Longitudinal Study of the Vocational Rehabilitation (VR) Services Program, Third Final Report: The Context of VR Services

Prepared for:
U.S. Department of Education
Office of Special Education and Rehabilitative Services
Rehabilitation Services Administration

By:
Becky J. Hayward and Holly Schmidt-Davis
Research Triangle Institute

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This report was produced under U.S. Department of Education Contract No. HR92022001 with the Research Triangle Institute. Harold Kay served as the contracting officer's representative. The views expressed do not necessarily represent the positions or policies of the Department of Education. No official endorsement by the U.S. Department of Education of any product, commodity, service or expertise mentioned in this publication is intended or should be inferred.

September 2005

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Contents

Illustrations

Figures

Tables

Executive Summary

This report is the third in a series of four final reports and several research briefs that present the findings of the Longitudinal Study of the Vocational Rehabilitation (VR) Services Program, a study that the Research Triangle Institute (RTI) has conducted for the Rehabilitation Services Administration (RSA), U.S. Department of Education, under contract number HR92022001. The broad purpose of the study is to assess the performance of the state-federal VR services program in assisting eligible individuals with disabilities to achieve positive, sustainable economic and noneconomic outcomes as a result of their receipt of VR services.

Initiated in fall 1992, the longitudinal study has tracked VR participation and post-VR experiences for up to three years following exit from the program, of a sample of applicants to, and consumers of, VR services. The sample was selected to approximate a national population. The study's sample acquisition and data collection activities began in December 1994 and were completed in January 2000, with sample acquisition occurring over a two-year period and with each of the study's 8,500 participants tracked for three years.

The study implemented a two-stage design that involved selection of a stratified random sample (with probability proportional to size) of 40 local VR offices[1] (located in 32 state VR agencies in a total of 30 states), and, among those offices, a sample of 8,500 applicants and current and former consumers of VR services. The study implemented a cohort design that involved randomly selecting 25 percent of the sample from the population of persons at application to VR, 50 percent of the sample from the population of persons who were already accepted for and receiving services, and 25 percent of the sample from the population of persons at exit or after they exited VR services. Each study participant was followed for a period of three years. The cohort design accommodated the typical time-in-services among VR consumers (22 months), such that the study would account for VR experiences and post-VR outcomes for up to three years after program exit.

Data collection included computer-aided interviews with study participants, abstraction of data from consumers' case records, and mail surveys to VR agencies. A battery of baseline

[1] Attrition subsequently reduced the number of participating offices to 37.

interviews conducted with each study participant at the time of entry into the study obtained information on work history, functioning, vocational interests and attitudes, independence and community integration, and consumer perspectives on their VR participation. Follow-up interviews administered for three subsequent years varied according to the individual's stage in the VR process at the time of interview. Records abstraction included consumer characteristics and detailed information on services; records were abstracted at the time the consumer entered the study and then quarterly until that person exited VR. Agency instruments included mail surveys of office managers in participating VR offices, counselors and other office staff, as well as a state policies and procedures form. These instruments were administered at initiation and termination of the study's data collection activities, with annual updates from the local office manager surveys. Analyses for this report also used the 1990 Decennial Census to examine community characteristics (e.g., demographic characteristics, local environment) and the Local Area Unemployment Statistics (LAUS) file for data on unemployment.

This report contains findings regarding the context of VR services, including the local environment and local offices in which VR counselors and other staff arrange for or deliver services to VR consumers, and analyzes the influence of the environment and organizational characteristics of VR offices on the outcomes that VR consumers achieve as a result of VR services. It builds on the prior two reports by looking at the influence of contextual factors on consumers' short- and long-term outcomes.

Specific study questions that this report addresses are as follows:

1. **In what ways and to what extent do local environmental factors influence VR consumers' services and outcomes?**
   - What are the sizes and densities of the total populations in the VR districts and regions? What are the characteristics of the local populations, including prevalence of disabling conditions as identified in available data?
   - Regarding VR offices, what is the nature of the local economy, including trends, nature, availability and distribution of jobs? Are jobs accessible to VR consumers in terms of their locations, the transportation available and the qualifications required?
   - In VR districts and regions, what are the numbers and types of service providers in the community (vendors or agencies providing comparable benefit services)? Are they accessible to VR consumers in terms of location and transportation?

2. **In what ways and to what extent do the operations, resources and organizational climate of VR agencies influence consumer services and outcomes?**

   - What is the amount of case service resources available to local VR staff? What proportion of the local expenditures are devoted to case service resources, the agency's direct service personnel, and other expenditures?
   - What types of organizational cultures exist in VR agencies? What are the predominant management techniques that influence those agencies, and what are their effects?

The report's organization is as follows. Chapter 1 provides a brief overview of the longitudinal study, addressing the study's authorization, information goals, conceptual framework and plan for the series of final reports. Chapter 2 comprises an overview of the local environment in which the VR program delivers services to consumers, including information on the demographic characteristics of the local population; size and population density of the catchment areas of VR offices (i.e., the area surrounding the VR office from which the bulk of consumers served in the office are drawn); occupational and earnings profiles of employed persons; unemployment rate; and availability of needed resources such as service providers and transportation. Chapter 3 contains findings regarding the characteristics, operations and resources of local VR offices. Topics covered include office characteristics, such as basic caseload information, staffing, and case service resources; VR counselor characteristics, activities and perspectives; and organizational characteristics that include office climate and organization. Chapter 4 addresses the influence of context on VR consumers' services and outcomes.

Data sources for the findings presented in this report include the following:

- 1990 Decennial Census;
- Local Area Unemployment Statistics (LAUS);
- Survey of local office managers;
- Survey of VR counselors; and
- State policies and procedures.

Findings in the report are weighted estimates that represent 956 local VR offices (offices in which consumers receive services) and 5,640 VR counselors.

The Local Environment of VR Offices and Services

Findings regarding the environment in which VR staff provide services to consumers fall into three broad topics: general population characteristics, the employment environment, and community resources.

Population Characteristics

Communities in which VR offices deliver services to consumers range from small towns (40,000 population) to large cities (3 million), with an average of nearly 400,000 persons. Office catchment areas are considerably smaller, averaging around 120,000 persons and ranging from about 60,000 to 250,000. In terms of prevalence of disability, 4 percent of the population reported being limited by disability in the type or amount of work they could perform, while 5 percent reported being prevented by disability from working at all (1990 Census). At the community level, prevalence of disability ranges from a low of 3 percent to a high of 6 percent for those limited but not prevented from working, and from 2 percent to 11 percent for persons reporting not being able to work at all. In terms of race/ethnicity, the general population is 86 percent white, on average; this percentage ranges from 41 to nearly 100 percent in some communities. Conversely, while about 10 percent is African-American, the distribution of this group within local communities ranged from less than 1 percent to as high as 55 percent. In terms of education levels, about one-third of the general population reported having a high school education (ranging from 19 to 55 percent), while about 22 percent reported having less than a high school education and 18 percent reported having achieved at least a bachelor's degree (ranging from 6 to 42 percent). Average annual earnings from employment for the general population was $20,209 (median $19,811); for persons limited by disability in amount or type of work they could perform, the figure was $14,935 (median $14,600); and for persons reporting that they were unable to work at all, it was $1,779 (median $1,619), on average.

Employment Environment

Working persons in the communities in which VR consumers receive services most often work in technical, sales and administrative support occupations (27 percent of all jobs, ranging from 16 to 36 percent). About 13 percent of jobs are in service occupations. Although data on

occupational types of VR consumers are not directly comparable[2], local VR office managers estimated that about 31 percent of jobs that VR consumers obtain are in service occupations (ranging from 3 to 75 percent of all jobs). Overall, unemployment was relatively low in the office communities over the period of data collection (1995–99), declining over the period from 5.28 to 4.08 percent and averaging 4.74 percent across the period. In some localities, however, unemployment was twice the overall rate (e.g., as high as 11.6 percent in 1996). Office managers reported that employment opportunities available to VR consumers remained relatively constant (36 percent of managers) or increased (35 percent of managers) during the period, although they believed that such increases are unlikely to continue over the subsequent five years.

Community Resources

Providers from which VR counselors can arrange or purchase services varied in their availability in the communities in which the program delivers services. Over 60 percent of local office managers reported ready availability of mental health counseling and substance abuse treatment. Around half reported availability of vocational training (56 percent), higher education (51 percent), and medical services (47 percent). Few communities (around 15 percent) reported availability of independent living skills training. In terms of employment services, most offices (81 percent) were located in communities with ready availability of the Employment Security Commission office, and almost two-thirds reported some availability of employment-related services under the *Job Training Partnership Act/Workforce Investment Act* (*JTPA/WIA*). Fewer than one-third reported full availability of a projects with industry (PWI), although an additional one-third reported some availability of these programs.

Most offices have access to comprehensive centralized rehabilitation centers (72 percent in their state and 32 percent in a neighboring state). While offices reported an average of seven community rehabilitation programs (CRPs) and other local service organizations to which they are able to refer consumers, many offices reported relative scarcity of service providers and indicated that such scarcity impedes positive consumer outcomes to either a great extent (21 percent) or to some extent (48 percent). Similarly, availability of transportation services

[2] Longitudinal Study of the Vocational Rehabilitation Services Program. *Second Final Report: VR Services and Outcomes* (RTI International, 2003), p. 6-6. These data report occupational type for VR consumers, while office managers estimated the

exclusively for VR consumers is somewhat limited (67 percent of office managers reported limited availability), although taxis, vans and public buses are readily available (89, 83 and 72 percent, respectively). Office managers reported that lack of transportation impedes positive consumer outcomes to a great extent (39 percent) or to some extent (58 percent). Additionally, some office managers reported great difficulty in obtaining other services for their consumers, including vocational training (30 percent), employment development services (22 percent), and supported employment (21 percent).

Relationships Between the Environment and VR Services

Earlier analysis (*Second Final Report: VR Services and Outcomes*) found that the receipt of certain services increased the likelihood that consumers would achieve an employment outcome. Using these services as dependent variables, we examined whether environmental factors increased the likelihood that consumers would receive such services (education and employment development services and support services). While we found that some aspects of the offices' local environment did affect the likelihood of receipt of services, they accounted for a small percentage of the variance in the regression analyses. This finding suggests that other factors (e.g., consumer characteristics) may be more important determinants of services that consumers receive than are specific characteristics of the environment.

Characteristics and Practices of Local VR Offices

Findings regarding the local offices in which VR staff provide services to consumers fall into three topics: 1) profile of offices; 2) office policies and practices; and 3) office culture.

Office Profile

Offices in which VR consumers receive services vary in the size of total caseload. They have an average total caseload of 1,738 (median 865), ranging from 141 to over 37,000. About 30 percent of offices reported operating under an order of selection, although only about one-third of those offices actually reported having a waiting list for services. Counselors managing general caseloads averaged 112 consumers, with a range from 54 to as many as 244 consumers in the active caseload. About three-fourths of offices reported having at least some specialized caseloads, and one-half of counselors managed specialized caseloads. Types of specialized

distribution at the office level.

caseloads most frequently reported were school caseloads (42 percent of all specialized caseloads), caseloads for persons with hearing impairments (36 percent of specialized caseloads), and caseloads for persons with mental illness (30 percent). In terms of staffing, offices range from 3 to 53 full-time equivalent (FTE) positions, with an average of 13.4 FTEs per office. VR counselors are typically highly experienced, having worked an average of 11 years in rehabilitation counseling, most of which has been spent with their current agency. Forty-one percent hold a bachelor's degree, and 56 percent, a master's degree. Only 17 percent hold certified rehabilitation counselor (CRC) certification.

In terms of financial resources to support VR services, offices average over $800,000 in case service funds per year, with a minimum of $50,000 and a maximum of $4.5 million. Twenty-one percent of offices reported access to other case service funds, such as a statewide pool, and 26 percent reported having requested additional case service funds over the course of the year. Few counselors (16 percent) have funds remaining at the end of the year. Salary expenditures average about $100,000 for administrative staff and about $370,000 for direct service staff.

Office Policies and Practices

Nearly all offices have established some type of quantified performance requirements for counselors targeted at both outcomes and processes. Over 90 percent have requirements for a number of employment outcomes counselors should achieve over the course of the year. Other requirements address the VR process, including time-in-status limits (72 percent of offices); number of individualized plans for employment (IPEs) initiated (62 percent); number of acceptances (49 percent); applications processed (48 percent); and referrals (42 percent). Few (11 percent) offer monetary incentives to counselors who reach or exceed their goals. Most office managers believe that performance requirements for counselors improve consumer outcomes (62 percent). In terms of case service funds, 63 percent of offices reported that counselors have control over their case service funds, although only 30 percent of counselors reported being able to authorize all payments (an additional 32 percent reported being able to authorize payments under a certain amount). When asked about the most important factor in effective performance of their job, two-thirds of counselors listed personal commitment to the success of consumers with whom they work. Other factors listed as important to job performance included experience in working with consumers (64 percent) and interpersonal skills (54 percent). Counselors believe that the most

important indicator of a consumer's likelihood of success in achieving a vocational goal is his or her level of motivation to succeed (89 percent of counselors listed this factor as important, and 59 percent listed it as most important).

Office Culture

Based on research in organizational effectiveness, we developed three scales of organizational culture/climate through surveys of VR office staff. The scales measured the extent of a hierarchical/rational culture, developmental/group culture, and organizational cohesiveness/effectiveness. VR offices are relatively above a midpoint (or average) on the hierarchical/rational scale (3.45 on a 5-point scale) and slightly lower than that, although still above "average" on the developmental/group culture scale (3.15). For organizational cohesiveness/effectiveness, scores are about the same (average of 3.46).

Relationships Between Office Characteristics and VR Services

To identify office characteristics that may influence the services that consumers receive from VR, we conducted logistic regression analyses using as dependent variables selected services that prior research has shown to be associated with positive employment outcomes at exit from VR; we included numerous office characteristics variables in these analyses. While these analyses revealed a number of characteristics with a statistically significant relationship to service receipt (e.g., case service budget and performance requirements and incentives), based on the low amount of variance accounted for by numerous models we tested, we concluded that office factors are not the primary determinant of the types of services consumers receive. Rather, consumer characteristics are the most important factors in service patterns (*Second Final Report: VR Services and Outcomes*).

As analyses in Chapter 3 indicate, while office factors are not important in predictors of services, in combination with consumer characteristics and environmental factors, use of office characteristics as covariates increases the power of the analyses that predict which services increase the likelihood that consumers will achieve employment and related outcomes.

VR Services and Consumer Outcomes

Based on analyses of environmental factors and office characteristics found to influence consumer outcomes, we selected a set of factors that we incorporated as covariates along with

consumer characteristics into our regression analyses of the effects of VR services on outcomes. (*Second Final Report: VR Services and Outcomes* explored the independent effects of consumer characteristics on such outcomes.)[3] These analyses yielded models that explain a high percentage of the variance in terms of the effects of VR services on consumer outcomes.

In terms of employment outcomes, controlling for consumer characteristics, environmental factors and office characteristics, selected services account for nearly 30 percent of the variance—an impressively high R^2 value for social science research. Services increasing the odds of an employment outcome included quality of the consumer/counselor relationship, IPE amendment, job placement, supported employment, on-the-job training, college or university, work adjustment training, driver training/licensing, business/vocational training, and provision of tools, uniforms, equipment or stock.

