A Selected Look at the Literature Base on Vocational Rehabilitation and Implications for Future Research

May 2010

Report by
Institute for Community Inclusion
University of Massachusetts Boston

100 Morrissey Boulevard
Boston, Massachusetts 02125
www.communityinclusion.org
www.facebook.com/communityinclusion
ACKNOWLEDGEMENTS

This review was conducted as part of the Rehabilitation Research and Training Center on Vocational Rehabilitation (VR-RRTC), an initiative run by the Institute for Community Inclusion (ICI) at the University of Massachusetts Boston (UMB). The VR-RRTC is jointly funded by the National Institute on Disability and Rehabilitation Research (NIDRR) and the Rehabilitation Services Administration (RSA).

The Review Team would like to thank the members of the Advisory Board specifically recruited for this study for their input on important stages of this research. Advisory Board members included: Michael J. Leahy, Ph.D., Professor and Director of the Office of Rehabilitation and Disability Studies, Department of Counseling, Educational Psychology and Special Education, College of Education, Michigan State University; Barbara G. Elliott, Senior Researcher at the Research Triangle Institute (RTI) International; and John Harper, Assistant Director of Mental Health Services and Data Reporting at the Missouri Division of Vocational Rehabilitation. The Review Team is grateful to senior research and program-management staff at the ICI, specifically Susan M. Foley, Ph.D., Principal Investigator of the VR-RRTC; John Halliday, Joseph Marrone, and William Kiernan, Ph.D.; and senior researchers from InfoUse, specifically Susan Stoddard, Ph.D., and Lita Jans, Ph.D., for their input during the implementation of this research and their feedback on early drafts of this report. The Review Team also thanks the Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre) at the Social Science Research Unit, Institute of Education, University of London, for their support and technical assistance with using the EPPI-Reviewer application in this research. Finally, we thank Anya Weber and David Temelini at the ICI, who helped with editing and designing this report.

The opinions contained in this report are those of the review team and do not necessarily reflect those of the Advisory Board members, NIDRR, and RSA.

REVIEW TEAM

Heike Boeltzig, Ph.D., Research Associate, Institute for Community Inclusion (ICI) at the University of Massachusetts Boston
Martha Klemm, Research Study Coordinator, ICI/UMass Boston
Allison Fleming, Doctoral Student, Michigan State University
Julisa Cully, Program Manager, ICI/UMass Boston
Paolo Infante, Graduate Student, UMass Boston
Keith Lewandowski, Graduate Student, UMass Boston
Christine Gottshall, Graduate Student, UMass Boston
Kate Szenamici, Graduate Student, UMass Boston
Melissa Manninen Luse, Doctoral Student, Michigan State University
Tina Mullins, Reference Librarian, UMass Boston
TABLE OF CONTENTS

1. Executive Summary 6
2. Study Findings 11
   2.1. Description of Studies Included in the Review 11
       (a) Time Period and Publication Status 11
       (b) Funding Source and Geographic Scope 12
   2.2. Description of Programs and Services Examined in the Studies 14
       (a) Relevance to the VR Program 14
       (b) Funding Source of the Programs and Services 15
       (c) Provider of the Programs and Services 17
       (d) Target Population of the Programs and Services 17
       (e) Types of Programs and Services 20
       (f) Broader Categorization of Programs and Services 20
   2.3. Description of Outcomes Reported in the Studies 22
       (a) Individual Employment and Related Outcomes 22
       (b) Agency and Program Outcomes 24
   2.4. Description of Study Methods Employed in the Studies 26
       (a) Types of Study Designs 26
       (b) Types of Data Sources 29
       (c) Types of Data Collection Methods 29
       (d) Types of Study Participants and Sample Size 30
       (e) Types of Stakeholder Input 32
       (f) Overall Weight of Evidence 33
   2.5. Description of Studies Using an Experimental Research Design 34
       (a) Randomized Control Trial Studies 34
       (b) Quasi-Experimental Studies 36

APPENDICES

A. Study Methods 60
B. Search Strategy – Information Sources 67
C. List of Studies (N=550) Included in the Review 71
D. List of Studies (n=24) Using an Experimental Research Design 112

REFERENCES 114
LIST OF TABLES

Table 1  Number of Studies by Publication Type and Status (N=550)  11
Table 2  Number of Studies Funded by the Federal Government (n=209)  13
Table 3  Number of Studies by Type of “Other” Program/Service Funder (n=55)  16
Table 4  Number of Studies by Type of Population Targeted by the Program/Service Examined (N=550)  18
Table 5  Number and Percent of Studies by Type of Program/Service Examined (N=550)  20
Table 6  Number of Studies by Type of Individual Outcome (n=329)  22
Table 7  Number of Studies by Type of Agency/Program Outcome (n=479)  24
Table 8  Number of Studies of Staff Outcomes by Type of Agency/Program (n=160)  25
Table 9  Number of Studies by Type of Study Design (N=550)  27
Table 10  Number of Studies by Type of Study Design and Time Period (N=550)  27
Table 11  Number of Studies by Type of Data Source (n=226)  29
Table 12  Number of Studies by Type of Data Collection Method (N=550)  30
Table 13  Number of Studies by Type of Data Collection Method and Time Period (N=550)  30
Table 14  Number of Studies by Type of Data Collection Method and Total Number of Study Participants (n=502)  32
Table 15  Randomized Control Trial Studies  39
Table 16  Randomized Control Trial Studies  44
Table 17  Quasi-Experimental Studies  50
Table 18  Quasi-Experimental Studies  55
Table 19  Study Inclusion Criteria  62
Table 20  Study Quality Scores by Coder Type  65

A Selected Look at the Literature Base on Vocational Rehabilitation and Implications for Future Research
VR-RRTC—Institute for Community Inclusion at UMass Boston
LIST OF FIGURES

Figure 1 Number of Studies by Time Period, and Percent of Total Number of Studies \( (N=550) \) 11
Figure 2 Number of Studies by Type of Research Funding Source \( (N=550) \) 12
Figure 3 Number of Studies by Funding Source and Time Period 13
Figure 4 Number of Studies by Geographic Scope \( (N=550) \) 14
Figure 5 Number of Studies by Type of VR Program Component \( (N=550) \) 15
Figure 6 Number of Studies by Type of Program/Service Funding \( (N=550) \) 16
Figure 7 Number of Studies by Type of Program/Service Provider \( (N=550) \) 17
Figure 8 Number of Studies by Type of Disability Targeted by the Program/Service Examined \( (n=159) \) 18
Figure 9 Number of Studies by Type of Special Population Targeted by the Program/Service Examined \( (n=47) \) 19
Figure 10 Number of Studies by Type of Service User Targeted by the Program/Service Examined \( (n=56) \) 19
Figure 11 Number of Studies by Broader Category \( (N=550) \) 21
Figure 12 Number of Studies by Type of Study Participant \( (N=550) \) 31
Figure 13 Number of Studies by Total Number of Study Participants \( (n=501) \) 31
Figure 14 Number of Studies by Type of Stakeholder Input \( (N=550) \) 32
Figure 15 Percent of Studies by Weight of the Evidence \( (N=550) \) 33
# LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2</td>
<td>Campbell Collaboration</td>
</tr>
<tr>
<td>CSAVR</td>
<td>Council of State Administrators of Vocational Rehabilitation</td>
</tr>
<tr>
<td>DD</td>
<td>Developmental Disabilities</td>
</tr>
<tr>
<td>EPPI</td>
<td>Evidence for Policy and Practice Information and Co-ordinating Centre</td>
</tr>
<tr>
<td>ICI</td>
<td>Institute for Community Inclusion</td>
</tr>
<tr>
<td>IDD</td>
<td>Intellectual and Developmental Disabilities</td>
</tr>
<tr>
<td>MH</td>
<td>Mental Health</td>
</tr>
<tr>
<td>MI</td>
<td>Mental Illness</td>
</tr>
<tr>
<td>MR</td>
<td>Mental Retardation</td>
</tr>
<tr>
<td>NIDRR</td>
<td>National Institute on Disability and Rehabilitation Research</td>
</tr>
<tr>
<td>RCT</td>
<td>Randomized Control Trial</td>
</tr>
<tr>
<td>RRTC</td>
<td>Rehabilitation Research and Training Center</td>
</tr>
<tr>
<td>RSA</td>
<td>Rehabilitation Services Administration</td>
</tr>
<tr>
<td>SSI/DI</td>
<td>Social Security Income (SSI)/Disability Insurance (DI)</td>
</tr>
<tr>
<td>UMB</td>
<td>University of Massachusetts Boston</td>
</tr>
<tr>
<td>VR</td>
<td>Vocational Rehabilitation</td>
</tr>
</tbody>
</table>
1. Executive Summary

The National Institute on Disability and Rehabilitation Research (NIDRR) and the Rehabilitation Services Administration (RSA) charged the Rehabilitation Research and Training Center on VR (VR-RRTC) to conduct a systematic review of existing empirical research on VR. The aim of the review was to characterize the public VR program in terms of its programmatic and systemic features, the types of customers served, and the kinds of outcomes achieved as reported in research studies. More broadly, the review aimed to describe the existing VR research base, including gaps in research, and to make recommendations for future research investment.

Researchers identified over 12,000 possibly relevant documents through an extensive search process, and then narrowed the review to 550 studies that best met the review criteria. To be included in the review, studies had to be empirically based (quantitative or qualitative) and produced (published or unpublished) between 1970 and 2008. Empirical research included secondary analysis of RSA databases and other relevant datasets. Excluded from the review were studies that were editorials, commentaries, book reviews, critiques, resource guides and manuals, as well as conceptual and theoretical studies. To be included in the review, studies had to relate to the public VR program in terms of the system, the services it provides, and/or the outcomes it achieves at the individual or agency/program level.

In this review “VR system” referred to the state VR agencies that implement the public VR program at the state level, and also to any agency (e.g., state mental health agencies, state intellectual and developmental disabilities agencies, workforce development agencies, community rehabilitation providers) that supports them in this effort. “VR services” referred to services provided under Title I and Title VI Part B (Supported Employment) of the Rehabilitation Act of 1973, as amended, although the review primarily focused on employment services. “Individual outcomes” included employment and related outcomes, as well as outcomes related to VR service delivery (such as customer satisfaction). “Agency or program outcomes” included effectiveness, efficiency, cooperation between agencies or programs, and outcomes related to staffing.

Furthermore, to be included in the review studies had to focus on working-age adults with disabilities (aged 22 and older). Studies that focused on transition-age youth (aged 21 and younger) were excluded from this review (unless they also looked at working-age adults and met all the other criteria). Given these selection criteria, the study reviewed a subset of the VR literature base. Therefore, the findings of this review are limited to the 550 studies included in this review and cannot be generalized to the broader literature base on VR. (A detailed description of the study methods used in this review is included in Appendix A, starting on page 61.)

Main Study Findings

Of the 550 studies included in the review, slightly more than two-thirds had been produced in the last two decades, and most studies had been published in the form of peer-reviewed journal articles. More than half of the studies did not report financial support. Of those studies that provided this information, most had been funded by the federal government, including 101 studies funded by NIDRR and 15 studies funded by the National Institute of Handicapped Research (NIHR, which became NIDDR). More studies reported the federal government as a funder between 2001 and 2008 than in previous decades. The studies also differed with respect to their geographic scope. The largest number of studies had been conducted at the state level, followed by the national, local, and regional levels.

As expected in a sample of studies related to VR, the largest number pertained to the VR service delivery process, closely followed by studies on VR performance, and studies on VR structure. Similarly, most studies examined
programs or services funded by VR, although some (less than ten percent) focused on programs or services that VR funded in partnership with other entities and sources, such as the Social Security Administration, mental health agencies, and programs and services supported with Workforce Investment Act funds.

Reviewers examined the target populations of the programs and services that were the focus of the studies included in this review. The majority of the studies examined programs or services targeted at the VR population in general; however, forty percent focused on programs or services targeted at sub-populations, such as people with particular types of disabilities, other special populations, and individuals who receive disability benefits or specialized services. The top three disability groups included people with mental illness/emotional problems, people with visual impairments, and people with mental retardation/developmental disabilities. The top three special populations were ethnic and racial minorities, persons with low income, and older people. With respect to service users/benefit recipients, the three main groups included people receiving supported employment services, people receiving public benefits (such as Social Security or welfare), and people receiving services under the Workforce Investment Act.

Within the sample of VR-related studies, almost seventy percent examined VR services in general, followed by studies focusing on “other” types of programs and services, and studies examining employment and job-related services. Researchers used a pre-defined list of programs and services to review the sample of studies with respect to the types of programs and services examined. This list was based on Title I and Title VI Part B (Supported Employment) of the Rehabilitation Act, as amended. Due to the large number of programs and services and the significant overlap of those within the sample, reviewers created four general categories to describe the studies. These categories were Employment, Health, Independent Living, and Policy and Administrative Action. In addition to the expected focus on employment (513 studies), 18 studies focused on health, 37 on independent living, and 55 on policy and administrative action. (Note that a study could belong to more than one category.)

The majority of VR-related studies reported on at least one agency- or program-level outcome, and almost sixty percent reported on at least one individual-level outcome. Effectiveness (examining how well a particular program or service worked in terms of the desired outcome) was the most commonly reported agency or program outcome. This was followed by efficiency (examining the outcomes of a particular program or service in relation to cost, speed, resources invested, etc.) and staff capacity (examining staff knowledge; improving staff attitudes). Studies reporting on outcomes related to agency/program cooperation (examining agencies and programs jointly working towards a common goal) accounted for slightly more than thirteen percent of all studies reporting on agency or program outcomes. In terms of individual outcomes, type of employment (such as integrated and non-integrated employment, self-employment and business ownership) was the most commonly reported outcome, followed by wages and “other” individual employment and related outcomes (such as service access and use, quality of life, social participation, and peer assistance).

The most common type of research design was secondary data analysis, relying mostly on RSA data, followed by cross-sectional study and case study designs. (Cross-sectional studies referred to studies that collected and analyzed data over a whole population.) Less than five percent of the studies included in this review used experimental or quasi-experimental designs. Slightly more than fifteen percent of the studies were classified as using more than one study design. When examining study design choices over time, reviewers found that more studies reported using a secondary data analysis design between 2001 and 2008 than in previous decades. With respect to data sources, studies that employed a secondary data analysis most commonly relied on RSA data, followed by studies using case data from state VR agencies.

A small number of studies (24) used some type of experimental design, indicating a limited evidence base. This included 11 randomized control trial (RCT) studies and 13 quasi-experimental studies. In the hierarchy of research
designs, RCTs are thought of as the “gold standard” in terms of producing high-quality evidence of the effectiveness of a particular intervention. Following RCT designs are quasi-experimental designs and other types of group comparison designs. The RCT and quasi-experimental studies included in this review provided some indication of the potential effectiveness of the interventions they studied. However, given the methodological limitations found across these studies (small sample, sampling issues, attrition, lack of treatment fidelity), more replication and expansion is needed to solidify and build on these findings.

The most common method of data collection was quantitative survey, followed by secondary data analysis and qualitative interviews. (Note that secondary data analysis was used in this review both as a type of research design and as a type of data collection method.) Slightly more than twenty percent of studies were classified as using more than one data collection method, with quantitative survey/secondary data analysis being the most common combination. Moreover, most studies employed a large number of participants (1,001+), which is not surprising given the type of data collection methods used (mostly quantitative survey and secondary data analysis).

Reviewers also examined the use of data collection methods over time and found that more studies reported using secondary data analysis between 2001 and 2008 than in previous decades, which is consistent with the findings on choice of research design.

Reviewers scored almost half of the studies in this review as “high” with respect to the overall quality of the study methods. The sample of studies in this review was also examined to determine the overall weight of the evidence. The quality score was calculated by aggregating several components as reported in the study. These included: appropriate choice of research design, attempts to establish the reliability and validity of data collection tools and data analysis, ability to rule out sources of error or bias that might lead to alternative explanations for the findings, generalizability of the findings, and trustworthiness of the conclusions. The weight of evidence determination does not represent a judgment of the rigor or quality of the research itself. It is only an indicator of the degree to which the research was reported in the study.

Discussion, Implications, and Conclusions

Findings indicate that the subset of VR literature reviewed in this study focused on multiple topics, populations, and outcomes. The study selection criteria and the approach used for reviewing studies did not allow researchers to identify linearity or progression of research on a particular topic, and this was not the goal of the review. The finding that the VR literature base is varied may be related to the nature of the field itself, and is consistent with conclusions of previous studies that have stressed the need for more replication and expansion as a way to build a knowledge base in rehabilitation research that can better inform policy and practice (Saunders, Leahy, McGlynn, & Estrada-Hernandez, 2006).

