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Expanding vocational retraining options for injured workers: An experiment in worker choice

Jeanne M. Sears[a,*], Thomas M. Wickizer[b] and Beryl A. Schulman[a]
[a]*Department of Health Services, School of Public Health, University of Washington, Seattle, WA, USA*
[b]*Division of Health Services Management & Policy, The Ohio State University College of Public Health, Columbus, OH, USA*

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Abstract.
BACKGROUND: An innovative self-directed vocational retraining alternative (Option 2) has been offered to eligible Washington State injured workers since 2008.
OBJECTIVE: We aimed to describe: (1) how frequently Option 2 was selected and by whom, (2) the extent to which Option 2 workers used their reserved retraining funds, and (3) how worker satisfaction and employment outcomes for Option 2 workers compared with those of workers undergoing traditional vocational retraining.
METHODS: Five-year cohort study involving workers' compensation data, state wage files, and two worker surveys.
RESULTS: Fewer than 25% of Option 2 workers used their retraining funds. Retraining fund use was associated with better employment outcomes. Workers who were older, whose preferred language was not English, or who had lower pre-injury wages or less education, were least likely to use Option 2 retraining funds. Many workers chose Option 2 because they thought the approved traditional retraining plan was not a good fit for them.
CONCLUSIONS: Self-directed retraining may benefit workers who have the ability, resources, and motivation to independently identify and complete retraining. Additional efforts may be needed to ensure that traditional retraining plans are well-suited to workers' circumstances, and to identify and remove barriers to use of reserved retraining funds.

Keywords: Vocational rehabilitation, workers' compensation, quality improvement, return to work, employment outcomes

1. Introduction

While a substantial majority of injured workers[1] are able to return to work (RTW) fairly soon after injury, others incur permanent impairments or have ongoing medical restrictions that require longer-term and more intensive support via vocational rehabilitation programs [1, 2]. The purpose of workers' compensation (WC)-based vocational rehabilitation programs is to facilitate RTW for workers who have been unable to return to their previous job after an occupational injury. While representing a small proportion of injured workers, these claims are generally the most complex and costly, with the highest potential to result in permanent disability [2]. Most states in the United States of America (USA) authorize some vocational rehabilitation benefits for injured workers via WC programs, but eligibility and covered services vary widely [3].

*Address for correspondence: Jeanne M. Sears, Department of Health Services, University of Washington, Box 354809, Seattle, WA 98195, USA. Tel.: +1 206 543 1360; E-mail: jeannes@u.washington.edu.

[1]The phrase "injured workers" is used to refer to workers with occupational injuries or illnesses throughout this manuscript.

Implementing effective vocational rehabilitation programs within WC settings has proven to be challenging, and these programs have been the focus of evaluation and improvement efforts internationally [1, 4–9].

In Washington State, the Department of Labor and Industries (L&I) manages the vocational rehabilitation program for covered injured workers. Washington State has a single-payer WC system (the State Fund) that covers approximately 70% of workers specified by the Industrial Insurance Act [10]. Self-insured employers account for the remaining 30%. No private WC insurers operate in Washington, which is one of only four states in the USA with an exclusive state fund [3]. L&I performs the functions of an insurer for State Fund claims and administers the state WC system for both State Fund and self-insured employers, which facilitates population-based research [11, 12]. An injured worker may be eligible for vocational retraining in Washington State if found to be: (1) not employable due to the effects of the occupational injury or disease, (2) physically able to participate in retraining, and (3) in need of retraining to become re-employable. Each year, about 2% of all injured workers or 6% of those entitled to time-loss compensation are found eligible for vocational retraining [2]. As in other jurisdictions, the vocational rehabilitation program managed by L&I has evolved over time, and L&I has a long history of collaborative efforts with stakeholders to improve vocational rehabilitation program performance [4, 7, 8].

In 2008, as part of a concerted effort to enhance vocational retraining alternatives, L&I implemented a new and innovative mechanism for eligible injured workers to elect self-directed training (Option 2) as an alternative to L&I-approved traditional vocational retraining (now called Option 1). Prior to 2008, there was no mechanism for workers to decline participation in the approved retraining plan, although stakeholder input and anecdotal evidence suggested that at least some workers preferred not to undertake retraining or felt that the retraining being offered did not meet their personal goals [2]. Option 2 was implemented as part of the Vocational Improvement Project (VIP). The VIP was an ambitious five-and-a half year pilot initiative (January 1, 2008 to June 30, 2013), which has since been extended. Details of other VIP-related program changes, as well as legislative and regulatory efforts surrounding implementation, evaluation, and subsequent extension of the VIP, are available elsewhere [2, 7, 8].

The goals of the vocational rehabilitation program managed by L&I are to determine the worker's ability to RTW, to develop a plan for retraining the worker if needed, and to support the retraining effort once initiated [13]. To accomplish these goals, L&I refers workers found eligible for retraining to private-sector vocational rehabilitation counselors, who then develop a retraining plan that is submitted to L&I for approval. Once a retraining plan is approved by L&I, workers have 15 days to decide whether to participate in the approved plan or choose Option 2. If workers choose Option 2, their claim is closed, time-loss benefits end, and a vocational award in the amount of six months of time-loss compensation is paid. In addition, a specified amount of vocational retraining funds are set aside,[2] which the worker can access for up to five years for tuition, training fees, and certain related expenses. Option 2 workers do not receive additional time-loss compensation while in training (as they would in Option 1). The worker can seek training at any licensed, accredited, or L&I approved program or course. The training goal can be different from the Option 1 retraining goal offered to the worker and does not need to be approved by L&I. Option 2 workers do not receive reminders or decision support for using their retraining funds. Workers can choose Option 2 only once, even if they have a subsequent WC claim and become eligible again for vocational retraining; there is no such limit for Option 1.

