA
↓
Enrollment into JTPA
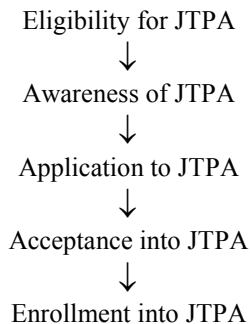
standards system counted only the employment and wages of enrollees in a specified period following termination from the program. As a result, local JTPA offices had an incentive to gain additional information about the potential employability of persons accepted into the program and to use it to guide their enrollment decisions. At the same time, the passage of time between acceptance and enrollment (as when waiting for a particular course to begin or looking for an employer willing to offer an OJT position) leads to changes in opportunity costs that may cause accepted applicants to decline enrollment when offered.

To more formally describe the participation process, consider the following conditional probabilities for a person with characteristics x: 1) the probability of eligibility, 2) the probability of program awareness given eligibility, 3) the probability of application given eligibility and awareness, 4) the probability of acceptance given application, and 5) the probability of formal enrollment conditional on acceptance into a program. In formal terms, we have

(6.1) $\Pr(el = 1 \mid x)$,

(6.2) $\Pr(aw = 1 \mid el = 1, x)$,

(6.3) $\Pr(ap = 1 \mid aw = 1, el = 1, x)$

(6.4) $\Pr(ac = 1 \mid ap = 1, aw = 1, el = 1, x)$,

(6.5) $\Pr(en = 1 \mid ac = 1, ap = 1, aw = 1, el = 1, x)$,

where $el = 1$ if a person is eligible for a program and zero otherwise, $aw = 1$ if a person is aware of a program and zero otherwise, $ap = 1$ if a person applies to a program and zero otherwise, $ac = 1$ if a person applies to and is accepted into a program and zero otherwise, and $en = 1$ if a person is formally enrolled in a program and zero otherwise.

As persons only participate in the program if they are eligible $el = 1$, are aware $aw = 1$, apply $ap = 1$, are accepted $ac = 1$, and formally enroll $en = 1$, we can decompose the probability of participation given $X = x$, $\Pr(par = 1 \mid x)$, into the five components on the right-hand side of Equation (6.2):

(6.6) $\Pr(par = 1 \mid x) =$

$\Pr(en = 1 \mid ac = 1, ap = 1, aw = 1, el = 1, x)\Pr(ac = 1 \mid ap = 1, aw = 1, el = 1, x)$

$\Pr(ap = 1 \mid aw = 1, el = 1, x)\Pr(aw = 1 \mid el = 1, x)\Pr(el = 1 \mid x)$,

where *par* = 1 if a person participates in a program and zero otherwise. By estimating each of the five component probabilities, we can determine the effect of each variable in *x* on the overall probability of participation and where and how it influences program participation. A variable that has no effect on the overall probability of participation may have strong, but offsetting, effects on the component probabilities.

In the sections that follow, we apply this framework to analyze participation in the JTPA program. Data limitations force us to combine application and acceptance into a single step, which we call "application/acceptance." We equate acceptance into the program with reaching the stage of random assignment during the experimental evaluation of JTPA. Only eligible applicants who completed the aptitude and achievement tests required at most JTPA training sites and who received a written JTPA service plan were subject to random assignment. These conditions required a substantial commitment by JTPA training centers to continued interaction with the applicant, but fall short of formal enrollment into JTPA. The section titled "The Determinants of Enrollment in JTPA" presents two sets of decompositions based on Equation (6.6). The first set includes four stages: eligibility, awareness, application/acceptance, and enrollment. In the second set, we decompose $\Pr(ac = 1 \mid el = 1, x)$, the probability of application and acceptance conditional on eligibility, into separate stages of awareness given eligibility and acceptance given awareness. Focusing solely on these two stages allows us to examine the effects of explanatory variables not included in the full decomposition due to data limitations or because they are perfect predictors of eligibility.

What can we learn from the analyses undertaken in the remainder of the chapter regarding the empirical importance of cream skimming induced by the JTPA performance standards system for the overall patterns of participation in JTPA among various groups? To begin with, we can use institutional knowledge to divide the stages of the participation process into those affected and not affected by program staff. Subgroup differences in the determinants of passing through stages not affected by program staff, such as eligibility and (in the main) awareness clearly cannot result from cream skimming. The full decompositions presented in the section "The Determinants of Application/Acceptance into JTPA" reveal the relative importance of these stages for overall group differences.

For stages of the participation process potentially affected by both the decisions of potential participants and the decisions of caseworkers, our framework yields at best suggestive evidence. Consider a particular characteristic Z that positively affects employment and earnings outcomes in the absence of participation and that both the caseworker and the researcher observe. Now consider a stage of the participation process over which caseworkers have some control. A positive effect of Z on the probability of passing through this stage is consistent with cream skimming by caseworkers and so provides some suggestive evidence in that regard. At the same time, high-Z individuals might participate at higher rates even without cream skimming, perhaps because of a correlation between observed Z and unobserved motivation or because high-Z individuals expect to benefit more from program participation. By contrast, a negative effect of Z indicates that cream skimming is not the dominant influence on whether or not high-Z individuals transit this stage of the participation process. It does not, however, demonstrate the absence of cream skimming, because a negative estimated effect might simply result from other factors working in the opposite direction overpowering caseworker efforts.

Our empirical analysis is deliberately descriptive. We seek to establish empirical regularities about the participation process in the JTPA program as it existed at the time our data were generated. These regularities suggest interesting behavioral relationships governing the process of program participation. They are not causal (or "structural" in the sense that economists use that term). For example, we would expect substantive changes in the eligibility rules to change not only the determinants of eligibility, but the conditional determinants at the other stages as well. We do not require causal effects to make the inferences we do. The analyses in this chapter complement, rather than substitute for, related analyses in the literature that aim to estimate the causal effects of performance standards on program behavior by making use of plausibly exogenous variation in the presence or details of such standards. Examples of such analyses include Chapters 7 and 8 in this volume, as well as Cragg (1997), Courty and Marschke (2008), and Courty, Kim, and Marschke (forthcoming).

THE JTPA PROGRAM

JTPA was the primary U.S. federal employment and training program for the disadvantaged until replaced by the programs financed under WIA in 1998. JTPA provided classroom training in occupational skills, remedial education, job search assistance, work experience, and subsidized on-the-job training (essentially a temporary wage subsidy) at private firms for approximately one million persons each year. Chapter 2 gives an overall picture of the program, compares it to its predecessors and to WIA and, along with Chapter 4, details its performance management system. This discussion focuses on the details of JTPA eligibility determination, which have special relevance to the analysis in this chapter.

There were two primary avenues to eligibility for JTPA. The first and most important avenue was economic disadvantage, which occurred if one of two criteria were met: 1) low *family* income in the six months prior to application to the program, or 2) being in a family receiving cash public assistance such as Aid to Families with Dependent Children (AFDC), general assistance, or Food Stamps.[4] The short window for income eligibility allowed highly skilled and normally highly paid workers to become eligible for JTPA after being out of work only a few months. According to the USDOL (1993), in program year 1991 around 93 percent of JTPA participants qualified because they were economically disadvantaged. A second avenue to eligibility was an "audit window" that allowed up to 10 percent of participants at each JTPA training center to be noneconomically disadvantaged persons with other barriers to employment such as limited ability in English.[5] Due to the subjective nature of these barriers, and the resulting difficulty in determining who is affected by them, at some stages in the participation process (described in more detail below) we consider only persons eligible by virtue of being economically disadvantaged. Devine and Heckman (1996) discuss the eligibility rules for JTPA and their implications for the composition of the eligible population.[6]

There are some differences between the eligibility criteria and services offered in JTPA compared to its predecessors, the Comprehensive Employment and Training Act (CETA) and the Manpower Development and Training Act (MDTA), and its successor, the WIA program.

Barnow (1993) suggests that these differences are modest in regard to CETA and MDTA. USDOL (1998), O'Shea and King (2001), and Social Policy Research Associates (2004; see especially Exhibit 1) document the details of the WIA program. Universal eligibility for low-intensity core services under WIA represents the largest difference between WIA and JTPA. By law, local programs must give priority to transfer program participants and other low income individuals when allocating intensive and training services. For these more expensive services, but not for the core job finding services, the WIA participation process remains broadly similar to that under JTPA.

DATA

The primary source of our data is the NJS, an experimental evaluation of the JTPA program conducted from 1987 to 1989.[7] We use data on JTPA, even though the program no longer exists, because similar data do not exist for the WIA program. As argued in Chapter 3, the programs have enough in common in terms of the populations they serve, the services they provide, and the institutions that provide them that, at a general level, the inferences we make regarding the relative importance of cream skimming and other factors in determining participation patterns likely carry over to WIA.

In the NJS, persons accepted into JTPA at a nonrandom sample of 16 JTPA training centers were randomly assigned into either a control group excluded from JTPA (for 18 months) or a treatment group given access to JTPA services. In order to learn more about the JTPA-eligible population, and to facilitate the development of better nonexperimental evaluation methods, data were collected on JTPA-eligible nonparticipants (ENPs) at 4 of the 16 centers. We describe these 4 centers in detail in the next section. The ENP sample includes only individuals eligible via the economic disadvantage criterion as determined by a short household screening instrument.

Detailed information on demographic characteristics, labor market histories, transfer program participation, and family composition and income was collected on the ENPs and on experimental control group members at the same four sites. We use this information for our analy-

ses of awareness of JTPA and of application/acceptance into JTPA. For the experimental treatment group, we have only the limited information on characteristics collected shortly before random assignment. We use these data to study enrollment into JTPA at the four sites.

The NJS did not collect data on persons ineligible for JTPA. In order to analyze the determinants of eligibility we use a national sample drawn from the 1986 Panel of the Survey of Income and Program Participation (SIPP). Devine and Heckman (1996) use the SIPP for their detailed study of JTPA eligibility; our dataset is a close cousin of theirs. The SIPP data are well suited to this purpose because they contain sufficient information to precisely determine JTPA eligibility via economic disadvantage. We treat the SIPP panel as a series of repeated cross-sections, and create a dataset consisting of person-months.[8]

The data we use have, not surprisingly, both advantages and disadvantages. In terms of advantages, both the SIPP and ENP data measure eligibility via economic disadvantage relatively precisely. All of the surveys from the NJS obtained relatively high response rates; the SIPP does less well on this dimension. Measurement of both acceptance and enrollment in JTPA relies on administrative data, and so avoids the problems of systematic measurement error in survey measures of program participation documented by Smith and Whalley (2009) for JTPA and by Meyer, Mok, and Sullivan (2009) for a wide variety of other programs. The key disadvantages associated with our data include the lack of separate information on program application and our reliance on only four nonrandomly selected sites for the ENP and JTPA participant data. The latter becomes problematic when combined with national-level data from the SIPP and when attempting to generalize to the overall JTPA eligible and participant populations.

THE FOUR SITES FROM THE NATIONAL JTPA STUDY

Detailed data on ENPs were collected from the geographic areas served by four training centers: Corpus Christi, Texas; Fort Wayne, Indiana; Jersey City, New Jersey; and Providence, Rhode Island. Table 6.1 provides descriptive information about these centers in order to pro-

vide some context for our analysis. The table notes provide details on the sources and definitions of the variables.

The first three columns of Table 6.1 present the race/ethnicity of the eligible adult population at each site, constructed using the data on the ENPs and the experimental control group. The sites vary widely on this dimension, with a strong Hispanic majority in Corpus Christi, a strong African American majority in Jersey City, almost exclusively whites in Fort Wayne, and a broad mix in Providence. The fourth column presents mean years of schooling among adult eligibles at each site. Here we find less variation, though Providence stands out as an outlier on the low side, with a mean below 11 years.

The fifth and sixth columns provide economic context in the form of the unemployment and the poverty rates, respectively. Corpus Christi and Jersey City have relatively weak economic situations at this time, while Providence and (especially) Fort Wayne were experiencing relatively low unemployment and poverty rates.

The final three columns summarize the service recommendations that the JTPA participants in the experimental samples at these training centers received prior to random assignment. In the jargon of the National JTPA Study, the "CT-OS treatment stream" denotes individuals recommended for classroom training in occupation skills (and possibly other services, but not on-the-job training), the "OJT treatment stream" denotes individuals recommended for on-the-job training (and possibly other services, but not classroom training in occupational skills), and the "other treatment stream" is a residual category. Most of those recommended for CT-OS either receive it or do not enroll at all (and thus receive at most very minimal services), but many of those recommended for OJT end up enrolling but receiving only job search assistance because no employer can be found who will offer them an on-the-job training slot. The sites differ in their service mix for a number of reasons, including the availability of local training providers of sufficient size and quality, the state of the local economy, and whether the center leadership has a "work first" or "learn first" orientation. Among the four sites in our study, Jersey City emphasizes classroom training, Fort Wayne and Corpus Christi emphasize on-the-job training, and Providence emphasizes other services.

Table 6.1 Characteristics of the Four Sites from the National JTPA Study

| Name | Eligibles | | | | Unemploy-ment rate | Poverty rate | Fraction CT-OS treatment stream | Fraction OJT treatment stream | Fraction other treatment stream |
	Fraction white	Fraction black	Fraction Hispanic	Average years of schooling					
Corpus Christi	0.25	0.08	0.66	11.33	10.2	13.4	34.3	51.5	14.1
Fort Wayne	0.74	0.23	0.02	11.28	4.7	5.9	6.4	66.2	27.3
Jersey City	0.05	0.68	0.24	11.51	7.3	18.9	46.0	35.7	18.3
Providence	0.32	0.28	0.31	10.72	3.8	12.1	32.3	13.0	54.7

SOURCE: Characteristics of the adult eligible population at each site come from the authors' calculations using the National JTPA Study data on the ENPs and the experimental control group. Following Heckman and Smith (1999), we assign the ENPs a weight of 0.97 and the controls a weight of 0.03 in calculating these averages. The numbers for race/ethnicity do not add up to 1.00 because other race/ethnicity individuals are omitted. The unemployment rates (unweighted annual averages for 1987–1989) are from Exhibit 3.3 of Orr et al. (1996). Poverty rates (for 1979) are from Exhibit 3.2 of Orr et al. (1996). The treatment stream recommendation fractions come from Kemple, Doolittle, and Wallace (1993, Table 7.1). As noted in the text, these refer to the services for which individuals in the National JTPA Study were recommended prior to random assignment. The CT-OS treatment stream corresponds to individuals recommended for classroom training in occupational skills and possibly other services not including on-the-job training. The OJT treatment stream refers to individuals recommended for subsidized on-the-job training at private firms plus possibly other services not including CT-OS. The other treatment stream is a residual category.

Overall, these four sites vary on geographic (two in the Northeast, one in the Southwest, and one in the Midwest), demographic, economic, and programmatic dimensions. Although neither the 4 sites nor the 16 sites represent random samples of all JTPA training centers, the sites examined in this chapter nonetheless do a good job of capturing the diversity present in the population of sites. In addition, the site characteristics presented here provide a context for, and aid in the interpretation of, the results that follow.[9]

THE DETERMINANTS OF ELIGIBILITY
FOR THE JTPA PROGRAM

This section examines the determinants of eligibility for JTPA. Table 6.2 defines the explanatory variables used in this chapter. Tables 6.3 and 6.4 present the results of logit analyses of the determinants of eligibility. Table 6.3 presents results for adult (aged 22 and above) men and women, and Table 6.4 presents the results for male and female out-of-school youth (aged 16–21). We focus on these four demographic groups throughout our empirical analysis for three reasons. First, they are the groups employed in the experimental impact reports, in our other work utilizing these data, and in some of the other chapters in this volume. Second, because of differences around family responsibilities and education, we would expect men and women, and youth and adults, to behave differently. Third, we have no NJS data on in-school youth, as this group was excluded from the experimental analysis.

The first column for each demographic group in Tables 6.3 and 6.4 displays estimated coefficients and associated standard errors (in parentheses) from logit models of the probability of eligibility derived from the SIPP data. The second column displays estimates of the mean derivative of the probability of eligibility with respect to each characteristic (in square brackets) along with p-values from tests of the null hypotheses that each population coefficient equals zero.[10]

A number of interesting findings emerge from this analysis. First, even after controlling for family income and productivity characteristics, race and ethnicity are very important determinants of the probability of eligibility. For example, for adult females, the difference

Table 6.2 Definitions of Variables

Site indicators
Fort Wayne, Jersey City, and Providence indicate the site of residence. Corpus Christi is the omitted site.

Race and ethnicity
Black, Hispanic, and other race/ethnicity indicate race or ethnicity. Whites are the omitted group.

Age
Age categories indicate age at the time of eligibility determination or of the participation decision. The omitted category is 16–18 years for youth and 22–29 years for adults.