Findings show that the studies included in this review were of high quality (overall weight of evidence) but very reliant on administrative data, particularly RSA 911 data, as well as surveys. (Note that the use of RSA 911 data was a study inclusion criterion in this review.) Compared to other employment programs (e.g., Workforce Investment Act Adult and Dislocated Worker Programs, Wagner-Peyser/Labor Exchange Programs), VR collects the most detailed information about individuals with disabilities served. VR agency data are combined into a national dataset that provides a unique opportunity or “window” to examine the program nationally. Despite these advantages, there are several limitations of using RSA data for research purposes. For example, RSA data provide information about the services a person received from VR but not about the intensity of, quality of, or the person’s satisfaction with the services.

There are also issues related to race and disability classification that are difficult to compare to other sources of information. This is due to discrepancies in definitions and to the limited information available about the
reliability, accuracy, and validity of some variables employed by researchers. Administrative data are not collected specifically for the purpose of research, but the VR research community is heavily utilizing the RSA 911 data without much knowledge of these critical concerns. There is considerable discussion underway about the use of RSA 911 data for purposes other than administrative ones. Additionally, it is difficult to use the RSA 911 data to investigate the effects of policy change (such as Order of Selection policy) because the dataset contains an exit cohort. Therefore, in a given year, the RSA 911 data will include individuals who entered in different years, and will have been impacted differently by any policy changes.

In terms of the larger research agenda, it is useful to begin to answer some questions about the use of variables from RSA 911 data. This should be in concert with costs of collecting data incurred by the VR agencies. However, at some point other sources of information also should be explored. Bruyere and Houtenville (2006) reviewed several data sources, including RSA. They identified datasets other than RSA that have great potential but are underused, such as Social Security data, Census data, and SSA-RSA DataLink. Some studies included in this review combined RSA data with other sources of information, such as qualitative interviews, focus groups, or participant observation. Future research could continue this trend and meld qualitative approaches with quantitative analysis. Additionally, researchers could place more emphasis on participatory action research and similar approaches as is consistent with the rehabilitation philosophy (Balcazar, Keys, Kaplan, & Suarez-Balcazar, 1998).

Furthermore, the review found that only a small number of studies employed some type of experimental design, suggesting a limited evidence base. This may, in part, be related to the difficulty of implementing such rigorous designs in social programs (cf. General Accountability Office [GAO], 2009), such as the VR program that provides highly individualized service delivery to individuals with multiple support needs, and where randomization creates practical and ethical dilemmas. This situation is compounded by state differences in VR program implementation and the local labor market and economy. Johnston et al. (2009) also discussed the challenges of melding the evidence-based practice movement with the realities of rehabilitation and disability research. Some of the issues identified by the authors include the “great breadth and complexity” of disability and rehabilitation research, the ethical challenges inherent in using a control group, the emphasis placed on empowerment of persons with disabilities in research, small sample sizes, and other issues that made designing a strictly controlled study in some cases not feasible. Even in cases where it is possible to implement such designs, they may not yield the most useful information. As stated by the GAO,

...the evaluation literature cautions that as social interventions become more complex, representing a diverse set of local applications of a broad policy rather than a common set of activities, randomized experiments may become less informative. ...aggregating results over substantial variability in what the intervention entails may end up providing little guidance of what, exactly, works. (Ibid., pp. 25–26)

The GAO (2009) discusses other limitations of RCTs: (a) whether interventions studied under highly controlled conditions will have the same level of effectiveness when utilized in real-life settings, especially given the homogeneity and variation of both customers and environments found within the VR population (p. 30); (b) risk of overlooking practices with great potential by solely relying on evidence from randomized experiments (p. 31); (c) time, resources, and funding needed to establish an evidence base. The issue of portability and practical application is especially pertinent for the VR system.

Findings also raise questions about what level of uncertainty the VR field can tolerate in terms of its knowledge base, considering that the urgency and necessity of developing evidence-based practices has not been as intense as in the medical field, for example. The GAO report (2009) suggests alternatives to RCTs that might be equally rigorous, including: quasi-experimental comparison group designs, statistical analyses of observational data, and
in-depth case studies. Additionally, the GAO report (2009) identifies features to strengthen effectiveness evaluations, such as collecting additional data, targeting comparisons, and using blended designs.

Put in a VR context, it is easier to understand the limited number of studies utilizing strict RCT practices, in contrast to the medical field, where these kinds of studies are much more common. However, this does not mean that rehabilitation and disability researchers should not continue to focus on producing quality research that demonstrates effectiveness of practices to better serve persons with disabilities. Johnston et al. (2009) suggest that rehabilitation researchers find guidance on these challenges by looking to similar fields that have utilized RCT more commonly. They also suggest using the most rigorous research methods available (i.e., quasi-experimental studies, RCT when appropriate) to answer questions that are relevant to persons with disabilities and rehabilitation practitioners both now and in the coming years.

The following report is an effort at systematically reviewing empirical research on VR with implications for future research. Reviewers identified relevant studies and screened according to the stated selection criteria. Apart from the selection criteria, a few limitations should be kept in mind when reading what follows. Studies were reviewed using a specific coding tool. This was the primary method of information gathering from the studies, and the reviewers mostly used this information for synthesizing the findings. In addition, research staff reviewing the studies trained together, and work was monitored for quality. However, each reviewer had a different level of research experience, and some individual differences may impact the way studies were screened for inclusion in the review and coded.

Overall, it appears that the VR research base is highly varied and spans across research designs and data collection methods, sample sizes, and participant characteristics. It also varies in terms of the research focus with respect to programs, services, and the agency itself. The evidence-based practice movement in the social sciences is increasingly requiring a certain level of evidence using methodology that has not been widely utilized in VR (or rehabilitation and disability) research up to this point. After taking a selected look at the VR literature base developed over the past four decades, we observed that most research was of merit in quality and had significant breadth, at least touching on the full range of VR populations, issues, and services. Yet this breadth is also a weakness, as there is limited depth of knowledge to support a “what works” analysis of any given practice, process, or strategy. There is a very limited knowledge base to draw upon. We echo the conclusion of others that replication is needed, and add that NIDRR should work with its VR partners to determine what questions are important to ask and to build a knowledge base with more depth.

Given this conclusion, this report describes the nature of the research literature base rather than listing processes, practices, and strategies that can be termed effective. We think that an effort to list effective practices could mislead practitioners into adopting what they might interpret as best practices, even if evidence is lacking or inconclusive. Prior to translating research into practice, the VR community of researchers and practitioners must identify critical areas of need, invest in those areas, and seek to create knowledge that results in adopted best practices.
2. Study Findings

2.1. Description of Studies Included in the Review

This section describes the studies included in the review (N=550) in terms of the time period when they were produced, publication status, funding source, and geographic scope.

(a) Time Period and Publication Status

Of all the studies included in the sample, slightly more than two-thirds had been produced in the last two decades (see Figure 1). For 13 studies (2.4%) there was no information on when they had been produced. Data indicate an increase of empirical work over the last four decades.

Figure 1. Number of Studies by Time Period, and Percent of Total Number of Studies (N=550)

The majority of studies had been published in the form of peer-reviewed journal articles (see Table 1 below). The sample of studies consisted of 486 published studies (88.4%) and 60 unpublished studies (10.9%). The publication status for four studies (0.7%) was unknown. The majority of published studies were journal articles (n=380), whereas most of the unpublished studies were Doctoral dissertations and Master’s theses (n=58).

Table 1. Number of Studies by Publication Type and Status (N=550)

<table>
<thead>
<tr>
<th>Publication Type</th>
<th>Published (n=486)</th>
<th>Unpublished (n=60)</th>
<th>Unknown (n=4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal Article</td>
<td>380</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Report</td>
<td>94</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Conference Paper</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Book/Book Chapter</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dissertation/Thesis</td>
<td>2</td>
<td>58</td>
<td>0</td>
</tr>
</tbody>
</table>
(b) Funding Source and Geographic Scope

More than half of the studies \((n=304)\) did not report financial support (see Figure 2 on page 12). Of those that reported financial support \((n=246)\), most had been funded by the federal government \((n=209)\), including 101 studies funded by NIDRR and 15 studies funded by the National Institute of Handicapped Research (NIHR, which became NIDRR). Twelve studies \((4.9\% \text{ of } 246)\) reported financial support from more than one source.

Within the “federal government” category, there were several agencies and programs that sponsored research, with the Department of Education supporting the most studies within the sample. Other sources of federal funding are displayed in Table 2 on page 13. It should be noted that over the time period of interest \((1970–2008)\), some organizations had been restructured or re-named. Most notably, in 1979, the Department of Health, Education, and Welfare was divided into the Department of Education (DOE) and the Department of Health and Human Services (DHHS). In 1986, the National Institute of Handicapped Research (NIHR) was renamed the National Institute of Disability and Rehabilitation Research (NIDRR). Within these larger departments, several agencies that support research exist (see Table 2 on page 13).

**Figure 2. Number of Studies by Type of Research Funding Source \((N=550)\)**

<table>
<thead>
<tr>
<th>Type of Funding Source</th>
<th>Number of Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>304</td>
</tr>
<tr>
<td>Federal Government</td>
<td>209</td>
</tr>
<tr>
<td>State Government</td>
<td>27</td>
</tr>
<tr>
<td>Other Funding Source</td>
<td>16</td>
</tr>
<tr>
<td>Corporate Entities</td>
<td>3</td>
</tr>
<tr>
<td>Foundations</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 550 because a study could report more than one funding source.
Table 2. Number of Studies Funded by the Federal Government (n=209)

<table>
<thead>
<tr>
<th>Federal Funding Source</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Education, DOE (n=164)</td>
<td>15</td>
</tr>
<tr>
<td>• Office of Special Education and Rehabilitation Services, OSERS</td>
<td>10</td>
</tr>
<tr>
<td>• Rehabilitation Services Administration, RSA</td>
<td>23</td>
</tr>
<tr>
<td>• National Institute of Disability and Rehabilitation Research, NIDRR</td>
<td>101</td>
</tr>
<tr>
<td>• National Institute of Handicapped Research, NIHR</td>
<td>15</td>
</tr>
<tr>
<td>Department of Health and Human Services, DHHS (n=24)</td>
<td>3</td>
</tr>
<tr>
<td>• Administration for Children and Families, ACF (includes Administration on Developmental Disability, ADD)</td>
<td>12</td>
</tr>
<tr>
<td>• National Institute of Health, NIH</td>
<td>3</td>
</tr>
<tr>
<td>• National Institute of Mental Health, NIMH</td>
<td>3</td>
</tr>
<tr>
<td>• Substance Abuse and Mental Health Services Administration, SAMHSA</td>
<td>3</td>
</tr>
<tr>
<td>Government Accountability Office, GAO</td>
<td>13</td>
</tr>
<tr>
<td>Department of Health, Education, and Welfare</td>
<td>10</td>
</tr>
<tr>
<td>Department of Labor, DOL (including the Office of Disability and Employment Policy, ODEP)</td>
<td>6</td>
</tr>
<tr>
<td>Social Security Administration, SSA</td>
<td>3</td>
</tr>
<tr>
<td>National Occupational Information Coordinating Committee, NOICC</td>
<td>1</td>
</tr>
<tr>
<td>Federal Government, not otherwise specified</td>
<td>10</td>
</tr>
</tbody>
</table>

Note: The number of studies adds up to more than 209 because a study could report more than one funding source.

More studies reported the federal government as funder between 2001 and 2008 than in previous decades (see Figure 3). The number of studies funded by the federal government increased over the last four decades, from 18 studies (29.5% of 61) in 1970–1980 to 95 studies (46.6% of 204) in 2001–2008. Studies that did not report financial support, labeled as “unknown,” made up the largest part of all studies in each decade, although between 2001 and 2008 the number of studies with no funding information and studies funded by the federal government was nearly equivalent.

Figure 3. Number of Studies by Research Funding Source and Time Period (N=550)

Note: The number of studies adds up to more than 550 because a study could report more than one funding source.
The studies included in this review also differed with respect to their geographic scope (see Figure 4). The largest number of studies had been conducted at the state level \((n=242, 44.0\%\) of 550), followed by the national level \((n=195, 35.5\%\), and the local level \((n=76, 13.8\%\). In this review, “state level” included both single state as well as multi-state levels. “Multi-state” referred to samples that included multiple states that were not located within the same region. Native American reservations were categorized in this review as “national level.” Only a small number of studies were regional in their geographic scope \((n=27, 4.9\%\). “Regional level” in this review referred to a grouping of states within the same geographic area (such as New England).

**Figure 4. Number of Studies by Geographic Scope (N=550)**

![Bar chart showing the number of studies by geographic scope](image)

*Note. The number of studies adds up to more than 550 because a study could have been carried out at more than one geographic level.*

### 2.2. Description of Programs and Services Examined in the Studies

This section focuses on programs and services (or interventions) that were the focus of the studies included in the review \((N=550\). Specifically, the section describes the studies in terms of their relevance to the VR program, and types of programs and services examined, including funding source, provider, and target population. The latter part of this section groups the studies into broader categories of programs and services.

(a) **Relevance to the VR Program**

As expected in a sample of studies related to VR, the largest number pertained to the VR service delivery process \((n=311, 56.5\%\) of 550), followed by VR performance \((n=277, 50.4\%\) and VR structure \((n=167, 30.4\%\) (see Figure 5 on page 15). These findings are not surprising given the criteria used to select studies for inclusion in this review.

Researchers reviewed the sample of 550 studies to determine their relevance to various components of the VR program. These components included: VR structure, VR service delivery process, VR partnership with other programs or organizations, and VR performance. “VR structure” included studies that looked at agency structure, infrastructure, human resources (staffing issues, staff development issues), policy, and administrative practices. “VR service delivery process” included studies that looked at the services themselves; including particular groups
receiving or not receiving particular services, involving customers or family members in planning services, or having case-processing issues. “VR partnership” included studies that looked at VR collaborating with other organizations (such as One-Stop Career Centers, community rehabilitation organizations). Examples of collaborations included shared funding and shared service delivery. “VR performance” included studies that looked at outcomes, including success of services (i.e., persons employed) and economic benefits of the services (e.g., cost-benefit, economic impact).

Reviewers added one more category, “other components,” to capture studies that related to services, but did not involve VR directly. These were mostly studies that examined structures and processes of other organizations or programs, which included or linked to VR in some way. For example, one study evaluated potential barriers to supported employment for persons with severe disabilities (McGaughey, Kiernan, McNally, & Cooperman, 1991). This study followed 45 supported employment providers, including VR. Note that studies could relate to more than one VR program component.

Figure 5. Number of Studies by Type of VR Program Component (N=550)

![Graph showing the number of studies by type of VR program component](image)

Note. The number of studies adds up to more than 550 because a study could be relevant to more than one VR program component.

(b) Funding Sources of the Programs and Services

Not surprisingly, the majority of studies examined VR-funded programs or services (n=470, 85.5% of 550), although some focused on programs or services funded in partnership with VR (n=47, 8.5%) (see Figure 6 on page 16). Twenty-four studies (4.4%) did not state or were unclear about program or service funding. Fifty-five studies (10.0%) examined programs and services funded by other sources, including the Social Security Administration, mental health agencies, and the federal government. For example, Gervey, Ratemo, Halper, Brucker, and Berkowitz, (2007) tested and evaluated an assertive outreach approach (including phone calls, follow-up information, and face-to-face meetings). This was an effort to increase use of the Ticket to Work program and One-Stop Career Center services by Social Security beneficiaries, with VR being a provider under the Ticket to Work program (VR staff were also involved in implementing the outreach effort). These studies had a VR focus or were closely related to VR services, thus making them eligible for this review. Table 3 on page 16 shows the distribution of the remaining studies within the “other” funding source category.
Figure 6. Number of Studies by Type of Program/Service Funding (N=550)

Note: The number of studies adds up to more than 550 because a study could report more than one program/service funding source.

