

The Effects of Vocational Rehabilitation for People with Cognitive Impairments

Presentation at the
StatsRRTC State-of-the-Science Conference

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Overview of Presentation

- Using longitudinal employment data for developing “return” from VR
- Using longitudinal service provision data to calculate the VR “investment”
- Modeling, identifying, and estimating employment impacts of VR services
- Developing 5 & 10 year return-on-investment (ROI) estimates for DRS SFY 2000 Applicant cohorts with different impairments

Using Longitudinal Earnings Data to
Develop Employment-Related “Return”
from VR Service Provision

Importance of Examining VR Outcomes Over Time

- VR provides both short-term (Labor Force Attachment) and long-term (Human Capital Development) services
- GAO studies (2005 & 2007) of VR program:
 - Emphasis on Status 26 closures limits evaluation of state agencies' overall performance
 - Lack of historical earnings information limits credibility of existing performance indicators
- VR is not a “one and done” program: 33% of clients (or more) have 2+ VR service episodes

Obtaining Long-Term Employment Data

- State Unemployment Insurance (UI) program records often available
- Usually have data for 5 years (20 quarters) for all individuals in “covered employment”
- “Hit rate” of about 80% in Virginia
- Our studies use quarterly UI wage records
 - Up to 3 years pre-application; and
 - Up to 12 years post-application

The Analysis Samples by Impairment Type (1 of 2)

Modeling Issues Applying to all Impairments

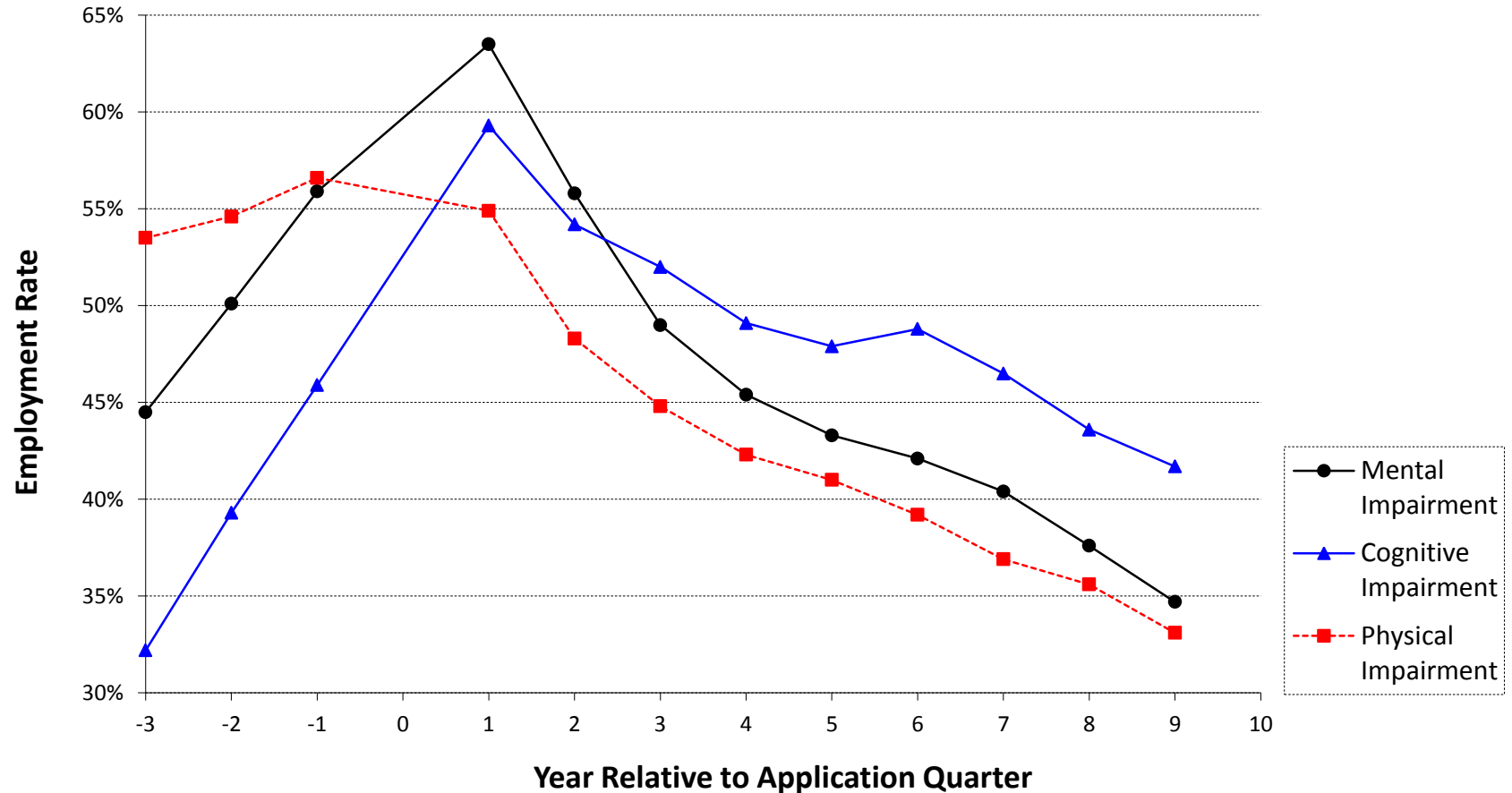
	# Dropped	# Remaining in Sample
Number of Applications for DRS Services in SFY 2000		10,411
Multiple applications in SFY 2000	235	
Number of Individuals Applying for DRS Services in SFY 2000		10,176
Reason for Dropping from Sample (All Impairments)		
Not in Virginia	59	10,117
Missing Primary Disability	194	9,923
Missing Secondary Disability	32	9,891
Initial Service Spell before SFY 2000	2,544	7,347
Neither Service nor Employment Record	297	7,050