In terms of achievement of competitive employment and controlling for consumer, environmental and office characteristics, services increasing the odds of competitive employment included IPE amendment, job placement and maintenance. Services associated with a decreased likelihood of competitive employment are receipt of supported employment or independent living services. The R^2 for this model was impressively strong (.4649), explaining nearly 50 percent of the variance.

Regarding earnings, services that increase the likelihood of higher earnings include: quality of the consumer/counselor relationship; receipt of AT devices and services; participation in business/vocational training, two-year community college or four-year college/university; and receipt of tools, uniforms, equipment or stock. Services reducing likelihood of higher earnings include IPE amendment, receipt of tutoring and receipt of work adjustment training. The R^2 for this model is .1829. Participation in postsecondary training or education, an important predictor of higher earnings, is also associated with a greater likelihood of receiving health insurance benefits with the job, as is the receipt of maintenance during VR services. However, consumers who receive medical services or independent living services are less likely than other working

[3] Tables in Appendix A list variables included in the analyses from each domain: consumer characteristics, services, environmental factors and office characteristics.

consumers to have employment that offer health benefits. The R^2 for this model is also very high for social science research (.3794).

In summary, our analyses found that a number of specific VR services appear to contribute to a consumer's likelihood of achieving outcomes that are important goals of the VR program. An important part of services leading to employment outcomes is a relationship between the consumer and counselor that the consumer believes is productive and helpful. Other outcomes (competitive employment, higher earnings) are enhanced by the counselor's responsiveness to the consumer's need to make appropriate changes in the service plans as he or she progresses through VR. Enrollment in postsecondary education is particularly important in terms of higher earnings and receipt of health benefits, and receipt of necessary support services improves employment, earnings and health benefits outcomes. Our models, controlling for environment, office characteristics and consumer characteristics, indicate the utility of these services, along with others, in leading to improved employment-related outcomes for VR consumers.

Introduction

This report is the third in a series of four final reports and several research briefs that present the findings of the Longitudinal Study of the Vocational Rehabilitation (VR) Services Program, a study that RTI is conducting for the Rehabilitation Services Administration (RSA), of the U.S. Department of Education, under contract number HR92022001. The broad purpose of the study is to assess the performance of the state-federal VR services program in assisting eligible individuals with disabilities to achieve positive, sustainable economic and noneconomic outcomes as a result of their receipt of VR services. This report contains findings regarding the local economic environment in which VR counselors and other staff arrange for or deliver services to VR consumers and analyzes the influence of local environments and the organizational characteristics of VR offices on the services and outcomes that VR consumers achieve as a result of VR services.

The report's organization is as follows. The remainder of this chapter provides a brief overview of the longitudinal study, addressing the study's authorization, information goals, conceptual framework and plan for the series of final reports. Chapter 1 comprises an overview of the local environment in which the VR program delivers services to consumers, including information on the demographic characteristics of the local population; size and population density of the catchment areas of VR offices; occupational and earnings profiles of employed persons; unemployment rate; and availability of needed resources such as service providers and transportation. Chapter 2 contains findings regarding the characteristics, operations and resources of local VR offices. Topics covered include office characteristics such as basic caseload information, staffing and case service resources; VR counselor characteristics, activities and perspectives; and organizational characteristics that include office climate and organization. Chapter 3 addresses the influence of context on VR services and consumer outcomes.

Overview of the Study's Mandate and Design

Initiated in fall 1992, the Longitudinal Study of the Vocational Rehabilitation Services Program addresses key questions of interest to Congress, RSA, state VR agencies and consumers about the performance of the state-federal VR program. The study's congressional mandate, contained in Section 14 of the *1992 Amendments to the Rehabilitation Act*, directs the secretary of the U.S. Department of Education to conduct a longitudinal study of the VR program:

> (f) (1) To assess the linkages between vocational rehabilitation services and economic and noneconomic outcomes, the Secretary shall continue to conduct a longitudinal study of a national sample of applicants for services.
>
> (2) The study shall address factors related to attrition and completion of the program through which the services are provided and factors within and outside the program affecting results. Appropriate comparisons shall be used to contrast the experiences of similar persons who do not obtain services.
>
> (3) The study shall be planned to cover the period beginning on the application of the individuals for the services, through the eligibility determination and provision of services for the individuals, and a further period not less than 2 years after termination of services (Section 14 (f)).

In response to this mandate, the study tracked application and eligibility determination, VR participation and post-VR experiences for up to three years following exit from the program, of a nationally representative sample of applicants to, and consumers of, VR services. Each individual participant was followed for three years, such that some members of the applicant and services cohorts were still receiving services at the end of their three years of participation in the study (approximately 1,500 sample members had not completed VR services at the end of the data collection period). Members of the exit cohort reported on post-VR employment and other activities for three years following exit from VR. The study's sample acquisition and data collection activities began in January 1995 and were completed in January 2000, with sample acquisition occurring monthly or bimonthly over a two-year period, and with each of the study's 8,500 participants tracked for three years.

The study implemented a two-stage design that first involved the selection of a random sample (with probability proportional to size) of 40 local VR offices[4] (located in 32 state VR agencies in a total of 30 states), and, second, among those offices, a sample of 8,500 applicants and current and former consumers of VR services. The study followed three cohorts: VR applicants (25 percent of the sample), VR consumers receiving services (50 percent of the sample), and VR exiters (25 percent of the sample) selected at or after exit from services (including persons exiting with an employment outcome, those exiting without an employment outcome following services, and those exiting VR without an employment outcome prior to receipt of services under an IPE).

[4] Attrition reduced the number of participating offices to 37.

The intent of the Longitudinal Study's design was to follow a nationally representative sample of VR applicants and consumers through their VR services and for up to three years following VR services. To achieve this intent, we selected a representative probability sample of the offices in which VR counselors work with individuals with disabilities as they apply for and subsequently receive VR services. Based on lists provided by RSA regional staff and state VR agencies, we selected a sample of offices to participate in the study that would represent the 1,082 district/local offices[5] in the United States, excluding Alaska and Hawaii, in which consumers received services during the study period (i.e., 1995–99). This sampling frame contained information on the number of consumers in each office who received services or who exited VR during FY 1991, the latest year for which such data were available at the time of the sample selection. We stratified the frame by region and type of agency (general/combined or blind/visually impaired) and allocated the sample of offices to the first-stage strata in proportion to the number of consumers in each of the five strata, as shown in table 1. Within strata, we randomly selected offices with probability proportional to size. Subsequent to initiation of data collection, we experienced some attrition of offices (three offices).

As shown in table 1, based on the proportion of persons who applied for/received VR services, the distribution of offices varied somewhat across the country. The West and South contained relatively more offices in which services are delivered to consumers, followed by the North Central and the East. (While the West contains more offices than the South, given the number of states in that region with widely scattered populations, that region contains a smaller VR consumer population than does the South.) According to rosters from RSA, agencies for blind/visually impaired services are a small proportion of VR offices overall.

[5] This number does not include satellite offices in which many local and district offices house counselors and other staff to make services more geographically accessible to VR consumers.

Table 1. Distribution of VR District Offices Across Sample Strata in the Population and Sample*

Stratum	Number of VR district offices in the stratum	
	Population	Sample
General/combined agency districts in the East region	132	8
General/combined agency districts in the North Central region	239	8
General/combined agency districts in the South region	250	12
General/combined agency districts in the West region	343	10
Blind/Visually Impaired agency districts	118	2
TOTAL	1082	40

*The sample design is based on divisions of the country established by the National Center for Education Statistics for sampling purposes.

Data collection included computer-aided interviews with study participants, abstraction of data from consumers' case records, and mail surveys to VR agencies. When individuals entered the study, interviews obtained a great deal of information as a baseline, including information on work history, functioning, vocational interests and attitudes, independence and community integration, and consumer perspectives on VR participation. A follow-up interview administered for three subsequent years varied according to the individual's stage in the VR process at the time of the interview. Abstraction of information from consumers' case records included consumer characteristics and detailed information on services; records were abstracted when the consumer entered the study and then quarterly until that person exited VR. Agency instruments included mail surveys of office managers, counselors and other office staff, as well as a state policies and procedures form. These instruments were administered at initiation and termination of the study's data collection activities. In addition, local office managers were asked to provide annual data on selected items (e.g., staffing and budgets).

The Study's Information Goals, Conceptual Framework and Reporting Design

The VR longitudinal study was designed to answer the following questions. (The questions that are addressed in this report appear in bold text below.)

- What short- and long-term economic and noneconomic (e.g., independent living and community integration) outcomes do VR applicants and consumers achieve as a result of their participation in VR?
- What characteristics of individuals with disabilities affect their: 1) access to and receipt of VR services; and 2) short- and long-term outcomes?

- To what extent does the receipt of specific VR services contribute to successful consumer outcomes?
- In what ways and to what extent do local environmental factors influence VR consumer services and outcomes?
- In what ways and to what extent do the operations, resources and organizational climate of VR agencies influence consumer services and outcomes?
- Given the relationship among consumer characteristics, contextual factors and VR services, what are the results of the VR program?

Specific issues that this report addresses include:

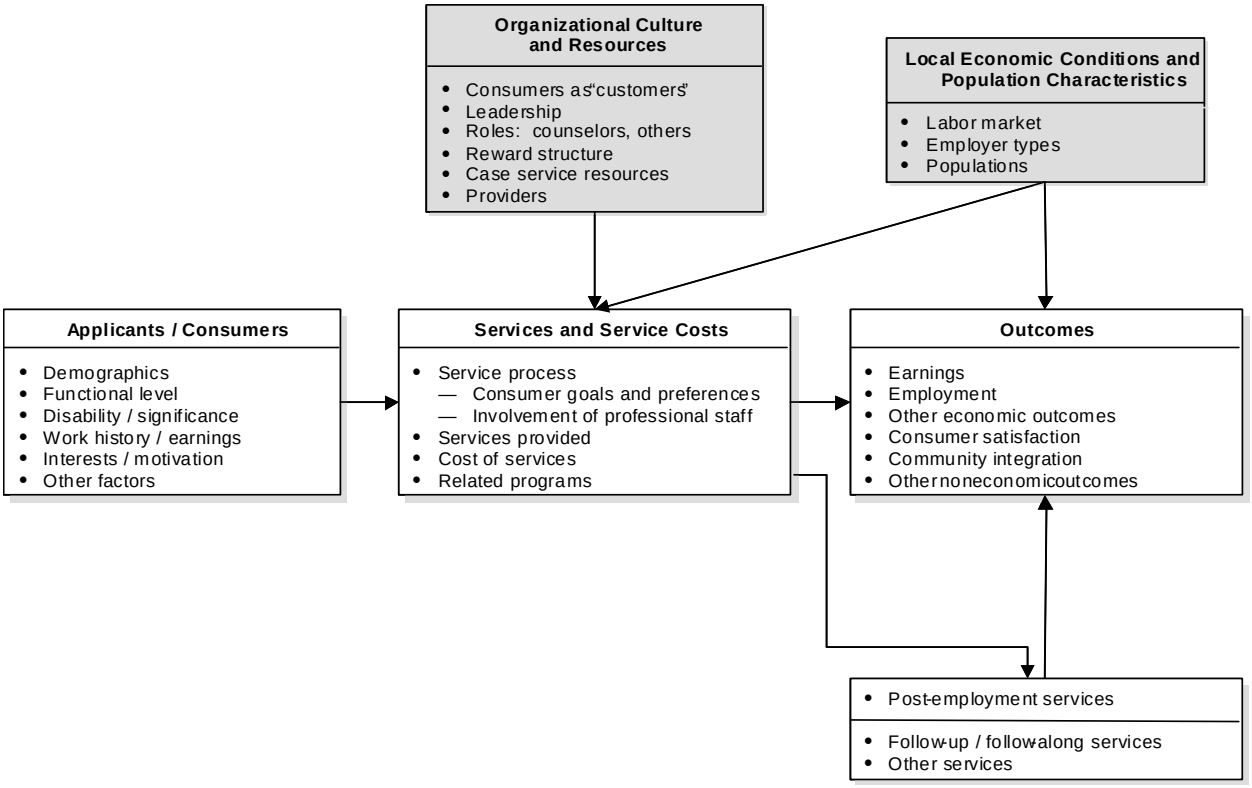
- In what ways and to what extent do local environmental factors influence VR consumer services and outcomes?
    - Regarding VR offices, what is the nature of the local economy, including trends, nature, availability and distribution of jobs? Are jobs accessible to VR consumers in terms of their location, the transportation available, and the qualifications required?
    - What are the sizes and densities (urban, rural and suburban) of the populations (total populations, not just the VR consumers) in the VR districts and regions? What are the characteristics of the local populations, including the prevalence of disabling conditions as identified in available data?
    - In VR districts and regions, what are the numbers and types of service providers in the community (vendors or agencies providing comparable benefit services)? Are they accessible to VR consumers in terms of location and transportation?
- In what ways and to what extent do the operations, resources and organizational climate of VR agencies influence consumer services and outcomes?
    - What is the amount of case service resources available to local VR staff, including case service dollars or services directly provided by the VR agency? What proportion of the local district's expenditures are devoted to: a) case service resources; b) the agency's direct service personnel (e.g., VR counselors, vocational evaluators and job placement specialists); and c) other expenditures?
    - What types of organizational cultures exist in state VR agencies? What are the predominant management techniques that influence those agencies, and what are their effects?

Conceptual Framework

The study's conceptual framework, which organizes the study's information goals and research questions, began with the assumption that the outcomes of VR services could be predicted by the types of consumers entering the program, the economic conditions affecting the

local labor market, the organizational resources and culture of the VR agency and its local service offices, and the services that consumers receive. Figure 1 is a representation of the conceptual framework, with its components and the relationships among them shown as interconnected boxes. Each of the study's four final reports focuses on a different subset of the framework's components, as explained later in this chapter. This report examines the relationships among organizational culture and resources and local economic conditions and population characteristics, as highlighted in figure 1.

Figure 1. Conceptual Framework



The model described in this framework can be expressed as follows:

Outcomes can be predicted by:

- The characteristics of applicants and consumers;
- Services and service costs;
- Local economic and population characteristics; and
- The organizational culture and resources in the local agency office.

Outcomes are defined as: earnings, employment, other economic outcomes, consumer satisfaction, community integration and other noneconomic outcomes.

This general model has been used as the basis for analyses in numerous other VR studies. However, other studies have not had access to the wealth of data that the longitudinal study has collected, including important pre- and post-program measures of consumer experiences and long-term outcomes. In addition, there have been few efforts to examine the impact of the VR system itself on consumer outcomes. This longitudinal study offered the opportunity to collect extensive data on individuals, services and outcomes, expanding previous analytical bases and allowing a more thorough assessment of VR results.

We developed the conceptual framework to organize the hypotheses we held about the relationships among the components of the VR program and to guide the study activities. Elaborating on the variables within each component helped determine the study questions and data collection plans. The questions, along with the hypothesized relationships among the components, guided our analytic activities.

Each of the study's major questions focused on relationships between two or more components of the conceptual framework. For example, to answer the question, "To what extent does receipt of specific VR services contribute to successful consumer outcomes?," our analyses examine the data from the *services and service costs* component, the *outcomes* component, and the statistical relationships among those variables. As described below, each of the longitudinal study's final reports focuses on a different subset of study questions and components of the conceptual framework.

