



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

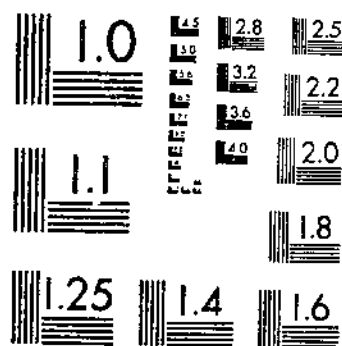
Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

TB 1619 (1980) USDA TECHNICAL BULLETINS UPDATA  
PUBLIC SERVICE EMPLOYMENT THE IMPACT ON WASHINGTON STATE'S  
NORLOCK, N J 1 OF 1

# START



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

2  
R 635  
U 12

57

# PUBLIC SERVICE EMPLOYMENT:

The Impact on Washington State's  
Nonmetropolitan Labor Markets

Mark J. Morlock

U.S. DEPARTMENT OF AGRICULTURE

1980

Los Angeles Public Library

U.S. Department of Agriculture  
Economics, Statistics, and Cooperatives Service

Technical Bulletin No. 1619

16  
A 1.36:1119

52

PUBLIC SERVICE EMPLOYMENT: THE IMPACT ON WASHINGTON STATE'S NONMETROPOLITAN LABOR MARKETS, by Mark J. Morlock. Economic Development Division; Economics, Statistics, and Cooperatives Service; U.S. Department of Agriculture. Technical Bulletin No. 1619.

#### ABSTRACT

A public service employment (PSE) program that provided work for the unemployed improved the status of workers in the Washington State job market during fiscal year 1976. Nonmetro county unemployment rates dropped an average 0.5 percent; post-program wages increased 82 cents per hour for women and 99 cents for men in unsubsidized employment; and job skills improved, usually in proportion with years of education. PSE may serve as a valuable manpower development tool in nonmetro areas, though some drawbacks include underutilization of skills, overconcentrations of participants with higher levels of education, and weak training for the disadvantaged worker.

Keywords: Public service employment, Nonmetro area, Job skills.

#### PREFACE

This research was conducted while the author was a research associate in the Department of Economics at Washington State University, Pullman, and was conducted under an agreement with the Economics, Statistics, and Cooperatives Service (ESCS), U.S. Department of Agriculture. This agreement was part of the Priority Issues Research Program initiated by ESCS in 1977.

#### ACKNOWLEDGMENTS

The author expresses his appreciation to Lyle Tinker and John Swannack, past and present administrators of the Washington State Employment and Training section, for their support of the project. Appreciation is also expressed to Professors V. Lane Rawlins, Duane E. Leigh, and Warren S. Gramm, all of the Department of Economics at Washington State University, for their sustained interest and careful criticisms; and to Robert Coltrane for review and suggestions, Jim Carlin for editorial review, and Nita Kennedy and Micki Weimerskirch for preparation of the manuscript.

## CONTENTS

HIGHLIGHTS.....	iv
INTRODUCTION.....	1
BACKGROUND.....	1
EVALUATION AND CHARACTERISTICS.....	2
NATURE OF PUBLIC SERVICE EMPLOYMENT OCCUPATIONS.....	5
Effect of Federal Regulations on the Distribu-	
tion of PSE Occupations.....	5
PSE Occupations and Employing Agencies.....	5
LABOR MARKET IMPACT OF PUBLIC SERVICE EMPLOYMENT	
PROGRAMS.....	9
LABOR FORCE DEVELOPMENT IMPACT OF PUBLIC SERVICE	
EMPLOYMENT PROGRAMS.....	12
Wage Gains.....	14
Job-skill Enhancement.....	18
INCIDENCE OF PLACEMENT.....	23
REFERENCES.....	24
APPENDIX - ASSIGNMENT OF SKILL LEVELS.....	25

## HIGHLIGHTS

Public Service Employment (PSE) programs created a substantial number of new jobs in Washington State. A study of demographic and geographic characteristics of a sample of PSE program participants for fiscal year 1976 in 32 mostly nonmetro counties in Washington indicates that these jobs reduced county unemployment rates by an average of 0.5 percent. This reduction varied substantially from county to county, ranging from zero to 1.1 percent.

The predominant occupations were clerical and maintenance/custodial, which accounted for about 54 percent of all PSE positions. Variations in the occupational mix differed significantly among counties.

There were nearly two males for every female in the program; of the participants, almost 90 percent were white, and almost all were in the prime 18 to 54 working age group. Participants of both sexes had relatively high levels of education; more than 87 percent had at least a high school education, and 20 percent had the equivalent of a college degree. This suggests that public service employment did not focus on the more disadvantaged workers.

About 61 percent of the females and 58 percent of the males who left the PSE programs in fiscal year 1976 were able to move into permanent jobs. More than four times as many female participants were placed in permanent public sector jobs as were placed in jobs in the private sector. About twice as many males moved into public jobs as moved into private sector jobs. About 18 percent of the females and 12 percent of males again became unemployed upon leaving the program. The postprogram employment status was not known for 21 percent of the females and 29 percent of the males.

Participants who moved directly into unsubsidized employment showed a wage increase of 82 cents per hour for females and 99 cents per hour for males. There was significant variation in the wage changes among participants. Members of both sexes who had higher levels of education got the larger wage gains. Most of them had relatively little labor market experience before PSE. Thus, PSE seemed to provide an entry into the labor market.

On average, employees of both sexes appeared to improve occupational skills while employed in PSE. However, significant variations were found among participants of differing characteristics. Skill deepening was positively related to years of formal education for both sexes, but was negatively related to preprogram job-skill levels.

# PUBLIC SERVICE EMPLOYMENT:

## The Impact on Washington State's Nonmetropolitan Labor Markets

Mark J. Morlock\*

### INTRODUCTION

There has been a substantial increase in the amount of Federal dollars appropriated for the operation of public service employment (PSE) projects throughout the country in the past half-decade.

Three pieces of Federal legislation--the Emergency Employment Act (EEA) of 1971 and Titles II and VI of the Comprehensive Employment and Training Act (CETA)--provided the base for PSE programs. All references to CETA refer to the Act prior to its reauthorization in 1978.

As a tool of public policy, PSE may be analyzed from either of two perspectives [11].<sup>1</sup> First, as the countercyclical tool of fiscal policy, PSE empha-

sizes the speed of implementation, problems of fiscal substitution, and employment displacement [12]. Second, approached from the work-force perspective, the key issue becomes the program's ability to solve structural problems affecting the labor market status of disadvantaged workers.

This study analyzes a number of issues related to the effectiveness of public service employment programs in nonmetropolitan Washington State in fiscal year 1976. It measures the impact of PSE programs on the local labor force, emphasizing the predominant occupations as well as sex, race, age, and job skills of the participants.

### BACKGROUND

Direct job creation by the Federal Government had its roots in the New Deal legislation with the establishment of the Public Works Administration (PWA) in 1933 and the Works Progress Administration (WPA) in 1935. These early programs employed more than 3 million workers in public works projects at their peak and expended an average of nearly \$1.4 billion per year on wage payments from 1935 until the programs ended operations in 1943 [8].

\*Morlock was formerly a research associate at Washington State University, Pullman, and now is assistant professor, Department of Economics, Weber State College, Ogden, Utah.

<sup>1</sup>/ Underscored numbers in parentheses cite references listed at the end of this report.

The relatively low unemployment rates of the two post-World War II decades resulted in the absence of any Federal manpower programs until interest was rekindled with the rise of a series of new Federal programs in the early sixties. The important programs initiated during this period were aimed at alleviating cyclical unemployment in specified distressed geographic areas in the United States and included the Area Redevelopment Act of 1961 and the Public Works and Economic Development Act of 1965. These programs provided employers with incentives to locate or expand in depressed areas. In addition, the broader Manpower Development and Training Act (MDTA) of 1962 provided for federally operated institutional training programs and work experience projects. The Community Work and Training Program initiated



in 1962 provided for the establishment of public employment programs. This program was superseded by the Work Incentive (WIN) program in 1967, as well as the Job Corps, Neighborhood Youth Corps, Operation Mainstream, and the New Careers programs, all of which were established under the authority of the Economic Development Act of 1964.

In the early seventies, the rising rates of unemployment brought renewed interest in the countercyclical application of public sector job creation programs. First to be established was the Public Employment Program (PEP), created by the Emergency Employment Act (EEA) of 1971. The program operated for 3 years, and was funded at an annual level of about \$1 billion [5]. PEP programs provided employment for 160,000 workers at peak enrollments in mid-1972 [8].

