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Kevin Hollenbeck

*W.E. Upjohn Institute*, [hollenbeck@upjohn.org](mailto:hollenbeck@upjohn.org)

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**Economic Payoffs to Participation in  
Adult Education**

**Kevin Hollenbeck**  
W. E. Upjohn Institute for Employment Research  
300 S. Westnedge Avenue  
Kalamazoo, MI 49007

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## Economic Payoffs to Participation in Adult Education

### 1. Introduction

The purpose of this paper is to examine the economic payoffs from pursuing adult education activities. Individuals beyond the age of compulsory schooling engage in many forms of educational activities for a variety of reasons. This paper makes the abstraction that the forms of postsecondary education can be classified into three categories. Higher education is the pursuit of a baccalaureate degree or higher at universities, colleges, or community colleges. Postsecondary technical education refers to formal education that results in the development of skills for occupations that require less than a baccalaureate degree but greater than a high school diploma. It takes place in community colleges, publicly-funded vocational/technical schools, and proprietary institutions. For this paper, I'll define adult education to be all other education or formal training activities. It ranges from adult basic education and GED preparation to short-term technical training to avocational courses.

Adult education has, by far, the greatest number of participants of the three forms of postsecondary education. The data set primarily relied upon for this paper suggests that around 30 percent of the adult population (over 54 million individuals) pursued adult education during a 12 month period in 1990-91. In contrast, the *Digest of Education Statistics* (1992) estimates that approximately 13.7 million individuals were enrolled in higher education in Fall 1990. Goodwin (1989) estimates that around 4 million individuals pursued postsecondary technical education in 1986.

A human capital framework provides a model that easily accommodates pursuit of higher education or postsecondary technical education into an investment behavior. Clearly, individuals are bearing direct education and training-related costs and indirect foregone opportunity costs in order to increase lifetime earnings and to enjoy higher wages. However, it seems less clear whether or not adult education is pursued as an investment. First of all, the payoff periods may be smaller since adult education usually occurs later in life than higher education or postsecondary technical education. Second, it may be the case that adult education has a significant avocational, and therefore consumption, component. Third, adult education activities are typically not certificated, so there is no clear signal to employers that can be rewarded.

Despite arguments that suggest that adult education may not be motivated by human capital enhancement, the predominant motivation of adult education participants is, in fact, for job-related reasons. In this paper, I report that over 70 percent of the individuals who participate in adult education indicated that the main reason for taking an adult education course was to improve, advance, or keep up to date in their current job or to train for a new job. From among the remaining 30 percent who cited another reason as their main motivation, 80 percent suggested that their job or career was an important secondary reason. These statistics suggest that a large majority of adult education is tantamount to formal job training.

The next section of this paper describes the national survey that collected detailed information about the educational experiences of adults, aged 16 to 80, in 1990 and presents summary statistics from that data. Section 3 presents models of participation in and the

economic payoffs from adult education activities. Section 4 discusses the results and summarizes key findings.

## 2. The National Household Education Survey (NHES)

The National Household Education Survey (NHES) collected data about two subjects--early childhood education and adult education--from a random sample of the U.S. noninstitutionalized population. It represents one of the first efforts of the U.S. Department of Education to collect education data through a random sample of households rather than from students, teachers, or administrators. The purpose of the adult education component of the NHES was "to measure participation in adult education activities, to describe those activities, to provide data on the characteristics of participants and nonparticipants, and to determine why some adults participate while other do not." (Brick et al., 1992, p.3).

For each individual who participated in higher or postsecondary technical education on a part-time basis or who participated in adult education, the NHES collected detailed information on up to four courses. The data set contains information on 12,568 individuals and 17,612 courses. Because the survey first screened households to identify adult education participants and then oversampled such households, it is important to adjust statistical analyses by the sampling weights that have been provided on the file.

