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Report to the Chairman, Subcommittee on Select Education and Civil Rights, Committee on Education and Labor, House of Representatives

August 1993

VOCATIONAL REHABILITATION

Evidence for Federal Program's Effectiveness Is Mixed

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Methodology Division

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The Honorable Major R. Owens
Chairman, Subcommittee on Select Education
and Civil Rights
Committee on Education and Labor
House of Representatives

Dear Mr. Chairman:

At your request, we have gathered information to respond to questions about who is served, and with what results, by the federal-state vocational rehabilitation program, directed by the Rehabilitation Services Administration in the Department of Education.

We found that only a small fraction of those potentially eligible are served and that those who do take part in the program receive, on the average, only modest services. The long-term results are also modest.

We are sending copies of this report to officials in the Department of Education and to others who are interested, and we will make copies available to others upon request. If you have any questions or would like additional information, please call me at 202-512-2900 or Robert L. York, Director of Program Evaluation in Human Services Areas, at 202-512-5885. Other major contributors to the report are listed in appendix VI.

Sincerely yours,

Eleanor Chelimsky
Assistant Comptroller General

Executive Summary

Purpose

The state-federal vocational rehabilitation (VR) program directed by the Rehabilitation Services Administration (RSA) in the Department of Education helps persons with disabilities become employed, more independent, and integrated into the community. The Chairman of the Subcommittee on Select Education of the House Committee on Education and Labor asked GAO to estimate the eligible population, contrast those accepted and those not, describe the services clients received, and evaluate the program's outcomes. Examining rehabilitation outcomes using long-term data and comparison-group study designs to overcome some of the long-standing gaps in this area was a major part of GAO's purpose in undertaking this work.

Background

To be eligible for VR, a person must have (1) medical certification of a physical or mental disabling condition, and (2) evidence that the condition is a substantial impediment to employment. In addition, there must be (3) a reasonable expectation that VR services will enhance the person's employability. (The third criterion was notably modified in the Rehabilitation Amendments of 1992, enacted after GAO finished work on this review.) GAO estimated how many persons may have disabilities affecting their employability, using data from national surveys. GAO analyzed the most recent (1988) complete client data available from RSA to find out more about those accepted and those not, as well as the services accepted clients received. GAO examined the program's long-term results using a computer-matched data base on nearly 900,000 VR applicants whose cases were closed in 1980, combined with Social Security Administration (SSA) wage records on these individuals from 1972 through 1988—that is, both before and after their program experience. GAO estimated the program's effect by comparing the employment and earnings of three groups of applicants: those who were rehabilitated, those who dropped out, and a third group that received services but were not rehabilitated.

Results in Brief

Answering the first two questions, GAO found that in national surveys in the 1980's a very large group of Americans—14 to 18 million—reported work limitations that made them potentially eligible for vocational rehabilitation. However, a much smaller group was actually served by the state-federal VR program—in any one year, 5 to 7 percent of those potentially eligible. Those accepted were generally similar to those who applied; GAO found no major disparities at that stage, except that those accepted were much more likely to be classified as having a severe

disability; however, no data addressed the question of why some never applied.

Answering the third question, GAO found most VR clients received only modest services: Less than half received any type of education or training services, the total value of purchased services averaged only $1,573 per client, and just under half received purchased services costing less than $500. The appropriateness of services for each individual is the key question; RSA data did not allow GAO to reach conclusions, but GAO did find that states purchased more services for clients with physical than with mental disabilities, more for clients with severe than with non-severe disabilities, and more for white clients than for black, Hispanic, or American Indian clients.

On the fourth question, GAO concluded that evidence on VR results was mixed. In contrast to the short-term gains typically reported by the program, GAO's evaluation of long-term outcomes found that rehabilitants' gains in employment and earnings from time of referral to their case-closure year of 1980 faded after about 2 years. The fraction working shrank steadily. By 1988, the last year examined, 61 to 66 percent of rehabilitants (depending on type of disability) had some earnings; however, this was either no better than or below the pre-program level (depending on type of disability), and only a third had worked continuously since 1980. Conversely, rehabilitants did do better than dropouts on all measures of work and earnings, even after statistical analyses controlled for some pre-program differences between the groups. Extensive VR efforts were not uniformly effective, however, as shown by the GAO finding that the group of clients who received significant services but were not rehabilitated (21 to 36 percent of those served, depending on type of disability) did no better in later employment and earnings than dropouts who never got any services after the initial evaluation.

Principal Findings

Who Is Potentially Eligible and Who Accepted?

The 14 to 18 million figure of those potentially eligible represented an upper limit of the population in the mid-1980's, since the data allowed estimation of those eligible on only two of the three statutory criteria. (Employability cannot be determined using extant data.) Now, however, this figure is a more appropriate estimate for the future since the

modification of the employability criterion in the Rehabilitation Amendments of 1992. About 65 percent of those served in 1988 had severe disabilities, which is comparable to the 69 percent of the national work-disabled population who have severe disabilities. Applicants, however, were much less likely to be older (over age 45), to be female, or to have disabilities such as orthopedic impairments or chronic health conditions, than were persons in the national work-disabled population. These findings raise questions about why some disabled-population subgroups may not have sought VR services.

What Services Are Provided?

Beyond the two initial services (diagnosis and evaluation, and counseling), about half of VR clients also received some type of skill-enhancing service, such as education or training. Smaller percentages of clients received other services targeted on difficulties associated with their specific disabilities. No data were available to allow GAO to evaluate whether the disparities in purchased services noted previously were appropriate.

What Is Their Effect on Employment and Earnings?

By RSA's definition, about 60 to 70 percent of clients accepted for services were rehabilitated—that is, they completed the planned services and then held a job for at least 60 days. Some clients held a job before they were referred for VR, of course, but more worked for wages immediately after closure than before (from 8 to 18 percentage points more, depending on the type of disability). Although this wage-earning group shrank in subsequent years, average earnings did rise, and rehabilitants continued to do better than dropouts.

GAO's statistical analyses to control as much as possible for prior differences showed statistically significant positive effects for rehabilitants, when compared with dropouts, with rehabilitants more likely to be employed and have higher earnings at the 5-year point across all three disability groups. Specifically, rehabilitated clients with physical disabilities were 12 percentage points more likely to be employed and earned about $2,000 more per year; rehabilitants with emotional disabilities were 15 percentage points more likely to be employed and earned about $1,600 more; and those with mental retardation were 19 percentage points more likely to be employed and earned about $1,000 more.

In contrast, clients who were not rehabilitated had long-term economic outcomes very similar to those for clients who dropped out. This raises

questions about the program's impact because this group, on average, remained in the program for as long as rehabilitated clients and received up to two thirds of the VR agency-purchased services received by a fully rehabilitated client.

Recommendations

GAO recommends that the Commissioner of RSA begin the review, authorized in the 1992 amendments to the Rehabilitation Act, of the adequacy of existing VR data for various users, with particular emphasis on measures of the VR referral process and of the cost, intensity, and frequency of services. In addition, GAO recommends that RSA determine why disparities exist in the cost of purchased services for clients of different races. To better evaluate the economic impact of the VR program, RSA should continue its commitment to a longitudinal study of the VR program, and the Secretary of Education and the Secretary of Health and Human Services should negotiate an agreement to produce updated computer matches of client and earnings data. Finally, to explore the broader issues of who can be served, at what intensity, and with what results, GAO recommends that the Secretary of Education take steps to establish the National Commission on Rehabilitation Services authorized by the 1992 amendments. The Commission can review GAO's findings and other up-to-date information on VR outcomes in order to derive recommendations for the future direction of the program, particularly for the next reauthorization.

Agency Comments

Responsible officials of the Department of Education provided oral comments on the findings, conclusions, and recommendations in this report. Although they raised a number of issues about GAO's analysis, in general they agreed with GAO's recommendations.

Contents

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Bibliography

Glossary

Related GAO Products

Tables

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Abbreviations

CPI	Consumer price index
CPS	Current Population Survey
GAO	General Accounting Office
MBR	Master Beneficiary Record
NCHS	National Center for Health Statistics
NHIS	National Health Interview Survey
OLS	Ordinary least squares
RSA	Rehabilitation Services Administration
SER	Summary Earnings Record
SIPP	Survey of Income and Program Participation
SSA	Social Security Administration
VR	Vocational rehabilitation

Introduction

Individuals with disabilities are more likely to be unemployed or living in poverty than are Americans without disabilities. One goal of the landmark Americans With Disabilities Act of 1990 was to increase the employment opportunities for individuals with disabilities by reducing such barriers to employment as the inaccessibility of workplaces and the discriminatory practices of employers. But many individuals, especially those with severe disabilities, are also in need of education, skill training, and other assistive services to effectively prepare them to take advantage of work opportunities.

The Rehabilitation Act of 1973, as amended, authorizes the Department of Education's Vocational Rehabilitation (VR) program, which provides federal funds to help persons with disabilities become employed, more independent, and integrated into the community. The federal funds are chiefly passed to state vocational rehabilitation agencies that directly provide services such as guidance, counseling, and job placement, as well as purchase services such as therapy and training from other providers.[1] The federal share of funding for these services is generally about 80 percent; the states pay the balance. In fiscal year 1991, $1.6 billion in federal funds went to the program, and about 945,000 persons were served.

To be eligible for the program, a person must possess (1) medical certification of a physical or mental disabling condition, and (2) evidence that the condition is a substantial impediment to employment. In addition, there must be (3) a reasonable expectation that VR services will enhance the person's employability.[2] The state agencies are also required to focus services on individuals with severe disabilities. About 57 percent of the applicants in 1990 were accepted for services; of those served, about 69 percent were classified as severely disabled.

Traditionally, the VR program has been justified as a good investment, with supporters pointing to cost-benefit studies showing high positive ratios of earnings gains of former clients to money spent on program services and administration. But questions have been raised about whether the program

[1]The Rehabilitation Services Administration (RSA) in the Department of Education is responsible for the overall administration of the program. There are 83 state agencies in the 50 states, the District of Columbia, and U.S. territories and protectorates. In some states, one agency serves all persons with disabilities, while in 26 states there are two agencies, with one serving only blind clients.

[2]This third criterion was modified in the 1992 reauthorization of the VR program (Rehabilitation Act Amendments of 1992, P.L. 102-569). Under the revised act, it is presumed that any applicant's employability can be enhanced, unless the state agency can demonstrate otherwise with clear and convincing evidence. All the data used in this report are from years before this change.

is able to serve all those who are eligible and desire services, whether the services provided are sufficient in scope and suitably targeted to meet the needs of a diverse clientele, and whether the program's effects persist over the long term.

Effective vocational rehabilitation programs are important for a number of reasons. First, a productive and humane society is enhanced by the useful employment of as many of its adult members as possible. Second, statistics suggest that the population of Americans with work disabilities may be increasing. Some scholars have argued that recent reductions in the risk of death from accidents and illnesses are associated with an increasing risk of disability. And third, technological developments such as the availability of assistive devices and new behavioral training techniques have made it possible for individuals who were previously regarded as unemployable to enter the workplace.

Effective vocational rehabilitation programs are thus both more necessary and more feasible than in the past. Those responsible for decisions about the state-federal VR program now more than ever need information about how those with disabilities are being served and what works.

One uncertainty in designing the program concerns how those with the most severe disabilities are treated. On one hand, the law requires the VR program to give them priority. Yet critics have argued that the state agencies operating the VR program may do the opposite by employing a strategy called "creaming"—that is, most frequently accepting for services those applicants with greater amounts of work experience or education, or with less severe disabilities. Such decisions could be made as a result of pressure to achieve the largest numbers of rapid rehabilitations at the lowest cost.

Another persistent issue is the extent of the services provided and the accuracy with which services are matched to needs. Once a client is accepted, a VR agency provides individualized rehabilitation services that follow a written plan drawn up by a rehabilitation counselor in consultation with the client. Clients may seek assistance for a number of reasons, and the service regimens that are offered vary in both length and type. For most clients, a primary reason for seeking rehabilitation services is getting or keeping a job in the competitive labor market, doing work suited to their abilities. For some, all that may be required is a little counseling and guidance, as well as help in finding job opportunities to pursue. But for others, employment may depend on the agency's spending

money to purchase an assistive device, such as a hearing aid, a wheelchair, or a specially equipped van. And for still others, success in a job may require an extensive period of higher education, training in social skills, or therapy for a problem relating to mental illness or substance abuse. Critics have argued that the VR agencies may prefer to give a larger number of clients the less expensive in-house services, such as diagnosis, counseling, and guidance, rather than (potentially) serving fewer but concentrating resources on the more expensive and prolonged services that could give clients the skills and technology necessary for long-term success in the labor market.

In addition to uncertainties about who is eligible, who accepted, and how they are served, there has been a more fundamental uncertainty concerning the long-term vocational outcomes for clients after they leave the program, and how former clients compare with persons who are not served. A central objective of this study was to analyze the work and earnings history of both program participants and nonparticipants for 8 years after leaving the program, using a previously unexamined data source.

Objectives, Scope, and Methodology

The Chairman of the House Subcommittee on Select Education asked us to provide information on several aspects of both the population with disabilities and the state-federal VR program, to help in the reauthorization of the VR program in the last congressional session.[3] Specifically, we were asked to answer the following questions:

1. How many people with disabilities are potentially eligible for rehabilitation services, and what is the nature of this population?

2. What are the characteristics of those people who receive services?

3. What types of services are received?

4. What results are achieved through the delivery of vocational rehabilitation services?

In further defining issues for study, we reviewed literature on VR, discussed the program history and the general study questions with

[3]This subcommittee was renamed the Subcommittee on Select Education and Civil Rights in the 103rd Congress (1993-94). We gave preliminary results of our work in testimony before the Subcommittee as it considered the reauthorization. See Vocational Rehabilitation Program: Client Characteristics, Services Received, and Employment Outcomes, GAO/T-PEMD-92-3 (November 12, 1991).

congressional staff, and reviewed testimony by witnesses who discussed the VR program in detail. From these sources, we gained a better understanding of the views of critics and supporters of the program, which helped us define questions that we could address with data.

The Potentially Eligible Population

We used analyses and tables from two published reports to answer the first question about the size and nature of the population of people with disabilities who potentially were eligible for VR services.[4] One report used data from a special supplement on disability done as part of the 1984 Survey of Income and Program Participation (SIPP).[5] The second report used aggregated data from three years (1983-85) of the National Health Interview Survey (NHIS).[6] Both SIPP and NHIS are surveys of representative household samples of the nation's noninstitutionalized civilian population. SIPP is administered by the Census Bureau.[7] NHIS is administered by the National Center for Health Statistics (NCHS).[8]

We examined estimates derived from these two national surveys from the 1980's for two reasons. First, of several recent national surveys with some information on disability, only NHIS and SIPP have information on the types of disabling conditions prevalent in the population. Second, they contain sufficient information and large enough sample sizes to describe the population of persons with disabilities in terms of other demographic

[4]The March supplement to the Current Population Survey (CPS) has since 1981 contained questions that provide information on work disability status. CPS estimates of the prevalence of work disability are lower (8.6 percent of the working age population in 1988, for example) than those from the sources we selected and report on in chapter 2. The Bureau of the Census cautions, however, that the difference is a result of technical differences in survey methods and that "CPS data are not the best source for prevalence estimates." J. Bennefield and J. McNeil, Labor Force Status and Other Characteristics of Persons With a Work Disability: 1981-1988, Current Population Reports, Special Studies, Series P-23, No. 160 (Washington, D.C.: U.S. Department of Commerce, Bureau of the Census, 1989).

[5]Assistant Secretary for Planning and Evaluation, Department of Health and Human Services, Task 1: Population Profiles of Disability, report prepared by Mathematica Policy Research, Inc. (Washington, D.C.: October 1989).

[6]M.P. LaPlante, Data on Disability from the National Health Interview Survey, 1983-1985, an Info Use Report (Washington, D.C.: National Institute on Disability and Rehabilitation Research, 1988).

[7]SIPP is a longitudinal survey. The same households are interviewed every 4 months for 2-1/2 years. Core questions are asked in every interview, with questions on specific areas of interest in any one wave. The supplement on disability was the third of four waves and was administered between May and August 1984. The 1984 panel contains information on persons residing in approximately 20,000 dwelling units. Each person 15 years of age and older in the household was interviewed individually.

[8]The NHIS is a multistage probability design permitting continuous sampling of the population. Samples are drawn weekly; each is representative of the target population and is additive with other weekly samples. The report we used was based on interviews with 105,620 people in 1983, 105,290 in 1984, and 91,531 in 1985.

characteristics. Thus, information from the surveys allowed us to answer the question about the nature of the potentially eligible population, in addition to its size.

NHIS and SIPP contain items developed for the purpose of monitoring the health and economic well-being of the nation's citizens, and the items on disability and employment limitations were not specifically designed to measure whether respondents would meet the criteria for eligibility used by VR program personnel. However, the reports we examined provide the best estimates of the number of persons who potentially meet two of the three criteria for eligibility for VR services—that is, persons (1) who have a disabling condition, and (2) whose ability to work is substantially limited by this condition.

In both SIPP and NHIS, respondents were asked whether an impairment or a health problem limited their ability to work, or kept them from working altogether. Those who reported being limited in working (or prevented altogether) were then asked the names of the conditions that caused their limitation, and what condition was the main cause. The SIPP respondents were shown a flashcard with a list of conditions; the NHIS respondents simply volunteered the condition. In responding to SIPP, a condition that was either acute or chronic could be named as a cause of work limitation. In the NHIS data, however, only chronic conditions were recorded. A condition was classified as chronic if it had been noticed 3 months or more before the date of the interview or was on the NCHS list of conditions that were defined as chronic regardless of time of onset. The exact item wordings from the two surveys are presented in table 1.1.[9]

[9]The questions were posed only to adults between the ages of 16 and 72 in SIPP, and 18 and 69 in NHIS.

Table 1.1: Items Measuring Limitations in the Ability to Work, and the Major Condition Causing the Limitation

Item	Survey	
	SIPP	NHIS
Work limitation		
Question 1	Does your health or condition limit the kind or amount of work you can do?	Does any impairment or health problem keep you from working at a job or business?
Question 2	Does your health or condition prevent you from working at a job or business?	Are you limited in the kind or amount of work you can do because of any impairment or health problem?
Cause of work limitation		
Question 1	(SHOW FLASHCARD) What health condition is the main reason for your work limitation?	What condition causes this?
Question 2	[a]	Besides (condition) is there any other condition that causes this limitation?
Question 3	[a]	Which of these conditions would you say is the MAIN cause of this limitation?

[a]Follow-up questions not asked in SIPP.

Sources: Bureau of the Census, Survey of Income and Program Participation (SIPP), 1984 Panel; and National Center for Health Statistics (NCHS), National Health Interview Survey (NHIS), 1985.

