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Unemployed Workers and Job Search Methods in the United States

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Objective

The aim of this project is to analyze the relationship between job search methods and labor market outcomes of unemployed persons in the U.S. Tabulations are compiled and multivariate analyses are conducted so that the findings for the U.S. can be compared with the findings from the Japanese and European studies.[1] By contributing to the understanding of how unemployed persons in different countries go about effecting re-entry to gainful employment, it is hoped that this project will help point the way to policy measures to help alleviate unemployment problems.

Data Sources

There inevitably are differences among countries in the scope of what the data can do. To address the issue of this project, an ideal data would be a longitudinal panel data that would facilitate the evolution of labor force status and wages. The two prominent US panel data, the *National Longitudinal Data (NLSY)*, the *Panel Study of Income Dynamics* (*PSID*), immediately come to mind, but they were judged to be ill suited for this study. The *NLSY* and *PSID*

[1] The Japanese study is compiled as Kodama, Higuchi, Abe, Matsuura and Sunada (2004), "Effects of Entry Methods on Job Turnover Outcomes".

have the advantage of being longitudinal, but the respondents in the *NLS* are restricted within a narrow age category, and the sample of unemployed person is rather small.[2] In the *PSID*, the information on job search methods is not very comprehensive nor is it available on a consistent basis year after year.

After weighing strengths and weaknesses of the various U.S. data sets, it was decided that this project should use the *Current Population Survey* (*CPS*) data. The *CPS* is one of the most comprehensive data available in the U.S. for labor market studies. Almost everything we know about U.S. labor force comes from the *CPS* data. Also, the survey instrument used by the *CPS* has influenced the development of surveys on many other countries.

The *CPS* is a monthly survey of about 50,000 households conducted by the US Bureau of the Census for the Bureau of Labor Statistics. Containing information about the employment status of each member of the household 15 years of age and older, although published data focus on those ages 16 and over, it is the primary sources of information on the labor force characteristics of the U.S. non-institutional population. The available information includes employment, unemployment, earnings, hours of work, and other variables sorted by such demographic characteristics as age, sex, race, marital status, educational attainment, and by occupation, industry, and class of worker.

Although the *CPS* is a series of cross section data, the fact that it rotates the sample each month makes it possible to simulate longitudinal data for a

[2] The NLSY started as an annual survey of 12,686 individuals who were between the ages of 14 and 21 in 1979. Since the mid-1990's, the surveys have been taken every other year. The number of job seekers is rather small in this data. In 2000, for example, the NLSY contained 269 job seekers who were not employed and 617 job seekers who were employed.

short span of time. Here's how it works. Each month, interviewers contact the sampled units to obtain basic demographic information about all persons residing at the address and detailed labor force information for all persons aged 15 or over. To improve the reliability of estimates of month-to-month and year-to-year change, 8 panels are used to rotate the sample each month. A sample unit is interviewed for four consecutive months, and then, after an 8-month period of absence, for the same four months a year later. Each month a new panel of addressees, or one-eighth of the total sample, is introduced. Thus, in a particular month, one panel is being interviewed for the first time, one panel for the second, one panel for the third, etc., and one panel for the eighth and final time. The semi-longitudinal nature of the *CPS* data will enable us to link a particular individual's job search activities with his/her outcomes within limits.

In the *CPS* survey, to be counted as unemployed, a respondent must either be on temporary layoff or claim that he/she has actively looked for work in the past four weeks. Persons who have given up looking for work are considered to be out of the labor force. Respondents are asked not only if they searched for work but are also asked the specific types of activities they used to find work. Reported activities normally include: checking with a state (public) employment agency; private employment agency; contacting an employer directly; contacting friends or relatives; placing or answering an advertisement; and looking in a newspaper. Outcome data include the usual labor market characteristics, including current employment status, wages, tenure, etc.

