Overview of Vocational Rehabilitation Data about People with Visual Impairments: Demographics, Services and Long-Run Labor Market Trends

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Structured Abstract

Introduction: This study describes the characteristics of, services received by, and labor market outcomes of applicants with visual impairments to three state vocational rehabilitation (VR) programs. Our objective is to both document cross-state variation in VR clientele and services as well as provide new insights on the longitudinal labor market outcomes of VR clients with visual impairments. This is a first step in assessing the returns to VR services for this population.

Methods: We first created a unique longitudinal dataset by matching administrative records on visually impaired applicants in state fiscal year (SFY) 2007 from three VR agencies to eight years of employment data from state Unemployment Insurance (UI) programs. Using these data, we examined cross-state variation in the descriptive statistics for important client explanatory variables and VR service categories. We then compared the long-term labor market outcomes of clients receiving services (treated) to untreated individuals.

Results: We documented two important findings. First, there were substantial differences in client characteristics, services provided, and costs across the three states. Second, the long run labor market analysis were consistent with VR services having no employment effect but a positive earnings effect.

Discussion: Labor market results indicate VR services provided persistent earnings benefits. Yet, the substantial cross-state heterogeneity suggest these labor market results might not be generalizable and should be interpreted with caution. We explain what was missing from this analysis and why the results should not be thought of as causal.

Implications for Practitioners: This paper gives practitioners a sense of a unique new dataset on VR and labor market variables for applicants with visual impairments. We highlight the importance of cross-state variation and linking VR data to long-term employment measures. The

question of how best to inform the efficacy of different VR strategies for clients with visual impairments is left for future researchers to consider.

In the last decade, state vocational rehabilitation programs (VR) have faced increasing demands to demonstrate effectiveness using rigorous and credible return on investment (ROI) analyses. An ROI analysis formally compares the monetized benefits of VR services to the associated costs of these services. Although there are many thorny conceptual issues involved in measuring the benefits and costs of VR services (see Clapp, Pepper, Schmidt, & Stern, 2019 for details), the first step is to assemble and describe the available data. This paper undertakes such a descriptive evaluation of a new and unique dataset on VR applicants with visual impairments. To do this, we examine client and agency characteristics, service provisions, and long-run labor market outcomes of the SFY 2007 VR applicant cohorts from Maryland, Oklahoma, and Virginia. Our novel dataset includes numerous measures about each applicant including basic demographic and health information as well as detailed service receipt and cost information. In addition, we observe quarterly employment and earnings data from SFY 2005 to SFY 2012.

This paper highlights important features of VR programs and clients across the three states and provides a preliminary analysis of the longitudinal labor market data. Our primary innovation is to examine labor market data several years before and after service receipt. Previous analyses generally focused on the employment rates of VR clients with visual impairments soon after completing services. For example, using Rehabilitation Services Administration (RSA) data from fiscal years 1997 to 2007, Bell (2010) documented a competitive employment rate of 31.8% for people with visual impairments, with the rates growing from 27% in 1997 to 37% in 2007. Earnings also increased. Warren-Peace (2009) showed that VR clients who are legally blind had much higher non-competitive closures from VR (29.5%) than VR clients with any other disabilities (1.5%).

A number of other studies identified correlates between post-closure employment and various observed explanatory variables. For example, Cimera, Rumrill, Chan, Kaya, & Bezyak (2015) found statistically significant associations between post-closure employment and the age, gender, and education of the VR client (also see Bell, 2010; Capella, 2001; Estrada-Hernandez, 2008; Giesen & Lang 2018; Warren, Giesen, & Cavenaugh 2004). Capella-McDonnall (2005) and McDonnall (2016) found that employment is associated with the characteristics and approach of the counselor, while Giesen & Lang (2018) and Steinman et al. (2013) identified meaningful associations between employment and the structure of the VR office (e.g., blindness-specific versus combined agency). Finally, some studies examined particular types of VR services. Leonard, D'Allura, & Horowitz (1999), for example, found that assistive technology, training, and orientation & mobility improve employment outcomes (also see Giesen & Hierholzer, 2016).