Table 1 provides weighted and unweighted descriptive statistics for selected variables from the NHES. The table displays demographic and geographic characteristics; employment, earnings, and income data; and adult education activities. The characteristics

Table 1  
Selected Sample Characteristics

Characteristic	Unweighted Percentage	Weighted Percentage
<u>Demographic and Geographic</u>		
<u>Sex</u>		
Female	54.6%	54.8%
Male	45.4	45.2
<u>Race/Ethnicity</u>		
Asian/Pacific Islander	2.0%	1.6%
Black	10.9	11.5
Native American	0.6	0.8
White	82.6	82.6
Other	4.0	3.5
<u>Current Marital Status</u>		
Divorced	8.8%	8.5%
Married	58.9	62.6
Never Married	27.1	20.2
Separated	1.9	2.4
Widowed	3.3	6.3
<u>Age</u>		
Mean	38.7	43.5
Median	37	37
<u>Educational Background</u>		
Up to 8th Grade	2.1%	5.6%
9th - 11th Grade	4.9	9.8
High School Diploma/Equivalent	29.2	36.9
Voc/tech after High School	3.4	3.8
1 - 2 Years College	17.9	13.7
Associate's Degree	3.8	2.8
3 - 4 Years College	8.4	6.5
Bachelor's Degree	17.5	12.9
Graduate/Professional School	12.9	8.0
<u>Region</u>		
Northeast	21.1%	20.9%
Midwest	26.9	24.1
South	30.2	34.2
West	21.8	20.8
<u>Urban Status</u>		
MSA	80.1%	75.6%
Non-MSA	19.9	24.4

Table 1  
(Continued)

Characteristic	Unweighted Percentage	Weighted Percentage
<b><u>Income, Employment and Earnings</u></b>		
<b><u>Employment Status</u></b>		
Employed	78.7%	63.6%
Unemployed	4.2	5.4
Not in Labor Force	17.0	31.0
<b><u>Annual Earnings –(Mean)*</u></b>	<b>\$24,173</b>	<b>\$21,459</b>
<b><u>Household Income</u></b>		
\$5,000 or Less	2.4%	5.6%
\$5,001 to \$10,000	4.3	9.5
\$10,001 to \$15,000	5.4	8.6
\$15,001 to \$20,000	5.9	8.9
\$20,001 to \$25,000	6.8	8.8
\$25,001 to \$30,000	10.9	9.9
\$30,001 to \$40,000	16.7	14.4
\$40,001 to \$50,000	15.5	11.7
\$50,001 to \$75,000	19.0	13.5
\$75,000 +	13.0	9.2
<b><u>Adult Education Activity</u></b>		
Full-time Student	17.3%	9.8%
Part-time Student	10.5%	3.9%
Adult Education	62.7%	29.7%
None	22.1%	61.7%
<b>Sample Size</b>	<b>12,568</b>	<b>181,975,208</b>

Source: Tabulations of the National Household Education Survey.

\* Conditioned on non-zero values.

of adult education participants can be inferred from the table by comparing the entries in the two columns. Because the weights adjust for oversampling of participants, characteristics for which the weighted frequency percentage are significantly less than the unweighted percentage tend to be associated with adult education participation. Thus nonmarried individuals, persons with higher educational achievement, residents in MSA's, employed persons, and individuals from households with higher levels of income seem to be disproportionately represented among participants.

Note that the last characteristic presented in the table displays the percentages of the population who were full- or part-time students working on degrees, who participated in adult education, or who did neither. The percentages sum to greater than 100 because some of the adult education participants were also students working toward a degree. Despite this overlap, it appears that more than twice as many adults participate in adult education in a year than pursue a degree program.

Table 2 presents statistics that characterize the adult education activities themselves. These statistics were calculated for the subsample of the dataset who reported participating in adult education. Two "kinds" of adult education predominate--(1) about three-quarters of the sample participated in an activity sponsored by an employer, labor organization, neighborhood center, church, or community group and (2) just under half took a formal continuing education or noncredit course. On average, individuals took 2.5 adult education courses during the year.