As is true with any data sets, there are advantages and limitation associated with this data set. Some of the advantages are: (1) it is a large data set and includes respondents of all ages (those over 16 years of age); (2) the data contain rich socio-economic variables that can be used as controls; (3) the samples of employed and non-employed with information on job search methods will be much larger than can be obtained from other standard data sources; and (4) the data contain rich information on job search methods used by unemployed persons. The limitations include: (1) there is no information on job search methods used if a worker engaged in search while being employed; (2) the *CPS* is a series of cross-section data sets, not a straightforward longitudinal data. The practice of panel rotation will enable us to track the same set of individuals for some time, but the number of months such individuals can be tracked is limited. Thus, we would not be able to ascertain any long-term effects; and (3) the eight-month absence necessitates assumptions about their employment status during that period, as will be specified shortly.

Extracting Samples

Since the *CPS* offers rich data, one can envision conducted all sorts of analyses on unemployment, job search methods, and subsequent outcomes. However, the primary objective here is to construct a sample that compares closely with the Japanese sample. The Japanese sample is based on an establishment survey, where employers surveyed newly acquired workers about their job search methods and unemployment duration before being

hired by these employers. In other words, the Japanese data are for persons with completed spells of unemployment. The Japanese survey also asked about previous wages and job search methods, making it possible to compute changes in wages between the previous and current employers and relate them to job search methods used. Accordingly, this report will focus attention on *CPS* persons who completed unemployment spells. To be able to track wage changes before and after unemployment, we require that such persons also were employed during the sampled years before becoming unemployed.

Given the eight-month absence caused by the *CPS* scheme, we need to make assumptions about the employment status during the absent period. We believe the following assumptions are most natural one to make. [For the assumptions below, E (or U) means that the person was employed (or unemployed) in the month either immediately preceding the beginning of the eight-month absence or just after the completion of the eight-month absence.]

[E, 8 months absence, E] => Assume E during 8 absent months

[E, 8 months absence, U] => Assume E in first 4 absent months and U in last 4 months

[U, 8 months absence, E] => Assume U in first 4 absent months and E in last 4 months

[U, 8 months absence, U] => Assume U in all 8 absent months,

Sample Results

Table 1 summarizes the stages of sample construction. We discovered that the *CPS* recycles household and individual identifier codes from time to time, sometimes prematurely. As a result, we had to use multiple identifiers such as educational attainment, race, sex, state, month, and year in addition to household identifier, household number, and person line number to ensure that we are tracking the same persons from month to month. This complication is the major reason for the several steps involved in cleaning the data. Final sample consists of 21,530 persons who experienced unemployment sometime during the sample period, of which 966 persons had become unemployed during the years under study (1998J - 2002M) and completed their unemployment spells.

Tables 2, 3, and 4 summarize the number of persons by months of observations available. For various reasons, e.g., some persons refuse to continue participating in the CPS surveys, others move away and cannot be located, etc., not all persons who were initially surveyed complete the survey cycle. By far the largest number of persons, males or females, participate in the survey only for four months.

Tables 5, 6, and 7 summarize the distribution of individuals by turnover pattern. The first column (EUE) refers to cases that have completed spells of unemployment for those who became unemployed during the period under study. Clearly, completed spells within the time period under study are a small fraction of all unemployment cases during the years under study.

Duration of Unemployment

Tables 8, 9, and 10 decompose the observations with completed spells by duration of unemployment. For the 966 persons who had become unemployed and eventually became employed again (i.e., those with completed spells of unemployment), the duration of unemployment is short, about five and a half month, for both sexes, males, and females.

To obtain a broader picture of unemployment duration, it is instructive to estimate the expected duration of unemployment using the sample for all persons who experienced unemployment during the time period under study including those whose unemployment spells are incomplete in the sample. Put another way, in addition to persons with completed unemployment spells, we must examine persons with uncompleted unemployment spells during the years under study and those who were already unemployed when they first appeared in the sample.