Funding for PEP ended with the passage of the Comprehensive Employment and Training Act (CETA) of 1973. However, a PSE program was established under Title II of the Act to provide temporary public sector employment for the unemployed and underemployed in areas of substantial unemployment. CETA's PSE program was expanded in 1974 through the passage of the Emergency Jobs and Unemployment Assistance Act (Title VI of CETA).

A major innovation of CETA is that it called for a decentralized system of program administration, where local governments receive CETA funds directly from the Federal Government for locally designed manpower programs. Local governments (usually cities or counties) designated to receive CETA funds are called prime sponsors. Prime sponsors are responsible for the implementation of programs to meet local employment needs

within the Act and Federal regulations. The Department of Labor monitors local programs to insure their compliance with the CETA legislation.

Public service employment has become dominant within the array of Federal labor market programs. Nearly \$1.8 billion was authorized in 1974 for CETA Titles II and VI PSE programs. This figure approached \$3.25 billion in 1976, and rose to an estimated \$8.4 billion for the 1977-78 biennium. The number of PSE positions established also have grown dramatically in the second half of the seventies. In 1975, 310,000 positions were established under Federal projects [9]. This number increased to more than 350,000 in 1976 and rose to nearly 725,000 by fiscal year 1978 [10].

A prime sponsor establishes PSE program positions in either public or private nonprofit agencies. The local government must serve a population of at least 100,000 persons to qualify as a prime sponsor. Areas in a State that are either too small or are unwilling to act as their own prime sponsor may join a prime sponsor or be grouped into one organization called the balance of State.

This analysis is based on the fiscal year 1976 balance of Washington State's prime sponsor area consisting of 32 counties. Two counties--Benton and Franklin--are in the Richland-Kennewick Standard Metropolitan Statistical Area (SMSA). The other counties are non-SMSA counties. The population of the counties ranged from a low of 3,000 to a high of 83,400.<sup>2/</sup> The counties' employment base included agriculture, forestry, and light industry. A random sample of more than 4,000 persons (about half the PSE participants) formed the data base.

#### EVALUATION AND CHARACTERISTICS

One PSE objective is to provide training and placement activities so unemployed workers may become more competitive in the labor market. It was found in this study that substantial improvement in wage gains and job-skill enhancement occurred among program participants, especially among women. However, the

analysis suggests that at least part of this development was attributed to non-PSE activities. Most program participants who

---

<sup>2/</sup> The 1976 populations of Benton and Franklin Counties were 83,400 and 28,900, respectively.

were employed in PSE jobs were best qualified in terms of either years of formal education or a combination of years of formal education and labor market experience. In addition, some of the skill deepening associated with the PSE program experience can be attributed to the underutilization of the individual's labor prior to his or her entry into the program. Part of the underutilization of labor was due to the generally slack labor market in 1975 and 1976. These factors necessarily detract from the measured importance of the PSE experience in affecting manpower development gains.

However, program participants did appear to gain specific job skills contributing to the individual's ultimate move into permanent public sector employment. This type of manpower development gain appeared to be more prevalent among female participants than among males.

In general, some work-force development resulted from the PSE program, but its overall incidence appears to have been limited. This is not to imply that PSE programs have somehow failed in their objective, since manpower development is only one PSE program goal. Furthermore, since some manpower development was identified, and much of it occurred in ways predicted by theoretical considerations, this study has established the very real potential of public service employment programs as a manpower development tool for nonmetro areas.

Finally, limitations on the generality of the present analysis must be mentioned. Since PSE programs under CETA are locally designed and administered, their exact nature will reflect the local area in terms of geographic setting, the composition of the labor force, and priorities with respect to the provision of public services. As a result, the types of PSE occupations and program participants may be expected to vary substantially from one area to another. The nature and extent of manpower development attributable to the PSE program will also vary.

Table 1 presents information on the general demographic characteristics of the sampled PSE program participants.

Several general characteristics of the PSE program participants were apparent. First, the programs employed significantly more males than females. Males comprised slightly less than 60 percent, and females comprised slightly more than 40 percent, of the sample. Second, program participants seemed to have been drawn predominantly from the prime working age groups, with 96 percent falling into the 18 to 54 age groups. Of the remaining 4 percent, 3.5 percent were older workers (55 years or older) and 0.5 percent fell under the age of 18. Third, program participants were overwhelmingly white, comprising 87.3 percent of the sample. Of the four categories of nonwhite program participants, the most significant was the Native American category at 5.2 percent of the sample, followed by Spanish American at 4.3 percent. Blacks were conspicuously absent from the programs, comprising only 1.5 percent of the total number of participants. Fourth, the participants appeared to be quite highly educated. Only 12.8 percent of the people had less than a high school education, while 43.2 percent reported some formal education beyond high school. Surprisingly, a full 20 percent of the participants reported 16 or more years of education--the equivalent of a college degree.

Table 1 reveals several differences between the balance of Washington State sample and the national sample. The most striking differences appeared in ethnic composition and levels of education. First, relative to the national sample, more of the balance of Washington State participant population was white. The underrepresentation of nonwhites may be explained in terms of the relative absence of blacks in the balance of the State region. Second, the balance of Washington State participant population appears to be somewhat more highly educated than the national sample; a smaller proportion of the participants fell into the lower education brackets, and a larger proportion fell into the higher education brackets.

Several characteristics of male participants varied from those of females in the balance of Washington State. A larger proportion of women participants were found in the nonwhite ethnic groups.

While 15.5 percent of the women participants fell into one of the nonwhite categories, only 10.7 percent of the male participants fit these same categories. Most of the nonwhite, female participants were either Native Americans or Spanish Americans.

Male participants appeared to have slightly less education than their female

Table 1--Demographic characteristics of sampled PSE program participants,  
balance of Washington State, fiscal year 1976

Item	:	Total	:	Females	:	Males	:	National sample
	:		:		:		:	
	:		:	<u>Percent</u>			:	
Sex:	:		:		:		:	
Female	:	41.6	:	100.0	:		:	44.0
Male	:	58.4	:		:	100.0	:	56.0
Age:	:		:		:		:	
Under 18	:	.5	:	.2	:	.6	:	2.0
18 to 24	:	38.9	:	41.8	:	36.8	:	<u>3</u> /94.0
25 to 54	:	57.1	:	54.9	:	58.7	:	
55 and over	:	3.5	:	3.1	:	3.9	:	4.0
Ethnicity:	:		:		:		:	
White	:	87.3	:	84.5	:	89.3	:	70.0
Nonwhite--	:		:		:		:	
Black	:	1.5	:	2.2	:	1.0	:	21.0
Native American <u>1</u> /	:	5.2	:	7.0	:	3.9	:	--
Spanish American	:	4.3	:	4.1	:	4.4	:	7.0
Other <u>2</u> /	:	1.7	:	2.2	:	1.4	:	2.0
Education (years):	:		:		:		:	
Under 8	:	3.6	:	.8	:	5.7	:	9.0
8 to 11	:	9.2	:	6.4	:	11.2	:	13.0
12	:	44.0	:	46.4	:	42.2	:	42.0
13 to 15	:	23.2	:	25.3	:	21.6	:	
16 and over	:	20.0	:	21.1	:	19.3	:	<u>4</u> /36.0
Sample size (number)	:	4,303	:	1,790	:	2,513	:	--

1/ Includes American Indian and Alaskan native categories.

Source: Westat, Inc., "Characteristics of New Enrollees in CETA Programs During Fiscal Year 1976", Continuous Longitudinal Manpower Survey, Report 6, Washington, D.C., August 1977, pp. 5-12.

## NATURE OF PUBLIC SERVICE EMPLOYMENT OCCUPATIONS

The nature of the PSE jobs was governed, to a large extent, by the necessity of local compliance with Federal PSE program regulations. Those aspects

of the Federal regulations relevant to the establishment of PSE occupations are reviewed, as a first step in the examination of the nature of PSE occupations.

### Effect of Federal Regulations on the Distribution of PSE Occupations

Federal regulations affect the nature of PSE jobs, though they do not dictate the exact type of occupations to be established. The CETA, Title II regulations stated that PSE positions must be used either to provide new public services or to supplement existing public service needs which otherwise would have been inadequately provided [6]. Title VI regulations also imposed this requirement, but had provisions for certain special types of public service projects, such as community capital improvement projects, in areas with excessively high unemployment rates.<sup>3/</sup>

The types of jobs established as PSE positions were further restricted by Federal regulations governing the selection of employing agencies. Acceptable employing organizations were limited to either public agencies or private nonprofit organizations providing social services [7]. The public agencies employing PSE program participants could include city or county agencies and local school districts, State agencies with offices in local areas, and in some cases Federal agencies [7]. Special provisions were also made for employing program

participants with Native American tribal organizations in local areas. Also, since local employment service offices administered most of the local PSE programs, Federal regulations urged that PSE positions be established in these agencies to assist in handling increases in workloads attributable to those programs.