Using our longitudinal data, we provide both researchers and practitioners new insights on applicants with visual impairments, agencies, and the long-run employment and earnings effects of VR programs. We first document substantial heterogeneity in the VR clientele and services across the three states. Then, with eight years of labor market information, this paper presents the first long-run analysis of employment and earnings among VR applicants with visual impairments. Results are consistent with VR service receipt increasing earnings but not employment.

In addition to providing important new descriptive information, this analysis is a critical first step for future researchers to consider as they attempt to make determinations about the return on investment in the rehabilitation of people with visual impairments. The descriptive results from this paper suggest that accounting for cross-state heterogeneity in client characteristics, services, and agency structure will be critical in order to draw credible inferences on the effect of VR on labor market outcomes for people with visual impairments. Dean, Pepper, Schmidt, & Stern (2015, 2017, 2018) and Schmidt, Clapp, Pepper, & Stern (2019) provided a modelling strategy that might be used to estimate the ROI for VR for clients with visual impairments. Clapp et al. (2019) discussed the difficulties with performing a credible ROI analysis that provides causal effects of VR services.

While we are not aware of any empirical evidence on the effects of VR on the long-run economic outcomes of people with visual impairments, there are good reasons to expect a positive return from VR services. Köberlein, Beifus, Schaffert, & Finger (2013), for example, estimated that productivity losses and absenteeism due to visual impairments in the United States and Canada are on the order of $5.3 billion/year, and the cost of reduced labor force participation is on the order of $7.4 billion/year. These costs are substantially larger than the total United States VR budget in 2017 of $3.1 billion (U.S. Department of Education, 2017) and state grants for the rehabilitation of people with visual impairments of $3.1 billion (Richert, 2018). This suggests VR services have the potential to reduce the economic costs of visual impairments.

Data Construction and Merging

Our starting point is the state VR administrative records for the State Fiscal Year (SFY) 2007 applicant cohorts from Maryland, Oklahoma, and Virginia. All VR clients recorded as having a primary or secondary visual impairment disability are included in our analysis sample. In particular, we observe data on 1,964 applicants with visual impairments with 598 from Maryland, 953 from Oklahoma, and 413 from Virginia.

Data from these three state agencies are part of a larger nine-agency project to study the ROI of state VR programs, funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR). Maryland, Oklahoma, and Virginia were the first states to provide us with the complete data necessary to undertake this descriptive analysis. Although geographically and programmatically diverse, these agencies are not a representative sample from the population. As such, whether results from these three agencies can be generalized is an open question and should be addressed by future researchers.

For each applicant, the VR administrative record provides information on basic demographic and health information in SFY 2007 along with VR service receipt and expenditure variables. The VR agencies collected much of the data for administrative purposes, including filing of the RSA-911 Case Service Report with the RSA. These data include (a) individual information (e.g., demographics and education); (b) case-specific information (e.g., disability diagnoses, case-related dates, closure type and reason, counselor, and field office); (c) information for each purchased service (including details on type and amount paid); and (d) comparable information on services provided within the agency and/or by a state-operated comprehensive rehabilitation center (if relevant and available).

We merged these data with quarterly earnings information from the state UI agency. The UI program collects earnings data to determine state unemployment insurance benefits. While these earnings data cover most businesses, some are not covered. In particular, people working for the federal government or commuting across state lines are not included in state UI data. Although we do not know the fraction of clients with vision impairments employed in business not covered by the state UI agencies, Dean et al. (2017) found that 12% of VR participants in Virginia’s general agency who reported earnings to the Internal Revenue Services were not covered by the UI system. Thus, this data limitation may be an important issue for future researchers to address.

Through a cooperative agreement between the VR agency and the state's UI program, we obtained quarterly earnings records from SFY 2005 to SFY 2012 for individuals in the analysis cohort. To provide a baseline against which to gauge VR's labor market impact, we collected UI data for two years prior to the submission of a VR application in SFY 2007. Because it is important to measure VR's impact in both the short and long term, we collected five years of UI data following VR application. Approximately 67% of the individuals included in this study reported UI earnings in at least one of these quarters.