The Analysis Samples by Impairment Type (2 of 2)

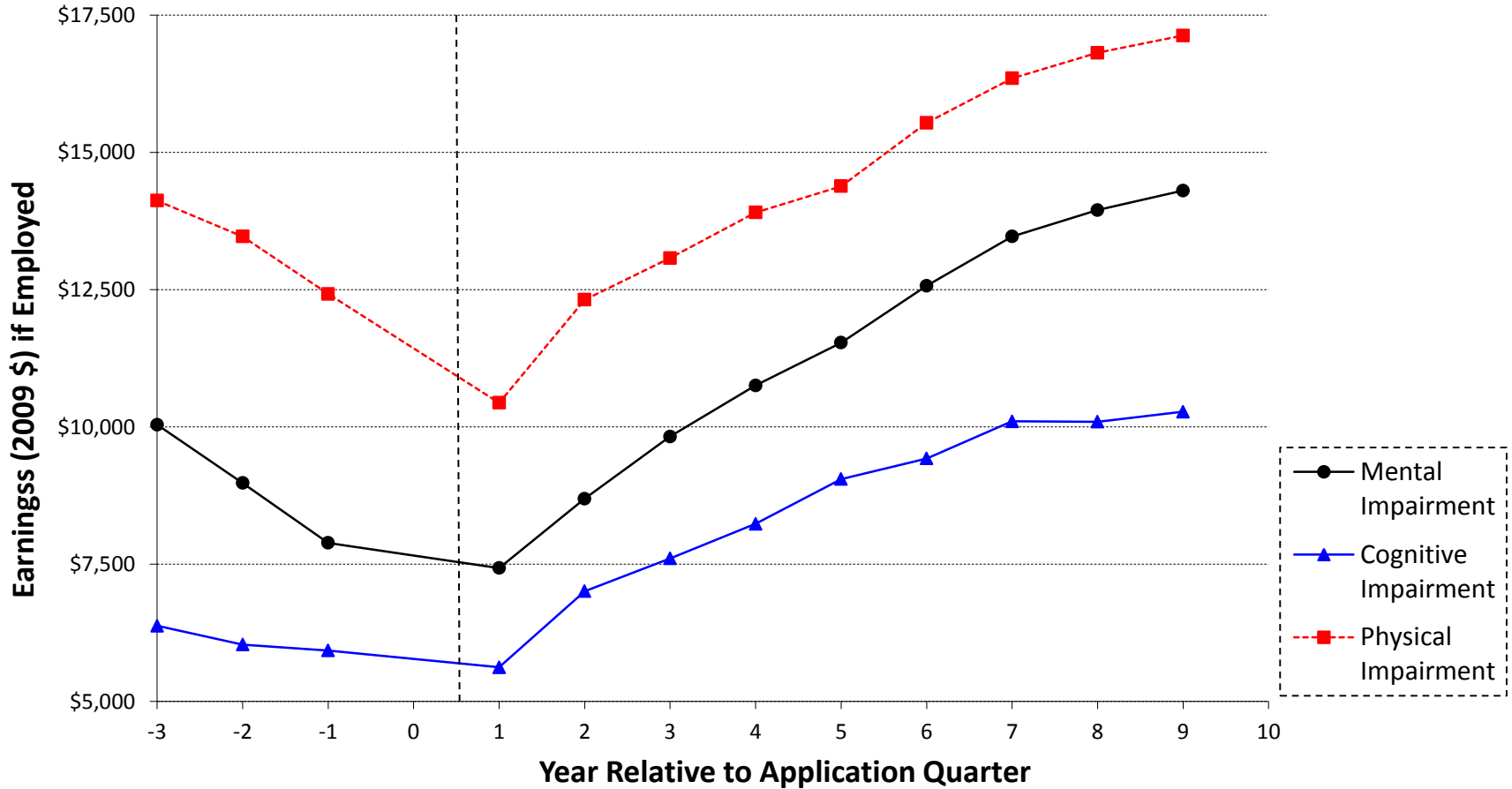
Analysis Sample by Impairment Type

	# Dropped	# Remaining in Sample
Mental Illness		7,050
Age Below 21 Years	2,585	4,465
No Primary or Secondary Impairment of Mentally Ill	2,910	1,555
Cognitive Impairment		7,050
Age Below 17 Years	409	6,641
No Primary or Secondary Impairment of Mentally Ill	5,632	1,009
Physical Impairment		7,050
Age Below 21 Years	2,585	4,465
No Primary or Secondary Impairment of Physical Impairment	1,853	2,612
Other Impairments		7,050
Age Below 21 Years	2,585	4,465
MI, PI, or CI	3,996	469

Pre and Post-VR Employment Rates by Impairment for DRS SFY 2000 Applicants



Pre and Post-VR Earnings by Impairment for DRS SFY 2000 Applicants



Using Longitudinal VR Services Data to Estimate the “Investment”