By far the main motivation for pursuing adult education is for job-related reasons. Over 70 percent of the participants noted that either improving their skills in their current job



Table 2

## Selected Characteristics of Adult Education Activities

Characteristic	Unweighted Percentage	Weighted Percentage
<u>Kind of Adult Education</u>		
Continuing ed./noncredit course	43.9%	40.4%
Mail, TV, radio, or newspaper	6.3%	5.4%
Private instruction/tutoring	9.2%	9.8%
Employer/labor org./neighborhood center/church/community group	74.8%	75.6%
Basic skills/GED	5.6%	4.7%
ESL	2.0%	1.9%
Other	2.1%	2.0%
<u>Number of Courses -- Mean<sup>a</sup></u>	2.5	2.5
<u>Main Reason for Taking Course(s)<sup>b</sup></u>		
Personal/family/social	31.4%	31.0%
Improve/advance/keep up to date on current job	62.7%	62.4%
Train for a new job	8.5%	9.1%
Improve basic skills	1.5%	1.2%
Meet a degree requirement	10.9%	9.4%
Other	1.1%	0.8%
<u>Job or Career-Related Reason<sup>b</sup></u>	78.4%	78.2%
<u>Type of Employment-Related Training<sup>b</sup></u>		
Exec/management development	28.8%	29.0%
Supervisory	27.6%	27.7%
Professional development	57.9%	56.6%
Technical/skilled worker	44.5%	44.0%
Computer software	22.3%	22.8%
Quality Control	23.2%	22.9%
Health and safety	27.2%	27.5%
Sales and marketing	17.5%	18.0%
New employee	14.7%	15.5%
Other	2.1%	1.7%
<u>Type of Provider<sup>b</sup></u>		
Elementary/junior high/high school	6.7%	6.3%
2-yr. Community college/technical institute	14.1%	12.8%
4-yr. College/university	14.4%	13.2%
Vocational, trade, business, hospital, or flight school	9.3%	9.1%
Tutor/private	4.8%	5.4%
Business/industry	34.0%	34.0%
Organized labor	11.6%	12.3%
Library	0.2%	0.2%
Government agency	15.4%	13.9%
Private community organization	12.1%	13.3%
Other	1.0%	1.2%

Table 2  
(Continued)

Characteristic	Unweighted Percentage	Weighted Percentage
<u>Who Paid?<sup>b</sup></u>		
Student/family	39.3%	36.3%
Federal government	6.4%	5.1%
State/local government	14.0%	12.9%
Business/industry	39.9%	40.9%
Private community organization	6.9%	8.2%
Someone else	0.7%	0.7%
No charge	13.5%	15.1%
<u>Number of Hours -- Mean</u>	93.2	87.8
<u>Completion Status</u>		
Completed all	77.3%	78.0%
Still taking at least one	19.2%	18.1%
Dropped all	3.5%	3.9%
Sample Size	7,878	54,046,637

Source: Tabulations of the National Household Education Survey.

<sup>a</sup> Conditioned on non-zero values.

<sup>b</sup> Question was asked for up to 4 courses. Table entries indicate percentages for at least one course.

or training for a new job was the main reason for taking an adult education course. In addition, almost a quarter indicated that job-related reasons were considered in deciding to pursue a course.

The major types of employment-related training were professional development training and technical or skilled worker training. These were reported by approximately half of the sample who indicated that they had pursued job-related training. Other types of training, reported by about one-fourth of the job-related adult education participants, were executive/management training, supervisory training, health and safety, quality control, and sales and marketing training.

Both business and individuals bore the costs of the training. Business and industry were reported to have (at least partially) paid for at least one course for about 40 percent of the sample. Survey respondents or their families reported that they paid (at least partially) for just under 40 percent of the courses. As can be seen in the table, these courses tend to be short-term. The average number of hours spent on up to four courses was around 90 hours.