To estimate the expected unemployment duration in the entire sample, and not just for persons with completed unemployment spells, we assume a first order Markov chain with stationary transition probability. This simplest specification states that $p(E_{t+1}|U_t) = p(E|U)$ and $p(U_{t+1}|U_t) = p(U|U)$ for all *t*. The term $p(E_{t=1}|U_t)$ is the probability that an unemployed person at time *t* becomes employed at time *t + 1*, and $p(U_{t+1}|U_t)$ is the probability that an unemployed person at time *t* remains unemployed at time *t + 1*.

The expected duration (*D*) of unemployment is given by:

$$D = 1p(E|U) + 2p(E|U)p(U|U) + 3p(E|U)p^2(U|U) + ...$$
$$= p(E|U)\{1 + 2p(U|U) + 3p^2(U|U) + ...\}$$
$$= p(E|U)/[1 - p(U|U)]^2 = 1/p(E|U).$$

The term $1/p(E|U)$ is the expected unemployment duration, under the Markov assumption. The term $p(E|U)$ is computed by the ratio, $[cases\ with\ (E_{t+1}/U_t)/all\ U_t\ cases]$.

Tables 11, 12, 13, and 14 report on the expected duration of unemployment for years 1998 through 2001 by sex, education, and age. Clearly, expected unemployment duration during these years is short, about 3 to 4 months.[3] Females tend to experience shorter unemployment duration than males, and those with high education trend to experience longer unemployment duration than those with low level of education, although the relationship is not monotonic. As for age differences, older workers tend to experience longer unemployment duration. So, whether we look at workers with completed spells or incomplete spells of unemployment, the duration of unemployment is similar for these years.

A unique feature of the US labor market is that temporary layoffs are often used for employment adjustments in the short-run. Temporary layoffs minimize the chances that workers with firm-specific skills will be separated forever from their employers (Feldstein 1976, Katz 1986).

[3] This is in contrast for persons with completed unemployment duration, for whom we found the actual mean duration to be about 5.5 months (see tables 8, 9, and 10). The expectation and realization need not be similar, of course. Also, the difference may be due in part to the assumption about employment status during the eight absent months.

The reason for the short duration may be that most of these individuals became separated as a result of temporary layoffs. Tables 15, 16, and 17 report on the extent of layoffs among the unemployed by education, and age, as measured by the proportion of laid-off persons to total number of unemployed persons (*L/TU*). The proportion of unemployed persons who were laid off hovers around 25 percent during these years for all education and age groups. So, temporary layoffs may be a significant cause of unemployment, though not the major reason, especially since not all layoffs are temporary. Note that temporary layoffs are more important for males than for females, for those with lower levels of education, and for older workers.

Job Search Methods

Table 18 summarizes various job search methods employed by the 966 persons during the time of unemployment (The *CPS* data do not contain job search methods used by persons who are employed, i.e., those who engage in on-the-job search). By construction of the *CPS* data, these are mutually exclusive categories.[4] An eye-opener is the large proportion (52.1 percent) of the persons who used the method, "contacted company employer directly/interview." This method overshadows other methods such as "sent out

[4] For the job search methods, the *CPS* asked the respondent the same question six times repeatedly to allow multiple responses. Possibly, a person tried more than one method to find a job. It is generally presumed that the most frequently tried method is indicated by the first response, and the least by the sixth. At any rate, there are only small number of respondents who answered this question more than once. Here, we use the first response only.

resumes/filled out application" (21.7 percent), "contacted public employment agency" (7.8 percent) and "looked at ads" (6.7 percent). It should be born in mind that these methods are not mutually exclusively used. A person may use two or more methods simultaneously.

How effective are the various job search methods employed in realizing wage gains? To address this question, we estimate a multiple regression model in which the dependent variable is $\ln(w_t / w_{t-\tau})$, where w_t is the wage in the new job and $w_{t-\tau}$ is the wage in the old job, and various explanatory variables including age, marital status, race, education, industry, and job search methods.