Federal regulations further stated that selections for PSE program positions be governed in large part by their potential contribution to upgrading job experience and skills of program participants [6,7]. However, jobs were limited by guidelines for allowable occupations. For instance, with the exception of classroom teachers, limits were placed on the number of participants that could be employed in a "professional" capacity [6]. Federal wage guidelines limited wages of PSE employees. While local employing agencies were free to subsidize the wages of PSE participants from their own funds, both Titles II and VI placed a maximum limit of \$10,000 a year per participant on the wages and benefits which could be paid out of CETA funds. This resulted in annual salaries of about \$7,800, with the remaining \$2,200 covering benefits [6,7].

### PSE Occupations and Employing Agencies

The distribution of PSE occupations within the Washington balance of State area is presented in table 2. The occupational categories employing the largest number of participants were maintenance/custodial workers, 18.8 percent, secretarial workers, 18.4 percent, other clerical workers, 16.9 percent, and

professional and technical workers, 15.6 percent. More than one-third of the positions (35.3 percent) were in the two clerical categories. Occupational categories of lesser overall significance were nonfarm laborers, 11.6 percent, and managerial and administrative workers, 7.5 percent. Protective service and craft, which respectively comprised 5.2 and 3 percent of the occupations, appeared to have been of comparatively little importance. Hardly any PSE positions were established in other service, operative,

<sup>3/</sup> Regions with "excessive" rates of unemployment were defined to be those with unemployment rates in excess of 7 percent for the last 3 consecutive months [7].



State, the employing agencies fell into five distinct categories, which included State, county, city, private nonprofit, and Federal agencies. State agencies consisted, for the most part, of local branch offices of State agencies. Especially important as employing agencies were the State Departments of Social and Health Services, and Employment Security. Other State organizations that provided PSE positions included the Departments of Highways; Natural Resources; Fisheries, Parks and Recreation; Emergency Services; the Washington State Arts Commission; the Commission on Mexican Affairs; and the State Bicentennial Program. State-operated colleges and universities located in the balance of State area also were included in this category.

County organizations supplying PSE jobs included county administrative units, county commissions, community colleges, local school districts, and Native American tribal associations. The last two groups, while not specifically county organizations, were included in this category on the basis of their distinctly local or regional nature. Employing agencies within the city category consisted primarily of the administrative organizations of cities and townships in the balance of State area. Private nonprofit organizations used to employ PSE program participants varied significantly among counties. The organizations included local hospitals, a variety of community action agencies, and social service groups such as drug prevention and crisis centers. PSE participants in the Federal Government were all employed with the U.S. Forest Service.

Table 3 presents the distribution of PSE employment by employing agencies and county. County agencies appear to be the most frequent type of employing organizations comprising an average of 48 percent of the total program employment. However, the standard deviation for this category is also the largest of the five, indicating large variations among the counties. Given the large mean value, however, it would appear that most counties in the balance of State area placed a considerable amount of emphasis on county organizations, with variations differing between moderate and disproportionately high

levels of emphasis. Note that some employment occurred in county agencies in all counties. Indeed, in no county does this category account for less than 16.4 percent of total countywide PSE employment. Furthermore, employment in county agencies accounted for over 25 percent of the total PSE employment in 29 counties, and for over 50 percent in 10 of the 32 counties surveyed. In Ferry County, 100 percent of the employment was in county agencies, and in Pend Oreille and San Juan Counties, over 90 percent was in county agencies.

Second in importance among the categories of employing organizations were State agencies, with 27.4 percent of the employment. The standard deviation for this category is also quite high. State agencies, for example, employed no PSE participants in two counties, and accounted for less than 10 percent in 6 of the 32 counties. On the other hand, employment in State agencies comprised over 25 percent of the total employment in 21 counties, with employment exceeding 50 percent of the total in 3 counties. Thurston County had the largest relative employment in State agencies; however, Thurston County is the location of the State Capitol.

City agencies accounted for an average of 18.9 percent of total PSE employment, with once again, a significant variation among counties. Employment with city agencies accounted for less than 10 percent of total employment in only eight counties. The greatest emphasis was placed on city organizations in Garfield County, where 62.5 percent of the program participants were in city agencies. Furthermore, Garfield County established PSE occupations in only two of the five categories of employing agencies.

Most counties placed relatively little emphasis on the private nonprofit agencies as employing organizations for PSE participants. In seven counties, no PSE positions were established in these organizations, and in 29 of the 32 counties the number represented less than 10 percent of the countywide total. Okanogan County is the only one which placed a substantial degree of emphasis on employment with these agencies, where they

Table 3--Percentage distribution of PSE employment, sampled participants, by employing agency and county, balance of Washington State, fiscal year 1976

County	:	Total	Employing agency				
			:	:	:	:	:
			State	County	City	Private	Federal
						nonprofit	
			Percent				
Adams	:	100.0	30.9	38.1	31.0	0	0
Asotin	:	100.0	15.7	68.6	9.8	5.9	0
Benton	:	100.0	16.1	42.5	36.8	4.6	0
Chelan	:	100.0	33.9	31.2	27.4	7.5	0
Clallam	:	100.0	37.4	38.5	18.1	6.0	0
Columbia	:	100.0	27.4	38.5	18.1	6.0	0
Cowlitz	:	100.0	21.1	46.1	31.1	1.7	0
Douglas	:	100.0	18.2	49.7	16.9	5.2	0
Ferry	:	100.0	0	100.0	0	0	0
Franklin	:	100.0	37.2	31.4	22.1	9.3	0
Garfield	:	100.0	0	37.5	62.5	0	0
Grant	:	100.0	39.2	29.1	22.6	9.1	0
Grays Harbor	:	100.0	31.1	28.4	33.1	7.4	0
Island	:	100.0	31.6	49.4	6.3	12.7	0
Jefferson	:	100.0	36.2	39.7	22.4	1.7	0
Kittitas	:	100.0	50.0	24.5	13.2	12.3	0
Klickitat	:	100.0	25.3	52.9	21.8	0	0
Lewis	:	100.0	31.5	44.6	11.1	1.0	11.8
Lincoln	:	100.0	5.9	70.6	17.6	5.9	0
Mason	:	100.0	32.1	54.7	7.5	5.7	0
Okanogan	:	100.0	12.6	49.8	18.0	19.6	0
Pacific	:	100.0	41.0	16.4	41.0	1.6	0
Pend Oreille	:	100.0	4.0	92.0	4.0	0	0
San Juan	:	100.0	4.5	90.9	4.6	0	0
Skagit	:	100.0	44.5	38.6	13.4	3.5	0
Skamania	:	100.0	8.9	64.3	17.9	8.9	0
Stevens	:	100.0	26.2	51.8	14.9	7.1	0
Thurston	:	100.0	67.1	18.5	6.3	8.1	0
Wahkiakum	:	100.0	41.7	41.7	16.6	0	0
Walla Walla	:	100.0	19.4	50.9	20.4	9.3	0
Whatcom	:	100.0	30.2	47.0	15.3	7.5	0
Whitman	:	100.0	56.2	31.2	6.3	6.3	0
Mean	:		27.4	48.0	18.9	5.3	.4
Standard deviation:	:		16.26	20.11	12.69	4.63	2.09

accounted for slightly less than 20 percent of the total. Federal agencies employed PSE participants in only one

county, where they comprised 11.8 percent of that county's total number of PSE participants.

#### LABOR MARKET IMPACT OF PUBLIC SERVICE EMPLOYMENT PROGRAMS

Labor market and PSE program information are presented in this section for each county within the balance of Washington State prime sponsor area. The labor market information includes the size of the local labor force, the number of unemployed, and the unemployment rate. These figures represent monthly averages for the 15-month 1976 fiscal year (table 4). The average monthly number of program participants was calculated for each county. This information, in combination with local labor market data, permitted the calculation of PSE program involvement as a percentage of the local labor force and as a percentage of the local number of unemployed. Note that in table 4 the data were aggregated for Benton and Franklin Counties and for Chelan and Douglas Counties.