Further details on the different data sources, construction, and confidentiality issues are provided in Stern, Clapp, Pepper, & Schmidt (2019).

Explanatory Variables

We begin by analyzing basic client characteristics across the three states. As described previously, the literature evaluating VR clients with visual impairments documented significant associations between employment and a wide range of demographic, health, and VR agency-specific measures. More generally, the labor economics literature (for example, Aakvik, Heckman, & Vytlacil, 2005; Baldwin, 1999; Dean et al., 2015, 2017, 2018; and Stern, 1989, 1996) found a set of similar explanatory variables (e.g., demographics, education, health) that almost always has a significant effect on both employment and quarterly earnings. Most of the variables identified in these literatures are included in our data. The one notable exception is that our data do not include information on the handful of agency administrative functions (e.g., agency control over human resources) that Steinman et al. (2013) found to be correlated with subsequent employment.

As seen in Table 1, the explanatory variables in our data can be decomposed into separate groups including demographic variables, education variables, and disability variables. There are some substantial differences in the characteristics of the VR clients across states. The first variables of particular interest are the race variables. There is wide variation in the proportion of VR clients who are white across states that does not merely reflect the racial composition of the state. For example, in Maryland, the percentage white is 42.8% (versus 64% of the population), while, in Oklahoma, it is 80.3% (versus 65%). Another related variable of interest is the prevalence of Native Americans. In Oklahoma, 12.6% of the 953 (n=120) Oklahoma applicants with visual impairments are Native American, providing a large enough sample to estimate the effects of VR for Native Americans with visual impairments.

The education variables also show significant variation across the three states. Virginia has a smaller percentage of clients with just a high school diploma (31.2%) but a much higher proportion with college degrees (19.1%). In part, these differences may reflect variation in the client characteristics across states and that the Virginia Department for the Blind and Vision Impaired (DBVI) as a blindness-specific agency may focus policy and practice on clients with higher education, while combined agencies like those in Maryland and Oklahoma have policy and practice that are more generic.

The table includes three sets of variables relating to the type and severity of an individual's disabling condition(s). These are included because severity was found to have a strong effect on both employment (Cavenaugh, Giesen, & Steinman, 2006; Darensbourg, 2013; Leonard et al., 1999) and medical costs (for example, Frick, Gower, Kempen, & Wolf, 2007; Köberlein et al., 2013). The first set relates to the presence of impairment(s) in addition to a visual impairment. Among the three states, Virginia has the lowest rates of additional impairments, and Maryland has the highest. For example, the rate of physical impairment is 24.5% in Virginia, 43.5% in Oklahoma, and 51.7% in Maryland.

There are also big differences across the states in the two measures identifying the relative priority of the disabling condition(s) qualifying the participant for services In particular, the proportion of individuals in the data who are labeled with a "most significant disability" is highest in Maryland (78.6%) and very small in Virginia (6.8%). The final pair of disability characteristics provide more detail about the visual impairment and also vary notably across agencies. Blind indicates that an RSA-911 impairment category is either blindness or deaf-blindness. Congenital blindness indicates that the RSA-911 cause code for blindness is a congenital condition or birth injury. In Virginia, 82.8% of applicants with visual impairments are blind, and 18.2% are congenitally blind; in Maryland, 42.3% are blind, and 23.7% are congenitally blind; and, in Oklahoma, 24.3% are blind, and 17.1% are congenitally blind. It is not clear what causes the large variation across states.

A final explanatory variable is a pre-2007 employment indicator. Pre-service employment and earnings played a critical role in the Dean et al. (2015, 2017, 2018) and Schmidt et al. (2019) ROI evaluations of VR programs for clients with other impairments. The fraction of clients employed in at least one-quarter pre-application is similar for clients in all three states at around 52%.