Tables 19, 20, and 21 report on the regression results of wage changes. Our focus is on the effects of job search methods. These regressions hold constant the previous wage for two reasons. First, it helps control for individual heterogeneity on the assumption that the initial wage reflects a person specific human capital and other factors that are not observed in the data. Second, the previous wage affects reservation wage, which in turn affects the probability of accepting a job as well as how long to search for new jobs – persons expect their next job to reflect the wage they earned in their last job.

Among the job search methods utilized, only "contacted private employment agency," and "checked with union/professional registers" obtain statistically significant effects. This result holds for both sexes and males, but for females none of the job search methods are statistically significant. It is revealing that private employment agencies appear to be much more effective

in realizing wage gains in the new job than public employment agencies. In contrast, it is not all that surprising that unions and professional registers have positive effects on wage changes.

Tables 22, 23, and 24 report on the regression results of unemployment duration of persons with completed spells of unemployment. Here, the link between job search methods and unemployment duration is ambiguous in a sample of all workers. None of the methods obtains statistically significant coefficients. For males, the only significant (and negative) coefficient is the one associated with the use of private employment agency. For females, "contacted private employment agency" obtains a positive and significant coefficient and "checked union/professional registers" obtains negative, though only mildly significant, coefficient. Use of public employment agency shortens unemployment duration for males but increase it for females. The male coefficient is insignificant, and the female coefficient barely significant.

The regression findings for wage changes and unemployment duration suggest that the use of private employment agencies may delay the duration of unemployment for females (but shorten unemployment duration for males), but once a new job is found the wage gains are larger than the gains obtained by using other methods. It should be noted that the use of private agencies and checking with union and/or professional registers are not frequently used job search methods. In Table 18, the two methods account only for 2.8 percent of all the methods used. It appears, therefore, that these are rather exclusive methods of finding jobs available only select group of workers. Persons who

manage to use them appear to enjoy increased wages. In contrast, public employment agencies are used more frequently (7.8 percent), but not very effective in affecting wages or unemployment duration.

In Lieu of Conclusion

Our analysis reveal that the mean expected duration of unemployment, calculated by in a sample consisting of persons with completed and incomplete unemployment spells, is rather short, hovering around three to four months, in years 1998 through 2001. Temporary layoffs may account for the short duration.

The primary focus of this study is the effectiveness of various job search methods in finding employment with increased wages. In the sample of persons with completed spells of unemployment, we find that the use of private employment agencies and checking with union and/or professional registers tend to increase wage gains. In contrast, public employment agency does not seem to be effective.

Which job search methods facilitate finding a new employment in a timely manner? The regression findings suggest that using private agency, while not widely used, tends to shorten unemployment duration for males but prolong it for females. Since this method was found to increase wage gains, an inference is that this is an exclusive way of finding jobs that increase the wage gains. In contrast, use of public employment agency shortens unemployment

duration for males but increase it for females. The male coefficient is insignificant, and the female coefficient barely significant.

I should note two limitations of this study. One limitation has to do with biases caused by unobserved heterogeneity and selectivity. Some of unobserved variables may be correlated with observed variables causing biases in parameter estimates. Also, a person who managed to complete his/her unemployment spell may be inherently different from other persons, and such differences may be unobservable in the data. The regression estimates correct for some of these biases, but not all, by having an initial wage as an independent variable. Also, since we examine wage changes, bias is corrected for in our estimates to the extent that such biases are caused by time-invariant unobserved heterogeneity in the wage level. However, if there is time-dependent unobserved heterogeneity, the bias caused by such heterogeneity is not corrected for. The above points notwithstanding, correcting for selectivity bias would seem to be the first priority for the next step.

The second limitation has to do with the regressions for unemployment duration. In this report, I focused on persons with completed spells of unemployment, i.e., those who was employed initially, subsequently became unemployed but was employed. Clearly, regressions for wage change are feasible only for those persons. For unemployment duration, however, one might argue that persons with incomplete duration should be included. To do so would require estimating something like a hazard function. In other words, one may ask how independent variables affect the probability that a person

becomes employed at time ($t + 1$), given that he/she is unemployed at time (t). The hazard function involved would be non-linear and estimating such a function would be quite involved requiring developing a complicated computer program.