Applicants/consumers

The VR program serves eligible applicants in an environment of funding and service constraints. The outcomes of VR services are affected by such factors as type and significance of consumers' disabilities, extent of work experience, and the work attitudes that consumers bring to the VR experience. There are also identified differences in the likelihood of acceptance and successful closure related to age, sex, race, education level, disability type and significance, and other consumer descriptors (see *First Final Report: How Consumer Characteristics Affect Access to, Receipt of, and Outcomes of VR Services*).

To date, most analyses of the state-federal VR system have involved examinations of consumer outcomes based on the limited consumer information available in RSA's R-911 data files. The types of VR consumers served by the program have changed significantly since the program's inception, moving from a consumer base with a need for physical restoration (industrial accidents and war injuries) to an increasing percentage of persons with a learning disability, mental illness, traumatic brain injury and other cognitive disabilities, and to persons with limited or no work history, problematic work behaviors, and other barriers to employment. The traditional indicators of consumer disability type, or nominal indicators of "significance," do not adequately differentiate among consumers or applicants. Additional measures available in this study (such as functional level, work history, interests and motivation, and receipt of financial assistance) will contribute greatly to our understanding of differences in caseloads, differences in applicants and accepted consumers, and explanations of outcomes (see *First Final Report: How Consumer Characteristics Affect Access to, Receipt of, and Outcomes of VR Services*).

Services and service costs

We use "services" broadly to include the consumer's VR process, including work with the counselor, assessment specialists, and others from application to VR through exit from VR and postemployment services. This list of services includes equipment, adaptive devices, supplies, and professional and other services directly paid for by the agency through purchase of services, as well as internal resources such as counselor, assessor and other staff time directly spent with the consumer, and services arranged with other providers and funding sources as "comparable benefits." This study gathered data on a list of services that is much more detailed than is normally reported to RSA in the R-911 and other RSA reporting, and also allows for a basis for estimating service costs (see *Second Final Report: VR Services and Outcomes*).

Postemployment services

Postemployment services are available to consumers after completing the VR program, if such services will facilitate retention of the placement. While a wide range of counseling and services are available to consumers after VR exit that assist consumers with job retention, these services are not frequently provided. Provision of adequate postemployment services may affect both job retention and recidivism.

Organizational culture and resources

The VR program comprises 80 general, combined and blind state VR agencies, each with its own resources (in light of differences in state levels of support for VR), internal organization, management philosophy and organizational culture. Resources include fiscal resources available for the purchase of services, a critical mass of effective service delivery professionals, and availability and accessibility of service providers or vendors.

In addition to the availability of resources is the existence of an organizational culture, or climate, that supports effective service delivery. In recent years, attention has increasingly focused on the influence of organizational culture within agencies on the effectiveness of their programs. Established in early work by Deming[6], the field of quality management as a whole has shifted from a concern with information and control to a concern with human factors. In human service agencies, human factors are especially important for delivering high-quality services (Bowen and Schneider, 1988). The human organization that creates quality is characterized by its culture of quality; key elements of the culture of quality are training and participation. The following indicators are important measures in assessing organizational climate: 1) management commitment to quality; 2) extent of barriers to employee participation and teamwork; 3) effectiveness of communication between supervisors and employees, 4) practices in setting numerical goals and quotas for employees; and 5) companywide training and education in quality. The organizational culture is viewed as an influencing factor on both quality of services and resulting service outcomes.

Local population and economic environment

Within the national state-federal program, VR services are delivered under widely varying conditions. Localities vary in their urban or rural nature, in the availability of jobs, and even in the prevalence of work disability in the state population. In examining the success of the VR program, it is useful to control for those external factors that may affect services or likelihood of outcomes. Thus, external conditions—exogenous factors in terms of VR discretion—should be taken into consideration in our conceptual framework.

[6] Deming, William. (1986). *Out of the Crisis.* (Cambridge, Mass.: MIT Press, Center for Advanced Engineering Study.)

Outcomes

Several outcome measures were relevant to this study, including both economic and noneconomic outcomes. VR traditionally has reported one outcome—achievement of employment—as the key measure of program success. Within this measure is a variety of types of successful outcomes, from placement in a job in the competitive labor market to work as a homemaker or unpaid family worker. Amount of earnings at closure is available in the existing information system. A variety of additional economic measures of outcomes was relevant to this study, including employment at exit from VR services and at one, two, and three years following closure; competitive employment at each of those points in time; and earnings and receipt of health benefits at each of those points in time.

In addition to measures of income and job retention, a number of noneconomic outcomes can serve as indicators of success or gain in VR. These include independent living, community integration, satisfaction with employment, and satisfaction with VR services.

Reporting Design

The study's research questions and findings were the focus of a series of interim and final reports. The first interim report (Hayward and Tashjian, 1995) contained profiles of the local offices participating in the study and their environments based primarily on analyses from the 1990 Decennial Census and a mail survey of each of the 37 local VR offices participating in the study. The second interim report (Hayward and Tashjian, 1996) described: 1) characteristics of current and former VR consumers; 2) history of labor force participation among VR consumers; and 3) consumers' perspectives of VR services, service providers and other aspects of their involvement with the VR program. The third interim report (Hayward, 1998) contained descriptive findings on characteristics of persons who achieved an employment outcome, including work history and details of post-VR employment and earnings status. The final interim report (Hayward and Schmidt-Davis, 2000) contained findings regarding the VR participation of transitional youth with disabilities. In addition to the reports of study findings, other study deliverables include a methodology report and public use data files with full documentation.

The *First Final Report* focused on the a*pplicants/consumers* component of the framework and the relationship of those variables to portions of the *outcomes* component, specifically eligibility for VR, receipt of VR services, and achievement of an employment outcome, including achievement of competitive employment.

The *Second Final Report* examined the relationship between the *services and service costs* component and the *outcomes* component of the framework, taking into account the findings of the first report regarding consumer characteristics. It described the services consumers receive and the short- and long-term outcomes they achieve.

The *Third Final Report: The Context of VR Services* builds on the prior two reports by looking at the additional influence of two other components of the framework on consumer outcomes—that is, the *local economic and population characteristics* and the *organizational culture and resources* components and their relationships to consumers' short- and long-term outcomes. The *Fourth Final Report*: *Summary of Findings* will encompass the entire conceptual framework by synthesizing all study findings and by addressing the following overall study question: Given the relationship among consumer characteristics, contextual factors and VR services, what are the results of the VR program?

Limitations of the Study's Data

The longitudinal study implemented a design that permits national estimates of characteristics, services and outcomes among persons with disabilities who applied for VR services, including persons who received VR services and those who applied for services but exited prior to receipt of services. The study implemented a carefully designed two-stage, stratified random sampling design that would permit development of the best available national estimates of the VR consumer population. In reviewing the findings in the study's reports, the reader should be aware of the following limitations of this design.

- Study findings reflect the study's data collection period, which occurred between 1995 and the end of 1999; therefore, findings do not reflect recent changes in the program that may be having an effect on VR services and outcomes.
- In instances where participant sample sizes were very small (e.g., less than 1 percent of the sample), findings should be viewed with caution; in general, we do not describe such findings other than including them in tables (e.g., blind reader services received by 0.3 percent of VR consumers). Small sample sizes may affect findings for groups in

which the incidence of disability is small and for analyses that involve the reporting of various characteristics in combination.

- The study was designed to provide national estimates of VR services and outcomes and does not provide estimates at the level of state VR agencies or local VR offices. No statements can be made about participants, services or outcomes for individual agencies or offices.
- The study was not experimental in nature. We studied participants as they received the services that agencies would normally provide—participants were not randomly assigned to specific services. Thus, we cannot conclude that specific services cause specific outcomes. Nevertheless, our analyses, in which we control for differences in individual characteristics, provided an indication of the relationships among services and outcomes.

Chapter 1

The Local Environment of VR Offices and Services

This chapter presents findings on the local environment in which VR offices deliver services to consumers. One of the longitudinal study's charges was to examine the extent to which local population and economic characteristics may affect the VR services and outcomes of the program's applicants and consumers. Specific questions that these analyses were to address include the following:

- **In what ways and to what extent do local environmental factors influence VR consumer services and outcomes?**
  - What are the sizes and densities (urban, rural and suburban) of the populations (total populations, not just the VR consumers) in the VR districts and regions? What are the characteristics of the local populations, including the prevalence of disabling conditions as identified in available data?
  - Regarding VR offices, what is the nature of the local economy, including trends, nature, availability and distribution of jobs? Are jobs accessible to VR consumers in terms of their location, the transportation available, and the qualifications required?
  - In VR districts and regions, what are the numbers and types of service providers in the community (vendors or agencies providing comparable benefit services)? Are they accessible to VR consumers in terms of location and transportation?

We have organized the findings presented in this chapter as follows: *population characteristics*, including demographic characteristics, income and nature and size of communities; *employment environment*, including occupational profile, unemployment rates and job opportunities available to VR consumers; and *community resources*, including the availability of employment-related and other services, rehabilitation service providers, and transportation. The final section examines the relationships between these characteristics and the services that consumers receive from VR. We have included in these analyses services that earlier analyses found to be related to consumers' employment outcomes.

Note on Data Sources

In order to investigate the relationship between the environment in which the program operates and its performance in terms of assisting consumers in achieving economic and other outcomes, we analyzed available information from two primary sources: the 1990 Decennial

Census and responses to questions regarding environmental factors in the study's Local Office Manager Survey. We briefly describe each of these sources prior to presenting findings on the local environment.

1990 Decennial Census

For local population characteristics and environmental factors, we conducted analyses of information available in the Public Use Microdata Samples (PUMS) prepared by the Bureau of the Census from the 1990 Decennial Census. These analyses are based on the 5-percent PUMS sample, which contains records representing 5 percent of the households in the United States. The PUMS housing records include data on such items as household type and income, presence of children, property value, and rent or mortgage information. Associated records provide information on age, race/ethnicity, education, occupation, mobility status, work limitations and other items for each person listed in the household.

Individual weights were applied to both personal and household records. We analyzed one household variable (family income) and a number of individual level variables, including race, Hispanic origin, work limitation status, occupation, individual income, educational attainment, and age, limiting these analyses to the working-aged population (16 to 64 years).

In subsequent sections of this chapter, we present census-based analyses that describe selected socioeconomic characteristics for offices in which VR consumers receive services. Among the findings presented are:

- Demographic characteristics of the local population, including race/ethnicity, age of the working-aged population, educational attainment, and work limitation status;
- Occupational profile of the local labor market;
- Average annual earnings from employment for persons without work limitations, persons reporting work limitations, and persons reporting that they are prevented from working;
- Average annual public benefits received by each of the three groups; and
- Average annual family income from employment and public benefits for each of the three groups.

To provide a framework for these analyses, in this section we provide information from the PUMS documentation that specifies definitions and criteria for key variables used in these analyses.

Work limitation status

The 1990 Decennial Census defined "work limitation" as: 1) the presence of a physical or mental health condition that had lasted for at least six months and that limited the kind or amount of work that an individual could perform on the job; 2) a health condition that restricted one's choice of jobs; or 3) a health condition that prevented full-time work. Persons reporting a work limitation were asked whether their condition had *prevented* their working at all in the past six months. This group is roughly comparable to the group of persons who may seek VR services in that most (about three-fourths) of the applicants were unemployed at the time of application for services.

Community employment environment

The 1990 Decennial Census grouped occupations into seven categories:

- Managerial, professional and specialty;
- Technical, sales and administrative support;
- Service;
- Farming, forestry and fishing;
- Precision production, craft and repair;
- Operators, fabricators and laborers; and
- Military.

In addition, the census noted persons who were "experienced unemployed" as well as those for whom occupation was not reported, so the occupational profiles of the local communities are somewhat limited.

Family income

Analyses of family income included income from both salaries and public assistance or benefits for all members of the household reporting such income. As presented in this report, it did not include additional sources of income (e.g., interest or dividends).

In addition to the census-based analyses, we obtained unemployment rates for each of the localities from the Local Area Unemployment Statistics (LAUS) files maintained by the Bureau of Labor Statistics, U.S. Department of Labor. This chapter reports these rates for each year of data collection at the city or Metropolitan Statistical Areas (MSAs) level.

Office Manager Questionnaire

At the outset of the study's data collection, we asked the manager of each of the 37 local VR offices participating in the VR Longitudinal Study to complete a questionnaire. While the survey focused primarily on office characteristics (the subject of the following chapter of this report), it also collected some information on selected community characteristics such as availability of accessible transportation and other services and the nature and scope of employment opportunities. We updated information that was likely to have changed (e.g., staffing) through contacts with survey respondents.

Population Characteristics

In terms of race/ethnicity, the general population of communities in which VR offices provide services is 86 percent white, on average (table 2). The percentage of the population in these communities that is white ranges from 41 percent to nearly 100 percent. Conversely, while overall about 10 percent of the general population is African-American, the distribution of this group within the local areas ranges from less than 1 percent to as high as 55 percent. The percentage of individuals of Hispanic background ranges from less than 1 percent to nearly 63 percent and averages 6 percent.

Table 2 also reports age ranges, the prevalence of disability and educational attainment for working-aged persons in the communities in which VR consumers receive services. As shown, nearly half of the working-age population was aged 30 to 49 years, with 20 percent aged 22 to 29 years, 14 percent aged 16 to 21, and 8 percent aged 60 to 64. Communities in which offices are located differed in terms of prevalence of disability. On average, 4 percent of the population reported being limited by disability in the type or amount of work, while 5 percent reported being prevented by disability from working at all. Prevalence ranged from a low of 3 percent to a high of 6 percent for persons limited from, but not prevented from working, and from 2 to 11 percent

Table 2. Demographic Characteristics of the Population in Communities Served by VR Offices (Weighted Estimates)

Characteristic	Percent		
	Mean (Median)	Minimum	Maximum
Race/ethnicity			
White	85.8 (88.2)	40.5	99.6
Black	9.6 (4.4)	0.1	55.4
American Indian/Alaska Native	0.7 (0.3)	0.1	2.9
Asian/Pacific Islander	1.6 (0.6)	0.1	15.3
Of Hispanic Origin	5.8 (0.7)	0.1	62.6
Age (working-aged population)			
16–21	13.6 (14.1)	10.3	19.8
22–29	19.1 (18.4)	16.0	27.2
30–39	25.2 (24.8)	21.0	30.4
40–49	20.0 (20.0)	16.3	26.2
50–59	14.7 (14.7)	9.9	18.8
60–64	7.6 (7.2)	4.1	13.8
Work limitation status			
Not limited in amount or type of work	90.8 (90.8)	83.8	95.8
Limited by disability in amount or type of work but not prevented from working	4.3 (4.3)	2.6	5.7
Prevented by disability from working	5.0 (4.6)	1.5	11.1
Educational attainment			
0 to 4 years of school	1.7 (1.2)	0.2	7.2
5 to 8 years of school	5.0 (4.5)	0.8	17.2
9 to 11 years of school	14.9 (16.3)	6.1	29.5
12 years of school (high school completion)	33.4 (35.3)	19.0	54.6
Some college	27.3 (26.5)	15.7	38.0
College graduate or beyond	17.7 (16.1)	6.4	42.3

Source: 1990 Decennial Census.

for persons reporting that they were prevented from working at all. In terms of educational attainment, about one-third of the general population (ranging from 19 to 55 percent) reported having a high school education, while about 22 percent (ranging from 7.7 to 41.9 percent) reported having less than a high school education; 18 percent (ranging from 6 to 42 percent) reported having achieved at least a bachelor's degree.