Highest grade completed
Schooling categories indicate the highest grade of formal schooling completed. The omitted category is exactly 12 years.

Low English ability
This variable indicates low ability in English. For the ENPs, this means that the person completed the baseline interview in a language other than English. For the controls, it means that the person indicated a language other than English in response to a survey question on language preference.

Marital histories
These categories indicate the respondent's marital status history. The omitted category is single, never married. In Tables 6.16 and 6.17, the divorced, widowed, and separated category is broken up into two categories, one for persons who were last married from 1–24 months ago and one for persons who were last married more than 24 months ago.

Presence of young children
Children younger than six years old indicates an own child less than six years old in the household.

Current AFDC receipt
This variable indicates that the respondent was receiving benefits under the Aid to Families with Dependent Children program, either as a case head or as part of someone else's case.

Table 6.2 (continued)

Current Food Stamp receipt
This variable indicates that the respondent was in a household receiving Food Stamps.

Current labor force status
These variables indicate whether the respondent was employed, unemployed (not working but looking for work), or out of the labor force (not employed and not looking for work). The omitted category is currently employed.

Labor force status transitions
These categories in Tables 6.8 and 6.9 and Tables 6.16–6.19 indicate the two most recent labor force statuses in the seven months up to and including the month of the participation decision. The second status in each pattern indicates the labor force status at the time of the participation decision. The first status indicates the status of the most recent prior spell during the preceding six months. Thus, the pattern "employed → unemployed" indicates someone who was unemployed at the time of the participation decision but whose most recent prior labor force status within the preceding six months was employed. Persons in the same labor force status for all seven months have repeated patterns of the form "OLF → OLF." The omitted pattern is "employed → employed," indicating persistent employment. In some cases, the "employed → OLF" and "unemployed → OLF" categories are collapsed due to small sample sizes.

Time since most recent employment
These categories indicate the number of months since the person was last employed. The omitted category is currently employed.

Family income in the last year
These categories indicate total family earnings in the past year. The omitted category is less than $3,000. For some tables, the original six categories are combined into four due to small sample sizes.

Table 6.3 Logit Estimates of the Determinants of JTPA Eligibility: Adults

	Adult males		Adult females	
Black	1.315	[0.060]	2.172	[0.129]
	(0.034)	0.000	(0.032)	0.000
Hispanic	1.070	[0.048]	2.270	[0.136]
	(0.036)	0.000	(0.030)	0.000
Other race/ethnicity	1.352	[0.062]	1.551	[0.090]
	(0.087)	0.000	(0.051)	0.000
Aged 30–39	−0.860	[−0.038]	0.018	[0.001]
	(0.030)	0.000	(0.026)	0.489
Aged 40–49	−0.939	[−0.042]	0.144	[0.007]
	(0.040)	0.000	(0.030)	0.000
Aged 50–54	−1.586	[−0.064]	0.047	[0.002]
	(0.049)	0.000	(0.035)	0.176
Highest grade < 10	0.737	[0.033]	0.974	[0.060]
	(0.034)	0.000	(0.029)	0.000
Highest grade 10–11	0.292	[0.012]	0.514	[0.031]
	(0.033)	0.000	(0.028)	0.000
Highest grade 13–15	−0.231	[−0.009]	−0.408	[−0.022]
	(0.031)	0.000	(0.025)	0.000
Highest grade > 15	−0.064	[−0.003]	−1.652	[−0.075]
	(0.036)	0.074	(0.032)	0.000
Currently married	0.157	[0.006]	1.366	[−0.074]
	(0.035)	0.000	(0.029)	0.000
Div.-wid.-sep.	0.177	[0.007]	0.043	[0.003]
	(0.042)	0.000	(0.031)	0.162
Child age < 6 years	−0.205	[−0.008]	0.646	[0.035]
	(0.036)	0.000	(0.027)	0.000
Family income $3,000–$6,000	0.113	[0.019]	−0.367	[−0.039]
	(0.050)	0.024	(0.044)	0.000
Family income $6,000–$9,000	−1.814	[−0.206]	−1.737	[−0.154]
	(0.048)	0.000	(0.043)	0.000
Family income $9,000–$12,000	−3.103	[−0.268]	−2.671	[−0.214]
	(0.056)	0.000	(0.043)	0.000
Family income $12,000–$15,000	−3.857	[−0.295]	−3.318	[−0.249]
	(0.056)	0.000	(0.044)	0.000

Table 6.3 (continued)

	Adult males		Adult females	
Family income > $15,000	−4.966	[−0.331]	−4.461	[−0.301]
	(0.048)	0.000	(0.037)	0.000
Constant	−0.474	[0.000]	4.714	[0.000]
	(0.033)	0.000	(0.043)	0.000
Number of observations	80,598		89,196	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. Person-month data from the 1986 SIPP full panel. Omitted categories in the logit are white, aged 22–29, highest grade equals 12, never married, no young children, and family income less then $3,000. Using the sample proportion eligible as the cutoff value, the within-sample prediction rates for adult males are 72.48 percent for eligibles and 91.10 percent for noneligibles. The corresponding rates for adult females are 79.82 percent for eligibles and 88.32 percent for noneligibles.

SOURCE: Heckman and Smith (2004).

in the average probability of eligibility for blacks and Hispanics relative to whites exceeds 0.12 holding the resource variables constant.

Being married has a large negative estimated effect on the eligibility probabilities for all groups except adult males. The eligibility status of adult males is driven primarily by their own income, while for adult females and for youth, eligibility status depends in large part on the earnings of other family members. For all demographic groups except adult males, the presence of an own child under the age of six living in the home substantially increases the probability of eligibility for JTPA. Children raise the income cutoff for eligibility by increasing household size but do not add to the family income. In addition, years of schooling have an important impact on eligibility for all groups.

Not surprisingly, the probability of eligibility decreases monotonically with family income for all four demographic groups. The magnitude of the estimated average derivatives is very large for family income categories corresponding to incomes above $6,000. For adult males, raising family income from less than $3,000 to between $9,000 and $12,000 produces a decrease in the average probability of JTPA eligibility of 0.268. For male and female youth, the estimated average derivatives are larger still, reflecting the differential importance of family resources in determining eligibility for these groups.

Table 6.4 Logit Estimates of the Determinants of JTPA Eligibility: Youth

	Male youth		Female youth	
Black	1.111	[0.056]	2.446	[0.155]
	(0.164)	0.000	(0.092)	0.000
Hispanic	2.255	[0.121]	1.114	[0.068]
	(0.103)	0.000	(0.076)	0.000
Other race/ethnicity	1.514	[0.078]	2.065	[0.129]
	(0.195)	0.000	(0.408)	0.000
Aged 19–21	−0.434	[−0.021]	0.124	[0.007]
	(0.082)	0.000	(0.070)	0.079
Highest grade < 10	1.959	[0.100]	0.915	[0.057]
	(0.105)	0.000	(0.107)	0.000
Highest grade 10–11	1.469	[0.074]	0.134	[0.008]
	(0.109)	0.000	(0.086)	0.118
Highest grade > 12	−0.150	[−0.007]	−0.617	[−0.036]
	(0.107)	0.160	(0.072)	0.000
Currently married	−1.657	[−0.068]	0.609	[0.036]
	(0.168)	0.000	(0.082)	0.000
Div.-wid.-sep.	−3.041	[−0.106]	1.511	[0.094]
	(0.380)	0.000	(0.242)	0.000
Child age < 6 years	1.161	[0.061]	1.468	[0.090]
	(0.168)	0.000	(0.081)	0.000
Family income $3,000–$6,000	−2.582	[−0.387]	−1.306	[−0.201]
	(0.153)	0.000	(0.102)	0.000
Family income $6,000–$9,000	−4.370	[−0.547]	−3.008	[−0.436]
	(0.165)	0.000	(0.126)	0.000
Family income $9,000–$12,000	−4.595	[−0.561]	−4.237	[−0.552]
	(0.157)	0.000	(0.144)	0.000
Family income $12,000–$15,000	−5.935	[−0.631]	−5.057	[−0.610]
	(0.204)	0.000	(0.142)	0.000
Family income > $15,000	−6.628	[−0.660]	−6.585	[−0.695]
	(0.153)	0.000	(0.103)	0.000
Constant	6.246	[0.000]	6.164	[0.000]
	(0.170)	0.000	(0.117)	0.000
Number of observations	10,280		11,165	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. Person-month data from 1986 SIPP full panel. Omitted categories in the logit are white, aged 16–18, highest grade equals 12, never married, no young children, and family income less than $3,000. Using the sample proportion eligible as the cutoff value, the within-sample prediction rates for male youth are 71.95 percent for eligibles and 90.67 percent for noneligibles. The corresponding rates for female youth are 72.72 percent for eligibles and 91.32 percent for noneligibles.
SOURCE: Heckman and Smith (2004).

As we detail in the table notes, the small set of characteristics included in the specifications reported in Tables 6.3 and 6.4 do well at predicting within-sample eligibility status. For all four groups, over 70 percent of the eligibles and almost 90 percent of the noneligibles are correctly predicted when we use the overall eligibility rate within each group to define the cutoff for predicting eligibility. Taken together, our results demonstrate that the eligibility rules for JTPA produced substantial group differences in access to subsidized government training. These differences have no link to the presence of a performance management system within JTPA.

THE DETERMINANTS OF AWARENESS OF THE JTPA PROGRAM

This section investigates the determinants of awareness of the JTPA program using data on the controls and ENPs at the four JTPA sites described earlier. The concept of program awareness is an elusive but important one. Differential access to information about the program can affect awareness and thereby influence participation. Language barriers are an obvious case in point. However, awareness also depends on the incentives a person has to participate in the program. In some cases the desire to participate may influence awareness rather than awareness independently influencing participation.

As we lack evidence on individuals' information-gathering activities, we cannot determine the extent to which information costs, and therefore program awareness, play a causal role in determining program participation choices. However, the evidence presented in this section indicates that awareness of JTPA among those eligible for it is by no means universal, and that program awareness appears to be related to the likelihood of participation in the program, to education, and to language skills. We also present evidence that a sizeable fraction of persons who are eligible for the program do not believe that they are eligible for it. Taken together, this evidence suggests that barriers to information represent an important determinant of program participation.

Each member of the ENP sample was asked whether or not he or she had heard of the JTPA program. In keeping with the decentral-

ized nature of the program, local training sites often selected operating names other than JTPA. To overcome this problem, ENPs were asked about their awareness of JTPA using the program's primary name in their locality. This measure does not capture general awareness of the existence of programs like JTPA among individuals not aware of JTPA by its local name. Persons who indicated that they were aware of the program were then asked whether or not they believed themselves to be presently eligible for it. Control group members are assumed to be aware of JTPA and of their own eligibility for it.

Table 6.5 presents rates of awareness and self-reported eligibility for ENPs in each major demographic group. The first column presents the fraction of the ENPs who have heard of JTPA. These fractions are surprisingly low. For all four groups, the awareness rate is below 50 percent. The rate is higher for youth than for adults, which may indirectly reflect requirements that sites expend 40 percent of their training resources on youth, who constitute much less than 40 percent of the eligible population. The second column gives the fraction of those persons aware of the program who think that they are eligible for it. Note that all

Table 6.5 Awareness of and Self-Reported Eligibility for the JTPA Program: JTPA-Eligible Nonparticipants

	Self-reported awareness of JTPA	Self-reported eligibility for JTPA conditional on awareness	Self-reported eligibility for JTPA unconditional on awareness
Adult males	0.3539	0.3598	0.1274
	(0.0167)	(0.0311)	(0.0116)
Adult females	0.4165	0.4594	0.1913
	(0.0124)	(0.0214)	(0.0099)
Male youth	0.4722	0.5672	0.2678
	(0.0373)	(0.0610)	(0.0330)
Female youth	0.4667	0.5410	0.2525
	(0.0289)	(0.0453)	(0.0251)

NOTE: Standard errors are in parentheses. National JTPA Study data. Respondents are coded as aware of JTPA if they report having heard of JTPA by its most common local name. Respondents are coded as self-reported eligibles if they are aware of JTPA and report that they believe themselves to be presently eligible for it.
SOURCE: Heckman and Smith (2004).

of the ENPs are determined to be eligible at the time of their screening interviews and that nearly all are still eligible at the time the awareness question was asked in the baseline interview. Conditional on awareness, only 36 percent of adult males, 46 percent of adult females, and around 55 percent of youth realize that they qualify for JTPA services. Taking the product of these two probabilities yields the unconditional probability of awareness and self-reported eligibility appearing in the third column. Barely 12 percent of adult male eligibles can identify both the program and their own eligibility for it. Even among youth, only about 25 percent of eligibles are both aware of the program and of their own eligibility for it. These figures suggest that there are substantial costs associated with finding out about social programs such as JTPA and about the rules governing access to their services, and that information costs play an important role in producing demographic differentials in program participation.

The results from a logit analysis of the determinants of awareness of the JTPA program appear in Tables 6.6 and 6.7. These tables have the same basic structure as Tables 6.3 and 6.4. These estimates result from the pooled sample of ENPs and experimental controls at the four sites in the NJS that collected ENP data. Following Heckman and Smith (1999), we weight the data such that the ENPs and controls represent 0.97 and 0.03 of the overall eligible population, respectively.

For all four demographic groups, black eligibles are relatively more likely than white eligibles to know about JTPA. Adult Hispanic eligibles are relatively less likely than whites to know about JTPA, with the difference being statistically significant in both cases. The negative and statistically significant coefficient estimates for Hispanic adult eligibles arise even after controlling for facility with the English language and for level of education.[11] Language skills and educational deficits play a role in explaining this phenomenon but more than just language deficits are involved. Tienda and Jensen (1988) find that Hispanics participate less in government programs compared to non-Hispanics with the same basic economic characteristics; this suggests that they may obtain less information about programs such as JTPA from their social environment.

Consistent with the standard human capital model (see, e.g., Becker [1964]), older adults have statistically significantly lower probabilities of awareness of the program than persons age 22 to 29. This may reflect

the reduced demand for skill enhancement programs with age documented in, e.g., Leigh (1995). The pattern with respect to education is hump-shaped. Persons with the lowest levels of schooling have lower conditional probabilities of awareness than those who have completed high school. This evidence supports the notion of substantial information processing costs among those with very low levels of schooling. A lower likelihood of participating in JTPA, and hence a lower value to information about the program, accounts for the evidence that the most educated persons are less aware of the program. More specifically, individuals with high levels of education have low incentives to know about poverty reduction programs, as they are not typically eligible for them.

Among adults, divorced, widowed, or separated eligibles have a higher probability of awareness than do those who are single. The difference is both statistically and substantively significant for adult males. For three of the four groups, living in a family that receives Food Stamps has a positive effect on the probability of being aware of JTPA, while living in a family that receives AFDC has a positive effect only for adult males and for female youth. The estimated effect of living in a family receiving Food Stamps is large, with mean derivatives of 0.164 and 0.133, and it is statistically significant for both adult males and females. As nearly all of the adult female AFDC recipients also receive Food Stamps, the negative (essentially zero) coefficient on the AFDC variable indicates the additional effect of receiving *both* AFDC and Food Stamps, rather than just Food Stamps. Interpreted in this way, the absence of any AFDC effect becomes less surprising. The strong effects observed for Food Stamp receipt are consistent with the practice in that program of providing recipients with information about training opportunities.

Unemployed (i.e., out of work but actively looking for work) eligibles have a higher probability of program awareness for all four demographic groups. This difference between the unemployed and the employed is statistically significant for both male and female adults. In contrast, eligible individuals who are out of the labor force (i.e., not working and not actively looking for work) have lower probabilities of awareness than employed eligibles for all four demographic groups. These results are consistent with the relative value of information about JTPA for the two groups.

