

Return on Investment from Training Programs and Intensive Services

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Abstract This study includes the likelihood of finding a job and retaining employment as well as eligibility for unemployment benefits to estimate the return on investment (ROI) for both job training and intensive services programs. The augmented ROI for job training programs and intensive job services from California One-Stop Centers are positive. This suggests that these programs do provide benefits. The estimated augmented ROI for individuals enrolled in job training programs and intensive job services are similar. In contrast, traditional approaches that omit important employment characteristics significantly overestimate the ROI. Monte Carlo simulations show that changing program costs affect the augmented ROI for training programs but have minimal impact on the augmented ROI for intensive services.

Keywords California One Stop Centers · Training programs · Intensive job services

JEL J30 · J31

Introduction

The public workforce investment system has received increasing attention since it underwent a major transformation in 1998 with the Workforce Investment Act (WIA) replacing the Job Training Partnership Act. Under the new WIA, California continues to receive a significant amount of federal funding to support various employment support programs. In California there are over 200 One-Stop Career Centers located across the state. These One-Stop Career Centers attempt to match job seekers with employment opportunities. While the WIA mandates what job services must be provided, the types of job services can vary considerably from one Career Center to another. This study evaluates the return on investment (ROI), by level of education, for both job training and intensive services. Moreover, additional employment characteristics are included to provide more precise estimates of the ROI.

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Calculating the ROI is complicated by a number of factors. Specifically, the costs of the types of job services offered by the One-Stop Career Centers vary considerably making it difficult to measure the overall return on investment. In addition, the typical method for calculating the ROI assumes that all individuals receiving job assistance find and retain employment. Another important factor to take into account, when calculating the ROI, is that only some of the individuals are eligible for unemployment benefits. The ROI will be overestimated when the methodology omits the likelihood of an individual finding and retaining employment and failing to account for individuals who are not eligible for unemployment benefits. This research examines the impact that job finding, job retention, and eligibility for unemployment benefits have on the estimated ROI. The ROI is calculated for two types of job services offered and by the participants' level of education.

Since the introduction of the WIA, the quality of the job services offered under the new program have been evaluated. One area of focus has been to determine if there has been an increase in earnings relative to the cost of providing job service and training programs. In assessing training programs, some research finds a relatively modest increase in earnings, including Decker and Berk (2011), Heinrich et al. (2010), Hollenbeck (2009), Jacobson et al. (2005), and Bloom et al. (1997). Adult training, according to Moore and Gorman (2009), did not yield any positive impact on earnings. However, job training services have been found to increase long-term earnings as in Hollenbeck et al. (2005), Mueser, Troske, Jeon, and Kahvecioglu (2010), Barnow and King (2005), Macro et al. (2003), Couch (1992) and Hollister, Kemper, and Maynard (1984). The evidence shows that training programs generate at best modest increases in earnings in the short run but generate larger gains in the long run. A comprehensive survey of research can be found in Decker and Berk (2011), Moore et al. (2010) and (2007).

There are three main tiers of job service and training opportunities that California One-Stop Centers provide. Individuals who are most able to find employment in a relatively short period enroll in the first two job tiers of core and intensive services. Core services are fairly basic where participants are evaluated for their level of job skills and are provided employment information and some counseling. Intensive job services provide a more in-depth evaluation of an applicant's current job skills and additional assistance including personal career counseling, assistance with resume preparation and interviewing skills. Both core and intensive services aim to help individuals find employment relatively quickly so that they are only out of employment for a relatively short period of time. Individuals who fail to find employment after receiving core and intensive job services are eligible for the third tier of job training.

Job training is typically a much more rigorous program that includes classroom instruction, on-the-job training and personalized training. These programs are usually more time consuming compared to core and intensive services and typically take an average of 3 months to complete. Thus individuals tend to spend more time out of the job market while undergoing job training. Also, a relatively large percentage of individuals enrolled in job training are eligible for collecting unemployment benefits for a longer period of time. This places an additional burden on California's unemployment fund. California's unemployment fund has been insolvent since January 2009 with the deficit projected to exceed \$10 billion by the end of 2012. Job training frequently costs more than other services because it often involves teaching an

individual a different skill, new technology or retraining an individual in a new field of expertise.