Table 3 reports information on earnings from employment, public benefits and annual family income and benefits for individuals and families residing in communities in which VR consumers receive services. The table provides these data for all working-age persons, for persons who reported having a disability that limited the type or amount of work they were able to do, and for persons who reported having a disability that prevented their working at all.

Table 3. Income Levels in Communities Served by Local VR Offices (Weighted Estimates)

Income level	Mean	Minimum	Maximum	Median
Annual earnings from employment				
For all working-aged persons	$20,209	$10,750	$32,877	$19,811
For persons limited by disability in the type or amount of work they can do but not prevented from working at all	$14,935	$9,312	$22,832	$14,600
For persons prevented by disability from working at all*	$1,779	$387	$7,235	$1,619
Annual public benefits				
For all working-aged persons receiving any benefits	$262	$108	$981	$225
For persons limited by disability in the type or amount of work they can do but not prevented from working at all	$1,020	$377	$8,539	$869
For persons prevented by disability from working at all	$3,506	$2,617	$4,643	$2,295
Annual family income from employment and public benefits				
For all working-aged persons	$41,005	$20,303	$67,704	$38,828
For persons limited by disability in the type or amount of work they can do but not prevented from working at all	$34,243	$20,722	$58,356	$31,536
For persons prevented by disability from working at all	$31,118	$11,904	$47,297	$19,074

Source: 1990 Decennial Census; data are in constant 1996 dollars.

*Income data are for a 12-month period, while disability items cover the prior six months.

To adjust for the time lag between the 1990 Decennial Census (the latest census for which information is available at the catchment area) and the period of data collection for the longitudinal study, we report these figures in constant 1996 dollars. As shown in the table, mean annual earnings from employment for all working-age persons was slightly over $20,000 per year, ranging from $10,750 to nearly $33,000 per year. This figure compared with the earnings of persons who were limited in terms of work: among these persons, the average annual earnings from employment was about $15,000 and ranged from $9,000 to almost $23,000. Comparable figures for persons reporting that they were prevented by disability from working were an average of nearly $1,800, with a minimum of $387 and a maximum of just over $7,000.

Table 3 also reports annual family income that includes earnings from employment and public benefits for all family members. As with the individual data on earnings and benefits, average income for families is highest for families that do not include a family member who is limited in work or prevented from working. The average for such families is approximately $41,000 (median $38,828). For those with a family member who has a work limitation, the

average income is about $34,000 (median $31,536), and for those with a member prevented from working, it is around $31,000 (median $19,074).

The size of communities in which VR offices deliver services to consumers ranged from small towns (40,000 population) to large cities (3 million), with an average of nearly 400,000 persons (table 4). Office catchment areas were considerably smaller, averaging around 120,000 persons and ranging from about 60,000 to about 250,000. As reported by office managers, offices were more frequently located in a catchment area that included urban, suburban and rural characteristics (43 percent of all offices). About one-third served areas that were both suburban and rural, while fewer served urban (5 percent), suburban (3 percent), or rural (5 percent) areas exclusively.

Table 4. Population Density and Size of Communities in Which VR Offices Deliver Services (Weighted Estimates)

Population	Mean	Minimum	Maximum	Median
Size of catchment area	119,884	60,057	248,197	121,029
Community size	398,345	40,000	3,000,000	250,000
Type of area	**Percent**			
Urban	5			
Urban and suburban	9			
Suburban	3			
Suburban and rural	30			
Rural	5			
Urban, suburban and rural	43			
Urban and rural	5			

Source: 1990 Decennial Census; Local Office Manager Questionnaire.

Employment Environment

The Decennial Census contains information on the distribution of types of occupations for the localities in which consumers obtain VR services. We obtained information on unemployment rates for the localities from the Local Area Unemployment Statistics (LAUS) data file. In addition, we obtained information on job trends and opportunities from the office manager questionnaire. In this section, we provide an overview of the employment environment in which the VR program delivers services to consumers.

As shown in table 5, occupations of working persons in the localities of VR offices are most often in technical, sales and administrative support (about 27 percent of all jobs, ranging

from a low of 16 percent in some localities to a high of 36 percent in others). Other types of occupations in which working persons were often employed included managerial, professional or specialty (average of 20 percent, with a range from 8 to 37 percent); service (13 percent, ranging from 9 to 17 percent); and operators, fabricators and laborers (mean of 15 percent, ranging from 6 to 27 percent).

Table 5. Occupational Profile of Communities in Which VR Offices Deliver VR Services (Weighted Estimates)

Occupations of working-aged persons (16-64)	Percent		
	Average	Minimum	Maximum
Managerial, professional and specialty	20	8	37
Technical, sales and administrative support	27	16	36
Service	13	9	17
Farming, forestry and fishing	2	1	9
Precision production, craft and repair	10	5	14
Operators, fabricators and laborers	15	6	27
Military	0	0	1
Experienced unemployed	0	0	2
Occupation not reported	12	6	29

Source: 1990 Decennial Census.

The VR program uses the *Dictionary of Occupational Titles* (*DOT*) for categorizing the jobs that VR consumers obtain as a result of VR services. Occupational categories in the *DOT* differ somewhat from those used in the Decennial Census. Thus, direct comparison between the occupational profiles of the general population in communities where VR offices provide services to consumers and the profiles of the VR consumer population is not possible. However, some rough comparisons are possible; table 6 reports office managers' estimates of job categories of persons exiting VR with an employment outcome in the late 1990s. As shown, jobs were most frequently in service (31 percent, ranging from 3 to 75 percent of all jobs), followed by clerical/sales (17 percent, ranging from 5 to 40 percent), and professional, technical or managerial (16 percent, ranging from 2 to 60 percent).

Table 6. Occupations of VR Consumers Exiting With an Employment Outcome (Weighted Estimates)

Occupations of VR consumers (estimated by office managers)	Percent		
	Average	Minimum	Maximum
Professional, technical and managerial	16	2	60
Clerical/sales	17	5	40
Service	31	3	75
Agricultural, fishery and forestry	4	0	15
Processing	5	0	21
Machine trades	7	1	14
Benchwork	5	0	20
Structural work	5	0	20
Miscellaneous	16	0	81

Source: Local Office Manager Questionnaire.

Overall, unemployment was relatively low in the office communities over the period of data collection (1995–99), declining over the period from 5.28 percent in 1995 to 4.08 percent in 1999, with an average across the period of 4.74 percent (ranging from 1.06 to 10.50; table 7). However, in some localities, unemployment was twice the overall rate (e.g., as high as 11.6 percent in 1996); conversely, in some localities, the rate was quite low (less than 1 percent).

Table 7. Unemployment Rates in Communities Where VR Offices Deliver VR Services (Weighted Estimates)

Year	Mean (median)	Minimum	Maximum
1995	5.28 (5.30)	.06	10.40
1996	5.33 (4.40)	.07	11.60
1997	4.79 (4.44)	.03	11.10
1998	4.24 (4.10)	.09	10.20
1999	4.08 (3.90)	.06	9.40
Average across years	4.74 (4.40)	1.06	10.50

Source: Local Area Unemployment Statistics.

To examine trends in employment opportunities specifically for VR consumers, we collected information regarding this topic from local VR office managers (table 8). For example, employment opportunities available to VR consumers were thought by office managers to have remained relatively constant or had increased during the latter half of the 1990s. As reported in table 8, over one-third of office managers reported that opportunities had remained constant

Table 8. Status of Job Opportunities in Communities Where VR Offices Deliver Services (Weighted Estimates)

Characteristics of opportunities	Percent
Extent of changes in job opportunities over the past 5 years	
Opportunities remained constant	35.6
Opportunities increased	34.6
Opportunities decreased	29.9
Expectations that job opportunities will change over the next 5 years	
Opportunities will change	12.2
Opportunities will not change	87.9
Supported employment opportunities	**Number**
Number of employers providing supported employment opportunities	
Mean (median)	10.4 (2.0)
Minimum	0.0
Maximum	100.0
Number of supported employment positions available	
Mean (median)	26.7 (5.0)
Minimum	0.0
Maximum	195.0

Source: Local Area Unemployment Statistics.

(36 percent) or had increased (35 percent), while 30 percent reported that employment opportunities had decreased in their localities. Their expectations for the first half of the ensuing decade were less optimistic, however, with nearly nine-tenths (88 percent) reporting that such opportunities will not change. The table also contains information on the availability of supported employment opportunities for consumers for whom that employment outcome is appropriate. Overall, offices reported that around 10 employers in their communities made supported employment positions available to VR consumers, with an average of about 27 such positions available over the course of a year. Some localities, however, reported that no employers were able to provide supported employment opportunities or specific positions, while some reported that as many as 100 employers provided such opportunities.

Community Resources

The performance of VR agencies in assisting consumers to achieve employment outcomes depends on the availability of an appropriate network of service providers, given that much of the mission of the agency involves: working with consumers to identify services that will support achievement of the vocational goal; arranging with available providers to deliver those services either through comparable benefits or through purchase (although agencies provide a number of services directly, such as vocational assessment, some forms of training, etc.); and supporting

consumers as they proceed through services to an employment outcome. Hence the availability of rehabilitation-related, employment and educational and other services and service providers can improve or constrain a local office's ability to help consumers move into employment outcomes that meet their goals and preferences. In this section, we review the availability of community resources to support the work of VR offices in performing their functions, using information from the survey of local office managers.

Table 9 reports findings regarding the availability of community-based services that VR offices can arrange for consumers as comparable benefits. About two-thirds of communities in which VR delivers services have relatively ready availability of alcohol and substance abuse treatment for consumers who need such services (67 percent and 66 percent of communities, respectively), and 62 percent of VR offices are able to arrange mental health counseling through comparable benefits. Around half reported availability of vocational training (56 percent), higher education (51 percent), and medical services (47 percent). Somewhat fewer offices were located in communities with family counseling services available (39 percent), and very few were able to arrange independent living skills training (16 percent) or recreation opportunities (15 percent) for consumers.

Table 9. Availability of Selected Community-Based Services (Weighted Estimates)

Resource	Percent of office managers reporting		
	Full availability	Limited availability	No availability
Alcohol abuse treatment	67.0	33.0	0.0
Substance abuse treatment	65.5	34.5	0.0
Mental health counseling	61.8	38.2	0.0
Vocational training	55.6	44.5	0.0
Higher education	51.4	48.7	0.0
Medical services	47.2	52.3	0.5
Family counseling	38.5	61.0	0.5
Independent living skills training	15.6	57.0	27.4
Recreation	15.4	84.0	0.6

Source: Local Office Manager Questionnaire.

In terms of resources to assist consumers in obtaining employment, most offices (81 percent) were located in communities with ready availability of the Employment Security Commission, while only about a third reported full availability of services through the *Job Training Partnership Act* (*JTPA*); replaced by *the Workforce Investment Act* (*WIA*) and the One-Stop System in 1998; table 10). Almost two-thirds of offices reported some availability of

employment-related services under *JTPA*. Fewer than one-third of offices reported full availability of a Project With Industry (PWI), although an additional third reported some availability of these programs, which typically help former VR consumers as well as other persons with disabilities to obtain job placement. Nearly 40 percent reported no availability of PWI. Finally, relatively few offices reported availability of a Javits-Wagner-O'Day Program (JWOD) to VR consumers; about one-third reported limited availability of this resource, while over two-thirds reported no availability.

Table 10. Availability of Community-Based Employment Assistance (Weighted Estimates)

	Percent		
Resource	**Full availability**	**Limited availability**	**No availability**
	Full	Limited	
State Employment Security Commission office	80.6	19.4	0.0
Job Training Partnership Act	35.1	64.9	0.0
Projects With Industry	28.0	33.1	38.8
Javits-Wagner-O'Day Program	0.9	31.5	67.6

Source: Local Office Manager Questionnaire.

Most offices had access to comprehensive centralized rehabilitation facilities (table 11). Almost three-fourths reported that such facilities were located in their state, and about one-third reported access to facilities in neighboring states. On average, offices reported that at least two such facilities were available for provision of services to VR consumers.

Offices also reported availability of community-based rehabilitation programs (CRPs) and other local service organizations (e.g., Goodwill Industries, community mental health centers and vocational schools) to which they were able to refer VR applicants and consumers for services. As shown in table 12, in a question asking respondents to list up to 10 such facilities in their communities, VR offices reported an average of seven such facilities in proximity to their office catchment areas. At the same time, many offices reported relative scarcity of service providers, indicating that such scarcity somewhat impedes positive outcomes for consumers. As shown in

Table 11. Availability of Comprehensive Centralized Rehabilitation Facilities (Weighted Estimates)

Centralized facility available	Percent
In the state	72.3
In a neighboring state	32.1
Number available in state	
Mean (median)	2.3 (2.0)
Minimum	1.0
Maximum	5.0
Number available in a neighboring state	
Mean (median)	2.3 (2.0)
Minimum	1.0
Maximum	5.0

Source: Local Office Manager Questionnaire.

Table 12. Availability of Community-Based Rehabilitation Programs and Other Service Providers (Weighted Estimates)

CRPs and other local service organizations	
Number available in community	**Number**
Mean (median)	6.9 (8.0)
Minimum	1.0
Maximum	10.0
Extent to which scarcity of service providers impedes positive consumer outcomes	**Percent**
To a great extent	20.7
To some extent	47.7
Not at all	6.6
Community has no scarcity of providers	25.0

Source: Local Office Manager Questionnaire.

the table, one-fifth of VR offices reported that scarcity of providers impeded positive consumer outcomes to a great extent, while nearly half reported that scarcity impeded positive outcomes to some extent. Only one-quarter indicated no scarcity of providers in their communities.

Finally, the study explored the availability of transportation for VR consumers and the extent to which a lack of transportation might impede VR consumers' access to services and positive outcomes. As shown in table 13, only 12 percent of VR offices reported full availability of transportation services exclusively for VR consumers, while two-thirds reported limited availability and over one-fifth reported no such availability. Taxis and vans were the modes of transportation most frequently available (89 percent and 83 percent, respectively), and most

Table 13. Availability of Transportation (Weighted Estimates)

Transportation arrangements	Percent
Availability of transportation services exclusively for VR consumers	
Full availability	11.7
Limited availability	66.8
No availability	21.5
Types of public transportation available to VR consumers	
Taxis	88.8
Vans	83.4
Public buses	72.0
Commuter trains	8.8
Parking convenient to VR office	87.5
Extent to which a lack of transportation impedes positive consumer outcomes	
To a great extent	38.6
To some extent	57.8
Not at all	3.6

Source: Local Office Manager Questionnaire.

offices (88 percent) reported having parking convenient to the VR office. Nearly two-fifths of offices identified lack of appropriate transportation as an impediment to positive VR consumer outcomes to a great extent, and nearly 60 percent viewed this lack as a problem to some extent. Very few indicated that transportation was not a problem.

In addition to responses to forced-choice items, VR office managers provided a list of services that in their judgment were most difficult to obtain on behalf of their consumers. Managers listed up to three such services (table 14). As shown, over half of office managers characterized transportation as the service they had greatest difficulty obtaining for their consumers. Thirty percent reported that vocational training was difficult to obtain, 22 percent reported that employment development services were among the most difficult to obtain, and 21 percent reported that supported employment services were in that category. Thus, a relatively large fraction of office managers reported difficulty in obtaining employment-related services, in addition to transportation. Other services that some office managers reported great difficulty in obtaining for their consumers were medical and dental treatment (13 percent), education (13 percent) and services for persons with mental illness (11 percent) or traumatic brain injury (9 percent).