Table 3. Number of Studies by Type of “Other” Program/Service Funder (n=55)

<table>
<thead>
<tr>
<th>Program/Service Funder</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Security Administration (SSA)</td>
<td>12</td>
</tr>
<tr>
<td>Mental Health Agency</td>
<td>11</td>
</tr>
<tr>
<td>Workforce Investment Act (WIA)</td>
<td>9</td>
</tr>
<tr>
<td>Federal Government</td>
<td>7</td>
</tr>
<tr>
<td>Industry Funding</td>
<td>6</td>
</tr>
<tr>
<td>Developmental Services</td>
<td>5</td>
</tr>
<tr>
<td>Private Sector Rehabilitation</td>
<td>4</td>
</tr>
<tr>
<td>Economic Development/Small Business Development</td>
<td>3</td>
</tr>
<tr>
<td>Worker’s Compensation</td>
<td>3</td>
</tr>
<tr>
<td>Other Program/Service Funder</td>
<td>3</td>
</tr>
<tr>
<td>State and Local Government</td>
<td>3</td>
</tr>
<tr>
<td>Welfare</td>
<td>3</td>
</tr>
<tr>
<td>School Funding</td>
<td>3</td>
</tr>
<tr>
<td>Projects With Industry (PWI)</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: The number of studies adds up to more than 55 because a study could report more than one program/service funding source.
(c) Provider of the Programs and Services

As expected in a sample of VR-related studies, most examined programs and services provided by VR only \((n=416, 75.6\% \text{ of } 550)\), although some focused on programs or services that VR funded in partnership with other organizations \((n=101, 18.4\% \text{ (see Figure 7)})\). This group was examined in more detail to determine patterns in combinations of providers. Within the “multiple providers” category, VR was involved in 93 provider combinations, including partnerships with community rehabilitation providers, mental health agencies, and other disability-service organizations. For example, Hanrahan, Heiser, Cooper, Oulvey, and Luchins (2006) surveyed rehabilitation counselors and mental health practitioners on the collaboration between their agencies as operationalized by referrals sent, referrals received, and persons employed. Studies in the “other agency only” category targeted service providers that were related to VR in some way, but looked at services that were not provided by the VR agency itself. For example, Campbell and O’Toole (1975) studied work adjustment at a rehabilitation facility funded by VR using surveys, interviews, and participant observation. Bishop and Degeneffne (2003) studied practices and policies of job developers in rehabilitation programs receiving funding from VR using survey methods. Within the “other agency only” category, the majority of providers represented were supported employment programs and One-Stop Career Centers.

Figure 7. Number of Studies by Type of Program/Service Provider \((N=550)\)

![Bar chart showing the number of studies by type of program/service provider.]

Note. The number of studies adds up to more than 550 because a study could report on more than one program/service provider.

(d) Target Population of the Programs and Services

Reviewers also examined the target populations of the programs and services that were the focus of the studies included in this review. The majority studies \((n=353, 64.2\% \text{ of } 550)\) examined programs and services targeting the VR population in general. Forty percent of studies focused on programs or services targeted at sub-populations of VR \((n=220, 40.0\% \text{ of } 550)\), such as people with particular types of disabilities, other special populations, and individuals who receive disability benefits or specialized services (see Table 4 on page 18). Figures 8 through 10 (pages 18 and 19) provide more information about who is represented in those groups. Twenty-six studies focused on programs and services targeting other populations. This mainly included customers of other employment...
services such as One-Stop Career Center customers, customers of state IDD agencies, and individuals in sheltered employment.

**Table 4. Number of Studies by Type of Population Targeted by the Program/Service Examined (N=550)**

<table>
<thead>
<tr>
<th>Population</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR Population in General</td>
<td>353</td>
</tr>
<tr>
<td>Sub-Population</td>
<td>220</td>
</tr>
<tr>
<td>• Disability Types</td>
<td>155</td>
</tr>
<tr>
<td>• Service User Types</td>
<td>38</td>
</tr>
<tr>
<td>• Special Populations</td>
<td>36</td>
</tr>
<tr>
<td>Other Population</td>
<td>26</td>
</tr>
</tbody>
</table>

*Note. The number of studies adds up to more than 550 because a study could examine a program/service targeted at more than one population.*

**Figure 8. Number of Studies by Type of Disability Targeted by the Program/Service Examined (n=158)**

Note. The number of studies adds up to more than 158 because a study could examine a program/service targeted at more than one disability type. Because of the time frame covered by this review (1970–2008), reviewers use the term "Mental Retardation." This has more recently been replaced by the term "Intellectual and Developmental Disabilities" (IDD).
Figure 9. Number of Studies by Type of Special Population Targeted by the Program/Service Examined (n=38)

Note. The number of studies adds up to more than 38 because a study could examine a program/service targeted at more than one type of special population.

Figure 10. Number of Studies by Type of Service User/Benefit Recipient Targeted by the Program/Service Examined (n=56)

Note. The number of studies adds up to more than 56 because a study could examine a program/service targeted at more than one type of service user/benefit recipient.
(e) Types of Programs and Services

Researchers used a pre-defined list of programs and services, based on those found in Title I and Title VI Part B (Supported Employment) of the Rehabilitation Act of 1973, as amended, to review the sample of studies with respect to the types of programs and services that these studies examined. Almost seventy percent examined VR services in general (n=380, 69.1%), followed by studies focusing on other types of programs and services (n=148, 26.9%), and studies examining employment/job-related services (n=71, 12.9%) (see Table 5). This is not surprising given the criteria used to select studies for inclusion in this review. Examples of other types of programs and services that studies examined were One-Stop Career Centers (n=17), vocational evaluation services (n=7), and the Ticket to Work program (n=6). For example, Bader (2003) studied core services offered by One-Stop Career Center partners, including VR, and their impact on job seekers with disabilities, using qualitative research. Brown, McDaniel, and King (1995) studied the role of vocational evaluation in the VR process by surveying vocational evaluators to find out whether there were differences in time needed for the evaluation and recommendations based on referral source and disability type.

Table 5. Number and Percent of Studies by Type of Program/Service Examined (N=550)

<table>
<thead>
<tr>
<th>Program/Service</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR Services in General</td>
<td>380</td>
</tr>
<tr>
<td>Other Program/Service</td>
<td>148</td>
</tr>
<tr>
<td>Employment/Job-Related Services</td>
<td></td>
</tr>
<tr>
<td>Including Job Search and Placement, Retention and Follow-Up</td>
<td>71</td>
</tr>
<tr>
<td>Vocational and Training Services</td>
<td></td>
</tr>
<tr>
<td>Including Provision of Training Materials</td>
<td>37</td>
</tr>
<tr>
<td>Supported Employment Services</td>
<td>36</td>
</tr>
<tr>
<td>Counseling and Guidance Services</td>
<td>32</td>
</tr>
<tr>
<td>Assessment Services for Determining VR Program Eligibility</td>
<td>24</td>
</tr>
<tr>
<td>Education Services</td>
<td>21</td>
</tr>
<tr>
<td>Transportation Services</td>
<td>20</td>
</tr>
<tr>
<td>Rehabilitation Technology Services</td>
<td>13</td>
</tr>
<tr>
<td>Referral Services</td>
<td>10</td>
</tr>
<tr>
<td>Treatment of Physical or Mental Impairments</td>
<td>10</td>
</tr>
<tr>
<td>Assistance with Living Expenses</td>
<td>7</td>
</tr>
<tr>
<td>Interpreter Services</td>
<td>2</td>
</tr>
<tr>
<td>Transition Services for Students with Disabilities</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 550 because a study could examine more than one type of program/service.

(f) Broader Categorization of Programs and Services

Due to the large number of programs and services examined by the studies in the sample and their significant overlap, reviewers created four categories based on overarching commonalities between the original program and service categories. The four categories included: Employment, Health, Independent Living, and Policy and Administrative Action. Each category is briefly described next.

The Employment category included: VR services in general, assessment services for determining VR program eligibility, counseling and guidance services, vocational and training services including provision of training materials, employment/job-related services including job search and placement, retention and follow up, supported employment services, and studies within the “other” programs and services and referral categories that were appropriate.
The category *Health* included studies that had health or health-related services as a main focus. Researchers combined studies on treatment of physical or mental impairments with studies on “other” programs and services and referral services that fit this new grouping.

The *Independent Living* category was created to include studies that related to services that improved the ability of the individual to live independently. This included: assistance with living expenses, transportation services, interpreter services, and rehabilitation technology services. Studies on “other” program and services were also examined for inclusion.

A significant portion of studies on “other” programs and services focused on either policies or administrative actions that impact service provision. For example, St. Clair (2000) investigated the practice of streamlining in VR agencies through surveying the Regional RSA training center directors. A new category, *Policy and Administrative Action*, was created to reflect this pattern. Studies on referral services that also fit this definition were included in this category as well.

The review found that, in addition to the expected focus on employment (n=513, 93.3% of 550), 18 studies focused on health, 37 on independent living, and 55 on policy and administrative action (see Figure 11). Note that a study could belong to more than one category.

*Figure 11. Number Studies by Broader Category (N=550)*

![Bar chart illustrating the number of studies by category.]

*Note.* The number of studies adds up to more than 550 because a study could examine a program/service that fitted in more than one category.
2.3. Description of Outcomes Reported in the Studies

This section describes the studies included in this review (N=550) in terms of the types of outcomes that they reported on. This included individual employment and related outcomes, and agency or program outcomes.

(a) Individual Employment and Related Outcomes

Of the total sample of VR-related studies, almost sixty percent (n=329) reported one or more individual outcome. Given the selection criteria of the studies, it is not surprising that most individual-level outcomes had to do with employment. However, reviewers chose to also focus on other outcomes related to employment. (See Textbox on page 23 for a list of definitions of these outcomes.) Type of employment was the most frequently reported outcome (n=201), followed by wages (n=110), and “other” individual outcomes (n=81) (see Table 6). Studies reporting on individual views of service delivery/customer satisfaction accounted for 70 studies in the sample, whereas 47 studies reported on self-sufficiency. “Other” individual outcomes related to service access and utilization (n=63), quality of life (n=5), social participation (n=3), and peer assistance (n=2). An example of a study looking at service access and utilization is Bolton, Bellini, and Neath (1996), in which researchers investigated the impact of personal history of customers on how counselors rated their functional limitations using validated instruments. Gilmore and Bose (2005) used RSA 911 and other data sets to study trends in participation in postsecondary education, comparing people with disabilities and the general population without disabilities. Note that studies could report more than one individual-level outcome.

Table 6. Number of Studies by Type of Individual Outcome (n=329)

<table>
<thead>
<tr>
<th>Individual Outcome</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Employment</td>
<td>201</td>
</tr>
<tr>
<td>Wages</td>
<td>110</td>
</tr>
<tr>
<td>Other Individual Outcome</td>
<td>81</td>
</tr>
<tr>
<td>Individual Views of Service Delivery/Customer Satisfaction</td>
<td>70</td>
</tr>
<tr>
<td>Self Sufficiency</td>
<td>47</td>
</tr>
<tr>
<td>Type of Occupation</td>
<td>41</td>
</tr>
<tr>
<td>Job Retention</td>
<td>36</td>
</tr>
<tr>
<td>Working Hours</td>
<td>35</td>
</tr>
<tr>
<td>Job Satisfaction</td>
<td>13</td>
</tr>
<tr>
<td>Health Status</td>
<td>12</td>
</tr>
<tr>
<td>Health Insurance Coverage</td>
<td>10</td>
</tr>
<tr>
<td>Health Management</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 329 because a study could report more than one type of participant outcome.
REVIEW DEFINITIONS OF INDIVIDUAL EMPLOYMENT AND RELATED OUTCOMES

TYPE OF EMPLOYMENT – examining any of the following types of employment:
• Employment in an integrated setting with no or time-limited job-related supports (competitive employment)
• Employment in an integrated setting with ongoing job-related supports (e.g., individual supported employment)
• Employment in a non-integrated setting (sheltered workshops)
• Self-employment/entrepreneurism including home-based employment and small businesses. This includes the Business Enterprise Program (BEP), a state-federal program that establishes small business or vending facility entrepreneurial opportunities for individuals who are legally blind.
• Homemaker or unpaid family worker, i.e., an individual who works without pay in a family business.

TYPE OF OCCUPATION
examining a person’s type of profession (e.g., management, administrative, sales)

WAGES
examining a person’s wage status from no or low wages to existing/increased wages etc.

WORKING HOURS
examining a person’s working hours from not working at all to limited working hours, or from working part-time to full-time, etc.

HEALTH INSURANCE COVERAGE
examining a person’s access to health care coverage through an employer, an employment program, or other coverage options

JOB RETENTION
examining a person’s ability to maintain a job

JOB SATISFACTION
examining a person’s level of happiness with his/her job

SELF-SUFFICIENCY
examining a person’s independence from outside aid/benefits (e.g., Social Security, Welfare)

HEALTH STATUS
examining a change in a person’s health

HEALTH MANAGEMENT
examining a person’s ability to manage a health condition or disability

INDIVIDUAL’S VIEWS OF SERVICE DELIVERY/CUSTOMER SATISFACTION
examining a person’s satisfaction with the program/services and those providing them
(b) Agency and Program Outcomes

Of the total sample of VR-related studies, most (479 or 87.1%) reported one or more agency or program outcome. (See Textbox on page 26 for a list of definitions of these outcomes.) Studies that included some aspect of agency or program effectiveness made up the largest group within this group \( n=371 \), 77.5% of 479 (see Table 7), and examined how well a particular program or service works in terms of the desired outcome. For example, Cavennaugh (1999) looked at differences in services (e.g., expenditures, number, and duration) and employment outcomes for individuals with visual impairments. These people were served by two types of VR agencies: general VR agencies and VR agencies specializing in visual impairments.

Studies involving some aspect of agency or program efficiency \( n=190 \), 39.7% of 479 examined the outcome of a particular program or service, for example, in relation to cost, speed, and resources invested. For example, Berkowitz (1985) performed an analysis of costs and benefits of rehabilitation services, and Walker, Asbury, Rodriguez, and Saravanabhavan (1995) used RSA 911 data to examine the cost of services related to needs of persons with disabilities from different ethnic backgrounds. Often studies focused on both effectiveness and efficiency. There was a significant overlap between these two categories.

More than ten percent of the studies \( n=63 \), 13.2% of 479 reported on VR cooperating with at least one other entity (e.g., state mental health agencies, community rehabilitation providers, One-Stop Career Centers) as one type of agency or program outcome. Nineteen studies reported other types of agency or program outcomes. This included agency administration and policy and their effect on service provision \( n=10 \), and customer involvement/access to services \( n=9 \). For example, Arnold and Seekins (1994) studied state VR agency policies on self-employment using qualitative interviews and document reviews, and Miller and Joe (1993) studied employment barriers and work motivation for Navajo individuals seeking rehabilitation services using qualitative interviews and a validated scale measuring understanding and use of VR services.

The next step in this review will be to examine the sub-samples of studies that reported outcomes of effectiveness, efficiency, and cooperation at the agency or program levels in more detail. The purpose of this is to identify emerging themes and patterns, including factors that potentially increase effectiveness and efficiency and encourage cooperation.

<table>
<thead>
<tr>
<th>Agency/Program Outcome</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency/Program Effectiveness</td>
<td>371</td>
</tr>
<tr>
<td>Agency/Program Efficiency incl. Cost-Benefit</td>
<td>190</td>
</tr>
<tr>
<td>Cooperation between Agencies/Programs</td>
<td>63</td>
</tr>
<tr>
<td>Staff Outcomes (e.g., staff performance, job retention, job satisfaction)</td>
<td>160</td>
</tr>
<tr>
<td>Other Agency/Program Outcome</td>
<td>20</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 479 because a study could report more than one type of agency/program outcome.

Most studies that reported staff outcomes focused on staff capacity \( n=103 \), 64.4% of 160, including outcomes of staff competency \( n=32 \) and staff training needs \( n=17 \) (see Table 8 on page 25). Outcomes of staff competency, for the most part, included staff counseling competencies \( n=14 \) and how counselor education impacted counselor competency \( n=9 \). Six of these studies related counselor competency to working with special populations, such as individuals with autism-spectrum disorders. Studies reporting on staff training needs recognized gaps in the counselor knowledge base, including screening/evaluation \( n=4 \) and working with special populations \( n=4 \).
The second most frequently reported staffing outcome was staff views of the agency, program or services \((n=63, 39.4\% \text{ of } 160)\). Within this category, most studies reported on staff views of the services and service delivery of their own program/agency \((n=26)\), followed by staff views of agency and system policy \((n=6)\), and staff views of the roles of other staff members in the agency \((n=5)\). Agency/program staffing outcomes were also reported in regard to staff job retention \((n=10)\) and job satisfaction \((n=10)\).

**Table 8. Number of Studies by Type of Agency/Program Staffing Outcome \((n=160)\)**

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff Capacity incl. Staff Performance</td>
<td>103</td>
</tr>
<tr>
<td>Staff Job Retention</td>
<td>10</td>
</tr>
<tr>
<td>Staff Job Satisfaction</td>
<td>10</td>
</tr>
<tr>
<td>Staff Views of Agency/Program/Services</td>
<td>63</td>
</tr>
</tbody>
</table>

*Note.* The numbers of studies adds up to more than 160 because a study could report more than one type of staff outcome.