According to L&I, Option 2 was not modeled on any existing program and, to our knowledge, there was no comparable option offered in any other jurisdiction at the time. Because of its unique nature, this study focused on issues specific to the introduction of Option 2 as an innovative self-directed approach to vocational retraining. The objectives of this study were to describe: (1) how frequently Option 2 was selected and by whom, (2) the extent to which Option 2 workers used their reserved retraining funds, and (3) how worker satisfaction and employment outcomes for Option 2 workers compared with those of workers undergoing traditional L&I-approved vocational retraining (Option 1).

2. Methods

2.1. Study design

This was a cohort study with staggered entry, involving both prospective and retrospective components. This study included State Fund and self-insured WC claims for injured workers who had a vocational retraining plan approved between January 1, 2008 and

[2] $12,000 as of January 1, 2008, with changes indexed to community college tuition rates.

December 31, 2012. Outcomes were followed until December 31, 2012, providing up to five years of follow-up time. Injured workers who were L&I employees, under the age of 18 or known to reside outside Washington State were excluded. For survey data collection, two additional exclusion criteria were applied: (1) employment through a prison program, and (2) inability to complete a telephone interview in English or Spanish. The Washington State Institutional Review Board approved this study.

2.2. Administrative data sources

L&I provided WC claims and vocational rehabilitation data for eligible injured workers for events occurring through December 31, 2012. L&I linked claims data to wage files from the Washington State Employment Security Department (ESD), and extracted employment and earnings information for each worker. ESD wage data includes those workers covered by unemployment insurance, representing over 86% of total employment in Washington [14]. The resulting data files were then transmitted to our research group for use in constructing the pre-injury and RTW wage measures. Wages were standardized to January 2008 using the Consumer Price Index. Workers who had an invalid Social Security number or who were injured prior to 1999 were excluded from analyses of employment outcomes (due to unavailable wage data), as were deceased workers and workers with total permanent disability.

2.3. Baseline and outcome surveys

A baseline survey and an outcome survey were conducted specifically for the VIP evaluation, using two distinct sampling frames. The initial target of 360 workers for each survey was based on balancing power analysis with available resources, and on projections of the numbers of workers eligible for interviews within the available timeframe. Workers and their legal representatives were mailed an advance letter that offered a $15 gift card and the ability to schedule the phone interview at a convenient time. Ten attempts to call each worker were made, spread out over a number of weeks, with reminder letters mailed as needed. Computer Assisted Telephone Interviews (CATI) were conducted by Gilmore Research Group, an independent survey research firm. Both surveys were developed in collaboration with L&I's vocational experts and stakeholders, and with assistance from Gilmore Research Group. A subset of questions from each survey were used to address each research objective of this study, as described in the data analysis section below. The full text of all interview questions and the sources used in survey development are available online, and additional survey findings are available in previous publications [7, 15].

Workers became eligible for the baseline survey when they were determined eligible for development of a vocational retraining plan. Interviews were conducted prior to plan development and option choice. Using a consecutive sampling approach, we attempted to interview all workers as soon as feasible after they became eligible (mean = 34 days, range = 18 to 61 days). Baseline survey interviews took place between August 27, 2009 and December 31, 2009. Post-stratification weights were used to improve generalizability and reduce non-response bias.

Workers who had a retraining plan approved after January 1, 2008 were eligible for the outcome survey during the first three to six months after claim closure. These interviews were conducted from August 11, 2009 through August 17, 2011. Due to the extended and unpredictable length of time required for vocational rehabilitation claims to mature, it was not feasible to identify a random sampling frame of claimants prior to claim closure. Instead we used a combination of consecutive and quota sampling to ensure at least minimal representation in several important categories and to enable us to describe the responses of workers having a variety of experiences. Quotas were pre-designated for 18 cells, defined by all possible combinations of four descriptors of particular interest: (1) State Fund vs. self-insured, (2) department-approved vs. worker-directed retraining (Option 1 vs. Option 2), (3) approved plan length in months (four categories: 0–6, 6–12, 12–18, 18–24), and (4) the vocational retraining plan was completed vs. incomplete. Cell quotas were adjusted as we learned more about opt-out rates, non-response rates, and prevalence of each type of claim in the underlying population. Post-stratification weights were used to reweight the distribution of the cell quota descriptors defined above to match the distribution in the entire population of otherwise eligible workers who had a retraining plan approved in 2008 (approved plan length was not available for most plans approved after 2008).

2.4. Data analysis

Each study objective was addressed using multiple analyses and more than one data source (i.e.,

administrative data, baseline survey data, and/or outcome survey data) as indicated below. Detailed descriptions of the variables and covariates used in data analysis are available online [7]. Survey response rates were calculated following recommendations published by the American Association for Public Opinion Research (AAPOR) [16]. All statistical tests were two-tailed, with statistical significance defined as $p \leq 0.05$. All regression models incorporated robust variance estimates. All analyses were conducted using Stata/SE 11.2 for Windows (StataCorp LP, College Station, TX).

2.4.1. Who chose Option 2 and why?

Two groups were constructed to address this question; workers who chose Option 2 were compared to those who chose Option 1. The 2% of workers who had chosen both Option 1 and Option 2 over the course of multiple retraining plans were included in the Option 2 group because Option 2 can be chosen only once. Chi-squared tests of independence and *t*-tests without the assumption of equal variance were used to test differences between groups as appropriate. Groups were compared with respect to a number of characteristics derived from administrative data, including: (1) claim type (State Fund vs. self-insured), (2) standardized pre-injury wages (quarterly ESD wages averaged over the four quarters prior to the injury quarter), (3) age, (4) gender, (5) marital status, (6) dependents, (7) preferred language, (8) occupational injury (vs. occupational disease), (9) educational level, (10) physical capacity rating, (11) rural/urban residence county, (12) employer size, and (13) previous retraining plan eligibility. Preferred language and occupational injury/disease were unavailable for self-insured claims. Physical capacity and education were not recorded by L&I until April 2009, and thus were available for only a subset of injured workers.