This study estimates the ROI by level of education for both basic training programs and for individuals receiving job training. Since the One Stop Centers do not provide detailed information about core services, no ROI is calculated for core services. Given that the One Stop Centers provide information about an individual's likelihood of finding and retaining employment as well as eligibility for unemployment benefits, an augmented ROI is developed that includes these factors by level of education. The results show that the augmented ROI is considerably smaller compared to ROIs that omit these important employment factors. To evaluate the sensitivity to changes in the estimated cost of a program, a Monte Carlo analysis was performed. The Monte Carlo simulations show that the augmented ROI for training programs is sensitive to changes to the estimated cost of the programs. This suggests that California One-Stop Centers could focus on lowering training costs. In contrast, changes to the estimated cost of intensive services have little impact on the augmented ROIs for intensive services.

California One-Stop Centers

California's One-Stop Centers are required to report information about the services they provide to clients to the Department of Labor. Based on the Workforce Investment Act Standardized Record Data (WIASRD), California's One-Stop Centers provided staff assisted services to 81,815 individuals in the third quarter of 2011 (Table 1). The One-Stop Centers are not required to maintain detailed records for individuals involved in core services (see United States Department of Labor, Workforce Investment Act of 1998) but reported that 16,007 individuals enrolled in core services. Consequently no ROIs are calculated for individuals receiving core services. Out of 81,815, core services accounted for 19.6 % (16,007), intensive services 57.0 % (46,635) and training programs 23.4 % (19,173). The estimated ROIs for intensive services and training programs account for over 80 % of individuals enrolling at One-Stop Centers.

High school graduates account for over 70 % of those enrolled in either intensive or training programs. For intensive services, more individuals without

Table 1 Participants served in California

	No schooling	Not a high school graduate	High school graduate	College graduate	Total served
Core services	–	–	–	–	16,007
Intensive services	81	7,033	32,945	6,576	46,635
Training programs	10	2,371	14,070	2,722	19,173
					81,815

Workforce Investment Act Standardized Record Data (WIASRD), third quarter of 2011

Core services had 16,007 individuals enrolled but the One Stop Centers are not required to report educational information per person

a high school education were enrolled compared to college graduates, but the reverse occurred for training programs. Individuals without schooling used the One Stop Centers the least.

Return on Training with Employment Characteristics

The ROI is used to estimate if the benefits from providing job training programs or intensive services, from the One-Stop Centers, exceed the costs. Individuals generally take a few months to complete a job training program whereas intensive job services are completed relatively quickly. Training programs generally last on average 3 months and individuals may receive instruction for new job skills, classroom training, on-the-job training and customized training. While enrolled in a training program, many individuals qualify for unemployment benefits for the duration of the training program. Since intensive job services are designed to get workers back into employment relatively quickly, they are likely to have a limited impact on the unemployment fund.

The cost of training programs varies across California and Moore et al. (2007) estimated the cost per client between \$579 and \$8,015 with a median cost of \$2,671. In contrast, workforce services other than training are far less costly and range from \$33 to \$554 with a median cost of \$166. The median costs are converted into 2011 dollars.

To determine the ROI, I follow the procedure of Hollenbeck (2009) and benefits include increased earnings; fringe benefits associated with earnings; federal, state and local taxes; reductions in unemployment benefits; reductions in temporary assistance for needy families (TANF) benefits; and reductions in Medicaid benefits. The costs for training include: foregone earnings during the training period; costs of the training program; and additional unemployment benefits while enrolled in training programs. The ROI depends on earnings, a variety of types of benefits and various costs and can be expressed as:

$$\text{ROI} = f(\text{earnings, benefits, costs}) \quad (1)$$

Traditional approaches to estimate the ROI from One-Stop Centers often do not have data about the probability of finding employment (P_{jt}) and probability of retaining employment (P_{jr}). The WIASRD data provides information on the number of individuals finding employment after training as well as job retention information. Consequently we can calculate the probability of finding and retaining a job which can be used to obtain more precise estimates of the ROI (earnings*number of participants* P_{jt} * P_{jr}). Thus the ROI can be adjusted to reflect the probabilities of finding and retaining employment.

$$\text{ROI} = f(\text{earnings, benefits, costs, job finding, job retention}) \quad (2)$$