The results in Table 1 identify substantial heterogeneity in client demographics and disabilities. Using a basic chi-squared test for dummy variables and ANOVA test for numeric variables we find that these cross state differences are nearly all statistically significant at the one-percent significance levels. The exceptions are for the proportion of clients with a high school diploma, the proportion with hearing impairments, and the pre-application employment rate. This heterogeneity raises concerns about the generalizability of analyses using these data to assess the impact of VR on labor market outcomes. Certainly, future ROI analyses will need to account for this heterogeneity.

Services Data

The next discussion concerns service variables. The 2008 RSA-911 handbook identified 16 different service categories, rising to 22 by 2013, 28 in 2014, and many more in the current edition. This is too many for any kind of an evaluation exercise. In fact, most of the literature on treatment effects assumes there is only one treatment available, and people either receive the treatment or not (see the analysis of labor market data that follows, for example).

Rather than focus on a binary treatment variable, Giesen & Hierholzer (2016) used a statistical factor model to identify four key service categories. Schmidt et al. (2019) aggregated the detailed service information to seven categories. They based their categories on three considerations: (a) the number of categories should be limited to at most nine or ten, (b) the categorization should reflect the way agencies do business (based on extensive discussion with VR agency staff), and (c) the categories should be expected to have different impacts on employment and earnings (both in magnitude and short vs. long term). Our analysis uses a modified version of the seven broad categories suggested by Schmidt et al. (2019):

- diagnosis & evaluation: assessing eligibility, developing an IPE, medical diagnostics;
- training: career and technical, job readiness, on-the-job, vocational, general education diploma;
- education: various services related to post-secondary education;
- restoration: medical and mental health care services;
- maintenance: transportation, clothing, vehicle/ home modification, rent, etc.;

- placement: employment services, vocational support services, etc.; and
- job supports: job coaching, supported employment.

Based on discussions with service providers at each of the three agencies, we expanded this list to include assistive technology (rehabilitation technology in the RSA-911) and orientation & mobility (disability-related augmentative skills). Unlike the first seven aggregated service categories, these last two service codes conform perfectly to the RSA-911 services. For further details on these service categories and how they vary across clients who have a cognitive impairment, mental illness, or physical impairment, see Dean et al. (2015, 2017, 2018) and Stern et al. (2019).

Service Receipt

Table 2 displays the fraction of clients receiving different types of purchased services in the three states. Except for education services, the proportions across the states are statistically different at the one-percent significance level (chi-squared test). For most service types, Maryland provides purchased services to many fewer clients than Oklahoma and Virginia. Also, there is a difference in the mix of services with Maryland emphasizing diagnosis & evaluation (53.0%), maintenance (45.0%), and assistive technology (38.1%); Oklahoma emphasizing diagnosis & evaluation (53.8%), restoration (50.9%), and maintenance (35.3%); and Virginia emphasizing maintenance (53.8%), restoration (35.6%), and diagnosis & evaluation (34.9%).

A final important feature of VR service receipt is that many clients apply for VR services multiple times. For SFY 2007 applicant cohorts in Maryland and Oklahoma, around 10% of clients first apply for VR services prior to 2007, and 30% apply for services at least twice. In Virginia, just over 40% of clients apply multiple times. Previous research has shown that ignoring prior service provision distorts estimates of service impacts on employment and earnings (Dean et al., 2015). Although our analysis of the labor market outcomes in this paper does not account for prior or subsequent spells, this will be an important factor to address in future ROI analysis.

Service Cost

We also observe information on the cost of purchased services. Cost is important because it has a large impact on any measure of return on investment. An expensive service requires a relatively large benefit to have a positive return on investment. Cost data might also be used as measure of the intensity of the service provision and might be considered by future researchers.

Table 3 provides information on the medians, means, and standard deviations of per-client purchased service cost for each of the nine categories of services. Education services ($5,488 mean, $2,699 median) are the most expensive of services, followed by assistive technology ($3,157 mean, $2,180 median), supported employment ($3,018 mean, $1,354 median), and restoration ($2,576 mean, $1,484 median). Diagnosis & evaluation ($408 mean, $260 median) is an order of magnitude less expensive than all of the other services.