Table 1
SAMPLE CONSTRUCTION STEPS

Steps	CPS Data (1998J –2002M)	Data #	Obs. & (Persons)
	Raw Data	1	3,261,888
Step 1	After initial deleting of incomplete data or continuously employed persons	2	868,281
	Only 4 months observations available	3	44,891
Step 2	5, 6, 7, 8 months observations available	4	62,592
Step 3	Remaining data for cleaning (2 - 4)	5	80,845
Step 4	Only 4 months observations available	6	61,722
Step 5	5, 6, 7, 8 months observations available	F1	62,541 (8,581)
	Only 4 months observations available	F2	51,796 (12,949)
	Final sample	F	114,337 (21,530)
Step 6	Experienced [E $\rightarrow$ U $\rightarrow$ E]		3,251 (966)

Note: The CPS recycles household and individual identifier codes from time to time. As a result, we had to use multiple identifiers such as household identifier, household number, person line number, educational attainment, race, sex, state, month, and year to ensure that we are tracking the same persons from month to month -- hence the several steps involved in cleaning the data points. Final sample consists of individuals who ever experienced unemployment during the sample period.

Table 2: Both Sexes
Summary of CPS Sample

Months of Observations Available	Number of Persons
4	12,949
5	72
6	1,880
7	2,131
8	4,498

Table 3: Male
Summary of CPS Sample

Months of Observations Available	Number of Persons
4	7,168
5	41
6	1,037
7	1,145
8	2,597

Table 4: Female
Summary of CPS Sample

Months of Observations Available	Number of Persons
4	5,781
5	31
6	843
7	986
8	1,901

Table 5: Both Sexes
Number of Persons by Turnover Pattern

EUE	UEU	EUU	UEE	UUU	Total
966	140	889	3,171	2,533	7,699

Note: After deleting persons who were continuously employed or those missing key information, i.e., wages, job search methods, etc.

Table 6: Male
Number of Persons by Turnover Pattern

EUE	UEU	EUU	UEE	UUU	Total
510	88	489	1,654	1,448	4,189

Note: After deleting persons who were continuously employed or those missing key information, i.e., wages, job search methods, etc.

Table 7: Female
Number of Persons by Turnover Pattern

EUE	UEU	EUU	UEE	UUU	Total
456	52	400	1,517	1,085	3,510

Note: After deleting persons who were continuously employed or those missing key information, i.e., wages, job search methods, etc.

Table 8: Both Sexes
Number of Initially Employed Persons by Unemployment Duration

1month to less than 3 months	3 months to less than 6 months	6 months to less than 1 year	1 year or more	Total
50	269	647	0	966

Note: See note on Table 5.

Table 9: Male
Number of Initially Employed Persons by Unemployment Duration

1month to less than 3 months	3 months to less than 6 months	6 months to less than 1 year	1 year or more	Total
27	142	341	0	510

Note: See note on Table 5.

Table 10: Female
Number of Initially Employed Persons by Unemployment Duration

1month to less than 3 months	3 months to less than 6 months	6 months to less than 1 year	1 year or more	Total
23	127	306	0	456

Note: See note on Table 5.

Table 11
Expected Duration of Unemployment

1998 by Sex

Month of the Year	Male	Female	Total
1	3.08	2.48	2.81
2	2.70	2.28	2.51
3	2.20	2.21	2.21
4	3.68	2.88	3.28
5	2.90	3.24	3.04
6	2.55	2.95	2.72
7	3.00	2.82	2.92
8	3.16	2.53	2.80
9	2.88	2.63	2.76
10	3.37	3.14	3.26
11	3.64	3.25	3.45
12	6.01	5.58	5.82
Mean	3.26	3.00	3.13