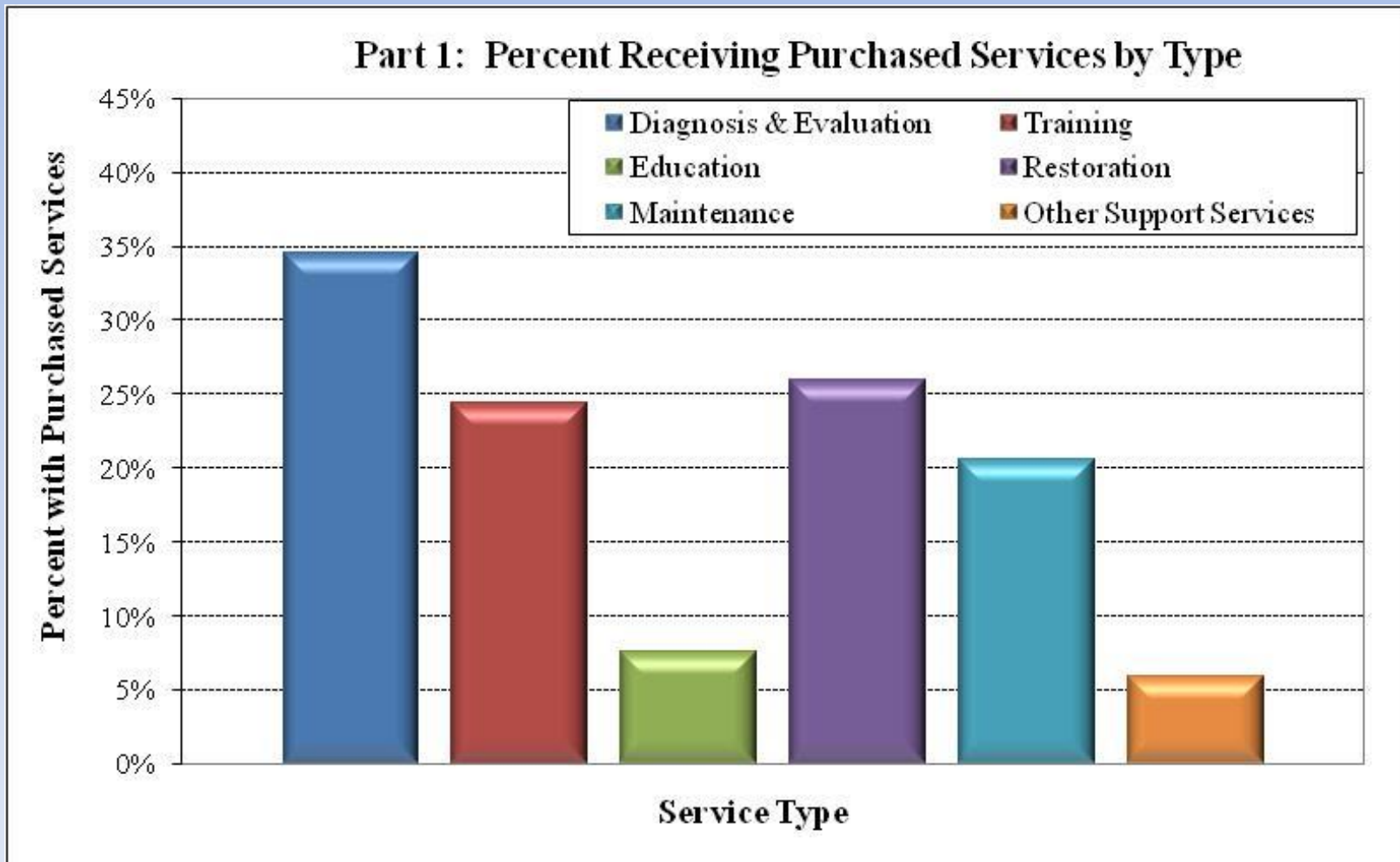
Examining VR Service Provision

- We are attempting to put a dollar value on all services provided to DRS applicants :
 - Purchased from a vendor,
 - Provided “in-house”,
 - Provided as a “similar benefit”, and
 - Provided via any combination of above
- For all VR episodes – “base”, prior, and subsequent cases

Decompose “VR” into “DTERMO”- six purchased service categories

- Diagnostic
- Training
- Education
- Restorative
- Maintenance
- and Other VR services

Percent of DRS SFY 2000 Applicants Receiving Purchased Services by Service Type



Purchased Services Classified by DTERMO & Impairment: Percent & Average Expenditure per Individual (if received)

Diagnostic & Evaluation	34.6%	\$384	Training	24.3%	\$2,530	Education	7.5%	\$2,278
Mental Illness	38.9%	\$324	Mental Illness	29.2%	\$2,057	Mental Illness	10.7%	\$1,794
Cognitive Impairment	35.6%	\$746	Cognitive Impairment	40.7%	\$2,852	Cognitive Impairment	1.8%	\$731
Physical Impairment	50.1%	\$322	Physical Impairment	13.1%	\$2,103	Physical Impairment	7.4%	\$2,304
Other Impairments	24.3%	\$228	Other Impairments	15.4%	\$1,861	Other Impairments	7.2%	\$2,480
Restoration	26.1%	\$1,288	Maintenance	20.4%	\$1,008	Other	5.8%	\$2,089
Mental Illness	28.2%	\$804	Mental Illness	25.4%	\$970	Mental Illness	5.7%	\$779
Cognitive Impairment	20.8%	\$361	Cognitive Impairment	24.9%	\$441	Cognitive Impairment	2.9%	\$226
Physical Impairment	38.0%	\$1,935	Physical Impairment	16.0%	\$1,468	Physical Impairment	6.0%	\$1,394
Other Impairments	39.9%	\$1,154	Other Impairments	22.8%	\$930	Other Impairments	9.4%	\$985

Modeling, identifying, and
estimating employment impacts of
VR service provision

Limitations of Previous Studies

- Do not examine impacts for all VR participants
- Assume a homogeneous VR “treatment” effect and don’t allow for differential service provision
- Controls for “selection bias” still require making strong assumption: unobservable attributes (e.g., motivation) are similar across treatment & comparison groups