Table 14. Services That VR Office Managers Characterized as Most Difficult to Obtain (Weighted Estimates)

Service	Percentage of office managers listing service as most difficult to obtain
Transportation	51.3
Vocational training	29.5
Employment development	21.7
Supported employment	20.7
Medical and dental treatment	13.1
Education	12.7
Services for mentally ill persons	10.6
Services for persons with traumatic brain injury	9.0

Source: Local Office Manager Questionnaire.

Relationships Between the Local Environment and VR Services

A key question of interest to RSA and VR practitioners, and one of the central questions of the Longitudinal Study, was: **In what ways and to what extent do local environmental factors influence VR consumers' services and outcomes?**

In the remainder of this chapter, we examine the relationships between environmental factors and the key consumer services that earlier analyses found to be related to employment and earnings outcomes. (Chapter 3 of this report then uses these factors as covariates in an analysis of consumer outcomes.) The following specific services were included in these analyses:

Employment Development and Education Services

- Job development
- Job placement
- On-the-job training/job trials
- Business/vocational training
- Two-year community college
- Four-year college or university
- Tutoring

Support Services

- Assistive technology services
- Assistive technology devices
- Driver training or licensing
- Tools/uniforms/equipment/stock
- Maintenance

To identify environmental factors that may, along with consumer characteristics, influence the services that consumers receive from VR, we conducted two logistic regression analyses that

predicted receipt of selected services that prior research has shown to be associated with positive employment outcomes at exit from VR using environment factors. The first regression analysis predicted whether consumers received any of a set of employment development and education services, while the second set of regression analysis predicted whether consumers received any of a set of support services.

The first regression analysis indicated a number of environmental factors that are related to the likelihood that a VR consumer would receive any of the employment development or education services found to increase the likelihood of employment and earnings outcomes. (Odds ratios are shown in Appendix A, table A-1.) Receipt of these services was more likely in localities with: 1) higher unemployment rates; 2) higher populations of individuals with disabilities; 3) higher levels of education in the general population, i.e., where relatively more people have a high school or greater education; 4) higher overall population density; and 5) a comprehensive centralized rehabilitation facility in a neighboring state. Receipt of these services was less likely in localities with: 1) a relatively higher proportion of the general population employed in service jobs; 2) a trend of increasing job opportunities over the last five years; 3) rural areas; and 4) a comprehensive centralized rehabilitation facility in the state. This model accounted for six percent of the variance in receipt of employment development or education services ($R^2 = .0623$).[7] Therefore, while all of the factors were significant predictors, they accounted for a small amount of variance, suggesting that other factors (e.g., consumer characteristics and VR practices) may be more important determinants of the services that VR consumers receive.

The second regression analysis revealed a number of environmental factors that are related to the likelihood that a VR consumer would receive any of the support services that were associated with improved consumer outcomes. (Odds ratios are shown in Appendix A, table A-2.) Receipt

[7] In linear regression models, the coefficient of determination (R^2) uses the total sums of squares and the error sums of squares. Since these two numbers do not exist for logistic regression, computation of the coefficient of determination is more problematic. Several researchers have proposed formulae for calculating this coefficient (Demaris, 1992). In this paper, we used the following formula (SAS Institute, 1999):

$$R^2 = \frac{(1-\{L(\mathbf{0})/L(\boldsymbol{\beta})\}^{2/n}}{1-\{L(\mathbf{0})\}^{2/n}}$$

where $L(\mathbf{0})$ is the likelihood of the intercept only model, $L(\boldsymbol{\beta})$ is the likelihood of the specified model, and n is the sample size. Demaris, A. (1992). *Logit modeling: Practical applications* (Sage University paper series on Quantitative Applications in the Social Sciences, series no. 07-086). Newbury Park, CA: Sage.

of these services was more likely in localities with: 1) higher populations of nonwhite individuals; 2) higher populations of individuals with disabilities; 3) higher levels of education in the general population; 4) a higher proportion of the general population employed in service jobs; 5) a trend of increasing number of job opportunities over the last five years; 6) suburbs; 7) better availability of rehabilitation service providers according to the local office manager; and 8) a comprehensive centralized rehabilitation facility in a neighboring state. Receipt of these services was less likely in localities with high unemployment rates, a higher overall population density, urban areas, and in areas with a comprehensive centralized rehabilitation facility in the state. This model accounted for 14 percent of the variance in receipt of support services (R^2 = .1493).

Based on these analyses reported in this chapter, we have selected a set of local environmental factors that relatively consistently appear to influence consumer services. We have incorporated them into subsequent analyses (see chapter 4) as covariates in addition to the consumer characteristics we included in the analyses of outcomes contained in the *Second Final Report*. Environmental factors that are appropriate for this purpose include the following:

- Percentage of the population with a high school or greater education;
- Percentage of the general population working in service occupations;
- Availability of transportation exclusively for persons with disabilities;
- Population density;
- Availability of rehabilitation-related resources in the community; and
- Availability of a comprehensive rehabilitation facility in the offices or in a neighboring state.

Chapter 2

Characteristics and Practices of the Local Offices That Deliver VR Services

This chapter presents findings on the local offices in which rehabilitation counselors and other practitioners deliver VR services to consumers. One of the Longitudinal Study's charges was to examine the extent to which the operations and culture of local VR offices may affect the VR services and outcomes of the program's applicants and consumers. Specific questions that these analyses were to address include the following:

- **In what ways and to what extent do the operations, resources and organizational climate of VR agencies influence consumer services and outcomes?**
  - What is the amount of case service resources available to local VR staff? What proportion of the local expenditures are devoted to case services resources, the agency's direct service personnel, and other expenditures?
  - What types of organizational cultures exist in VR agencies? What are the predominant management techniques that influence those agencies, and what are their effects?

Earlier studies of the state-federal VR program emphasized the important role of VR office operations and the role of staff—VR counselors in particular—in promoting quality consumer outcomes (e.g., Hayward et al., 1994; Bolton et al., 1995; Rehabilitation Services Administration, 1998). Research has tended to focus more on counselor productivity than on agency performance, although performance measures that hold agencies accountable for performance are relevant at the office and agency level as well as at the counselor level. While the longitudinal study did not focus attention specifically on agency efficiency and effectiveness, given the study's intended emphasis on consumer outcomes, we did collect information on agency operations, resources, and policies and procedures that can be expected to influence the success of the VR program in achieving desired outcomes. In this chapter, we examine the program's operations and investigate their relationship to consumer outcomes.

We have organized findings presented in the chapter as follows: *office profile*, including information on caseloads, staffing, training and experience of VR counselors, and case service funding; *office policies and practices*, addressing policies and practices regarding counselor

performance, counselor perspectives regarding factors affecting job performance and on factors affecting consumers' success at achieving an employment outcome; and *office culture*, examining organizational climate and implementation of management improvement initiatives. The final section of the chapter examines the relationships among these characteristics and services that consumers obtain from or through VR. Data sources for these analyses include surveys that local office managers and rehabilitation counselors in local offices participating in the study completed at the end of the study's data collection period (FY 1999). Weighted according to the study's data collection design, the responses represent a total of 956 local office managers and 5,640 rehabilitation counselors.

Office Profile

Caseloads

Overall, local VR offices worked with a total caseload (persons receiving services and those exiting services during the fiscal year[8]) that averaged 1,738 consumers (median 865), as reported in table 15. The size of caseloads ranged from 141 consumers to as many as 37,624. On average, 1,268 of these consumers continued receiving services throughout the year, while 492 exited services. The table also reports the status of program applicants during the fiscal year. As shown, offices averaged nearly 500 applicants (491; median 380), with an average of 301 of the applicants accepted for services, 19 placed in extended evaluation, and 171 not accepted for services. Over one-fourth (28 percent) of offices reported that they were operating under an order of selection[9]; the number of years operating under this arrangement averaged 6.4 (median

[8] For aggregate caseload information, the study collected detailed information for FY 1993, the latest year for which these data were available at the initiation of data collection in December 1994. Given the burden of these items, office managers were not always willing to provide this information annually in later years of the study, so these data reflect caseload configuration early in the study's data collection period. All other information reported in this chapter and elsewhere in this report comes from administration of the survey at the end of the data collection period, FY 1999.

[9] An order of selection consists of a list of priority categories developed by the state VR agency and implemented when the agency cannot provide the full range of VR services, as appropriate, to all eligible individuals. The agency may not be able to fully serve all individuals because of a shortage of funds, personnel or both. Eligible individuals are assigned to and selected from priority categories based on the significance of their disability. When selecting individuals for services, first priority is given to individuals with the most significant disabilities. The implementation of an order of selection should prevent depletion of agency resources before the end of the fiscal year, assuring that those who have started to receive services will continue to receive all needed services. (Section 101(a)(5) of the *Rehabilitation Act of 1973*; 34 CFR 361.36(a)(2); 361.42(g))

Table 15. Overview of Local VR Office Caseloads at Study Initiation (Weighted n = 956)

Caseload	Percent	Mean	Median	Minimum	Maximum
Applicants		491	380	69	3,765
Accepted for service		301	206	25	2,996
Placed in extended evaluation		19	8	0	147
Not accepted for service		171	128	20	1,149
Receiving services		1,268	582	88	23,929
Exited services		492	264	53	13,695
Total caseload (received services + exited services)		1,738	865	141	37,624
Order of selection					
Offices operating under an order of selection	28				
Years operating under an order of selection		6.4	5.0	0.0	20.0
Number of persons on a waiting list		86	0	0	653

Source: Local Office Manager Survey.

5.0) and ranged from less than one year to as many as 20 years. Waiting lists in offices operating under an order of selection averaged 86 applicants, although the median was zero, suggesting that over 50 percent of offices were not experiencing a need to place eligible applicants on a waiting list for services. In fact, of the estimated 266 offices reporting under an order of selection, only 96 (36 percent) actually had persons waiting for services.

Table 16 provides additional details regarding office caseloads. As shown, 97 percent of local VR offices had counselors who managed general caseloads. The average size of general caseloads was 112 (median 109) per counselor, with the size of caseloads ranging from 54 to 244 consumers.[10] Seventy-six percent of offices also operated at least some specialized caseloads, with an average of three such caseloads in the offices that reported assigning specialized caseloads to some counselors. Fifty-two percent of counselors reported that they managed a specialized caseload. As shown in the table, 42 percent of offices reported that they operated school caseloads; these offices averaged two such caseloads, with an average of 56 consumers each. Over one-third of offices (36 percent) used specialized caseloads to provide services for consumers with hearing impairments; offices averaged fewer than two (1.3) such

[10] Nearly four-fifths (79 percent) of counselors reported that the size of their caseload prevented their spending sufficient time with individual consumers throughout their VR services.

Table 16. Details of Local VR Office Caseloads, FY 1999 (Weighted n = 956)

Type of caseload	Percent of offices with caseload	Average number of caseloads per office	Size of caseload per counselor			
			Mean	Median	Minimum	Maximum
General caseload	97	NA	112	109	54	244
Specialized caseload						
Mental illness	30	1.5	53			
Hearing impairment	36	1.3	72			
Visual impairment	27	1.7	50			
Developmental disability	13	1.3	88			
Traumatic brain injury	9	1.0	65			
School	42	2.0	56			
Correctional facility	5	1.4	64			
Other	16	2.5	50			
Overall	76	3.0	59			
Percentage of counselors with specialized caseloads	52					

Source: Local Office Manager Survey.

caseloads and averaged 72 consumers per caseload. Other relatively frequent specialized caseloads included those for persons with mental illness (30 percent of offices, 1.5 caseloads per office, on average, and 53 consumers per caseload) and visual impairments (27 percent of offices, 1.7 caseloads per office, and 50 consumers per caseload).

Staffing

Local VR offices averaged 13.4 full-time equivalent (FTE) staff positions overall (median 10.0), ranging from 3.0 to 53.0 persons (table 17). The preponderance of these staff FTEs were VR counselors: an average of 6.42 (median 6.0) counselors, ranging from offices without counselors to offices with as many as 30 such staff. Overall 98 percent of offices reported having counselors, and 27 percent reported having vacancies in this position. Offices also employed other service professionals (e.g., vocational evaluation specialists, physical or occupational therapists, physicians or psychologists, etc.), although much less frequently. Offices reported an average of 1.03 such staff (median 0.10), with a maximum of seven FTEs. About half of the offices reported locating other professionals in their offices, and they did not typically report vacancies as an issue. In terms of case service support staff, offices employed an average of 3.79 FTEs (median 2.5), ranging from no such staff to 19 FTEs. Nearly all offices (90 percent)

Table 17. Overview of Local VR Office Staffing Configurations, FY 1999 (Weighted n = 956)

Staff position	Mean	Median	Minimum	Maximum	Percent of offices with position	Percent of offices with vacancy
VR counselors	6.42	6.00	0.00	30.00	97.5	27.1
Other service professionals	1.03	0.10	0.00	7.00	51.8	2.2
Case service support	3.79	2.50	0.00	19.00	90.2	13.4
Administrative staff	1.84	1.00	0.00	12.00	83.2	13.3
Clerical staff	0.01	0.00	0.00	1.00	1.3	0.0
Total FTE staff positions	13.43	10.00	3.00	53.00	97.5	
Ratio of administrative to direct service staff	0.16	0.13	0.00	0.78		
Ratio of VR counselors to support staff	2.08	1.83	0.53	9.00		

Source: Local Office Manager Survey.

employed case service support staff, and 13 percent reported vacancies in this position. Overall, the ratio of VR counselors to case service support staff averaged 2.08 (median 1.83, ranging from .53 to 9.0 FTEs). Administrative staff included office managers and counselor supervisors, with offices averaging 1.84 FTEs of administrative positions (median 1.0, range from 0.0 to 12.0); 83 percent of offices reported employing staff specifically for administrative purposes, and about 13 percent reported vacancies. The ratio of administrative to direct service staff was 0.16 FTEs.

Table 18 reports details on the training and experience of VR counselors who provide VR services to applicants and consumers. Counselors reported an average of over 11 years of experience as a VR counselor (median of nine years, ranging from one to 37 years), and findings suggest a high level of employment stability in terms of length of time in the current agency (10.7 years on average, compared with 11 years as a VR counselor). About one-fifth of counselors reported having worked at a position in VR other than as a counselor prior to becoming a counselor, and nearly half (49 percent) reported prior experience as a counselor outside VR. As shown in the table, 41 percent of counselors possessed a baccalaureate, while 56 percent had a master's degree. Very few reported having less than a college degree. Only 11 percent were pursuing a higher degree or certificate (nearly two-thirds of these were working toward a master's, while one-fourth were seeking post-master's certification). Seventeen percent of VR counselors reported holding a Certified Rehabilitation Counselor (CRC) credential.