Table 6.6 Logit Estimates of the Determinants of JTPA Awareness among JTPA-Eligible Nonparticipants: Adults

	Adult males		Adult females	
Fort Wayne	0.261	[0.055]	−0.187	[−0.039]
	(0.233)	0.264	(0.203)	0.356
Jersey City	0.071	[0.015]	−0.174	[−0.036]
	(0.210)	0.736	(0.191)	0.364
Providence	−0.268	[−0.054]	−0.683	[−0.142]
	(0.231)	0.245	(0.197)	0.001
Black	0.414	[0.094]	0.288	[0.063]
	(0.272)	0.128	(0.194)	0.138
Hispanic	−0.486	[−0.102]	−0.360	[−0.077]
	(0.210)	0.021	(0.185)	0.051
Other race/ethnicity	−0.290	[−0.063]	−0.348	[−0.074]
	(0.279)	0.298	(0.255)	0.174
Low English ability	−0.763	[−0.147]	−1.334	[−0.254]
	(0.180)	0.000	(0.144)	0.000
Aged 30–39	−0.345	[−0.073]	−0.114	[−0.024]
	(0.165)	0.037	(0.137)	0.405
Aged 40–49	−0.372	[−0.078]	−0.235	[−0.050]
	(0.201)	0.064	(0.174)	0.177
Aged 50–54	0.010	[0.002]	−0.126	[−0.027]
	(0.349)	0.977	(0.253)	0.619
Highest grade < 10	−0.476	[−0.100]	−0.836	[−0.180]
	(0.179)	0.008	(0.135)	0.000
Highest grade 10–11	−0.144	[−0.031]	−0.126	[−0.028]
	(0.210)	0.494	(0.173)	0.468
Highest grade 13–15	0.102	[0.022]	−0.263	[−0.058]
	(0.239)	0.671	(0.201)	0.190
Highest grade > 15	−0.387	[−0.082]	−0.646	[−0.141]
	(0.279)	0.166	(0.292)	0.027
Currently married	0.019	[0.004]	−0.239	[−0.051]
	(0.181)	0.918	(0.162)	0.142
Div.-wid.-sep.	0.718	[0.156]	0.112	[0.024]
	(0.273)	0.009	(0.164)	0.494
Child age < 6 years	−0.079	[−0.016]	−0.062	[−0.013]
	(0.161)	0.623	(0.130)	0.635

Table 6.6 (continued)

	Adult males		Adult females	
Current AFDC receipt	0.088	[0.019]	−0.086	[−0.018]
	(0.499)	0.859	(0.218)	0.694
Current Food Stamp receipt	0.756	[0.164]	0.625	[0.133]
	(0.251)	0.003	(0.187)	0.001
Currently unemployed	0.805	[0.176]	0.628	[0.136]
	(0.289)	0.005	(0.250)	0.012
Currently out of the labor force	−0.182	[−0.037]	−0.221	[−0.047]
	(0.258)	0.481	(0.140)	0.115
Family income $3,000–$9,000	−0.152	[−0.030]	0.604	[0.129]
	(0.347)	0.662	(0.239)	0.012
Family income $9,000–$15,000	−0.070	[−0.014]	0.389	[0.083]
	(0.343)	0.838	(0.239)	0.104
Family income > $15,000	0.377	[0.080]	0.156	[0.033]
	(0.340)	0.267	(0.215)	0.469
Constant	−0.359	[0.000]	0.238	[0.000]
	(0.393)	0.361	(0.287)	0.407
Number of observations	1,551		2,436	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. National JTPA Study data. Omitted categories in the logit are Corpus Christi, white, aged 22–29, highest grade equals 12, never married, no young children, not currently receiving AFDC, not currently receiving Food Stamps, currently employed, and family income less than $3,000. Using the sample proportion aware of JTPA as the cutoff, the within-sample prediction rates for adult males are 63.29 percent for aware eligibles and 62.95 percent for unaware eligibles. The corresponding rates for adult females are 69.44 percent for aware eligibles and 61.82 percent for unaware eligibles.

SOURCE: Heckman and Smith (2004).

**Table 6.7 Logit Estimates of the Determinants of JTPA Awareness
among JTPA-Eligible Nonparticipants: Youth**

	Male youth		Female youth	
Fort Wayne	0.054	[0.011]	0.150	[0.033]
	(0.661)	0.935	(0.490)	0.759
Jersey City	−0.147	[−0.031]	−0.509	[−0.111]
	(0.727)	0.839	(0.461)	0.270
Providence	−0.412	[−0.087]	−0.686	[−0.153]
	(0.666)	0.536	(0.438)	0.117
Black	1.183	[0.242]	0.902	[0.204]
	(0.739)	0.109	(0.464)	0.052
Hispanic	0.189	[0.040]	0.298	[0.068]
	(0.652)	0.772	(0.416)	0.475
Other race/ethnicity	1.348	[0.277]	−0.813	[−0.167]
	(1.370)	0.325	(0.610)	0.183
Low English ability	−2.972	[−0.439]	−2.373	[−0.393]
	(0.751)	0.000	(0.664)	0.000
Aged 19–21	−0.891	[−0.187]	−0.212	[−0.048]
	(0.528)	0.091	(0.300)	0.478
Highest grade < 10	−0.025	[−0.005]	−0.672	[−0.153]
	(0.630)	0.968	(0.368)	0.068
Highest grade 10–11	0.280	[0.059]	−0.077	[−0.018]
	(0.592)	0.636	(0.405)	0.849
Highest grade > 12	−0.254	[−0.053]	0.063	[0.014]
	(0.729)	0.728	(0.496)	0.898
Currently married	1.323	[0.266]	0.136	[0.031]
	(0.819)	0.106	(0.370)	0.713
Div.-wid.-sep.	−0.584	[−0.119]	−0.951	[−0.203]
	(0.830)	0.482	(0.444)	0.032
Child age < 6 years	−0.242	[−0.050]	−0.164	[−0.037]
	(0.758)	0.750	(0.323)	0.613
Current AFDC receipt	−0.838	[−0.170]	0.329	[0.073]
	(1.087)	0.441	(0.420)	0.433
Current Food Stamp receipt	0.494	[0.103]	−0.026	[−0.006]
	(0.813)	0.543	(0.410)	0.950
Currently unemployed	0.522	[0.110]	0.362	[0.081]
	(0.575)	0.363	(0.471)	0.442

Table 6.7 (continued)

	Male youth		Female youth	
Currently out of the labor force	−0.990	[−0.203]	0.000	[0.000]
	(0.594)	0.095	(0.342)	1.000
Family income $3,000–$9,000	−0.907	[−0.188]	0.040	[0.009]
	(0.915)	0.321	(0.441)	0.928
Family income $9,000–$15,000	−0.395	[−0.082]	−0.321	[−0.072]
	(0.938)	0.673	(0.555)	0.563
Family income > $15,000	−0.703	[−0.146]	−0.410	[−0.092]
	(1.031)	0.495	(0.534)	0.442
Constant	0.613	[0.000]	0.272	[0.000]
	(1.019)	0.547	(0.633)	0.668
Number of observations	530		700	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. National JTPA Study data. Omitted categories in the logit are Corpus Christi, white, aged 16–18, highest grade equals 12, never married, no young children, not currently receiving AFDC, not currently receiving Food Stamps, currently employed, and family income less than $3,000. Using the sample proportion aware of JTPA as the cutoff, the within-sample prediction rates for male youth are 72.31 percent for aware eligibles and 64.86 percent for unaware eligibles. The corresponding rates for female youth are 67.43 percent for aware eligibles and 53.64 percent for unaware eligibles.

SOURCE: Heckman and Smith (2004).

While the concept of program awareness is a conceptually problematic one, the evidence presented here indicates that learning about the JTPA program and its eligibility requirements is not costless, and that the likelihood of becoming aware of the program varies in predictable ways. In particular, we find that differences in information costs, information processing and language skills, and the expected value of information about the JTPA program (which is itself a function of the probability of participation in the program and its expected benefit) can account for the patterns we observe in the data. Both the institutional structure of JTPA and our empirical findings suggest little if any link between awareness and JTPA's performance standards system. While local JTPA offices could in principle influence awareness by targeting specific groups or locations in their (quite limited) marketing efforts or by choosing contractors with links to specific subgroups among the eligible population, the indirect nature of these strategies suggests that even a program that wanted to cream-skim would likely devote its efforts primarily to other margins. Moreover, findings such as the positive effect of Food Stamp receipt on awareness argue against a major role for attempts to cream-skim at this stage in the participation process. Our analysis also suggests, however, that one way to boost program participation is to increase awareness among those eligible.

THE DETERMINANTS OF APPLICATION/ ACCEPTANCE INTO JTPA

This section presents a logit analysis of the determinants of application/acceptance (defined as reaching random assignment) conditional on program awareness using data on controls and ENPs from the NJS. We combine the application and acceptance stages here because we lack the data to examine them separately. Combining these two stages in the program participation process means that the patterns we observe reflect the influence of individual decisions to apply and to persist through the (sometimes lengthy) application process, as well as JTPA staff decisions regarding referrals to other programs, the number of required visits to the JTPA office and other hassle costs, what services to offer, and so on.

Tables 6.8 and 6.9 report estimates of logit models of application/acceptance into the JTPA program as a function of observed characteristics for the four demographic groups. Coefficient estimates and estimated standard errors take account of the choice-based nature of the sample. The training site indicators included in the model have no behavioral interpretation, as the relative numbers of ENPs and controls at each site is an artifact of the study design. The notes to Tables 6.8 and 6.9 summarize the within-sample predictive success of the models.[12]

The most dramatic result in Tables 6.8 and 6.9 is the powerful effect of recent labor force status dynamics on application/acceptance into JTPA.[13] For both adult males and adult females, all of the labor force status pattern indicators have coefficients statistically different from zero, though many of the coefficients cannot be statistically distinguished from one another. In general, unemployed persons are the most likely to apply and be accepted into the JTPA program. For adult men, individuals who recently became unemployed, either by leaving employment or by reentering the labor force, have higher application/acceptance probabilities than the long term (over six months) unemployed. This difference does not appear for adult women.

Older adults have a lower conditional probability of application/acceptance, consistent with conventional arguments that the return to training declines with age. The effect of years of completed schooling on acceptance into the program shows a hill-shaped pattern for adults, with individuals with fewer than 10 or more than 15 years of schooling having differentially low estimated application/acceptance probabilities. This pattern reveals that it is more than just low rates of awareness that cause those with less than a high school education to have low rates of participation in JTPA conditional on eligibility. For youth, the probability of application/acceptance increases monotonically with years of schooling.

Relative to single, never married persons, currently married persons have a statistically significantly lower probability of application/acceptance for three of the four demographic groups. Among adult men, but not the other three demographic groups, divorced, widowed, and separated persons also have lower probabilities of application/acceptance into JTPA.

The effect of living in a family receiving AFDC is negative for all four groups, and statistically significant for three. In contrast, family

Table 6.8 Logit Estimates of the Determinants of Acceptance into JTPA-Aware ENP and Control Samples: Adults

	Adult males		Adult females	
Fort Wayne	2.334	[0.117]	1.878	[0.118]
	(0.450)	0.000	(0.256)	0.000
Jersey City	1.120	[0.040]	1.228	[0.060]
	(0.482)	0.020	(0.238)	0.000
Providence	1.547	[0.054]	1.720	[0.084]
	(0.507)	0.002	(0.280)	0.000
Black	0.159	[0.008]	−0.060	[−0.003]
	(0.304)	0.600	(0.199)	0.763
Hispanic	−0.170	[−0.007]	0.964	[0.067]
	(0.442)	0.701	(0.240)	0.000
Other race/ethnicity	1.228	[0.079]	−0.169	[−0.008]
	(0.455)	0.007	(0.494)	0.732
Aged 30–39	−0.564	[−0.028]	−0.291	[−0.016]
	(0.263)	0.032	(0.160)	0.069
Aged 40–49	−0.836	[−0.038]	−0.226	[−0.013]
	(0.396)	0.035	(0.224)	0.313
Aged 50–54	−0.766	[−0.036]	−0.276	[−0.016]
	(0.518)	0.139	(0.334)	0.408
Highest grade < 10	−0.950	[−0.040]	−0.194	[−0.010]
	(0.341)	0.005	(0.172)	0.258
Highest grade 10–11	−0.103	[−0.006]	−0.112	[−0.006]
	(0.331)	0.755	(0.184)	0.543
Highest grade 13–15	0.327	[0.020]	0.413	[0.027]
	(0.332)	0.325	(0.208)	0.047
Highest grade > 15	−1.420	[−0.053]	−0.500	[−0.024]
	(0.550)	0.010	(0.767)	0.515
Currently married	−0.875	[−0.043]	−0.909	[−0.042]
	(0.314)	0.005	(0.214)	0.000
Div.-wid.-sep.	−0.571	[−0.031]	0.142	[0.010]
	(0.316)	0.071	(0.167)	0.398
Child age < 6 years	−0.166	[−0.007]	−0.185	[−0.010]
	(0.349)	0.634	(0.159)	0.245
Current AFDC receipt	−1.545	[−0.047]	−0.975	[−0.050]
	(0.691)	0.025	(0.232)	0.000
Current Food Stamp receipt	0.189	[0.009]	0.205	[0.012]
	(0.323)	0.558	(0.191)	0.282

Table 6.8 (continued)

	Adult males		Adult females	
Unemployed → employed	1.752	[0.068]	1.722	[0.080]
	(0.390)	0.000	(0.325)	0.000
OLF → employed	2.372	[0.120]	1.122	[0.039]
	(0.447)	0.000	(0.370)	0.002
Employed → unemployed	3.861	[0.328]	2.782	[0.210]
	(0.430)	0.000	(0.277)	0.000
Unemployed → unemployed	2.615	[0.146]	2.862	[0.223]
	(0.536)	0.000	(0.320)	0.000
OLF → unemployed	4.048	[0.360]	2.326	[0.144]
	(0.566)	0.000	(0.324)	0.000
Employed or unemployed → OLF	5.421	[0.610]		
	(0.937)	0.000		
Employed → OLF			1.400	[0.055]
			(0.314)	0.000
Unemployed → OLF			2.242	[0.134]
			(0.452)	0.000
OLF → OLF	1.550	[0.055]	1.093	[0.037]
	(0.556)	0.005	(0.260)	0.000
Family income $3,000– $9,000	−1.196	[−0.075]	0.269	[0.016]
	(0.531)	0.024	(0.232)	0.246
Family income $9,000– $15,000	−0.448	[−0.034]	−0.023	[−0.001]
	(0.480)	0.351	(0.339)	0.946
Family income > $15,000	−1.895	[−0.098]	0.034	[0.002]
	(0.507)	0.000	(0.313)	0.914
Constant	−3.385	[0.000]	−4.857	[0.000]
	(0.564)	0.000	(0.385)	0.000
Number of observations	1,024		1,520	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. National JTPA Study data. Estimates reflect weighting to account for choice-based sampling. Omitted categories in the logit are Corpus Christi, white, aged 22–29, highest grade equals 12, never married, no young children, not currently receiving AFDC, not currently receiving Food Stamps, "Employed → employed," and family income less than $3,000. The categories "Employed → OLF" and "Unemployed → OLF" are combined due to small sample sizes. Using the population proportion of persons accepted into JTPA (assumed to be 3 percent overall) to determine the cutoff, the within sample prediction rates for adult males are 81.06 for controls (applied and accepted into JTPA) and 81.38 for ENPs (did not apply or not accepted into JTPA). The corresponding rates for adult females are 65.94 for controls and 71.43 for ENPs.
SOURCE: Heckman and Smith (2004).