Innovations (1)

- Isolate effect of initial VR episode on employment & earnings
 - “Repeat” consumers having multiple VR episodes cost more and earn less

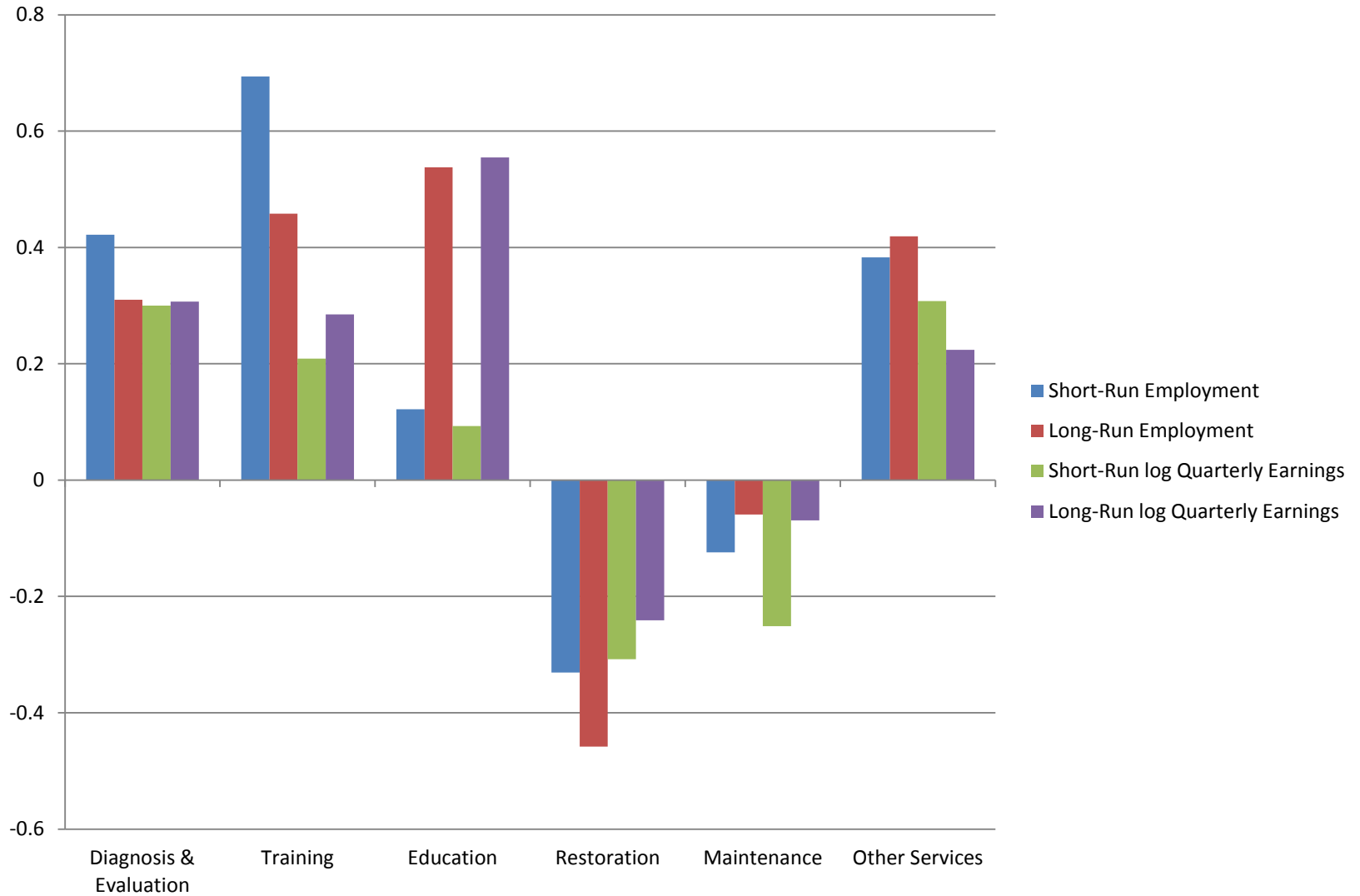
Innovations (2)