Table 18. VR Counselors' Experience and Training, FY 1999 (Weighted n = 5,640)

Experience/training	Percent
Years of experience as a rehabilitation counselor	
Mean	11.0
Median	9.0
Minimum	1.0
Maximum	37.0
Years with current agency	
Mean	10.7
Median	9.0
Minimum	1.0
Maximum	32.0
Percentage with experience in VR prior to becoming a counselor	22.1
Percentage with experience as a counselor outside the field of VR	49.0
Educational attainment	
High school diploma only	0.8
Some college	1.1
Associate degree	0.6
Baccalaureate	40.9
Master's	56.2
Doctorate	0.6
TOTAL	100.0
Percentage of counselors with certified rehabilitation counselor (CRC)	16.8
Percentage of counselors working toward advanced degree or certificate	10.7

We conducted correlations to examine the relationship between VR counselors' educational attainment and consumer outcomes. While some of these correlations were statistically significant, they were consistently too low to be considered meaningful. Consequently, we have not reported the results here or included these variables in subsequent analyses of the relationships between offices characteristics and consumer outcomes.

Orientation and Inservice Training

As shown in table 19, four-fifths of VR counselors reported having received new counselor orientation when they began working in VR.

Additionally, counselors participated in inservice training on a variety of topics. Over 60 percent reported having received training on IPE methods and procedures; nearly all of this training was from VR agency staff. Fifty-six percent had received training in eligibility

Table 19. Counselors' Receipt of Orientation and Inservice Training, FY 1999 (Weighted n = 5,640)

Type of training	Percent of all counselors receiving training	Training Provider	
		VR agency staff	Vendor
New counselor orientation	79.2		
Inservice training			
Eligibility determination	56.2	97.1	2.9
Extended evaluation	34.3	99.1	1.0
Vocational evaluation	35.3	89.5	10.5
IPE	62.5	98.0	2.0
Supported employment	50.5	87.9	12.1
Caseload management	42.1	92.7	7.3
Job development	49.5	76.2	23.8
Job placement	51.9	81.5	18.5
Postemployment services	27.6	98.4	1.6
New consumer populations	32.1	58.3	41.7
Functional aspects of disability	48.6	77.0	23.0
1992 amendments	50.5	91.5	8.5
Americans with Disabilities Act (*ADA*)	51.7	87.0	13.0

determination, which agency staff also provided. Other frequent topics of training that counselors reported having received were job placement (52 percent of counselors), supported employment (51 percent of counselors), the 1992 amendments (51 percent of counselors), job development (50 percent of counselors), and functional aspects of disability (49 percent of counselors). While agency staff conducted nearly all of this training, an exception was new consumer populations, which agencies often purchased from outside experts (42 percent of this training).

Case Service Resources

Total case service budget for local VR offices averaged over $800,000 (median $620,400) and ranged from $50,000 to as much as $4.5 million (table 20). Considered on a per-consumer basis, this overall amount of case service funds averaged about $845 (median $816) and ranged from a low of $19 to a high of $3,116. These figures do not mean that an individual consumer received a maximum of $3,166 in purchased services, however. Rather, these figures are an average across all consumers in the caseload receiving services during the fiscal year, with expenditures limited to one fiscal year rather than to all of the case service resources available to

Table 20. Overview of Local VR Office Case Service Funding, FY 1999 (Weighted n = 956)

Office case service resources	Mean	Median	Minimum	Maximum
Total case service budget	$812,208	$620,400	$50,000	$4,500,000
Case service funds per consumer in the office caseload	$845	$816	$19	$3,116
	Percent			
Offices with access to other case service funds (e.g., statewide pool)	20.9			
Offices requesting additional case service funds from the state during the year	25.8			
Offices in which counselors have case service funds left over at the end of the year	16.4			

Source: Local Office Manager Survey.

any individual consumer who may have received services for several years.[11] As shown in the table, some offices have access to other sources of funds for purchased services in addition to the office's annual case service budget. One-fifth of offices reported access to such other resources as a statewide pool of funds for high-cost services, and one-quarter reported having requested additional case service funds from the state during the year. Very few offices (16 percent) reported that counselors have case service funds left over at the end of the year.

Salary Expenditures

To address the question of distribution of local expenditures among case service expenditures, direct service personnel and other expenditures, the longitudinal study requested information on the salaries of local office staff by staff position from state VR agencies. Because not all of the agencies provided this information, data reported in table 21 should be viewed with caution. For example, in the category of administrative staff (including managers and counselor supervisors), about half of the agencies reported salary levels, while for direct service staff (counselors, other service staff and caseworkers) we obtained this information for two-thirds of the local offices. We report these findings on the notion that they provide at least a rough estimate of local VR offices expenditures on salaries. As shown in the table, the aggregate salaries of administrative staff averaged about $110,000 per year (median $83,306) and ranged from about $28,000 to nearly $300,000. Aggregate expenditures for direct service staff averaged nearly $370,000 (median $304.907) and ranged from about $51,000 to about $1.5 million.

Table 21. Office Expenditures for Staff Salaries*

Office expenditures for salaries	Mean	Median	Minimum	Maximum
Aggregate salaries of administrative staff	$109,774	$83,306	$27,883	$296,566
Aggregate salaries of direct service staff	$369,011	$304,907	$50,914	$1,503,112

*Salaries are for FY 1994, converted to constant 1996 dollars.

Source: State Policies and Procedures Questionnaire.

Office Policies and Practices[12]

Performance Requirements

Nearly all VR offices have established some type of quantified performance requirements for VR counselors (table 22). Ninety-one percent have requirements for the number of employment outcomes counselors should achieve over the course of a year. Other performance requirements frequently in use in VR offices include time-in-status limits (72 percent of offices), the percentage of the caseload represented by consumers with significant disabilities (63 percent), the number of IPEs initiated (62 percent), and other process measures such as number of acceptances (49 percent), applications processed (48 percent) and referrals (42 percent). In nearly all offices (83 percent), counselors negotiate annual performance goals with their supervisors; however, very few offices (11 percent) reported offering monetary incentives to counselors who reach or exceed their goals. Most office managers reported that they believe that the implementation of performance requirements improves consumer outcomes (62 percent), and very few believe that they impede effective service delivery (8 percent). While counselors must meet a variety of process and outcome goals, they do not necessarily have full control over their activities. As shown in table 22, 63 percent of offices reported that counselors have control over their case service funds. Counselors reported such control less frequently—only 30 percent reported being able to authorize all payments, while 32 percent reported authorizing payments under a certain amount, 12 percent authorized payments for particular services, and 27 percent reported not being able to authorize any payments (table 23).

[11] The *Second Final Report* provides extensive information on costs of purchased services, by service, for services that VR purchases on behalf of consumers. It also contains findings on estimated costs of services arranged under comparable benefits, as well as some information on services that VR staff provide directly to consumers.

[12] Chapter 2 of the *Second Final Report* contains a section on the VR process that reports detailed information on the consumer-counselor relationship. We do not repeat these findings here, but instead provide information on office-focused characteristics including policies relevant to counselor performance, activities associated with the performance of job responsibilities, and counselors' perspectives on their role and the factors associated with performing that role.

Table 22. Overview of Local VR Office Policies and Practices for VR Counselors (Weighted n = 956)

Office policies and practices	Percent of offices
Offices with quantified performance requirements for:	
Number of employment outcomes	90.5
Time-in-status limits	71.7
Number/percent of consumers with significant disabilities	62.7
Number of IPEs initiated	61.5
Number of acceptances	48.7
Number of applications processed	47.9
Number of referrals to caseload	41.9
Number of quantified requirements	3.2
Performance goals negotiated between counselors and supervisors	82.8
Counselors offered monetary incentives for reaching or exceeding goals	11.3
Performance requirements improve consumer outcomes	61.6
Performance requirements impede effective service delivery	7.7
Counselors have operational control of case service funds	63.1

Source: Local Office Manager Survey.

Table 23. Counselors' Perspectives on Control of Plans and Case Service Funds, FY 1999 (Weighted n = 5,640)

	Percent of counselors
Counselors sign service plans	91.4
Counselors required to obtain other signature for service plans	33.3
Counselors authorize payment for services without approval from the supervisor	
All payments	30.3
Payments under a certain amount	31.4
Payments for particular services	11.9
No payments	26.4

Source: Survey of VR Counselors

In connection with performance, we asked counselors their perspectives on factors, among the characteristics of counselors, that contribute to effective job performance (table 24). The single factor that most counselors (over two-thirds) listed as important and that counselors most frequently mentioned as the single most important factor (32 percent) was the counselor's personal commitment to the success of consumers with whom he or she worked. Other factors identified as important to effective job performance included experience in working with

Table 24. Counselors' Perspectives on Importance of Selected Factors to Effectiveness in Job Performance, FY 1999 (Weighted n = 5,640)

Factor	Percent of all counselors listing factor as important	Percent of all counselors listing factor as most important
Personal commitment to the success of consumers	68.3	32.1
Experience over time	63.6	23.6
Interpersonal skills	54.0	13.1
Formal education	42.8	17.5
Organizational skills	31.3	5.2
VR agency training	26.2	5.4

Source: Survey of VR Counselors.

consumers (64 percent of counselors listed this factor as important and 24 percent as most important), interpersonal skills (54 and 13 percent, respectively), and formal education (43 and 18 percent, respectively). One-third considered organizational skills important, and one-fourth the training they received from the VR agency. Only five percent listed those factors as most important, however.

Counselors' Functions and Activities

We asked counselors to report on selected aspects of their activities regarding their work with consumers and other activities. Their responses appear in table 25. In terms of the distribution of their time among casework activities, counselors reported spending about one-fourth of their time per month completing file management and documentation activities. They spent about 23 percent of their time in counseling and guidance with consumers; 14 percent on IPE development and eligibility determination, respectively; and 11 percent on job development and placement services.

Counselors also spent time on service coordination, estimating that on average they spend about 13 hours per week on interactions with service providers arranging or coordinating services for consumers, and about six hours per week on-site at service providers' locations. Most counselors (70 percent) believed that their time on-site with providers was adequate to ensure that services delivered to consumers were consistent with their IPEs. In addition to consultation and coordination with service providers, they consulted with other staff in their offices and in their districts regarding individual consumers' IPEs and services. For example, over half of the

Table 25. Functions and activities of VR Counselors, FY 1999 (Weighted Estimate = 5,640)

Function/activity	Time allocated
	Mean percent time
Casework and other activities	**per month**
Eligibility determination	13.7
Counseling and guidance	22.7
Vocational evaluation	8.0
IPE development	14.1
Job development and placement	11.1
File management and documentation	26.2
Other	12.3
	Mean hours
Service coordination activities	**per week**
Interactions (e.g., meetings, phone) with service providers to arrange or coordinate services for consumers	13.1
On-site at service providers' locations	5.6
	Percent
Counselors report time on-site with providers is adequate to ensure consumers' services are consistent with IPEs	70.4
Consultations with other VR local office staff regarding individual consumers' plans and services	
On a regular, formal basis	53.5
Periodically as needed	35.4
Rarely or never	11.1
Consultations with VR district staff regarding individual consumers' plans and services	
On a regular, formal basis	5.1
Periodically as needed	63.0
Rarely or never	31.9
Counselors believe the size of their caseload allows sufficient time with each consumer throughout the VR experience	21.5

Source: VR counselor questionnaire.

counselors (54 percent) reported consulting with other office staff on a regular, formal basis, while 35 percent reported such consultations periodically as needed. Few counselors (only 5 percent) consulted regularly with district-level staff, although nearly two-thirds (63 percent) reported such consultations periodically as the need arose. Finally, in terms of availability of sufficient time to work with individual consumers, only 22 percent of counselors believed that the size of their caseload and their other responsibilities allowed them sufficient time to spend with each consumer throughout his or her VR experience.

Counselors' Perspectives on Consumers' Outcomes

Finally, we asked counselors to identify indicators of consumers' likelihood to achieve an employment outcome—the key outcome that most offices measure to assess counselors' job performances. As shown in table 26, most counselors listed a consumer's level of motivation to succeed as the most important indicator of achievement of an employment outcome. Nearly four-fifths (89 percent) listed this factor as important, and over half (59 percent) listed it as the most important factor. Other frequently mentioned indicators were the consumer's work habits (66 percent listed this factor as important), work history (53 percent),[13] and emotional stability (51 percent). Factors such as type of disability, socioeconomic status and intellectual capacity were viewed as less important to achievement of an employment outcome.

Table 26. Counselors' Perspectives on Importance of Selected Indicators in Consumers' Likelihood to Achieve an Employment Outcome, FY 1999 (Weighted n = 5,640)

Indicator	Percent of all counselors listing indicator as important	Percent of all counselors listing indicator as most important
Level of motivation to succeed	88.5	58.5
Work habits	66.1	7.8
Work history	52.8	9.6
Emotional stability	51.2	7.6
Occupational skills	34.2	2.0
Work tolerance	33.2	1.4
Extent of family support	25.0	0.8
Personal and social history	24.9	1.5
Significance of disability	24.3	1.4
Educational level	22.5	2.1
Intellectual capacity	18.0	3.7
Type of disability	15.1	2.7
Socioeconomic status	4.1	0.4
Gender	0.9	0.0

Source: Survey of VR Counselors.

Office Culture

To obtain information on organizational culture and effectiveness within VR offices, the study included items on these topics in surveys of VR counselors and other office staff. The survey's theoretical framework and items came from the research on organizational culture (e.g., Yeung, Brockbank, and Ulrich, 1991). Following this theoretical framework, which we adapted in

[13] Analyses of employment outcomes in Reports 1 and 2 demonstrated empirically that work history is an important predictor of employment outcomes.

response to the characteristics and imperatives of the VR program as implemented at the local level, we conducted factor analyses to develop reliable scales of climate and culture. These analyses yielded two scales for organizational culture and one for organizational cohesiveness/effectiveness. The first culture scale, called "hierarchical/rational culture" (alpha = .93), included such items as "This office is a very formal and structured place. People pay attention to procedures to get things done," and "The glue that holds this office together is formal rules and policies. Following rules is important." The second culture scale, called "developmental/group culture" (alpha = .92), includes such items as "This office emphasizes growth through developing new ideas. Generating new products or services is important," and "This office is a very personal place. It is like an extended family. People seem to share a lot of themselves." Scores on each scale ranged from 1 to 5, with high scores indicating more of the trait.

The organizational cohesiveness and effectiveness scale (alpha = .97) measures counselors' and other office staff's perceptions of the office environment, including cohesiveness of the office culture, teamwork and responsiveness to change. The scale included 16 items, such as "This office has a long-term purpose and direction" and "This office continually adopts new and improved ways to do work." Scores ranged from 1 to 5, with high scores indicating higher levels of cohesiveness and effectiveness.

Table 27 reports findings regarding office organizational culture and effectiveness. For culture, offices were relatively above the midpoint on hierarchical/rational culture (3.45 on a five-point scale) and slightly below that on developmental/group (3.15 on a five-point scale). They ranged from around the midpoint to very high on both scales. For organizational cohesiveness/ effectiveness, scores were about the same, with an average of 3.46 and a range from 2.55 to 4.57 on a five-point scale. As shown in the table, slightly over one-fourth of offices (27 percent) reported having a specialized management improvement initiative, such as total quality management or quality circles, in place. To examine the relationships between implementation of such initiatives and organizational culture and climate, we conducted analyses to examine whether such offices were relatively higher on any of the office culture scales. We

Table 27. Overview of Local VR Office Organizational Culture, FY 1999

Office organizational culture and effectiveness	**Mean**	**Median**	**Minimum**	**Maximum**
Hierarchical/rational culture (alpha = .93)	3.5	3.40	2.58	5.00
Developmental/group culture (alpha = .92)	3.15	3.05	2.21	4.63
Organizational cohesiveness and effectiveness (alpha = .97)	3.46	3.53	2.55	4.57
	Percent			
Office has a specialized management improvement initiative	26.8			

Source: Local Office Manager Survey.

found no significant correlation between the presence of a management improvement initiative and performance on the culture scales. Hence the presence of such an initiative appears not to affect office culture.