In addition, it is often assumed that all individuals unemployed are eligible for unemployment benefits. For those individuals entering job training programs, the One-Stop Centers maintain records on the number of people eligible for unemployment benefits. Thus the probability of being eligible for unemployment benefits (P_{ub}) can be

calculated. Since not all individuals entering job training qualify for unemployment benefits, the ROI will be lower after eliminating those individuals not eligible for unemployment benefits (number of participants*benefits*P_{ub}). Thus unemployment benefits are adjusted to reflect unemployment eligibility for benefits:

$$\text{Augmented ROI} = f(\text{earnings, benefits, costs, job finding, job retention, eligibility for unemployment benefits}) \quad (3)$$

To estimate the ROI, state and local taxes for California are set to 3.7 %, FICA tax rate is 7.65 %, national fringe benefits are 20 %, Medicaid is \$602 per month, unemployment benefits are of \$336 per month, and the TANF multiplier is 2.3¹. The cost of training is the median cost of \$2,735 per individual while the cost for intensive services is the median cost of \$175 per individual, both expressed in 2011 dollars². The total cost of training is determined by multiplying the number of individuals enrolled in training programs by the median cost of job training programs of \$2,735 per person. Similarly, the total cost of intensive services is determined by multiplying the number of individuals enrolled in intensive services by the median cost of intensive services of \$175 per person. Hollenbeck (2009) found positive returns for the first ten quarters in an analysis of workers in Indiana. Thus the short-term ROIs are calculated for over ten quarters. Given more uncertainty in determining lifetime earnings since the Great Recession, the long term ROIs are not calculated.

Job Training Programs and ROI

To estimate the ROI for job training programs, statistics from quarterly WIASRD data are used and are displayed in Table 2. As expected, the returns on the amount of education that an individual has are high. Specifically, quarterly average earnings for college graduates in training programs are significantly higher at \$12,723 compared to all other types of schooling. In addition, college graduates earn on average \$8,040 more than individuals who only have a high school education. These college graduates earn 2.2 times more (\$12,723 compared to \$5,789) relative to those who did not graduate high school. People with no schooling enrolled in training programs on average earned the least amount of \$4,683 per quarter.

Training programs are effective in helping individuals find and retain jobs. Individuals with at least some schooling have over a 60 % probability of finding a job. While the probability of finding a job is highest for those without schooling, only ten individuals with no schooling were enrolled in a training program. For those individuals with some schooling, the likelihood of retaining a job increases with the amount of schooling from 74.4 % for those not graduating high school to 83.0 % for college graduates.

In California, to be eligible for unemployment benefits an individual must meet specific conditions including having sufficient earnings over a period of time, current unemployment status and be actively looking for work (see Table 2). Eligibility for unemployment benefits increases with the amount of schooling. With no schooling,

¹ Percentages are from Hollenbeck (2009) except for state and local taxes in California. Average Medicaid costs in 2011 are \$602 per person.

² See Moore et al. (2007).

Table 2 Participants served in training programs

	No schooling	Not a high school graduate	High school graduate	College graduate
Earnings	\$4,683	\$5,789	\$7,589	\$12,723
Probability of job finding	0.750	0.602	0.623	0.671
Probability of job retention	0.923	0.744	0.808	0.830
Eligible unemployment benefits	0.320	0.470	0.515	0.655

Workforce Investment Act Standardized Record Data (WIASRD), 2011Q3

Employment Development Department www.edd.ca.gov/unemployment/eligibility.htm states that: an individual who files for unemployment insurance (UI) benefits must meet specific eligibility requirements before benefits can be paid. Individuals must: have received enough wages during the base period to establish a claim; be totally or partially unemployed; be unemployed through no fault of his/her own; be physically able to work; be available for work which means to be ready and willing to immediately accept work; be actively looking for work; meet eligibility requirements each week benefits are claimed; be approved for training before training benefits can be paid

eligibility for unemployment benefits is lowest at 32.0 % and increasing to 65.5 % for college graduates. The data show that many individuals are not eligible for unemployment benefits and should not enter the ROI calculation.

The data from Tables 1 and 2 are used to calculate the ROIs by education using both Eq. (1) that uses earnings, benefits and costs and Eq. (3) for the augmented ROI that also includes job finding, job retention and eligibility for unemployment benefits. Including the probability of finding a job, probability of retaining a job, and eligibility for unemployment benefits decrease the ROI. The ROIs are calculated for ten quarters.