The baseline survey was used to further explore who chose Option 2 over Option 1. Groups were compared with respect to three questions about economic circumstances, as well as four questions about how well the WC system meets the needs of injured workers, satisfaction with the vocational rehabilitation system, RTW expectations, and what effect they thought their future retraining plan would have on their ability to RTW. Binary measures were constructed for questions having Likert-type response categories.

Open-ended questions from the outcome survey were used to explore workers' reasons for choosing Option 2. Workers were asked "What was the primary reason you chose Option 1/Option 2?" They were then prompted for two additional reasons. Responses were categorized by interviewers into predetermined categories, and further categorized by our research team as needed. Finally, outcome survey data were used to explore whether other income sources or resources might be associated with option choice. These included payments or cash benefits from other WC claims, Social Security retirement benefits, Social Security Disability Insurance, other short or long term disability insurance, welfare program, private retirement/pension benefits, and/or unemployment insurance.

2.4.2. Use of Option 2 retraining funds

Option 2 workers who had expended any of their retraining funds as of December 31, 2012 were compared with those who had not, using administrative data for the same characteristics listed in Section 2.4.1. Only those workers having at least six months after claim closure to use retraining funds were included in this analysis (i.e., their claims closed before July 1, 2012). Logistic regression was used to assess which worker characteristics were significantly associated with any use of Option 2 retraining funds. These models included all covariates listed in section 2.4.1. Because data for certain characteristics were available only for subsets of workers, we assessed preferred language using a parallel model that included only workers with State Fund claims, and assessed physical capacity and education using a parallel model that included only workers having those data fields available.

Because the dates of retraining fund use were not available, a set of progressively restricted samples was constructed by increasing the amount of time between claim closure and December 31, 2012. For example, nested samples included workers whose claims closed by June 30, 2012; by December 31, 2011; and so on). This allowed us to determine whether a longer observation window between claim closure and December 31, 2012 (i.e., the date when cumulative use of retraining funds was measured), was associated with an increase in the percentage of workers who had used retraining funds. This provided a rough assessment of the trajectory of workers' use of retraining funds after claim closure.

Survey responses were compared with the patterns of retraining fund use observed in administrative data. In the outcome survey, workers who had chosen Option 2 were asked whether they had begun using the vocational retraining funds available to them. If not, they indicated whether and when they planned to use their retraining funds using predetermined response categories.

2.4.3. Employment outcomes

For purposes of exploring and describing employment outcomes in detail, five worker subgroups were created: (1) Option 1 completed plans, (2) Option 1 incomplete (but terminated) plans, (3) Option 2 workers who had used *all* of their allotted retraining funds, (4) Option 2 workers who had used *some* of their allotted retraining funds, and (5) Option 2 workers who had used *none* of their allotted retraining funds. Analyses were based on the first plan approved for each worker after January 1, 2008, and excluded Option 1 workers whose retraining plans were ongoing. Retraining fund use was measured as of December 31, 2012.

Survival analysis methods, i.e., failure and hazard functions, were used to estimate and depict employment outcomes for each of the five subgroups. Time was measured in calendar quarters. Entry time (i.e., the point at which employment outcomes came under observation) was set for each worker as the quarter in which the relevant vocational plan referral or retraining plan ended (Q0). In this context, "failure" was defined as the first occurrence of any ESD wages during or after Q0. Employment outcomes were followed until December 31, 2012. Differences in the survival functions between subgroups were tested using the Peto-Peto-Prentice test of equality, which is not sensitive to non-proportional variation in hazard functions or differences in censoring patterns across groups.

Mean quarterly wages (i.e., quarterly ESD wages averaged over the four quarters after the first RTW quarter) were estimated for the five subgroups using linear regression. The models only included workers with at least four follow-up quarters available after initial RTW. In addition to the variables indicated in section 2.4.1, the following covariates were included in the mean wage regression models: (1) North American Industry Classification System (NAICS) industrial sector of injury, (2) unemployment rate for county of residence and month/year of labor market re-entry, (3) number of quarters since injury, and (4) number of months since referral start date or plan approved.

2.4.4. Worker satisfaction and suggestions for improvement

Four questions in the outcome survey measured satisfaction with current employment status, services provided by the claim manager, services provided by the vocational counselor, and the vocational rehabilitation system overall. Three questions measured workers' opinions about how their claim manager, vocational counselor, and vocational retraining plan impacted their ability to RTW. Workers responded using a five-point Likert-type response scale with verbal anchors. For these analyses, responses were recoded to construct binary variables: (1) the two positive categories (somewhat/very satisfied or somewhat/very positive effect), versus (2) all neutral or negative categories; those who responded "Don't know" were excluded. One additional binary response question was analyzed: "Overall, do you feel that the vocational rehabilitation services you received were appropriate for you?" Differences between Option 1 and Option 2 groups were tested using Chi-squared tests of independence.

Responses to several open-ended questions in the outcome survey were used to further explore satisfaction and opportunities for program improvement. Workers were asked: "If you had the opportunity to make the choice between Option 1 and Option 2 again, do you think you would make the same choice?" Those who responded in the negative were asked to provide the top three reasons they would have chosen differently. Responses were categorized by interviewers into predetermined categories, and further categorized by our research team as needed. Workers were also asked: "Based on your experience with the vocational rehabilitation system, if you could make one improvement, what would it be?" Suggestions were grouped into non-exclusive themes by the research team.

3. Results

3.1. Survey response

L&I identified 772 workers eligible for the baseline survey, and 361 interviews were completed. The adjusted response rate was 61.6%. Respondents were more likely to have State Fund claims than was the case for the overall sample (89% vs. 85%, $p = 0.026$), and less likely to have been found eligible for plan development more than once (20% vs. 25%, $p = 0.041$). L&I identified 1,956 workers eligible for the outcome survey, and 360 interviews were completed. The adjusted response rate was 52.6%. Respondents were more likely to have State Fund claims than was the case for the overall sample (89% vs. 83%, $p < 0.001$). Respondents were older at claim closure than were those in the overall sample (50 years vs. 47 years, $p < 0.001$). About 4% of interviews were conducted in Spanish, and 13 workers participated in both surveys.