With this description of the data set as background, the next section describes analyses of who participates in adult education activities and with what outcomes.

### 3. Participation and Earnings Models

An earlier discussion in the paper inferred various relationships between participation in adult education activities and characteristics of individuals; however, I now want to be

more systematic in analyzing participation behavior. Two competing hypotheses about that behavior are as follows:

- Adult education effectively enhances human capital and so participants are individuals most in need of human capital enhancement--i.e., younger, lower educational levels, lower income
- The link from adult education to labor market rewards is not readily perceived, so adult education will more likely be pursued by those who have had prior success in and a taste for education--i.e., older, higher educational levels, higher income

To test these hypotheses, I first examined cross-tabulations of adult education participation by various characteristics and performed chi-square tests on the observed relationships. Table 3 presents these results. The table suggests that participants tend to have the following characteristics:

- White
- Aged 31-45
- Completed at least 4 years of college
- Employed
- Household income of greater than \$50,000
- West Census region resident
- MSA resident

The statistical test used in table 3 is rather weak and furthermore the participation relationship needs to be analyzed in a multivariate framework, so I estimated the following probit model of participation:

$$(1) \quad AE_i = \begin{cases} 1, & \text{if } p_i^* > 0 \\ 0, & \text{otherwise} \end{cases}$$

$$p_i^* = a_1 + B_1'X_i + u_i$$

where,

$$AE_i = \begin{cases} 1, & \text{if individual } i \text{ participated in adult} \\ & \text{education; } 0 \text{ otherwise} \end{cases}$$

Table 3

Selected Characteristics of Individuals  
Who Pursued Adult Education Activities

Characteristic	Percentage with Adult Education (wtd)	Percentage without Adult Education (wtd)	$\chi^2$	(d.f.)
<u>Sex</u>			0.11	(1)
Female	29.57%	70.43		
Male	29.84%	70.16		
<u>Race/Ethnicity</u>			64.80***	(2)
Black	21.14%	78.86		
White	31.27%	68.73		
Other	26.84%	73.16		
<u>Age</u>			452.03***	(2)
< 30	30.95%	69.05		
31 - 45	40.40%	59.60		
45 +	19.94%	80.06		
<u>Educational Background</u>			1030.71***	(4)
< High School	11.51%	88.49		
High School/Equiv.	21.26%	78.74		
1-2 Years Postsec.	36.19%	63.81		
3-4 Years College	35.09%	64.91		
Bach. +	49.92%	50.08		
<u>Employment Status</u>			808.13***	(2)
Employed	38.46%	61.54		
Unemployed	19.27%	80.73		
Not in Labor Force	13.53%	86.47		
<u>Household Income Status</u>			743.78***	(3)
< \$15,000	14.82%	85.18		
\$15,001 - \$30,000	23.72%	76.28		
\$30,001 - \$50,000	36.62%	63.38		
\$50,000 +	44.56%	55.44		
<u>Earnings</u>			558.38***	(3)
< \$15,000	20.16%	79.84		
\$15,000 - \$30,000	34.28%	65.72		
\$30,001 - \$50,000	45.16%	54.84		
\$50,001 +	46.41%	53.59		
<u>Region</u>			44.89***	(3)
Northeast	30.01%	69.99		
Midwest	28.47%	71.53		
South	27.32%	72.68		
West	34.71%	65.29		
<u>MSA Status</u>			29.79***	(1)
MSA	30.97%	69.03		
Non-MSA	25.76%	74.24		

Source: Cross-tabulations of the National Household Education Survey.

\*\*\* Significant at the .01 level.

$X_i$  = vector of characteristics describing  $i$  that are thought to be related to participation  
 $a_1, B_1$  = parameters to be estimated  
 $u_i$  = standard error term

Table 4 presents the estimates of (1). The results confirm the positive relationships between education level and income and participation in adult education, and the negative relationships between being of a minority ethnicity and residing in the South Census region with participation. With other controls in the model, it turns out that women are more likely to participate than men and non-MSA residents are more likely to participate than MSA residents. The estimates for the quadratic in age match the results for the categorical age variable in table 3--the U-shaped relationship reaches a maximum at age 34.