**Table 6.9 Logit Estimates of the Determinants of Acceptance into JTPA-
Aware ENP and Control Samples: Youth**

	Male youth		Female youth	
Fort Wayne	2.268	[0.127]	0.750	[0.040]
	(0.647)	0.000	(0.506)	0.139
Jersey City	1.445	[0.060]	0.462	[0.022]
	(0.649)	0.026	(0.545)	0.396
Providence	3.627	[0.246]	1.218	[0.067]
	(0.632)	0.000	(0.471)	0.010
Black	−0.793	[−0.030]	0.227	[0.011]
	(0.515)	0.124	(0.434)	0.601
Hispanic	0.717	[0.046]	0.097	[0.005]
	(0.628)	0.254	(0.439)	0.825
Other race/ethnicity	−4.207	[−0.080]	0.971	[0.064]
	(1.252)	0.001	(0.798)	0.223
Aged 19–21	0.285	[0.013]	−0.451	[−0.024]
	(0.460)	0.536	(0.328)	0.169
Highest grade < 10	−0.104	[−0.005]	−0.028	[−0.001]
	(0.508)	0.838	(0.421)	0.947
Highest grade 10–11	−0.187	[−0.009]	−0.392	[−0.018]
	(0.475)	0.693	(0.440)	0.373
Highest grade > 12	0.472	[0.028]	0.236	[0.014]
	(0.845)	0.576	(0.441)	0.592
Currently married	−1.225	[−0.042]	−0.527	[−0.022]
	(0.637)	0.055	(0.436)	0.227
Div.-wid.-sep.	0.155	[0.009]	0.316	[0.018]
	(1.226)	0.899	(0.662)	0.633
Current AFDC receipt	−1.455	[−0.043]	−0.934	[−0.007]
	(0.980)	0.137	(0.399)	0.019
Current Food Stamp receipt	0.555	[−0.043]	1.311	[−0.042]
	(0.580)	0.339	(0.370)	0.000
Child age < 6 years	−1.294	[0.030]	−0.139	[0.083]
	(0.676)	0.056	(0.339)	0.681
Unemployed → employed	2.110	[0.120]	1.776	[0.059]
	(0.629)	0.001	(0.564)	0.002
OLF → employed	−1.331	[−0.021]	2.243	[0.095]
	(0.890)	0.135	(0.597)	0.000

Table 6.9 (continued)

	Male youth		Female youth	
Employed →	2.087	[0.118]	3.648	[0.293]
unemployed	(0.537)	0.000	(0.664)	0.000
Unemployed →	2.211	[0.130]	2.638	[0.137]
unemployed	(0.706)	0.002	(0.591)	0.000
OLF → unemployed	1.285	[0.054]	3.292	[0.229]
	(0.764)	0.093	(0.614)	0.000
Employed or	1.959	[0.106]		
unemployed → OLF	(0.806)	0.015		
Employed → OLF			1.462	[0.041]
			(0.498)	0.003
Unemployed → OLF			0.845	[0.017]
			(0.886)	0.340
OLF → OLF	2.387	[0.150]	1.201	[0.030]
	(0.699)	0.001	(0.549)	0.029
Family income $3,000–	3.867	[0.309]	−0.386	[−0.015]
$9,000	(0.748)	0.000	(0.536)	0.472
Family income $9,000–	1.552	[0.055]	0.261	[0.013]
$15,000	(0.746)	0.038	(0.691)	0.706
Family income >	1.011	[0.028]	1.765	[0.149]
$15,000	(0.764)	0.186	(0.535)	0.001
Constant	−6.787	[0.000]	−4.732	[0.000]
	(0.976)	0.000	(0.753)	0.000
Number of observations	436		540	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. National JTPA Study data. Estimates reflect weighting to account for choice-based sampling. Omitted categories in the logit are Corpus Christi, white, aged 16–18, highest grade equals 12, never married, no young children, not currently receiving AFDC, not currently receiving Food Stamps, "Employed → employed," and family income less than $3,000. The categories "Employed → OLF" and "Unemployed → OLF" are combined due to small sample sizes. Using the population proportion of persons accepted into JTPA (assumed to be three percent overall) as the cutoff, the within sample prediction rates for male youth are 68.66 for controls (applied and accepted into JTPA) and 76.47 for ENPs (did not apply or not accepted into JTPA). The corresponding rates for female youth are 67.91 for controls and 69.57 for ENPs.

SOURCE: Heckman and Smith (2004).

Food Stamp receipt has a positive influence in all cases. Interpreting the AFDC coefficient as the marginal effect of family AFDC receipt in addition to Food Stamps, it appears that among aware eligibles, AFDC recipients have much lower probabilities of application/acceptance into JTPA than do those receiving only Food Stamps. As the effect of young children in the home is being controlled for, this difference does not result from young children acting as a barrier to work or training outside the home.

The effects of family income differ across groups. High levels of family income reduce the probability of application/acceptance among adult males, have little effect for adult females, and raise the probability of participation for both youth groups. The availability of income from other family members to provide support during training appears to encourage youth to apply to JTPA.

We do not include measures of the state of the local economy at the four sites during the time that the ENP and control samples were collected in the specifications reported here. In other work, we estimate models including both county-level monthly unemployment rates averaged over the counties constituting each of the sites, and interactions between these unemployment rates and the site indicators. Surprisingly, given the strong effects of individual unemployment found here, these variables never attain statistical significance and never have a noticeable impact on the proportion of correct predictions. One reason for this is that the number of ENPs whose month of measured (via the screening interview) eligibility occurs in a given calendar month depends not only on the size of the eligible population in that month, but also on the administrative schedule of the consulting firm doing the screening. A second reason is that the flow into the program, as measured by the number of persons randomly assigned in each calendar month, depends strongly on factors besides the local economy, including the academic schedule of the community colleges that provide much of the JTPA classroom training at these sites.

Our analysis of application/acceptance into JTPA conditional on eligibility reveals the fundamental importance of labor force status dynamics in determining who applies and is accepted into the program conditional on program awareness. A number of other factors including age, schooling, marital status, and family income play important supporting roles. In terms of cream skimming, the institutions appear

to drive some measurable effects here, as caseworkers can affect the process once a potential participant applies to JTPA. For example, caseworkers sometimes required extra visits as a way of weeding out potential participants not seriously interested in services and/or employment. The overrepresentation of unemployed individuals who recently lost a job or reentered the labor market is consistent with a cream-skimming story, though it is also consistent with the use of JTPA as a form of job search by such persons. The age, education, marital status, welfare, and family income patterns we estimate do not suggest a dominant role for cream skimming, but they do not rule out a modest one, either.

THE DETERMINANTS OF ENROLLMENT IN JTPA

Formal enrollment constitutes the final stage in the JTPA participation process. In this section we examine the determinants of the transition from acceptance into the program (defined as reaching random assignment) to formal enrollment.[14] A key difference between acceptance and enrollment is that, as noted in Chapters 3 and 4, only the outcomes of persons formally enrolled in JTPA influenced the rewards (or punishments) that a site received under the JTPA performance standards system. Training centers in JTPA had considerable (but not unlimited) discretion regarding whether (and when) to enroll persons accepted into the program. The performance standards system provided an incentive for training centers to delay enrollment until accepted applicants provided evidence that they were likely to obtain a job or to otherwise count favorably toward center performance. In practice, this sometimes meant that individuals receiving job search assistance were not enrolled until they found a job and that persons assigned to receive subsidized on-the-job training at private firms were not enrolled until a firm willing to provide them with such training had been located. For persons assigned to receive classroom training, training centers would often wait until trainees successfully attended class before enrolling them in the program.

Another factor influencing enrollment decisions for persons recommended for classroom training is their ability to maintain themselves

during the time they are enrolled in training. Classroom training typically lasts longer than employment-related services such as job search assistance. At the same time, unlike earlier programs such as CETA, JTPA provided no stipends to trainees except in unusual circumstances. Thus, the willingness of a person to pursue classroom training could depend on the availability of a stable income from outside sources. Two important sources of such income are transfer programs such as AFDC and family income. Thus, we would expect AFDC receipt and family income to have positive effects on the probability of enrollment.

At the same time, the lag between acceptance into the program and enrollment may lead to changes in the opportunity costs of participation. Accepted applicants may receive job offers that dominate the training offered by JTPA, or they may experience illness or family problems that make it impossible for them to enroll. Alternatively, they may not care for the particular services offered by their caseworkers, or may not expect them to provide sufficient benefits to justify their time, hassle, and opportunity costs. Thus, even though enrollment represents the stage in the participation process where JTPA staff members have both the greatest incentive to cream-skim and the most leverage to do so, the patterns we observe still represent the combined influence of their efforts and of individual decisions to continue in or drop out of the program.

Tables 6.10 and 6.11 present the results of logit analyses of enrollment for the four demographic groups using data on the experimental treatment group. The notes to the tables discuss the within-sample predictive performance of the model, which is quite good. We find that the four training centers have very different overall enrollment rates, even controlling for the observable characteristics of their accepted applicants. For all four demographic groups, accepted applicants at the Fort Wayne and Jersey City centers have enrollment probabilities substantially lower than similar persons at Corpus Christi, which is the omitted training center in our analysis. These differences reflect in part the differing mix of services offered at the various sites. As documented in Table 6.1, Corpus Christi offered mainly classroom training. This form of service leads to a higher enrollment rate than other JTPA services; see Kemple, Doolittle, and Wallace (1993). In contrast, Fort Wayne and, to a lesser extent, Jersey City, primarily offered on-the-job training and job search assistance. Centers offering these services will have

lower enrollment rates among accepted applicants because those who fail to locate a job or for whom no firm is willing to provide on-the-job training often do not ever get enrolled in the program.

Conditional on acceptance into JTPA, older adults are less likely to enroll than younger adults. This finding is consistent with the lower expected returns to training for older persons, which would make them relatively more likely to drop out of the program in response to a given outside opportunity. Family participation in the Food Stamp Program has a negative effect for three of the four demographic groups, with the effect both large and statistically significant for adult females. To the extent that Food Stamp recipients are less likely to find employment than other accepted applicants, this is consistent with creaming induced by the operation of JTPA performance standards. Also consistent with these incentives is our finding that for women and male youth, having no employment experience strongly reduces the probability of enrollment.

Finally, we estimate a large positive effect of family income on the enrollment probability for adults. Family income may allow an accepted applicant to undertake training even in the absence of a stipend. Thus, even though higher family income lowers eligibility, it raises the probability of enrollment among accepted applicants.

Taken together, our findings on the determinants of enrollment provide some suggestive, but not definitive, evidence of cream skimming. The strongest evidence comes from the systematic relationship between enrollment probabilities and service types across sites. Sites emphasizing subsidized on-the-job training, which provides greater enrollment flexibility than classroom training, appear to make strategic use of that flexibility. In terms of the covariates, explanations other than cream skimming can account for the age and family income effects. The rest lack any consistent pattern of precisely estimated coefficients across demographic groups. As such, we conclude only that, based primarily on site effects, our analysis of enrollment offers suggestive evidence in favor of cream skimming.

Table 6.10 Logit Estimates of the Determinants of Enrollment into JTPA Experimental Treatment Group: Adults

	Adult males		Adult females	
Fort Wayne	−0.692	[−0.163]	−1.030	[−0.232]
	(0.177)	0.000	(0.177)	0.000
Jersey City	−1.157	[−0.274]	−1.280	[−0.292]
	(0.204)	0.000	(0.195)	0.000
Providence	0.447	[0.090]	−0.563	[−0.121]
	(0.198)	0.024	(0.199)	0.005
Black	−0.180	[−0.041]	−0.240	[−0.056]
	(0.129)	0.165	(0.132)	0.069
Hispanic	0.271	[0.060]	0.196	[0.045]
	(0.181)	0.135	(0.176)	0.265
Other race/ethnicity	−0.024	[−0.005]	0.637	[0.141]
	(0.283)	0.933	(0.350)	0.068
Low English ability	0.288	[0.065]	−0.082	[−0.019]
	(0.241)	0.231	(0.210)	0.697
Aged 30–39	−0.105	[−0.023]	0.056	[0.013]
	(0.114)	0.358	(0.115)	0.629
Aged 40–49	−0.483	[−0.109]	−0.324	[−0.075]
	(0.165)	0.003	(0.160)	0.042
Aged 50–54	−0.370	[−0.083]	0.055	[0.013]
	(0.285)	0.195	(0.305)	0.856
Highest grade < 10	−0.129	[−0.029]	−0.168	[−0.038]
	(0.140)	0.357	(0.132)	0.203
Highest grade 10–11	−0.210	[−0.047]	−0.041	[−0.009]
	(0.130)	0.105	(0.124)	0.738
Highest grade 13–15	0.001	[0.000]	−0.035	[−0.008]
	(0.156)	0.993	(0.151)	0.817
Highest grade > 15	−0.204	[−0.046]	−0.216	[−0.049]
	(0.260)	0.432	(0.302)	0.475
Currently married	0.325	[0.073]	0.106	[0.024]
	(0.154)	0.034	(0.167)	0.525
Div.-wid.-sep.	0.273	[0.061]	0.203	[0.046]
	(0.135)	0.044	(0.121)	0.093
Child age < 6 years	0.109	[0.024]	0.336	[0.077]
	(0.154)	0.480	(0.115)	0.004

Table 6.10 (continued)

	Adult males		Adult females	
Current AFDC receipt	0.132	[0.029]	0.158	[0.036]
	(0.353)	0.709	(0.138)	0.253
Current Food Stamp receipt	−0.070	[−0.016]	−0.237	[−0.054]
	(0.132)	0.595	(0.117)	0.044
Employed 1–6 months ago	−0.060	[−0.013]	0.308	[0.071]
	(0.164)	0.715	(0.150)	0.040
Employed 7–12 months ago	−0.058	[−0.013]	0.216	[0.050]
	(0.210)	0.781	(0.198)	0.276
Employed > 12 months ago	0.032	[0.007]	0.287	[0.066]
	(0.211)	0.880	(0.177)	0.106
Never employed	−0.085	[−0.019]	0.061	[0.014]
	(0.227)	0.709	(0.192)	0.750
Family income $3,000–	−0.108	[−0.024]	0.211	[0.049]
$9,000	(0.122)	0.378	(0.118)	0.073
Family income $9,000–	0.057	[0.013]	0.441	[0.100]
$15,000	(0.165)	0.728	(0.166)	0.008
Family income	0.483	[0.105]	0.599	[0.135]
> $15,000	(0.204)	0.018	(0.256)	0.019
Constant	0.498	[0.000]	0.596	[0.000]
	(0.365)	0.172	(0.350)	0.088
Number of observations	1,886		2,012	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. National JTPA Study data. Estimation includes observations with imputed covariates due to relative high levels of item non-response. Omitted categories in the logit are Corpus Christi, white, normal English ability, aged 22–29, highest grade equals 12, never married, no young children, not currently receiving AFDC, not currently receiving Food Stamps, currently employed, and family income less than $3,000. Using the sample proportion of accepted applicants enrolled into JTPA as the cutoff, the within-sample prediction rates for adult males are 62.48 percent for enrollees and 67.94 percent for nonenrollees. The corresponding rates for adult females are 57.64 percent for enrollees and 66.41 percent for nonenrollees.

SOURCE: Heckman and Smith (2004).

Table 6.11 Logit Estimates of the Determinants of Enrollment into JTPA Experimental Treatment Group: Youth

	Male youth		Female youth	
Fort Wayne	−1.213	[−0.241]	−1.266	[−0.253]
	(0.273)	0.000	(0.271)	0.000
Jersey City	−1.350	[−0.274]	−1.557	[−0.324]
	(0.297)	0.000	(0.266)	0.000
Providence	−0.554	[−0.096]	−0.597	[−0.103]
	(0.276)	0.045	(0.276)	0.031
Black	−0.291	[−0.061]	−0.223	[−0.048]
	(0.191)	0.127	(0.210)	0.287
Hispanic	−0.044	[−0.009]	0.212	[0.043]
	(0.241)	0.854	(0.250)	0.396
Other race/ethnicity			0.531	[0.102]
			(0.533)	0.319
Low English ability	−0.360	[−0.070]	0.113	[0.023]
	(0.392)	0.358	(0.391)	0.773
Aged 19–21	−0.429	[−0.087]	0.036	[0.007]
	(0.175)	0.014	(0.167)	0.830
Highest grade < 10	0.060	[0.012]	0.084	[0.017]
	(0.213)	0.779	(0.204)	0.680
Highest grade 10–11	0.000	[0.000]	0.131	[0.027]
	(0.192)	0.999	(0.183)	0.476
Highest grade > 12	0.064	[0.013]	−0.111	[−0.023]
	(0.405)	0.874	(0.355)	0.755
Currently married	0.138	[0.028]	−0.052	[−0.011]
	(0.335)	0.680	(0.302)	0.864
Div.-wid.-sep.	0.338	[0.066]	0.424	[0.083]
	(0.729)	0.643	(0.381)	0.267
Child age < 6 years	0.279	[0.055]	0.092	[0.019]
	(0.313)	0.373	(0.193)	0.632
Current AFDC receipt	−0.699	[−0.151]	0.135	[0.028]
	(0.336)	0.038	(0.241)	0.576
Current Food Stamp receipt	0.157	[0.032]	−0.060	[−0.012]
	(0.219)	0.474	(0.195)	0.757
Employed 1–6 months ago	−0.228	[−0.044]	−0.220	[−0.044]
	(0.254)	0.370	(0.239)	0.357

Table 6.11 (continued)

	Male youth		Female youth	
Employed 7–12 months ago	−0.467	[−0.093]	−0.415	[−0.085]
	(0.341)	0.170	(0.332)	0.211
Employed > 12 months ago	−0.413	[−0.082]	−0.353	[−0.072]
	(0.409)	0.312	(0.328)	0.282
Never employed	−0.657	[−0.134]	−0.276	[−0.055]
	(0.302)	0.030	(0.280)	0.324
Family income $3,000–$9,000	−0.057	[−0.012]	0.086	[0.018]
	(0.185)	0.758	(0.176)	0.627
Family income $9,000–$15,000	−0.463	[−0.099]	0.207	[0.042]
	(0.234)	0.048	(0.272)	0.446
Family income > $15,000	0.301	[0.058]	0.116	[0.024]
	(0.278)	0.279	(0.280)	0.680
Constant	2.505	[0.000]	1.453	[0.000]
	(0.586)	0.000	(0.557)	0.009
Number of observations	923		962	

NOTE: Standard errors are in parentheses, mean derivatives are in square brackets, and p-values are below the mean derivatives. National JTPA Study data. Estimation includes observations with imputed covariates due to relative high levels of item non-response. Omitted categories in the logit are Corpus Christi, white, normal English ability, aged 16–18, highest grade equals 12, never married, no young children, not currently receiving AFDC, not currently receiving Food Stamps, currently employed, and family income less than $3,000. Using the sample proportion of accepted applicants enrolled into JTPA as the cutoff, the within-sample prediction rates for male youth are 60.20 percent for enrollees and 65.08 percent for nonenrollees. The corresponding rates for female youth are 57.51 percent for enrollees and 68.75 percent for nonenrollees.