The reports we examined presented tabulations of the percentage of the population that was limited in or prevented from working, for the entire working age population (aged 18 to 64), as well as breakdowns of the former population by various demographic characteristics. In addition, individuals were categorized according to the major condition causing the limitation. We relied on the coding of conditions that had been done by the authors since we did not conduct our own analyses of the surveys.

Client Characteristics

To answer the second question about the characteristics of those served by the VR program, we conducted our own analyses of a major set of data called the Case Service Reports. The Rehabilitation Services Administration (RSA) routinely collects information from the state agencies at the end of each fiscal year on the characteristics of each client whose case was closed that year in each state's program, as well as on the general types of services that each client received and his or her employment

status in both the week of application and the week of case closure. At any particular time, RSA may be waiting for original or corrected data from one or more states for one or more years; thus, at the time we began our study, the most recent full year for which largely complete data were available was fiscal year 1988.

The set of VR clients whose cases were closed during a single fiscal year includes two distinct groups. The first consists of those who applied to the program but were not accepted for services for one of several possible reasons.[10] The second and larger group is made up of persons accepted into the program and includes those who during the fiscal year (1) were rehabilitated (as defined later in this chapter), (2) dropped out of the program before a written plan for rehabilitation had been developed or before services had been initiated, or (3) were not rehabilitated after receiving at least one (and perhaps several) of the services agreed upon in the rehabilitation plan.[11]

We analyzed these RSA records to describe those accepted into the VR program (in terms of age, gender, ethnicity, education, type of disabling condition, and severity of disability) and to make comparisons with persons who applied but were not accepted. Of the 605,872 cases closed in 1988, we found that 58 percent were accepted by the state agencies and 42 percent applied but were not accepted. Where possible, we also compared the characteristics of VR clients with the characteristics of those potentially eligible that we derived from SIPP and NHIS data.

Services Received by VR Clients

To answer the third question about VR services, we used the same Case Service Reports for 1988. The state agency is required to list, for each client, whether or not a service has been received, using a checklist of 13 general categories of services. Using this information, we present the percentage of clients who received each category of service, as well as the average number of service categories they received.

[10]Some applicants are not accepted because they fail to meet the criteria for eligibility. Other applicants' cases are closed before acceptance because they refuse services, move to another state or cannot be located, fail to cooperate with agency personnel, become institutionalized, or die. An additional subset of applicants may not be accepted after being placed into "extended evaluation." Applicants are placed into this status for up to 18 months when agency staff cannot readily certify eligibility for VR services and must gather further information before a decision can be made.

[11]The Case Service Reports cover clients whose cases were closed any time during the fiscal year. The year of application will vary across individuals and may have been much earlier (because of variations in the length of time required to determine eligibility and to complete the program). For example, two clients may be rehabilitated in 1988, but one may have applied for services in 1983 and the other in 1987.

The agency also reports the total dollar amount spent while a client is in the program to purchase services from other providers. This figure is not the total dollar cost of all services a client receives, since it excludes those provided by the VR agency (such as counseling) or those provided by others but not purchased by the agency (such as community college tuition covered by student aid, or medical expenses covered by health insurance). We present the average cost of purchased services and determine whether the overall cost varies by type and severity of disability, and by various demographic characteristics. We were particularly interested in determining if the amount spent on purchased services varied according to whether clients were severely disabled or from traditionally underserved or disadvantaged groups, such as women, blacks, Hispanics, American Indians, and Asian Americans.

Vocational Rehabilitation Results

In answering the fourth and final evaluation question about the program's results, we limited our examination of program results to economic outcomes—that is, clients' employment and earnings in the years following their participation. The Rehabilitation Act does allow state agencies to provide services to clients who are not presently able to achieve full-time employment in the competitive labor market. Certain clients may be placed in some type of unpaid employment; others may achieve greater independence even if they are unable to find or maintain employment. Nevertheless, paid work in the competitive labor market is still a primary objective for most clients, and a job that pays good wages is a central means of their achieving independence and emotional well-being.

The state VR agencies only collect information and report to RSA on their clients' earnings and employment during the week before referral.[12] The agencies also report on rehabilitated clients' earnings and employment in the week of closure.[13] Analyses of these data usually show substantial economic gains between application and case closure for clients who are successfully rehabilitated.[14] However, conclusions based on these data suffer from two major limitations: lack of any comparison group and short

[12]Until the mid-1980's, state agencies reported information on earnings for the week before referral. Since then, state agencies have reported information for the week before application.

[13]Clients are considered rehabilitated, and their cases are closed, when they have received the services listed in the individualized written rehabilitation plan and been suitably employed for a minimum of 60 days. Clients can also be considered successfully rehabilitated if they achieve other outcomes than employment.

[14]RSA, Comparison of Economic Gains Achieved by Persons with Severe and Non-Severe Disabilities Rehabilitated by State Vocational Rehabilitation Agencies in Fiscal Year 1988 (Washington, D.C.: U.S. Department of Education, 1990).

time-perspective. That is, first, it is difficult to attribute gains to the program without comparing the rehabilitated clients with other VR clients or comparable individuals with disabilities who are not VR clients. And second, stronger conclusions about the effectiveness of the rehabilitation would come from longer follow-up of clients than the 60-day period now used. RSA's observations have the potential to routinely overestimate the impact of VR services on rehabilitants, since most have no earnings in the week of application but at least modest earnings during the week of closure.[15] The absence of earnings at application is likely to be an underestimate of the client's true pre-program potential, while the level of earnings at closure has an unknown relationship with long-term post-program outcomes.

In our study, we were able to overcome both these limitations. We were able to examine annual earnings of both rehabilitated clients and other accepted applicants for a much more extended period—ranging from several years before referral to 8 years after their cases were closed. We did so by analyzing a special computer-matched file, known in RSA and the Social Security Administration (SSA)—the two agencies that created it—as the "data link." This file contained information from the VR program on the characteristics of all applicants whose cases were closed in 1980 that had been combined with information from SSA on the annual earnings of these same clients for the period between 1972 and 1988.

The data link had been created by SSA in the late 1980's in cooperation with RSA. Using social security numbers, SSA computer-matched RSA client records with SSA's Summary Earnings Record (SER), which contains information on annual earnings from wages reported for tax purposes by employers or by self-employed individuals.[16] SSA was able to find at least some wage record (in the SER data) for 96 percent of the 864,940 VR clients

[15]In 1988, for example, RSA reported 80 percent of rehabilitants had no earnings at the time of application, while only 9 percent had no earnings at closure.

[16]The files matched have a number of limitations. First, RSA did not include, for each client, the full set of data available (notably, omitting information on services received). Second, there are limits on the SSA side as well. For example, SER lists most, but not all, wage income (for example, wages from certain types of employers, such as government, are not included). And earnings above the maximum taxable base are also not included, although this truncation probably affects few of the persons with disabilities we were studying. Other kinds of income (such as disability benefits) are recorded in a separate SSA file, the Master Beneficiary Record (MBR). The RSA files were matched with the MBR data. This income would be pertinent to an evaluation of the overall economic situation of persons with disabilities. However, as we were interested chiefly in employment and wages, we did not examine this portion of the data base in our review.

whose cases were closed in 1980.[17] Neither SSA nor RSA tried to check the accuracy of the matched data, such as by cross-checking it with other data sources. Such a task was also beyond the scope of our study.

Because they contain personally-identifiable tax information, access to SER files is severely restricted by the Internal Revenue code. However, under section 6103(f)(4) of the code, GAO can be granted access to tax information when it is designated as an agent of a congressional committee dealing with tax matters. In this case, we analyzed the data contained in the RSA-SSA data link as agents of the Joint Committee on Taxation.

Methodology for Examining Program Impact

The first part of our analysis of the results of the VR program is descriptive. We present tabulations of the proportion of clients who have any SSA record of earnings from employment in the years prior to program referral, as well as the 8 years after their cases were closed (1981-88). We also present information on the continuity of post-program employment for former clients, and use as our measure of continuity the number of consecutive years clients had any SSA record of earnings from employment after their cases were closed. Finally, we present information on the average annual earnings in pre-program and post-program years. We present these measures of employment and earnings separately for clients with three different kinds of primary disabling conditions: (1) physical disabilities (including orthopedic impairments, amputations, visual impairments, hearing impairments, and chronic illnesses such as cardiac or circulatory conditions, respiratory conditions, neurological conditions, and the like); (2) emotional disabilities (including drug abuse, alcohol abuse, or mental illness); and (3) mental retardation.[18] We group clients in this way because of the very different barriers to employment that might be faced by individuals with these types of disabilities, and the fact that such differences would be masked if we only presented information on the entire sample.

The second component in our analysis involved the use of statistical procedures to determine whether participation in the VR program was associated with better long-term economic results. We compared the

[17]A valid match was defined as linking a VR client's social security number with even a single year's entry in SER for the period between 1972 and 1988. Thus, for some clients for whom a valid match was found, there might exist complete earnings data for the entire period we studied, while for others there might be some years for which no annual earnings were recorded.

[18]Because of limited computer capabilities, we took random samples from the data set for each of the three client groups. The resulting numbers of cases were (1) 41,865, or 8 percent of the clients with physical disabilities; (2) 39,823, or 17 percent of the clients with emotional disabilities; and (3) 40,558, or 50 percent of the clients with mental retardation.

outcomes of subsets of clients who participated in the program with the outcomes of a group of clients that did not participate. As our outcome variables, we chose to determine (1) whether clients (whose cases were closed in 1980) had any income from employment in 1985, and if so, (2) what level of earnings was achieved. Examining outcomes 5 years after program participation enabled us to look at the long-term impact of the program and avoid the problems associated with examining an earlier year such as 1982 or 1983, during which many persons with and without disabilities were out of work due to the recession.

Analyses of this sort are sensitive to the choice of groups being compared and the variables that are included in the statistical analysis. When evaluating program impact using data from treatment and comparison groups that are not formed through random assignment, impact estimates may well be affected by pre-program differences between the groups. The problem of selection bias occurs when pre-program differences are correlated with both the decision to accept program applicants and the outcomes from program participation. In the case of VR, applicants who are younger and more educated, for example, may have more motivation to seek employment and may also be perceived as more motivated by program personnel. Thus, they may not only be more likely to be accepted into the VR program (because the counselor sees the client as "employable" with the provision of services), but may also be more likely to be successful in the labor market with or without VR services. The causes of their greater success in employment, compared with applicants not accepted, would therefore include both preexisting differences and participation in the program.

In an effort to overcome the component of selection bias due to decisions made by program personnel, we chose to examine only those clients who were accepted for VR services. Within the group that was accepted, we identified several subgroups that had different VR experiences—naturally-occurring variations that are the practical alternative to genuine experimental and control groups. Thus, we compared rehabilitated clients with clients who were accepted but dropped out. (Dropouts may have left the program before a rehabilitation plan was developed, or later but still before receiving any services.) This comparison showed whether participants judged successful by RSA actually did better, in economic terms, than eligible clients who did not participate. We also compared clients who received some services but were not classified formally as rehabilitated, with the dropouts. This

comparison showed whether those with some participation in the program (although termed non-rehabilitated) did any better than those who quit.[19]

These types of comparisons do not rule out the possibility of bias due to differences between client groups unrelated to decisions made by program personnel. We cannot make definitive estimates of the program's effects because we cannot be sure that people in the three comparison groups (rehabilitants, partial participants, and dropouts) were alike in other ways when they were referred to the program. However, we used statistical analysis methods (more specifically, two types of regression analysis) to take into account as many of the preexisting differences between the groups as we could, using measures that were available in the data set. The information on clients available in the RSA-SSA file allowed us to include in our statistical analysis some other variables that were associated with differences in earnings and employment, including severity of disability; demographic characteristics such as age, gender, education, race, and region of the country; and economic conditions in the state where clients were served at the time of program referral and closure.[20] Since the three groups of clients might well have different patterns of pre-program employment, we also included measures of employment and earnings during the year of referral and the year prior to the year of referral.[21] Our results are presented in chapter 5, and details of the regression analysis are contained in appendix IV.

In addition to differing in ways we documented from the RSA-SSA data file and included in our statistical analyses, the groups could differ on other factors that are not measured in the data set. For example, rehabilitants may differ from program dropouts in motivation, family support, or the availability of alternatives to VR—factors that may be associated with

[19]This category of partial participants comprises persons who were accepted and for whom a rehabilitation plan was developed. But in contrast to the group labelled dropouts that never started their planned activity, this group began—but did not finish. This could have happened for a variety of reasons, including moving away, losing interest, getting services elsewhere, entering an institution, or death. Dropouts do get time and attention from VR counselors as they go through initial diagnostic procedures leading towards a rehabilitation plan. That may be beneficial even in the absence of any further services. Nevertheless, we judged the partial participants worthy of separate analysis since they receive substantial purchased services as well (as discussed further in chapter 5).

[20]We added these variables to the data file, using state-level information from published sources. It would be better to include even more local information, such as county-level economic data, to help control even more precisely for the labor market situation of each client. (That is, a client in Los Angeles faces not a California-wide set of economic conditions, but rather a more localized situation.) We could not do that analysis, however, since the RSA client information in the RSA-SSA data link did not include county of residence or of VR service.

[21]Again, stronger analysis of pre-program differences would depend on access to a richer data set. With information on the onset of each client's disability, it would be possible to have an even better baseline picture of employment and wages. However, this information is not available in the RSA-SSA data link.

long-term success in the labor market independent of participation in the program. Exploring the possible effect of these unobserved differences (that is, controlling statistically for their contribution to VR client outcomes) was beyond the scope of our analysis. Our conclusions must be considered suggestive, and we recommend further steps to clarify the picture of program outcomes, including the use of better data and stronger study designs.

We performed our work in accordance with generally accepted government auditing standards. We obtained comments from a number of experts in the disability field at different points in our work—such as when designing the study, planning details of the outcome analysis, and drafting our report—and their names are listed in appendix V.

Strengths and Limitations of the Study

The chief strength of our approach to describing the size and nature of the eligible population lies in our use of findings from two different surveys of the national population. The chief limitations arise from the fact that the surveys were collected for more general purposes than ours. Thus, they may not have included in their samples all the types of individuals potentially eligible for VR (for example, those in institutions or those under 18 years of age). Further, the surveys relied on individuals' own reports of disability and limitations in working; these may correspond only partially with medical assessments of disability and with a VR counselor's judgment about the extent to which an applicant's disability is a substantial impediment to employment.

The chief strength of our description of the characteristics of VR clients and the services they receive is that we divided the overall client group for the purpose of analysis, in recognition of the enormous heterogeneity of the VR program. We are limited in this regard, however, by the data states are required to provide on each client for the RSA Case Service Reports. It would have been very useful to have in each client's record more information in the following areas: (1) pre-VR work experience and the history of an individual's disability, as well as any experiences with other service programs before entering VR; (2) within the program period, details on the quality, duration, and intensity of the specific services received; and (3) the costs to the state agency of providing services, such as counseling and referral, as well as the value of services received as benefits from other sources. The key issue is the appropriateness of services to the client's situation, and we had no independent information that would allow us to perform that evaluation.

Our examination of the results of the VR program is the central contribution of our report. Ours is the first study to provide national data on the long-term economic outcomes for clients who participated in the VR program following the passage of the Rehabilitation Act of 1973. There are several strengths to our approach. By using the combined RSA-SSA client and wage data, we could overcome two of the long-standing shortcomings of evaluation in the field: We could study clients over a longer term, and we could compare different client groups. In addition although not all kinds of income are included, the SSA data on earnings, which are based on employer reports, may be more accurate than data reported by clients themselves. Further, the very large size of the 1980 case-closure group in the RSA-SSA data link allowed us to look at long-term outcomes for those with different kinds of disabilities, as well as to include a number of variables of interest in our statistical analyses.

There are, however, a number of limitations in our design. First, as noted previously, there are limits, imposed both by the data and by our resources, on our search for the size of the program's effects. Better data would permit better statistical controls for pre-program differences, but more complex statistical models than we could explore might possibly be helpful in this regard even with the present data. Second, we can do little to explain any outcomes—that is, to say why clients work as much as they do or earn the wages they do, particularly whether these are related to details of the VR services they received. Service data, though available in RSA's Case Service Reports (with many limitations already noted in discussing our chapter 3 analyses), were not included in the RSA-SSA data link. And no other data are available about clients' work histories that could help explain the employment and earnings figures—for example, what jobs they held or whether they worked full- or part-time—after program closure.

Agency Comments

We discussed our preliminary findings and conclusions with responsible officials of the Department of Education while we were preparing our 1991 testimony, and we incorporated a number of their comments and concerns in our ongoing analysis. These officials also provided oral comments on our final findings, conclusions, and recommendations. These comments are presented, with GAO's response, in appendix I.

Organization of the Report

Chapter 2 uses data from published reports to answer the first evaluation question about persons with disabilities who might be eligible for VR.

Chapters 3 and 4 present our analysis of VR program data on those served in fiscal year 1988. Chapter 3 answers the second evaluation question about who is served and compares those accepted for VR services with those who were not in terms of demographic characteristics and type and severity of disability. Chapter 4 again uses RSA data on the 1988 client group to answer the third question about services received. The final chapter answers the fourth evaluation question concerning program results, using data on work and wages through 1988 for various groups of rehabilitated and other clients whose cases were closed in 1980.

The Population Potentially Eligible for Vocational Rehabilitation Services

The first evaluation question asked us to determine the size and nature of the population of people with disabilities who are eligible for vocational rehabilitation (VR) services. Not all persons with disabilities are eligible for services under the Rehabilitation Act, since the law also requires that a person's disability present a substantial impediment to employment and that the individual can benefit from VR services in terms of employability.[1] The judgmental nature of these criteria makes it quite difficult to arrive at national estimates of those whom VR could be serving. To answer the question, we relied on published reports from two national surveys from the mid-1980's. Based on the data in these reports, we estimated the number of persons meeting the following two (of three) VR criteria: (1) presence of a disabling condition that (2) limits the amount and kind of work the person can do.

From our review of these national survey data, we estimated that about 5 to 7 percent of the working-age population with work-limiting disabilities is served in a year by the VR program. We also found that about 69 percent of the general work-disabled population is severely disabled, which is slightly higher than the percentage of severely disabled clients (65 percent) among those served by the VR program in fiscal year 1988.

In the first section of this chapter, we present estimates of the size of the work-disabled population. In the next three sections, we examine the demographic characteristics of this population, the type of conditions reported as causing work disability, and the severity of the disabling conditions.

How Many Are Potentially Eligible?

The two surveys we examined—the 1983-85 National Health Interview Survey (NHIS) and the Survey of Income and Program Participation (SIPP)—showed between 14.3 and 18 million people with self-reported health-related work limitations.[2] This represents 10.1 to 12.5 percent of the working age population (those aged 18 to 64). Since about 933,000 to 1 million persons are VR clients in any one year, this means that about 5 to 7 percent of the work-disabled population are served by the program.