To test whether or not there is any economic payoff to adult education, I estimated the standard human capital model presented in equation (2).

$$(2) \quad \ln E_i = a_2 + B_2'X_i + c AE_i + v_i$$

where,

$E_i$  = annual earnings of individual  $i$   
 $X_i$  = vector of characteristics describing  $i$  that are related to earnings  
 $AE_i$  = 1, if individual  $i$  participated in adult education; 0 otherwise  
 $a_2, B_2, c$  = parameters to be estimated  
 $v_i$  = standard error term

The basic hypothesis of interest in this paper is that the coefficient on adult education participation,  $c$ , will be positive.

Table 5 presents (weighted) OLS estimates of the  $c$  coefficient from (2). With the assumption that there are structural differences between the labor markets for men and women, I estimated the model separately by sex. Furthermore, I estimated the model with

Table 4

Coefficient Estimates for a Model of Participation  
in Adult Education

(estimated with a weighted probit)

Variable	Coefficient	Standard Error
Female	.166***	.026
Minority	-.089**	.036
Married	.051	.032
Children under 16	.011	.030
South	-.065**	.027
MSA	-.066**	.031
Age	.023***	.005
Age <sup>2</sup> ÷ 100	-.034***	.057
Years of education	.110***	.006
Used a library in last 12 months	.162***	.030
Income class	.074***	.005
Employed last week	.507***	.036
Unemployed last week	.211***	.066
Intercept	-3.186***	.124
Log-likelihood	-6545.0	

*Source:* Estimated from nonmilitary observations on the National Household Education Survey.

\*\* Significant at the .05 level; \*\*\* significant at the .01 level.

Table 5

Coefficients on Adult Education Activities  
in Earnings Models

(standard errors in parentheses)

Characteristic	Females				Males			
	Model (1)	Model (2)	Model (3)	Model (4)	Model (1)	Model (2)	Model (3)	Model (4)
Participated in adult education	.189*** (.020)	.154*** (.020)			.256*** (.021)	.213*** (.020)		
Participated in job-related AE			.272*** (.022)	.231*** (.021)			.282*** (.021)	.237*** (.021)
Participated in AE not directly related to employment			-.028 (.032)	-.040 (.031)			.124*** (.043)	.093** (.041)
Industry and occupation dummies	No	Yes	No	Yes	No	Yes	No	Yes
$\bar{R}^2$	.175	.255	.184	.262	.288	.361	.290	.362
Sample Size	6,371				5,110			

Source: Estimated from observations with positive earnings in the National Household Education Survey.

Note: Table entries are coefficient estimates from weighted least squares regression of the log of annual salary. Besides variables in the table, the independent variables included minority status, marital status, presence of children < 16, South Census region, homeownership status, MSA residence, years of education, a quartic in age, full-time student status, and part-time student status.

\*\* Significant at the .05 level; \*\*\* significant at the .01 level.



and without a set of dummy variables for industry and occupation.<sup>1</sup> The inclusion of the industry and occupation dummy variables reduces the size of the adult education effects somewhat, but does not alter their sign or significance.

The first two columns in each panel of the table, labeled model (1) and model (2), display effects that are quite sizeable in magnitude and that are highly significant statistically. Participating in adult education seems to accrue a 15 to 19 percent salary for females and 21 to 26 percent higher salary for males. To begin to disentangle these impacts, I partitioned the adult education participation dummy variable into two separate variables--a dummy that indicates that at least one of the courses taken was job-related and a dummy that indicates that none of the courses were job-related. The results from this partitioning are displayed in the rightmost two columns of each panel in the table, marked models (3) and (4). Here we find an interesting difference by sex. The return to adult education for women comes exclusively from job-related education; whereas for men, the job-related education is positive and significant, but so is pursuit of adult education that is not job-related.