3.2. Who chose Option 2 and why?

The administrative data sample consisted of 7,350 workers; 70.6% chose Option 1, and 29.4% chose Option 2. As shown in Table 1, workers were more likely to have chosen Option 2 if they were male, had less education, or had an occupational injury (vs. disease). Additionally, workers who chose Option 2 were slightly older on average than those who chose Option 1 (49.2 years vs. 48.4 years; $p = 0.002$); and mean quarterly pre-injury wages were $6,982 for workers who chose Option 2, compared with $7,755 for workers who chose Option 1 ($p < 0.001$).

Of the 361 workers surveyed prior to plan development, 258 (71%) had a plan developed and chose a retraining option within a year of the baseline survey. Of the 258 who made an option choice, those who thought their future retraining plan would have a negative effect on RTW were twice as likely to choose Option 2, compared with those who had neutral or positive expectations of retraining (44% vs. 22%; $p = 0.038$). There were no other significant differences in baseline survey responses between the two groups, including opinions about effectiveness of the WC system, satisfaction with vocational rehabilitation services, and reported presence of economic stressors such as recent contact from a collection agency, worry about being unable to pay expenses and bills, and being at risk of losing housing.

When asked in the outcome survey about the reasons for their choice of Option 1 or Option 2, 57% of Option 2 respondents stated that the approved Option 1 retraining plan would have been a poor fit for them, physically, emotionally, logistically, or in terms of their own interests; 27% gave financial reasons for choosing Option 2; and 21% gave reasons related to wanting more control or independence. In contrast, 87% of Option 1 workers stated that they chose Option 1 because they liked their retraining plan or because it was the best way to RTW or obtain new skills.

According to the outcome survey, significantly more Option 2 workers reported receiving private retirement or pension benefits compared with Option 1 workers (14.4% vs. 5.8%; $p = 0.007$). Significantly fewer Option 2 workers reported receiving unemployment benefits compared with Option 1 workers (12.2% vs. 27.1%; $p = 0.003$). There were no significant differences between the two groups in receipt of Social Security retirement or disability benefits, other disability benefits, or welfare payments, at three to six months after claim closure.

Table 1
Characteristics of workers choosing Option 1 or Option 2 (administrative data; $N = 7{,}350$)

Characteristic	Option 1 ($N = 5{,}186$) Percent	Option 2 ($N = 2{,}164$) Percent	p-value
Overall	70.6	29.4	n/a
Claim type			0.109
State Fund	70.8	29.2	
Self-insured	67.9	32.1	
Gender			0.002*
Female	73.5	26.5	
Male	69.6	30.4	
Marital status			0.094
Married	71.4	28.6	
Other	69.7	30.3	
Dependents			0.663
No dependents	70.7	29.3	
1 or more dependents	70.2	29.8	
Preferred language ($N = 6{,}645$)**			0.427
English	71.0	29.0	
Not English	69.5	30.5	
Occupational injury or disease ($N = 6{,}645$)**			0.052*
Occupational injury	70.4	29.6	
Occupational disease	73.4	26.6	
Education ($N = 5{,}112$)***			<0.001*
Less than high school	65.1	34.9	
High school graduate	69.4	30.6	
At least some college	74.8	25.2	
Physical capacity rating ($N = 5{,}112$)***			0.300
Sedentary/light	69.3	30.7	
Medium/heavy	70.9	29.1	
Residence county			0.897
Rural	71.0	29.0	
Urban	71.2	28.8	
Employer size (at injury)			0.226
Large employer (≥50 FTE)	71.3	28.7	
Other	70.0	30.0	
Plan development exposure			0.090
First/only retraining plan developed	70.0	30.0	
Determined eligible for plan development more than once	72.0	28.0	

*$p \leq 0.05$. **State Fund claims only. ***L&I did not record this measure until April 2009.

3.3. Use of Option 2 retraining funds

Based on administrative data, 19.3% of Option 2 workers had used any of their retraining funds as of December 31, 2012 ($N = 1{,}577$). Table 2 presents the percentage of Option 2 workers who used any retraining funds, stratified by various characteristics. Option 2 workers who used their retraining funds tended to be younger than those who did not (42.9 years vs.

Table 2
Percentage of Option 2 workers who used any retraining funds, by characteristic (administrative data; $N = 1{,}577$)

Characteristic	Percent	p-value
Overall	19.3	n/a
Claim type		<0.001*
State Fund	20.9	
Self-insured	6.8	
Gender		0.947
Female	19.5	
Male	19.3	
Marital status		0.103
Married	17.7	
Other	20.9	
Dependents		0.018*
No dependents	17.6	
1 or more dependents	22.6	
Preferred language ($N = 1{,}401$)**		<0.001*
English	22.6	
Not English	6.3	
Occupational injury or disease ($N = 1{,}401$)**		0.452
Occupational injury	20.6	
Occupational disease	23.0	
Education ($N = 1{,}055$)***		<0.001*
Less than high school	13.9	
High school graduate	17.3	
At least some college	27.7	
Physical capacity rating ($N = 1{,}055$)***		0.611
Sedentary/light	18.1	
Medium/heavy	19.5	
Residence county		0.943
Rural	19.3	
Urban	19.5	
Employer size (at injury)		0.629
Large employer (≥50 FTE)	18.8	
Other	19.8	
Plan development exposure		0.400
First/only retraining plan developed	18.9	
Determined eligible for plan development more than once	21.1	

*$p \leq 0.05$. **State Fund claims only. ***L&I did not record this measure until April 2009.

47.3 years; $p < 0.001$). State Fund workers, workers with dependents, English-speaking workers, and those with higher educational levels were more likely to use retraining funds.