The 14.3 to 18-million figure is an imprecise estimate of those eligible, however, for at least three reasons. First, eligibility is based on medical

[1]As noted in chapter 1, the employability criterion was modified substantially in the 1992 reauthorization of the program.

[2]Differences in the survey estimates can result from, among other things, differences in the questions' wording, the order of questions, or the time period queried.

evidence and counselors' judgment, which will differ to an unknown degree from applicants' own views; and the surveys' self-reports of disability capture only the latter. Second, eligibility depends on a third judgment, of employability after services are received, which cannot be simulated using the survey data. Thus, there is no way to estimate whether all applicants should be viewed—as some advocates did for many years and which the law does beginning with the 1992 reauthorization—as employable. Third, some people outside the 18 to 64 age group are also eligible, as are some of those beyond the household population represented by the survey data. Whatever the number eligible, it is not a definitive guide to the potential demand for VR services for an additional reason: Not all will want to enter the labor market. (Although there are other benefits and outcomes from VR services, they are primarily aimed at helping clients achieve jobs in the competitive labor market.)

Who Are Those Reporting a Work Disability?

Table 2.1 shows that those reporting a work disability were older, less educated, and poorer than the general working-age population. The work-disabled population also differed from the working-age population, although less markedly, in race and gender.

Table 2.1: Demographic Comparisons of Work-Disabled and Working-Age Populations

Characteristic	Work-disabled[a]		Working-age[b]	
	NHIS	SIPP	NHIS	SIPP
Age				
18 - 24	8%	[c]	20%	[c]
25 - 44	34	[c]	49	[c]
45 - 64	58	[c]	31	[c]
Some education beyond high school	21	22%	37	38%
Family income below poverty level[d]	18	21	10	12
Gender				
Male	49	47	48	49
Female	51	53	52	51
Ethnicity				
Black	14	14	11	11
Hispanic origin	5	5	6	6

Note: Survey sample sizes are given in chapter 1.

[a]Report that a health condition or impairment limits the amount or kind of work they can do.

[b]For characteristics other than age, NHIS includes those aged 18 to 69.

[c]Data not broken down into these categories.

[d]In NHIS, respondents are categorized as below the poverty level; in SIPP, respondents are categorized as at or below the poverty level.

Sources: Assistant Secretary for Planning and Evaluation, Task 1: Population Profile of Disability, report prepared by Mathematica Policy Research, Inc. (Washington, D.C.: U.S. Department of Health and Human Services, October 1989); and M. P. LaPlante, Data on Disability from the National Health Interview Survey, 1983-1985 (Washington, D.C.: U.S. Department of Education, 1988).

Not surprisingly, the two populations differed considerably in age. For example, in the 1980's survey data, 58 percent of those reporting a work-limiting disability were aged 45 to 64, while only 31 percent of the total working-age population were in this age bracket.

Also, in terms of education and income, persons who reported having work limitations differed considerably from the working-age population as a whole. In both surveys, about one fifth of the work-disabled group had some formal education beyond high school, compared with about two fifths of the overall working-age population. In addition, 18 percent of the work-disabled group had family incomes that fell below the poverty level, compared with 10 percent of the working-age population.

Women were about as likely as men to report that a health condition or impairment limited their ability to work. Women constituted 53 percent of the work-disabled population versus 51 percent of the working-age population.

Black Americans also had a slightly greater representation in the work-disabled population than in the working-age population: 14 percent versus 11 percent. Persons of Hispanic origin, on the other hand, were slightly less represented: 5 percent of the work-disabled population versus 6 percent of the working-age population.

What Are the Work-Limiting Conditions?

Despite differences in the surveys' methods, they showed considerable consistency in the predominant disabling conditions reported as the main cause of work limitations. Musculoskeletal and cardiovascular conditions together accounted for 55 to 61 percent of the total, as can be seen in table 2.2. The largest category, musculoskeletal impairments (38 to 41 percent of all conditions reported), included arthritis, back injuries and disk disorders, spinal cord injuries or deformity, and amputation or absence of one or more of the major extremities. The next largest category, cardiovascular and circulatory conditions (17 to 21 percent of all conditions reported), included heart disease, hypertension, and stroke.

Table 2.2: Conditions Reported as the Main Cause of Work Limitation

Condition	NHIS[a]	SIPP[b]
Musculoskeletal	40.7%	38.1%
Cardiovascular/circulatory	20.5	16.9
Mental illness, mental retardation, substance abuse	5.5	8.3
Respiratory	7.2	6.4
Visual and hearing impairments	5.0	4.2
Neurological	4.3	3.6
Neoplastic	2.4[c]	2.6
Digestive	2.7	2.5
Other conditions[d]	11.7	17.3
Total[e]	**100.0%**	**99.9%**

[a]NHIS conditions asked of respondents 18 to 69 years old.

[b]SIPP conditions asked of respondents 18 to 64 years old. Percentages are based on all respondents who named a specific condition as a cause of their work limitation. About 7 percent named no specific condition.

[c]Cancers and tumors.

[d]Includes such conditions as diabetes, end-stage renal disease, genito-urinary disorders, endocrine conditions, other ill-defined conditions, and all other health conditions.

[e]SIPP total does not add to 100 percent due to rounding.

Sources: Assistant Secretary for Planning and Evaluation, Task 1: Population Profile of Disability, report prepared by Mathematica Policy Research, Inc. (Washington, D.C.: U.S. Department of Health and Human Services, October 1989); and M.P. LaPlante, Data on Disability from the National Health Interview Survey, 1983-1985. (Washington, D.C.: U.S. Department of Education, 1988).

Mental illness, emotional problems, mental retardation, and substance abuse together accounted for 6 to 8 percent of all conditions. Respiratory conditions, including asthma and emphysema, accounted for 6 to 7 percent of all conditions. And visual and hearing impairments accounted for 4 to 5 percent of all conditions.

How Severe Are These Conditions?

Both the Rehabilitation Act and the regulations implementing it direct state VR agencies to give first priority to serving the severely disabled, so we looked for evidence of the size of that particular group. However, differences between the two surveys' definitions of the degree of limitation caused by a disability and the VR program's administrative definition of "severely disabled" made it very difficult to first estimate the total population of persons with severe disabilities and then compare it to the overall VR population.

Estimates derived from SIPP were closest to those used by RSA to categorize persons as severely disabled.[3] One study we examined reported answers to several questions that approximate a measure of severity: Add the number of persons who said that their health condition or impairment limited the kind or amount of work they could do, and who said that (1) they received disability benefits—Social Security Disability Insurance, Supplemental Security Income, or Veterans' Administration disability benefits; or (2) that they had difficulty with such tasks as personal hygiene, getting in and out of bed, dressing and undressing, doing light housework, getting around outside the house, or with such functions as seeing and hearing, lifting things, walking short distances, or climbing stairs without resting.[4]

Based on the sample surveyed by SIPP, an estimated 18 million persons have some work limitation. Around 69 percent of these (12.4 million) could be considered severely disabled based on reported limitations in functioning (8.4 million) or receipt of disability benefits (4.0 million). This is slightly higher than the 65 percent categorized as severely disabled in the VR clientele in 1988.

Conclusions

The population of persons with work disabilities who are potentially eligible for VR services is large, between 14 and 18 million people, comprising over 10 percent of the working age population and including persons with a diverse range of disabilities. A majority of these persons (about 69 percent) have severe disabilities that limit their capacity to carry out activities at home and at work, and a majority are older (that is, over the age of 45). Both these factors may be associated with lower probabilities of success in the labor market, unless appropriate vocational rehabilitation services are provided.

However, this self-reported population that is potentially eligible for VR services might not be the same as the population that would have met the VR criteria for eligibility (in use during the period of our review, but now changed), which are based on medical evidence, counselor judgment, and

[3]RSA directs state VR agencies to categorize an applicant as "severely disabled" if he or she (1) has a major disabling condition such as blindness or deafness, which is automatically included, or other disabilities as qualified, such as respiratory disorder with sufficient loss of breathing capacity; (2) is a recipient of Social Security Disability Insurance or Supplemental Security Income for reason of blindness or disability, at any time during the rehabilitation process; or (3) has documented evidence of substantial loss of function in conducting certain specified activities.

[4]Assistant Secretary for Planning and Evaluation, Task I: Population Profile of Disability, report prepared by Mathematica Policy Research, Inc. (Washington, D.C.: U.S. Department of Health and Human Services, October 1989).

employability. The exact size of the latter population is difficult to estimate. However, with respect to those who are potentially eligible by virtue of their self-reported degree of disability, the data show that only about 5 to 7 percent of the population with work disabilities is currently being served in a year by the state-federal VR program.

Characteristics of Vocational Rehabilitation Clients

The second evaluation question asked us to describe who gets vocational rehabilitation (VR) services. This question is of great importance to many disability advocates, who have charged that VR counselors tend to follow decision rules denoted by the shorthand term "creaming" during the eligibility review process. That is, according to this analysis, counselors accept the easiest cases—those individuals with greater amounts of work experience or education, or with less severe disabilities—because of pressures to achieve quicker and less costly rehabilitations. More sympathetic observers have pointed to the difficulties counselors face in predicting the rehabilitation "potential" (the eventual employability) of any individual applicant. To address the issue of whether applicants who are accepted differ in systematic ways from those who are not, we compared the two groups on a variety of demographic and disability-related characteristics, using data from the 1988 RSA Case Service Reports.

In addition, we explored the possibility that applicants differ from the general work-disabled population. Observed differences could result from differences in motivation, but could also suggest that some persons with disabilities who want services and could benefit from them are not even reaching the first step of the process. We investigated this possibility by comparing the VR client group in the 1988 RSA Case Service Reports with the general work-disabled population described in the previous chapter.

We found generally that applicants who were accepted were similar to applicants who were not, on many demographic characteristics. There were some small differences between the groups in terms of the type of disabling conditions that were the main causes of work limitations. And, contrary to the creaming argument, applicants who were accepted were more likely to have a severe disability or a secondary disabling condition than applicants who were not accepted.[1]

We found larger differences between the pool of applicants and the general work-disabled population. Some groups that could face greater difficulties in the labor market, and thus be considered more "difficult" to rehabilitate—including women, older people, and persons with orthopedic disabilities and chronic health conditions—were less likely to apply to the VR program than their numbers in the general work-disabled population would suggest. On the other hand, other groups that also encounter difficulties in the labor market—blacks, persons with no formal education beyond high school, and persons with sensory impairments and mental or

[1]This generalization concerns aggregate national data. In another study, however, we found significant variation among the states in the extent of persons with severe disabilities in the VR case load. See the more detailed discussion in note 4 in this chapter.

emotional conditions—were more likely to apply to the program than their numbers in the general work-disabled population would suggest. Further study of the VR referral process is essential to an understanding of whether some persons who could benefit from the VR program are being systematically discouraged from applying.

In the first part of this chapter, we present information on the demographic characteristics of applicants (accepted and not accepted) and the general work-disabled population. In the second part of the chapter, we present information for the same groups on type and severity of disability.

Demographic Characteristics

Those accepted and not accepted into the program differ only slightly in demographic characteristics (as shown in table 3.1). About 58 percent of the applicants were men. Most clients were under age 45, with about a quarter aged 18 to 24 and one half in the 25 to 44 range. (The remaining 25 percent were over 45 or under 18.) Around 20 percent of the applicants were black, and 5 percent were of Hispanic origin. Of all applicants, about 45 percent had less than a high school education.

Table 3.1: Demographic Characteristics of VR Applicants and the U.S. Work-Limited Population

Demographic characteristic	VR applicants[a]		Percent in U.S.work-limited population[b]
	Percent accepted	Percent not accepted	
Gender			
Male	58	59	48
Female	43	41	52
Age			
14-17	9	7	[c]
18-24	25	24	8
25-44	49	52	34
45-64	15	16	58
65 and older	2	1	[c]
Ethnicity			
Black	19	21	14
Hispanic	5	6	5
Years of education			
Up to 11 years[d]	44	44	43
High school grad	39	41	35
More than high school	17	15	22

[a]Based on GAO tabulations from 1988 RSA Case Service Reports.

[b]Entries in this column are averages of the 1984 SIPP and the 1983-85 NHIS percentages (except for age, which is derived from the NHIS data only).

[c]NHIS data not reported in comparable age category.

[d]In the RSA data, this category includes clients with primary or secondary disability of mental retardation, who are categorized as "special education" on the education variable.

These data provide no evidence that applicants in any of the demographic groupings that we examined were accepted or not accepted in disproportionate numbers. There were some differences between the overall applicant pool and the work-limited population in the United States, however. On the one hand, fewer women and fewer persons over the age of 44 apply to the program than are represented in the general work-disabled population. On the other hand, more blacks and more persons without education beyond high school apply to the program than are represented in the general work-disabled population. Thus, there is mixed evidence that groups that could be considered more "difficult" to rehabilitate are also less likely to apply to the VR program than their numbers in the general work-disabled population might suggest.

Type of Disabling Condition

The state VR agencies serve persons who have a wide range of health conditions or impairments that limit their ability to work. Again, we found only a few differences between persons accepted and persons not accepted into the program with regard to the prevalence of specific conditions that were the primary causes of work limitation. In comparison with persons not accepted into the program, those who were accepted had a greater prevalence of mental retardation (13 versus 8 percent) and hearing impairments (7 versus 4 percent), and a lesser prevalence of miscellaneous conditions (19 versus 23 percent). These percentages appear in table 3.2.

Table 3.2: Type and Severity of Work-Limiting Conditions Among VR Applicants and the U.S. Work-Limited Population

Type and severity of disabling condition	VR applicants[a]		Percent in U.S. work-limited population[b]
	Percent accepted	Percent not accepted	
Sensory (total)	14	11	5
Visual	7	7	[c]
Hearing	7	4	[c]
Orthopedic/amputee (total)	24	27	39
Mental and emotional conditions (total)	43	41	7
Mental illness	19	20	[c]
Substance abuse	11	13	[c]
Mental retardation	13	8	[c]
All other conditions (total)	19	23	49[d]
Severely disabled	65	35	69[e]
Secondary disabling condition	42	23	[c]

[a]Based on GAO tabulations from 1988 RSA Case Service Reports.

[b]Entries in this column are averages of the 1984 SIPP and the 1983-85 NHIS percentages.

[c]Category not reported in the surveys.

[d]Includes chronic health conditions such as cardiovascular and circulatory conditions, respiratory conditions, digestive conditions, neoplasms, neurological conditions, diabetes, and all other conditions not elsewhere classified.

[e]Percentage derived from SIPP only.

Although precise comparisons between VR clients in 1988 and the U.S. work-limited population are impossible because of the different data collection and coding procedures employed, there are some differences between the two populations in general categories of disabling conditions. VR clients are much more likely to have mental, emotional, and cognitive

conditions than are individuals in the general U.S. work-limited population (43 percent versus about 7 percent).[2] We also found a larger percentage of sensory conditions (visual and hearing impairments) in the VR client pool in 1988 than in the U.S. work-limited population.

In contrast, VR clients are less likely to have "other" disabling conditions—which include such conditions as cardiovascular and respiratory diseases, diabetes, and neoplasms, or orthopedic impairments (musculoskeletal impairments)—than are those in the U.S. work-limited population (24 percent for orthopedic impairments, and 19 percent for "other" impairments, compared with 39 and 49 percent, respectively). These differences may be attributable to the difference in the average age of the two populations. As we have seen, VR clients tend to be younger than the U.S. work-limited population. The conditions that are more prevalent in the U.S. work-limited population are also those that tend to be associated with age.[3]

Severity of Disability

State VR agencies classified, in total, 65 percent of all those accepted as severely disabled, a higher rate than in the group of persons not accepted (of whom only about one third were severely disabled).[4] In addition, 42 percent of those accepted had a secondary disabling condition, compared with 23 percent in the group of persons not accepted.

Although the data sources are not directly comparable, the percentage of VR applicants with severe disabilities who were accepted for services in

[2]On one hand, it is possible that this observed difference would not hold up under closer study; such conditions may be underreported in population surveys. On the other hand, the difference may reflect VR referral practices. That is, there may be better referral methods or particular VR program options for this group that could explain a genuinely higher representation in the VR caseload.

[3]For example, the prevalence of cardiovascular and circulatory conditions rises dramatically with age. In NHIS, 27 percent of those 45 to 69 years old who report a work limitation say that the primary cause is a cardiovascular or circulatory condition. Only 8 percent of work-limited persons aged 18 to 44 attribute their work limitation to these conditions.

[4]In another evaluation, we found that states varied in the percentage of cases classified as persons with severe disabilities, with a range from 29 to 96 percent. Despite the requirement in the Rehabilitation Act to focus services on this group, some state officials perceived conflicting goals. They told us that increasing service to persons with severe disabilities could significantly reduce the overall number of clients they could serve. Because in that study we also found RSA guidance was unclear and the agency was not adequately checking states' decisions in this regard, we recommended both stronger program guidance and increased oversight, which RSA agreed to and has begun to implement. See Vocational Rehabilitation: Clearer Guidance Could Help Focus Services on Those With Severe Disabilities, HRD-92-12 (November 26, 1991). In the present study, we did not examine data below the national level. Considering the importance of the classification, it is of interest whether the reported data rest on valid and reliable measures used by states to categorize clients as severely disabled, and whether the categorization procedure is applied consistently to accepted and rejected clients. However, we had no practical alternative to using the existing data.

1988 was slightly smaller than the percentage of severely disabled persons in the U.S. work-limited population (65 versus 69 percent).

Conclusions

Overall, we found little evidence that certain types of applicants were disproportionately more likely than other types to be accepted for services (based on comparisons between applicants accepted and those not accepted). The major exception was that individuals with severe disabilities were—in the aggregate—more likely to be accepted than were individuals with less severe disabilities. (While the program's decisions thus generally tend to meet the legal requirement that services be focused on those with severe disabilities, we found in another study that states vary widely in this regard.)

We did find several differences between the pool of accepted clients and the U.S. work-limited population when we compared our findings from the 1988 RSA data with information from NHIS and SIPP. From these data, there is no way to tell why certain groups of people were more likely to seek out VR services than were others. The fact that certain types of persons choose not to apply for services, or are not referred for services, may not be evidence of a failing in the VR system itself. These observed disparities may be due to variations in individual motivation, or in the availability of jobs for certain groups of people. On the other hand, they may instead be due to practices of VR agencies or the agencies that are sources of referral to the program. These agencies may discourage certain types of people from following through with the application process. The findings are suggestive of possible problems in the VR referral process, but conclusions about the reasons are speculative in the absence of additional data.

Recommendations

We recommend that RSA begin the data review authorized by the 1992 amendments to the Rehabilitation Act and work as well with the National Commission on Rehabilitation Services, if it is established, to develop plans that could improve information in the area of disability and rehabilitation. Currently, RSA's knowledge of how well it is serving the general work-disabled population is inadequate because data limitations make precise comparisons between this population and the VR applicant pool difficult. Specifically, there are two major data limitations:
(1) surveys of the general population are too small to allow for state-level breakdowns by demographic and disability characteristics (and thus state agencies that have no other data cannot rely on such surveys for their own

planning purposes), and (2) data on VR clients are limited with regard to severity of disability.