SOURCE: Heckman and Smith (2004).

DECOMPOSING THE PROCESS OF SELECTION INTO JTPA

In order to determine at what stage—enrollment (*en*), awareness (*aw*), acceptance (*ac*), or eligibility (*el*)—and in which direction particular observed characteristics operate to determine participation in the program, we use the chain rule to decompose the probability of participation in the following way:

(6.7) $\dfrac{\partial \Pr(en = 1 \mid x)}{\partial x} =$

$$\left[\frac{\partial cond(en)}{\partial x} \right] \cdot cond(ac) \cdot cond(aw) \cdot cond(el)$$

$$+ cond(en) \cdot \left[\frac{\partial cond(ac)}{\partial x} \right] \cdot cond(aw) \cdot cond(el)$$

$$+ cond(en) \cdot cond(ac) \cdot \left[\frac{\partial cond(aw)}{\partial x} \right] \cdot cond(el)$$

$$+ cond(en) \cdot cond(ac) \cdot cond(aw) \cdot \left[\frac{\partial cond(el)}{\partial x} \right]$$

where $cond(en) = \Pr(en = 1 \mid ac = 1, aw = 1, el = 1, x)$

$cond(ac) = \Pr(ac = 1 \mid aw = 1, el = 1, x)$

$cond(aw) = \Pr(aw = 1 \mid el = 1, x)$

$cond(el) = \Pr(el = 1 \mid x)$.

This equation decomposes the effect of a change in *x* on the probability of participation in the program into its effect on each constituent probability weighted by the remaining probabilities. In each term, the component in square brackets is the effect of a change in *x* on one of the conditional probabilities leading to participation in the program. For dichotomous variables, we replace derivatives with finite changes.

Using Equation (6.7), we can assess through which channels, if any, variation in *x* operates to affect the probability of participation in JTPA. In this section, we present results for two different decompositions. The two decompositions differ in terms of the number of steps included, the

set of variables included, and the data used to perform the decomposition. These criteria are interrelated because the probability estimates are derived from different datasets and not all of the datasets contain all of the variables used to estimate the conditional probabilities discussed in the preceding sections. Reducing the number of stages enables us to estimate the effects of more explanatory variables. In addition, for certain variables some of the stages in Equation (6.7) are effectively eliminated. For example, belonging to a family that receives AFDC or Food Stamps makes the probability of eligibility equal to one. It is only informative to examine the effects of AFDC and Food Stamp receipt on the remaining components of the decomposition.

The first decompositions we present appear in Tables 6.12–6.15. The format of each table corresponds directly to Equation (6.7). The estimates of the probability of eligibility are based on the SIPP data. The estimates for the conditional probabilities of awareness, of application/ acceptance, and of enrollment all draw on data from the four sites in the National JTPA Study, with the first two constructed using the pooled ENP and control group data and the last obtained from the experimental treatment group. The stark difference in geographic coverage between the samples for the first stage and the later stages of the decomposition weakens our analysis, but this is unavoidable given the lack of comparable data on the ineligible population at the four ENP sites. As in the earlier tables, the reported derivatives consist of sample averages of individual derivatives (or finite differences). They are not the derivatives evaluated at the sample means of the characteristics.[15]

The first column in the table presents the overall effect of a change in the indicated characteristic x on the probability of enrollment; this is the term on the left-hand side of Equation (6.7). These values are expressed in terms of the expected change in the probability of participation resulting from the indicated change in characteristics, multiplied by 100 for ease of presentation. To put the terms in context, note that the unconditional probability of participation is around 0.03, so that an overall effect of −0.867, which is the effect for adult males of switching from a family income of $0–$3,000 to one over $15,000, translates into a change in the probability of −0.00867, or a reduction of nearly one-third relative to the unconditional probability.

The second, fourth, sixth, and eighth columns of the first panel present the four chain rule terms that compose the overall effect. Thus,

Table 6.12 JTPA Participation Simulation Results—Weighted and Unweighted Effects of Changes in Characteristics on the Probability of Participation in JTPA 1986 SIPP Panel Sample of JTPA Eligibles: Adult Males (80,598 observations)

Change from:	Overall effect	Weighted eligibility term	Percent of overall	Weighted awareness term	Percent of overall	Weighted acceptance term	Percent of overall	Weighted enrollment term	Percent of overall
White to									
Black	0.15813	0.17989	113.76	0.06623	41.88	−0.05204	−32.91	−0.03595	−22.74
	(0.00174)	(0.00194)	(0.21)	(0.00068)	(0.20)	(0.00054)	(0.21)	(0.00041)	(0.15)
Hispanic	−0.09954	0.12535	−125.93	−0.08245	82.83	−0.18921	190.08	0.04676	−46.98
	(0.00121)	(0.00137)	(1.30)	(0.00086)	(0.54)	(0.00198)	(1.03)	(0.00053)	(0.30)
Other race/ethnicity	0.19616	0.17773	90.61	−0.07631	−38.90	0.08834	45.03	0.00643	3.28
	(0.00202)	(0.00193)	(0.16)	(0.00081)	(0.19)	(0.00084)	(0.19)	(0.00007)	(0.02)
Aged 22–29 to									
30–39	−0.20738	−0.07229	34.86	−0.04524	21.81	−0.08232	39.69	−0.00752	3.63
	(0.00213)	(0.00078)	(0.05)	(0.00046)	(0.05)	(0.00083)	(0.06)	(0.00009)	(0.01)
40–49	−0.23873	−0.08673	36.33	−0.04657	19.51	−0.05507	23.07	−0.05034	21.09
	(0.00252)	(0.00095)	(0.06)	(0.00048)	(0.04)	(0.00056)	(0.04)	(0.00058)	(0.05)
50–54	−0.31125	−0.12920	41.51	−0.00039	0.012	−0.12280	39.45	−0.05886	18.91
	(0.00330)	(0.00139)	(0.05)	(0.00000)	(0.00)	(0.00127)	(0.05)	(0.00067)	(0.04)
Single, never married to									
Married	−0.05544	0.01257	−22.68	0.01334	−24.07	−0.12037	217.11	0.03899	−70.33
	(0.00052)	(0.00014)	(0.15)	(0.00014)	(0.14)	(0.00117)	(0.69)	(0.00044)	(0.45)
Div.-wid.-sep.	0.09699	0.02779	28.66	0.10393	107.16	−0.06582	−67.86	0.03110	32.06
	(0.00106)	(0.00030)	(0.10)	(0.00106)	(0.18)	(0.00068)	(0.37)	(0.00035)	(0.16)

Highest grade = 12 to									
< 10	−0.07920	0.08490	−107.19	−0.06366	80.37	−0.01038	126.74	−0.00008	0.10
	(0.00091)	(0.00093)	(0.93)	(0.00067)	(0.44)	(0.00105)	(0.53)	(0.00000)	(0.00)
10–11	0.02426	0.03716	153.13	−0.01861	−76.70	0.02108	86.89	−0.01537	−63.33
	(0.00027)	(0.00041)	(0.52)	(0.00019)	(0.46)	(0.00021)	(0.44)	(0.00018)	(0.44)
13–15	0.01822	−0.02288	−125.56	0.00813	44.64	0.01885	103.44	0.01412	77.48
	(0.00019)	(0.00026)	(0.88)	(0.00008)	(0.25)	(0.00019)	(0.41)	(0.00016)	(0.31)
> 15	−0.24466	−0.00939	3.84	−0.05869	23.99	−0.17448	71.32	−0.00210	0.86
	(0.00245)	(0.00010)	(0.01)	(0.00060)	(0.04)	(0.00174)	(0.05)	(0.00002)	(0.00)
No child < 6 years of age to child									
< 6 years of age	−0.09757	−0.02979	30.53	−0.00915	9.38	−0.07291	74.72	0.01429	−14.64
	(0.00097)	(0.00032)	(0.07)	(0.00009)	(0.02)	(0.00072)	(0.10)	(0.00016)	(0.05)
Family income < $3,000 to									
$3,000–$9,000	−0.32777	−0.10544	32.17	−0.02445	7.46	−0.15696	47.89	−0.04095	12.49
	(0.00344)	(0.00116)	(0.04)	(0.00025)	(0.02)	(0.00161)	(0.06)	(0.00047)	(0.03)
$9,000–$15,000	−0.47674	−0.25404	53.29	−0.03367	7.06	−0.15563	32.64	−0.03338	7.00
	(0.00484)	(0.00259)	(0.05)	(0.00035)	(0.02)	(0.00158)	(0.04)	(0.00038)	(0.02)
> $15,000	−0.86666	−0.32102	37.04	0.01048	−1.21	−0.56750	65.48	0.01143	−1.32
	(0.00493)	(0.00250)	(0.09)	(0.00011)	(0.01)	(0.00274)	(0.07)	(0.00013)	(0.01)

(continued)

Table 6.12 (continued)

Change from:	Unweighted eligibility term	Unweighted awareness term	Unweighted acceptance term	Unweighted enrollment term
White to				
Black	0.06693	0.11697	−0.00968	−0.07041
	(0.00018)	(0.00005)	(0.00005)	(0.00005)
Hispanic	0.04687	−0.14448	−0.03352	0.08792
	(0.00013)	(0.00011)	(0.00020)	(0.00000)
Other race/ethnicity	0.06753	−0.13250	0.01774	0.01230
	(0.00020)	(0.00009)	(0.00009)	(0.00000)
Aged 22–29 to				
30–39	−0.02757	−0.08029	−0.01583	−0.01445
	(0.00007)	(0.00004)	(0.00009)	(0.00000)
40–49	−0.03277	−0.08247	−0.01053	−0.09820
	(0.00009)	(0.00004)	(0.00006)	(0.00003)
50–54	−0.04864	−0.00068	−0.02274	−0.11663
	(0.00014)	(0.00000)	(0.00013)	(0.00008)
Single, never married to				
Married	0.00468	0.02359	−0.02424	0.07681
	(0.00001)	(0.00001)	(0.00012)	(0.00006)
Div.-wid.-sep.	0.01056	0.18502	−0.01223	0.05862
	(0.00003)	(0.00006)	(0.00007)	(0.00002)

Highest grade = 12 to				
< 10	0.03184	−0.11108	−0.01834	−0.00016
	(0.00008)	(0.00007)	(0.00010)	(0.00000)
10–11	0.01406	−0.03287	0.00410	−0.02980
	(0.00004)	(0.00001)	(0.00002)	(0.00000)
13–15	−0.00856	0.01443	0.00364	0.02700
	(0.00002)	(0.00000)	(0.00002)	(0.00000)
> 15	−0.00355	−0.10503	−0.03325	−0.00404
	(0.00001)	(0.00003)	(0.00017)	(0.00000)
No child < 6 years of age to				
child < 6 years of age	−0.01129	−0.01621	−0.01379	0.02742
	(0.00003)	(0.00001)	(0.00007)	(0.00001)
Family income < $3,000 to				
$3,000–$9,000	−0.03797	−0.04304	−0.02817	−0.08075
	(0.00013)	(0.00000)	(0.00017)	(0.00006)
$9,000–$15,000	−0.08709	−0.05927	−0.03101	−0.06552
	(0.00035)	(0.00000)	(0.00019)	(0.00000)
> $15,000	−0.27189	0.01851	−0.22959	0.02226
	(0.00040)	(0.00001)	(0.00043)	(0.00000)

NOTE: Simulations use 1986 SIPP full panel data. Bootstrap standard errors appear in parentheses. The standard errors reflect variation due to the sample used to perform the simulations.
SOURCE: Heckman and Smith (2004).

Table 6.13 JTPA Participation Simulation Results—Weighted and Unweighted Effects of Changes in Characteristics on the Probability of Participation in JTPA 1986 SIPP Panel Sample of JTPA Eligibles: Adult Females (89,196 observations)

Change from:	Overall effect	Weighted eligibility term	Percent of overall	Weighted awareness term	Percent of overall	Weighted acceptance term	Percent of overall	Weighted enrollment term	Percent of overall
White to									
Black	0.18225	0.17694	97.09	0.04858	26.66	−0.01011	−5.55	−0.03316	−18.20
	(0.00074)	(0.00074)	(0.08)	(0.00024)	(0.09)	(0.00005)	(0.01)	(0.00016)	(0.05)
Hispanic	0.05725	0.06722	117.41	−0.03759	−65.65	−0.03785	−66.11	0.06547	114.36
	(0.00027)	(0.00028)	(0.26)	(0.00018)	(0.28)	(0.00018)	(0.25)	(0.00033)	(0.36)
Other race/ethnicity	0.08121	0.06315	77.76	−0.05323	−65.54	0.00495	6.10	0.06633	81.68
	(0.00037)	(0.00026)	(0.15)	(0.00025)	(0.22)	(0.00002)	(0.02)	(0.00033)	(0.18)
Aged 22–29 to									
30–39	−0.06881	0.00439	−6.38	−0.00849	12.34	−0.07057	102.56	0.00587	−8.53
	(0.00031)	(0.00002)	(0.01)	(0.00004)	(0.02)	(0.00032)	(0.00)	(0.00003)	(0.02)
40–49	−0.13415	0.00954	−7.11	−0.02645	19.72	−0.08264	61.60	−0.03461	25.80
	(0.00064)	(0.00004)	(0.02)	(0.00013)	(0.03)	(0.00039)	(0.00)	(0.00017)	(0.03)
50–54	−0.17226	−0.02104	12.21	−0.02611	15.16	−0.13052	75.77	0.00540	−3.13
	(0.00078)	(0.00008)	(0.02)	(0.00013)	(0.02)	(0.00061)	(0.05)	(0.00003)	(0.01)
Single, never married to									
Married	−0.25809	−0.11003	42.63	−0.03753	14.54	−0.13273	51.43	0.02221	−8.61
	(0.00096)	(0.00037)	(0.03)	(0.00018)	(0.02)	(0.00054)	(0.03)	(0.00011)	(0.02)
Div.-wid.-sep.	0.05775	−0.00537	−9.30	0.00975	16.88	0.02610	45.20	0.02727	47.21
	(0.00028)	(0.00002)	(0.02)	(0.00005)	(0.03)	(0.00012)	(0.03)	(0.00014)	(0.04)

Highest grade = 12 to									
< 10	−0.00028	0.12478	−45004.11	−0.09553	34456.05	−0.01200	4329.50	−0.01752	6320.56
	(0.00039)	(0.00050)	(61725.88)	(0.00048)	(47143.37)	(0.00006)	(5926.98)	(0.00009)	(8658.46)
10–11	−0.02252	0.00440	−19.54	−0.00229	10.17	−0.01690	75.04	−0.00773	34.34
	(0.00011)	(0.00002)	(0.05)	(0.00001)	(0.02)	(0.00008)	(0.06)	(0.00004)	(0.03)
13–15	0.00983	−0.02878	−292.81	−0.02655	−270.11	0.06390	650.14	0.00125	12.70
	(0.00010)	(0.00012)	(2.80)	(0.00013)	(2.40)	(0.00030)	(5.07)	(0.00001)	(0.10)
> 15	−0.17329	−0.11342	65.45	−0.08481	48.94	0.04682	−27.02	−0.02190	12.64
	(0.00072)	(0.00045)	(0.07)	(0.00039)	(0.04)	(0.00022)	(0.03)	(0.00011)	(0.02)
No child < 6 years of age to child									
< 6 years	0.00212	0.03731	1763.02	−0.00557	−263.19	−0.06759	−3193.65	0.03797	1794.02
	(0.00012)	(0.00015)	(103.67)	(0.00003)	(15.97)	(0.00033)	(194.88)	(0.00019)	(107.23)
Family income < $3,000 to									
$3,000–$9,000	0.00364	−0.08450	−2322.85	0.06882	1891.74	0.01681	462.23	0.00250	68.81
	(0.00022)	(0.00037)	(139.38)	(0.00034)	(108.34)	(0.00008)	(27.00)	(0.00001)	(4.04)
$9,000–$15,000	−0.14105	−0.18756	132.98	0.03819	−27.08	−0.02034	14.42	0.02862	−20.29
	(0.00068)	(0.00084)	(0.13)	(0.00019)	(0.11)	(0.00009)	(0.04)	(0.00014)	(0.08)
> $15,000	−0.37947	−0.33806	89.09	0.00612	−1.61	−0.08725	22.99	0.03971	−10.46
	(0.00114)	(0.00098)	(0.00)	(0.00003)	(0.01)	(0.00036)	(0.05)	(0.00020)	(0.04)