Relationships Between Office Characteristics and VR Outcomes

A key question of interest to RSA and VR practitioners, and one of the central questions of the longitudinal study, is: **In what ways and to what extent do the operations, resources and organizational climate of VR agencies influence consumer services and outcomes?**

In the remainder of this chapter, we examine the relationships between office characteristics and the services that consumers received during their VR experience. A subsequent chapter related these factors to the key consumer outcomes that the study had examined throughout, namely, achievement of an employment outcome, achievement of competitive employment, earnings from employment, and receipt of health insurance benefits through the job. The later chapter uses key office characteristics along with consumer characteristics and environmental factors as covariates in analysis of the relationships between services and consumer outcomes at exit from VR.

To identify office characteristics that may influence the services that consumers receive from VR, we conducted two logistic regression analyses using as dependent variables selected services that prior research has shown to be associated with positive employment outcomes at exit from VR (*Second Final Report*). The first regression analysis predicted whether consumers received any of a set of employment development and education services (job development services, job placement services, on-the-job training or job trials, business/vocational training, two-year or community college, four-year college or university, or tutoring), and the second

predicted whether consumers received any of a set of support services (assistive technology devices, assistive technology services, driver training or licensing, tools/uniforms/equipment/stock or maintenance).

The first regression analysis indicated a number of office characteristics that were related to the likelihood that a VR consumer would receive any of the employment development or education services listed above. (Odds ratios are shown in Appendix A, table A-3.) Receipt of these services was more likely in offices with higher ratios of administrative to service staff, with higher average caseloads, with more specialized caseloads, with quantified performance requirements for employment outcomes, with monetary incentives for counselors, and with high levels of organizational cohesiveness. Receipt of employment development or education services was less likely in offices with a high percentage of consumers with significant or most significant disabilities, with other case service funds available, with a developmental/group culture, and in offices in which counselors could authorize some or all payments for services. This model accounted for only 5 percent of the variance in receipt of employment development or education services ($R^2 = .0497$), however, suggesting that factors other than office characteristics are likely to have a greater effect on the types of services that consumers receive from VR than do the characteristics tested in the model.

The second regression analysis revealed a number of environmental factors that are related to the likelihood that a VR consumer would receive any of the support services listed above. (Odds ratios are shown in Appendix A, table A-4.) Receipt of these services was more likely in offices with a higher case service budget per consumer and with higher percentages of counselors with specialized caseloads. Receipt of these services was less likely in offices with higher caseload sizes. This model accounted for only 6 percent of the variance in receipt of support services ($R^2 = .0554$).

While the factors predicting receipt of services in the models described above are statistically significant, they seem to have little practical importance. Analyses conducted with various combinations of factors that could conceivably influence the receipt of services did not yield significant findings, leading to the conclusion—based on the low amount of variance accounted for by any of these models—that office factors are not the primary determinant of the types of services

consumers receive. Rather, the most important factors in service patterns and thus in consumer outcomes are individual consumer characteristics. However, as shown in the analyses reported in chapter 3, in combination with consumer characteristics and environmental factors, use of office characteristics as covariates increases the power of regression analyses that predict which services increase the likelihood that VR consumers will achieve employment and related outcomes.

Based on the findings reported in this chapter as well as on prior research regarding the role of office policies and practices in VR performance, we have included selected characteristics as covariates in analyses of VR services and outcomes, as specified in the study's research questions. Office characteristics that are appropriate for this purpose include:

- Ratio of VR counselors to support staff;
- Ratio of administrative staff to service staff;
- Office and counselor caseload size;
- Case service budget, including availability of other case service funds;
- Specialized caseloads;
- Counselor performance requirements and incentives;
- Counselor decision-making; and
- Organizational culture.

We will use these office characteristics as covariates that increase the power of the regression analyses reported in chapter 3.

Chapter 3

VR Services and Consumer Outcomes

An earlier volume in the series of final reports from the longitudinal study (*Second Final Report*) examined the relationships between VR services and key consumer outcomes, controlling for consumer characteristics that we found (*First Final Report*) affected outcomes that VR consumers achieved as a result of VR services. One of the key purposes of the current report is to examine the context in which VR offices deliver services to consumers throughout the nation and to investigate the extent to which that context is related to VR outcomes.

Earlier chapters of this report have presented findings on the influence of environmental factors on receipt of services (chapter 1) and the influence of office characteristics on receipt of services (chapter 2). In this chapter, we have used factors that we found in those earlier analyses as additional covariates to examine further the relationships between VR services and outcomes. That is, we have controlled for the independent effects of not only consumer characteristics, but also environmental factors and office characteristics to examine what services may affect the likelihood that consumers will achieve positive outcomes as a result of VR services. As with other such analyses, the outcomes of interest include:

- Achievement of an employment outcome;
- Achievement of a competitive employment outcome;
- Achievement of relatively higher earnings from employment; and
- Receipt of health insurance benefits through employment.

Table 28 lists the covariates we have used in the analyses reported in this chapter. As shown, among the characteristics of VR consumers for which we controlled in the models are disability type, other disability characteristics, receipt of financial assistance, psychosocial characteristics, work history and selected demographic characteristics. Office characteristics that the earlier analyses found to be consistent predictors of service receipt and for which we therefore controlled in these analyses included office profile (e.g., total caseload, case service funds) and office policies/practices. Environmental factors that we used as covariates included selected

general population characteristics, employment environment and availability of community resources (e.g., mental health counseling, PWI).

Table 28. Covariates Used in Analyses of the Relationships Between Services and Outcomes

OFFICE CHARACTERISTICS	CONSUMER CHARACTERISTICS
Office Profile	***Disability Type***
Total caseload size	Vision
Total case service budget	Hearing impairment
Ratio of case service funds to caseload size	Nonorthopedic physical
Number of specialized caseloads	Mental illness
Ratio of counselors to support staff	Mental retardation
Ratio of administrative to service staff	Substance abuse
Office Practices	Learning disability
Counselors have employment outcome requirements	Traumatic brain injury
	Other
ENVIRONMENTAL FACTORS	***Disability Characteristics***
Population Characteristics	Significance
High school or greater	***Financial Assistance***
Urban	SSI/SSDI
Rural	***Psychosocial Characteristics***
Suburban	Self-esteem
Employment Environment	***Work History***
Working in service occupations	Working at application
Community Resources	***Demographic Characteristics***
Transportation available	Number of dependents
Mental health counseling available	Nonwhite
Higher education available	
Comprehensive rehab facility in state	
Comprehensive rehab facility in other state	
PWI available	
JTPA available	
ESC available	
JWOD available	

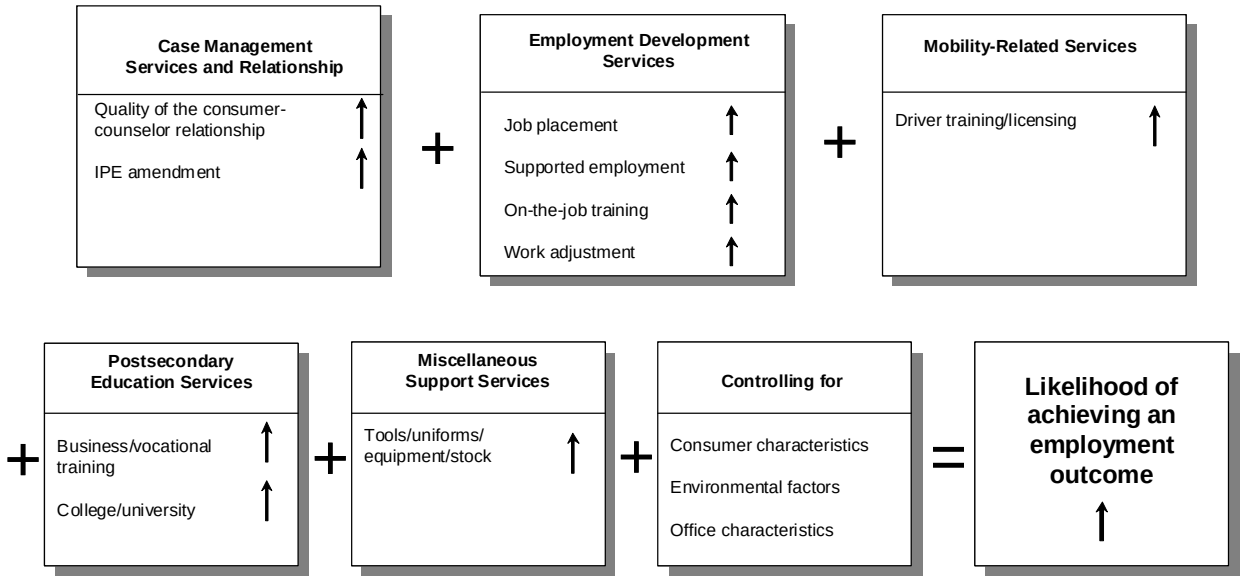
In preparation for regression analyses, we identified three variables (total caseload size, the ratio of case service funds to caseload size, and the ratio of counselors to support staff) with distributions that were substantially different from the normal distribution and transformed these variables using a logarithmic transformation. In the remainder of this chapter, we describe the results of these analyses.

Achievement of an Employment Outcome

Figure 2 reports the results of our logistic regression analyses regarding the relationship between services and the likelihood to achieve an employment outcome, controlling for consumer characteristics, environmental factors and office characteristics. The analyses revealed a number of services that are related to an increased likelihood that a VR consumer would achieve

an employment outcome. (Odds ratios are shown in Appendix A, table A-5). Specifically, the services shown in the figure accounted for a significant of the variance in employment. At exit from VR, these variables accounted for nearly 30 percent of the variance (that is, $R^2 = .2707$) in employment outcome, an impressively high R^2 value for social science research.

Figure 2. Services That Lead to Employment (R2 = .2707)



We need to interpret carefully the results of this and later analyses because we cannot infer that these specific services would be of benefit to all consumers in all environments. Specific consumers in the sample received these services, presumably because the services were appropriate to their needs and vocational goals. We believe that these should be considered as potentially important services for consumers and counselors to consider, unless they are inconsistent with the individual's specific goals and needs.

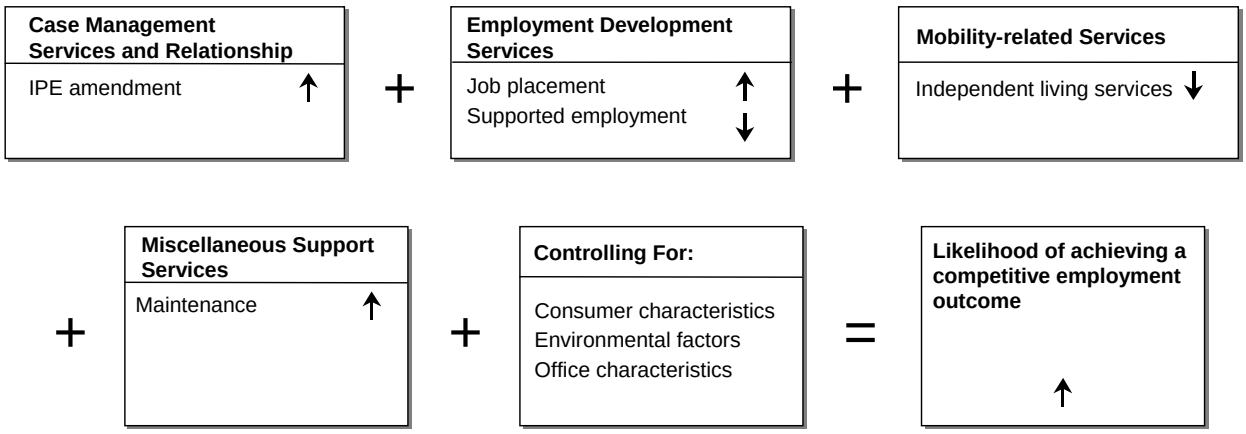
With these cautions in mind, figure 2 suggests a number of implications. First, having a good consumer-counselor relationship is important, as is the flexibility to amend the IPE as needed to facilitate achievement of the vocational goal. Especially important services in the categories of employment development and education included job placement, supported employment, on-the-job training, work adjustment training, and enrollment in college or university education, which increased the odds of an employment outcome. Receipt of driver training/licensing services and the provision of job-

related materials such as tools, uniforms, equipment and stock improved the likelihood of an employment outcome as well.

Achievement of a Competitive Employment Outcome

The next outcome we considered was the achievement of competitive versus noncompetitive employment. Competitive employment typically brings higher average earnings, reduced dependency on financial assistance and the potential for career advancement. The desirability of this outcome for VR consumers is reflected in RSA's program evaluation standards and indicators, most of which target this outcome and related measures. As figure 3 depicts graphically, after controlling for consumer, environmental and office characteristics, we found significant relationships for several services. (Odds ratios are shown in Appendix A, table A-6.)

Figure 3. Services That Lead to Competitive Employment (R2 = .4698)



Services that contributed to the achievement of competitive employment included the amendment of the IPE, as appropriate; receipt of job placement services; and receipt of maintenance during VR. Two services, independent living services and supported employment, reduced the odds of competitive employment outcomes. We interpret this finding to mean that individuals for whom independent living or supported employment services were needed were less likely to be able to be employed initially in a competitive rather than in a noncompetitive position rather than that the services were themselves detrimental to the outcome. The predictive power of this model was very strong, as represented by an R^2 of .4698, explaining nearly half of the variance in the outcome.

Earnings

Services that we found to be important for the amount of earnings from employment are somewhat different from those reported for employment or competitive employment outcomes. As shown in figure 4, IPE amendment and quality of the consumer-counselor relationship, significantly related to competitive employment, also differentiated among earnings levels for consumers who were working. Most notable, however, was the relationship between participation in education or training and the likelihood of higher earnings. Consumers who participated in business/vocational training, two-year community college, and four-year university were likely to have higher earnings than other working consumers, while those who had received tutoring or work adjustment training were less likely to earn at higher levels. Consumers receiving such services may have had other characteristics associated with the lower earnings that were not included in the model. Provision of tools, uniforms, equipment or stock was also associated with higher earnings at exit from VR. As noted in the figure, the R^2 for this model was also relatively high (.3761), explaining nearly 40 percent of the variance. (Odds ratios are shown in Appendix A, table A-7.)

Health Benefits

Participation in postsecondary training or education, an important predictor of higher earnings, was also associated with greater likelihood to receive health insurance benefits with the job, as was receipt of maintenance during VR services. However, consumers who received medical services or independent living services were less likely than other working consumers to have employment that offered health benefits. (Odds ratios are shown in Appendix A, table A-8.) As figure 5 shows, the R^2 for this model is also very high for social science research (.3761).