- Develop a three-equation “structural” model to estimate the impacts of VR service selection decisions on both employment probability and earnings
 - Equation 1: likelihood of receiving a specific set of VR services (DTERMO)
 - Equation 2: likelihood of being employed given their set of DTERMO
 - Equation 3: earnings of VR consumers, given their set of DTERMO and they are employed

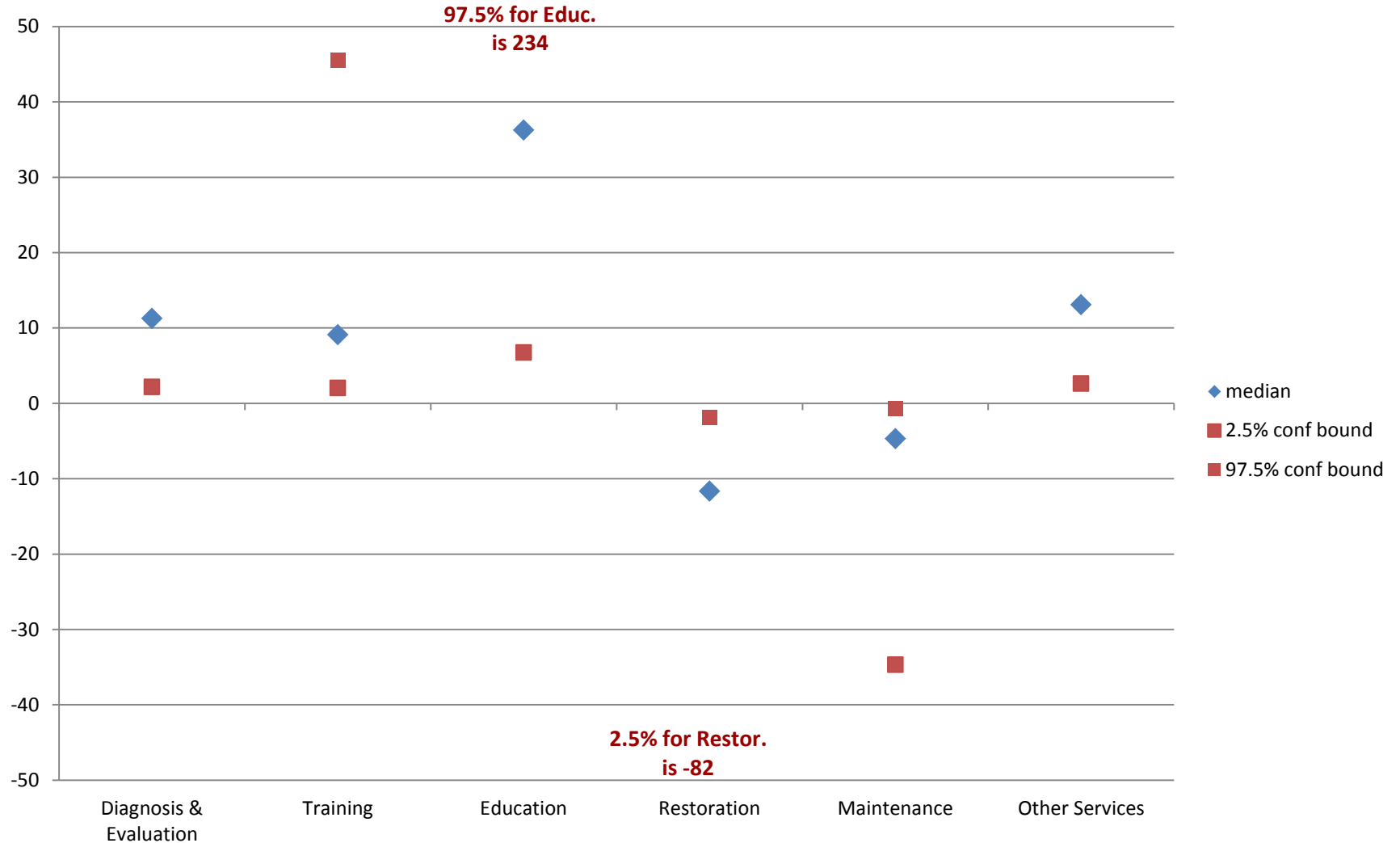
Innovations (3)