Table 6 repeats the estimates shown in table 5, except that the dummy variable specification for adult education is replaced by a quadratic in hours of education. That is, in models (1) and (2), the dummy variable indicating participation in some adult education activity is replaced by hours and hours<sup>2</sup>.<sup>2</sup> Similarly, in models (3) and (4), I have replaced

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<sup>1</sup>The industry and occupation classes are very broad--10 industries and 12 occupations. Because it may be argued that industry and occupation are endogenous with earnings, my preferred specification omits these covariates. Of course, as I argue below, adult education may be endogenous as well.

<sup>2</sup>Strictly speaking, hours is measured as the sum of weeks completed time average hours per week for up to 4 courses.

Table 6

Coefficients on Hours Participated\* in Adult Education  
Activities in Earnings Models

(Standard Errors in Parentheses)

Characteristic	Females				Males			
	Model (1)	Model (2)	Model (3)	Model (4)	Model (1)	Model (2)	Model (3)	Model (4)
Hours of participation in adult education	.048*** (.015)	.042*** (.014)			.093*** (.012)	.065*** (.012)		
Hours <sup>2</sup>	-.002* (.001)	-.001 (.001)			-.003*** (.001)	-.002*** (.001)		
Hours of participation in job-related adult education			.072*** (.017)	.062*** (.016)			.105*** (.013)	.074*** (.013)
(Hours in job-related) <sup>2</sup>			-.003*** (.001)	-.002** (.001)			-.004*** (.001)	-.003*** (.001)
Hours of participation in non-job-related			-.026 (.031)	-.018 (.029)			.014 (.039)	.005 (.037)
(Hours non-job-related) <sup>2</sup>			.002 (.003)	.002 (.002)			-.001 (.004)	-.001 (.004)
Industry and occupation dummies	No	Yes	No	Yes	No	Yes	No	Yes
$\bar{R}^2$	.164	.248	.165	.249	.274	.350	.275	.350
Sample size	6,371				5,110			

Source: Estimated from observations with positive earnings in the National Household Education Survey.

Note: Table entries are coefficient estimates from weighted least squares regression of the log of annual salary. Besides variables in the table, the independent variables included minority status, marital status, presence of children < 16, South Census region, homeownership status, MSA residence, years of education, a quartic in age, full-time student status, and part-time student status.

\* Hours are scaled in 100's.

\* Significant at the .10 level; \*\* significant at the .05 level; \*\*\* significant at the .01 level.

the dummy variables for job-related adult education and non-job-related adult education with a quadratic in hours for each type. The quadratic specification does suggest decreasing returns to hours of overall and to hours of job-related educational activities. Interestingly, the hours specification for non-job-related education loses significance for men.

To further analyze the impact of adult education on earnings, I examined the effects of individual types of employment- or career-related training. Specifically, the survey asked respondents whether the coursework that they engaged in included any of the following:

- Executive or management development training
- Supervisory training
- Professional development training
- Technical or skilled worker training
- Word processing or computer software training
- Job health and safety training
- Training in areas such as quality control or statistical process control
- Sales and marketing training
- Training as a new employee, or
- Some other kind of training

Table 7 reports the results of estimating the earnings equation with dummy variables for each of these types of training as well as a dummy for non-job-related training. Among all of these categories of training, the only types that had significant, positive effects on salaries were "professional development training" and "executive or management development training." The latter seemed to have a far bigger influence on women's earnings than on men's. Not surprisingly, new employee training was negatively related to earnings. It may, in fact, be a proxy for relatively little tenure or experience.