It is also clear from the table that there is significant variation in cost even within an aggregated service category; the standard deviation of cost is greater than the mean for each category. For example, the standard deviation for orientation & mobility is more than three times the mean.

Labor Market Variables

Finally, we examine longitudinal data on the labor market variables of VR clients with vision impairments who had exited the program. We focus on two different measures of labor market outcomes in Figures 1 and 2. The first is the proportion of clients who are employed during the quarter, and the second is average quarterly earnings for those employed.

For each labor market outcome, we display the longitudinal patterns from 8 quarters before the client applied for VR services in SFY 2007 to 20 quarters afterwards and compare average outcomes for 1314 clients we refer to as "treated" with 494 clients we refer to as "untreated." Specifically, we identify clients as being treated if they completed an individualized plan for employment and then received "substantial" VR services in support of that plan. This determination was made by the agency and recorded for the RSA-911 case service report in the field for the type of closure. Substantial services are defined as exiting either with an employment outcome or without an employment outcome but after receiving services. We classify all other applicants as "untreated" for one of these closure reasons: (a) they were found to be ineligible for VR services because their disabilities were too severe or not severe enough (7.5%), (b) they did not complete their application for any other reason (34.8%), or (c) they dropped out of the program before substantial services were provided (57.7%).

These figures allow us to compare the average labor market outcomes of treated and untreated clients conditional on the SFY 2007 application quarter. However, this descriptive time-series analysis does not account or control for the covariates listed in Table 1, the nine different service categories listed in Table 2, or the fact that some treated clients receive VR services for many post-application quarters. We discuss the limitations of this type of descriptive analysis at the end of this section.

Figure 1, which shows how employment rates change over time, provides the first long-run characterization of employment rates for VR applicants with visual impairments. The figure shows that employment rates are consistently falling after the SFY 2007 application (period 0) and that clients receiving substantial VR services (treated) have higher employment rates than those not receiving service (untreated). Post-application employment rates fall from 24.9% to

18.0% for not treated and from 36.6% to 25.2% for treated. The basic downward trend in the employment rate reflects, in part, the onset of a severe recession in 2008.

The differences in the employment rates by treatment status tell us only that service recipients are better connected to the labor market throughout the period than are service non-recipients, but that does not imply that service receipt improves employment rates. In fact, the treated start with higher rates before the SFY 2007 application. The difference in rates between treated and untreated is 2.7% eight quarters prior to application and rises to a 7.1% difference two quarters prior. The gap peaks at 11.7% one quarter after, falling to 7.2% twenty quarters after application. Many researchers would measure the improvement in employment by comparing the difference (treated minus untreated) in employment rates after VR application to the difference in employment rates prior to application, possibly with controls for covariates and corrections for statistical issues. This is referred to as a difference-in-difference estimator. Using this approach, there is no obvious improvement in employment outcomes of service receipt.

Figure 2 has the same structure as Figure 1 but for mean quarterly earnings for those who are employed. As with Figure 1, those treated have higher average nominal earnings than those not treated. However, the difference in earnings between treated and not treated increases after service receipt and permanently. The average difference in quarterly earnings between treated and untreated is about $810 for quarters two through eight before VR application and rises to about $940 for the 20 quarters after application. Thus, service receipt is positively associated with quarterly earnings.

In both figures, it is clear that focusing on employment and earnings at closure or even a year after closure leads to misleading results. All four curves in the two figures move significantly over the course of the 20 quarters after VR application.

While these figures illustrate the association between VR services and labor market outcomes, we caution readers not to draw causal conclusions about the effects of VR from these descriptive associations. Several studies identify the directions for future research in this area. Dean et al. (2015, 2017, 2018) showed that the type of analysis associated with Figures 1 and 2 can lead to seriously biased estimates of VR returns. In particular, it is important to (a) control for explanatory variables of the type listed in Table 1; (b) address the reality that different service types of the kind displayed in Table 2 have different effects on labor market outcomes; (c) account for the closure date and (d) control for the endogeneity of service choices (see, for example, Wooldridge (2010) for a general explanation of endogeneity and Clapp et al. (2019) for a VR-specific discussion). Dean et al. (2017) showed how much each extra modelling choice affects estimates. In addition, missing from our basic analysis is the fact that the financial crash of 2008 had a large effect on aggregate unemployment, beginning in the quarters after application. Schmidt et al. (2019) controlled for such an effect.