RSA need not by itself remedy the first of these. However, based on further review of the existing data and options for improvement, RSA could take action. For example, RSA could encourage new efforts by the agencies in charge of monitoring the nation's health and economic well-being, even though we could not in our review develop specific plans and check their feasibility. Some states may already have methods for describing their populations of persons with disabilities. If these methods are sound, they could be expanded to other states (with RSA providing technical assistance and incentives for data quality and comparability). Establishing a national program of periodic special studies is another possibility.

Remedying the second limitation—by improving RSA's definitions and measures in order to strengthen comparisons of data on VR applicants and clients with data from other sources on persons with disabilities—is a difficult conceptual and technical problem that should also be addressed by RSA and the National Commission. RSA could develop measures of the severity of disability that are more comparable with those collected by the Census Bureau and the National Center for Health Statistics—in particular, by paying greater attention to the functional limitations faced by VR clients. It is possible, however, that there are better and more comparable measures already in place in some states that could be more widely adopted. As in the case of population surveys, the scope of our review did not permit us to review state-level data to find promising practices nor to evaluate the costs and feasibility of new options. Whether to augment regular data-gathering and reporting—in this case, adding better measures of severity and more comparable classifications of disability—to states' existing data routines and reports, or whether to get better data in periodic special studies, is again an issue.

In addition, we recommend that RSA collect additional data on the referral process itself in order to determine why certain groups are less likely than others to apply for VR services. At this point, few relevant data are reported to RSA by the state agencies, other than their recording from a list of agencies the source of a referral. (States may collect, but not report, more such data.) From the data RSA has, one can learn little about how and why certain types of applicants seek rehabilitation services, the alternatives to VR that are available to them, how they access the VR system, and their treatment by referral sources and VR agencies.

If properly done, an evaluation now in progress could help answer some of these questions. The 1992 amendments to the Rehabilitation Act transferred evaluation authority from the RSA Commissioner to the Secretary of Education, as well as required the Secretary to continue a longitudinal study of the VR program. We recommend use of a design in that evaluation that will trace potential clients from an early point in order to shed light on questions like those previously mentioned concerning the referral stage.

Services Received by Persons Accepted Into the Program

The third evaluation question asked us to describe what types of services are received by vocational rehabilitation (VR) clients. The state VR agency provides some services, such as guidance, counseling, and job referral; the state agency also purchases services from other providers, such as diagnosis, psychotherapy, vocational training, and medical restoration; and it helps locate certain services that are paid for by other agencies. Rehabilitation counselors work with clients to develop an individualized service plan that will combine a variety of activities to help clients achieve their employment potentials. (Clients can also be considered successfully rehabilitated if they achieve outcomes other than employment.)

But what kind and quantity of services should be provided? Critics of the federal-state VR system have argued that VR agencies spend too much time and effort on such agency-provided services as guidance and counseling, at the expense of providing or purchasing educational and training services that could enhance skills necessary for long-term success in the labor market. These critics suggest that incentives for counselor performance, historical patterns of service provision, and the professional training of rehabilitation counselors may contribute to a paternalistic relationship between counselor and client, with the result being the provision of low-cost service that often may not fit the individual client's needs and capabilities.

Other critics have expressed concerns about whether these same factors have resulted in inequitable treatment for some traditionally underserved groups. These groups include individuals with more severe disabilities, those with mental and emotional disabilities, and minorities and women.

In this chapter, we address these issues by analyzing data in the 1988 RSA Case Service Reports. For all accepted clients whose cases were closed in 1988 (344,865 individuals), state agencies recorded the general categories of services received (whether provided by the VR agency or another source), as well as the total cost of all purchased services. As discussed in chapter 1, the data have significant limitations and do not fully reveal either the kind, quantity, and quality of all services—or their cost.

In brief, we found that services purchased by the state agency were relatively modest in cost (with an overall average of $1,573). Since every new client requires initial evaluation, the records not surprisingly show that most received diagnosis and evaluation, as well as counseling and guidance. About one half of all clients received some type of skill-enhancing education and training service. Examining services by type

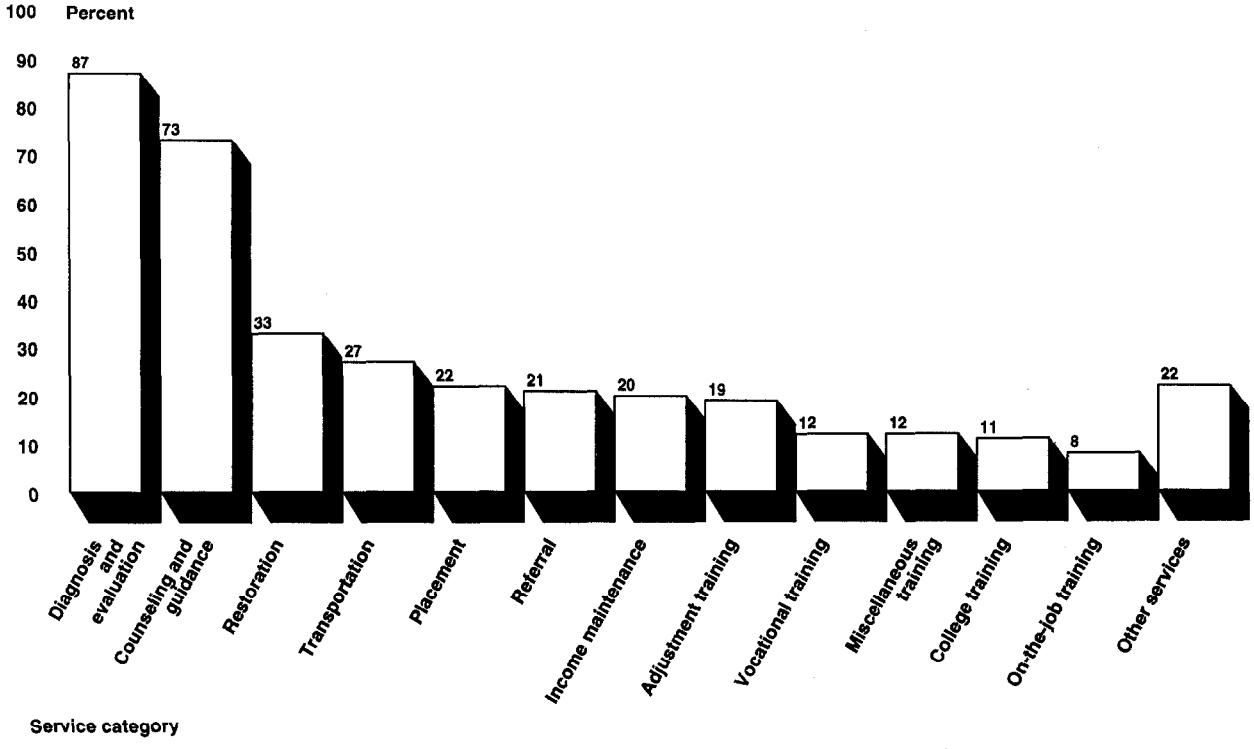
of disability, we found that the average amount spent on purchased services for persons with mental and emotional disabilities was less than was spent for persons with physical disabilities. Finally, for the most part, the average spent on purchased services for clients who were members of minority groups was less than that spent for clients who were white.

In the first part of the chapter, we present our findings on the types of services received by VR clients. The number of services received and the cost of all purchased services are then tabulated by disability type, severity of disability, gender, age, education, and race/ethnicity.

Types of Services Received

RSA data show that clients commonly received the two initial services that would be expected: (1) diagnosis and evaluation, and (2) counseling and guidance. A much smaller percentage of the clients received services in the other major categories, ranging from 33 percent who were receiving restoration services to 8 percent receiving on-the-job training. However, 47 percent of all clients received at least one of the five categories of education and training. These percentages are shown in figure 4.1. A description of the specific types of services that make up each of these more general service categories appears in the glossary.

Figure 4.1: Percent of All VR Clients Receiving Each Category of Service



Source: GAO analysis of 1988 RSA Case Service Reports

There is some evidence that patterns of service-provision vary according to whether a client is or is not severely disabled, and also according to the client's major disabling condition. (That is, we found variation in services beyond the two most common ones—diagnosis and evaluation, and counseling and guidance.) Concerning differences by severity, clients with severe disabilities were more likely than those with non-severe disabilities to receive services of all kinds, but especially adjustment training. Concerning service differences by type of disability, we found that

- clients with visual impairments received referral and placement services least often;
- restoration services most often went to clients with hearing impairments, who conversely least often received transportation services;

- a greater percentage of clients with mental retardation received placement services, adjustment services, and on-the-job training, and a lesser percentage received restoration services and college/university training; and finally,
- a greater percentage of clients with substance abuse problems received counseling and guidance, transportation, income maintenance, and other types of service.

The differences in services received, by disability and severity, are shown in table 4.1.

Table 4.1: Percent of Clients Who Received Categories of Service, by Type and Severity of Disability

		Type of major disabling condition							Severity of disability	
Category of service	All VR clients	Visually impaired	Hearing impaired	Orthopedic impairment/ amputation	Mentally ill	Mentally retarded	Substance abuse	Other conditions	Severe	Non-severe
Diagnosis and evaluation	87	90	90	86	86	89	87	87	88	86
Counseling and guidance	73	70	68	72	75	73	82	72	75	70
Restoration	33	53	64	34	30	10	29	35	35	30
Transportation	27	25	16	25	31	29	37	22	28	26
Placement	22	15	24	20	23	30	22	21	23	20
Referral	21	12	20	19	23	26	23	20	22	18
Income maintenance	20	18	14	19	23	18	28	17	20	19
Adjustment training	19	29	11	10	22	39	17	14	23	12
Business or vocational training	12	6	8	14	16	7	13	12	12	12
Miscellaneous training	12	17	10	10	12	16	13	11	14	9
College or university training	11	9	12	15	11	2	10	11	10	11
On-the-job training	8	7	5	5	7	15	7	7	9	6
Other services	22	27	24	21	22	18	32	18	23	21

Source: GAO analysis of 1988 RSA Case Service Reports

Number of Services Received

The average client received 3 to 4 services out of the 13 services RSA lists in the service record, and there were few major differences between groups of clients. Two groups stood out from the rest. First, persons of Hispanic origin received somewhat more—an average of 4.4 services. (Although as we report in table 4.3, the average amount spent on purchased services for this group was somewhat lower than the average for all clients.) Second, persons over the age of 65 received somewhat fewer—an average of 3.1 services. These averages are presented in tables 4.2 and 4.3. It should be noted that the number of types of services received, however, provides indication neither of the number of specific services received nor of their intensity or duration.

Table 4.2: Number and Cost of Purchased Services, by Type and Severity of Disability

Type of disability	Average number of service types	Average cost of all purchased services
Visual impairment	3.8	$2,401
Hearing impairment	3.6	1,744
Orthopedic impairment/ amputation	3.5	1,920
Mental illness	3.8	1,224
Mental retardation	3.7	1,478
Substance abuse	4.0	975
Other condition	3.4	1,536
Severity of disability		
Severe	3.8	1,798
Non-severe	3.4	1,175
All clients	3.7	1,573

Source: GAO analysis of 1988 RSA Case Service Reports

Table 4.3: Number and Cost of Purchased Services, by Client Background

Client background	Average number of service types	Average cost of all purchased services
Gender		
Male	3.7	$1,559
Female	3.6	1,593
Age		
Under 18	3.3	1,630
18-24	3.7	1,813
25-44	3.8	1,487
45-64	3.5	1,477
Over 65	3.1	865
Race/Ethnicity		
White	3.6	1,642
Black	3.8	1,349
American Indian	3.9	1,263
Asian American/ Pacific islander	3.4	1,622
White Hispanic	4.4	1,472
Years of education		
Special education	3.7	1,508
Fewer than 9	3.4	1,580
9-11	3.6	1,575
12	3.6	1,562
13-15	3.8	1,626
16 or more	3.7	1,747
All clients	3.7	1,573

Source: GAO analysis of 1988 RSA Case Service Reports

Cost of Purchased Services

On average, the state VR agencies spent $1,573 in purchased services per client while their cases were active. However, the program spent less than $500 on purchased services for about half (47 percent) of all clients. There was a wide range of spending on services for the other clients: $500 to $999 for 16 percent, $1,000 to $2,999 for 23 percent, and $3,000 or more on 15 percent of all clients.

As might be expected, more money (about 1-1/2 times more) was spent on purchased services for the average client with a severe disability than for the average client with a non-severe disability. As table 4.2 shows, more

was spent on purchased services for the average client with a physical disability (visual, hearing, and orthopedic impairments, and persons with "other" conditions or impairments) than for the average client with a mental disability (mental illness, mental retardation, and substance abuse). The four physical disability categories comprised the top four categories in terms of average amounts spent on purchased services.

In table 4.3, we present the differences in average service costs by client demographic variables. We found that the largest differences between groups in the average costs of purchased services were as follows:

- $379 more was spent for non-Hispanic whites than for American Indians;
- $293 more was spent for non-Hispanic whites than for blacks;
- $170 more was spent for non-Hispanic whites than for whites of Hispanic origin;
- at least $300 more was spent for clients between 18 and 24 years old than for clients who were age 25 or older, and about $200 more was spent for these clients than for clients who were age 17 or younger;
- more was spent for clients who already had some higher education than for clients who had no higher education.

Conclusions

The findings suggest that after VR agencies provide clients the two common initial services, patterns vary widely, since no other service is provided to more than a third of the group. In terms of quantity of service, at least as measured by the cost of purchased service, states spend more, on the average, when clients have severe rather than non-severe disabilities, when clients have physical rather than mental disabilities, and when clients are white rather than black, Hispanic, or American Indian.

We are limited in our conclusions by the data at hand. Thus, based on the data states are required to submit to RSA, we were unable to determine the intensity or cost of any specific category of service that was received. And the total cost figure understates the total dollar value of all a client's services because the states report neither the cost of counselor time and administrative overhead in the VR agency nor the cost of services arranged

for by the agency but paid for by other sources.[1] Thus, we could not determine whether disparities in the costs of purchased services may be made up elsewhere, perhaps through more intensive services provided by the agency or services paid for by other sources. And data on services alone, no matter how extensive and detailed, do not yield conclusions on the key question of the appropriateness of the services to the client's needs.

The data we have presented in this chapter are descriptive and provide no direct evidence of discriminatory practices on the part of state VR agencies. There are many possible explanations for the differences we have uncovered, especially since the groups we have examined differ in terms of other characteristics associated with variations in the costs of purchased services.[2] Addressing the issue of discrimination is not possible with the data at hand and is therefore beyond the scope of this report.

Recommendations

We recommend that the broad issue of the adequacy of an average purchased-service amount of $1,573 per client (and of less than $500 for half the clients) be an early agenda item for the National Commission on Rehabilitation Services authorized in the Rehabilitation Act Amendments of 1992 (if it is established). The issue is especially important in view of the expansion of eligibility, enacted in the same law, that has the potential to stretch the VR budget over an even larger group of clients.

The limitations in the RSA data and the descriptive evidence of racial disparities in purchased service costs prompt us to make two types of recommendations to the Rehabilitation Services Administration (RSA).

First, as part of the data review that we have already (in chapter 3) recommended be started, as authorized in the 1992 amendments to the Rehabilitation Act, RSA should develop plans for improving data on

[1]A study of one year's cases in one state suggests the magnitude of these omitted costs. In 1982, in Virginia, the average VR client not only received over $1,600 in purchased services (similar to the figure we report), but also over $1,500 in externally funded services and over $300 in counselor services. D. Dean and R.C. Dolan, "Using A Better Measure for Services," in M. Berkowitz (ed.), Measuring the Efficiency of Public Programs (Philadelphia: Temple University Press, 1988), 186-98. A study of all types of services for VR clients in three states later in the 1980's found that the total dollar cost was two to three times greater than the cost of purchased services alone. See M. Berkowitz et al., Enhanced Understanding of the Economics of Disability, final report submitted to the National Institute of Disability and Rehabilitation Research (Richmond, Va.: Virginia Department of Rehabilitative Services, 1988), chapter 5.

[2]See appendix III for further analysis of differences among clients of different racial groups, using other variables measured in the RSA Case Service Reports as well as measures of state economic context.

services received by VR clients. For example, it should be possible, without unduly burdening counselors, to routinely collect a more detailed profile on each client of the cost, intensity, and frequency of specific services provided, purchased, or arranged for by the VR agency. Alternatively, RSA could conduct periodic studies of client samples, although the multiple disabilities and service types in the VR program would make this approach technically complex.

Second, we recommend that RSA further examine the specific issue of racial disparities in spending. This can be done in at least two ways. RSA could make use of existing data to shed light on this problem. For example, the data from the Client Assistance Program (which exists to assist clients who have complaints during the VR process) might be useful for determining whether conflicts that exist between clients and the VR agency are related to the racial or ethnic group membership of the client. Alternatively, evaluations could be designed to include this issue. Thus, RSA could ensure that provision is made for the collection of generalizable data on the experiences of clients who are members of minority groups in the current longitudinal evaluation study, and could focus on the issue in future evaluation contracts. Such a focus may well require over-sampling members of minority groups, or designing additional data collection instruments for measuring processes related to minority issues in vocational rehabilitation.

Employment and Earnings Outcomes

The fourth and final evaluation question asked us to describe the results achieved through the delivery of vocational rehabilitation (VR) services. Traditionally, the VR program has been justified in economic terms as a "good investment." Supporters claim that the costs of providing services to persons with disabilities are more than balanced by rehabilitated clients' improved employment levels and earnings. However, such claims have usually been based on analyses of the short-term data collected by the state VR agencies.[1] Few studies have examined long-term outcomes; of those that did, one looked at clients who received services before the implementation of the Rehabilitation Act of 1973, and another at clients from only one state agency.[2] Furthermore, little is known about how the long-term impact of the program varies for subgroups of clients who differ in type and severity of disability, or in other background characteristics.

We examined the long-term economic outcomes of the program using the RSA-SSA "data link" data base containing RSA's information on the characteristics of the nearly 865,000 VR applicants whose cases were closed in fiscal year 1980, combined with information from SSA on the annual earnings of each for the years 1972 through 1988. Thus, the data base followed these individuals for several years before referral to the program and for 8 years after case closure in 1980. In our analyses, we compared the economic outcomes of three groups: (1) clients who were rehabilitated, (2) clients who were served but not rehabilitated, and (3) clients who were accepted but who dropped out before a service program was developed or before services were initiated. We do not claim the groups are fully comparable, with no differences other than their VR experiences. Yet, with statistical control methods, the second and third groups do provide an initial step towards isolating the program's effects as well as possible, short of an actual experiment where the study design (including randomly assigned experimental and control groups) helps eliminate sources of bias that can affect conclusions. Since the data included all clients whose cases were closed in the year 1980, we could

[1]For example, RSA reported that for the group of clients (without severe disabilities) rehabilitated in 1988, employment in the competitive labor market jumped 69 percentage points from application to closure and average weekly wages rose $163. (For those with severe disabilities, RSA reported a 63 percentage point gain in the size of the group employed and a $137 per week gain in average wages.) Rehabilitation Services Administration, Comparison of Economic Gains Achieved by Persons with Severe and Non-severe Disabilities Rehabilitated by State Vocational Rehabilitation Agencies in Fiscal Year 1988 (Washington, D.C.: U.S. Department of Education, 1990).