The most significant result is that the ROIs are positive for all types of schooling and both methodologies as discussed below. This suggests that the job training programs do provide short-term benefits of up to ten quarters. The ROI based on Eq. (1) are highest at 25.1 % for college graduates (Table 3). For those individuals that are not high school graduates, the ROI is still relatively high at 21.3 % and for high school graduates is 19.0 %. The lowest ROI of 17.2 % is for no schooling. These ROI estimates are slightly lower than the short-term ROI estimates of Hollenbeck (2009) of 27.35 % for postsecondary education in Indiana, whose estimates are based on data that include training programs and intensive services.

When using the augmented ROI from Eq. (3), the ROI are much smaller. College graduates give the highest ROI of 11.3 % with the return on high school graduates falling to 8.5 %. The largest decline is for not a high school graduate where the

Table 3 ROI by schooling for training programs

	No schooling	Not a high school graduate	High school graduate	College graduate
ROI (%)	17.2	19.0	21.3	25.1
Augmented ROI (%)	13.9	6.1	8.5	11.3

Workforce Investment Act Standardized Record Data (WIASRD), 2011Q3

augmented ROI falls to 6.1 % because of the relatively lower probabilities of finding and retaining employment. For those individuals without any schooling, the augmented ROI falls to 13.9 %. These results show that adjusting for the probability of finding and retaining a job as well as eligibility for unemployment benefits significantly affects the ROI estimates. Excluding these employment characteristics and using the traditional ROI results in an overestimate of the ROI.

Intensive Job Services and ROI

The quarterly WIASRD data for individuals receiving intensive job services during the third quarter of 2011 are in Table 4. Similar to earnings for individuals enrolled in training programs, college graduates in intensive services earn considerably more compared to all other types of schooling. However, average earnings for individuals with no schooling and those not graduating high school are very similar.

The intensive job services provided by California One Stop Centers are less effective in helping individuals find and retain jobs compared to training programs. The probability of finding a job after experiencing intensive services is between 41.2 % and 55.3 %. In contrast, the probability of job finding in training programs was between 60.2 % and 75.0 %. Job retention after attending intensive job services is high and exceeds 71 % regardless of the amount of education. Job retention for those receiving intensive job services is only slightly lower compared to training programs.

The ROI for intensive services uses the data from Tables 1 and 4 and both methodologies. Since the time taken for an individual to complete intensive services is relatively quick, it is unlikely that there are foregone earnings or additional unemployment benefits while receiving intensive services. The ROIs for intensive services are positive for all types of schooling and both methodologies (Table 5). This suggests that intensive services provide short-term benefits of up to ten quarters. The ROIs based on Eq. (1) for intensive services are around 36 % regardless of the schooling and are slightly higher than the short-term ROI estimates of Hollenbeck (2009) of 27.35 % for postsecondary education in Indiana, whose data include both training programs and intensive services. The ROIs for intensive job services exceed the corresponding estimates based on training programs because the cost of intensive services is lower compared to costs of training programs and there are no foregone earnings or additional unemployment benefits while receiving intensive services. The augmented ROIs for intensive job services exceed the corresponding

Table 4 Participants receiving intensive services

	No schooling	Not a high school graduate	High school graduate	College graduate
Earnings	\$7,008	\$7,042	\$8,586	\$14,310
Probability of job finding	0.412	0.425	0.470	0.553
Probability of job retention	0.787	0.719	0.773	0.819

Workforce Investment Act Standardized Record Data (WIASRD), 2011 Q3

Table 5 ROI by schooling for intensive services

	No schooling	Not a high school graduate	High school graduate	College graduate
ROI (%)	37.9	37.9	37.1	35.7
Augmented ROI (%)	7.3	6.4	8.6	11.7

Workforce Investment Act Standardized Record Data (WIASRD), third quarter of 2011

estimates for training programs except for no schooling which had a relatively small number enrolled in training programs. College graduates produced the largest ROI of 11.7 % with high school graduates having an ROI of 8.6 %. The ROI is still high at 7.3 % for no schooling and 6.4 % for individuals who did not graduate high school. The results suggest that intensive job services offer higher short term returns compared to job training programs.

The augmented ROI for training programs and intensive services are similar when comparing the amount of schooling that an individual obtained. However, the traditional ROIs are significantly higher for intensive services compared to training programs as the likelihood of finding, retaining employment and eligibility for unemployment benefits significantly affect the estimated ROI.