There are large county-by-county variations in all statistics shown in table 4. County size, as measured by the size of the civilian labor force, ranges from a low of 1,297 for Garfield and Wahkiakum Counties to a high of 40,118 for Whatcom County. The size of local PSE programs also exhibits large variation, ranging from a high of 251 to a low of 3. These data indicate that large-population counties tend to have large numbers of PSE program participants, while smaller counties tend to have smaller numbers of participants. The three largest counties in the balance of State area, for instance, had average monthly PSE enrollments of 251, 150, and 117, respectively. In contrast, the three smallest counties had average monthly program enrollments of 11, 3, and 4, respectively.

While the positive relationship between county size and PSE program size seemed to hold generally, the magnitude of local PSE program participation did not appear to be a strict function of county size. This was because the number of PSE positions in any given county was

also a function of the local unemployment rate, with areas of high unemployment receiving relatively more PSE positions than those based solely on county size.

The information on the average monthly number of PSE program participants as a percentage of the local labor force provides an indication of the magnitude of impact of the existing PSE programs on the operation of local labor markets. The larger the PSE program as a percentage of the local labor force, the more likely that its existence will influence the labor allocation mechanisms in these areas by creating a new source of labor demand. It is apparent from an examination of the data that while PSE program participation as a percentage of the local labor force displays a wide variation, ranging from 0.06 to 1.06, all programs are small relative to the size of the local labor markets in which they operate. The number of PSE positions exceeded 1 percent of the total labor force for only one county and was less than 0.5 percent for 16 of the 30 counties.

Although the number of public service jobs available to local labor markets were small relative to the size of the labor force, they appeared to have had a significant impact on unemployment. The average number of PSE program participants exceeded 10 percent of the unemployed for two counties, and topped 5 percent of the unemployed for 16 of the 30 counties.

The effects of PSE programs on local rates of unemployment were estimated (table 5). The method of analysis assumes that: (1) in the absence of PSE, all participants would be unemployed, (2) the PSE programs would have no displacement effects on regular employment, and (3) the programs would have no effect on labor force participation. Total county unemployment, then, would be equal to the



Table 4--The magnitude of PSE program involvement, sampled participants, balance of Washington State, by county, fiscal year 1976

County	Civilian: labor force	Unemployed 1/	Unemployment rate 1/	Average monthly PSE 1/ 2/	Average monthly PSE as percentage of labor force	PSE as per- centage of total unemployment
	Number	Number	Percent	Number	Percent	
Adams	5,980	485	8.1	20	0.33	4.12
Asotin	6,579	367	5.3	28	.42	7.63
Benton-Franklin	48,977	3,772	7.7	139	.28	3.69
Chelan-Douglas	30,322	3,031	10.0	132	.44	4.35
Clallam	16,144	1,720	10.7	99	.61	5.76
Columbia	2,012	185	9.2	19	.94	10.27
Cowlitz	31,229	2,545	8.2	117	.37	4.60
Ferry	1,987	221	11.1	11	.55	4.98
Garfield	1,297	82	6.3	3	.23	3.66
Grant	20,041	1,865	9.3	89	.44	4.77
Grays Harbor	24,627	2,347	9.6	156	.64	6.65
Island	9,459	967	10.2	41	.43	4.24
Jefferson	4,531	485	10.7	29	.64	5.98
Kittitas	9,794	1,045	10.7	91	.93	8.71
Klickitat	5,419	746	13.8	53	.98	7.10
Lewis	20,450	2,421	11.8	137	.67	5.66
Lincoln	3,923	109	2.8	18	.46	16.51
Mason	8,443	599	7.1	30	.36	5.01
Okanogan	12,410	1,652	13.3	132	1.06	7.99
Pacific	6,265	678	10.8	30	.48	4.42
Pend Oreille	2,535	301	11.9	18	.71	5.98
San Juan	2,197	205	9.3	7	.32	3.41
Skagit	24,448	3,084	12.6	148	.61	4.80
Skamania	2,325	319	13.7	21	.90	6.58
Stevens	8,451	1,027	12.2	67	.79	6.52
Thurston	39,767	2,840	7.1	150	.38	5.28
Wahkiakum	1,297	113	8.7	4	.31	3.54
Walla Walla	19,295	1,181	6.1	53	.27	4.49
Whatcom	40,118	4,380	10.9	251	.63	5.73
Whitman	15,107	675	4.5	9	.06	1.33
Total	425,329	39,447	3/ 9.3	2,102	4/ .49	5/ 5.33

1/ Monthly average for fiscal year 1976 (July 1, 1975, to September 30, 1976).

2/ Defined as the  $(\sum M_j / 15)_i$ , where  $M_j$  = the number of months of PSE program participation

by the jth participant during the 1976 fiscal year for each county i.

3/ Computed by dividing the total unemployment for all counties by the total civilian labor force for all counties.

4/ Computed by dividing average monthly PSE employment for all counties by the total civilian labor force for all counties.

5/ Computed by dividing average monthly PSE employment for all counties by the total unemployment for all counties.

Source: State of Washington, Department of Employment Security, "Resident Labor Force and Employment in Washington State and Labor Market Areas," February 1977.

Table 5--The impact of PSE programs on local unemployment rates, sampled participants, balance of Washington State, by county, fiscal year 1976

County	Unemployment rate <u>1/</u>	Estimated unemployment rate <u>2/</u>	Difference between actual and estimated unemployment rates
	-----Percent-----		Number
Adams	8.1	8.4	0.3
Asotin	5.3	5.9	.6
Benton-Franklin	7.7	8.0	.3
Chelan-Douglas	10.0	10.4	.4
Clallam	10.7	11.3	.6
Columbia	9.2	10.1	.9
Cowlitz	8.2	8.5	.3
Ferry	11.1	11.7	.6
Garfield	6.3	6.6	.3
Grant	9.3	9.8	.5
Grays Harbor	9.6	10.2	.6
Island	10.2	10.7	.5
Jefferson	10.7	11.3	.6
Kittitas	10.7	11.6	.9
Klickitat	13.8	14.7	.9
Lewis	11.8	12.5	.7
Lincoln	2.8	3.2	.4
Mason	7.1	7.5	.4
Okanogan	13.3	14.4	1.1
Pacific	10.8	11.3	.5
Pend Oreille	11.9	12.6	.7
San Juan	9.3	9.6	.3
Skagit	12.6	13.2	.6
Skamania	13.7	14.6	.9
Stevens	12.2	12.9	.7
Thurston	7.1	7.5	.4
Wahkiakum	8.7	9.0	.3
Walla Walla	6.1	6.4	.3
Whatcom	10.9	11.5	.6
Whitman	4.5	4.5	.0
Total	9.3	9.8	.5

1/ Unemployment rate from table 4.

2/ The estimated unemployment rates are based on the assumption that all persons employed in PSE jobs would have been unemployed.

sum of actual unemployment and PSE employment.<sup>4/</sup>

The actual average unemployment rate for each county in the balance of State area was contrasted with the countywide unemployment rate estimated in the absence of local PSE programs. In table 5, the estimated unemployment rates were computed for each county by dividing the sum of the countywide unemployed and the average number of countywide PSE program participants by the civilian labor force.

#### LABOR FORCE DEVELOPMENT IMPACT OF PUBLIC SERVICE EMPLOYMENT PROGRAMS

Data on program participants will be examined in this section to determine the extent to which participants experienced manpower development gains associated with their PSE program involvement. First, the analysis will identify the nature and extent of manpower development among the sampled program participants. Regression analysis will then be used to identify differences in the extent of manpower development among program participants of varying demographic and personal characteristics. Finally, the extent to which specific PSE program and geographic variables contribute to differential levels of manpower development among program participants will be determined.

A major indicator of work-force development is long-term earnings gains. Therefore, the assessment of the manpower development impact of PSE programs ideally would require the identification of the longrun labor market performance of program participants subsequent to their

Thus, the difference in the actual and estimated unemployment rate represents the reduction in countywide rates of unemployment attributable to the PSE programs. These reductions ranged from zero to a high of 1.1 percentage points. Eighteen of the 30 counties experienced a reduction of at least 0.5 of a percentage point in their unemployment rates. The reduction was 0.9 of a percentage point or greater in five counties.

program involvement. An analysis would be necessary of the nature of the contribution of the PSE program experience to any identified longrun earnings gains. Program participant information, available for use in this study, was limited in this regard. The PSE information base contained virtually no followup data on participants after they left the program. Nevertheless, the available data did contain variables capable of serving as proxies for actual measured longrun earnings gains.