[2]Berkeley Planning Associates, Use of the Social Security Data-Link for Assessing the Impact of the Federal-State Vocational Rehabilitation Program (Washington, D.C.: U.S. Department of Education, January 1989). Though performed and published in the 1980's, this study analyzed a client cohort from the mid-1970's, before major changes in the 1973 law were fully implemented. D. Dean and R.C. Dolan, "Establishing a Mini-Data Link," in M. Berkowitz (ed.), Measuring the Efficiency of Public Programs (Philadelphia: Temple University Press, 1988), 233-55.

examine program impact for clients who differed in type and severity of disability. (Chapter 1 contains a more detailed description of the data and our methods of analysis.)

Briefly, those applicants who were rehabilitated worked more and earned more than their group did before VR, and the trends were better than those for non-rehabilitants (partial participants) and dropouts. On the other hand, the rise in the proportion of those with earnings in any year was short-lived (lasting only 2 years after closure), and subsequent earnings gains for the shrinking fraction working were modest. Using statistical methods to control for some pre-existing differences between the groups, we found the rehabilitants' work level and earnings higher at the 5-year point after VR than those for the other two groups.

Organization of the Chapter

This chapter presents details of our findings in three sections, with results in each given separately for clients with physical disabilities, emotional disabilities (including mental illness or substance abuse), and mental retardation.[3] In the first section, we examine short-term economic outcomes, using RSA data alone to show clients' status at the time of closure. In the second section, we examine three indicators of long-term economic outcomes, covering 8 years after case closure—how many worked, how continuously they worked, and what they earned. In this section, we also present the results of more detailed statistical analyses of the effect of the program, taking account of differences among the groups other than their VR experience. In the third section, we assess the program's effect on long-term outcomes separately for those with severe and non-severe disabilities.

Short-Term Outcomes

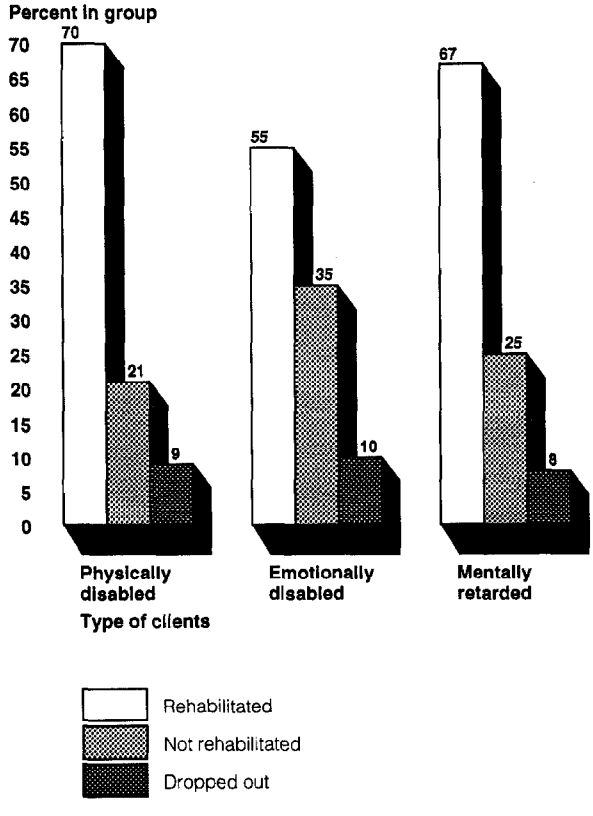
The state agency records one of three outcomes for clients accepted into the VR program. Clients may (1) drop out before a service plan is developed or before services are initiated, (2) receive some services but not be rehabilitated, or (3) be rehabilitated. Clients are classified as rehabilitated if they are engaged in an occupation commensurate with their abilities for 60 days after the provision of VR services.

Approximately 70 percent of clients with physical disabilities (including visual, hearing, and orthopedic impairments, amputations, and chronic

[3]In the previous chapter, we found that clients with different types of disabilities received VR services that varied in type and cost. We also expected that these client groups would face different barriers to employment. Thus, we analyzed outcomes for these groups separately also; aggregate analysis of all clients in the data base would not reveal any differences by disability.

illnesses) and clients with mental retardation were rehabilitated in 1980. About half the clients with emotional disabilities (those due to substance abuse or mental illness) were rehabilitated. Roughly 10 percent in each of the three disability groups dropped out of the program. The remaining clients received some services but were not rehabilitated. The results, presented by disability group, are contained in figure 5.1.

Figure 5.1: Short-Term Outcomes of the VR Program



Source: GAO analysis of 1980 combined RSA-SSA data base

For rehabilitated clients, RSA also records whether they find work in the competitive labor market, are placed in sheltered employment situations (defined as those settings where employers are allowed to pay less than the minimum wage, and where most employees are persons with

disabilities), become homemakers (RSA recognizes achieving greater independence at home as an acceptable rehabilitation outcome for some clients), or are engaged in self-employed or unpaid work. As can be seen in table 5.1, a majority of clients who were rehabilitated found work in the competitive labor market. However, a substantial percentage of clients with mental retardation were placed in sheltered employment. Also, across all three disability groups, men were more likely than women to find competitive employment. A greater proportion of women than men were rehabilitated as homemakers, a pattern that was especially pronounced among clients with physical disabilities.

Table 5.1: Types of Short-Term Employment Outcomes for Rehabilitated Clients

	Rehabilitants with physical disabilities		Rehabilitants with emotional disabilities		Rehabilitants with mental retardation	
Type of outcome	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Competitive employment	83%	67%	92%	82%	74%	58%
Homemaker	8	29	2	13	1	11
Sheltered work	2	2	4	3	24	29
Other	7	3	3	2	2	2
Total[a]	**100**	**101**	**101**	**100**	**101**	**100**

[a]Totals may not equal 100 percent due to rounding.

Source: GAO analysis of 1980 combined RSA-SSA data base

Long-Term Outcomes

Using the SSA data on VR clients' annual earnings, we examined three basic questions about their experience after the program (with comparisons to the years before VR as appropriate):[4]

- How many VR clients worked each year?
- How continuously did they work across the 8 years?
- What did they earn?

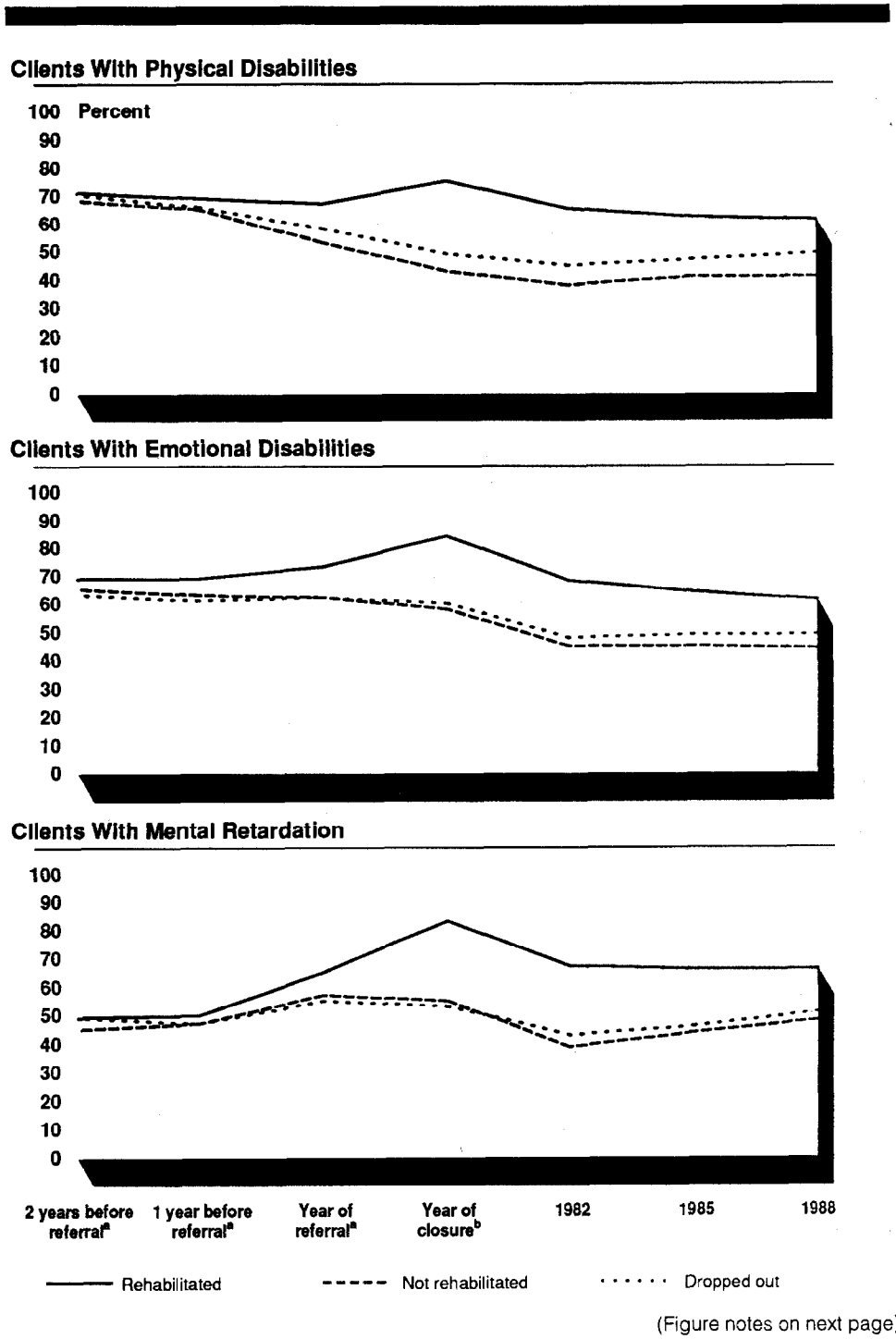
Employing these questions, we examined the VR program's effect by comparing rehabilitants, non-rehabilitants, and dropouts; we also looked for differential effects within the client groups by comparing the three major disability groups.

[4]Analysis of clients' pre-program situation would be much stronger if, in addition to basic wage data, we also knew the date of onset of disability. This information is not included in RSA data, however.

The Proportion of VR Clients With Any Earnings From Wages

It is noteworthy that, among those rehabilitated in all three disability groups, quite a large fraction had earnings in the year of referral (65 to 73 percent) and an even larger percentage in the year of closure (75 to 84 percent). However, the increases were temporary; the proportion with any earnings dropped to near or below pre-program levels within 2 years following closure. These patterns are shown in figure 5.2.

Figure 5.2: Percent of Clients With Any Earnings From Wages



(Figure notes on next page)

[a]Year of referral varies across clients.

[b]Clients' cases were closed in fiscal year 1980, which included parts of calendar years 1979 and 1980.

Source: GAO analysis of 1980 combined RSA-SSA data base

In contrast, clients who were not rehabilitated or who dropped out of the program were less likely to have earnings from employment in the years after closure from the program than in the years before referral. The declines occurred within the first 2 years after closure and then leveled off or were slightly reversed. At the end of the period that we studied, from 40 to 50 percent of those clients who were not rehabilitated or who dropped out of the program had some earnings from employment. This compared with the 61 to 66 percent of rehabilitated clients who had earnings.

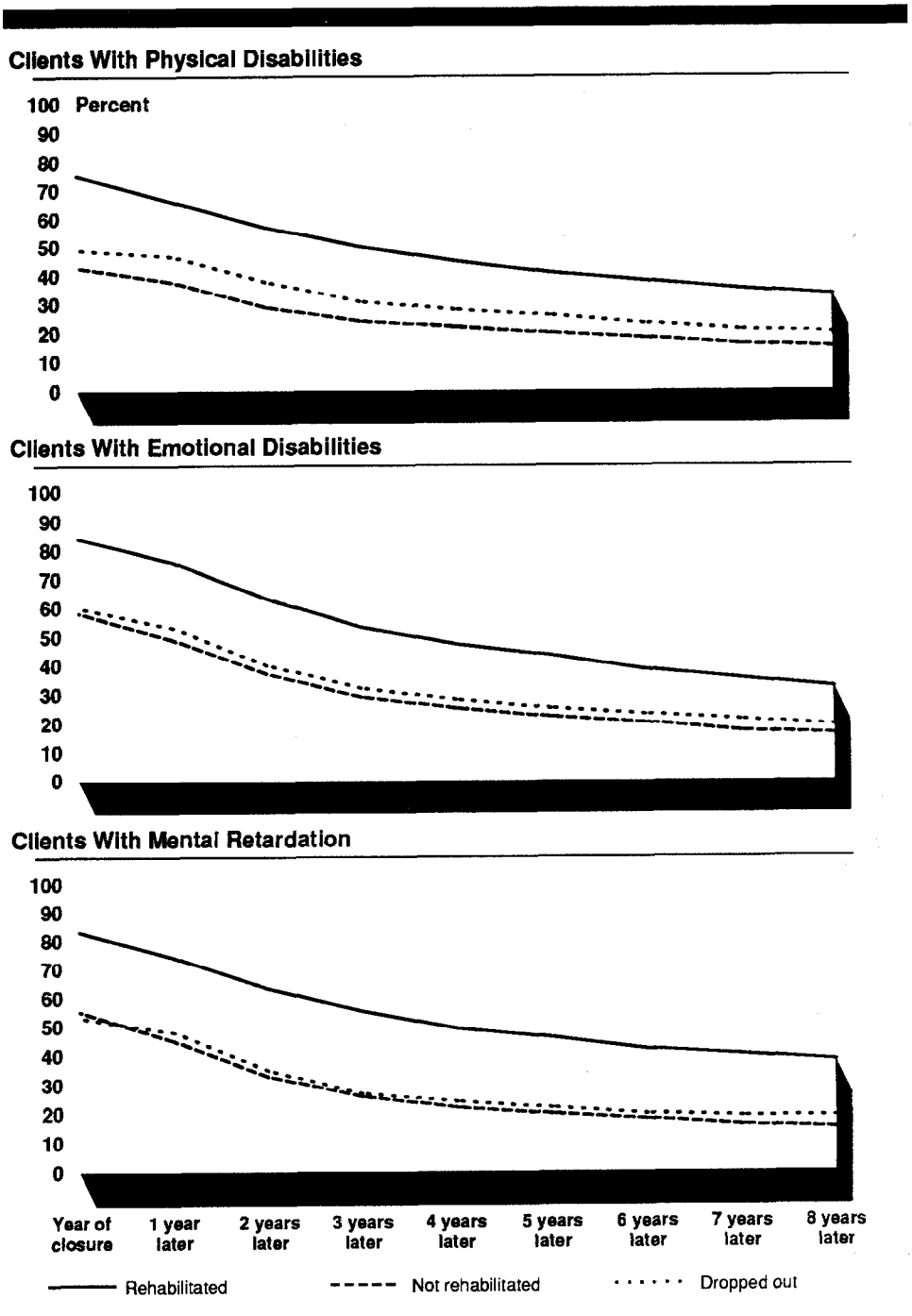
The post-program patterns of sharp declines, followed by a leveling off, or a slight increase, were similar for clients who were not rehabilitated and clients who dropped out of the program. However, the proportion employed in the former group was slightly lower than in the latter.

Consecutive Years of Post-Program Earnings

We also examined VR clients' continuity of wage-earning after participation. These results are presented in figure 5.3 and are quite similar to the results we saw in the previous section. That is, in the years after closure, a shrinking fraction of clients showed a record of uninterrupted earnings; at the 8-year point, only about a third had earned wages each year.[5] Across all three disability types, clients who were rehabilitated were much more likely to work continuously (according to this measure) than were those in the other two groups (non-rehabilitants and dropouts)—by about two to one.

[5]The measure of continuity is limited by the available data. The SSA wage information consists of a single figure for an entire year. Thus, even those with earnings may not have had steady jobs throughout the year.

Figure 5.3: Continuity of Earnings



(Figure notes on next page)

Notes:

Clients' cases were closed in fiscal year 1980, which included parts of calendar years 1979 and 1980.

Percentages shown for each year represent those with some wages from employment in that year and all preceding years since closure.