Monte Carlo and Augmented ROI

Given the large variation in the costs of job training programs across California, as reported by Moore et al. (2007), it is important to evaluate how changes in the cost of job programs affect the augmented ROI. The costs of job training programs range between \$593 and \$8,207 per person with a median cost of \$2,735 while the cost of intensive services range between \$35 and \$584 with a median cost of \$175, in 2011 dollars. A Monte Carlo analysis is performed to evaluate the sensitivity of the ROI for both job training programs and intensive services to changes in the costs of these services.

The sensitivity of the augmented ROI to different costs of training programs is evaluated using a range of alternative costs one standard deviation above and below the median cost. There is little information about the distribution of costs from Moore et al. (2007) and the normal approximation for the standard deviation provides a relatively wide range of costs. For a normal distribution, the standard deviation can be approximated by the range divided by four. This gives alternative costs of training programs between \$831 and \$4,639, which represent one standard deviation below and above the median cost of \$2,735. The corresponding cost of intensive services is between \$172 and \$447 because this range produces a relatively large standard deviation. Random costs are drawn from a truncated normal distribution, which limits the range to a minimum cost one standard deviation below the median and the maximum cost one standard deviation above the median. A total of 10,000 trials were performed. The minimum and maximum values for the augmented ROI for training programs and intensive services are displayed in Table 6.

Table 6 Monte Carlo simulations

	No schooling		Not a high school graduate		High school graduate		College graduate	
	Low	High	Low	High	Low	High	Low	High
Training programs	12.70	15.36	5.63	6.58	7.99	9.07	10.90	11.82
Intensive services	6.03	8.57	6.03	6.77	8.09	9.11	11.09	12.11

ROI by schooling for training programs and intensive services

Minimum and maximum augmented ROI from the 10,000 trials

For those with no schooling, the augmented ROI for training from Table 3 was 13.9 %. From the 10,000 simulations, the augmented ROI gives the largest range from 12.70 % to 15.36 % (Fig. 1a) probably attributable to there being only 10 participants enrolled in the training program. The ROI was 6.1 % for participants with some schooling but did not graduate high school and from the 10,000 simulations, the range is between 5.63 % and 6.58 % (Fig. 1b).

The ROI for high school graduates was 8.5 % (from Table 3) with the Monte Carlo ROI simulations between 7.99 % and 9.07 % (Fig. 1c). For college graduates, the ROI was 11.3 % (from Table 3) and the Monte Carlo simulations for the ROI are between 10.90 % and 11.82 % (Fig. 1d). The positive skewness regardless of amount of schooling indicates an asymmetric tail extending toward more positive values. Skewness is largest at 0.159 (no schooling) and lowest at 0.078 for college graduates. Skewness for individuals who are not high school graduates is 0.1431 and for high school graduates 0.121. These simulations suggest that the cost of training does have an impact on the return from training programs. The One-Stop Centers could focus on reducing the costs of training programs which could increase the ROI.

The widest range for the intensive services ROI from the Monte Carlo simulations is for those with no schooling from a low of 6.03 % to a high of 8.57 % and probably reflects the fact that relatively few people without any schooling enroll in intensive services (Fig. 2a).

The simulations for the augmented ROI for high school graduate (Fig. 2c) and college graduate (Fig. 2d) do show a relatively larger range compared to individuals who did not graduate high school. Compared to the range of the simulated 10,000 augmented ROI for training programs, the intensive services distribution is less spread out. For intensive services, the skewness for the augmented ROI are close to zero but for no schooling is slightly negative (-0.0004) but slightly positive for those not graduating high school (0.0005), high school graduates (0.0017) and college graduates (0.0018). The skewness measures from the simulations show that the augmented ROI for intensive services is not very sensitive to the change in the cost of the services.