The sample of PSE program participants used in this study was drawn from the population of individuals having PSE program involvement in the balance of Washington State prime sponsor area during the 1976 fiscal year. The sample was divided into two groups with respect to the existence of postprogram information. First, there were those individuals who, after termination of PSE employment, immediately moved into unsubsidized employment in either the private or the public sector during the 1976 fiscal year. For these individuals, information was available on the wages and occupation associated with their new employment. This situation, however, did not represent the majority of the sampled participants. No postprogram employment information was available for most of the sample. This included: (1) those participants who were enrolled in the program at the time the data were gathered, and (2) those participants whose PSE program termination was not followed by immediate or known employment. In the latter case, the individual

<sup>4/</sup> Assumptions 2 and 3 may be quite restrictive. There is some question as to the actual extent of fiscal substitution occurring in PSE programs [1,3]. To the extent that some fiscal substitution does exist, however, the estimates may misstate the actual reduction in unemployment rates attributable to the PSE program. Also, it may be that the PSE program itself induces entry into the labor force. To the extent that this is true, the estimates may once again misstate the actual reduction in unemployment rates attributable to the PSE program.

A comparison of the characteristics of the participants in each of these categories is shown in table 6. The data showed little difference between the two groups in terms of sex, race, age, or education. For males, the participants leaving the program and accepting employment appeared to have been slightly younger and have somewhat more education than the males in the rest of the sample. For females, the difference between the two samples appeared to have been even smaller, with the only notable exception a slightly lower proportion of nonwhites among female participants with postprogram employment data. Based on these surface characteristics, then, there appeared to be little difference in individuals transferring from the PSE program into employment positions, and those who do not.

dividuals, depending on the availability of postprogram information. The extent of manpower development was measured in terms of actual wage gains for those participants with post-PSE employment records. The variable measured the individuals's postprogram hourly wage minus his or her preprogram hourly wage.

Job-skill enhancement was another indicator of work-force development stemming from PSE participation. Two types of data were used to measure job-skill enhancement. The first measured the extent of job-skill deepening associated with PSE program participation. This measure was calculated by comparing the skill level of the individual's in-program occupation relative to the skill level of his or her preprogram occupation. Second, job-skill enhancement may take the form of skill broadening. This was measured by a binary variable indicating whether the nature of the job skills utilized in the participant's in-program occupation was of a different type than those utilized in his or her preprogram occupation.

[illegible]

13

## Wage Gains

Wage gains associated with PSE participation were measured by computing the difference between the hourly wage of the individual's postprogram employment and his or her preprogram hourly wage. Mean values, by sex, are presented as follows: <sup>5/</sup>

<u>Sex</u>	<u>Mean</u> <u>preprogram</u> <u>wage</u>	<u>Mean</u> <u>wage change</u>
	<u>Dollars</u>	
Female	2.80 (.97)	0.82 (1.27)
Male	3.71 (1.38)	.99 (1.52)

Note: Standard deviations appear in parentheses.

Participants of both sexes experienced wage gains after PSE program involvement. Females increased their hourly wages by an average of 82 cents, while males increases their hourly wages by an average of 99 cents. These wage gains represented increases in excess of 26 percent for both groups. However, the size of the standard deviations suggested large variations in wage gains among PSE participants.

Two types of variables were used to explain the variation in wage gains. The first type included years of labor market experience, age, education, and other demographic characteristics of participants. The second type related to the experience and skills obtained as a PSE participant and the type of post-PSE employment. The equation used

to relate wage gains to these variables follows:

$$\begin{aligned} \text{WAGECH} = & b_0 + b_1 \text{NEXP} + b_2 \text{DRACE} + \\ & b_3 \text{ED1} + b_4 \text{ED3} + b_5 \text{ED4} + \\ & b_6 \text{INT1} + b_7 \text{INT3} + b_8 \text{INT4} + \\ & b_9 \text{DISAD} + b_{10} \text{SKLDEP} + \\ & b_{11} \text{PL} + b_{12} \text{PUBAG}, \end{aligned}$$

where:

NEXP = years of potential labor market experience for each participant defined as: age of participant minus years of formal education minus 5. Negative values of NEXP were set at zero. <sup>6/</sup>

DRACE = race of participant. White participants were given a value of 0; nonwhite = 1.

ED1 through ED4 = a set of binary variables representing years of formal education. ED1 represents less than 12 years of education; ED2, 12 years; ED3, 13 to 15 years; and ED4, 16 years or more.

INT1 through INT4 = a set of interaction terms expressing the relationships between years of formal education and years of potential labor market experience. INT1 = ED1 x NEXP; INT3 = ED3 x NEXP; and INT4 = ED4 x

<sup>5/</sup> Since the average period of PSE program participation was substantially less than 1 year for both sexes (see table 7), no attempt was made to state wage rates in real terms. Note, however, that to the extent that some wage inflation occurred during this period, the calculated wage change may overstate the real wage change.

<sup>6/</sup> Since there is no guarantee that all participants have devoted all time since school to labor force participation, this variable is actually a measure of potential labor market experience.

DISAD = economically disadvantaged. This variable was assigned 1 if economically disadvantaged, 0 if not. 8/

SKLDEP = change in occupational skill defined as the difference between job-skill level of an individual's PSE occupation and his or her pre-PSE job-skill level. 9/ Negative values were set at zero. 10/

PL = number of weeks participants were in the PSE program.

PUBAG = a binary variable indicating whether a participant's postprogram employment was in the pub-

lic or private sector. This variable was assigned a value of 1 if the individual moved into full-time employment with a public or a nonprofit agency. If postprogram employment was in the private sector, this variable was assigned a value of 0.

Mean values for the variables appear in table 7. Note that, in general, differences in the mean values between sexes were relatively small. Females averaged slightly longer lengths of PSE program participation and had slightly higher education levels. Also, a slightly larger proportion of females obtained employment in the public sector.

The regression results are shown in table 8. Separate regressions are represented for males and females. Respective t-statistics are displayed in parentheses next to the regression coefficients, with starred t-statistics indicating a level of significance at the .05 level.

The results show that NEXP entered the equation with a negative sign for both sexes, but was significant at the .05 level only for females. Thus, for females, the larger preprogram to postprogram wage gains tended to accrue to those individuals with the least potential labor market experience. The negative values for both sexes were to be expected, since relatively low levels of labor market experience will presumably be associated with relatively low preprogram wages.

Some differences seemed to arise between the sexes on the importance of years of formal education on wage gains. For females, the two education variables representing higher levels of formal education entered into the regression equation positively, becoming significant at the .05 level. These two variables were also positive and significant for males, but the ED1 variable, representing lower levels of education was also significant and negative. Thus, for males, the effect of education on wage gains appeared to be significant over all ranges of education. Lower levels of

7/ In the regression equations, ED2 and INT2 are used as reference groups.

8/ An individual was classified as "economically disadvantaged" if he or she was in one or more of the following categories: Vietnam-era veteran, female head of household, disadvantaged youth (age less than 22 years and yearly income less than \$4,000), older worker (age greater than 44 years), ethnic minority, undereducated adult (less than 12 years of formal education), welfare recipient, or handicapped.

9/ See appendix for a description of the process by which specific numerical job-skill values were assigned to individual occupational titles. The occupational skill levels are cardinal numerical values ranging from 1 to 9, and reflect the years of specific vocational preparation (SVP) associated with the occupation.

10/ The rationale for limiting the skill deepening variable to non-negative values centers around the relatively short length of PSE program involvement, so that no unlearning of existing job skills could have occurred. From the perspective of job-skill development then, PSE program involvement cannot have a negative net effect on the level of job skills possessed by a participant.

Table 7--Mean values of independent variables used  
in the wage change model, by sex

Variable	: Female	: Male	:	Variable	: Female	: Male
	:	:	:		:	:
	<u>Values</u>		:		<u>Values</u>	
NEXP	11.45	11.27	:	DISAD	0.60	0.76
DRACE	.11	.11	:	SKLDEP	.69	.71
ED1	.05	.10	:	PL	42.04	40.39
ED3	.28	.22	:	PUBAG	.78	.65
ED4	.21	.22	:			
INT1	19.62	21.90	:		<u>Number</u>	
INT3	9.19	8.48	:			
INT4	9.56	7.68	:	Observations	480	653

Table 8--Regression results for the wage change model (dependent  
variable = WAGECH)

Variable	Females		Males	
	: Regression	: t-Statistic	: Regression	: t-Statistic
	: coefficient	:	: coefficient	:
	:	:	:	:
	<u>Values</u>			
Intercept	0.808	4.14 *	0.721	3.01 *
NEXP	-.019	-2.10 *	-.014	-1.53
DRACE	-.215	-1.14	.193	.97
ED1	-.024	-.05	-.871	-2.50 *
ED3	.606	2.91 *	.801	3.22 *
ED4	.523	2.13 *	.952	3.43 *
INT1	.035	1.60	.007	.50
INT3	-.058	-4.02 *	-.076	-3.49 *
INT4	-.009	.49	-.072	-2.81 *
DISAD	-.005	-.04	.357	2.36 *
SKLDEP	.167	3.63 *	.007	-1.17
PL	.004	1.54 *	-.0001	-.03
PUBAG	-.341	-1.71	.128	1.01
R <sup>2</sup>				
F		0.155		0.095
		7.16*		5.57*
	<u>Number</u>			
Observations		480		653

\*Significant at the .05 level.

ranges of education. Lower levels of education seemingly hindered wage gains, while higher levels of education led to wage increases. For females, the positive relation between years of formal education and wage gains was significant only at the upper levels of education.