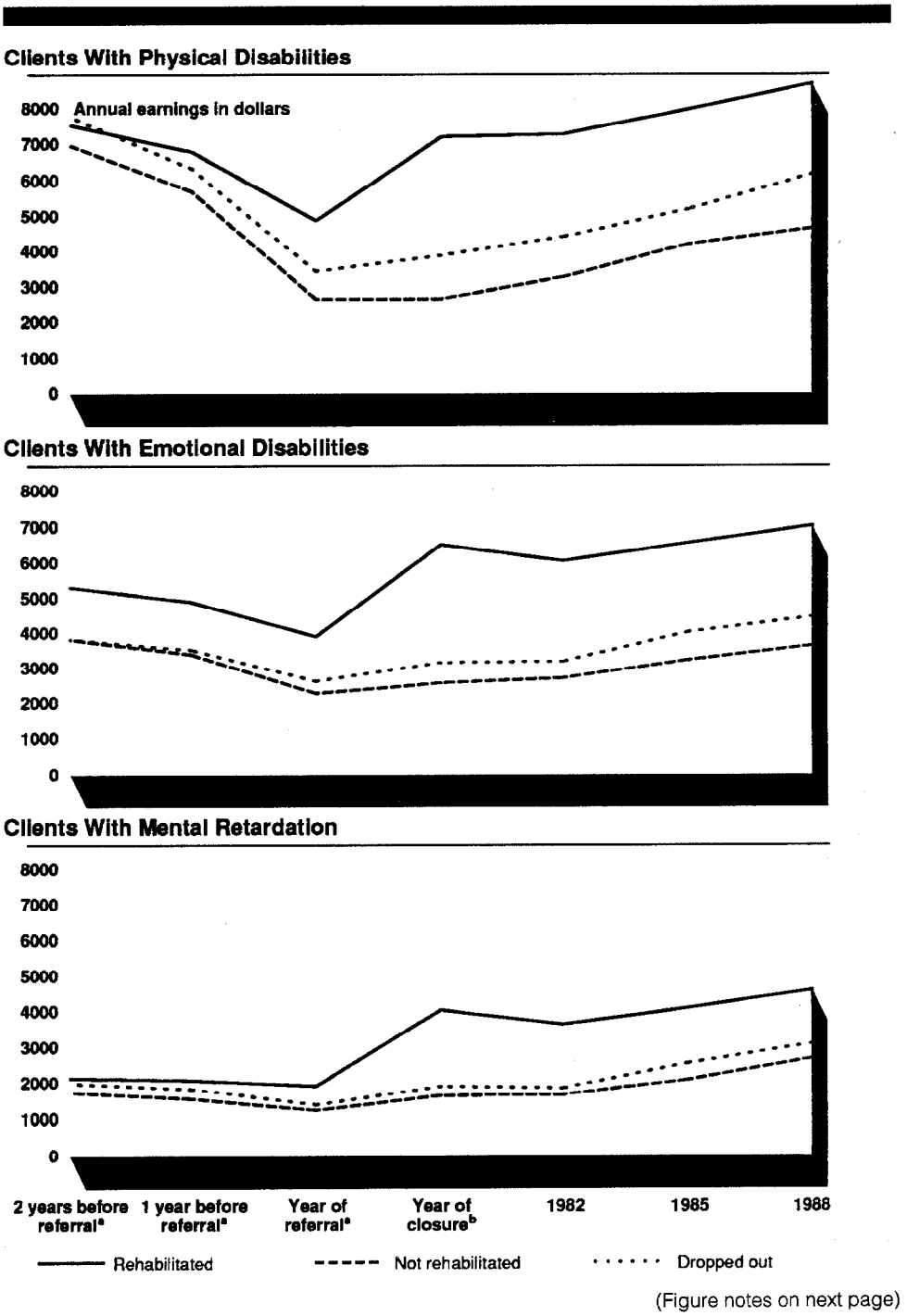
Source: GAO analysis of 1980 combined RSA-SSA data base

Annual Earnings

Although the group earning wages shrank noticeably over the years, as previously reported, average earnings generally rose. We found this to be true for each of the three major disability groups and for rehabilitants, non-rehabilitants, and dropouts as well. We first examined earnings for the entire group of 1980 closures in the RSA-SSA file—that is, for those of working age each year—and noted increases from 1980 to 1988 of $547 to $1,430 (depending on the disability type) in the annual average earned by rehabilitants. (See figure 5.4.) These averages are lowered by including in the calculation for each year many individuals who earned no wages, so we recalculated each year's average excluding those with no wages—with the results shown in figure 5.5. We found increases of $2,052 to $4,592 (again depending on the disability type) for rehabilitants over the 8 years. Both analyses show that earnings drop-offs before referral to VR were reversed following closure.[6] And the figures also show that, while both dropouts and non-rehabilitants had wage gains, rehabilitants did much better (with gains at least four times as great as gains in other groups), with the average eventually exceeding that of the before-referral period. (Some of the other closure groups also recouped earlier wage losses.) We saw earlier that fewer non-rehabilitants and dropouts worked than rehabilitants; thus, more had zero earnings. However, even removing these individuals from the analysis—as we did for figure 5.5—shows that rehabilitants who were working earned on the average more than those in the other groups who worked.

[6]Evaluations of job training programs have documented how participation is not random, and specifically that individuals whose earnings are unusually low just prior to participation in training are the ones most likely to enter training. This dip in earnings introduces bias in estimates of program effects. Not all VR client groups show a pre-program earnings dip in the SSA annual wage data, but some do. (The week-of-application earnings figure used by RSA may be more affected.) We report in a later section of this chapter the results of the regression analyses we did to begin to deal with pre-program factors; further work with RSA-SSA data could explore additional statistical approaches to these problems common to non-experimental data in order to yield better estimates of the program's net effect.

Figure 5.4: Average Real Annual Earnings From Wages



(Figure notes on next page)

Notes:

Earnings are adjusted to 1988 dollars, using the consumer price index.

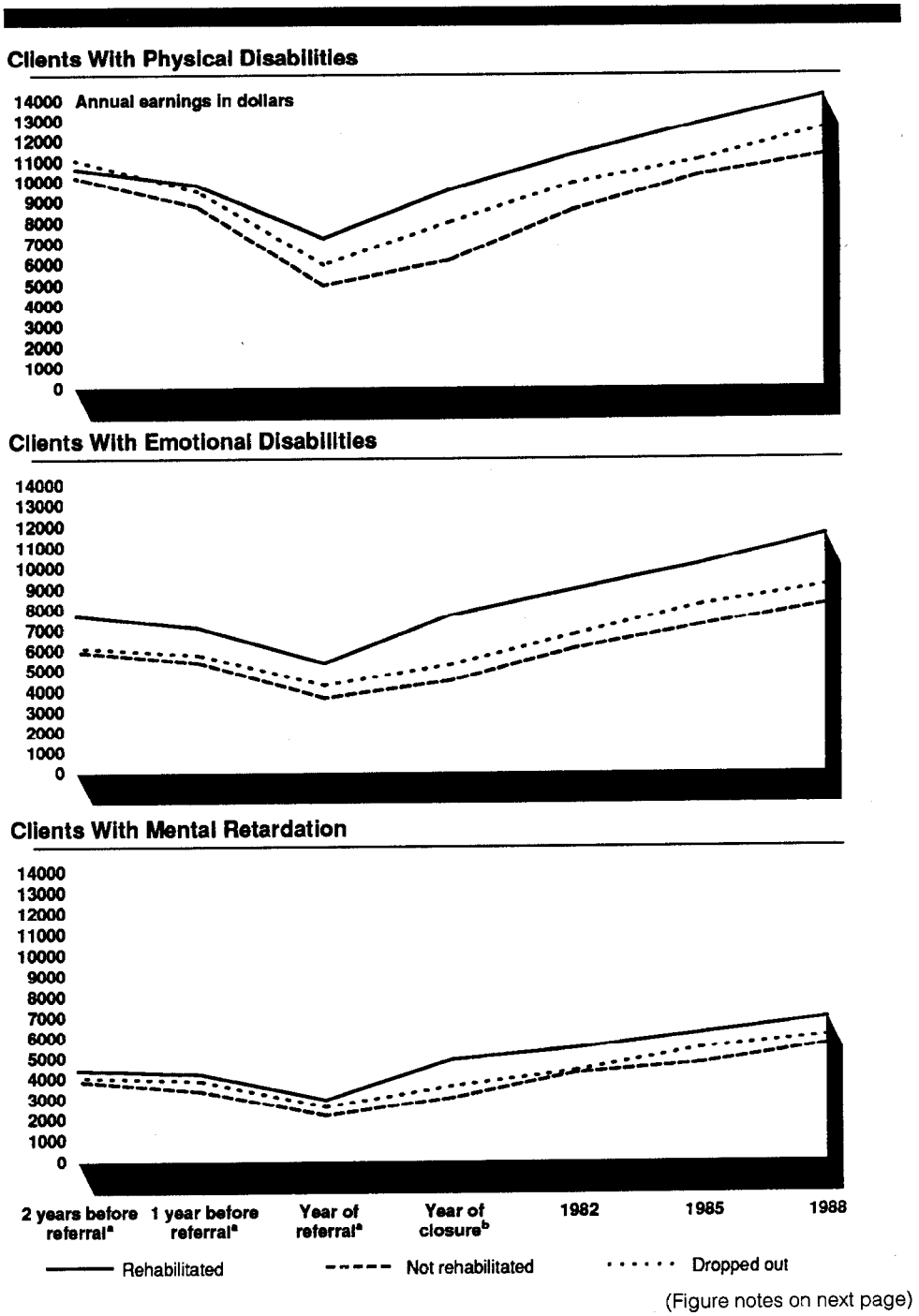
Each entry is the average for all working-age clients. (Clients with $0 in annual earnings are included in the computation.)

Year of referral varies across clients.

Clients' cases were closed in fiscal year 1980, which included parts of calendar years 1979 and 1980.

Source: GAO analysis of 1980 combined RSA-SSA data base

Figure 5.5: Average Real Annual Earnings From Wages for Clients With Some Earnings



(Figure notes on next page)

Notes:

Earnings are adjusted to 1988 dollars, using the consumer price index.

Each entry is the average for all working-age clients with more than $0 in annual earnings.

Year of referral varies across clients.

Clients' cases were closed in fiscal year 1980, which included parts of calendar years 1979 and 1980.

Source: GAO analysis of 1980 combined RSA-SSA data base

Differences in Pre-Program Employment for Rehabilitants and the Comparison Groups

As we have shown in the three preceding sections, clients considered rehabilitated in later years did fare differently from the non-rehabilitants and dropouts with whom we compared them: In any one year, more rehabilitants worked for wages; more had wages in consecutive years; and they earned more. This was true for rehabilitants in all three categories of disability.

But the figures portraying these differences also reveal that the groups differed before they entered the program. For example, as shown in figure 5.2:

- among clients with physical disabilities, declines in employment levels among rehabilitants during the 2 years before referral contrasted with sharper declines for non-rehabilitants and dropouts;
- among clients with emotional disabilities, pre-program increases in employment levels for rehabilitants contrasted with declines for the other groups; and
- among clients with mental retardation, large increases in pre-program employment for rehabilitants contrasted with smaller increases for the other groups.

When groups differ before they take part in a program, it is unclear how to interpret post-program differences. Where an experimental design is not possible, as in our case, statistical analysis techniques were available that have the same goal of controlling for the effect of other factors that could affect the results, in order to draw conclusions about a program's influence. We used two forms of regression analysis to explore whether the VR program had an effect even when considering pre-program differences. Such analyses depend on having data on the other factors that may be influencing the results. In this case, we could examine only a few such factors since we were limited by the data on each client that were

included in the RSA-SSA merged file.[7] Thus, our conclusions about the net effect of the VR program are more tentative than if we had additional measures of key dimensions related to results, such as a client's motivation or family support.

VR Program Effect on Level of Employment

Using regression analysis to examine the three disability groups in 1985, we concluded that, even considering all the other factors we could measure, an individual who completed a VR program and who was considered to be rehabilitated would be significantly more likely than a dropout to be working for wages 5 years after closure. Our estimate of the program's effect—the estimated difference in likelihood of work—was largest for clients with mental retardation, a difference of 19 percentage points. We estimated the difference in the likelihood of working for those with emotional disabilities at 15 percentage points, and at 12 percentage points for those with physical disabilities.

In our second comparison, however, we found no program effect. That is, using a similar analysis involving statistical controls for other factors, the non-rehabilitated group (across all three disability types) did not look much different from the dropouts at the 5-year point in their likelihood of working for wages. Thus, disregarding the diagnosis and counseling that both groups received, the purchased services that non-rehabilitants received did not make them any more likely than dropouts to be working.[8]

Effect of Program Participation on Annual Earnings 5 Years After Closure

Again using regression analysis, we examined whether a second VR outcome—in this case, the earnings gain for rehabilitants—was statistically significant, given the differences between the three closure groups in pre-program earnings and in other characteristics. (Details of our method and results are contained in appendix IV.) We found that, on average, clients with physical disabilities, emotional disabilities, and mental retardation were likely to earn about $2,000, $1,600, and $1,000 more, respectively, at the 5-year point after closure than clients who dropped out—a statistically significant difference.

[7]Full details of the variables we used and the results of our analyses are in appendix IV. The available data on the RSA-SSA file allowed us to examine some demographic variables, as well as pre-program work history and earnings. We also included the region of the country where the client received service and measures of state economic conditions.

[8]RSA officials interpret the similar outcomes for the two groups as possibly reflecting the effects of diagnosis and counseling that even dropouts receive.

As in the previous section, this second regression showed no VR program effect on the wages of clients who were not rehabilitated compared with clients who dropped out, once all the other factors were included in the analysis.

Non-Rehabilitants Comprise a Large Proportion of the VR Clientele

The findings on the low level of post-program employment and earnings for the non-rehabilitant group are important simply because of the size of this group. They comprise from one fifth to one third of the clients in each of the three disability groups. (See figure 5.1.) The program invested considerable resources to purchase services for this group, and the clients in this group invested considerable time in the program. Concerning the dollar level of that investment, the state agency spent on the average only about one-fifth to one-quarter less on all purchased services for the non-rehabilitants than for the rehabilitants. (See table 5.4.) This amount was at least four times as much as was spent for the dropouts. And non-rehabilitants spent more time as clients of the program (measured as time elapsed between program referral and program closure) than did either rehabilitants or dropouts.

Table 5.4: Average Amount Spent on Purchased Services and Average Number of Years Between Program Referral and Closure

	Physically disabled			Emotionally disabled			Mentally retarded		
Services	Rehab	Non-rehab	Dropout	Rehab	Non-rehab	Dropout	Rehab	Non-rehab	Dropout
Average cost of purchased services	$1,225	$998	$133	$921	$669	$133	$1,193	$937	$224
Average number of years between referral and closure	1.93	2.53	1.42	1.78	2.05	1.20	2.40	2.73	1.58

Source: GAO analysis of 1980 combined RSA-SSA data base

Program Effect Differs for Severely Disabled Clients

Because the program has a congressional mandate to focus services on those clients with more severe disabilities, we examined whether the program effect differed for clients with severe and non-severe disabilities. We did so by repeating the regressions for employment status and earnings in 1985 separately for clients with severe and non-severe disabilities (using the same set of variables that we used in the earlier analyses).

We found the program did have statistically significant larger effects for those with severe disabilities (when compared with dropouts with severe

disabilities)—slightly larger in the case of the likelihood of working at the 5-year point, and quite a bit larger in the case of average annual wages earned at that point. The earnings increase, however, was only experienced by those clients with physical or emotional disabilities. The effects on earnings for mentally retarded clients were reversed: The gap between rehabilitants and dropouts was twice as large for clients with non-severe disabilities as for clients with severe disabilities. These findings suggest that the program may do well in getting severely mentally retarded clients into jobs, but may have greater difficulty in finding them jobs that pay much more than those held by program dropouts.

Conclusions

The analyses in this chapter suggest that the gains in economic status made by clients rehabilitated in 1980 were quite temporary. Within the group RSA classified as rehabilitated (60 days from the end of services), after 2 years the proportion with any earnings from wages returned to near or below pre-program levels. The earnings gains for all rehabilitants were modest. Although rehabilitated clients may have achieved other valuable non-economic outcomes, the long-term economic gains for this group were disappointing, particularly when contrasted with the large short-term gains shown in previous RSA analyses.[9]

We did find that clients who were rehabilitated after participation in the VR program were better off, in economic terms, than clients who did not participate. This pattern was consistent across all three major disability groups, although the absolute levels of labor force participation and earnings that were attained differed. (And post-program differences may to some degree reflect pre-program differences that we could not take fully into account in our analyses. We also were unable to examine, for lack of data, what aspects of participation in the VR program influenced post-program employment experience.)

Although the results suggest that the VR program had a positive effect on rehabilitants, that conclusion must be tempered by our findings on non-rehabilitants. We found that the large group of clients who participated in the program but were ultimately classified as not rehabilitated did no better economically than clients who were accepted but dropped out of the program.

[9]RSA does not record other non-economic client outcomes, so we could not include them in our evaluation. Significant non-economic outcomes include increased job satisfaction, personal independence and mobility, the independence of other family members, and increased integration into the community. It may become more important to measure these non-economic outcomes systematically as the program serves an ever wider and more diverse group.

Explaining this finding is beyond the scope of our analysis. On the one hand, it is possible that this group of clients did not receive appropriate services from the VR program. On the other hand, they may have differed systematically from successful participants in terms of such unmeasured factors as motivation, and thus could be expected to do less well in spite of receiving appropriate services. Evaluating these different explanations would require additional data not available in the RSA client file on specific services received and on client motivation.

Recommendations

We make three recommendations based on the findings given in this chapter. First, more links of VR files with long-term wage data held by the Social Security Administration are needed. We recommend that the Secretary of Education negotiate an agreement with the Secretary of Health and Human Services to implement the provision of the Rehabilitation Act Amendments of 1992 calling for further data links. Examining more recent cohorts would show whether the program's effects have been maintained as program funds are spread ever thinner, and as larger and larger proportions of clients with severe disabilities participate in the program. All the RSA Case Service Report data on client services should be included in the files used for computer matching; this will permit the Secretary of Education to explore in as much detail as possible (given the limitations of the data states are now required to send RSA) how differences in VR services affect clients. More complex statistical analyses of further data links could help control even better for pre-program differences.

Second, we recommend that the Secretary of Education continue the longitudinal evaluation of the VR program authorized in the Rehabilitation Act Amendments of 1992. The study is an important opportunity to follow up on a number of issues raised by our findings. (As we recommend in chapter 3, starting the study with a group comprised of individuals just becoming interested in rehabilitation will help trace referral and acceptance processes.) In addition, effort should then be made to detail the experiences of participants and non-participants so that outcomes can be linked to the services received from VR or from other providers. Use of a comparison group, attention to program process, and sufficient information on pre-program experiences and post-program outcomes should lead to a greater understanding of why some clients have long-term success, as well as help guide policy with regard to the achievement of this goal.

Finally, we recommend that the Secretary of Education take steps to initiate the National Commission on Rehabilitation Services authorized by the Rehabilitation Act Amendments of 1992. Our data show modest results from the VR program as currently designed and implemented, and changes in the 1992 law expanding eligibility are likely to bring further challenges. A broadly representative group supported by the structure and resources provided by the Commission could weigh the available data, as well as the issues of goals, resources, and results that must be considered in a full review of the program, before the next reauthorization. Such reconsideration is needed not only because of the mixed results in terms of program effectiveness, but also because the situation with regard to employment of persons with disabilities may be changing rapidly as a result of the Americans With Disabilities Act that went into effect in stages in 1992-93. The Commission's discussions and recommendations could help ensure that the Congress has a well-considered plan, based on a thorough review, when the VR program is next reauthorized.

Comments From the Department of Education and GAO's Response

Officials of the Rehabilitation Services Administration (RSA) provided oral comments on our findings, conclusions, and recommendations. Beyond the points noted, they generally found no errors of fact or analysis and did not take issue with the recommendations.

Concerning chapter 2, RSA officials noted that other data sources, such as the Current Population Survey (CPS), suggest that prevalence of disability is much lower, perhaps 10 to 11 million, in contrast to the 14 to 18 million figure from the surveys we cite in chapter 2. We pointed out the warnings issued by the Bureau of the Census against using CPS to estimate prevalence, and we have added a note in the text explaining why we did not use CPS figures. In any case, whatever the population estimate turns out to be, it is clear that only a small fraction is now served and that an increased proportion of persons with disabilities will be eligible under the new law.

With regard to chapter 4, RSA officials said they were aware of the racial and ethnic group disparities in the amounts of purchased services that we found and were already conducting analyses to understand these disparities better.