---

### REVIEW DEFINITIONS OF AGENCY AND PROGRAM OUTCOMES

**EFFICIENCY**
examining how well a particular program or service works in terms of the desired outcome

**EFFECTIVENESS**
examining the outcomes of a particular program or service in relation to cost, speed, resources invested, etc.

**AGENCY/PROGRAM COOPERATION**
examining agencies jointly working toward a common goal or collaborating, for example, to better integrate service delivery across agencies

**STAFF CAPACITY**
examining staff knowledge, improving staff attitudes, increasing staff’s feeling of comfort, etc.

**JOB SATISFACTION**
examining staff satisfaction with their jobs

**JOB RETENTION**
examining staff ability to retain their jobs

**STAFF’S VIEWS OF SERVICE DELIVERY**
examining staff satisfaction with the agency and how it provides the program/service

---

### 2.4. Description of Study Methods

This section describes the studies included in the review \((N=550)\) in terms of study design, data source, data collection method, types of study participants and sample size, stakeholder involvement, and quality of study methods.

As mentioned before, the review was limited to studies that were empirically based (quantitative or qualitative), i.e., findings that are based on analysis of directly observed and/or collected information. This included secondary analyses of RSA databases and other relevant datasets. Excluded from the review were studies that were editorials,
commentaries, book reviews, critiques, resource guides, and manuals, as well as conceptual/theoretical studies. Reviewers used these and other criteria to screen all potentially relevant documents for inclusion in the review.

(a) Types of Study Designs

Reviewers examined the sample of 550 studies with respect to the type of study design. (See Textbox on page 28 for a list of definitions of study designs.) The most common type of research design was secondary analysis \(n=226\), followed by cross-sectional study \(n=195\) and case study \(n=81\) designs (see Table 9 on page 27). Twenty-eight studies used other types of designs. This included: program evaluation/needs assessment, cost-benefit analysis, mixed-method design, action research design, longitudinal design, factorial design, assessment of instrument validity/reliability, and (application of) job task analysis. Twenty-four studies, that is, less than five percent of the study sample, used some type of experimental design (described in more detail in Section 2.5 of this report).

**Table 9. Number of Studies by Type of Study Design \((N=550)\)**

<table>
<thead>
<tr>
<th>Study Design</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Data Analysis</td>
<td>226</td>
</tr>
<tr>
<td>Cross-Sectional Study</td>
<td>195</td>
</tr>
<tr>
<td>Case Study</td>
<td>81</td>
</tr>
<tr>
<td>Cohort Study</td>
<td>36</td>
</tr>
<tr>
<td>Document Study</td>
<td>32</td>
</tr>
<tr>
<td>Other Study Design</td>
<td>28</td>
</tr>
<tr>
<td>Experimental Design</td>
<td>24</td>
</tr>
<tr>
<td>Single Group Tests</td>
<td>10</td>
</tr>
<tr>
<td>Ethnography</td>
<td>8</td>
</tr>
<tr>
<td>Study Design Unknown</td>
<td>6</td>
</tr>
<tr>
<td>Panel Study</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note. The numbers of studies adds up to more than 550 because a study could report more than one type of study design.*

Slightly more than fifteen percent of all the studies (84 or 15.3% of 550) used more than one research design. Cross-sectional study/secondary data analysis \(n=30\) was the most common combination of designs. For example, Matrone and Leahy (2005) used the Multicultural Counseling Inventory (cross-sectional) and RSA 911 data (secondary data analysis) to investigate the relationship between counselor multicultural competency and customer outcomes. Cohort study/secondary data analysis \(n=10\) was the second most common combination of study designs. For example, the Longitudinal Studies of the Vocational Rehabilitation Services Program (e.g., Hayward, 1998; Hayward & Schmidt-Davis, 2003a, 2003b) followed a cohort of individuals over time and included secondary data as a major source of information. Experimental design/secondary data analysis \(n=10\) was the third most common combination of research designs. For example, Fraser et al. (2008) carried out a secondary analysis of data collected from a previously conducted randomized controlled trial (RCT) study that tested the Individual Placement and Support model (IPS) of supported employment within a VR setting and its effect on rates of VR sponsorship, successful VR closures, and time between VR milestones.

Reviewers examined study design choices over time. More studies reported using secondary data analysis design between 2001 and 2008 than in previous decades (see Table 10). This was also true of studies using a case study design. While cross-sectional studies were the second most common overall, they decreased over time in this sample.
Table 10. Number of Studies by Type of Study Design and Time Period (N=550)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Data Analysis</td>
<td>20</td>
<td>40</td>
<td>61</td>
<td>99</td>
<td>6</td>
<td>226</td>
</tr>
<tr>
<td>Cross-Sectional Study</td>
<td>28</td>
<td>46</td>
<td>67</td>
<td>52</td>
<td>2</td>
<td>195</td>
</tr>
<tr>
<td>Case Study</td>
<td>5</td>
<td>16</td>
<td>16</td>
<td>41</td>
<td>3</td>
<td>81</td>
</tr>
<tr>
<td>Cohort Study</td>
<td>5</td>
<td>4</td>
<td>16</td>
<td>10</td>
<td>1</td>
<td>36</td>
</tr>
<tr>
<td>Document Study</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>13</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Other Study Design</td>
<td>2</td>
<td>4</td>
<td>12</td>
<td>8</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>Experimental Designs</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>8</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Single Group Tests</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Ethnography</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Study Design Unknown</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Panel Study</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 550 because a study could report more than one type of study design.
**REVIEW DEFINITIONS OF TYPES OF STUDY DESIGNS**

**EXPERIMENTAL DESIGNS**
- *Randomized Control Trial (RCT)*: To be classified as a RCT, the study must: 1) compare two or more groups that receive different interventions or different intensities/levels of an intervention to each other, and/or to a group that does not receive any intervention at all, AND 2) randomly allocate participants or sequences to the different groups.
- *Non-RCT*: The study compares two or more groups that receive different interventions or different intensities/levels of an intervention to each other, and/or to a group that does not receive any intervention at all, but DOES NOT randomly allocate participants or sequences to the different groups. This also includes quasi-random allocation.

**SINGLE GROUP TESTS**
- *Single group pre-post test*: A study where a group of subjects is tested on an outcome of interest before and after receiving an intervention, which is being evaluated. The goal is to find if there is a difference between the pre- and post-test scores of the subjects.
- *Single group post-test*: A study where one group of subjects is tested on an outcome of interest after receiving an intervention, which is being evaluated.

**COHORT STUDY**
- Researchers follow over time a group of similar individuals (cohort) who differ in certain factors/conditions that are the focus of the study and measure how these factors/conditions relate to or impact on their outcomes.

**CROSS-SECTIONAL STUDY**
- Researchers collect data once over a whole population (e.g., a national survey).

**PANEL STUDY**
- Researchers conduct the same data collection and analysis multiple times with different samples each time (e.g., British Household Panel Survey).

**SECONDARY DATA ANALYSIS**
- Researchers conduct an analysis of data that have already been collected and possibly processed by previous researchers. Data can be quantitative or qualitative.

**CASE STUDY**
- Researchers study a particular phenomenon (a “case”) such as a particular group or event, using multiple sources of evidence (e.g., documents, qualitative interviews, participant observation).

**ETHNOGRAPHY**
- Researchers present a qualitative description of a particular phenomenon, based on fieldwork, primarily using participant observation methods.

**DOCUMENT STUDY**
- Researchers use documents as a source of data (e.g., newspaper reports).
(b) Types of Data Sources

Studies that employed a secondary data analysis design most commonly relied on RSA data \( (n=123) \) (see Table 11). This was followed by case data from VR agencies \( (n=63) \) and case data from non-VR agencies \( (n=16) \). Sixty-two studies in the secondary data analysis group were classified as using “multiple data sources.” For example, Szymanski (1991) surveyed VR counselors and examined case data to determine the relationship between educational preparation of counselors and their performance with customers with significant disabilities. Hayward and Schmidt-Davis (2003a, 2003b) combined case data, quantitative surveys, qualitative interviews, and administrative data in the Longitudinal Study of Vocational Rehabilitation Services Program.

Table 11. Number of Studies by Type of Data Source \( (n=226) \)

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rehabilitation Services Administration (RSA) Data /VR Agency</td>
<td>123</td>
</tr>
<tr>
<td>VR Case Files /VR Agency</td>
<td>64</td>
</tr>
<tr>
<td>Multiple Data Sources</td>
<td>62</td>
</tr>
<tr>
<td>Case Data /Non-VR Agency</td>
<td>16</td>
</tr>
<tr>
<td>Census Data</td>
<td>12</td>
</tr>
<tr>
<td>Social Security Data</td>
<td>11</td>
</tr>
<tr>
<td>Administrative Data /VR Agency(^a)</td>
<td>10</td>
</tr>
<tr>
<td>Longitudinal Survey of VR Services Program</td>
<td>9</td>
</tr>
<tr>
<td>Third Party Survey Data(^b)</td>
<td>4</td>
</tr>
<tr>
<td>Administrative Data /Non-VR Agency</td>
<td>4</td>
</tr>
<tr>
<td>US Department of Labor Data</td>
<td>4</td>
</tr>
<tr>
<td>State-level Department of Labor Data</td>
<td>3</td>
</tr>
<tr>
<td>Government Accounting Office (GAO) Data</td>
<td>1</td>
</tr>
<tr>
<td>National Center for Education Statistics (NCES) Data</td>
<td>1</td>
</tr>
<tr>
<td>Commission on Rehabilitation Counselor Certification (CRCC) Data</td>
<td>1</td>
</tr>
<tr>
<td>CORE Documents(^c)</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 226 because a study could report more than one type of data source.

\(^a\) Refers to agency level, non-case data.

\(^b\) Refers to survey data not collected by the authors and not from a typical rehabilitation data source.

\(^c\) Council on Rehabilitation Education: accrediting body for Rehabilitation Education master’s-level programs.

(c) Types of Data Collection Methods

The most common method of data collection was quantitative survey \( (n=254) \), followed by secondary data analysis \( (n=240) \) and qualitative interviews \( (n=89) \) (see Table 12 on page 30). Slightly more than twenty percent of the studies \( (n=118, 21.5\% \text{ of } 550) \) used more than one method of data collection. The most commonly reported combination of data collection methods were quantitative survey/secondary data analysis \( (n=38) \) and qualitative survey/qualitative interview \( (n=24) \), followed by qualitative interview/document review \( (n=22) \), qualitative interview/secondary analysis \( (n=19) \) and document review/secondary analysis \( (n=17) \).
Table 12. Number of Studies by Type of Data Collection Method (N=550)

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Survey</td>
<td>254</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>240</td>
</tr>
<tr>
<td>Qualitative Interviews</td>
<td>89</td>
</tr>
<tr>
<td>Document Review</td>
<td>66</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>19</td>
</tr>
<tr>
<td>Method Unknown</td>
<td>10</td>
</tr>
<tr>
<td>Participant Observation</td>
<td>9</td>
</tr>
<tr>
<td>Other Method</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. The numbers of studies adds up to more than 550 because a study could report more than one type of data collection method.

Reviewers also examined the use of data collection methods over time. They found that more studies reported using secondary data analysis between 2001 and 2008 than in previous decades (see Table 13). This finding is not surprising given the trends in study design. While quantitative survey was the second most common method of data collection, there was a decrease in the last decade, while qualitative interviews saw an increase in use over time.

Table 13. Number of Studies by Type of Data Collection Method and Time Period (N=550)

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Time Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantitative Survey</td>
<td>37</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>22</td>
</tr>
<tr>
<td>Qualitative Interviews</td>
<td>11</td>
</tr>
<tr>
<td>Document Review</td>
<td>7</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>0</td>
</tr>
<tr>
<td>Method Unknown</td>
<td>0</td>
</tr>
<tr>
<td>Participant Observation</td>
<td>2</td>
</tr>
<tr>
<td>Other Method</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 550 because a study could report more than one data collection method.

(d) Types of Study Participants and Sample Size

The studies included in this review used a variety of study participants, with persons with disabilities making up the largest group (see Figure 12 on page 31). This finding is most likely related to the study selection criteria used in this review. The most commonly reported types of participants in the sample of 550 studies included persons with disabilities (n=347 studies), frontline staff (n=130), and administrative, supervisory and managerial staff (n=109). Only a small number of studies (n=7) included employers as study participants. Forty-one studies used other types of participants, with non-profit and community organizations being the most commonly reported participant type.

A total of 502 studies provided information on sample size. The majority of studies used samples consisting of 1,001 participants or more (n=153), followed by studies with samples of 1–50 participants (n=100) (see Figure 13 on page 31). Sample size varied by method of data collection (see Table 14 on page 32). As might be expected, studies utilizing secondary data analysis commonly had more than 1,000 participants and studies using qualitative interviews tended to have fewer participants. Studies utilizing quantitative survey method seemed to be relatively well distributed across sample sizes.
Figure 12. Number of Studies by Type of Study Participants (N=550)

Note. The number of studies adds up to more than 550 because a study could report more than one type of participant.

Figure 13. Number of Studies by Sample Size (in Ranges) (n=502)

Note. The number of studies adds up to more than 502 because a study could report more than one participant sample.
Table 14. Number of Studies by Type of Data Collection Method and Sample Size (in Ranges) \( (n=502) \)

<table>
<thead>
<tr>
<th>Data Collection Method</th>
<th>Sample Size (in Ranges)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1–50</td>
</tr>
<tr>
<td>Quantitative Survey</td>
<td>52</td>
</tr>
<tr>
<td>Secondary Data Analysis</td>
<td>16</td>
</tr>
<tr>
<td>Qualitative Interviews</td>
<td>40</td>
</tr>
<tr>
<td>Document Review</td>
<td>12</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>8</td>
</tr>
<tr>
<td>Method Unknown</td>
<td>2</td>
</tr>
<tr>
<td>Participant Observation</td>
<td>2</td>
</tr>
<tr>
<td>Other Method</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. The number of studies adds up to more than 502 because a study could report more than one participant sample.

\( (c) \) Types of Stakeholder Input

Most studies did not report stakeholder input \( (n=395) \) (see Figure 14). Of those that did, most received input from VR staff \( (n=90) \), followed by researchers/academicians \( (n=69) \) and “other” stakeholders \( (n=65) \). They included: rehabilitation practitioners; health and medical professionals; rehabilitation technicians; rehabilitation educators; rehabilitation counseling students; representatives of federal, state, and local government agencies (labor/workforce, education, welfare, health, mental health and substance abuse, other human services); representatives of national, state, and local workforce development organizations; economic development staff; consultants; community-development specialists; representatives of Native American reservations and their agencies; accrediting bodies (e.g., Commission on Accreditation of Rehabilitation Facilities or CARF); national professional organizations (e.g., National Rehabilitation Counseling Association or NRCA); disability lawyers; and representatives of mayors’ offices for persons with disabilities.

Figure 14. Number of Studies by Type of Stakeholder Input \( (N=550) \)

Note. The number of studies adds up to more than 550 because a study could report more than one type of stakeholder input.
(f) Overall Weight of Evidence

The sample of studies in this review was also examined to determine the overall weight of the evidence. The quality score was calculated by aggregating several components as reported in the study. This included: appropriate choice of research design, attempts to establish the reliability and validity of data collection tools and data analysis, ability to rule out sources of error or bias that might lead to alternative explanations for the findings, generalizability of the findings, and trustworthiness of the conclusions. The highest score a study could receive as the sum of these components was 15. Studies rated “high” received scores of ten or greater, “medium” meant that a study was scored between a seven and a nine, and “low” indicated that a study had received six or fewer points on the components.

As can be seen in Figure 15, almost half of the studies were rated as having a “high” overall weight of evidence (n=243, 44% of 550). It is important to note that the weight of evidence determination does not represent a judgment of the rigor or quality of the research itself. It is only an indicator of the degree to which the research was reported in the study. Due to constraints of time, reviewers did not contact authors and request further information for each study included in the sample. Often, a “low” weight of evidence was reflective of inadequate information regarding methodology or conclusions/implications.

Figure 15. Percent of Studies by Weight of Evidence (N=550)
2.5. Description of Studies Using an Experimental Research Design

This section provides a description of the 24 studies identified in this review that used an experimental design. (See Appendix D on page 12 for bibliographic information about these studies.) This included 11 Randomized Control Trial (RCT) studies and 13 quasi-experimental studies. Tables 15 on page 39 and 17 on page 50 summarize the studies in terms of the focus of the intervention, data collection method and data points, sample size and sampling, and study limitations reported in these studies. Tables 16 on page 44 and 18 on page 62 also summarize the studies in terms of outcomes, results, and conclusions. Note that this review also included studies that used other types of group comparison designs such as correlational designs. However, researchers did not create a separate category for these designs for the purposes of coding/analysis.