Conclusion

This study shows that an augmented return on investment (ROI) that includes the likelihood of finding and retaining employment as well as eligibility for unemployment

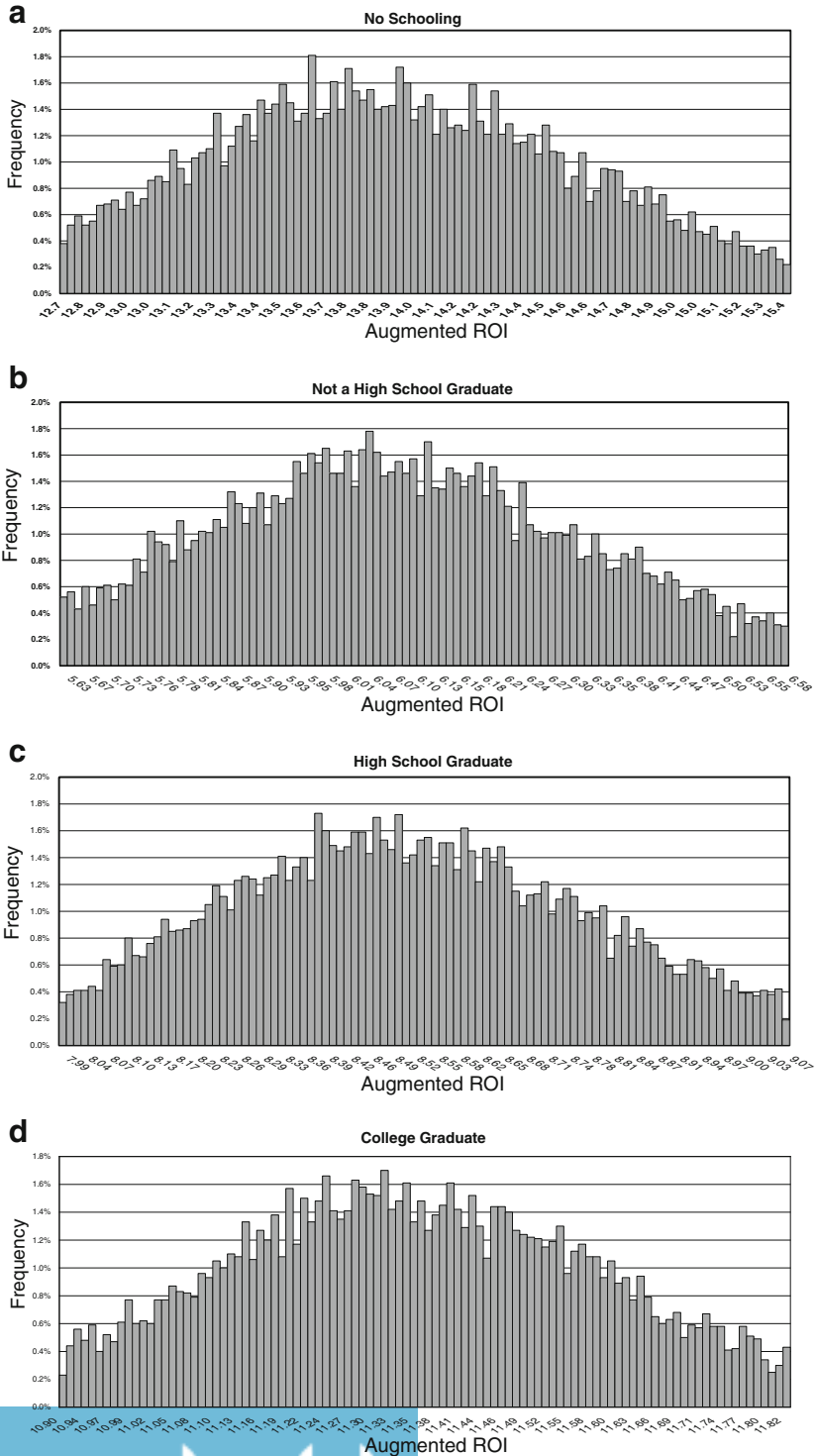


Fig. 1 a No schooling. b Not a high school graduate. c High school graduate. d College graduate