Concerning chapter 5, RSA officials stated that some improvement in RSA's outcome measures may be expected in the next several years. They noted that section 127 of the Rehabilitation Act Amendments of 1992 requires the commissioner to establish and publish, by September 30, 1994, evaluation standards and performance indicators (including outcomes) for the program. They believed that such improvements as following clients for a longer period after closure and learning more about their post-program jobs, will be considered in developing these standards.

In addition, RSA officials stated that a comparison in our draft report between wages of VR clients and wages in the general population was inappropriate. In order to avoid misunderstanding, we removed that specific analysis from the final text; however, the issue of benchmarks—that is, what are reasonable expectations, in economic terms, for rehabilitants—will persist. RSA officials also said they do not routinely contrast dropouts and non-rehabilitants, as we do in this report. They believe dropouts get substantial non-purchased services (in diagnosis, and evaluation and counseling). The non-rehabilitated are, however, a large group of clients who spent considerable amounts of time in VR and were accorded considerable amounts of purchased services. We therefore continue to believe this group should be a focus of study and

evaluation so that more may be learned about how resources could be used more effectively.

Concerning the possibilities of additional linkages of RSA and SSA data, the RSA officials said there had been progress made. As of June 1993, a memorandum of understanding between the Departments of Education and Health and Human Services existed in draft form.

Concerning our several recommendations for analyses to be conducted by the yet-to-be-established National Commission on Rehabilitation Services, the officials pointed out that it would be hard for RSA to provide much support for the commission given the limited resources of the agency. We, however, made no change in our recommendation since we believe the opportunity the commission provides for sustained review of the VR program's services and results is important in light of changing eligibility criteria and the implementation of the Americans With Disabilities Act.

Major Disabling Conditions of VR Clients

Type	Impairment
Visual	Blindness, both eyes, no light perception
	Blindness, both eyes (with correction not more than 20/200 in better eye or limitation in field within 20 degrees)
	Blindness, one eye, other eye defective
	Blindness, one eye, other eye good
	Other visual impairments
Hearing	Deafness, prelingual
	Deafness, prevocational
	Deafness, postvocational
	Hard of hearing, prelingual
	Hard of hearing, prevocational
	Hard of hearing, postvocational
Orthopedic	Involving three or more limbs or entire body
	Involving one upper and one lower limb (including side)
	Involving one or both upper limbs (including hands, fingers, and thumbs)
	Involving one or both lower limbs (including feet and toes)
	Other and ill-defined impairments (including trunk, back, and spine)
	Loss of at least one upper and one lower major extremity (including hands, thumbs, and feet)
	Loss of both major upper extremities (including hands or thumbs)
	Loss of one major upper extremity (including hand or thumb)
	Loss of one or both major lower extremities (including feet)
	Loss of other and unspecified parts (including fingers and toes, but excluding thumbs)
Mental illness	Psychotic disorders
	Neurotic disorders
	Mental and emotional disorders not elsewhere classified
Mental retardation	Mental retardation, mild
	Mental retardation, moderate
	Mental retardation, severe
Substance abuse	Alcohol abuse or dependence

(continued)

Type	Impairment
	Other drug abuse or dependence
Other conditions	Other conditions resulting from neoplasms
	Allergic, endocrine, metabolic, and nutritional diseases
	Diseases of the blood and blood-forming organs
	Other specified disorders of the nervous system
	Cardiac and circulatory system conditions
	Respiratory system conditions
	Digestive system conditions
	Genito-urinary system conditions
	Speech impairments
	All other disabling diseases and conditions

Racial Differences on Variables in 1988 Case Service Reports

As discussed in chapter 4, we found differences in the amount spent for services for people in different racial groups; however, we could not explain these differences. One possible explanation is discrimination in decisions, but data were not available either to support or rebut such a conclusion. A number of other explanations are possible, and this appendix shows data pertinent to two, drawn from the RSA 1988 Case Service Reports.

First, we considered that the different racial groups of VR clients may enter the VR system with different disabilities or with other background differences. Spending differences thus could reflect different needs associated with the preexisting differences. Table III.1 shows whether 1988 clients of different races differ on a number of individual characteristics, such as disability type and severity, age, and education.[1] There are some differences, but they are not large.

Table III.1: Client Characteristics, by Racial Group

	Race					
Client characteristic	White, non-Hispanic	Hispanic	Black	American Indian/ Alaskan native	Asian American/ Pacific islander	All cases
Closure status						
Rehabilitated	63%	65%	58%	52%	65%	62%
Not rehabilitated	28	30	35	38	28	30
Dropped out	8	5	7	10	7	8
Type of disability						
Visual	7	8	7	7	7	7
Hearing	8	7	5	4	11	7
Orthopedic/ amputation	26	25	16	24	25	24
Mental illness	19	17	20	15	23	19
Substance abuse	11	15	12	22	5	11
Mental retardation	11	8	21	12	13	13
Other disability	18	19	19	16	17	19
Severely disabled	65	62	65	62	65	65
Had secondary disability	42	42	40	48	38	42

(continued)

[1]RSA coded the race of the client as (1) white, (2) black, (3) American Indian or Alaskan native, or (4) Asian American or Pacific islander. RSA also recorded whether the client was of Hispanic origin. We combined these variables to create a new race/ethnicity variable, with the following categories: (1) white, not of Hispanic origin; (2) white, of Hispanic origin; (3) black, not of Hispanic origin; (4) American Indian or Alaskan Native, not of Hispanic origin; and (5) Asian American or Pacific Islander, not of Hispanic origin.

Client characteristic	Race					All cases
	White, non-Hispanic	Hispanic	Black	American Indian/ Alaskan native	Asian American/ Pacific islander	
Male	57%	63%	57%	59%	60%	58%
Age at application						
Under 18	9	5	13	7	11	9
18 to 24	25	26	26	27	25	25
25 to 34	29	31	30	28	28	29
35 to 64	36	37	31	36	35	35
65 and older	3	1	1	1	1	2
Years of education at application						
Special education[a]	13	10	26	15	15	15
8 or fewer	8	18	9	10	12	9
9 to 11	20	26	23	21	20	21
High school graduate	42	34	32	40	32	39
Some college	13	10	10	13	12	12
College graduate	5	2	2	2	8	4
Married	28	33	16	25	28	26
Live in South	45	45	67	37	19	49
Received public assistance during VR program[b]	30	30	33	35	40	31
Service categories received during VR program						
Training[c]	27	36	26	32	28	27
Higher education	12	8	6	11	8	11
Adjustment training	18	20	24	18	17	19
Restoration	34	32	31	31	22	33
No purchased services	9	6	10	5	26	9

Note: Table entries are percentages with the specific demographic characteristic, in each racial group.

[a]All clients with a primary or secondary disability of mental retardation were coded as "special education" on this variable.

[b]Includes Supplemental Security Income (for reasons of blindness, disability, or age), Social Security Disability Insurance, Veterans' Disability Payments, all other payments for reasons of disability (such as Worker's Compensation, or payments from the Black Lung Program), Aid to Families with Dependent Children, state general assistance, and all other public supports.

[c]Includes the service categories of (1) business/vocational training, (2) on-the-job training, and (3) miscellaneous training.

Source: GAO analysis of 1988 RSA Case Service Reports

For a second possibility, we considered that the differences in spending may not arise from individual differences at all, but from conditions where the clients live. That is, clients of different races may not be distributed in the same way as the general client population among states but may be concentrated in richer or poorer states that differ in level of spending on VR services (since some of each state's total VR budget comes from state sources). We used one direct measure of VR spending and two more general indicators of state economic health to explore this conjecture about the importance of the state economic context. The results are shown in table III.2.

Table III.2: State-Level Indicators: Economic Context for VR Clients in Different Racial Groups

	Race					
State level economic indicator	White, non-Hispanic	Hispanic	Black	American Indian/ Alaskan native	Asian American/ Pacific islander	All cases
Per capita income indicator (year of referral)[a]	$13,961	$15,111	$13,718	$13,655	$14,903	$13,985
Unemployment rate (year of referral)[b]	7.1%	6.9%	7.1%	7.0%	6.5%	7.1%
State VR program spending indicator	$1,591	$1,567	$1,504	$1,519	$1,370	$1,570

Note: Table entries are variable means, for each racial group.

[a]From tables published by the U.S. Department of Commerce, Bureau of Economic Analysis.

[c]From tables published by the U.S. Department of Labor, Bureau of Labor Statistics.

Source: GAO analysis of 1988 RSA Case Service Reports

We first asked what the typical state VR spending level, and the typical state income and unemployment levels, were for the full set of clients. We did this by assigning to each of the 344,865 accepted clients in the 1988 Case Service file his or her own state's figure—that is, we assigned VR client A, living in Texas, the Texas statewide per capita income figure for all citizens, the statewide unemployment figure, and the state average VR spending on purchased services for all clients; we assigned client B, from Maine, that state's figures; and so on. Then, we calculated an overall average for each of the three indicators across all clients. Those results are shown in the right-hand column of table III.2, "all cases."

To address the main objective of this analysis, we next checked each racial subgroup on our three indicators. For example, when we separated Hispanic clients and, as before, developed an average state income

indicator just for that group (again using for each individual his or her state's income figure), the average jumped $1,126 above that for all cases, to $15,111. This observation implies nothing about individual Hispanic clients' economic well-being. It only means that VR's Hispanic clients in 1988 were to be found in states generally characterized by higher income, which may be understandable given that many Hispanics live in states such as New York and California that are among the wealthiest. On the other hand, black clients in 1988—as shown by their lower average state income figure—appeared to live in states slightly poorer than the average for all clients.

Regression Analyses for Long-Term Outcomes

This appendix contains more detailed discussion of the regression analyses conducted to examine the impact of VR program participation on two dependent variables: (1) the probability of employment in 1985 and (2) the level of earnings attained by those clients employed that year. Separate regressions were conducted for clients with physical disabilities, emotional disabilities, and mental retardation. We present the variables used in both, and then results for the two different, analyses. Finally, we show the results of repeating the analyses after separating those with severe and non-severe disabilities.

Variables Used in the Regression Analyses

The regressions included variables from the combined RSA-SSA data base. Some variables came from the RSA portion of the file, drawn from the 1980 Case Service Reports. Others came from the SSA portion of the file, drawn from the Summary Earnings Record. In addition, we added to the file two variables measuring state-level economic conditions.

RSA Variables

Participation in the VR Program

If clients were accepted for VR services, RSA used one of three codes to categorize their status when their cases were closed: (1) rehabilitated; (2) not rehabilitated, after at least some services were delivered; or (3) dropped out before services were delivered. We created two dummy variables from these three categories, which we used to measure program impact: (1) clients who were rehabilitated versus clients who dropped out, and (2) clients who were not rehabilitated versus clients who dropped out.

Race

RSA coded the race of the client as (1) white, (2) black, (3) American Indian or Alaskan native, or (4) Asian American or Pacific islander. We constructed three dummy variables (black, American Indian, and Asian American) using whites as the omitted category.

Gender

Males were coded as 1, females as 0.

Age

Age (in years) at time of case closure was included in the RSA portion of the file.

Education

For clients with physical or emotional disabilities, the regressions included a variable measuring years of education. The variable was omitted in regressions for clients with mental retardation, since years of education were not recorded for these clients. In addition, the variable

was missing for those clients with primary disabilities that were physical or emotional and a secondary disability of mental retardation.

Severity of Disability

We used RSA's categorization of clients as severely or not severely disabled. We also included a variable that measured whether a client had a secondary disabling condition that substantially limited his or her employment potential.

Received Public Assistance

A dummy variable measured whether a client received Supplemental Security Income (for reasons of blindness, disability, or age), Aid to Families with Dependent Children, or state general assistance funds while in the VR program.

Region of the Country

We coded each client's state according to which region it is in. (There are 10 RSA regional offices.) We included nine dummy variables in the regressions, using region IX (which includes California, Nevada, Hawaii, and the Pacific Islands) as the omitted category.

State Economic Variables

As previously noted, RSA recorded the state in which a client received VR services. We added two variables to the file, which measured state economic conditions the year clients left the VR program: (1) average per capita income (from tables published by the Bureau of Economic Analysis, U.S. Department of Commerce) and (2) unemployment rate (from tables published by the Bureau of Labor Statistics, U.S. Department of Labor). Since these were state-level aggregate variables, the values were the same for all clients from the same state.

SSA Variables

Pre-Program Employment Status

In the logistic regressions, we included two dummy variables measuring whether the client was employed in the year of referral to the program and the year prior to the year of referral. These variables were constructed by recoding the earnings variables that SSA derived from the Summary Earnings Record and included in the file.

Pre-Program Earnings

In the ordinary least squares (OLS) regressions, we included two variables measuring (1) earnings in the year of referral to the program, and (2) earnings in the year prior to the year of referral. Both variables were derived from the SSA Summary Earnings Record, and both were adjusted to 1988 dollars, using the consumer price index.

Probability of Employment in 1985

We used logistic regression to examine whether the observed differences between the groups in post-program employment were statistically significant, given the preexisting differences between groups. This is the appropriate statistical procedure for examining dichotomous dependent variables.

We examined employment levels in 1985, 5 years after clients had participated in the VR program. We conducted a separate logistic regression for each major disability group (those with physical disabilities, emotional disabilties, and mental retardation). We included in each regression those variables that were available in the data set and that were likely to be related to pre-program differences between the groups, including demographic characteristics, pre-program earnings history, region of the country where clients received services, and state economic conditions. Each regression then tested for program effect by including two variables that measured membership in one of the three closure categories (rehabilitants, non-rehabilitants, and dropouts). The regression coefficients for these variables relate to the differences between the closure categories after accounting for the impact of other variables included in the regression. We were then able to examine statistically whether rehabilitants did better than clients who did not persevere in the program (dropouts), and whether clients who persevered but did not successfully complete the program (non-rehabilitants) did better than clients who did not persevere (dropouts).

A summary of the results of these analyses is presented in table IV.1. (Full results of the regressions for each disability group are included in tables IV.2, IV.3 and IV.4. Summary statistics for the regressions are in table IV.5.) In the first table, we present the logistic regression coefficients for the group membership variables, the standard errors associated with these coefficients, and their probability levels (whether the coefficient is statistically significant). We also present in the table the percent of each group that was actually employed in 1985, compared with the percent that was predicted based on the logistic regression equations.

Table IV.1: Predicting Whether Clients Have Any Earnings From Employment

	Physically disabled		
	Rehab	**Non-rehab**	**Dropout**
Percent in group	70	21	9
Percent with any earnings in 1985	62	41	47
Predicted percent with any earnings in 1985	59	43	47
Differences in predicted percentages			
Rehab vs. dropout		+12	
Non-rehab vs. dropout		–4	
Logistic regression parameter estimates	Coefficient	Standard error	Probability
Rehab vs. dropout	.58	.07	<.001
Non-rehab vs. dropout	–.18	.08	<.05

Emotionally disabled			Mentally retarded		
Rehab	**Non-rehab**	**Dropout**	**Rehab**	**Non-rehab**	**Dropout**
55	35	10	67	25	8
64	45	49	66	44	46
62	46	47	61	39	42
	+15			+19	
	−1			−3	

Coefficient	Standard error	Probability	Coefficient	Standard error	Probability
.67	.06	<.001	.81	.07	<.001
−.06	.06	[a]	−.14	.08	[a]

[a]Regression coefficient not significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.2: Logistic Regression Analysis Predicting Whether Physically Disabled Clients Were Employed in 1985

Variable	Regression coefficient	Coefficient standard error	Wald statistic	Probability level
Participation in VR program (vs. dropouts)				
Rehabilitants	.5798	.0694	69.72	<.001
Non-rehabilitants	−.1802	.0776	5.40	<.05
Race (vs. white)				
Black	−.1132	.0509	4.95	<.05
American Indian	.0619	.2531	0.06	[a]
Asian	−.0414	.1739	0.06	[a]
Gender (male)	.1391	.0405	11.78	<.001
Age at closure	−.0425	.0019	500.77	<.001
Education (in years)	.0633	.0081	61.75	<.001
Severely disabled	−.5830	.0404	208.72	<.001
Had secondary disability	−.1549	.0431	12.89	<.001
On public assistance	−.2728	.0501	29.63	<.001
State per capita income, year of closure	.0000066	.0000178	0.14	[a]
State unemployment rate, year of closure	−.0245	.0145	2.84	[a]
Region (vs. region IX—California, Nevada, Hawaii)				
I. New England	.1552	.1469	1.12	[a]
II. New York and New Jersey	.3632	.1032	12.39	<.001
III. Border states	−.0562	.0915	0.38	[a]
IV. Old South	.0729	.1146	0.40	[a]
V. Great Lakes	.0782	.0899	0.76	[a]
VI. Southwest	.0997	.1068	0.87	[a]
VII. Midwest farmbelt	−.0990	.1259	0.62	[a]
VIII. Rocky Mountains	.0855	.1409	0.37	[a]
X. Pacific Northwest	.2374	.1117	4.51	<.05
Had job the year of referral	.6782	.0465	212.81	<.001
Had job one year prior to referral	.5711	.0487	137.58	<.001
Intercept	.1955	.3690	0.28	[a]

[a]Wald statistic not significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.3: Logistic Regression Analysis Predicting Whether Emotionally Disabled Clients Were Employed in 1985

Variable	Regression coefficient	Coefficient standard error	Wald statistic	Probability level
Participation in VR program (vs. dropouts)				
Rehabilitants	.6692	.0598	125.34	<.001
Non-rehabilitants	−.0564	.0619	0.83	[a]
Race (vs. white)				
Black	−.1974	.0434	20.69	<.001
American Indian	−.0108	.1810	0.00	[a]
Asian	−.0777	.1605	0.23	[a]
Gender (male)	−.1491	.0350	18.15	<.001
Age at closure	−.0350	.0018	367.83	<.001
Education (in years)	.0501	.0076	43.84	<.001
Severely disabled	−.5175	.0353	214.93	<.001
Had secondary disability	.0873	.0369	5.60	<.05
On public assistance	−.1541	.0407	14.32	<.001
State per capita income, year of closure	−.000012	.0000165	0.57	[a]
State unemployment rate, year of closure	−.0274	.0134	4.16	<.05
Region (vs. region IX—California, Nevada, Hawaii)				
I. New England	.4132	.1172	12.44	<.001
II. New York and New Jersey	.3612	.0799	20.45	<.001
III. Border states	.1675	.0781	4.60	<.05
IV. Old South	.1471	.1026	2.01	[a]
V. Great Lakes	.1460	.0757	3.72	[a]
VI. Southwest	.0669	.0891	0.56	[a]
VII. Midwest farmbelt	.1220	.1051	1.35	[a]
VIII. Rocky Mountains	.0608	.1083	0.31	[a]
X. Pacific Northwest	.2799	.0989	8.02	<.01
Had job the year of referral	.5156	.0402	164.14	<.001
Had job one year prior to referral	.5650	.0394	205.79	<.001
Intercept	.3311	.3361	0.97	[a]

[a]Wald statistic not significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.4: Logistic Regression Analysis Predicting Whether Mentally Retarded Clients Were Employed in 1985

Variable	Regression coefficient	Coefficient standard error	Wald statistic	Probability level
Participation in VR program (vs. dropouts)				
Rehabilitants	.8098	.0731	122.66	<.001
Non-rehabilitants	−.1407	.0801	3.08	[a]
Race (vs. white)				
Black	−.2228	.0496	20.16	<.001
American Indian	−.3557	.3190	1.24	[a]
Asian	−.1190	.1834	0.42	[a]
Gender (male)	.2326	.0413	31.71	<.001
Age at closure	−.0106	.0023	20.44	<.001
Severely disabled	−.1810	.0507	12.73	<.001
Had secondary disability	−.2570	.0426	36.33	<.001
On public assistance	−.2054	.0428	23.00	<.001
State per capita income, year of closure	−.000023	.0000208	1.27	[a]
State unemployment rate, year of closure	−.0355	.0151	5.53	<.05
Region (vs. region IX—California, Nevada, Hawaii)				
I. New England	.2262	.1521	2.21	[a]
II. New York and New Jersey	.2819	.0930	9.19	<.01
III. Border states	.1417	.1010	1.97	[a]
IV. Old South	.0584	.1356	0.19	[a]
V. Great Lakes	.1998	.0954	4.38	<.05
VI. Southwest	−.0418	.1218	0.12	[a]
VII. Midwest farmbelt	.1179	.1253	0.89	[a]
VIII. Rocky Mountains	.3880	.1504	6.65	<.01
X. Pacific Northwest	.0216	.1258	0.03	[a]
Had job the year of referral	.4437	.0466	90.64	<.001
Had job one year prior to referral	.2546	.0456	31.16	<.001
Intercept	−.4174	.4058	1.06	[a]

[a]Wald statistic not significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.5: Summary Statistics for Logistic Regression Analyses

Statistic	Physically disabled	Emotionally disabled	Mentally retarded
Percent correctly classified	70	66	64
-2 x log likelihood of model (degrees of freedom)	15,510.7[a] (13,227)	20,115.6[a] (16,225)	13,878.2[a] (10,796)
Goodness of fit (degrees of freedom)	13,301.4[a] (13,227)	16,297.2[a] (16,225)	10,823.3[a] (10,796)
Change in chi-square, adding VR participation variables (degrees of freedom)	268.1[a] (2)	428.7[a] (2)	451.0[a] (2)
Number of cases	13,252	16,250	10,820

[a]$p < .001$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.1 shows that clients in all three disability groups who were rehabilitated were significantly more likely to have earnings from wages 5 years after program closure than were clients who dropped out of the program. This was indicated by the large positive coefficients and small standard errors for the variable "rehabilitants versus dropouts."