(a) Randomized Control Trial Studies

The review included 11 Randomized Control Trials (RCTs) that measured the effectiveness of a particular intervention (see Table 15 on page 39). This included seven studies that focused on a customer-level intervention and two counselor- or staff-level intervention studies; the intervention in two other studies focused on program issues.

The focus of customer-level interventions ranged from increasing choice-making among VR customers in the rehabilitation process (Hartnett, Collins, & Tremblay, 2002), to peer counseling (Akridge, Farley, & Rice, 1987) and job search/job readiness curricula (Kneipp, Vandergoot, & Lawrence, 1980), to vocational evaluation and work adjustment services (Brewer, Miller, & Ray, 1975). The intervention in Blankertz and Robinson’s study (1999) focused on improving employment outcomes for people with severe mental illness (MI) by incorporating a vocational focus into mental health (MH) service delivery. Similarly, Fraser, Jones, Frounkelker, Harding, Hardin, and Bond (2008) analyzed data from a RCT that examined the effect of the Individual Placement and Support (IPS) model of supported employment on customers who received MH and employment services from a community rehabilitation provider contracted by a state VR agency. A study conducted by Chandler, Meisel, Hu, McGowen, and Madison (1997) evaluated a model that integrated supported and transitional employment with core rehabilitation services targeting individuals with severe MI.

Two effectiveness studies were targeted at VR staff or staff of other service provider agencies, focusing mainly on their perceptions and attitudes. For example, Grasso, Jitendra, Browder, and Harp (2004) examined the effect of ecological and standardized vocational assessments on VR counselors’ perceptions regarding people with developmental disabilities. Huz (1999) studied a group-model-building strategy (in combination with an administrative mandate for MH-VR service integration) to bring together MH and VR agency staff to change their perceptions of and attitudes towards integrated MH and rehabilitation service delivery.

In addition to these studies, two RTCs focused on program issues. This included a study by Chase (1983) that evaluated the effectiveness of a management intervention to address inefficiencies at the counselor and program levels. McGrew, Johannesen, Griss, Born, and Katuin (2005) studied a new, performance-based payment structure for supported employment services and its effect at the customer and program levels.

One theme that emerged across five of the 11 studies was the focus on MH issues. Three of the seven studies that targeted customers focused specifically on individuals with severe MI (Blankertz & Robinson, 1999; Fraser et al., 2008; and Chandler et al., 1997); one of the two studies that targeted agency staff included both MH and VR agency personnel (Huz, 1999); and one of the two studies that focused on program issues evaluated the intervention’s effectiveness with respect to VR customers with severe MI (McGrew et al., 2005).
With respect to methods (see Tables 15 on page 39 and 16 on page 44), 10 studies conducted a RCT whereas one study (Fraser et al., 2008) carried out a secondary analysis of data from a previously conducted RCT study. One of the 11 studies (Huz, 1999) was a doctoral dissertation. The studies utilized a variety of data collection methods, and often included multiple data points across periods of time. All but one study (Hartness, Collins, & Tremblay, 2002) used rather small samples; none discussed power analysis or reported effect size, although some discussed analytical techniques to address bias or to control for potentially confounding variables. For the customer- and staff-level interventions, study participants (or counties in the case of Huz’s study, 1999) were randomly assigned to the intervention or control group; one study (Brewer et al., 1975) did not provide information about the selection and assignment of the intervention group. For the two studies that focused on program issues, sites were selected purposefully, and were matched against a control group. Some study limitations of these studies included: small samples, sampling issues, significant group differences at baseline, high attrition, lack of treatment fidelity (how accurately the program or intervention was implemented), and limitations associated with data collection instruments.

Overall, studies provide some indication of the potential effectiveness of the interventions studied. However, given the study limitations found across studies (e.g., small samples, significant baseline group differences, lack of treatment fidelity), more replication and expansion is needed to solidify and build on these findings.

The 11 RCT studies included:

1. An intervention to increase choice-making among VR customers (a Choice Demonstration Project funded by the Rehabilitation Services Administration) and its effect on customers’ vocational status, employment outcomes, and cost of purchased services in comparison to traditional VR service delivery. (Hartnett, Collins, & Tremblay, 2002)

2. A peer-counseling training intervention and its effect on VR customers in a residential rehabilitation facility in terms of their attitudes towards the training, skill development, self-concept (empathy, assertion, and decision-making), and generalization of the training in comparison to traditional VR service delivery. (Akridge, Farley, & Rice, 1987)

3. A comparison of two job search/job readiness curricula and their impact on VR customers in terms of number of job placements, number of job contacts, knowledge of job search skills, and job readiness posture. (Kneipp, Vandergoot, & Lawrence, 1980)

4. A study that tested the effect of vocational evaluation and work adjustment services, provided by a rehabilitation facility contracted by the state VR agency, on VR customers’ attitude towards work. (Brewer, Miller, & Ray, 1975)

5. An intervention that integrated a vocational focus into community MH service provision and measured its intermediate effect on individuals with severe MI (skills gained, changes in work attitude) and its longer-term effect on these individuals (entry into VR program, employment) in comparison to MH service provision with no vocational component. (Blankertz & Robinson, 1999)

6. A study analyzing data from a study that tested the Individual Placement and Support (IPS) model of supported employment within a VR setting and its effect on rates of VR sponsorship, successful VR closures, and time between VR milestones (VR program entry, VR sponsorship, Status 26/case closure) in comparison to the Diversified Placement Approach (DPA) (study funded by the National Institute of Mental Health [NIMH]). (Fraser, Jones, Fronufelker, Harding, Hardin, & Bond, 2008)
7. A study testing the Integrated Service Agency (ISA) model that integrated supported and transitional employment with core rehabilitation services and measured its effect at the customer level (orientation to work, trying out paid work, wage earnings, work continuity, type of employment, weekly working hours, and relationship of work to self-esteem) and at the program level (cost and effectiveness of employment services) (study funded in part by the California Department of Mental Health). (Chandler, Meisel, Hu, McGowen, & Madison, 1997)

8. A study comparing the effect of an ecological vocational assessment (intervention) and a standardized vocational assessment in terms of their effect on VR counselor perceptions of job coach funding, training time needed, and employment outcomes of VR customers with developmental disabilities. (Grasso, Jitendra, Browder, & Harp, 2004)

9. A group-model-building intervention (combined with an administrative mandate for MH-VR service integration) targeted at MH and VR agency staff, with the goal to provide more integrated health and rehabilitation services delivery. Research indicators included the intervention’s effect on staff perceptions of group functioning, their alignment with other group members, and their attitudes and beliefs about integration and how to achieve it. (Huz, 1999)

10. A study that evaluated a Management Control System (MCS) that was developed for VR programs. The MCS also functioned as an intervention intended to: evaluate effectiveness; develop competency standards; develop mechanisms for evaluating performance, processing casework, and reporting requirements; and fulfill legislative requirements as per the 1973 Rehabilitation Act, as amended. This intervention was tested in three states (GA, MI, and MD), although the report mainly focused on one state (GA). Districts were compared with respect to critical points of case management (eligibility, employment plan development, financial accountability, and case closure), and counselor perceptions (job satisfaction, work alienation, and time utilization) (study funded by the National Institute of Handicapped Research [NIHR]). (Chase, P.E., 1983)

11. A study that compared a new, performance-based payment structure for supported employment services (where programs are only paid for successful outcomes) with the traditional funding structure, and the impact at the customer level (job status, wages, job satisfaction, quality of life, wellness, timely achievement of milestones) and at the program level (supported employment fidelity, success rates with customers) (study funded by NIDRR/Indiana Family and Social Services). (McGrew, Johannesen, Griss, Born, & Katsuin 2005)

(b) Quasi-Experimental Studies

The review included 13 studies classified as quasi-experimental (see Table 17 on page 50). Seven of the studies were focused at the customer-level, aimed at determining the effect of a particular service. For example, Borgenson (1992) and Borgenson and Cusick (1994) examined the effect of personalized outreach and collaboration between MH and VR agencies on engagement of customers with severe mental illness, while Balcazar, Lardon, Keys, Jones, and Davis (2005) compared the outcomes of customers with respect to receiving counselor-provided training and/or follow-along supports. Richardson (1973) studied the effect of comprehensive rehabilitation services on customers based on personality factors, self-concept, and differences in outcomes. Dean and Dolan (1991) and Dean, Dolan, and Schmidt (1999) evaluated the change in earnings as a result of receiving VR services.

Five of the studies focused on counselor- or staff-level issues. Four of the studies (Szymanski & Parker, 1989a, 1989b; Szymanski, 1991; and Szymanski & Danek, 1992) utilized outcome data to compare effectiveness and cost-efficiency of counselors based on differences in educational preparation. The authors replicated and expanded upon previous work with this line of research. Hergenrather, Rhodes, and McDaniel (2003) identified attitudes of...
job placement staff towards job placement of individuals with disabilities, including influencing factors and perceived barriers.

One study focused on program-level issues. Main (2002) used staff-reported time logs and factors such as disability type, caseload size, and stage in rehabilitation process to develop models of optimal time spent in workload management.

With respect to methods (see Tables 17 on page 50 and 18 on page 55), the studies utilized a variety of data collection methods, and often included multiple data points over periods of time. Some samples were small, whereas other researchers utilized large data sets and therefore had access to very large samples. Some authors discussed power analysis, reported effect size, and/or discussed analytical techniques that addressed bias or controlled for potentially confounding variables. Eight studies were multiple works on the same topics involving the same researcher(s), indicating efforts at replication and expansion. Three of the studies were doctoral dissertations. One study (Hergenrather, et al. 2003) was retained in the group due to author-reported quasi-experimental design; however, reviewers determined that there was no evidence that the study involved any comparison. Some study limitations of these studies included issues such as small samples, lack of random selection and assignment, attrition, limitations associated with the use of administrative data, and limited information regarding strength of the relationship and/or how much of the variance in the sample could be explained by the results. Given some study limitations found across studies (e.g., small samples, attrition, sampling issues), more replication and expansion would be helpful in building on these findings.

The 13 quasi-experimental studies included:

1. A study of counselor-provided training and follow-along support of VR customers with respect to goal attainment, help-recruiting skills, and employment outcomes (study funded by RSA). (Balcazar, Lardon, Keys, Jones, & Davis, 2005)

2 & 3. Studies of the impact of personalized outreach to potential VR customers with severe MI, as well as tighter MH-VR collaboration on VR program entry and drop-out rates. (Borgeson, 1992; Borgeson & Cusick, 1994)

4 & 5. Determination of the VR program’s net-earnings impact on successful VR customers as compared with those who discontinued VR services. Researchers utilized secondary data (RSA–SSA DataLink) and tracked earnings over several data points. (Dean & Dolan, 1991; Dean, Dolan & Schmidt, 1999)

6. A study designed to identify determinants of vocational placement professionals’ intent to place people with disabilities into jobs. Researchers surveyed placement professionals to find their attitude towards job placement, influences, and perceived barriers to job placement for persons with disabilities. (Hergenrather, Rhodes, & McDaniel, 2003)

7. An empirical effort to develop models of workload management applicable to rehabilitation counselors. Researchers analyzed time logs and administrative data to derive estimates of optimal time spent on cases with respect to disability type, caseload size, and phase in the rehabilitation process. (Main, 2002)

8. An investigation of administrative data to determine impact of demographic factors and service involvement on acceptance rates for individuals with traumatic brain injury in the public VR program, and impact of race on reason for closure. (Kolakowsky-Hayner, 2007)
9. Evaluation of counseling and services at a comprehensive rehabilitation center. Factors such as personality, self-concept, training, and relationship with counselor were examined across several caseload groups, including those who closed successfully versus customers who did not achieve employment. (Richardson, 1973)

### Table 15. Randomized Control Trial Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartnett, Collins, &amp; Tremblay (2002)</td>
<td>An intervention to increase choice-making among VR customers</td>
<td>Analysis of case/administrative data, and quarterly earnings records</td>
<td>2 data points (pre and post), interim data, and earnings records at 3, 6, 9, 12 and 15 months post-rehab</td>
<td>VR customers from VT state VR agency</td>
<td>Customers randomly selected from caseload to participate in study, then randomly assigned to intervention or control.</td>
<td>Total N: 4,551, Control: 4,281, Intervention: 270</td>
<td>Treatment fidelity and confounding variables; attrition; lack of earnings info for VR customers who became self-employed or worked outside VT; and selection of rural state (VT).</td>
</tr>
<tr>
<td>Akridge, Farley, &amp; Rice (1987)</td>
<td>Peer counseling</td>
<td>Scales/validated instruments</td>
<td>2 data points (one week before and one week after the intervention)</td>
<td>2 samples of customers of a VR-operated rehabilitation facility</td>
<td>Customers were encouraged to volunteer, then randomly assigned to intervention or control.</td>
<td>Total N: 59, Sample 1: N=26, Sample 2: N=33, Sample 1: n=30, Sample 2: n=29</td>
<td>Limitations related to data collection scales; narrow focus on particular disability types.</td>
</tr>
<tr>
<td>Kneipp, Vandergoot, &amp; Lawrence (1980)</td>
<td>Job seeking skills/Job readiness training</td>
<td>Scales/validated instruments, qualitative interviews, and structured activity sheets</td>
<td>2 data points (pre and post) and interim data</td>
<td>VR customers</td>
<td>Counselors selected to run groups, randomly assigned to intervention or control. Counselors invited customers to participate.</td>
<td>Total N: 122, n=70 (10 groups/avg. of 7 in a group), n=60 (10 groups/avg. of 6 in a group)</td>
<td>Counselors were randomly assigned to groups, but participants were hand-selected. Only a small number scored as “job-ready.”</td>
</tr>
</tbody>
</table>
Table 15 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total N</td>
<td>Control</td>
</tr>
<tr>
<td>Brewer, Miller, &amp; Ray (1975)</td>
<td>Vocational evaluation and work adjustment (provided by rehabilitation facility)</td>
<td>Scales/validated instruments</td>
<td>3 data points (baseline, after intervention received vocational evaluation, after intervention received work adjustment)</td>
<td>VR customers</td>
<td>No information about selection of customers for intervention group, 5 VR counselors randomly selected customers for the control group.</td>
<td>N=81</td>
<td>n=21</td>
</tr>
<tr>
<td>Blankertz &amp; Robinson (1999)</td>
<td>An intervention to integrate a vocational focus into MH service delivery</td>
<td>Scales/validated instruments</td>
<td>2 data points (baseline and 9 months post intervention)</td>
<td>Adults with severe MI receiving services from a community MH center</td>
<td>Customers were randomly assigned to intervention or control.</td>
<td>N=122</td>
<td>n=61</td>
</tr>
<tr>
<td>Fraser, Jones, Frounfelker, Harding, Hardin, &amp; Bond (2008)</td>
<td>Individual Placement and Support (IPS) model of supported employment in VR context</td>
<td>Secondary analysis of RCT data collected by parent study (interviews, chart reviews, case/administrative data)</td>
<td>Parent study collected baseline data (e.g., demographics, employment history, and income), quarterly employment outcomes data, and data on VR status measures</td>
<td>Adults with severe MI receiving services from a community MH provider (VR vendor)</td>
<td>Parent study randomly assigned customers to intervention or control.</td>
<td>N=194</td>
<td>data for 4 customers were excluded from secondary data analysis</td>
</tr>
</tbody>
</table>