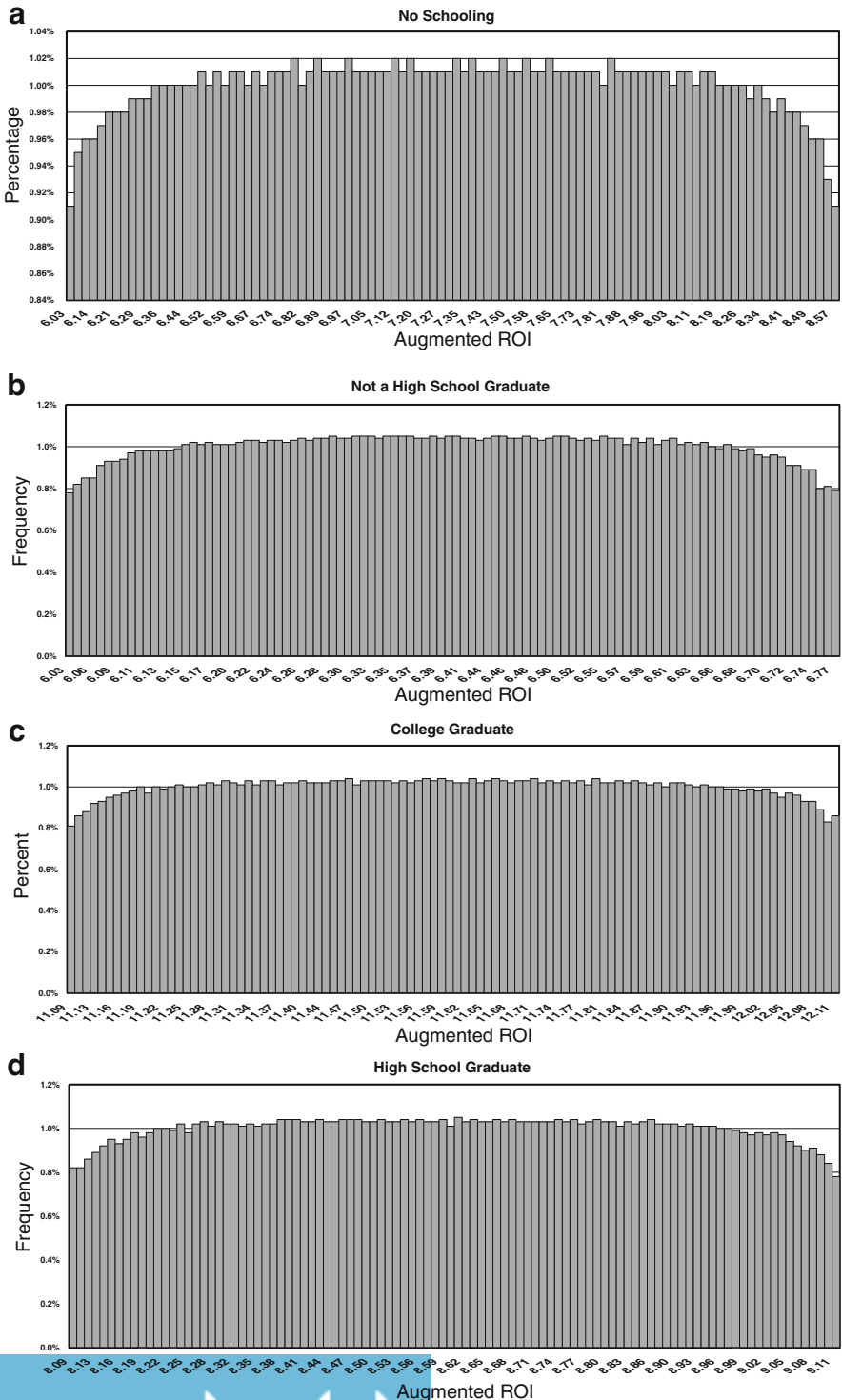


Fig. 2 a No schooling. b Not a high school graduate. c High school graduate. d College graduate

benefits has a significant effect on the ROI. Estimates from the augmented ROI are significantly lower than the traditional ROI calculations that exclude these factors. Thus the approach of estimating ROI without accounting for employment characteristics may severely over estimate the ROI.

The estimated augmented ROI for both job training programs and intensive services from California One-Stop Centers are positive. These results show that the employment programs are successful and should continue to receive federal support. The augmented ROI for those involved in job training programs and intensive services are similar. In contrast, without accounting for the employment factors, the ROI are significantly higher for individuals enrolled in intensive services compared to training programs. The California One-Stop Centers generate higher returns for college graduates and those who graduate high school compared to individuals with less education.

The costs of providing job training programs and intensive services vary considerably across the California One-Stop Centers. To determine the sensitivity of the augmented ROI to alternative cost structures, a Monte Carlo analysis is performed. The Monte Carlo simulations show that the augmented ROI for training programs are sensitive to changes in the estimated costs of these programs. In contrast, the augmented ROI for individuals involved in intensive services is not sensitive to changes in the costs of these services. These results suggest that California One-Stop Centers should focus on lowering the costs of training programs.

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