Using logistic regression models ($N = 1{,}416$), we found that younger workers were more likely to use retraining funds; each additional year of age was associated with a 3% decrement in the odds of using retraining funds ($p < 0.001$). Higher pre-injury wages were also significantly associated with a higher odds of retraining fund use, with a 4% increased odds of retraining fund use for each $1000 increase in pre-injury wages ($p = 0.003$). The odds of Option 2 workers with self-insured claims using their retraining funds were 69% lower on average than for similar workers with State Fund claims ($p < 0.001$). Among State Fund claims only ($N = 1{,}261$), the odds of Option 2 workers whose preferred language was not English using their retraining funds were 82% lower, on average, than for otherwise similar English-speaking workers ($p < 0.001$). Just among those claims having physical capacity and education recorded ($N = 951$), the odds of Option 2 workers with at least some college education using their retraining funds were four times as high, on average, than for otherwise similar workers who had not graduated high school ($p < 0.001$). Physical capacity ratings were not significantly associated with use of retraining funds.

As shown in Table 3, there appeared to be very little increase in the prevalence of retraining fund use after the first six months following claim closure. The percentage of workers using their Option 2 retraining funds remained under 25%, even when the sample was restricted to workers whose claims had been closed for at least four years.

As shown in Table 4, 21% of Option 2 workers responding to the outcome survey ($N = 115$) reported that they were already using their retraining funds, and another 43% planned to use their retraining funds at some future time.

3.4. Employment outcomes

Of the 4,965 workers eligible for the employment outcomes analyses, 34% had completed Option 1 plans and 28% had incomplete Option 1 plans. Of the remaining 38% who had chosen Option 2, 82% had not used any retraining funds as of December 31, 2012, 16% had used some of their retraining funds, and less than 2% had used all their retraining funds. For each of these five subgroups, the cumulative proportion of workers who had RTW and earned any ESD wages by various points in time after retraining plan/referral end is presented in Fig. 1a, and the estimated probability of the first occurrence of earning any wages is presented in Fig. 1b. Although a relatively low proportion of Option 2 workers who used all their retraining funds earned any wages in the first two years, a higher proportion of these workers appeared to RTW over the long term compared with any other subgroup. Instead of the generally decreasing probability of RTW after the first year observed for most subgroups, the few Option 2 workers who had used all their retraining funds

Table 3
Use of Option 2 retraining funds as of December 31, 2012 (administrative data)

Sample	N	No funds expended Percent	Funds partially expended Percent	Funds 100% expended Percent
All option 2 workers with retraining funds reserved	1,875	82.7	15.8	1.5
Claims closed on or before 12/31/12	1,804	82.2	16.3	1.6
Claims closed at least 6 months prior to 12/31/12	1,577	80.7	17.6	1.8
Claims closed at least 1 year prior to 12/31/12	1,339	79.5	18.7	1.9
Claims closed at least 2 years prior to 12/31/12	888	79.2	18.7	2.1
Claims closed at least 3 years prior to 12/31/12	549	78.7	19.3	2.0
Claims closed at least 4 years prior to 12/31/12	232	77.6	19.4	3.0

Table 4
Use and planned use of Option 2 retraining funds (outcome survey; $N = 115$)

Response category	Percent
Already using Option 2 retraining funds	20.5
Plans to use funds within 6 months	15.4
Plans to use funds in 6 to 12 months	14.3
Plans to use funds in 1 to 2 years	10.0
Plans to use funds in more than 2 years	3.6
Unsure if or when will use funds	26.5
Does not plan to use retraining funds	9.7

appeared to have a temporary uptick in the probability of RTW, centered approximately in the third year after Option 2 choice. Due to small numbers, the survival function for workers using all their retraining funds differed significantly only from that for workers with incomplete Option 1 plans and that for workers using no retraining funds. It is worth noting that the patterns for "Option 1: Completed plans" and "Option 2: Some retraining funds used" were almost identical in both analyses. The patterns for "Option 1: Incomplete plans" and "Option 2: No retraining funds used" were also quite similar.

Unadjusted mean quarterly pre-injury wages and RTW wages (for the four quarters after the initial RTW quarter) are shown in Table 5. In regression modeling ($N = 1{,}018$), mean wages for the two Option 2 subgroups who had RTW and who had used *none* or *only some* of their retraining funds were both significantly lower than for those with completed Option 1 plans ($1,463 and $1,215 lower per quarter respectively; $p < 0.001$ for both). Mean wages for Option 2 workers who had used *all* their retraining funds were $1,343 lower than those for Option 1 workers with completed plans, but the difference was not statistically significant (only 12 workers who had used all their retraining funds could be included in the model).

3.5. *Worker satisfaction and suggestions for improvement*

According to the outcome survey, Option 2 workers were significantly less satisfied with their vocational rehabilitation counselor, less likely to think their claim manager had a positive effect on their ability to RTW, and less likely to think that the vocational services they had received were appropriate (Fig. 2).

There was no significant difference between Option 1 and Option 2 workers with regard to whether they would make a different option choice, given the hypothetical opportunity to revisit that decision. Among the 22% of both Option 1 and Option 2 workers who reported they would choose differently, 35% cited the retraining plan being unsatisfactory among their top three reasons.

Sixty-three percent of outcome survey respondents offered a specific suggestion for improving the vocational rehabilitation system; these suggestions were grouped into non-exclusive themes. The most frequent theme focused on the need for more retraining choices, more worker input into the retraining goal, and/or a better fit of the retraining goal with the workers' experience and abilities. This theme was cited by 36% of Option 2 workers and 22% of Option 1 workers. A second theme was the need for various players to listen to, respect, and/or understand the worker (e.g., their interests, goals, and limitations). This theme was cited by 28% of Option 2 workers and 14% of Option 1 workers. Of Option 2 workers, 11% suggested that retraining and RTW expectations should better comport with physical limitations; this theme was mentioned by only 5% of Option 1 workers.