1 For the purposes of this review, we classified Brewer, Miller, & Ray (1975) as a RCT study although information on selection and assignment of the intervention group was limited.
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total N</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Control</td>
<td>Intervention</td>
</tr>
<tr>
<td>Chandler, Meisel, Hu, McGowen, &amp; Madison (1997)</td>
<td>An intervention to integrate supported and transitional employment with core VR services (Integrated Service Agency [ISA] model)</td>
<td>Analysis of case/ administrative data (employment records, vocational costs), and qualitative interviews</td>
<td>3 data collection points (10 months after study began, and then yearly thereafter)</td>
<td>2 samples of adults with severe MI receiving services from community MH centers (one purchased services from VR)</td>
<td>Study recruited one urban and one rural community MH center; at each center customers were encouraged to volunteer, then randomly assigned to intervention or control.</td>
<td>Not reported</td>
<td>Sample 1: &lt;i&gt;n&lt;/i&gt;=108 &lt;br&gt;Sample 2: &lt;i&gt;n&lt;/i&gt;=114</td>
</tr>
<tr>
<td>Grasso, Jitendra, Browder, &amp; Harp (2004)</td>
<td>Ecological vocational assessment</td>
<td>Scales/validated instruments</td>
<td>1 data point</td>
<td>VR counselors from PA state VR agency</td>
<td>Counselors were encouraged to volunteer, then randomly assigned to intervention or control.</td>
<td>&lt;i&gt;N&lt;/i&gt;=141</td>
<td>&lt;i&gt;n&lt;/i&gt;=70</td>
</tr>
</tbody>
</table>
Table 15 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points (pre and post)</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Huz (1999) Doctoral dissertation</td>
<td>Group-model-building and/or administrative mandate for MH-VR service integration (3 experimental conditions)</td>
<td>Scales/ validated instruments, and quantitative survey</td>
<td>2 data points</td>
<td>3 samples of MH and VR agency management staff</td>
<td>Study recruited 6 counties, 2 were randomly assigned to one of 3 experimental conditions. Study recruited a group of 12-20 MH and VR management staff for each group.</td>
<td>Total N: 99</td>
<td>Control: n=30</td>
</tr>
<tr>
<td>Chase (1983) Funded by NIHR</td>
<td>Development of a management intervention to reduce inefficiency</td>
<td>Scales/ validated instruments and document reviews</td>
<td>2 data points</td>
<td>VR caseloads</td>
<td>District selected based on combination of factors, including representation of state. Control group selected to match.</td>
<td>67 caseloads</td>
<td>Control: n=15 supervisors</td>
</tr>
</tbody>
</table>

*The three experimental conditions included: a) group-model-building only (Sample 1), b) group-model-building and administrative mandate for MH-VR service integration (Sample 2), and c) administrative mandate for MH-VR service integration only (Sample 3).*
Table 15 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>McGrew, Johannesen, Griss, Born, &amp; Katuin (2005)</td>
<td>Performance-based payment for supported employment (SE) services</td>
<td>Quantitative survey/analysis of administrative data</td>
<td>Data collected at 4 intervals, monthly logs, and at job termination</td>
<td>32 caseloads (VR customers with severe MI)</td>
<td>Sites selected, customers invited based on eligibility and consented to participate.</td>
<td>N=122</td>
<td>n=41</td>
</tr>
</tbody>
</table>
Table 16. Randomized Control Trial Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Hartnett, Collins, & Tremblay (2002) | Increase choice-making among VR customers | Rehab status, employment outcomes (earnings and retention), cost of purchased services | -                | -              | • Rehab status: intervention group was more likely to have completed rehab.  
• Employment outcomes: both groups had increase in median earnings.  
• Cost of service: mean cost was higher for intervention group.                                                                 | Study provided positive evidence for utilizing a choice delivery model without compromising employment outcomes or increasing service costs. |
| Akridge, Farley, & Rice (1987)       | Peer counseling                        | Attitude towards peer counseling, skill development, self-concept changes (empathy, assertion, decision-making), interpersonal style | -                | -              | • Attitude: both groups positively reacted to peer counseling.  
• Skill development: both groups demonstrated improved helping/peer-helper skills.  
• Self-concept and interpersonal style: no changes for both groups.                                                                 | Study provided some support for positive effect of peer counseling on customers’ helping/peer-helper skills. |
| Kneipp, Vandergoot, & Lawrence (1980) | Job seeking skills/Job readiness training | Job placements, job contacts, knowledge of job search skills 6 weeks after treatment, job readiness posture at end of treatment, and at 6 weeks after treatment | -                | -              | • Only one significant (p < .05) difference was found between groups: retention of job readiness posture at 6-week follow-up.  
• Few (21 of 122) participants met criteria based on scale of being “job-ready.”                                                                 | While there was no significant difference between groups on job placement outcome and readiness factors immediately following training, there was a significantly greater mean of persons in the intervention group who retained good job readiness posture 6 weeks after the completion of training. |
Table 16 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brewer, Miller, &amp; Ray (1975)</td>
<td>Vocational evaluation and work adjustment (provided by rehabilitation facility)</td>
<td>Customers: work attitude</td>
<td>-</td>
<td>-</td>
<td>• Intervention group showed improvement in work attitudes, effect improved over time/longer engagement in intervention.</td>
<td>Customers that need rehabilitation facility services such as vocational evaluation and work adjustment should receive this support as early as possible.</td>
</tr>
<tr>
<td>Blankertz &amp; Robinson (1999)</td>
<td>Integrating a vocational focus into mental health service delivery</td>
<td>Intermediate goals: skills gained (interpersonal relationships, community living, work skills), work attitude changes; Outcomes: VR entry, employment</td>
<td>-</td>
<td>-</td>
<td>• Intervention group showed improvement in skills gained and work attitude.</td>
<td>VR focus can over a short period positively impact skills and attitudes needed by customers with severe MI in order to gain employment.</td>
</tr>
<tr>
<td>Fraser, Jones, Frounfelker, Harding, Hardin, &amp; Bond (2008)</td>
<td>Individual Placement and Support (IPS) model of supported employment in VR context</td>
<td>VR sponsorship, Status 26 closure, time between VR milestones (VR program entry–VR sponsorship–Status 26 closure)</td>
<td>-</td>
<td>-</td>
<td>• VR sponsorship: intervention group was more likely to achieve VR sponsorship.</td>
<td>IPS closure rates are comparable to standard VR employment-placement approach.</td>
</tr>
<tr>
<td>Study</td>
<td>Intervention</td>
<td>Individual Outcomes</td>
<td>Program Outcomes</td>
<td>Agency Outcomes</td>
<td>Results/Effect Size</td>
<td>Conclusion</td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td>---------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>---------------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| Chandler, Meisel, Hu, McGowen, & Madison (1997) | An intervention to integrate supported and transitional employment with core VR services (Integrated Service Agency [ISA] model) | Orientation to work, trying paid work, wages, work continuity, type of employment (transitional, competitive), weekly working hours, relationship of work to self-esteem | Cost of employment services, effectiveness of employment services | - | • Orientation to work: intervention group more likely to work (sample 1), no finding for sample 2.  
• Trying work: intervention group more likely to have paid jobs (both samples).  
• Wages: no significant group differences (sample 1), significant group differences (sample 2).  
• Work continuity: intervention group more likely to maintain jobs (sample 1), no finding for sample 2.  
• Employment type: intervention group more likely to be competitively employed (sample 1).  
• Working hours: no significant group differences (sample 1), significant group differences (sample 2).  
• Service effectiveness: demonstrated for intervention group (sample 1).  
• Relationship of work to self-esteem: no evidence found (sample 1), no findings for sample 2. | Study provides some support for positive effect of ISA model on employment outcomes for individuals with severe MI. |
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
• Training time and employment outcome: intervention group perceived individuals with DD needing less training time and more likely to remain employed after job coaching. | Study provided some support for positive effect of ecological vocational assessment on counselors’ perception of job coaching time and on employment outcomes for customers with DD.                                                                 |
### Table 16 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Chase (1983) | Development of a management intervention to reduce inefficiency | Counselors: work alienation, job satisfaction, perception of time utilization | - | Case-management critical points: eligibility, development of an individualized written rehabilitation plan, financial accountability, case closure | • Multiple raters were used to evaluate cases (inter-rater reliability reported at .80-.85), and cases were rated for pre-test differences (not significant).  
• The intervention group outperformed the control group in all process standards except eligibility (e.g., ineligibility, plan, and financial accountability) and case closure.  
• Counselors in the intervention group reported feeling more in-control of their work, and spending more time in rehabilitation-related activities vs administrative, follow-up tasks, and training.  
• Control group supervisors reported more time in fiscal duties  
• Secretaries in the intervention group reported more time in paperwork duties  
• Counselors in the intervention group reported feeling more freedom in job tasks and fewer administrative interruptions, not significant in supervisors and secretaries. | Three pilot projects introduced, but more information about the sample in one state (Georgia). Significant improvement on rated aspects of case management and counseling, including: eligibility, rehabilitation planning, financial accountability, and case closure. Other benefits included counselor perception of greater control over their work and fewer administrative interruptions. Authors recommend expansion of these pilot projects. |
Table 16 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| McGrew, Johannesen, Griss, Born, & Katuin (2005) | Performance-based payment for supported employment (SE) services | Job status, wages, job satisfaction, quality of life, wellness, timely achievement of milestones | Supported employment fidelity, success rates with customers | - | • Sites were judged to have “moderately good” adherence to SE principles with noted exceptions.  
• Results-based funding (RBF) sites were significantly higher in milestones attained, especially person-centered plans and those with 9 months of continuous employment  
• Milestones were also achieved faster in the RBF group; however, those in RBF waited an average of 3 weeks longer for VR authorization  
• RBF group had higher staff contact hours and more time in evaluation, also reported fewer barriers to employment (controlled for functioning).  
• No significant differences in jobs attained, whether job was consistent with stated goals (most were consistent), satisfaction, functioning, quality of life, and hopefulness. | Results-based funding produced better vocational outcomes related to milestones, but did not impact other areas (e.g., quality of life, other areas of life valued by psychiatric rehabilitation), or other work indicators such as wages and benefits. |
### Table 17. Quasi-Experimental Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balcazar, Lardon, Keys, Jones, &amp; Davis (2005)</td>
<td>Counselor-provided training and/or follow-along support to VR customers (4 experimental conditions)</td>
<td>Scales/validated instruments, qualitative interviews</td>
<td>2 data points (baseline and 22 months after intervention)</td>
<td>VR customers from a state VR agency in the Midwest</td>
<td>Random assignment</td>
<td>N= 89 (Baseline), N=54 (Follow up)</td>
<td>Group 4: n=14 Group 1: n=14 Group 2: n=16 Group 3: n=10</td>
</tr>
<tr>
<td>Borgeson &amp; Cusick (1994)</td>
<td>Personalized outreach to potential VR customers, tighter MH-VR collaboration</td>
<td>Analysis of case data</td>
<td>2 data points (baseline and 4 months into program)</td>
<td>Individuals considered to have severe MI by MH and VR agencies</td>
<td>No random assignment</td>
<td>N=51 n=26 n=25</td>
<td>Small sample; no random assignment to groups; no controlling for differences in time between referral and case opening.</td>
</tr>
<tr>
<td>Borgeson (1992) Doctoral dissertation</td>
<td>Personalized outreach to potential VR customers, tighter MH-VR collaboration</td>
<td>Scales/validated instruments, analysis of case data</td>
<td>2 data points (baseline and 4 months into program)</td>
<td>Individuals considered to have severe MI by MH and VR agencies</td>
<td>No random assignment</td>
<td>N=51 n=26 n=25</td>
<td>Small sample; no random assignment to groups; group differences in racial composition; confounding variables (differences in counselor work patterns and skills, in customer [work] values, and in time between referral and case opening); variability in implementing intervention at counselor level; limitations related to data collection scales; unknown impact of hospitalization on customer attrition.</td>
</tr>
</tbody>
</table>
Table 17 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean &amp; Dolan (1991)</td>
<td>Evaluation of VR program’s net earnings impact on successful VR customers and VR drop-outs (control)</td>
<td>Secondary analysis of longitudinal case and quarterly earnings data for VR customers (RSA-SSA DataLink)</td>
<td>Multiple data points (interval between 2nd pre-VR year and 1 post-VR year)</td>
<td>VR customers, closed by VA state VR agency in 1982, stratified by gender (male/female) and 3 disability types (physical, mental, emotional), 6 cohorts in total</td>
<td>No random assignment</td>
<td>N = 6,533</td>
<td>Not reported; confounding variables (change in customer health, lack of info on customer earnings path before and after disability onset).</td>
</tr>
<tr>
<td>Dean, Dolan, &amp; Schmidt (1999)</td>
<td>Evaluation of VR program’s net earnings impact on successful VR customers and VR drop-outs (control)</td>
<td>Secondary analysis of longitudinal case and earnings data for VR customers (1980 RSA-SSA DataLink); earnings estimates are combined with actual program costs to obtain benefit-cost ratios</td>
<td>Multiple data points (interval between 2nd pre-VR year and 1 post-VR year, up to 8 post-VR years)</td>
<td>VR customers, closed in FY 2008 stratified by gender (male/female) and 7 disability types (visual, hearing/speech, musculo-skeletal, internal, MI, substance abuse, MR), 14 cohorts in total</td>
<td>10% random sample</td>
<td>N = 28,986</td>
<td>Not reported; confounding variables (change in customer health, lack of info on customer earnings path before and after disability onset).</td>
</tr>
<tr>
<td>Hergenrather, Rhodes, &amp; McDaniel (2003)</td>
<td>Identification of determinants of vocational placement professionals’ intent to place people with disabilities into jobs</td>
<td>Survey consisting of 3 open-ended questions, content analysis of responses</td>
<td>1 data point</td>
<td>Vocational placement professionals in five southern US states</td>
<td>Convenience sample</td>
<td>N = 155 (98.1% response rate)</td>
<td>NA</td>
</tr>
</tbody>
</table>
Table 17 continued.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main (2002)</td>
<td>No intervention-developed models of workload management that are applicable to rehabilitation counselors</td>
<td>Survey, administrative data; counselors kept time logs and secondary data collected once</td>
<td>Ongoing</td>
<td>VR cases in Kansas state VR program during data collection</td>
<td>Convenience sample, no matching, attempted to control bias through variable selection</td>
<td>Total N: 105 counselors, N = 1,330 cases</td>
</tr>
<tr>
<td>Kolakowsky-Hayner (2007)</td>
<td>Investigation of impact of demographic factors and service involvement on acceptance rates in the public VR program, and impact of race on reason for closure</td>
<td>RSA 911 data</td>
<td>1 data point</td>
<td>All VR customers with TBI as their primary or secondary diagnosis whose cases were closed in FY 2001</td>
<td>Selected all eligible cases</td>
<td>N = 18,304</td>
</tr>
<tr>
<td>Richardson (1973)</td>
<td>Counseling and services at a large, comprehensive rehabilitation center providing information, referral, training, vocational evaluation, medical care, and counseling</td>
<td>Quantitative survey, qualitative interviews, scales/validated instruments, and administrative records</td>
<td>3 data points</td>
<td>Customers at a comprehensive rehabilitation center</td>
<td>Convenience sample, assigned to next counselor (with availability to serve)</td>
<td>N = 53</td>
</tr>
</tbody>
</table>
Table 17 continued.