Interaction terms between levels of education and years of labor market experience were included in the regression equations to investigate further the effect of years of education on wage gains. For females, only the second interaction term (INT3) proved to be significant and entered with a negative sign. Thus, for female participants with some schooling beyond high school but with less than 4 years of college, the greatest wage gain apparently accrued to those with relatively low levels of labor market experience. Years of labor market experience apparently had no independent effect on wage gains for women in other education categories. For male participants, both INT3 and INT4 entered into the equation negatively and significant at the .05 level. This suggested that for males with any formal education beyond high school, wage upturns accrued to those with relatively low levels of labor market experience.

The economically disadvantaged (DISAD) variable failed to affect females but was positive and significant for males. Wage gains thus appeared to have accrued differentially to the economically disadvantaged males.

The two program variables--the level of job-skill deepening (SKLDEP) and the length of PSE program participation (PL)--both enter positive and significant for females but were not significant in the male sample. Thus, for females, wage gains were positively associated with both the extent of job-skill deepening through PSE program involvement and the length of the individual's tenure in the PSE program. For male participants, however, neither of these variables appeared to play a significant role in determining the magnitude of measured wage gains.

These results suggest two conclusions with respect to the differential effect of PSE program involvement on the wage gains

experienced by program participants. First, for either sex, higher levels of formal education contributed positively to wage gains. On the surface, this finding could be interpreted in several ways. It could, for instance, suggest that participants with higher amounts of education learn more rapidly, so that the observed wage gains represent differential productivity gains. It also could mean that participants tended, for one reason or another, to underutilize their education prior to PSE program involvement. However, the negative and significant interaction terms for individuals with large amounts of formal education (INT3 for females, and INT3 and INT4 for males) suggest a different explanation for the positive contribution of education. Because lower levels of labor market experience for the highly educated were positively associated with wage gains, the interaction terms suggest that PSE served as the first job for a large number of highly educated program participants of either sex. For this group, the wage gains may be attributable to the combination of a low preprogram wage (reflecting irregular labor force involvement), with postprogram wages more consistent with their higher levels of formal education.

Second, for females, manpower development from PSE appeared to be associated with job-skill enhancement, as suggested by the statistically significant program variables positively associating wage gains with both skill deepening and program length. For male participants, however, wage gains cannot be associated exactly with skill enhancement. It should be noted that one factor contributing to the lack of statistical significance of the SKLDEP variable for males may be a less consistent relationship between job-skill level and wages for men than for women. This would be the case where wages are related to the physical demands of the job, so that relatively high wages may be found in connection with relatively low job-skill levels. To the extent that this occurs, it will dilute the normal positive relation between job-skill levels and wages.



## Job-skill Enhancement

An indicator of manpower development associated with PSE program involvement is the extent to which job skills of individuals are enhanced as a result of PSE program participation. In addition to the theoretical ties between this variable and manpower development, the fact that the preceding analysis showed a positive and significant relationship for females between occupational skill deepening and shortrun wage gains provided support for using this variable as a proxy for manpower development. As discussed earlier, job-skill enhancement can take the form of either skill deepening or skill broadening.

### Skill Deepening

Again, occupational skill deepening occurs when a worker acquires new job skills of a higher level than those previously commanded. PSE skill deepening occurred when the individual's PSE occupation was of a higher skill level than that of his or her preprogram occupation.

The magnitude of occupational skill deepening which occurred among the sample of PSE program participants appears as follows:

Sex	Mean preprogram specific vocational preparation skill level	Mean in- program/ preprogram skill change
Female	4.74 (1.75)	0.90 (1.38)
Male	4.28 (2.03)	0.78 (1.36)

Note: Standard deviations appear in parentheses.

The participants experienced increases in job-skill levels averaging close to one point on the specific vocational preparation (SVP) scale. The increase was about nine-tenths of an SVP point for females and slightly more than three-fourths of a point for males. These values represents skill increases

in excess of 18 percent.

A regression analysis was performed to analyze the nature of the variation in occupational skill gains experienced by program participants. Once again, separate regressions were used for males and females with the dependent variable being the magnitude of the in-program/preprogram occupational skill deepening (SKLDEP). Explanatory variables included indicators of demographic and personal characteristics, variables reflecting a participant's pre-PSE occupation, and the degree of variation in the types of PSE occupations. The following equation related skill deepening to these variables:

$$\begin{aligned} \text{SKLDEP} = & b_0 + b_1 \text{NEXP} + b_2 \text{DRACE} + \\ & b_3 \text{ED1} + b_4 \text{ED3} + b_5 \text{ED4} + \\ & b_6 \text{INT1} + b_7 \text{INT3} + b_8 \text{INT4} + \\ & b_9 \text{DISAD} + b_{10} \text{PRESKL} + \\ & b_{11} \text{INT5} + b_{12} \text{INT7} + b_{13} \text{INT8} + \\ & b_{14} \text{OCCVAR}, \end{aligned}$$

Where:

SKLDEP, NEXP, DRACE, ED1, ED3, ED4, INT1, INT3, INT4, and DISAD are identical to those variables used in the wage change model (WAGECH).

PRESKL = the SVP skill level of the individual's preprogram occupation.

INT5 through INT8 = a set of interaction terms expressing the relationship between years of formal education and preprogram occupational skill levels. INT5 = ED1 x PRESKL; INT7 = ED3 x PRESKL; INT8 = ED4 x PRESKL.

OCCVAR = the extent of variation in the types of PSE occupations

created by local organiza-  
tions. ll/

Average values for the variables are presented in table 9. Small differences are exhibited in mean values between sexes. In general, a somewhat larger proportion of females fell into the higher education brackets. Preprogram job-skill levels were also slightly higher for females than for males, both overall and when segmented for labor market experience.

The regression results are shown in table 10. Years of potential labor market experience (NEXP) is not significant at the .05 level for either sex; however, its sign differs between the sexes. On the other hand, the sign for the ethnicity variable (DRACE) differs for males and females, but the coefficients in both equations are significant at the .05

level. For females the sign is positive, indicating greater skill deepening for nonwhite women. The opposite is true for males. Here the negative sign indicates that white males attained more skill deepening than nonwhite males.

Two observations follow on education coefficients. First, for either sex, the ED4 variable (16 years or more of education) is significant at the .05 level, with the size of the coefficient being substantially larger than the corresponding ED3 coefficient (13 to 15 years of education). In terms of skill deepening, this suggests the existence of a large marginal payoff for either sex for the completion of college. Second, the strong effect of education in this model has implications for the wage change model presented above. To the extent the job-skill deepening was significant in

Table 9--Mean values of independent variables used  
in skill deepening model, by sex

Independent	:	:	::	Independent	:	:
variable	:	Female : Male	::	variable	:	Female : Male
	:	:	::		:	:
		<u>Value</u>	::			<u>Value</u>
			::			
NEXP	11.42	11.58	::	PRESKL	4.74	4.28
DRACE	.16	.11	::	INT5	4.24	3.68
ED1	.07	.17	::	INT7	4.62	4.33
ED3	.25	.22	::	INT8	5.96	5.61
ED4	.21	.19	::	OCCVAR	.63	.63
INT1	20.61	18.85	::			
INT3	9.28	9.49	::			
INT4	7.93	6.70	::			<u>Number</u>
DISAD	.67	.75	::	Observations	1,689	2,136

11/ OCCVAR was calculated by first distributing the 11 two-digit occupational categories in table 2 for each of the 32 counties in the sample. For each county, a value representing the degree of occupational variation was found by summing the percentage of occupations falling into the three largest two-digit occupational categories for that county. Each individual in the sample was then given the value for this variable corresponding to his or her county of residence. Note that values for this variable range from 0.273 to 1.0. The former would be the case if PSE occupations

were evenly distributed among the 11 occupational categories, so that each category contained 0.091 of the total number of PSE occupations in the county. The latter would be the case if all PSE occupations in a given county fell into three or less of the 11 occupational categories. For this variable, the smaller the value, the greater the variance in the county wide distribution of PSE occupations. Since lower values indicate greater variation in the type of local PSE occupations, this variable is expected to enter into the regression equation negatively, so that larger amounts of variation contribute to greater skill gains.