4. Discussion

Self-directed vocational retraining (Option 2) has been offered as an alternative to traditional L&I-

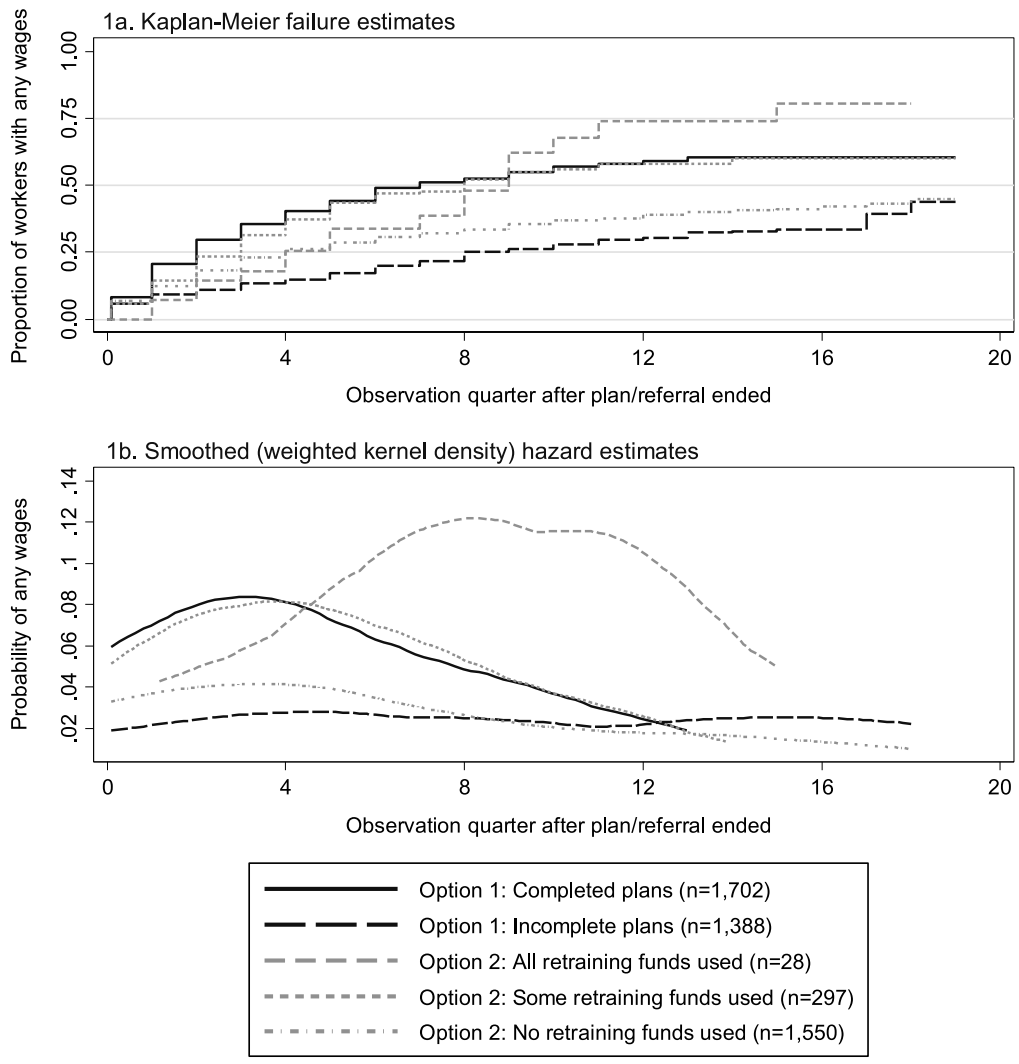

Fig. 1. Proportion of workers earning any wages (1a) and probability of the first occurrence of earning any wages (1b), by option choice subgroup over time (administrative data).

Table 5
Unadjusted mean quarterly pre-injury and RTW wages by option choice subgroup, in standardized dollars per quarter (administrative data)

Subgroup	N	Pre-injury wages: 4Q before injury Q		RTW wages: 4Q after RTW Q	
		Estimate	95% CI	Estimate	95% CI
Option 1: Completed plans	441	7,636	7,221–8,051	4,750	4,351–5,149
Option 1: Incomplete plans	193	6,768	6,109–7,426	3,706	3,062–4,351
Option 2: All retraining funds used	13	7,127	4,621–9,633	4,054	1,596–6,512
Option 2: Some retraining funds used	103	7,666	6,601–8,730	3,674	3,017–4,332
Option 2: No retraining funds used	312	7,468	6,810–8,127	3,195	2,734–3,657

Q, quarter; RTW, return-to-work.

approved vocational retraining (Option 1) in Washington State since 2008, and was chosen by 29% of workers in our sample. Although most Option 2 workers (64%) reported that they intended to use their reserved retraining funds, less than 25% accessed those funds prior to expiration. It is noteworthy that the workers least likely to use retraining funds were more likely to have characteristics that may make them less competitive in the