(continued)

Table 6.13 (continued)

Change from:	Unweighted eligibility term	Unweighted awareness term	Unweighted acceptance term	Unweighted enrollment term
White to				
Black	0.11936	0.10254	−0.00213	−0.07239
	(0.00025)	(0.00000)	(0.00000)	(0.00003)
Hispanic	0.04523	−0.07589	−0.00796	0.13711
	(0.00010)	(0.00003)	(0.00001)	(0.00006)
Other race/ethnicity	0.04237	−0.10664	0.00105	0.13905
	(0.00009)	(0.00004)	(0.00000)	(0.00000)
Aged 22–29 to				
30–39	0.00292	−0.01759	−0.01495	0.01270
	(0.00001)	(0.00000)	(0.00003)	(0.00000)
40–49	0.00633	−0.05442	−0.01792	−0.07575
	(0.00001)	(0.00002)	(0.00004)	(0.00003)
50–54	−0.01395	−0.05343	−0.02759	0.01166
	(0.00004)	(0.00003)	(0.00004)	(0.00000)
Single, never married to				
Married	−0.08046	−0.07888	−0.03365	0.04852
	(0.00017)	(0.00004)	(0.00004)	(0.00002)
Div.-wid.-sep.	−0.00355	0.02033	0.00566	0.05814
	(0.00001)	(0.00001)	(0.00001)	(0.00000)

Highest grade = 12 to				
< 10	0.08384	−0.18277	−0.00254	−0.03823
	(0.00017)	(0.00014)	(0.00001)	(0.00001)
10–11	0.00292	−0.00474	−0.00356	−0.01680
	(0.00001)	(0.00000)	(0.00001)	(0.00000)
13–15	−0.01898	−0.05459	0.01348	0.00270
	(0.00005)	(0.00000)	(0.00002)	(0.00000)
> 15	−0.07569	−0.17394	0.00970	−0.04777
	(0.00020)	(0.00009)	(0.00002)	(0.00002)
No child < 6 years of age to				
child < 6 years	0.02473	−0.01154	−0.01397	0.08169
	(0.00006)	(0.00001)	(0.00003)	(0.00004)
Family income < $3,000 to				
$3,000–$9,000	−0.05266	0.14643	0.00361	0.00541
	(0.00015)	(0.00006)	(0.00001)	(0.00000)
$9,000–$15,000	−0.11255	0.08099	−0.00431	0.06103
	(0.00035)	(0.00000)	(0.00001)	(0.00000)
> $15,000	−0.26155	0.01266	−0.02135	0.08726
	(0.00039)	(0.00001)	(0.00003)	(0.00000)

NOTE: Simulations use 1986 SIPP full panel data. Bootstrap standard errors appear in parentheses. The standard errors reflect variation due to the sample used to perform the simulations.

SOURCE: Heckman and Smith (2004).

Table 6.14 JTPA Participation Simulation Results—Weighted and Unweighted Effects of Changes in Characteristics on the Probability of Participation in JTPA 1986 SIPP Panel Sample of JTPA Eligibles: Male Youth (10,280 observations)

Change from:	Overall effect	Weighted eligibility term	Percent of overall	Weighted awareness term	Percent of overall	Weighted acceptance term	Percent of overall	Weighted enrollment term	Percent of overall
White to									
Black	0.18985	0.13157	69.30	0.19817	104.38	−0.08387	−44.18	−0.05602	−29.51
	(0.00359)	(0.00251)	(0.59)	(0.00360)	(1.21)	(0.00185)	(0.94)	(0.00127)	(0.59)
Hispanic	0.16202	0.27921	172.33	0.00435	2.68	−0.16337	−100.84	0.04183	25.82
	(0.00461)	(0.00559)	(2.31)	(0.00008)	(0.07)	(0.00334)	(3.13)	(0.00098)	(0.80)
Other race/ethnicity	0.11554	0.21151	183.06	0.19799	171.37	−.35420	−306.57	0.06022	52.12
	(0.00528)	(0.00417)	(6.88)	(0.00348)	(7.34)	(0.00742)	(16.67)	(0.00144)	(2.69)
Aged 16–18 to									
19–21	−0.04099	−0.05230	127.60	−0.12499	304.94	0.17496	−426.86	−0.03866	94.32
	(0.00217)	(0.00098)	(5.88)	(0.00224)	(15.65)	(0.00386)	(26.88)	(0.00091)	(5.52)
Single, never married to									
Married	−0.09644	−0.14673	152.14	0.22705	−235.42	−0.20505	212.61	0.02827	−29.31
	(0.00327)	(0.00262)	(3.74)	(0.00400)	(7.59)	(0.00430)	(4.65)	(0.00067)	(0.66)
Div.-wid.-sep.	−0.45773	−0.18594	40.62	−0.16515	36.08	−0.12806	27.98	0.02142	−4.68
	(0.00827)	(0.00319)	(0.18)	(0.00311)	(0.10)	(0.00267)	(0.16)	(0.00051)	(0.04)

Highest grade = 12 to									
< 10	0.27423	0.19428	70.85	0.00450	1.64	0.05394	19.67	0.02152	7.85
	(0.00480)	(0.00358)	(0.36)	(0.00008)	(0.01)	(0.00110)	(0.25)	(0.00051)	(0.10)
10–11	0.31709	0.15118	47.68	0.06286	19.82	0.09853	31.07	0.00451	1.42
	(0.00559)	(0.00287)	(0.35)	(0.00112)	(0.13)	(0.00200)	(0.27)	(0.00011)	(0.02)
> 12	−0.15662	−0.00644	4.11	−0.08392	53.58	−0.06819	43.54	0.00192	−1.23
	(0.00291)	(0.00012)	(0.05)	(0.00152)	(0.17)	(0.00140)	(0.20)	(0.00005)	(0.01)
No child < 6 years of age to child									
< 6 years	−0.06653	0.13831	−207.91	−0.02807	42.20	−0.20069	301.67	0.02392	−35.95
	(0.00296)	(0.00276)	(9.74)	(0.00051)	(1.50)	(0.00411)	(9.40)	(0.00057)	(1.18)
Family income < $3,000 to									
$3,000–$9,000	−0.02934	−0.38646	1317.34	−0.09657	329.20	0.47009	−1602.39	−0.01638	55.82
	(0.00890)	(0.00892)	(577.07)	(0.00178)	(147.80)	(0.00977)	(750.37)	(0.00038)	(25.52)
$9,000–$15,000	−0.62620	−0.36139	57.71	0.00376	−0.60	−0.18625	29.74	−0.08230	13.14
	(0.01208)	(0.00660)	(0.13)	(0.00007)	(0.01)	(0.00378)	(0.08)	(0.00188)	(0.08)
> $15,000	−1.13101	−0.85797	75.86	−0.07077	6.26	−0.22640	20.02	0.02411	−2.13
	(0.00927)	(0.00564)	(0.21)	(0.00126)	(0.07)	(0.00358)	(0.18)	(0.00056)	(0.04)

(continued)

Table 6.14 (continued)

Change from:	Unweighted eligibility term	Unweighted awareness term	Unweighted acceptance term	Unweighted enrollment term
White to				
Black	0.06224	0.23652	−0.01464	−0.10033
	(0.00033)	(0.00027)	(0.00011)	(0.00009)
Hispanic	0.12856	0.00515	−0.02811	0.07099
	(0.00071)	(0.00001)	(0.00023)	(0.00011)
Other race/ethnicity	0.09938	0.24597	−0.05971	0.10316
	(0.00059)	(0.00029)	(0.00051)	(0.00017)
Aged 16–18 to				
19–21	−0.02447	−0.14922	0.02848	−0.06538
	(0.00013)	(0.00014)	(0.00020)	(0.00006)
Single, never married to				
Married	−0.06715	0.28561	−0.03700	0.04882
	(0.00043)	(0.00023)	(0.00032)	(0.00007)
Div.-wid.-sep.	−0.08370	−0.18808	−0.02320	0.03693
	(0.00060)	(0.00048)	(0.00018)	(0.00006)

Highest grade = 12 to				
< 10	0.09339	0.00533	0.01010	0.03660
	(0.00051)	(0.00001)	(0.00007)	(0.00005)
10–11	0.07254	0.07497	0.01866	0.00780
	(0.00039)	(0.00009)	(0.00013)	(0.00001)
> 12	−0.00299	−0.09993	−0.01283	0.00333
	(0.00002)	(0.00013)	(0.00009)	(0.00000)
No child < 6 years of age to				
child < 6 years	0.06409	−0.03296	−0.03545	0.04130
	(0.00038)	(0.00006)	(0.00029)	(0.00006)
Family income < $3,000 to				
$3,000–$9,000	−0.13607	−0.10801	0.09427	−0.02889
	(0.00150)	(0.00018)	(0.00035)	(0.00003)
$9,000–$15,000	−0.17195	0.00445	−0.03412	−0.14599
	(0.00229)	(0.00001)	(0.00027)	(0.00013)
> $15,000	−0.57966	−0.08677	−0.05300	0.04362
	(0.00228)	(0.00010)	(0.00026)	(0.00006)

NOTE: Simulations use 1986 SIPP full panel data. Bootstrap standard errors appear in parentheses. The standard errors reflect variations due to the sample used to perform the simulation.
SOURCE: Heckman and Smith (2004).

Table 6.15   JTPA Participation Simulation Results—Weighted and Unweighted Effects of Changes in Characteristics on the Probability of Participation in JTPA 1986 SIPP Panel Sample of JTPA Eligibles: Female Youth (11,165 observations)

Change from:	Overall effect	Weighted eligibility term	Percent of overall	Weighted awareness term	Percent of overall	Weighted acceptance term	Percent of overall	Weighted enrollment term	Percent of overall
White to									
Black	0.60673	0.25958	42.78	0.15867	26.15	0.23113	38.09	−0.04265	−7.03
	(0.00343)	(0.00170)	(0.17)	(0.00122)	(0.08)	(0.00153)	(0.13)	(0.00043)	(0.04)
Hispanic	0.33973	0.13234	38.95	0.07296	21.48	0.03803	11.19	0.09640	28.38
	(0.00237)	(0.00086)	(0.18)	(0.00055)	(0.07)	(0.00031)	(0.04)	(0.00103)	(0.14)
Other race/	0.52914	0.21732	41.07	−0.15091	−28.52	0.39674	74.98	0.06597	12.47
ethnicity	(0.00323)	(0.00135)	(0.24)	(0.00124)	(0.12)	(0.00309)	(0.24)	(0.00071)	(0.07)
Aged 16–18 to									
19–21	−0.13182	0.00600	−4.55	−0.04413	33.48	−0.09964	75.58	0.00594	−4.51
	(0.00103)	(0.00004)	(0.04)	(0.00033)	(0.09)	(0.00080)	(0.09)	(0.00006)	(0.02)
Single, never married to									
Married	−0.11438	0.04948	−43.26	0.02279	−19.93	−0.21716	189.86	0.03049	−26.66
	(0.00122)	(0.00031)	(0.52)	(0.00017)	(0.15)	(0.00170)	(0.81)	(0.00032)	(0.20)
Div.-wid.-sep.	0.43598	0.16794	38.52	−0.13812	−31.68	0.34108	78.23	0.06509	14.93
	(0.00272)	(0.00102)	(0.22)	(0.00113)	(0.13)	(0.00267)	(0.23)	(0.00070)	(0.08)

Highest grade = 12 to									
< 10	0.02402	0.10392	432.68	−0.13596	−566.07	0.03667	152.69	0.01939	80.72
	(0.00062)	(0.00064)	(10.15)	(0.00105)	(17.22)	(0.00030)	(4.69)	(0.00020)	(2.47)
10–11	−0.04111	0.00763	−18.55	−0.03043	74.01	−0.03857	93.82	0.02026	−49.28
	(0.00034)	(0.00005)	(0.16)	(0.00023)	(0.21)	(0.00032)	(0.27)	(0.00021)	(0.33)
> 12	−0.23797	−0.08057	33.86	−0.00592	2.49	−0.15552	65.35	0.00405	−1.70
	(0.00153)	(0.00052)	(0.16)	(0.00004)	(0.01)	(0.00120)	(0.16)	(0.00004)	(0.01)
No child < 6 years of age to child									
< 6 years	0.04561	0.16064	352.24	−0.01929	−42.29	−0.11019	−241.62	0.01445	31.68
	(0.00111)	(0.00095)	(7.62)	(0.00015)	(1.20)	(0.00094)	(7.36)	(0.00015)	(0.95)
Family income < $3,000 to									
$3,000–$9,000	−0.21200	−0.20549	96.93	0.04033	−19.02	−0.02672	12.60	−0.02013	9.49
	(0.00173)	(0.00166)	(0.09)	(0.00030)	(0.10)	(0.00022)	(0.08)	(0.00021)	(0.06)
$9,000–$15,000	−0.26501	−0.31212	117.78	−0.01785	6.73	0.05881	−22.19	0.00615	−2.32
	(0.00243)	(0.00277)	(0.12)	(0.00014)	(0.03)	(0.00049)	(0.11)	(0.00006)	(0.01)
> $15,000	−0.29814	−0.64432	216.11	−0.06660	22.34	0.43046	−144.38	−0.01767	5.93
	(0.00588)	(0.00390)	(3.51)	(0.00050)	(0.46)	(0.00460)	(4.09)	(0.00018)	(0.13)

Table 6.15 (continued)

Change from:	Unweighted eligibility term	Unweighted awareness term	Unweighted acceptance term	Unweighted enrollment term
White to				
Black	0.07514	0.18894	0.08124	−0.06723
	(0.00020)	(0.00012)	(0.00038)	(0.00006)
Hispanic	0.03805	0.08826	0.01283	0.14839
	(0.00010)	(0.00004)	(0.00007)	(0.00011)
Other race/ethnicity	0.06344	−0.17801	0.13083	0.10252
	(0.00017)	(0.00019)	(0.00058)	(0.00011)
Aged 16–18 to				
19–21	0.00172	−0.05334	−0.03352	0.00931
	(0.00000)	(0.00000)	(0.00016)	(0.00001)
Single, never married to				
Married	0.01431	0.02747	−0.07153	0.04781
	(0.00004)	(0.00002)	(0.00036)	(0.00003)
Div.-wid.-sep.	0.04896	−0.16342	0.11298	0.10116
	(0.00013)	(0.00015)	(0.00052)	(0.00011)

Highest grade = 12 to				
< 10	0.03018	−0.16072	0.01233	0.03028
	(0.00008)	(0.00015)	(0.00006)	(0.00003)
10–11	0.00219	−0.03662	−0.01290	0.03163
	(0.00001)	(0.00002)	(0.00007)	(0.00003)
> 12	−0.02355	−0.00714	−0.05464	0.00635
	(0.00005)	(0.00000)	(0.00028)	(0.00001)
No child < 6 years of age to				
child < 6 years	0.04769	−0.02320	−0.03586	0.02259
	(0.00012)	(0.00002)	(0.00019)	(0.00002)
Family income < $3,000 to				
$3,000–$9,000	−0.05959	0.04868	−0.00894	−0.03154
	(0.00019)	(0.00002)	(0.00005)	(0.00002)
$9,000–$15,000	−0.09455	−0.02149	0.01981	0.00962
	(0.00035)	(0.00001)	(0.00010)	(0.00001)
> $15,000	−0.19203	−0.08038	0.11196	−0.02763
	(0.00017)	(0.00002)	(0.00045)	(0.00002)

NOTE: Simulations use 1986 SIPP full panel data. Bootstrap standard errors appear in parentheses. The standard errors reflect variations due to the sample used to perform the simulation.

SOURCE: Heckman and Smith (2004).

for the decomposition in Tables 6.12–6.15, the weighted eligibility term is given by the first term on the right-hand side of Equation (6.7), the weighted acceptance term by the second term, the weighted awareness term by the third term, and the weighted enrollment term by the fourth term. The third, fifth, seventh, and ninth columns present the percentage of the overall effect attributable to each of the four components. Thus, the third column indicates the percentage of the overall effect that results from the effect of the indicated change in x on the conditional probability of eligibility, which is given by the ratio of the weighted eligibility term to the overall effect multiplied by 100. The second panel of each table presents the *unweighted* effect of the indicated change in x on each of the conditional probabilities. This unweighted effect is just the average partial derivative (or finite difference) of the probability with respect to the characteristic.