Table 10--Regression results for the skill deepening model (dependent variable = SKLDEP)

Variable	Females		Males	
	Regression coefficient	t-Statistic	Regression coefficient	t-Statistic
	<u>Values</u>			
Intercept	3.308	12.36*	1.720	8.22*
NEXP	.001	.25	-.003	-.77
DRACE	.433	5.35*	-.175	-2.22*
ED1	-.265	-.86	-.420	-2.32*
ED3	.481	2.37*	.218	1.36
ED4	1.452	5.71*	3.139	16.26*
INT1	.010	1.12	.013	2.33*
INT3	.015	2.08*	-.002	-.24
INT4	.004	.47	.001	.08
DISAD	-.156	-2.41*	.013	.20
PRESKL	-.434	-16.38*	-.264	-12.71*
INT5	.029	.46	.011	.26
INT7	-.082	-1.94*	.014	.42
INT8	-.154	-3.40*	-.378	-11.33*
OCCVAR	-.806	-2.20*	-.021	-.07
R <sup>2</sup>	.346		.329	
F	63.28*		74.11*	
	<u>Number</u>			
Observations	1,689		2,136	

\*Significant at the .05 level.

explaining wage gains for females, the importance of education implies that education may have, in fact, contributed more to wage gains than the amount indicated by the education coefficients in the wage change model. Thus, the contribution of education to wage gains appears to have been twofold--directly through the education variables and indirectly through the effect of education skill deepening.

Most of the interaction variables between years of formal education and years of labor market experience (INT1-INT4) were not significant at the .05 level. Exceptions appear only among female participants with between 13 and 15 years of education and male participants with less than 12 years of education.

The economically disadvantaged variable enters into the regression equation significantly at the .05 level with a negative sign for females, suggesting a differential skill deepening payoff to females not classified as

economically disadvantaged. For the male sample, however, this variable was not significant.

The preprogram occupational skill variable (PRESKL) enters significantly with a negative sign into both equations. This finding suggests that for both sexes, skill deepening apparently took the form of large in-program/preprogram job-skill gains among participants with relatively low preprogram job-skill levels.

The second set of interaction terms (INT5-INT8) yielded additional information on the nature of these skill gains. Specifically, the negative and significant INT7 and INT8 terms for females and the negative and significant INT8 for males, indicates that large skill gains accrued to participants of either sex with relatively high levels of formal education but with relatively low preprogram job-skill levels. Here, the observed negative sign indicates that for females with greater than a high school education and for

males with the equivalent of a college degree, skill gains are significantly greater the lower the individual's preprogram job-skill level.

Finally, the variable designed to capture the degree of variance in PSE occupations in local areas (OCCVAR) enters negatively into both equations but is significant only for females. The negative sign is to be expected and indicates that the greater the amount of variation in the types of PSE occupations created in local areas, the greater will be the amount of occupational skill deepening. Presumably, the larger the array of PSE occupations available for use in a given area, the greater will be the ability of PSE administrators to match effectively program participants with their PSE occupation. Thus, rather than being dictated by necessity, the match can be made with an eye toward its contribution to job-skill enhancement. While the variable is not significant for males, its significance for females indicates that occupational skill deepening is, in fact, related to the degree of variation in the array of PSE occupations created in local areas.

These results suggest important conclusions with respect to the nature of the variation in skill deepening which occurred among PSE participants. Education seemed of have affected assignment of PSE program occupations more (and thus inprogram skill levels) than it affected preprogram job-skill levels. This conclusion was supported by two results. The first shows the highly significant and negative coefficients found for the PRESKL variable for either sex. As discussed above, these negative values indicated that a significant amount of skill deepening took the form of major jumps in occupational skill levels among participants with relatively low levels of preprogram job skills. Second, the interaction between preprogram skill levels and years of education (INT5-INT8) revealed exactly which types of individuals were affected. They are shown to be individuals of either sex with relatively high levels of formal education but with relatively low preprogram job-skill levels.

Two explanations may be given for skill deepening accruing differentially to the highly educated. First, as proposed above, this would be the case if preprogram job-skill levels tended to underrepresent levels of education. The possibility that labor skills may be underutilized during periods when the labor market is slack was introduced by Melvin Reder [4]. Reder postulates that as labor markets loosen, workers avoid unemployment by taking lower skilled jobs than those consistent with the skill levels they possess. Given this, labor underutilization was expected to be prevalent during periods of exceptionally high unemployment. The observed preprogram to in-program skill change will thus be expected to be positive, if these individuals are assigned PSE jobs which reflect the level of their skills.

Second, the low skill levels found for highly educated participants may be attributable simply to low amounts of labor market experience, especially in occupations related directly to their education. In either of these cases, preprogram occupational skill levels will be low relative to years of formal education, so that for the highly educated participants the assignment of a PSE occupation reflecting their education will result in relatively large job-skill gains.

The first of these two propositions is supported by the regression results. The insignificance of the NEXP variable suggests that skill deepening is not related to the amount of labor market experience, as would be expected under the second proposition. Furthermore, the INT3 and INT4 variables add strength to this conclusion by documenting the lack of significance of labor market experience on skill deepening specifically for those groups with large amounts of formal education.

To the extent that job-skill deepening accrues to individuals whose preprogram job skills reflect a slack labor market, the actual manpower development impact of PSE may be less than the full amount of the identified job-skill change. If the same program participants

were taken from a tight labor market, they would, according to this explanation, have higher preprogram job-skill levels with correspondingly lower occupational skill gains.

The experience of males with less than a high school education was different from the general trend. For this group, the results indicated that preprogram labor market experience is indeed a factor in skill deepening. Years of labor market experience were apparently considered in the assignment of PSE occupations for the range of occupations relevant for this group.

Finally, the significance of the women's occupational variable (OCCVAR) suggested that skill deepening is, in fact, tied to the ability of the local PSE program to create a wide variety of PSE occupations. Where this is accomplished, women tend to benefit through skill deepening. This result is especially significant in that the array of PSE occupations is capable of manipulation by local PSE administrators.

#### Skill Broadening

Occupational skill broadening occurs when a worker obtains job skills of a substantially different type, but not necessarily of a different level, than those previously possessed. Since some level of job skills can be associated with all occupations, the process of working in most new occupations can be expected to result in a degree of occupational skill broadening as the worker comes to command the new array of job skills. As discussed above, acquiring the new job skills may be accomplished either through participation in formal on-the-job training programs or through a more informal process of on-the-job learning.

PSE program participation may result in job-skill broadening by exposing program participants to specific types of job skills heretofore unknown to them. Like skill deepening, this form of skill enhancement can be expected to have manpower development potential by providing the mechanism by which longrun earnings payoffs may be affected. Future earnings payoffs associated with skill

broadening will not necessarily be associated with a higher level of physical productivity, as was the case with occupational skill deepening, because job-skill levels may not change in response to the skill broadening. Rather, manpower development may be affected by providing the individual with an array of job-skill credentials which qualify him or her for a wider variety of jobs. This, in turn, may have one or both of the following manpower development effects. First, by increasing the spectrum of job types for which an individual is qualified to apply, skill broadening may work to shorten future periods of unemployment by decreasing the amount of time needed to find new employment. Second, job-skill broadening may increase future earnings for the individual by allowing him or her to respond to excess labor demand conditions for the specific types of labor for which the newly acquired job skills are relevant.

The following shows the extent of occupational skill broadening:

<u>Sex</u>	<u>Proportion whose preprogram occupation differed from his or her PSE occupation</u>	
	<u>Percent</u>	
Female	61	(49)
Male	72	(43)

Note: Standard deviations appear in parentheses.

The two-digit occupational grouping of each participant's PSE occupation was compared with the two-digit occupational grouping associated with his or her preprogram occupation, as a measure of occupational skill broadening.

A large proportion of program participants of both sexes experienced occupational skill broadening as a result of their PSE program participation. Among female participants, 61 percent were placed into PSE occupations of a different type than their preprogram occupation. The proportion of males experiencing occupational skill broadening was even higher at 72 percent.