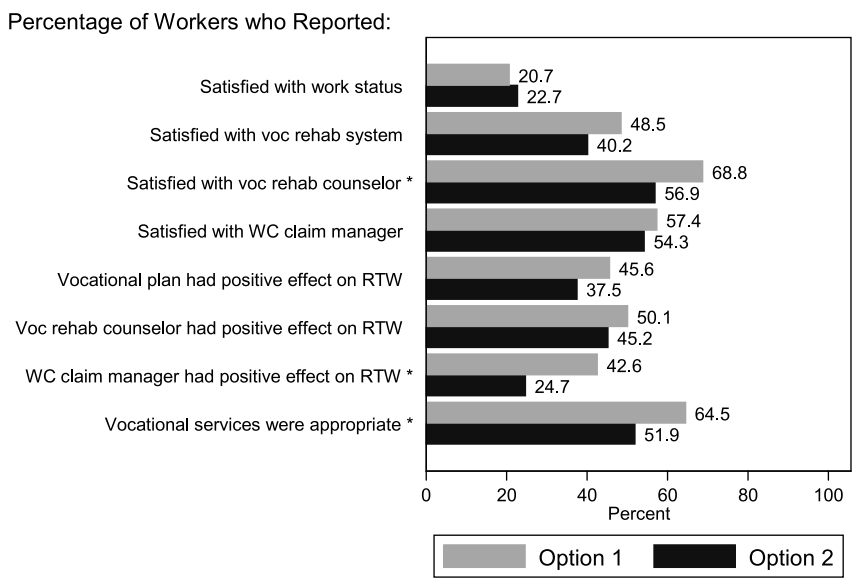

Fig. 2. Worker satisfaction with various aspects of the vocational rehabilitation system by option choice (outcome survey). Voc rehab, vocational rehabilitation; WC, workers' compensation; RTW, return to work. *Option 1/Option 2 difference was statistically significant at $P \leq 0.05$.

labor market without (or perhaps even with) retraining (e.g., older workers, lower-wage workers, and workers with lower educational levels or whose preferred language was not English). Despite initial intentions, it may be difficult for some workers to independently select, initiate and direct their own training after their claim is closed. Additional decision support and/or reminders regarding use of retraining funds may be helpful in this regard. In addition, the need to maintain an income stream via employment or other resources may pose an insurmountable barrier to training for some Option 2 workers, since they are not eligible for time-loss compensation during self-directed retraining. The need to RTW part-time during retraining may in part explain the observation that Option 2 workers earned lower quarterly wages after RTW.

The lower observed use of retraining funds by workers with self-insured claims may have been due to several factors, the relative contributions of which we were unable to tease out: (1) possible under-reporting of retraining fund expenditures by self-insured employers to L&I, (2) a known data collection issue within L&I data systems, such that some information reported by self-insured employers was not completely recorded, and/or (3) actual lower use of retraining funds by injured workers who had self-insured employers. It is worth noting that while State Fund workers apply to L&I to use their retraining funds, self-insured workers must apply to the claims representative of the employer responsible for the claim. Self-insured employers are expected to report the use of retraining funds to L&I, but L&I has no oversight responsibility or information about possible barriers to retraining fund use, the frequency of denials, or delays in approval.

In a previous related study, we found no significant differences in a variety of employment outcomes between workers choosing Option 1 (measured after retraining) and Option 2 (measured after option choice), with the exception that Option 2 workers were less likely to RTW immediately [8]. The current study's findings suggest that Option 2 workers have relatively good RTW outcomes once they complete self-directed retraining. Although very few workers had used all of their retraining funds ($N = 28$), that subgroup displayed a strikingly different RTW pattern over time compared with the other four subgroups. A relatively low proportion of these workers RTW in the first two years, but a higher proportion RTW over the long term compared with any other subgroup. For this subgroup in particular, there also appeared to be a "bounce" in the probability of RTW, centered approximately in the third year after Option 2 choice. Though speculative, this "bounce" may coincide with completion of self-directed retraining. In general, it appeared that Option 2 workers who used any or all of their retraining funds had better employment outcomes than those who did not (Fig. 1). This observation may be due to selection effects; however, if there is any value to vocational retraining, it

is likely that efforts to encourage such training after Option 2 is selected would have positive benefit.

Although it did not appear that having been determined eligible for plan development more than once (an indication of problems with previous plans) was associated with choosing Option 2, Option 2 does provide workers with a mechanism to exit the vocational rehabilitation system if they so choose. Option 2 at least theoretically gives workers more retraining options and the opportunity to exercise more control over retraining. Option 2 may benefit workers who have the ability, resources, and motivation to independently identify and complete retraining. However, an increased system focus on worker choice does not always translate to the availability of more meaningful or beneficial choices and can also lead to unintended negative consequences [6]. In fact, according to a systematic review of literature about patient choice in health services, an increased focus on choice is least likely to benefit and may even adversely affect the most disadvantaged groups (i.e., the least affluent and educated) [17]. In making the decision about which retraining option to choose, some workers may be overly optimistic about their future use of self-directed retraining funds, and may thus overestimate the benefit they would derive from Option 2.

Although workers who chose Option 1 or Option 2 did not differ with regard to decision regret, the reasons underlying their original choices were illuminating. Most workers who chose Option 2 stated that the approved retraining plan would have been a poor fit for them, while most workers who chose Option 1 stated that they did so because they liked their retraining plan, or it was the best way to RTW or obtain new skills. Option 2 may in fact have represented the best alternative for workers who felt unable to meet retraining demands or thought the approved retraining plan was not a good fit for them, but it is also possible that some could have benefited from being offered a different Option 1 retraining plan. That assessment was beyond the scope of this study. However, compared with Option 1 workers, Option 2 workers interviewed about potential improvements to the vocational rehabilitation system more frequently suggested that there be more retraining choices, more worker input, and/or a better fit of the retraining goal with the workers' experience and abilities, and they more often suggested that retraining and RTW expectations should better comport with physical limitations. Compared with Option 1 workers, Option 2 workers were significantly less satisfied with their vocational rehabilitation counselor, less likely to think their claim manager had a positive effect on their ability to RTW, and less likely to think that the vocational services they had received were appropriate. Even if these responses reflected misperceptions by workers rather than inadequate vocational services, such perceptions could interfere with workers' willingness to accept the approved Option 1 retraining plan and could perhaps induce workers to choose Option 2, even if they would otherwise have preferred or benefited from traditional vocational retraining. Given the descriptive nature of this study, we are unable to determine whether workers who chose Option 2 might have had better outcomes had they chosen Option 1.

This research highlights several areas that warrant further study. First, there is a need for longer-term study of the use of Option 2 retraining funds and subsequent RTW outcomes. Few workers had used all of their Option 2 retraining funds by the end of 2012. It is also important to understand why so many Option 2 workers are not using their retraining funds, whether they view this as problematic, and whether additional interventions such as decision support or reminders might assist them in taking full advantage of their retraining funds.