The results for race and ethnicity are especially striking. Blacks consistently have an overall probability of participation higher than that of whites. For three of the four demographic groups, this higher overall probability decomposes into higher conditional probabilities of eligibility and awareness, but lower conditional probabilities of acceptance and enrollment. Decomposing the overall effect in this way makes it clear where blacks fall out of the participation process, and suggests that policy measures designed to increase their participation should likely focus relatively more attention on the stages of application, acceptance, and enrollment, rather than on changes in eligibility rules or on outreach efforts to increase awareness, although such measures may still bear fruit. This evidence indicates that the concerns expressed in GAO (1991) regarding minority participation may not have been misplaced. Administrative discretion may have played a role in reducing black participation in JTPA, and may continue to do so under WIA.

A different pattern emerges for the categorical age variables. For adults, older persons nearly always have lower conditional probabilities at every stage in the participation process relative to persons aged 22–29. The same is true of youth, where a modest overall negative effect for 19–21-year-olds relative to 16–18-year-olds is mirrored at each stage in the process except for the application/acceptance stage for male youth and the eligibility and enrollment stages for female youth.

Overall, being married rather than being single decreases the probability of participation in JTPA for all four demographic groups. The

dominant factor lowering enrollment among married persons is a strong negative effect of marriage on the conditional probability of application/ acceptance. For adult males, this negative term outweighs a positive effect of marriage on the conditional probabilities of eligibility, aware- ness, and enrollment. The probability of participation for divorced, widowed, or separated persons exceeds that for single persons in three of the four groups. For adult males, positive effects of having once been married on eligibility, awareness, and enrollment dominate the negative acceptance term, while all but the eligibility term are positive for adult females.

For adults, the relationship between the overall probability of participation in JTPA and years of completed schooling is roughly hill- shaped, with its peak occurring at 10–11 years of completed schooling for men and 13–15 years for women. The decompositions reveal that the overall relationship results from combining a negative relationship between years of schooling and eligibility, and generally hill-shaped re- lationships between schooling and awareness, application/acceptance, and enrollment. For youth, the overall relationship between participa- tion and years of completed schooling peaks at 10–11 years for males and at less than 10 years for females.

For three of the four demographic groups, the overall effect of having an own child under six years of age in the home breaks down into a positive component due to increased conditional probabilities of eligibility and enrollment, and negative components due to decreased probabilities of awareness and acceptance. The overall effect is nega- tive for men and positive for women.

The overall probability of participation in JTPA decreases mono- tonically in family income for adult males and male and female youth, and peaks in the $3,000–$9,000 category for adult females. The strong negative relationship between family income and the probability of eligibility described earlier in the chapter dominates the overall ef- fect in almost every case. The exception is the peak for adult females, which results from the influence of a similarly peaked pattern in the relationship between family income and the conditional probabilities of awareness and of application/acceptance for that group.

Tables 6.16–6.19 present a second set of decompositions. In these tables, we decompose the probability of application/acceptance con- ditional on eligibility into components due to awareness and due to

Table 6.16 JTPA Simulation Results—Two-Step Decomposition
Weighted Effects of Changes in Characteristics on the Probability of Acceptance into JTPA
National JTPA Study Eligible Nonparticipant Sample: Adult Males (1,552 observations)

Change from:	Overall effect		Weighted awareness term		Percent of overall		Weighted acceptance term		Percent of overall	
White to										
Black	2.5149	(0.0675)	1.5521	(0.0495)	61.72	(0.66)	0.9628	(0.0257)	38.28	(0.66)
Hispanic	−2.9536	(0.0902)	−2.6335	(0.0844)	89.16	(0.25)	−0.3201	(0.0087)	10.84	(0.25)
Other race/ethnicity	5.8446	(0.1485)	−1.4193	(0.0457)	−24.28	(0.85)	7.2639	(0.1668)	124.28	(0.85)
Aged 22–29 to										
30–39	−3.7082	(0.0993)	−1.3499	(0.0433)	36.40	(0.62)	−2.3583	(0.0664)	63.60	(0.62)
40–49	−4.2680	(0.1146)	−1.2858	(0.0412)	30.13	(0.55)	−2.9822	(0.0838)	69.87	(0.55)
50–54	−2.5991	(0.0765)	0.1994	(0.0064)	−7.67	(0.22)	−2.7985	(0.0803)	107.67	(0.22)
Highest grade 12 to										
< 10	−6.5763	(0.1825)	−2.1992	(0.0693)	33.44	(0.54)	−4.3771	(0.1279)	66.56	(0.54)
10–11	−1.4067	(0.0380)	−0.7153	(0.0233)	50.85	(0.70)	−0.6914	(0.0193)	49.15	(0.70)
13–15	2.1957	(0.0557)	0.5977	(0.0192)	27.22	(0.57)	1.5980	(0.0430)	72.78	(0.58)
> 15	−7.3700	(0.2089)	−1.6050	(0.0516)	21.78	(0.40)	−5.7650	(0.1688)	78.22	(0.40)
Not receiving AFDC to										
Current AFDC receipt	−5.5477	(0.1714)	0.4306	(0.0138)	−7.76	(0.22)	−5.9783	(0.1800)	107.76	(0.23)
Not receiving Food Stamps to										
Current Food Stamp receipt	4.4612	(0.1165)	2.8726	(0.0897)	64.39	(0.68)	1.5886	(0.0424)	35.61	(0.68)
Two most recent labor force statuses from employed → employed to										

Unemployed → employed	11.1319	(0.2484)	2.8784	(0.0920)	25.86	(0.60)	8.2535	(0.1969)	74.14	(0.60)
OLF → employed	15.2249	(0.3061)	2.6670	(0.0845)	17.52	(0.45)	12.5578	(0.2646)	82.48	(0.44)
Employed → unemployed	23.9905	(0.4532)	2.8125	(0.0946)	11.72	(0.31)	21.1780	(0.3998)	88.28	(0.31)
Unemployed → unemployed	15.9797	(0.3196)	3.6041	(0.1122)	22.55	(0.55)	12.3756	(0.2652)	77.45	(0.55)
OLF → unemployed	28.6514	(0.4525)	6.4026	(0.2087)	22.35	(0.59)	22.2488	(0.3654)	77.65	(0.59)
Employed → OLF	25.9317	(0.3865)	−1.6591	(0.0530)	−6.40	(0.22)	27.5908	(0.3904)	106.40	(0.22)
Unemployed → OLF	30.8787	(0.4021)	−4.9403	(0.1627)	−16.00	(0.67)	35.8191	(0.3365)	116.00	(0.67)
OLF → OLF	6.8828	(0.1859)	−0.0298	(0.0009)	−0.43	(0.01)	6.9126	(0.1864)	100.43	(0.03)
No child < 6 years of age to										
child < 6 years	−0.9468	(0.0270)	−0.5962	(0.0190)	62.97	(0.71)	−0.3506	(0.0114)	37.03	(0.71)
Family income < $3,000 to										
$3,000–$9,000	−5.2227	(0.1744)	−0.1078	(0.0034)	2.06	(0.06)	−5.1149	(0.1725)	97.94	(0.04)
$9,000–$15,000	−2.4054	(0.0750)	−0.1520	(0.0048)	6.32	(0.18)	−2.2535	(0.0722)	93.68	(0.19)
> $15,000	−6.8375	(0.2571)	1.6230	(0.0511)	−23.74	(0.94)	−8.4605	(0.2804)	123.74	(0.94)
Corpus Christi site to										
Fort Wayne site	12.6473	(0.3162)	1.0828	(0.0346)	8.56	(0.22)	11.5644	(0.2958)	91.44	(0.23)
Jersey City site	6.3780	(0.1534)	0.3288	(0.0105)	5.16	(0.15)	6.0492	(0.1490)	94.84	(0.16)
Providence site	6.4292	(0.1691)	−1.5965	(0.0509)	−24.83	(0.95)	8.0257	(0.1824)	124.83	(0.95)
Never married to										
Currently married	−4.9098	(0.1401)	0.4562	(0.0145)	−9.29	(0.31)	−5.3660	(0.1467)	109.29	(0.31)
Married 1–24 months ago	4.3002	(0.1261)	4.2079	(0.1252)	97.85	(0.04)	0.0923	(0.0025)	2.15	(0.07)
Married > 24 months ago	5.3340	(0.1391)	3.6192	(0.1166)	67.85	(0.73)	1.7147	(0.0441)	32.15	(0.73)

NOTE: Simulations use National JTPA Study data. Bootstrap standard errors appear in parentheses. These standard errors reflect variation in the samples used to do the simulations.

SOURCE: Heckman and Smith (2004).

Table 6.17 JTPA Simulation Results—Two-Step Decomposition
Weighted Effects of Changes in Characteristics on the Probability of Acceptance into JTPA
National JTPA Study Eligible Nonparticipant Sample: Adult Females (2,438 observations)

Change from:	Overall effect		Weighted awareness term		Percent of overall		Weighted acceptance term		Percent of overall	
White to										
Black	0.3406	(0.0082)	0.5807	(0.0110)	170.49	(1.57)	−0.2401	(0.0044)	−70.49	(1.57)
Hispanic	2.5843	(0.0514)	−1.5509	(0.0312)	−60.01	(1.29)	4.1352	(0.0709)	160.01	(1.29)
Other race/ethnicity	−0.5642	(0.0140)	−0.9772	(0.0192)	173.22	(1.55)	0.4130	(0.0074)	−73.22	(1.55)
Aged 22–29 to										
30–39	−1.5293	(0.0272)	−0.2304	(0.0044)	15.07	(0.18)	−1.2989	(0.0238)	84.93	(0.17)
40–49	−1.0421	(0.0184)	−0.3973	(0.0075)	38.12	(0.30)	−0.6449	(0.0120)	61.88	(0.30)
50–54	−0.9142	(0.0163)	−0.3667	(0.0071)	40.12	(0.30)	−0.5474	(0.0102)	59.88	(0.30)
Highest grade 12 to										
< 10	−2.6424	(0.0495)	−2.0099	(0.0393)	76.06	(0.21)	−0.6325	(0.0119)	23.94	(0.21)
10–11	−0.8521	(0.0151)	−0.2605	(0.0050)	30.57	(0.27)	−0.5916	(0.0109)	69.43	(0.27)
13–15	1.4035	(0.0265)	−0.5493	(0.0103)	−39.14	(0.72)	1.9527	(0.0332)	139.14	(0.72)
> 15	−3.5102	(0.0668)	−1.4343	(0.0283)	40.86	(0.26)	−2.0760	(0.0410)	59.14	(0.26)
Not receiving AFDC to										
Current AFDC receipt	−3.9558	(0.0809)	−0.0051	(0.0001)	0.13	(0.00)	−3.9507	(0.0808)	99.87	(0.00)
Not receiving Food Stamps to										
Current Food Stamp receipt	2.4674	(0.0416)	1.3765	(0.0242)	55.79	(0.30)	1.0908	(0.0201)	44.21	(0.30)
Two most recent labor force statuses from employed → employed to										

Unemployed → employed	10.1978	(0.1374)	0.2336	(0.0044)	2.29	(0.04)	9.9642	(0.1353)	97.71	(0.00)
OLF → employed	6.0237	(0.0963)	−0.6424	(0.0123)	−10.66	(0.17)	6.6660	(0.1040)	110.66	(0.18)
Employed → unemployed	20.0536	(0.2370)	1.9825	(0.0363)	9.89	(0.15)	18.0711	(0.2195)	90.11	(0.15)
Unemployed → unemployed	19.1886	(0.2369)	1.1889	(0.0234)	6.20	(0.12)	17.9997	(0.2287)	93.80	(0.11)
OLF → unemployed	13.1690	(0.1825)	0.8147	(0.0151)	6.19	(0.09)	12.3543	(0.1737)	93.81	(0.09)
Employed → OLF	7.3442	(0.1160)	0.2988	(0.0056)	4.07	(0.06)	7.0454	(0.1125)	95.93	(0.04)
Unemployed → OLF	13.9890	(0.1926)	−0.6109	(0.0118)	−4.37	(0.08)	14.5999	(0.1989)	104.37	(0.05)
OLF → OLF	4.2671	(0.0845)	−0.9764	(0.0188)	−22.88	(0.45)	5.2435	(0.0952)	122.88	(0.46)
No child < 6 years of age to										
child < 6 years	−0.8987	(0.0173)	−0.1516	(0.0029)	16.87	(0.21)	−0.7471	(0.0151)	83.13	(0.20)
Family income < $,3000 to										
$3,000–$9,000	2.1865	(0.0390)	1.1198	(0.0208)	51.22	(0.38)	1.0667	(0.0215)	48.78	(0.38)
$9,000–$15,000	1.0367	(0.0183)	0.6227	(0.0117)	60.07	(0.38)	0.4140	(0.0083)	39.93	(0.37)
> $15,000	0.5172	(0.0107)	−0.0683	(0.0013)	−13.20	(0.22)	0.5855	(0.0116)	113.20	(0.23)
Corpus Christi site to										
Fort Wayne site	7.6811	(0.1556)	−0.6637	(0.0124)	−8.64	(0.19)	8.3448	(0.1608)	108.64	(0.18)
Jersey City site	5.4065	(0.0990)	−0.7513	(0.0147)	−13.90	(0.24)	6.1578	(0.1084)	113.90	(0.23)
Providence site	7.3382	(0.1506)	−2.0068	(0.0412)	−27.35	(0.62)	9.3450	(0.1711)	127.35	(0.62)
Never married to										
Currently married	−3.7900	(0.0758)	−0.3984	(0.0077)	10.51	(0.13)	−3.3915	(0.0697)	89.49	(0.12)
Married 1–24 months ago	3.1004	(0.0569)	−0.0496	(0.0009)	−1.60	(0.02)	3.1499	(0.0576)	101.60	(0.00)
Married > 24 months ago	6.3540	(0.1107)	0.5205	(0.0100)	8.19	(0.11)	5.8335	(0.1038)	91.81	(0.12)

NOTE: Simulations use National JTPA Study data. Bootstrap standard errors appear in parentheses. These standard errors reflect variation in the samples used to do the simulations.
SOURCE: Heckman and Smith (2004).

Table 6.18 JTPA Simulation Results—Two-Step Decomposition
Weighted Effects of Changes in Characteristics on the Probability of Acceptance into JTPA
National JTPA Study Eligible Nonparticipant Sample: Male Youth (530 observations)

Change from:	Overall effect		Weighted awareness term		Percent of overall		Weighted acceptance term		Percent of overall	
White to										
Black	4.8041	(0.2699)	6.6041	(0.2893)	137.47	(2.52)	−1.7999	(0.0720)	−37.47	(2.52)
Hispanic	5.9390	(0.2145)	0.2688	(0.0123)	4.53	(0.22)	5.6701	(0.2112)	95.47	(0.22)
Other race/ethnicity	−3.1888	(0.3835)	6.6837	(0.3157)	−209.60	(28.11)	−9.8724	(0.4783)	309.60	(28.11)
Aged 16–18 to										
19–21	−1.1238	(0.2264)	−5.3078	(0.2366)	472.32	(109.67)	4.1840	(0.1576)	−372.32	(109.67)
Never married to										
Currently married	2.1384	(0.3343)	7.4097	(0.3489)	346.50	(54.91)	−5.2712	(0.2273)	−246.50	(54.91)
Div.-wid.-sep.	−3.4641	(0.1330)	−2.0780	(0.0950)	59.99	(1.04)	−1.3862	(0.0561)	40.01	(1.04)
Highest grade 12 to										
< 10	−0.3731	(0.0267)	−0.6401	(0.0292)	171.56	(6.06)	0.2670	(0.0103)	−71.56	(6.06)
10–11	1.9636	(0.0810)	1.6799	(0.0760)	85.55	(0.59)	0.2837	(0.0110)	14.45	(0.59)
> 12	−1.8382	(0.0667)	−0.6697	(0.0305)	36.43	(1.04)	−1.1685	(0.0468)	63.57	(1.04)
Not receiving AFDC to										
Current AFDC receipt	−11.1117	(0.4965)	−4.2387	(0.1942)	38.15	(0.74)	−6.8730	(0.3298)	61.85	(0.74)
Not receiving Food Stamps to										
Current Food Stamp receipt	3.7423	(0.1253)	1.8386	(0.0835)	49.13	(1.20)	1.9037	(0.0692)	50.87	(1.20)

Two most recent labor force statuses from employed → employed to										
Unemployed → employed	14.4300	(0.3934)	1.1809	(0.0536)	8.18	(0.40)	13.2491	(0.3886)	91.82	(0.40)
OLF → employed	−4.5935	(0.2030)	0.5569	(0.0255)	−12.12	(0.57)	−5.1505	(0.2159)	112.12	(0.57)
Employed → unemployed	16.6120	(0.4569)	3.5322	(0.1670)	21.26	(0.93)	13.0798	(0.4174)	78.74	(0.93)
Unemployed → unemployed	10.3782	(0.2823)	3.2308	(0.1478)	31.13	(1.11)	7.1474	(0.2211)	68.87	(1.11)
OLF → unemployed	0.3517	(0.0666)	−1.2450	(0.0573)	−354.01	(72.52)	1.5967	(0.0634)	454.01	(72.52)
Employed → OLF	26.9129	(1.1099)	−8.8298	(0.4202)	−32.81	(2.70)	35.7427	(0.8344)	132.81	(2.70)
Unemployed → OLF	5.5548	(0.3447)	7.5616	(0.3597)	136.13	(2.89)	−2.0068	(0.0916)	−36.13	(2.89)
OLF → OLF	6.9113	(0.5004)	−6.8417	(0.3147)	−98.99	(10.08)	13.7529	(0.4157)	198.99	(10.08)
No child < 6 years of age to child < 6 years	−9.2754	(0.4498)	−1.9897	(0.0911)	21.45	(0.67)	−7.2856	(0.3823)	78.55	(0.67)
Family income < $,3000 to										
$3,000–$9,000	9.3512	(0.4811)	−4.6211	(0.2073)	−49.42	(3.64)	13.9722	(0.4734)	149.42	(3.64)
$9,000–$15,000	−2.6233	(0.1288)	−3.1610	(0.1402)	120.50	(1.17)	0.5377	(0.0256)	−20.50	(1.17)
> $15,000	−4.7303	(0.1979)	−3.8578	(0.1714)	81.56	(0.69)	−0.8725	(0.0425)	18.44	(0.69)
Corpus Christi site to										
Fort Wayne site	10.3470	(0.3620)	0.3657	(0.0169)	3.53	(0.17)	9.9813	(0.3578)	96.47	(0.17)
Jersey City site	3.0515	(0.1968)	−1.4890	(0.0675)	−48.80	(3.80)	4.5406	(0.2061)	148.80	(3.80)
Providence site	18.4090	(0.6361)	−2.3738	(0.1081)	−12.89	(0.76)	20.7827	(0.6359)	112.89	(0.75)

NOTE: Simulations use National JTPA Study data. Bootstrap standard errors appear in parentheses. These standard errors reflect variation in the samples used to do the simulations.