1998 by Education

Month of the Year	Low	Middle	High	Total
1	3.00	2.72	2.29	2.81
2	2.55	2.40	2.52	2.51
3	2.30	2.01	2.16	2.21
4	3.13	3.16	4.76	3.28
5	3.35	2.47	3.21	3.04
6	2.82	2.43	2.88	2.72
7	2.89	2.93	3.03	2.92
8	2.84	2.80	2.68	2.80
9	2.81	2.58	2.89	2.76
10	3.31	2.85	3.79	3.26
11	3.21	3.91	3.96	3.45
12	5.25	6.80	8.18	5.82
Mean	3.12	3.09	3.53	3.13

1998 by Age

Month of the Year	16-29	30-49	50-59	60+	Total
1	2.51	2.82	3.54	4.33	2.81
2	2.20	2.81	2.45	3.25	2.51
3	2.09	2.33	2.11	2.27	2.21
4	3.01	3.52	3.79	2.60	3.28
5	2.60	3.57	3.00	3.86	3.04
6	2.55	2.80	2.84	3.07	2.72
7	2.67	2.94	3.40	3.77	2.92
8	2.85	2.90	2.76	2.05	2.80
9	2.64	2.83	2.85	3.43	2.76
10	3.15	3.56	2.92	2.44	3.26
11	3.14	3.77	4.11	2.50	3.45
12	5.52	5.66	10.14	4.80	5.82
Mean	2.91	3.29	3.66	3.20	3.13

Table 12
Expected Duration of Unemployment

1999 by Sex

Month of the Year	Male	Female	Total
1	4.66	3.65	4.19
2	3.46	3.64	3.52
3	2.82	3.12	2.93
4	2.96	3.40	3.13
5	3.50	3.52	3.51
6	3.41	2.80	3.10
7	3.40	3.42	3.41
8	2.67	2.38	2.52
9	3.63	2.63	3.08
10	3.22	2.94	3.09
11	4.00	4.23	4.10
12	4.94	4.33	4.67
Mean	3.56	3.34	3.44

1999 by Education

Month of the Year	Low	Middle	High	Total
1	4.25	4.10	4.09	4.19
2	3.38	3.63	4.17	3.52
3	2.76	3.21	3.35	2.93
4	2.81	3.40	4.33	3.13
5	3.42	3.16	4.76	3.51
6	3.23	2.54	3.48	3.10
7	3.32	3.53	3.57	3.41
8	2.55	2.41	2.56	2.52
9	3.14	3.35	2.60	3.08
10	3.09	3.02	3.24	3.09
11	4.17	3.91	4.15	4.10
12	5.11	3.81	4.75	4.67
Mean	3.44	3.34	3.75	3.44

1999 by Age

Month of the Year	16-29	30-49	50-59	60+	Total
1	4.19	4.10	4.65	3.73	4.19
2	3.17	3.68	4.15	3.31	3.52
3	2.62	3.16	3.00	3.27	2.93
4	2.89	3.34	3.18	3.06	3.13
5	3.30	3.41	4.33	4.63	3.51
6	2.50	3.47	4.00	4.00	3.10
7	3.15	3.65	3.15	4.15	3.41
8	2.21	2.63	3.26	2.28	2.52
9	2.59	3.04	4.79	7.75	3.08
10	2.54	3.42	3.81	4.50	3.09
11	3.43	4.91	4.08	3.78	4.10
12	4.68	4.41	5.63	5.00	4.67
Mean	3.11	3.60	4.00	4.12	3.44

Table 13
Expected Duration of Unemployment

2000 by Sex

Month of the Year	Male	Female	Total
1	4.75	4.40	4.60
2	2.97	3.29	3.08
3	2.87	3.02	2.93
4	2.90	3.44	3.11
5	2.89	2.90	2.89
6	3.40	3.36	3.38
7	3.32	3.20	3.26
8	2.83	2.46	2.62
9	3.20	2.64	2.90
10	2.96	2.87	2.92
11	4.09	3.86	3.99
12	5.29	5.78	5.49
Mean	3.46	3.43	3.43