Second, it is important to learn whether our observation that self-insured workers appeared significantly less likely to use their retraining funds compared with State Fund workers is in fact accurate, and if so, why that might be the case. We have no evidence of any bad intentions or misconduct, nor can we be certain there was actually lower use of retraining funds in the self-insured sector. However, it is conceivable that workers might be reluctant to request funds from their previous employers for a variety of reasons, and that some self-insured employers might be reluctant to approve retraining fund requests due to immediate and direct economic impact. This issue requires further research.

Third, given survey feedback, additional research and policy efforts may be needed in order to ensure that workers have constructive input into retraining plan development, that they are offered adequate retraining choices and plans well-suited to their circumstances, and that they receive adequate communication and support from their vocational counselor. Improvements suggested by workers also included changes that would ease college re-entry and allow for more flexibility for older age and other individual circumstances [7]. The goal of equal treatment based on clear accountability standards may at times conflict with the goal of fairness based on meeting differing needs, and optimizing worker outcomes will require a balance of the two [18,

19]. In this regard, there may be much to learn from the experience of other jurisdictions in addition to L&I's own historical experience.

Finally, it would be valuable to understand the long-term outcomes and income sources (or lack thereof) for Option 2 workers, particularly those who never use their retraining funds. Except for the short-term outcome survey, we did not have non-wage income data. Three to six months after claim closure, Option 2 workers were more likely than Option 1 workers to report receiving private retirement or pension benefits, but there were no significant differences in disability payments at that early stage. Other recent studies have reported important interactions between WC and disability programs such as Social Security Disability Insurance (SSDI) as sources of long-term income support for injured workers [20, 21].

To our knowledge, there is no comparable self-directed retraining option offered in any other jurisdiction at this time. The Workplace Safety and Insurance Board (WSIB) in Ontario, Canada, offers a self-directed work reintegration program as an alternative to traditional retraining. However, this program is limited to 12 months and to workers 55 and older. Given the descriptive nature of our study and the extent of variation in WC systems, we cannot comment on the suitability of this program for other jurisdictions. More experience and research, both over time and across settings, is required before drawing strong conclusions. However, we believe our study findings may serve to guide policy makers internationally, as they consider whether or how a self-directed retraining program might fit into their own WC-based vocational rehabilitation systems.

5. Strengths and limitations

This population-based study was conducted over a period of five years, in close collaboration with L&I and the VIP subcommittee composed of labor and business stakeholders. The WC, wage, and survey data were quite rich, and we were able to describe vocational retraining choices and subsequent outcomes using a variety of different approaches and measures. We also identified several areas worthy of further investigation. Although Washington is almost unique among states in the USA in having a population-based WC system, the lessons that can be drawn are broadly relevant (e.g., WC covers vocational rehabilitation in most states) [3]. Our findings add to the meager but growing evidence base regarding various features of WC-based vocational rehabilitation systems around the world, including Ontario and New Zealand [1, 5, 9].

Response rates for both surveys were on the high end of expectations for WC-related surveys ([22], page 31). Given the amount of time required for WC claims involving vocational rehabilitation to mature, identification of a random probability sample prior to claim closure was not an option. Instead, we used a combination of consecutive sampling, quota sampling and post-stratification analytic techniques to enhance representativeness. Although there was little evidence of response bias based on measured variables, there may have been attitude, opinion, or other unmeasured differences that were correlated with non-response.

It was unclear at what point Option 2 satisfaction and employment outcomes could be reasonably compared with those for Option 1. By claim closure, Option 1 workers had the opportunity to finish retraining and were expected to be in the labor market. In contrast, Option 2 workers receive six months of time-loss compensation when their claim is closed, are not considered able to work immediately after claim closure, and may delay use of their retraining funds for up to five years. In our administrative data sample, 28 Option 2 workers had used all of their retraining funds and were perhaps comparable to Option 1 workers with completed plans. However, the date by which they had used all their funds was not recorded, making it impossible to line up the quarter of labor market re-entry comparably across the two groups. In addition, many Option 2 workers RTW before or during the time their retraining funds were being used. This would not be unexpected, since they were not eligible for time-loss compensation during retraining.

The most serious challenge facing this evaluation was the inability to fully control for self or system-based selection via a suitable comparison group. This was due in part to simultaneous statewide implementation of the pilot program, and in part to the limited independent variables available in WC administrative data. Due to the descriptive nature of this study, it was not possible to draw conclusions about the causal effect of Option 2 on employment outcomes.

6. Conclusions

In Washington State, self-directed vocational retraining (Option 2) has been offered as an alternative to traditional vocational retraining since 2008. Option

2 provides workers with a mechanism to exit the vocational rehabilitation system and, at least theoretically, gives workers more retraining options and the opportunity to exercise more control over retraining. Option 2 may benefit workers who have the ability, resources, and motivation to independently identify and complete retraining. However, the percentage of Option 2 workers using any of their retraining funds remained low up to five years after claim closure. Despite initial intentions, it may be difficult for some workers to independently select, initiate, and direct their own training while maintaining an income stream after their claim is closed. Further research is needed to identify possible barriers and solutions with regard to use of Option 2 retraining funds. Many workers reported choosing Option 2 because they felt unable to meet retraining demands or thought the approved retraining plan was not a good fit for them. Additional efforts may be needed to ensure that workers have constructive input into retraining plan development, that they are offered adequate retraining choices and plans well-suited to their circumstances, and that they receive adequate communication and support from their vocational counselor. In Washington State, as well as in other jurisdictions that may adopt a self-directed retraining model, it will be important to monitor impact on those workers least prepared to direct their own retraining, and to ensure that the program is equitable for workers with limited resources. Self-directed retraining has the potential to increase workers' independence and choices, but cannot substitute for addressing the many challenges posed by traditional vocational retraining.

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