SOURCE: Heckman and Smith (2004).

Table 6.19 JTPA Simulation Results—Two-Step Decomposition
Weighted Effects of Changes in Characteristics on the Probability of Acceptance into JTPA
National JTPA Study Eligible Nonparticipant Sample: Female Youth (701 observations)

Change from:	Overall effect		Weighted awareness term		Percent of overall		Weighted acceptance term		Percent of overall	
White to										
Black	3.9275	(0.1724)	3.0290	(0.1451)	77.12	(0.49)	0.8985	(0.0322)	22.88	(0.49)
Hispanic	1.0273	(0.0415)	0.5037	(0.0249)	49.03	(0.75)	0.5236	(0.0189)	50.97	(0.75)
Other race/ethnicity	2.8539	(0.1085)	−2.4043	(0.1197)	−84.25	(5.34)	5.2582	(0.1592)	184.25	(5.34)
Aged 16–18 to										
19–21	−2.3024	(0.0867)	−0.5579	(0.0272)	24.23	(0.54)	−1.7445	(0.0634)	75.77	(0.54)
Never married to										
Currently married	−1.5024	(0.0587)	0.6539	(0.0321)	−43.52	(1.63)	−2.1563	(0.0833)	143.52	(1.63)
Div.-wid.-sep.	−1.1802	(0.0922)	−2.5635	(0.1267)	217.21	(7.55)	1.3833	(0.0481)	−117.21	(7.55)
Highest grade 12 to										
< 10	−2.0172	(0.0973)	−2.0554	(0.0984)	101.89	(0.00)	0.0381	(0.0014)	−1.89	(0.05)
10–11	−1.7373	(0.0661)	−0.4037	(0.0200)	23.24	(0.50)	−1.3336	(0.0487)	76.76	(0.51)
> 12	1.0272	(0.0355)	−0.0518	(0.0025)	−5.04	(0.16)	1.0790	(0.0375)	105.04	(0.15)
Not receiving AFDC to										
Current AFDC receipt	−2.3463	(0.0926)	1.2829	(0.0633)	−54.68	(2.33)	−3.6292	(0.1378)	154.68	(2.33)
Not receiving Food Stamps to										
Current Food Stamp receipt	6.5595	(0.2010)	0.1105	(0.0054)	1.68	(0.06)	6.4490	(0.1971)	98.32	(0.07)

Two most recent labor force statuses from employed → employed to									
Unemployed → employed	9.5744	(0.2550)	−0.4118	(0.0203)	−4.30	(0.18)	9.9862	(0.2662)	104.30	(0.18)
OLF → employed	11.3506	(0.2832)	−1.8182	(0.0898)	−16.02	(0.81)	13.1688	(0.3136)	116.02	(0.81)
Employed → unemployed	24.0502	(0.4336)	−1.4540	(0.0712)	−6.05	(0.31)	25.5041	(0.4422)	106.05	(0.32)
Unemployed → unemployed	17.0906	(0.4181)	1.2007	(0.0580)	7.03	(0.29)	15.8899	(0.3908)	92.97	(0.29)
OLF → unemployed	21.6456	(0.4132)	0.3991	(0.0197)	1.84	(0.09)	21.2465	(0.4105)	98.16	(0.08)
Employed → OLF	8.6803	(0.2773)	1.4078	(0.0686)	16.22	(0.52)	7.2725	(0.2306)	83.78	(0.53)
Unemployed → OLF	7.1564	(0.2625)	3.3152	(0.1614)	46.32	(0.97)	3.8412	(0.1313)	53.68	(0.97)
OLF → OLF	4.6998	(0.1774)	−1.0262	(0.0503)	−21.84	(0.98)	5.7260	(0.2065)	121.84	(0.99)
No child < 6 years of age to child < 6 years	−1.3768	(0.0594)	−0.8447	(0.0417)	61.36	(0.74)	−0.5320	(0.0210)	38.64	(0.74)
Family income < $3,000 to									
$3,000–$9,000	−0.8170	(0.0328)	0.1014	(0.0050)	−12.41	(0.43)	−0.9184	(0.0366)	112.41	(0.43)
$9,000–$15,000	−0.7310	(0.0416)	−0.9901	(0.0490)	135.45	(1.50)	0.2591	(0.0101)	−35.45	(1.50)
> $15,000	8.3821	(0.2512)	−1.1948	(0.0593)	−14.25	(0.59)	9.5768	(0.2877)	114.25	(0.59)
Corpus Christi site to									
Fort Wayne site	3.5282	(0.1269)	0.3522	(0.0173)	9.98	(0.30)	3.1761	(0.1138)	90.02	(0.30)
Jersey City site	0.3881	(0.0532)	−1.5274	(0.0769)	−393.62	(69.52)	1.9155	(0.0728)	493.62	(69.53)
Providence site	3.5378	(0.1675)	−2.1585	(0.1040)	−61.01	(3.86)	5.6963	(0.2075)	161.01	(3.86)

NOTE: Simulations use National JTPA Study data. Bootstrap standard errors appear in parentheses. These standard errors reflect variation in the samples used to do the simulations.
SOURCE: Heckman and Smith (2004).

application/acceptance given awareness. Omitting the stages of eligibility and enrollment allows us to simulate using the same ENP and control data from the National JTPA Study that we use to estimate the conditional probabilities of awareness and of application/acceptance. Omitting the enrollment stage allows us to include variables representing recent labor force status transitions, which are not available in the treatment group data we use to estimate the probability of enrollment. Otherwise, the format of the tables and the construction of the individual terms parallels that for the decompositions already discussed.

The basic patterns for those variables, such as age and schooling, included in the earlier decompositions remain essentially the same as for the decompositions previously discussed, so we do not dwell on them here. Of great interest are the decompositions of the overall effects of family receipt of AFDC and Food Stamps on the application/acceptance probabilities. The overall effect of AFDC receipt is negative for all four groups. For both groups of adults, the overall effect decomposes into a small effect due to awareness, combined with a large negative effect of living in a family receiving AFDC on the probability of application/acceptance conditional on awareness. For male youth, living in a family receiving AFDC has negative effects of equal size on awareness and on application/acceptance given awareness. For female youth positive awareness and negative application and acceptance effects cancel to yield a small overall effect.

All four demographic groups show a positive impact of living in a family receiving Food Stamps on the probability of application/acceptance. For all the groups except female youth, this effect decomposes into roughly equal positive effects of Food Stamp receipt on the probabilities of awareness and of application/acceptance conditional on awareness. For female youth, the contribution of the awareness term is negligible, leaving the impact of living in a family receiving Food Stamps on application/acceptance to dominate the overall effect. Interpreting the effect of AFDC receipt as measuring the difference between receiving both AFDC and Food Stamps and just Food Stamps, we find that AFDC receipt primarily discourages application/acceptance.

Finally, examination of the decompositions for the variables representing the two most recent labor force statuses at the time of random assignment or eligibility screening shows that in all cases it is the effect of these statuses on the probability of application/acceptance condi-

tional on awareness that accounts for their large positive effects on the unconditional probability of application/acceptance. The estimated effects of labor force status transitions on awareness are small and are of mixed sign, with negative estimated effects usually associated with transitions out of the labor force.

These decompositions offer unique insights regarding the effects of characteristics such as race, age, education, transfer program participation, labor force status, and family income on the various stages of the process by which individuals select and are selected into the JTPA program. For many characteristics, such as race and ethnicity, the same characteristic has competing effects at different stages of the process. Other characteristics, such as age among adults, operate in the same direction on the conditional probabilities of program eligibility, awareness, application/acceptance, and formal enrollment. Sorting out the effects of particular characteristics at each step enriches our understanding of the overall participation process and demonstrates quite clearly that much of the action in terms of subgroup differences arises at stages in the participation process over which JTPA staff have little or no control.

SUMMARY AND CONCLUSIONS

This chapter lays out a framework for studying the determinants of participation in social programs using data on random samples of individuals at each stage in the participation process. We outline the evidence our framework can provide regarding cream skimming by program staff, perhaps motivated by the incentives resulting from administrative performance standards, in the context of what we call mutually voluntary programs. In such programs, participation depends on the choices of both potential participants and program staff. In that context, our framework can provide only suggestive evidence for or against cream skimming based on characteristics observed by both the researcher and the program staff, except in the special case where program staff completely control certain stages of the process. Except in that special case, our framework cannot provide the sort of definitive positive evidence of caseworker responses to performance incentives

obtained by studies that rely on exogenous variation in the existence or nature of those incentives, such as Courty, Kim, and Marschke (forthcoming). When caseworkers (or other program staff) have little or no control over specific stages of the process, our framework also reveals the importance of factors other than cream skimming in generating differences in participation among groups.

We apply our framework to data from the JTPA program, which allows us to decompose participation into the stages of eligibility, awareness, application/acceptance, and enrollment. From the perspective of this volume, two major empirical findings emerge from this analysis. Although they arise from data on JTPA, the similarity between JTPA and other programs (including its successor WIA) documented in Chapter 2 suggests that they likely apply more broadly.

The first major finding is that much of the action in terms of differences in participation rates across groups occurs at stages in the participation process over which program staff have little or no control. This finding highlights the dangers of inferring cream skimming from simple comparisons of program participants and program eligibles.

The second major finding is that we find only modest evidence of cream skimming at the stages of the participation process where JTPA caseworkers arguably do have some influence, namely enrollment, and to a lesser extent, application and acceptance. Several factors may account for this lack of strong evidence, particularly relative to the amount of attention cream skimming receives in discussions of performance management systems for employment and training programs.

First, caseworkers may have goals that conflict with those of the performance management system. Given the relatively indirect and low-powered incentives offered by the system, they may choose to indulge those goals. Heckman, Smith, and Taber (1996) use data from Corpus Christi, the only site in the NJS to collect good data on applicants, to study the transition from application to enrollment. They find evidence that caseworkers prefer applicants with relatively weak, rather than relatively strong, expected labor market outcomes in the absence of the program. This suggests that caseworker preferences for serving the most disadvantaged may overcome the incentives provided by the performance standards system in some contexts.

Second, JTPA caseworkers faced many constraints other than the performance standards system. Local JTPA offices faced political con-

straints emanating from politicians, businesspeople, community groups, and service providers. For example, Smith (1992) shows that three of the four sites analyzed here underserve (relative to its representation in the eligible population) the race/ethnic group locally in the majority, even when that group is black. This may reflect political pressures to cater to marginal voting blocks. Some or all of these other pressures may weigh against the incentives for cream skimming provided by the performance measures. They may also lead program staff to focus on alternative forms of strategic behavior aimed at improving their measured performance, such as those discussed in Chapter 7.

Third, Courty, Kim, and Marschke (forthcoming) suggest a role for the regression model developed by the USDOL and used to adjust the performance standards faced by local JTPA offices for differences in participants' observed characteristics. Although optional for states at the time, all of the states with sites in the NJS used the regression adjustment model. The model relied on data from prior years on the relationship between participants' characteristics and their postprogram labor market outcomes. If the model worked as intended, it should have diminished or even eliminated the incentive sites faced to cream-skim based on the observed characteristics included in the adjustment model. Many of those same characteristics appear in our model, with the result that if the regression adjustment did its job, we should not expect to find much evidence of cream skimming in our analysis. Of course, program staff may still have tried very hard to select participants based on characteristics not included in the adjustment model.

Fourth, the empirical patterns generated by participant choices may simply overshadow the efforts of the caseworkers, even at the stages of the participation process where caseworkers have the most influence.

Overall, the results of our empirical analysis provide valuable insights into the importance of cream skimming under JTPA and suggest the value of a similar but richer analysis using data from the current WIA program.

Notes

1. In addition to issues related to the effects of performance standards, Heckman and Smith (2004) focus on how decomposing the participation process illuminates the causes of differences in program participation across groups more generally and how it contributes to the selection and specification of econometric evaluation estimators.

2. More recent work in this area includes Aizer (2007); Bitler, Currie, and Scholz (2003); Burton, Macher, and Mayo (2007); Dahan and Nisan (2009); and Kleven and Kopczuk (2008).

3. A related literature considers how participants get allocated to services within programs that provide more than one service. See Plesca and Smith (2007) and Mitnik (2009) and the references therein.

4. The act also specifies additional eligibility criteria for several small groups. In the Survey of Income and Program Participation (SIPP) data used in our analysis, we are not able to accurately measure foster child status, disability, or homelessness on a monthly basis, and so are unable to implement the special eligibility rules applicable to these groups in selecting our sample of eligibles. However, these groups represent a very small portion of the overall eligible population, and many of those eligible under the special provisions will also be eligible under the basic family income and program participation criteria described in the text.

5. Program year 1991 covers the period from July 1991 to June 1992.

6. Two other details regarding JTPA eligibility deserve note. First, the implementation of the rules varied somewhat across localities, as states and training centers had some discretion over exactly what did and did not constitute family income and what did and did not constitute a family for the purposes of the program. Devine and Heckman (1996) find these differences too small to affect the patterns discussed here. Second, the eligibility rules described here are those in place at the time our data were collected. Some small changes in rules took place after that time; see Devine and Heckman (1996) or USDOL (1993).

7. See Doolittle and Traeger (1990) for a discussion of the implementation of the NJS and Bloom et al. (1997) and Orr et al. (1996) for summaries of the impact estimates.

8. Appendices A and B in Heckman and Smith (2003) provide additional detail regarding the NJS and SIPP samples used in our analyses.

9. Doolittle and Traeger (1990), Kemple, Doolittle, and Wallace (1993), and Orr et al. (1996) all provide even more detail about the sites in the National JTPA Study.

10. We present mean derivatives and not derivatives evaluated at the mean of the x. That is, we calculate the derivative (or finite difference for binary variables) for each observation and report the (weighted) sample mean. The literature sometimes refers to these as mean marginal effects. The standard errors take account of the use of multiple observations on the same individuals.

11. The English language ability variable should be interpreted with caution as it arises from different underlying measures in the ENP and control group samples.

For the ENPs, lack of English ability is measured by the language in which the respondent chose to complete the baseline survey, while for the controls it is obtained from a question on language preference administered around the time of random assignment.

12. Appendix C of Heckman and Smith (2003) provides additional details regarding the methods used to obtain the reported results.

13. Heckman and Smith (1999) discuss the importance of these variables at greater length. See also Card and Sullivan (1988) and Dolton and Smith (2010).

14. Heckman, Smith and Taber (1998) discuss nonenrollment within the experimental treatment group and its implications for the evaluation of JTPA. See also the general discussions of treatment group dropout and control group substitution in Heckman et al. (2000) and Heckman, LaLonde, and Smith (1999).

15. Appendix C of Heckman and Smith (2003) contains a detailed discussion of the simulations.

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