## INCIDENCE OF PLACEMENT

Important PSE issues include the extent to which PSE program participants are placed into unsubsidized employment; the relative importance of the different types of placement; and the number of participants placed relative to alternative forms of PSE program termination. The following presents data on the postprogram status of participants, by sex:

<u>Postprogram status</u>	<u>Females</u>	<u>Males</u>
	<u>Percent</u>	
Private sector placement	11.8	20.4
Public sector placement	48.8	37.8
Postprogram unemployed	18.2	12.5
Postprogram status unknown	21.2	29.3
Total	100.0	100.0

For each sex, the information is available for program terminees who: (1) were transferred into permanent employment in the private sector, (2) were placed into permanent employment in the public sector, (3) were laid off from the PSE program into unemployment, or (4) had an unknown postprogram employment status.

A substantial proportion of the program terminees in the balance of Washington State were able to find permanent postprogram employment. Public sector placements were more prevalent than private sector placements, especially for females. This is not surprising for three reasons. First, private sector job opportunities were limited, because of the high unemployment rates in the private sector during 1975-76. Second, an individual's ability to move into permanent

postprogram employment may be tied to both the extent of skill enhancement associated with the PSE experience and the relevance of the skills to permanent employment openings in either the public or the private sector. Placement will tend to be biased toward the public sector to the extent that the job skills obtained through PSE are less relevant to private sector job openings. Finally, since PSE program participation physically placed the individual in the public sector, information on the availability of permanent public employment positions would likely be more readily available than that for private sector job openings.

Not all participants were able to find employment when they left the program. About 18 percent of the females returned to the unemployed ranks, and 12.5 percent of the males became unemployed. However, for both sexes, these numbers are not exceptionally large relative to the number of participants who moved into post-program employment. For females, the number of participants placed exceeds the number who became unemployed by over three to one, while the number of employed males exceeds the unemployed by slightly less than five to one.

Finally, these comparisons need to be interpreted with caution, because of the large numbers of program terminees of both sexes with unknown postprogram employment status. Given the large numbers of individuals in this unknown group, it is clear that knowledge of their postprogram employment status could alter the relative distribution of program terminees among the three categories of postprogram employment status.

# REFERENCES

1. Borus, Micheal E., and Daniel S. Hammermesch. "Study of the Net Employment Effects of Public Service Employment-Econometric Analysis," in Job Creation Through Public Service Employment, National Commission for Manpower Policy, vol. III, Washington, D.C., March 1978, pp. 89-149.
2. Fechter, Alan. "Public Employment Programs," Evaluative Studies No. 20, American Enterprise Institute for Public Research, Washington, D.C., May 1975.
3. Rawlins, Lane, and Robert F. Cook. "Job Displacement Under CETA Public Service Employment," 1978 Proceedings of the American Statistical Association, Social Science Section, San Diego, Calif., 1978.
4. Reder, Melvin W. "The Theory of Occupational Wage Differentials," Amer. Econ. Rev., vol. 61, pp. 883-850, Dec. 1955.
5. U.S. Department of Labor. Dictionary of Occupational Titles, 3rd ed., supplement: Selected Characteristics of Occupations, U.S. Gov. Print. Off., 1966.
6. \_\_\_\_\_. Office of the Secretary. "Comprehensive Manpower Program and Grants to Areas of High Unemployment," Federal Register, 39, no. 54, pt. III, March 19, 1974, pp. 10374-10395.
7. \_\_\_\_\_. Office of the Secretary. "Programs Under Title VI," Federal Register, 40, no. 7, pt. IV, January 10, 1975, pp. 2360-2369.
8. \_\_\_\_\_. and U.S. Department of Health, Education, and Welfare. Manpower Report of the President, 1975, U.S. Gov. Print. Off., 1975.
9. \_\_\_\_\_. Employment and Training Report of the President, 1976, U.S. Gov. Print. Off., 1976.
10. \_\_\_\_\_. Employment and Training Report of the President, 1977, U.S. Gov. Print. Off., 1977.
11. Wiseman, Michael. "On Giving a Job: The Implementation and Allocation of Public Service Employment," Employment, Paper No. 1, in Achieving the Goals of the Employment Act of 1946--Thirtieth Anniversary Review, vol. I, Joint Economic Committee, Subcommittee on Economic Growth, U.S. Congress, 1975.
12. \_\_\_\_\_. "Public Employment as Fiscal Policy," Brookings Papers on Economic Activity, Brookings Institution, (1976:1), Washington, D.C., pp. 67-104.

## APPENDIX

### ASSIGNMENT OF SKILL LEVELS

Each of the 3-digit census occupational codes used in the categorization of participant's preprogram, in-program, and postprogram occupations were associated with a corresponding specific vocational preparation (SVP) skill level. SVP skill levels are furnished for 6-digit DOT occupational titles in a supplement to the Dictionary of Occupational Titles [5]. The skill levels are numerical values ranging from one to nine and are an index of the number of years of vocational preparation necessary to master the array of job skills relevant to that occupation.

The process of assigning SVP skill levels to census 3-digit occupational categories involved associating each census category with a single 6-digit occupational code and assigning to it the corresponding SVP skill level. The major problem encountered in making this association arose from the necessity of associating a broad census occupational category with a much more specific 6-digit DOT occupational title. In many cases the connection was explicit, but in some cases there would be numerous possible 6-digit DOT occupational titles for a given census category. When this was the case, the criteria for making the association involved finding the most general 6-digit DOT occupational title corresponding to the particular census classification. The more general the DOT job title used for providing the SVP skill level for a census occupation, the more representative the skill level will be of the majority of persons placed in each census classification. While not guaranteeing that all SVP skill levels established for census occupations in this fashion are absolutely correct, this procedure at least guards against the arbitrary or capricious assignment of SVP skill levels by providing a consistent criteria for making the connection between census occupations and 6-digit DOT occupational titles. This procedure is described below.

For any census occupation, the

procedure used to associate a census occupation with a specific 6-digit DOT occupational title centered on two steps. The first step involved identifying the most general 6-digit occupation among all those falling into the broader census classification. For example, consider the census 3-digit occupational classification of "social workers." DOT 6-digit occupational titles corresponding to this broad census category include such diverse job titles as "family caseworker," "psychiatric social worker," and "social group worker." In this case, the single most appropriate DOT job title was chosen "social group worker" on the basis of its generality. Thus, the census occupational category of "social workers" was assigned the SVP skill level corresponding to the 6-digit DOT occupational title of "social group worker."

If two or more 6-digit DOT occupational titles corresponding to a given census occupation appeared to be of equal generality and applicability, a second step would be employed to identify the specific 6-digit occupation used to provide the SVP skill level. This second step involved identifying that occupational title most generally in terms of the variety of industry settings in which it is found. Information on industry settings is also provided in the supplement to the Dictionary of Occupational Titles. For example, the Census occupational category includes "gardeners and groundskeepers." Among the 6-digit DOT occupational titles falling into this category are two essentially equal terms of job titles--"landscape laborer" and "groundskeeper." In this case, the former job title is specifically associated with the agricultural sector, while the industrial setting for the latter is identified as "any industry." Thus, on the basis of the more general industrial setting in which the job is found, the 6-digit job title of "groundskeeper" was chosen to provide the SVP skill level to associate with the census occupational



category of "gardeners and ground-keepers."

Note that an occupational category need not be generally applicable across industries. This second step was only implemented when the occupational defini-

tion alone proved inadequate for making the association. It is also worth noting that in a significant number of cases conflicts between competing 6-digit DOT job titles proved to be of no practical problem, in that the conflicting choices had the same SVP skill levels.

\*U.S. GOVERNMENT PRINTING OFFICE : 1980 O-310-945/ESCS-102

UNITED STATES DEPARTMENT OF AGRICULTURE  
WASHINGTON, D.C. 20250

---

POSTAGE AND FEES PAID  
U.S. DEPARTMENT OF  
AGRICULTURE  
AGR 101  
THIRD CLASS



## Economics, Statistics, and Cooperatives Service

The Economics, Statistics, and Cooperatives Service (ESCS) collects data and carries out research projects related to food and nutrition, cooperatives, natural resources, and rural development. The Economics unit of ESCS researches and analyzes production and marketing of major commodities; foreign agriculture and trade; economic use, conservation, and development of natural resources; rural population, employment, and housing trends, and economic adjustment problems; and performance of the agricultural industry. The ESCS Statistics unit collects data on crops, livestock, prices, and labor, and publishes official USDA State and national estimates through the Crop Reporting Board. The ESCS Cooperatives unit provides research and technical and educational assistance to help farmer cooperatives operate efficiently. Through its information program, ESCS provides objective and timely economic and statistical information for farmers, government policymakers, consumers, agribusiness firms, cooperatives, rural residents, and other interested citizens.

**END**