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>VR counselors</td>
<td>Surveyed all counselors working for a state VR agency</td>
<td>N=235 ( n=122 ) MA degree in rehab counseling ( n=52 ) MA degree in related field ( n=64 ) BA or MA degree in unrelated field</td>
<td>Multiple comparison groups</td>
</tr>
<tr>
<td>Szymanski &amp; Parker (1989a)</td>
<td>Investigated performance of counselors with respect to educational background, caseload, and work experience</td>
<td>Quantitative survey and administrative data</td>
<td>1 data point for survey and administrative data</td>
<td>VR counselors</td>
<td>Surveyed all counselors working for a state VR agency</td>
<td>N=235 ( n=122 ) MA degree in rehab counseling ( n=52 ) MA degree in related field ( n=64 ) BA or MA degree in unrelated field</td>
</tr>
<tr>
<td>Szymanski &amp; Parker (1989b)</td>
<td>Investigated performance of counselors with respect to educational background, caseload, and work experience</td>
<td>Quantitative survey and administrative data</td>
<td>1 data point for survey and administrative data</td>
<td>VR counselors</td>
<td>Surveyed all counselors working for a state VR agency</td>
<td>N=235 ( n=121 ) MA degree in rehab counseling ( n=114 ) other degree</td>
</tr>
</tbody>
</table>
### Table 17 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Data Collection Method</th>
<th>Data Points</th>
<th>Sample</th>
<th>Sampling</th>
<th>Sample Size</th>
<th>Study Limitations</th>
</tr>
</thead>
</table>
|       | Investigated performance of counselors with respect to educational background, caseload, and work experience | Quantitative survey and administrative data | 1 data point for survey and administrative data | VR counselors | Surveyed all counselors working for a state VR agency | N=144  
 n=57 MA degree in rehab counseling  
 n=33 related MA degree  
 n=10 BA degree in rehab counseling  
 n=44 unrelated degree or less than BA degree | Multiple comparison groups | Used alpha level of .10 for reasons related to statistical power; sample limited to single setting (state); and variables statistically controlled rather than manipulated. |
| Szymanski & Danek (1992) | Investigated performance of counselors with respect to educational background, caseload, and work experience | Quantitative survey and administrative data | 1 data point for survey and administrative data | VR counselors | Surveyed all counselors working for a state VR agency | N=100  
 n=30 MA degree in rehab counseling  
 n=23 related MA degree  
 n=47 unrelated MA or BA degree | Multiple comparison groups | Used alpha level of .10 for reasons related to statistical power; sample limited to single setting (state); and variables statistically controlled rather than manipulated. |
Table 18. Quasi-Experimental Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balcazar, Lardon, Keys, Jones, &amp; Davis (2005)</td>
<td>Counselor-provided training and/or follow-along support to increase goal attainment among VR customers</td>
<td>Goal attainment, help-recruitment skills, employment outcomes</td>
<td>-</td>
<td>-</td>
<td>• Effect sizes calculated</td>
<td>VR customers who received only training, or both training and follow-along supports, had better results.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Goal attainment: effect of both training and support (.96), effect of training only (.29), effect of follow-along support only (.50).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Help-recruitment: effect of both training and support (1.1), effect of training only (1.2), effect of support only (.54).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Employment outcomes: significant effect for training-only group.</td>
<td></td>
</tr>
<tr>
<td>Borgeson &amp; Cusick (1994)</td>
<td>Personalized outreach to potential VR customers, tighter MH-VR collaboration</td>
<td>VR program entry/drop out</td>
<td>-</td>
<td>-</td>
<td>• Significant group difference with more intervention participants entering the VR program.</td>
<td>Individuals with severe MI who received personalized outreach had better results.</td>
</tr>
<tr>
<td>Borgeson (1992)</td>
<td>Personalized outreach to potential VR customers, tighter MH-VR collaboration</td>
<td>VR program entry/drop out</td>
<td>-</td>
<td>-</td>
<td>• Significant group difference with more intervention participants entering the VR program.</td>
<td>Individuals with severe MI who received personalized outreach had better results.</td>
</tr>
</tbody>
</table>
Table 18 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Dean & Dolan (1991)      | Evaluation of VR program’s net earnings impact on successful VR customers and VR drop-outs (control) | Earnings impact (Measured as quarterly earnings change for period between 2nd pre-VR year and 1st post-VR year) | Benefit-cost ratios  | -              | • Earnings coefficient of women is about twice that of men across the 3 disability groups and significant for physical and mental disabilities.  
• Group differences in earnings impact, although average service costs were comparable. | VR program is more effective (earnings) for women than for men among people with physical and mental disabilities. |
| Dean, Dolan, & Schmidt (1999) | Evaluation of VR program’s net earnings impact on successful VR customers and VR drop-outs (control) | Earnings impact (Measured as change in annual earnings for period between 2nd pre-VR year and 1 post-VR year, up to 8 post-VR years) | Benefit-cost ratios  | -              | • Significant and positive earnings effect for women across all 7 disability groups.  
• Positive but significantly weaker effects for men across 6 of 7 disability groups.  
• More cost-effective for women than men; least cost-effective for women and men with MR. | VR program is more effective (earnings) for women than men; and least effective (benefit-cost) for women and men with MR. |
<p>| Hergenrather, Rhodes, &amp; McDaniel (2003) | Identify determinants of vocational placement professionals’ intent to place people with disabilities into jobs | Staff attitudes toward placement of people with disabilities into jobs: behavioral beliefs, normative beliefs, control beliefs | -                    | -              | • Study identified 10 outcomes of customer placement (behavioral beliefs), 3 groups of persons influencing professionals when placing people with disabilities into jobs (normative beliefs), and 8 impediments to job placement (control beliefs). | Professionals a have positive attitude towards job placement; are mostly influenced by their supervisor; most frequently reported barrier is customer lack of job seeking skills |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Main (2002)         | No intervention-developed models of workload management that are applicable to rehabilitation counselors | -                   | -                | Optimal ranges of time spent on different caseload functions based on aspects of case and customer | • Models were developed, empirically tested and cross-validated on small samples of cases until reduction was sufficient.  
• Average optimal minutes per case were calculated based on type of disability, place in rehabilitation process (e.g., training, placement), and size of caseload. | Factors such as disability type, stage in rehabilitation process, caseload size, and whether there is a special population (e.g., youth, persons with MI, or other populations that might require more counseling time) were used to derive the optimal standards for workload management. |
| Kolakowsky-Hayner (2007) | Investigation of impact of demographic factors and service involvement on acceptance rates in the public VR program, and impact of race on reason for closure | Acceptance rates and reason for closure | -                | Patterns of acceptance and reason for closure with customers with different demographic factors | • Calculated strength of association to determine practical significance due to large sample size.  
• Predictive validity of exhaustive CHAID analysis was calculated at 99.4%.  
• Most significant predictor of acceptance for services was primary source of support at application.  
• Significant differences between white and non-white customers on reason for closure, but “modest” strength of association. | Findings suggest that racial disparity in rehabilitation acceptance rates is still unclear. Despite statistically significant differences, there did not appear to be a practical difference between white and non-white customers with regard to reason for closure. |
Table 18 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Richardson, B. K. (1973) | Counseling and services at a large, comprehensive rehabilitation center providing information, referrals, training, vocational evaluation, medical care, and counseling | Successful closure, examined relationship between disability factors, demographic factors, work history, personality factors, service variables, and perception of counseling relationship and the outcome. | - | - | • Those who completed training were more likely to close successfully.  
• No significant differences were found on perception of counseling relationship.  
• Customers who were successfully closed did not necessarily experience improvements in self-concept as compared with the other group.  
• Most variables tested in this experiment produced non-significant results. | Most factors of self-concept and personality were not significantly impacted by rehabilitation services, and for the most part did not differ between groups. Customers who completed training were more likely to close successfully, and no differences were found between groups on perception of counseling relationship (e.g., working alliance). |
| Szymanski & Parker (1989a) | Investigated performance of counselors with respect to educational background, caseload, and work experience | Competitive closures, non-competitive closures, and case expenditures for non-competitive closures; attention to customers with severe disabilities | - | - | • No significant differences in success with customers with non-severe disabilities.  
• No significant differences between counselors with MA degree in rehab counseling vs related MA degree  
• Counselors with MA degree in rehab counseling spent fewer case dollars on non-successful closures, had better successful closure rates, and fewer unsuccessful closures than those with BA or unrelated MA degrees. | Counselors with MA degree in rehab counseling are not only more effective but also more cost-efficient in serving customers with severe disabilities than counselors with a BA or unrelated MA degree for a substantial portion of their agency tenure. |
Table 18 continued.

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Individual Outcomes</th>
<th>Program Outcomes</th>
<th>Agency Outcomes</th>
<th>Results/Effect Size</th>
<th>Conclusion</th>
</tr>
</thead>
</table>
| Szymanski & Parker (1989b)   | Investigated performance of counselors with respect to educational background, caseload, and work experience | Competitive closure/ rehab rate for customers with severe disabilities                 | -                | -              | • Power analysis calculated.  
• Counselors with MA degree in rehab counseling were significantly more successful in competitive closure rates with persons with severe disabilities than counselors with other degrees during the first six years of service. | Counselors with MA degree in rehab counseling outperformed counselors with degrees in other disciplines. These differences dissipated after approximately 6 years of counseling experience. |
| Szymanski (1991)             | Investigated performance of counselors with respect to educational background, caseload, and work experience | Counselor performance (successful case closure) with attention to customers with severe disabilities | -                | -              | • Effect sizes calculated.  
• The combination of level of counselor education and years of DVR experience accounted for 10% of the variance of competitive closure rate for customers with severe disabilities and 13% of the variance of number of rehabilitated customers with severe disabilities. | Counselors with MA degree in rehab counseling or related MA degree demonstrate better rehabilitation outcomes with customers with severe disabilities than do their colleagues with unrelated BA or MA, or less than BA degree. |
| Szymanski & Danek (1992)     | Investigated performance of counselors with respect to educational background, caseload, and work experience | Competitive closures, non-competitive closures, and case expenditures for non-competitive closures | -                | -              | • Effect sizes and power analysis calculated.  
• Not significant differences in # of closures (persons with severe and non-severe disabilities).  
• Counselors with MA degree in rehab counseling are more cost-effective and achieve higher competitive-employment outcomes with customers with severe disabilities. | Counselors with MA degrees in rehab counseling have higher rates of competitive outcomes and are more cost-efficient than their colleagues with unrelated BA or MA degree in their service to people with severe disabilities. Both counselors with MA degree in rehab counseling and those with related MA degree are more cost-efficient in overall service delivery. |
APPENDICES

Appendix A: Study Methods

This review aimed to answer the following research question:

- **What are the characteristics of the public Vocational Rehabilitation program in terms of its programmatic and systemic features, the types of customers served, and the kinds of outcomes achieved as reported in research studies?**

More broadly, the review aimed to describe the existing VR research base, including gaps in research, and to make recommendations for future research investment.

To answer these questions, researchers conducted a systematic review between May 2008 and February 2010 of existing empirical research on the public VR system. The methodology for this study consisted of six steps: (1) recruitment of advisory board, (2) selection of review approach, (3) development of inclusion and exclusion criteria, (4) searching for studies, (5) screening studies, and (6) data analysis, interpretation, and synthesis of findings. Each of the steps is explained in detail after a list of definitions of key terms used in the review and a brief description of the review team. The section concludes with a description of study limitations.

Definitions of Key Terms Used in the Review

**VR system** referred to the state VR agencies that implement the public VR program at the state level, and also to any agency (e.g., state mental health agencies, state intellectual and developmental disabilities agencies, workforce development agencies, community rehabilitation providers) that supports them in this effort.

**VR services** referred to services provided to working-age adults with disabilities (aged 22 and older) under Title I and Title VI Part B (Supported Employment) of the Rehabilitation Act of 1973, as amended, although the review primarily focused on employment services. The review paid less attention to transition services or services targeted at younger adults (aged 21 and younger).

**Individual outcomes** included employment outcomes (such as type of employment, wages, working hours) and related outcomes (such as self-sufficiency, health status and management), as well as outcomes related to VR service delivery (such as individuals' view of services, customer satisfaction).

**Agency or program outcomes** included effectiveness (examining how well a particular program or service worked in terms of the desired outcome), efficiency (examining the outcomes of a particular program or service in relation to cost, speed, resources invested, etc.), agency or program cooperation (examining agencies and programs jointly working towards a common goal), and staffing outcomes (such as staff capacity, satisfaction, and retention).

Description of Review Team

The review team consisted of nine members: three researchers (Boeltzig, Klemm, Cully) from the Institute for Community Inclusion (ICI) at the University of Massachusetts Boston (UMB), six graduate students from UMB and Michigan State University, and one reference librarian (Mullins) from the UMB Library. The six graduate students included: four master’s-level students (Infante, Lewandowski, Gottshall, Szenami) from the Sociology, Linguistics, and American Studies programs at UMB, and two doctoral students (Fleming, Luse Manninen) from the Michigan State University doctoral program in Rehabilitation Counseling. At the time of
the review, all graduate students had completed or were completing graduate-level coursework in research methods. Boelting and Cully also participated in a training workshop on the Campbell Collaboration (C2) model for systematic reviews. Senior research and program management staff from the ICI (Foley, Halliday, Marrone, Kiernan) and InfoUse (Stoddard, Jans) provided input on important stages of the research. Note that InfoUse is a research partner on the VR-RRTC project.

Methodology

1. Recruitment of Advisory Board
User involvement is an important step in project planning and managing but also provides another level of quality check. The study recruited an advisory board of three rehabilitation researchers (see Acknowledgements on page 1 for a list of board members.) These participants provided input on important stages of the research (such as development of study inclusion and exclusion criteria, literature search, and identification of experts).

In addition, researchers solicited input during study implementation from VR agency staff, researchers, and practitioners at various venues (such as annual meetings and conferences of the Council of State Administrators of Vocational Rehabilitation [CSAVR] and the National Association of Rehabilitation Research Training Centers [NARRTC]).

2. Selection of Review Approach
Initially, the study intended to use the Campbell Collaboration (C2) model to conduct a systematic review of VR research. C2 focuses primarily on systematic reviews of randomized control trials (RCTs) on effectiveness in the areas of social welfare, education, and crime and justice. Unlike C2 reviews, researchers expected the majority of the studies in this review to be qualitative studies rather than experimental or quasi-experimental studies (although there might also be some correlational studies). Researchers contacted the Campbell Collaboration to inquire about the possibility to register the study and the extent to which C2 could provide methodological support. Although the topic of the review was relevant to C2 content areas, C2 was not ready at the time to register and support a systematic review of predominantly qualitative research.

Researchers contacted two other evidence-based centers in the United Kingdom: the Cochrane Collaboration, and the Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Centre). Similar to C2, Cochrane focuses on systematic reviews of RCTs’ effectiveness, mainly in health care, although it increasingly acknowledges the role of qualitative evidence in improving the scope and relevance of systematic reviews. However, study registration at the time did not extend to reviews of qualitative research, although staff from Cochrane’s Qualitative Research Methods Group offered to provide methodological advice and guidance throughout the review.

In addition to Cochrane, researchers also contacted the EPPI-Centre. Unlike C2 and Cochrane, the EPPI-Centre does not have a “model” for systematic reviews, but adheres to the general standards and transparency required to conduct these types of studies. The EPPI-Centre describes its approach to systematic reviews as “question-led,” which may involve looking at different types of studies including qualitative research. Researchers reviewed information about the center, its approach, and the types of supports available (methodological and software/technical), and also communicated with EPPI-Centre staff. Based on this information, researchers chose the EPPI-Centre approach as the most appropriate fit for the study.

3. Development of Inclusion and Exclusion Criteria
Researchers developed a list of inclusion and exclusion criteria to guide the literature search. The criteria were also used to screen studies to determine their fitness for inclusion in the review. Table 19 on page 62 presents the list of inclusion criteria.
Table 19. Study Inclusion Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Date</td>
<td>Studies should be published or dated between 1970 and 2008.</td>
</tr>
<tr>
<td>2. Language</td>
<td>Studies should be written in English.</td>
</tr>
<tr>
<td>3. Country</td>
<td>Studies should be carried out in the United States.</td>
</tr>
<tr>
<td>4. Age</td>
<td>Studies should focus on working-age adults.</td>
</tr>
<tr>
<td>5. Study Type</td>
<td>Studies should be empirically based (i.e., findings based on analysis of</td>
</tr>
<tr>
<td></td>
<td>directly observed and/or collected information), using qualitative</td>
</tr>
<tr>
<td></td>
<td>and/or quantitative methods. Studies based on secondary data analysis</td>
</tr>
<tr>
<td></td>
<td>of Rehabilitation Services Administration data and other relevant datasets</td>
</tr>
<tr>
<td></td>
<td>are also included.</td>
</tr>
<tr>
<td>6. Study Content</td>
<td>Studies should focus on the functioning of a program or service or one</td>
</tr>
<tr>
<td></td>
<td>of its constituent parts, as provided by state VR agencies under Title I</td>
</tr>
<tr>
<td></td>
<td>or Title VI Part B (Supported Employment) of the 1973 Rehabilitation</td>
</tr>
<tr>
<td></td>
<td>Act, as amended. The study’s focus should be the effect of this program/</td>
</tr>
<tr>
<td></td>
<td>service on people with disabilities (customer outcomes) or its efficiency</td>
</tr>
<tr>
<td></td>
<td>(system-level outcomes). This includes studies investigating outcomes,</td>
</tr>
<tr>
<td></td>
<td>delivery processes, and VR program management.</td>
</tr>
</tbody>
</table>

4. Searching for Studies

Identification of Information Sources
Researchers conducted a search of literature published or dated between 1970 and 2008 by tapping into a variety of sources. These included: (a) electronic databases, (b) websites of relevant organizations, and (c) experts in public VR and related fields. Electronic databases included 20 academic databases that are listed in Appendix B on page 67. To select these databases, researchers developed a list of (248) academic journals that focus on VR and related issues, and obtained information about database access to these journals, publication years, and format (hard copy, electronic). Researchers narrowed the list to the 68 journals most relevant to the review. (The list of journals is available from the first author upon request.) The databases through which these journals can be accessed were selected for searching.

Websites included those of relevant government and related organizations (such as the Rehabilitation Services Administration, the Government Accountability Office, and state VR agencies); professional organizations (such as the Council of State Administrators of Vocational Rehabilitation) and national information and dissemination centers (such as the National Center for the Dissemination of Disability Research); research institutes, centers, and think tanks (such as the Research Triangle Institute International and the Institute on Rehabilitation Issues); disability advocacy organizations (such as the National Council on Disability); and employer- and business-related organizations (such as the Federal Disability Workforce Consortium). A list of the websites searched in this study is included in Appendix B on page 67. Additionally, experts in public VR and related fields were asked to help identify relevant studies for the review, especially those that are unpublished (“gray” literature).