Results and Implications

Our unique longitudinal data on the labor market outcomes of VR clients with visual impairments provide important new insights on this population. First, there is notable variation in demographic characteristics of clients, the VR services provided to clients, and the costs of services across the three states. Second, focusing on labor market activity at closure or a short period after completing services (as is done in other analyses of VR) provides incomplete and possibly misleading estimates of long-run effects of VR service on labor market outcomes (see Figures 1 and 2). Finally, the longitudinal labor market results are consistent with VR service receipt increasing earnings (if employed) but not employment.

To be clear, the results reported in this paper are descriptive and should not be used to draw causal conclusions. For example, the analysis associated with Figures 1 and 2 does not account for other ways that treated and untreated VR clients differ. The next step for future researchers will be to estimate a model of the effect of VR on labor market outcomes for people with visual impairments using a modelling strategy similar to the models in Dean et al. (2015, 2017, 2018) and Schmidt et al. (2019). This estimation strategy allows researchers to account for the heterogeneity identified in this paper.

Importantly, models such as those used in the Dean et al. (2015, 2017, 2018) papers need to be modified to reflect the particular circumstances of VR clients with visual impairments. The typical VR client with visual impairments faces different challenges and receives somewhat different services than other VR clients. As a result, several modifications need to be made. First, the Dean et al. (2015, 2017, 2018) and Schmidt et al. (2019) models aggregated the services information to six or seven broad service categories (see the “Services Data” section), while an analysis of applicants with visual impairments should include categories for assistive technology and orientation & mobility, two service types that are seldom provided for other VR clients.

Second, in addition to accounting for different service types, an analysis of clients with vision impairments should also account for the cross-state variation in client demographics, services, and agency structure. The descriptive patterns discussed above will inform salient features the model must capture. For instance, the descriptive analysis in this paper suggests that agency structure (i.e., part of the state VR agency or a separate division) will be an especially important factor to include in the model. Blindness-specific agencies have the ability to develop their own policies, while combined agencies have policies that are not typically tailored to just one disability population. Cavenaugh, Giesen, & Pierce (2000) provided evidence that earnings at closure of clients who are legally blind were significantly higher in blindness-specific agencies than in combined agencies. Warren-Peace (2009) provided similar results. Capella (2001), however, found that agency type is not related to earnings. Since each state chooses one agency type or the other, an obvious empirical hurdle in addressing such a question is how to distinguish between state effects and type-of-agency effects. A second important issue is how to control for differences in the amount of resources available in the two agency types.

There are two important caveats to our work. First, changes to VR that occurred in response to the 2014 Workforce Innovation and Opportunity Act are not reflected in these data or our analysis. Second, our study focuses on labor market measures as the sole outcomes of interest. For people with visual impairments, there is a strong argument for looking at other outcomes, especially the development of independent living skills. Halpern (1985) argued that living arrangements are critically important to the overall quality of an individual’s life. Frick et al. (2007) reported that $5.5 billion is spent on home care for people with visual impairments, and Sanford et al. (2011) reported that, among youths with disabilities, those with visual impairments had the highest rates of living independently after graduation from high school. This suggests that developing independent living skills are important for people with visual impairments, and services exist to help develop such skills.

There are good reasons to expect that VR services have a high rate of return for clients with visual impairments. As noted in the introduction, there are potentially large economic benefits associated with VR for people with visual impairments while the purchased service costs as well as the total cost of VR are low. Thus, VR provides an opportunity to improve outcomes at a relatively low cost.