- “Identify” VR treatment effects by incorporating an “instrumental variable” (IV)
- An IV is associated with the VR service but not the labor market outcomes
- Use variation in DTERMO across counselor/field office caseloads

DRS Purchased Service Effects on Labor Market Outcomes for Persons with Cognitive Impairments



DRS Purchased Service Effects on Long-Run Discounted Earnings for Persons with Cognitive Impairments (in (\$000))

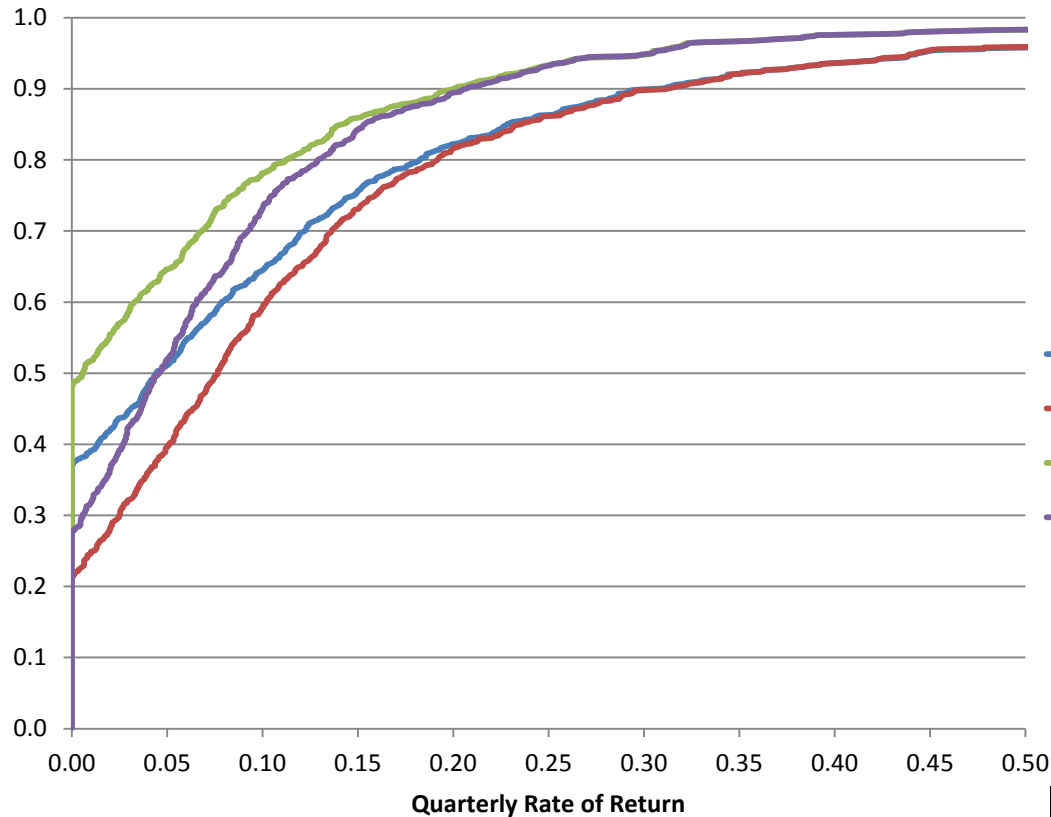


Issues in Calculating ROI

Rate of Return Methodology

- Develop distribution of quarterly “rates of return” for all persons in a given cohort
 - Unlike ROI do not have to assume a “discount rate” for earnings gains in future periods
 - Estimate five and ten year returns
 - For groups with different impairments (MI, CI, PI)
 - Ultimately, combine these together to get overall VR agency rate of return

Distribution of Quarterly Rates of Return for Cohort with Cognitive Impairment



Horizon	Fixed Cost	Proportion w/ Negative Return	Median Quarterly Return	90th Percentile Quarterly Return
10 Years	\$2,000	0.213	0.077	0.311
	\$4,200	0.277	0.046	0.205
5 Years	\$2,000	0.372	0.044	0.300
	\$4,200	0.483	0.006	0.200