Figure 4. Services That Lead to Earnings Outcomes Employment (R2 = .3761)

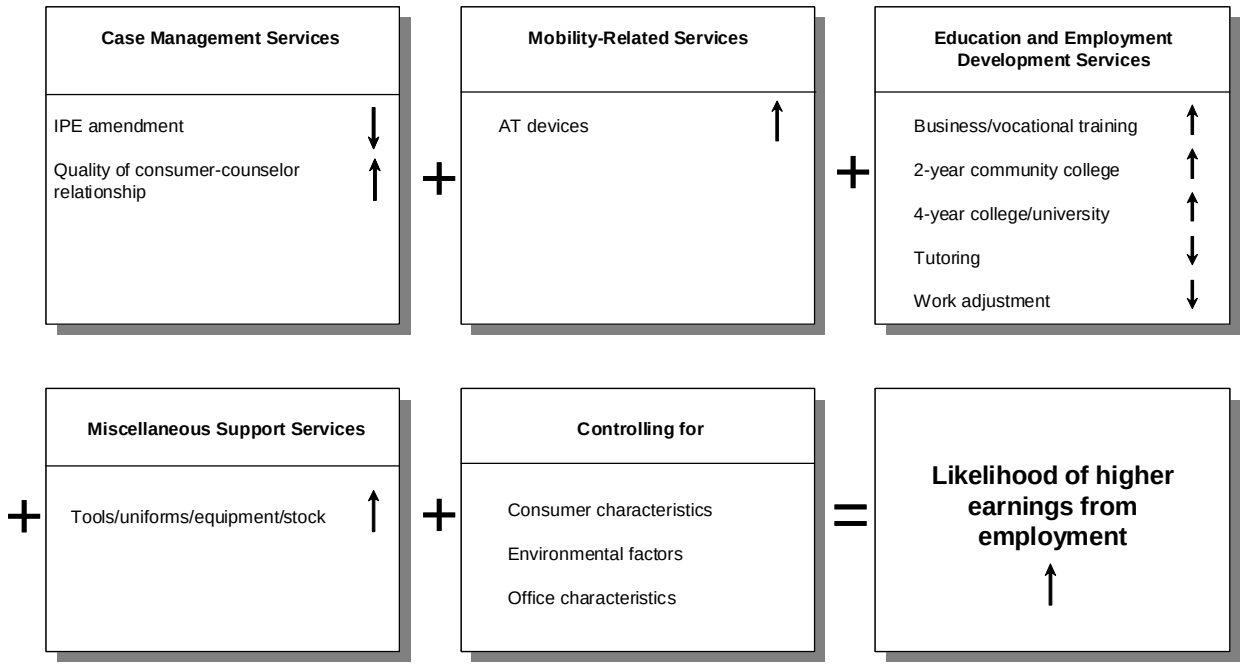
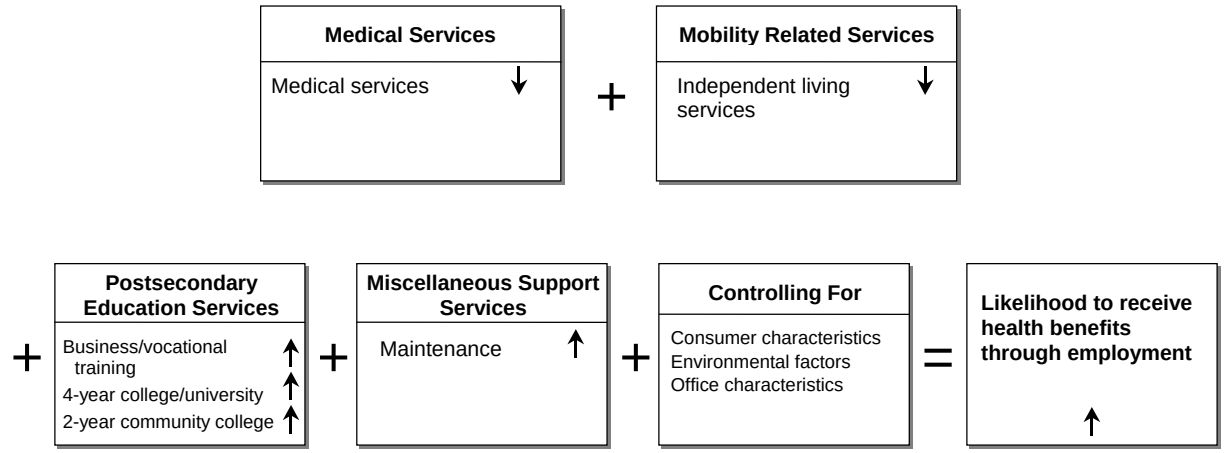


Figure 5. Services That Lead to Receipt of Health Benefits With Employment (R2 = .3794)



Implications

Overall, these analyses confirmed the findings reported in the *Second Final Report*. The types of services that we found related to positive consumer outcomes when controlling for consumer characteristics only were also predictive of consumer outcomes when we controlled for additional factors—environmental and office characteristics. In the analyses reported in this chapter, many of the specific services remained in the predictive models, although some of the other specific services failed to reach significance. The proportion of variance in the outcomes

for which the services and covariates accounted is impressively large. That is, the R^2s range from .27 to .46, higher than those reported in the *Second Final Report*, which can be explained by the addition of further covariates that are known to be related to the outcomes.

In summary, our analyses found that a number of specific VR services appeared to contribute to a consumer's likelihood to achieve outcomes that are important goals of the VR program. An important part of services leading to employment outcomes was a relationship between the consumer and counselor that the consumer believes is productive and helpful; other outcomes (competitive employment and higher earnings) are enhanced by counselors' responsiveness to consumers' need to make appropriate changes in the service plans as they progress through VR. Enrollment in postsecondary education is particularly important in terms of higher earnings and health benefits, and receipt of necessary support services improves employment, earnings and health benefits outcomes. Our models—controlling for environment, office characteristics and consumer characteristics—indicate the utility of these services, along with others, in leading to improved employment-related outcomes.

Appendix A

Tables of Odds Ratios

Table A-1. Odds Ratios Predicting Receipt of Employment Development or Education Services Using Environmental Factors (R^2 = .0623)

Variables	Odds ratios
Population characteristics	
Prevalence of disability	>999.999
High school or greater	81.839
Rural	0.700
Population density	1.000
Employment environment	
Unemployment rate	76.938
Working in service occupations	<.001
Job opportunities increasing over last five years	0.495
Community resources	
Comprehensive rehabilitation facility in state	0.788
Comprehensive rehabilitation facility in neighboring state	1.354

Table A-2. Odds Ratios Predicting Receipt of Support Services Using Environmental Factors (R^2 = .1493)

Variables	Odds ratios
Population characteristics	
Prevalence of disability	>999.999
High school or greater	120.813
Urban	0.728
Suburban	1.268
Population density	1.000
Nonwhite	12.163
Employment environment	
Unemployment rate	0.007
Working in service occupations	>999.990
Job opportunities increasing over last five years	2.264
Community resources	
Better availability of rehabilitation service providers	1.272
Comprehensive rehabilitation facility in state	0.455
Comprehensive rehabilitation facility in neighboring state	1.253

Table A-3. Odds Ratios Predicting Receipt of Employment Development and Education Services Using Office Characteristics (R^2 = .0497)

Variables	Odds ratios
Ratio of administrative to service staff	2.685
Percentage of caseload with significant or most significant disabilities	0.224
Average caseload size	1.009
Size of specialized caseloads	1.000
Quantified performance requirement for employment outcomes	2.378
Counselors offered monetary incentives for reaching or exceeding goals	2.041
Other case service funds available	0.725
Percent of counselors able to authorize all payments for services	0.210
Percent of counselors able to authorize some payments for services	0.304
Developmental/group culture	0.521
Organizational cohesiveness	1.364

Table A-4. Odds Ratios Predicting Receipt of Support Services Using Office Characteristics (R^2 = .0554)

Variables	Odds ratios
Average caseload size	0.990
Case service budget per consumer	1.000
Percentage of counselors with specialized caseloads	2.018

Table A-5. Odds Ratios Predicting Employment Outcome at Closure Using Office Characteristics, Environmental Factors, Consumer Characteristics and Services Received (R^2 = .2707)

Variables	Employment outcome odds ratios
Case management services and relationship	
Quality of the consumer-counselor relationship	1.866
IPE amendment	1.165
Education and employment development services	
Job placement	2.615
Supported employment	2.161
On-the-job training	2.317
Business/vocational training	1.109
College/university	1.137
Work adjustment	1.399
Mobility-related and other support services	
Driver training/licensing	2.754
Tools/uniforms/equipment/stock	1.578
Office characteristics	
Office profile	
Total caseload size	0.938
Ratio of case service funds to caseload size	0.909
Number of specialized caseloads	1.013
Ratio of counselors to support staff	0.910
Ratio of administrative to service staff	0.395
Office practices	
Counselors have 26 exit performance requirements	2.775
Environmental factors	
Population characteristics	
High school or greater	1.146
Urban	0.674
Rural	0.709
Suburban	0.638
Employment environment	
Working in service occupations	893.269
Community resources	
Transportation available	0.827
Mental health counseling available	0.970
Higher education available	0.830
Comprehensive rehabilitation facility in state	0.622
Comprehensive rehabilitation facility in other state	0.608
PWI available	1.248
JTPA available	0.249
ESC available	2.650
JWOD available	*

*Numbers insufficient to support analysis.

Table A-5. (*continued*)

Variables	Employment outcome odds ratios
Consumer characteristics	
Disability type	
Vision	5.176
Hearing impairment	2.131
Nonorthopedic physical	0.986
Mental illness	1.020
Mental retardation	2.140
Substance abuse	1.118
Learning disability	0.855
Traumatic brain injury	0.644
Other	2.035
Disability characteristics	
Significance	1.075
Financial assistance	
Supplemental Security Income/Social Security Disability Insurance	0.468
Psychosocial characteristics	
Self-esteem	1.401
Work history	
Working at application	2.470
Demographic characteristics	
Number of dependents	1.034
Nonwhite	0.787

Table A-6. Odds Ratios Predicting Competitive Employment at Closure Using Office Characteristics, Environmental Factors, Consumer Characteristics and Services Received (R^2 = .4698)

Variables	Competitive employment odds ratios
Case management services and relationship	
IPE amendment	1.347
Education and employment development services	
Job placement	2.078
Supported employment	0.556
Mobility-related and other support services	
Independent living services	0.662
Maintenance payments	1.260
Office characteristics	
Office profile	
Total caseload size	0.721
Ratio of case service funds to caseload size	0.883
Number of specialized caseloads	1.003
Ratio of counselors to support staff	1.451
Ratio of administrative to service staff	2.619
Office practices	
Counselors have 26 exit performance requirements	2.430
Environmental factors	
Population characteristics	
High school or greater	42.548
Urban	0.419
Rural	0.403
Suburban	1.583
Employment environment	
Working in service occupations	0.221
Community resources	
Transportation available	0.620
Mental health counseling available	1.221
Higher education available	1.341
Comprehensive rehabilitation facility in state	2.896
Comprehensive rehabilitation facility in other state	0.232
PWI available	1.065
JTPA available	0.411
ESC available	1.620
JWOD available	*

*Numbers insufficient to support analysis.

Table A-6. (*continued*)

Variables	Competitive employment odds ratios
Consumer characteristics	
Disability type	
Vision	0.066
Hearing impairment	1.628
Nonorthopedic physical	0.809
Mental illness	0.920
Mental retardation	0.302
Substance abuse	0.916
Learning disability	1.214
Traumatic brain injury	1.757
Other	2.124
Disability characteristics	
Significance	0.462
Financial assistance	
Supplemental Security Income/Social Security Disability Insurance	0.539
Psychosocial characteristics	
Self-esteem	1.085
Work history	
Working at application	1.729
Demographic characteristics	
Number of dependents	1.160
Nonwhite	5.451

Table A-7. Regression Coefficients Predicting Earnings at Closure Using Office Characteristics, Environmental Factors, Consumer Characteristics and Services Received (R^2 = .3761)

Variables	Earnings regression coefficients
Case management services and relationship	
Quality of the consumer-counselor relationship	0.388
IPE amendment	-0.415
Education and employment development services	
Business/vocational training	0.314
Two-year/community college	0.388
Four-year college/university	0.441
Tutoring	-6.265
Work adjustment	-0.385
Mobility-related and other support services	
Tools/uniforms/equipment/stock	0.381
Assistive technology devices	**0.464**
Office characteristics	
Office profile	
Total caseload size	0.297
Ratio of case service funds to caseload size	-1.859
Number of specialized caseloads	-0.158
Ratio of counselors to support staff	-4.136
Ratio of administrative to service staff	-6.990
Office practices	
Counselors have 26 exit performance requirements	5.823
Environmental factors	
Population characteristics	
High school or greater	17.542
Urban	3.159
Rural	2.363
Suburban	1.067
Employment environment	
Working in service occupations	42.262
Community resources	
Transportation available	1.107
Mental health counseling available	-0.650
Higher education available	-0.144
Comprehensive rehabilitation facility in state	-1.854
Comprehensive rehabilitation facility in other state	2.937
PWI available	-1.102
JTPA available	1.890
ESC available	0.595
JWOD available	-4.982

Table A-7. (continued)

Variables	Earnings regression coefficients
Consumer characteristics	
Disability type	
Vision	-1.179
Hearing impairment	-0.277
Nonorthopedic physical	-0.030
Mental illness	-0.063
Mental retardation	-1.942
Substance abuse	-0.326
Learning disability	-1.505
Traumatic brain injury	0.145
Other	-1.589
Disability characteristics	
Significance	0.058
Financial assistance	
Supplemental Security Income/Social Security Disability Insurance	-1.190
Psychosocial characteristics	
Self-esteem	0.782
Work history	
Working at application	0.733
Demographic characteristics	
Number of dependents	0.283
Nonwhite	8.571

Table A-8. Odds Ratios Predicting Receipt of Health Benefits at Closure Using Office Characteristics, Environmental Factors, Consumer Characteristics and Services Received (R^2 = .3761)

Variables	Health benefits odds ratios
Education and employment development services	
Business/vocational training	1.232
Two-year/community college	1.120
Four-year college/university	1.215
Mobility-related and other support services	
Independent living services	0.411
Maintenance payments	1.210
Medical and psychosocial services	
Medical services	0.887
Office characteristics	
Office profile	
Total caseload size	1.745
Ratio of case service funds to caseload size	1.970
Number of specialized caseloads	0.969
Ratio of counselors to support staff	1.452
Ratio of administrative to service staff	7.309
Office practices	
Counselors have 26 exit performance requirements	0.893
Environmental factors	
Population characteristics	
High school or greater	0.506
Urban	0.342
Rural	0.746
Suburban	12.334
Employment environment	
Working in service occupations	<0.001
Community resources	
Transportation available	0.798
Mental health counseling available	0.358
Higher education available	2.501
Comprehensive rehabilitation facility in state	1.040
Comprehensive rehabilitation facility in other state	2.432
PWI available	0.449
JTPA available	1.028
ESC available	0.497
JWOD available	*

*Numbers insufficient to support analysis.

Table A-8. (*continued*)

Variables	Health benefits odds ratios
Consumer characteristics	
Disability type	
Vision	0.792
Hearing impairment	1.604
Nonorthopedic physical	0.760
Mental illness	0.626
Mental retardation	0.256
Substance abuse	0.678
Learning disability	1.356
Traumatic brain injury	0.738
Other	0.417
Disability characteristics	
Significance	0.939
Financial assistance	
Supplemental Security Income/Social Security Disability Insurance	0.558
Psychosocial characteristics	
Self-esteem	1.211
Work history	
Working at application	1.434
Demographic characteristics	
Number of dependents	1.068
Nonwhite	773.320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