2000 by Education

Month of the Year	Low	Middle	High	Total
1	5.06	4.36	3.56	4.60
2	2.90	3.62	3.13	3.08
3	2.95	2.61	3.82	2.93
4	3.08	2.97	3.52	3.11
5	2.83	3.10	2.84	2.89
6	3.73	2.76	3.49	3.38
7	3.29	3.01	3.62	3.26
8	2.56	2.55	2.94	2.62
9	2.96	2.97	2.67	2.90
10	3.01	2.57	3.25	2.92
11	4.27	3.84	3.33	3.99
12	6.09	4.80	4.52	5.49
Mean	3.56	3.26	3.39	3.43

2000 by Age

Month of the Year	16-29	30-49	50-59	60+	Total
1	4.05	4.56	6.15	7.67	4.60
2	3.08	3.06	3.05	3.55	3.08
3	2.72	2.97	3.79	2.76	2.93
4	3.22	3.10	3.03	2.67	3.11
5	2.42	3.27	4.10	3.00	2.89
6	2.96	3.79	3.28	4.57	3.38
7	3.09	3.31	3.38	4.25	3.26
8	2.70	2.57	2.77	2.23	2.62
9	2.71	2.92	3.41	3.00	2.90
10	2.32	3.24	3.96	3.60	2.92
11	3.49	3.81	5.60	6.43	3.99
12	4.69	6.38	5.43	5.57	5.49
Mean	3.12	3.58	4.00	4.11	3.43

Table 14
Expected Duration of Unemployment

2001 by Sex

Month of the Year	Male	Female	Total
1	4.64	4.32	4.51
2	3.95	3.49	3.76
3	3.03	3.65	3.22
4	2.92	3.12	2.99
5	3.19	2.91	3.07
6	4.28	3.81	4.06
7	2.80	3.49	3.07
8	2.85	2.81	2.83
9	3.38	3.11	3.25
10	3.69	2.59	3.12
11	4.51	4.08	4.33
12	7.25	5.39	6.41
Mean	3.87	3.56	3.72

2001 by Education

Month of the Year	Low	Middle	High	Total
1	5.07	3.83	3.79	4.51
2	3.68	3.56	4.63	3.76
3	3.09	3.34	3.63	3.22
4	2.93	2.77	3.73	2.99
5	3.12	2.71	3.59	3.07
6	4.25	3.28	5.00	4.06
7	2.91	3.75	2.88	3.07
8	2.81	3.24	2.45	2.83
9	3.13	3.42	3.36	3.25
10	3.20	2.93	3.26	3.12
11	4.55	3.99	4.24	4.33
12	6.30	6.00	7.57	6.41
Mean	3.75	3.57	4.01	3.72

2001 by Age

Month of the Year	16-29	30-49	50-59	60+	Total
1	4.43	4.52	4.75	4.38	4.51
2	3.01	4.37	4.03	4.33	3.76
3	3.33	3.32	3.23	2.20	3.22
4	2.86	3.13	3.03	2.47	2.99
5	2.45	3.52	4.83	2.62	3.07
6	3.42	4.73	4.20	3.64	4.06
7	2.80	3.13	3.84	2.88	3.07
8	2.54	2.94	3.22	3.06	2.83
9	3.12	3.09	4.03	4.25	3.25
10	2.62	3.52	3.48	3.33	3.12
11	3.84	4.45	4.97	5.30	4.33
12	5.91	6.57	7.16	6.44	6.41
Mean	3.36	3.94	4.23	3.74	3.72

Table 15
Importance of Layoffs in Unemployment

By Sex

Number of Unemployed Persons

Year	1998	1999	2000	2001	2002
Male	4531	5568	5261	6581	1456
Female	3724	4293	4197	4570	850
Total	8255	9861	9458	11151	2306

Number of Persons on Layoff

Year	1998	1999	2000	2001	2002
Male	1094	1449	1364	1757	452
Female	719	828	824	969	159
Total	1813	2277	2188	2726	611