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Author's Note

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Table 1

Proportions of Applicants with with Visual Impairments for Selected Characteristics, by State

Variable	**Maryland**	**Oklahoma**	**Virginia**	**Total**
# Observations	598	953	413	1964
Demographic Variables				
Male	0.480	0.463	0.554	0.487
White	0.428	0.803	0.608	0.648
Native American	0.015	0.126	0.002	0.066
Age (in years)[a]	42.1	47.7	39.1	44.2
Veteran	0.032	0.065	0.005	0.042
Education Variables				
HS Diploma	0.338	0.348	0.312	0.338
Some College	0.258	0.301	0.186	0.264
College Degree	0.159	0.059	0.191	0.117
Disability Variables				
Intellectual Disability	0.040	0.010	0.010	0.019
Hearing Impairment	0.072	0.057	0.053	0.061
Physical Impairment	0.517	0.435	0.245	0.420
Learning Disability	0.048	0.022	0.007	0.027
Mental Illness	0.171	0.095	0.024	0.103
Substance Abuse	0.064	0.018	0.002	0.029
Disability Significant	0.089	0.220	0.915	0.326
Disability Most Significant	0.786	0.637	0.068	0.563
Blind[b]	0.423	0.243	0.828	0.421
Congenital Blindness[c]	0.237	0.171	0.182	0.193
Miscellaneous Variables				
Government Assist.	0.560	0.311	0.559	0.439
Employment Before 2007	0.532	0.519	0.540	0.527

[a] Unlike the other variables, the mean is shown in the table for age. [b] Identified by an RSA-911 impairment category of either "blindness" or "deaf-blindness." [c] Identified by the RSA-911 cause code of "congenital condition or birth injury."

Table 2
Service Proportions by State for all SFY 2007 VR Applicants

Service	**Maryland**	**Oklahoma**	**Virginia**	**Total**
Diagnosis & Evaluation	0.530	0.538	0.349	0.496
Training	0.207	0.118	0.240	0.171
Education	0.077	0.093	0.104	0.091
Restoration	0.107	0.509	0.356	0.354
Maintenance	0.450	0.353	0.538	0.421
Placement	0.074	0.046	0.138	0.074
Supported Employment	0.059	0.026	0.063	0.044
Assistive Technology	0.381	0.209	0.077	0.234
Orientation & Mobility	0.054	0.033	0.068	0.046

Table 3
Descriptive Statistics by Type for Per-Client Purchased Service Costs (N = 1,964)

Service Type	# Obs	Median	Mean	Std Dev	Minimum	Maximum
Diagnosis & Evaluation	974	$260	$408	$494	$4	$5,626
Training	335	$1,040	$2,577	$4,269	$6	$36,859
Education	178	$2,699	$5,488	$8,174	$15	$57,471
Restoration	696	$1,484	$2,576	$3,255	$15	$36,027
Maintenance	827	$501	$2,051	$5,996	$4	$113,254
Placement	145	$1,000	$2,258	$5,442	$9	$37,636
Supported Employment	86	$1,354	$3,018	$3,401	$76	$12,536
Assistive Technology	459	$2,180	$3,157	$3,766	$22	$29,774
Orientation & Mobility	91	$500	$2,523	$8,500	$28	$67,449