Table 7

Coefficients on Types of Job-Related Adult Education  
Activities in Earnings Models

(Standard errors in parentheses)

Characteristic	Females		Males	
	Model (1)	Model (2)	Model (1)	Model (2)
Management training	.201*** (.046)	.194*** (.044)	.082* (.044)	.089** (.042)
Supervisory training	-.016 (.047)	-.024 (.045)	.032 (.044)	.038 (.042)
Professional development training	.289*** (.033)	.259*** (.032)	.250*** (.034)	.223*** (.033)
Technical training	.046 (.037)	-.003 (.035)	.066* (.034)	.020 (.033)
Computer software training	.024 (.040)	.025 (.038)	.014 (.038)	-.059 (.037)
Health and safety- related training	.004 (.038)	.007 (.037)	-.056 (.036)	.004 (.035)
Quality control training	.046 (.046)	.032 (.044)	-.022 (.039)	-.018 (.037)
Sales and marketing training	-.048 (.044)	-.018 (.043)	.013 (.043)	.012 (.041)
New employee training	-.212*** (.044)	-.183*** (.042)	-.090** (.045)	-.076* (.043)
Other training	-.053 (.103)	-.067 (.099)	.032 (.132)	.039 (.125)
Non-job-related training	-.028 (.032)	-.040 (.031)	.115*** (.043)	.093** (.041)
Industry and occupation dummies	No	Yes	No	Yes
$\bar{R}^2$	.195	.270	.289	.362

Source: Estimated from observations with positive earnings in the National Household Education Survey.

Note: Table entries are coefficient estimates from weighted least squares regression of the log of annual salary. Besides variables in the table, the independent variables included minority status, marital status, presence of children < 16, South Census region, homeownership status, MSA residence, years of education, a quartic in age, full-time student status, and part-time student status.

\* Significant at the .10 level; \*\* significant at the .05 level; \*\*\* significant at the .01 level.

#### 4. Summary of Findings and Conclusions

The basic finding of this paper is that "adult education" seems to have sizable effects on participants' annual earnings. For men, the effect is on the order of 20-25 percent and for women, it is 15-20 percent. Most adult education is job- or career-related; however, some of it is not. The "job-relatedness" of the adult education activity significantly affects its earnings payoff. For women, non-job-related adult education has little or no payoff, and so the return to adult education participation is strictly a return to job-related adult education. For men, however, I've estimated that there is a payoff to non-job-related adult education; although the return to job-related adult education is greater.

For the most part, adult education activities are of short duration--sample means suggest a total of 90 hours devoted to 2.5 courses. There is undoubtedly a tradeoff that must be balanced by an individual in deciding how much adult education to pursue because it enhances earnings (and presumably productivity), but engaging in too many hours of adult education will eventually reduce work time or productivity. The empirical evidence presented here supports this notion of a tradeoff; both coefficients in a quadratic specification of hours were significant and suggestive of an upward sloping profile with decreasing returns.

Among several different types of job-related adult education, only two seemed to be strongly related to earnings--professional development training and executive or management training. The documentation of the survey does not provide a precise definition of or indicate interviewer instructions pertaining to professional development training, so it is hard to interpret that finding. I presume that respondents were likely to associate it with

professional occupations. If this were the case, then the evidence suggests little payoff to adult education in occupations other than managerial, professional, or technical workers. In particular, quality control, safety and health, and computer software adult education did not seem to enhance earnings.

Analyses of participation in adult education suggest that participants tend to be more advantaged--higher educational achievement and higher levels of household income. This raises the specter of significant causality from annual earnings to adult education and consequent simultaneity bias in the estimates of the returns to adult education.

Unfortunately, this cross-sectional data set has almost no variables to use to instrument for participation. What I can report is that the coefficient on adult education does not decrease greatly as variables are added to the earnings equation, which suggests that any bias component to the return is unlikely to be the major share of the effect.

In short, job-related adult education activities tend to be pursued by relatively advantaged individuals--high education levels, high household income, aged 31-45, and white. It appears as if these activities do enhance earnings for participants, but additional analyses on this dataset, or analyses on other datasets are needed to more firmly identify the existence and magnitude of this effect.

## REFERENCES

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