Search Process
Once researchers had identified the information sources, they conducted a comprehensive search for potentially relevant studies with the assistance of a Reference Librarian from the UMB library. The search was conducted over a six-month period (May—October 2008). Researchers conducted several types of searches: (a) controlled searches (subject and keyword terms), (b) free-text searches, (c) hand searches, and (d) website
searches. To conduct a controlled database search, the researcher selects a term listed in the thesaurus or in the subject term list/guide of the particular database. The researcher can search the term as a subject term or as a keyword term. Using the term as a subject term searches the list of subject terms that the journal assigned to each study. Similarly, using the term as a keyword searches the list of keywords that authors assigned to their study. In contrast to controlled searches, free-text searches allow searching for text anywhere in a citation including the title, journal name, and abstract.

Researchers conducted controlled (subject term) searches in 11 databases (listed in Appendix B on page 67) that had a thesaurus or a subject term list/guide that listed the subject term “vocational rehabilitation.” In addition, they searched 14 databases (listed in Appendix B on page 67) using the words “vocational rehabilitation or rehabilitation services administration” as (author-supplied) keywords. Together with a reference librarian, researchers developed detailed instructions to guide each database search.

In addition to controlled searches, researchers developed and piloted a list of search terms for free-text searches. They conducted free-text searches in 10 electronic databases (listed in Appendix B on page 67). Researchers together with a reference librarian translated the list of search words into search syntax (a copy of which is available from the first author) and developed search instructions for each database. All identified studies with their bibliographic information were imported into the EPPI-Reviewer Version 3.0, a web-based software application to manage the whole life cycle of systematic review.

Some journals (27) or particular years of a journal publication were only available in hard-copy format. In these cases, researchers located these publications at the UMB library or at another Boston-area university library. Researchers hand-searched these journals; they scanned the titles and abstracts of the studies using the list of controlled and free-text search terms for guidance. Nine of the 68 identified relevant journals were available online, but not via an academic database, and researchers manually searched each journal for potentially relevant studies. If a study seemed relevant, researchers copied the study’s bibliographic information and then entered the information manually into the EPPI-Reviewer.

The list of controlled and free-text search terms also guided the website search. Researchers searched a total of 110 websites (listed in Appendix B on page 67). If a study seemed relevant, researchers copied the bibliographic information for entry into the EPPI-Reviewer and, if the study document was available, downloaded it.

Additionally, researchers developed a list of experts in VR and related fields. This included directors/chairs of rehabilitation counseling graduate programs; directors of employment-focused Rehabilitation Research and Training Centers (RRTCs) and University Centers for Excellence in Developmental Disabilities Education, Research, & Service (UCEDDs); and directors of the (then called) Rehabilitation Continuing Education Programs (RCEPs). Researchers contacted these experts and asked them about studies relevant to the review, and about other experts who have conducted research in the VR field. Bibliographic information of the studies identified by experts were entered into the EPPI-Reviewer.

5. Screening Studies
The literature search yielded a total 12,822 “hits” (after 7,442 duplicates had been removed in the EPPI-Reviewer), including documents that were not research studies (e.g., newspaper articles, newsletter items, advertisements). The next step involved screening the studies for potential inclusion in the review. Three researchers (Boelzig, Klemm, Cully) and three graduate students (Infante, Lewandowski, Gottshall) participated in this process. Researchers applied the screening criteria (see Table 19 on page 62) to the bibliographic references of the collected studies. In cases where the bibliographic information was insufficient to determine study inclusion or exclusion, researchers obtained the full-text of the study and re-applied the

A Selected Look at the Literature Base on Vocational Rehabilitation and Implications for Future Research
VR-RRTC—Institute for Community Inclusion at UMass Boston
screening criteria. Of the 12,822 studies, 550 were determined eligible for inclusion in the review. Researchers obtained the full-text for those studies and uploaded the information into the EPPI-Reviewer in preparation for analysis.

The Review Team used several strategies—screener training and instructions, screening exercises, double screening, and audit trail—to ensure consistency and quality of the screening process. The process started with training the team members in the application of the screening criteria. This included exercises where team members screened studies as a group and discussed differences in screening until a consensus was reached. As part of this process, the group developed instructions for screening to provide additional guidance. Team members were also trained in how to screen studies electronically using the EPPI-Reviewer. Double screening was another technique the Review Team used. Staff were grouped into teams of two; each team was assigned a certain number of studies to be screened electronically. Each of the two-team staff members independently screened the studies (double screening). The team then met with a third researcher to discuss and resolve those cases where team members differed in their screening results. The purpose of the third researcher was to aid in the decision-making by providing an objective perspective. Screening results were tracked and documented in the EPPI-Reviewer.

6. Data Analysis, Interpretation, and Synthesis of Findings
The next step in the review involved coding the 550 studies included in the final sample. Coding refers to attaching meaningful labels that signify concepts, actions, or recurrent themes to data or pieces of data (Miles & Huberman, 1984). Researchers developed a tool to guide the coding process. Specifically, they used an existing coding tool from the EPPI-Centre (EPPI-Centre, n.d.) and customized it to the review question. The coding tool consisted of 11 sections that included categorical and open-ended types of codes.

The 11 sections were: (a) Administrative details, (b) Study aims, rationale and scope, (c) Actual sample, (d) Details about the program or service, (e) Results, conclusions and recommendations, (f) Methods–Sampling strategy, (g) Methods–Recruitment and consent, (h) Methods–Design and data collection, (i) Methods–Data analysis, (j) Quality of the study–Reporting, and (k) Quality of the study–Level and weight of evidence. (A copy of the coding tool is available from the first author upon request.) Three researchers (Boeltzig, Klemm, Cully) and five graduate students (Infante, Lewandowski, Szenamici, Fleming, Luse Manninen) participated in the coding process, although most of the coding was done by graduate students. Studies were coded electronically in the EPPI-Reviewer.

The review team used several strategies—coder training and instructions, coder exercises, inter-coder reliability checks, and audit trail—to ensure consistency and quality of the coding and data-analysis process. The process started with training the team of coders on the coding tool and the instructions for applying the codes. This was followed by at least five rounds of coding exercises where team members individually coded a number of studies, both qualitative and quantitative, and then met as a group (in person and by phone) to go over the coding and discuss any coding differences until a consensus was reached. Each coder was assigned a number of studies to be coded in the EPPI-Reviewer, which provided an audit trail.

Inter-Coder Reliability Checks. The coding team consisted of three researchers and five graduate students, with some graduate students having less research experience compared to research staff. Fifteen studies from each coder were randomly selected and reviewed for consistency and quality of coding. For example, one code in the coding tool instructed coders to score a study with respect to the quality of study methods. The quality score was calculated by aggregating several components as reported in the study. The highest score a study could receive as the sum of these components was 15. Studies rated “high” received scores of ten or greater, a “medium” rating meant that a study was scored between a seven and a nine, and “low” indicated that a study
had received six or fewer points on the components. Table 20 shows the distribution of scores by type of coder (researchers, graduate students). Most studies were rated “high” (10+ points) by both researchers (35.6%) and graduate students (44.0%), suggesting little variation in coding by coder type.

**Table 20. Study Quality Scores by Coder Type**

<table>
<thead>
<tr>
<th>Study Quality Scores</th>
<th>Researchers n studies reviewed = 45</th>
<th>Graduate Students n studies reviewed = 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (0–6 points)</td>
<td>15 (33.3%)</td>
<td>12 (16.0%)</td>
</tr>
<tr>
<td>Medium (7–9 points)</td>
<td>14 (31.1%)</td>
<td>30 (40.0%)</td>
</tr>
<tr>
<td>High (10+ points)</td>
<td>16 (35.6%)</td>
<td>33 (44.0%)</td>
</tr>
</tbody>
</table>

Once all the studies had been coded, researchers ran a series of coding reports (a table listing the studies and the text coded relevant to a specific code or combination of codes) in the EPPI-Reviewer. The coding reports provided the basis for the analysis conducted by two researchers (Boeltzig, Klemm) and one doctoral student (Fleming). Most coding reports took the form of frequency reports including cross-tabulations; researchers reviewed the frequencies and synthesized the findings. Several codes/code categories instructed coders to provide additional descriptive detail (the “please specify” option). Researchers analyzed this data, identifying common themes and patterns. Analyzing the additional descriptive detail resulted in some instances in changes of study coding; researchers re-ran the frequency reports and synthesized the findings. In other instances, researchers used existing codes/code categories and combined them to analyze the data more broadly or from another perspective. For the purpose of this (first) report, researchers analyzed the main codes (but not all of the codes) of the coding tool. Senior research and program management staff from the ICI and InfoUse reviewed drafts of the report prior its publication.

**Study Limitations**

This study faced several limitations. One concerned the search process. Although researchers conducted an extensive search process tapping into a variety of sources, there is always the possibility that studies were missed. Another limitation concerned the types of studies included in the review, i.e. studies based on empirical research (both quantitative and qualitative) that met all the other selection criteria. Reviewing studies across the methodology spectrum was challenging, particularly with regard to summarizing study results and appraising study quality. For example, the review identified 11 RCTs, none of which reported effect size. This limited the possibility of conducting a statistical meta-analysis of results across these studies. (Note that a variety of statistics can be used for the purpose of meta-analysis, including effect size [Lipsey & Wilson, 2001].) The field of systematic reviews and syntheses has acknowledged the important role that qualitative studies play in the process of systematically reviewing the knowledge base on a particular topic as captured in research studies. However, integrating qualitative studies into systematic reviews, especially in terms of appraising the quality of qualitative studies, continues to be a challenge (Dixon-Woods & Fitzpatrick in Petticrew & Roberts, 2006, p.71).

Another study limitation concerned the coding tool used for extracting information from eligible studies. Some codes (such as agency/program efficiency and effectiveness) were broadly defined, giving coders flexibility
in how to apply these codes. Researchers used several strategies (coder training and instructions, coding exercises, inter-coder reliability checks, and audit trail) to address this potential source of bias. However, the general definitions of some codes may have contributed to variations in interpretations among coders.

Related to this, most of the study screening and coding was done by graduate students (in part because of budgetary reasons), who varied in their knowledge of methodology and the public VR program. Strategies such as double screening and inter-coder reliability checks revealed little variation in screening and coding between researchers and graduate students. However, limited knowledge among these students may have contributed to the exclusion of studies meeting inclusion criteria or discrepancies in coding. Furthermore, researchers were only able to code information available in the studies, so even if authors conducted a power analysis, if they did not report it, it could not be considered. Due to time constraints, reviewers did not contact authors of particular studies to request further information.
Appendix B: Search Strategy – Information Sources

Electronic Databases

<table>
<thead>
<tr>
<th>Database</th>
<th>Controlled Search</th>
<th>Free Search</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subject Term</td>
<td>Keyword Term</td>
</tr>
<tr>
<td>Academic Search Premier</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Academic One File</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Ageline</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Business Source Premier</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CINAHL (Cumulative Index to Nursing and Allied Health Literature)</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Dissertation Abstracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EconLit</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Educator’s Reference Complete</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERIC (Educational Resources Information Center)</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Expanded Academic ASAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Reference Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IngentaConnect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Development Collection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proquest Education Journals</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Proquest Nursing and Allied Health Source</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PsycARTICLES</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>PsycINFO</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>ScienceDirect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SocINDEX</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Wiley Interscience Journals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. Researchers accessed the databases except Wiley Interscience Journals through the University of Massachusetts Boston library website ([http://www.lib.umb.edu/find/databases/search](http://www.lib.umb.edu/find/databases/search)). Wiley Interscience Journal was accessed directly via the website: [http://www3.interscience.wiley.com/](http://www3.interscience.wiley.com/).*

Websites

*Government and Related Organizations*

Department of Education (US DOE)

Rehabilitation Services Administration (RSA)
[http://www2.ed.gov/about/offices/list/osers/rsa/index.html](http://www2.ed.gov/about/offices/list/osers/rsa/index.html)

Department of Labor (US DOL)
Employment and Training Administration (ETA)
http://www.doleta.gov/etainfo/

Office of Disability Employment Policy (ODEP)
http://www.dol.gov/odep/

Social Security Administration (SSA)
http://www.ssa.gov/

Government Accountability Office (GAO)
http://www.gao.gov/

State VR Agencies
http://www.workworld.org/wwwebhelp/state_vocational_rehabilitation_vr_agencies.htm
This website provides web links to the websites of 70 of the 80 state VR agencies.

Professional Organizations and National Information and Dissemination Centers

The Council of State Administrators of Vocational Rehabilitation (CSAVR)
http://www.rehabnetwork.org/

National Association of Rehabilitation Research Training Centers (NARRTC)
http://www.ilr.cornell.edu/edi/narrtc/index.shtml

National Rehabilitation Association (NRA)

National Center for the Dissemination of Disability Research (NCDDR), including the Registry of Systematic Reviews http://www.ncddr.org/

National Rehabilitation Information Center (NARIC), including REHABDATA
http://www.naric.com/research/rehab/advanced.cfm

Center for International Rehabilitation Research Information and Exchange (CIRRIE), including the Database of International Rehabilitation Research
http://cirrie.buffalo.edu/

National Clearinghouse of Rehabilitation Training Materials (NCRTM), including the Digital Library
http://ncrtm.org/

Institute on Rehabilitation Issues (IRI)
Research Institutes, Centers and Think Tanks

Research Triangle Institute (RTI) International
http://www.rti.org/

Westat, Inc.
http://www.westat.com/

InfoUse
http://www.infouse.com/

Mathematica Policy Research, Inc.
http://www.mathematica-mpr.com/

The Urban Institute
http://www.urban.org/

Institute for Community Inclusion (ICI)*, University of Massachusetts Boston
http://www.communityinclusion.org

Indiana Institute on Disability and Community (IIDC)*, Indiana University
http://www.iidc.indiana.edu/

Institute on Community Integration (ICI)*, University of Minnesota
http://ici.umn.edu/

Center for Community Inclusion and Disability Studies (CCIDS)*, University of Maine
http://www.ccids.umaine.edu/

Center on Disability and Employment, University of Tennessee
http://www.cde.tennessee.edu/default.html

Rehabilitation Research and Training Center (RRTC) on Workplace Supports and Job Retention, Virginia Commonwealth University
http://www.worksupport.com/

Rehabilitation Research and Training Center (RRTC) on Employment Policy and Individuals with Disabilities, Employment and Disability Institute, School of Industrial and Labor Relations, Cornell University
http://www.ilr.cornell.edu/edi/index.cfm

Rehabilitation Research and Training Center (RRTC) on Improving Employment Outcomes, Hunter College of the City University of New York (CUNY)
http://www.essrtc.org/

John J. Heldrich Center for Workforce Development
http://www.heldrich.rutgers.edu/
National Center on Education and the Economy (NCEE), Workforce Development  

Center for the Study and Advancement of Disability Policy  
http://www.disabilitypolicycenter.org/

Law, Health Policy & Disability Center at the University of Iowa College of Law  
http://disability.law.uiowa.edu/

National Center on Workforce and Disability for Adults (NCWD/Adult)  
http://www.onestops.info/

National Collaborative on Workforce and Disability for Youth (NCWD/Youth)  
http://www.ncwd-youth.info/

* University Centers for Excellence in Developmental Disabilities Education, Research, and Service (UCEDD)

Disability Advocacy Organizations

National Organization on Disability  
http://www.nod.org/

National Council on Disability (NCD)  
http://www.ncd.gov/

Job Accommodation Network (JAN)  
http://www.jan.wvu.edu/

Employer- and Business-Related Organizations

Federal Disability Workforce Consortium  
http://www.fdwc.info/links

Disability and Business Technical Assistance Center (DBTAC)  
http://wwwadata.org/index.html
Appendix C: List of Studies (N=550) Included in the Review


Cavenaugh, B.S. (1999b) Relationship of agency structure and client characteristics to rehabilitation services and outcomes for consumers who are blind. Mississippi State, MI: Rehabilitation Research and Training Center on Blindness and Low Vision, Mississippi State University. Retrieved from the ERIC database. (ED471947)


Fagnoni, C.M. (2007). *Workforce Investment Act: One-stop system infrastructure continues to evolve, but Labor should take action to require that all employment service offices are part of the system* (GAO-07-1096). Washington, DC: Government Accountability Office.


---

A Selected Look at the Literature Base on Vocational Rehabilitation and Implications for Future Research

VR-RRTC—Institute for Community Inclusion at UMass Boston


Nilsen, S.R. (2004). Workforce Investment Act: Labor has taken several actions to facilitate access to One-Stops for persons with disabilities, but these efforts may not be sufficient (GAO-05-54). Washington DC: Government Accountability Office.


---

A Selected Look at the Literature Base on Vocational Rehabilitation and Implications for Future Research

VR-RRTC—Institute for Community Inclusion at UMass Boston


Appendix D: List of Studies (n = 24) Using an Experimental Research Design


REFERENCES