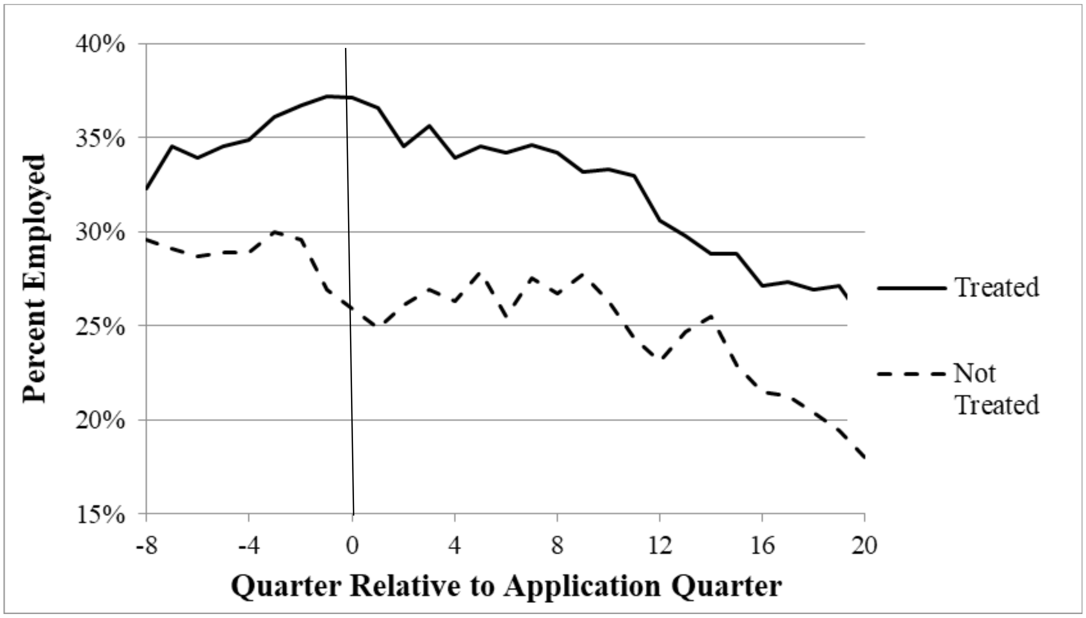

Figure 1. Employment Percentages (Notes: N=1808, 1314 Treated, and 494 Not Treated. Quarter 0 represents an individual's application quarter during State Fiscal Year 2007.)

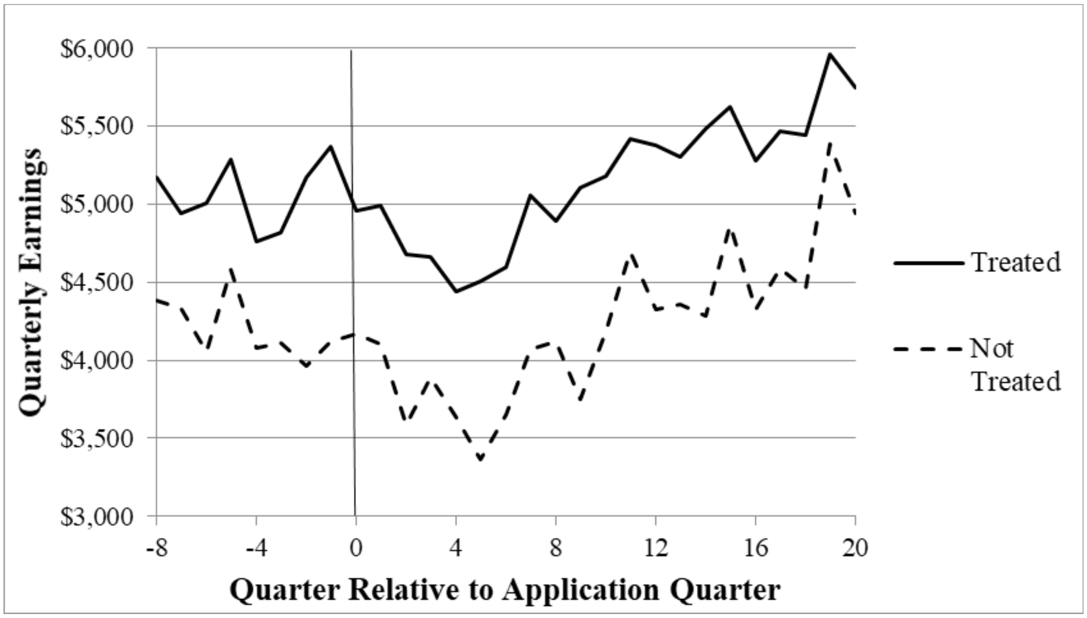

Figure 2. Mean Quarterly Earnings, if Employed (Notes: N=1808, 1314 Treated, and 494 Not Treated. Quarter 0 represents an individual's application quarter during State Fiscal Year 2007.)