The significant effect of the program is also indicated by the differences in the predicted values for rehabilitants and dropouts in each disability group. For example, among clients with mental retardation, rehabilitants were 19 percentage points more likely to be employed in 1985 than were dropouts. This difference remained after explaining as much of the preexisting differences between the groups as was possible with the data that were available. The effect was smaller for the emotionally disabled and physically disabled clients, as can be seen in the table.

Conversely, for two of the three disability groups, clients who were not rehabilitated did not differ from clients who dropped out in the likelihood of employment in 1985. Although they participated in the VR program, at 5 years after program closure, those clients with emotional disabilities and with mental retardation were no different from clients who did not participate. This finding is indicated by the small coefficients for the variable "non-rehabilitants versus dropouts." The predicted probabilities of employment in 1985 for dropouts were only slightly higher than for non-rehabilitants in the case of clients with mental retardation (3 percent difference) and for those with emotional disabilities (1 percent difference).

non-rehabilitants in the case of clients with mental retardation (3 percent difference) and for those with emotional disabilities (1 percent difference).

Clients with physical disabilities who were not rehabilitated, however, were less likely to be employed in 1985 than were clients who dropped out. For these clients, participation in the program was associated with worse outcomes in 1985 than if they had not participated at all. The effect was small (the predicted probability of employment was only 4 percent less than for dropouts), but nevertheless it was a statistically significant difference.

Level of Earnings in 1985

The approach to this second analysis was similar to that reported in the previous section. We included in each ordinary least squares (OLS) regression those variables available in the data set and likely to be related to pre-program differences between the groups, and tested for program impact by including two variables that measured membership in one of the three closure categories. As before, we were able to examine statistically whether rehabilitants earned more than clients who did not persevere in the program (dropouts), and the extent to which clients who persevered but did not successfully complete the program (non-rehabilitants) differed from clients who did not persevere (dropouts).

Summary results of these analyses are presented in table IV.6. (The full results for each disability group are in tables IV.7 through IV.9, with summary statistics in table IV.10.) In table IV.6, we present the OLS regression coefficients for the group membership variables, the standard errors associated with these coefficients, and their probability levels (whether the coefficient is statistically significant). Also included are the average earnings levels in 1985, which are compared with the predicted earnings levels derived from the regression equations.

Table IV.6: Predicting Earnings Levels for Clients With Any Earnings From Employment in 1985

	Physically disabled		
	Rehab	**Non-rehab**	**Dropout**
Percent in group	70	21	9
Actual earnings in 1985	$12,837	$10,284	$11,056
Predicted earnings in 1985	12,659	11,065	10,626
Parameter estimates (in $)	Coefficient	Standard error	Probability
Rehab vs. dropout	+2,033	409	<.001
Non-rehab vs. dropout	+439	474	[a]

Emotionally disabled			Mentally retarded		
Rehab	**Non-rehab**	**Dropout**	**Rehab**	**Non-rehab**	**Dropout**
55	35	10	67	25	8
$10,200	$7,205	$8,228	$6,227	$4,700	$5,471
10,058	7,977	8,483	5,494	3,990	4,457
Coefficient	Standard error	Probability	Coefficient	Standard error	Probability
+1,575	313	<.001	+1,037	290	<.001
−506	336	[a]	−467	322	[a]

Note: Earnings are adjusted to 1988 dollars, using the consumer price index.

[a]Regression coefficient not significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.7: Ordinary Least Squares Regression Analysis Predicting 1985 Real Annual Earnings of Physically Disabled Clients

Variable	Regression coefficient	Coefficient standard error	T-statistic	Probability level
Participation in VR program (vs. dropouts)				
Rehabilitants	2,033.37	409.35	4.97	<.001
Non-rehabilitants	438.74	473.88	0.93	[a]
Race (vs. white)				
Black	-1,035.32	290.52	-3.56	<.001
American Indian	-3,171.36	1,420.76	-2.23	<.05
Asian	-516.58	960.95	-0.54	[a]
Gender (male)	2,355.66	222.75	10.58	<.001
Age at closure	-54.36	10.60	-5.13	<.001
Education (in years)	686.16	47.25	14.52	<.001
Severely disabled	98.51	217.32	0.45	[a]
Had secondary disability	-1,222.36	243.72	-5.02	<.001
On public assistance	-733.41	304.67	-2.41	<.05
State per capita income, year of closure	0.3964	0.0957	4.14	<.001
State unemployment rate, year of closure	-11.07	78.91	-0.14	[a]
Region (vs. region IX—California, Nevada, Hawaii)				
I. New England	1,306.38	792.20	1.65	[a]
II. New York and New Jersey	1,078.24	539.11	2.00	<.05
III. Border states	-351.78	506.78	-0.69	[a]
IV. Old South	-361.16	625.12	-0.58	[a]
V. Great Lakes	292.51	494.39	0.59	[a]
VI. Southwest	628.10	572.02	1.10	[a]
VII. Midwest farmbelt	-944.45	666.53	-1.42	[a]
VIII. Rocky Mountains	-631.02	743.43	-0.85	[a]
X. Pacific Northwest	-1,243.59	620.08	-2.01	<.05
Earnings in the year of referral	0.2036	0.0204	9.98	<.001
Earnings one year prior to referral	0.2969	0.0174	17.09	<.001
Intercept	-5,161.23	1,990.05	-2.59	<.01

[a]T-value not statistically significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.8: Ordinary Least Squares Regression Analysis Predicting 1985 Real Annual Earnings of Emotionally Disabled Clients

Variable	Regression coefficient	Coefficient standard error	T-statistic	Probability level
Participation in VR program (vs. dropouts)				
Rehabilitants	1,574.90	313.03	5.03	<.001
Non-rehabilitants	-505.62	335.76	-1.51	[a]
Race (vs. white)				
Black	-438.71	227.41	-1.93	[a]
American Indian	-2,102.92	925.71	-2.27	<.05
Asian	359.10	809.78	0.44	[a]
Gender (male)	292.20	175.92	1.66	[a]
Age at closure	-14.05	9.57	-1.47	[a]
Education (in years)	507.25	40.11	12.65	<.001
Severely disabled	-1,335.23	178.45	-7.48	<.001
Had secondary disability	-47.82	182.89	-0.26	[a]
On public assistance	297.31	219.58	1.35	[a]
State per capita income, year of closure	0.2964	0.0807	3.67	<.001
State unemployment rate, year of closure	30.26	67.01	0.45	[a]
Region (vs. region IX—California, Nevada, Hawaii)				
I. New England	573.68	552.00	1.04	[a]
II. New York and New Jersey	607.94	416.69	1.46	[a]
III. Border states	-868.63	410.69	-2.12	<.05
IV. Old South	-664.53	513.23	-1.30	[a]
V. Great Lakes	-909.92	392.99	-2.32	<.05
VI. Southwest	-670.72	445.02	-1.51	[a]
VII. Midwest farmbelt	-2,103.57	519.96	-4.05	<.001
VIII. Rocky Mountains	-926.27	544.16	-1.70	[a]
X. Pacific Northwest	-1,067.69	509.78	-2.09	<.05
Earnings in the year of referral	0.3593	0.0205	17.53	<.001
Earnings one year prior to referral	0.2309	0.0173	13.34	<.001
Intercept	-1,779.74	1,633.27	-1.09	[a]

[a]T-value not statistically significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.9: Ordinary Least Squares Regression Analysis Predicting 1985 Real Annual Earnings of Mentally Retarded Clients

Variable	Regression coefficient	Coefficient standard error	T-statistic	Probability level
Participation in VR program (vs. dropouts)				
Rehabilitants	1,037.47	289.57	3.58	<.001
Non-rehabilitants	-466.64	321.59	-1.45	[a]
Race (vs. white)				
Black	446.96	170.67	2.62	<.01
American Indian	-1,278.31	1,117.88	-1.14	[a]
Asian	-40.06	684.20	-0.06	[a]
Gender (male)	852.99	148.45	5.75	<.001
Age at closure	-105.80	9.93	-10.66	<.001
Severely disabled	-1,111.95	154.42	-7.20	<.001
Had secondary disability	-243.06	163.38	-1.49	[a]
On public assistance	-514.34	162.63	-3.16	<.01
State per capita income, year of closure	-0.0475	0.0672	-0.71	[a]
State unemployment rate, year of closure	-63.64	53.59	-1.19	[a]
Region (vs. region IX— California, Nevada, Hawaii)				
I. New England	-237.10	583.04	-0.41	[a]
II. New York and New Jersey	-30.95	366.91	-0.08	[a]
III. Border states	-1,047.15	380.26	-2.75	<.01
IV. Old South	-156.27	456.05	-0.34	[a]
V. Great Lakes	-718.23	353.50	-2.03	<.05
VI. Southwest	-905.69	429.46	-2.11	<.05
VII. Midwest farmbelt	-1,361.82	436.95	-3.12	<.01
VIII. Rocky Mountains	-1,787.89	498.50	-3.59	<.001
X. Pacific Northwest	-1,465.95	499.81	-2.93	<.01
Earnings the year of referral	0.4970	0.0272	18.24	<.001
Earnings one year prior to referral	0.2598	0.0251	10.36	<.001
Intercept	9,030.55	1,351.01	6.68	<.001

[a]T-value not statistically significant at $p < .05$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Table IV.10: Summary Statistics for Ordinary Least Squares Regression Analyses

Statistic	Physically disabled	Emotionally disabled	Mentally retarded
R-square	0.23	0.20	0.31
Adjusted R-square	0.23	0.20	0.31
Change in R-square, adding VR participation variables	0.005	0.01	0.01
Standard error of estimate	8,874.51	8,030.89	5,320.29
F-statistic (degrees of freedom)	91.90[a] (24,7266)	92.67[a] (24,8991)	115.64[a] (23,5799)
Number of cases	7,291	9,016	5,823

[a]$p < .001$.

Source: GAO analysis of 1980 combined RSA-SSA data base

Rehabilitated clients in all three disability groups had significantly higher earnings from wages in 1985 than clients who dropped out of the program, when other factors were taken into account (and considering only wage earners). This was indicated by the large positive coefficients and small standard errors for the variable "rehabilitants versus dropouts." The coefficients from the regression analyses are interpreted as follows: Clients with physical disabilities, emotional disabilities, and mental retardation earned about $2,000, $1,600, and $1,000 more, respectively, than did clients who dropped out of the program. Clients who were not rehabilitated did not, however, differ from clients who dropped out when we examined average earnings in 1985. This finding is indicated by the statistically insignificant coefficients for the variable "non-rehabilitants versus dropouts."

Analysis by Severity of Disability

We repeated the regression analyses separating those with severe disabilities, with the results shown in table IV.11. The long-term impact of rehabilitation on whether clients had earnings in 1985 was slightly greater for persons with severe disabilities than for persons with non-severe disabilities. This can be seen by comparing the size of the logistic regression coefficients in horizontal rows 1 and 2 of the table for all three disability groups. On the other hand, one can recall from table 5.2 that clients with physical disabilities who were not rehabilitated were less likely to have earnings from wages in 1985 than were dropouts. As it turns out, this effect is a function of the lesser likelihood of employment of severely disabled non-rehabilitants with physical disabilities, as can be seen in row 3 of table IV.11.

Table IV.11: Program Effects in 1985, by Severity of Disability

	Physically disabled		
	Coefficient	Standard error	Probability
Have earnings in 1985			
Rehab vs. dropout			
Severe	+0.64	0.09	<.001
Non-severe	+0.52	0.10	<.001
Non-rehab vs. dropout			
Severe	–0.28	0.11	<.01
Non-severe	–0.03	0.12	[a]
Earnings in 1985			
Rehab vs. dropout			
Severe	+$2,799	$631	<.001
Non-severe	+$1,459	$540	<.01
Non-rehab vs. dropout			
Severe	+$567	$725	[a]
Non-severe	+$355	$629	[a]

Emotionally disabled			Mentally retarded		
Coefficient	Standard error	Probability	Coeffcient	Standard error	Probability
+0.77	0.08	<.001	+0.93	0.09	<.001
+0.54	0.09	<.001	+0.55	0.14	<.001
–0.10	0.08	[a]	–0.07	0.10	[a]
–0.03	0.09	[a]	–0.25	0.15	[a]
+$1,862	$446	<.001	+$744	$319	<.05
+$1,371	$436	<.01	+$1,449	$599	<.05
–$348	$476	[a]	–$606	$352	[a]
–$569	$469	[a]	–$455	$674	[a]

[a]Regression coefficient not significant at p < .05.

Source: GAO analysis of 1980 combined RSA-SSA data base

Examining earnings, we did similar OLS regressions as before and found that the long-term impact of rehabilitation on earnings levels in 1985 was quite a bit greater for persons with severe disabilities—for two of the three disability groups. We found the reverse pattern in the group of clients with mental retardation, where earnings at the 5-year point were greater among those with non-severe disabilities. These results are discussed further in chapter 5.

Expert Advisors

Frederick Collignon
Berkeley Planning Associates
Oakland, Calif.

David Dean
University of Richmond
Richmond, Va.

Dale Hanks
Virginia Department of Rehabilitative Services
Richmond, Va.

V. Joseph Hotz
University of Chicago
Chicago, Ill.

Robert Lerman
The American University
Washington, D.C.

Maurice McInerney
Pelavin Associates
Washington, D.C.

Craig Thornton
Mathematica Policy Research
Princeton, N.J.

R. Alexander Vachon (served as advisor until February 1993)
National Disability Policy Center
Washington, D.C.

Major Contributors to This Report

Program Evaluation and Methodology Division

Frederick V. Mulhauser, Assistant Director
Tom Jessor, Project Manager
Brett S. Fallavollita, Social Science Analyst
Venkareddy Chennareddy, Referencer
Patrick C. Seeley, Reports Analyst

Los Angeles Regional Office

James C. Geibel, Referencer

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Glossary

	Adapted from the transmittal of instructions for the RSA-911 Reporting System sent from RSA to state agencies.
Diagnosis and Evaluation	This complex of services is designed to enable the rehabilitation agency to determine a client's eligibility for vocational rehabilitation services, and/or to determine the nature and scope of services to be provided. Diagnosis and evaluation can be medical, psychological, social, or vocational in scope.
Counseling and Guidance	This would include any of the many different kinds of counseling and guidance services that counselors may have to provide for their clients.
Restoration	This category includes those medical and medically-related services that are necessary to correct or substantially modify a physical or mental condition. Restoration services include surgery, therapy, treatment, hospitalization, prosthetic appliances, etc.
Adjustment Training	This is training that helps the client to adjust to a particular situation hindering his or her ability to work. Included would be work conditioning; developing work tolerance, training in the use of artificial limbs, aids, or appliances; mobility training; remedial training; literacy training; lip reading; braille; etc.
Vocational Training	This is noncollegiate postsecondary education. Included is training in a business/commercial school or college (preparing the client for work in areas of office practice, typing, bookkeeping, accounting, etc.) and a vocational trade school (preparing the client for occupations such as welding, woodworking, TV repair, drafting, cosmetology, etc.).
On-The-Job Training	Training by a prospective employer in which the client usually works for wages while learning the skills of a job.
College Training	All academic training on a level higher than a secondary education.

Miscellaneous Training	Training that does not readily fit into other categories of training (for example, academic training on a secondary level or lower, or specialized schools for the blind and deaf which are academic in nature).
Referral	A job referral occurs when a client is sent for and has a job interview with a prospective employer. This referral need not result in the offer of a job.
Placement	A placement service is rendered when the client is referred to, and subsequently hired by, an employer. Excluded would be instances in which the client found his or her own job, or where the client's employer at the time of application for rehabilitation services retained the individual in employment. A key element of this service is that the client became employed as a result of the job referral.
Transportation	This is any service that enables the client to arrive at appointments for diagnosis and evaluation, medical services, training, or any other rehabilitation service, as well as any that permits the client to get to work. Included would be the provision of vans, cabs, or private cars for the client, as well as payments made to these carriers.
Income Maintenance	Included is any service provided to cover basic living expenses so that the individual can derive the full benefit of other vocational rehabilitation services.
Other Services	Included are reader and interpreter services, occupational tools and equipment, initial stocks and licenses, services to family members for the benefit of the client, and medical care for acute conditions arising during rehabilitation that jeopardize a client's rehabilitation potential.

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