Layoffs / Unemployment

Year	1998	1999	2000	2001	2002
Male	0.24	0.26	0.26	0.27	0.31
Female	0.19	0.19	0.20	0.21	0.19
Total	0.22	0.23	0.23	0.24	0.26

Table 16
Importance of Layoffs in Unemployment

By Education

Number of Unemployed Persons

Year	1998	1999	2000	2001	2002
Low	5120	5830	5587	6358	1302
Middle	2015	2451	2413	2892	602
High	1120	1580	1458	1901	402
Total	8255	9861	9458	11151	2306

Number of Persons on Layoff

Year	1998	1999	2000	2001	2002
Low	1235	1553	1453	1809	425
Middle	391	511	506	642	142
High	187	213	229	275	44
Total	1813	2277	2188	2726	611

Layoffs / Unemployment

Year	1998	1999	2000	2001	2002
Low	0.24	0.27	0.26	0.28	0.33
Middle	0.19	0.21	0.21	0.22	0.24
High	0.17	0.13	0.16	0.14	0.11
Total	0.22	0.23	0.23	0.24	0.26

Table 17
Importance of Layoffs in Unemployment

By Age

Number of Unemployed Persons

Year	1998	1999	2000	2001	2002
16-29	3209	3505	3518	3790	687
30-49	3709	4458	4171	5185	1121
50-59	957	1404	1296	1635	386
60+	380	494	473	541	112
Total	8255	9861	9458	11151	2306

Number of Persons on Layoff

Year	1998	1999	2000	2001	2002
16-29	436	563	484	665	153
30-49	912	1119	1139	1357	299
50-59	288	400	366	478	116
60+	177	195	199	226	43
Total	1813	2277	2188	2726	611

Layoffs / Unemployment

Year	1998	1999	2000	2001	2002
16-29	0.14	0.16	0.14	0.18	0.22
30-49	0.25	0.25	0.27	0.26	0.27
50-59	0.30	0.28	0.28	0.29	0.30
60+	0.47	0.39	0.42	0.42	0.38
Total	0.22	0.23	0.23	0.24	0.26

TABLE 18
JOB SEARCH METHODS
(CPS 1998J-2002M)

Job Search Method	Frequency	Percent	Cumulative
Contacted employer directly/interview	16,337	52.11	52.11
Contacted public employment agency	2,438	7.78	59.88
Contacted private employment agency	556	1.77	61.66
Contacted friends or relatives	754	2.40	64.06
Contacted school/university employment center	169	0.54	64.60
Sent out resumes/filled out application	6,811	21.72	86.33
Checked union/professional registers	324	1.03	87.36
Placed or answered ads	1,032	3.29	90.65
Other active	640	2.04	92.69
Looked at ads	2,092	6.67	99.37
Attended job training programs/courses	92	0.29	99.66
Nothing	41	0.13	99.79
Other passive	66	0.21	100.00
Total	31,352	100.00	

Note: Numbers in the table are the number of observations not the number of persons.

Table 19: Both Sexes

Wage Regression for Job Changers: $ln(w_t/w_{t-1})$

Coeff	Estimate	t-ratio	Variable (# of responses for Job Search Method))
β_1	-0.452	-14.71	Wage(before)
β_2	-0.012	-0.94	Unemployment duration in month (mean = 5.625)
β_3	-0.003	-1.53	Age
			Marital Status
δ_{11}	0.058	1.10	1: Married
δ_{12}	0.019	0.29	2: Widowed/divorced/separated
			Race
δ_{21}	-0.032	-0.51	1: Black
δ_{22}	-0.238	-1.70	2: American Indian/Aleut/Eskimo
δ_{23}	0.142	1.19	3: Asian/Pacific Islander
			Education
δ_{31}	0.040	0.86	1: Middle
δ_{32}	0.243	3.94	2: High
			Industry
δ_{41}	0.481	2.31	1: Agriculture/Forestry/Fishery
δ_{42}	0.257	0.92	2: Mining
δ_{43}	0.729	4.24	3: Construction
δ_{44}	0.479	2.96	4: Manufacturing
δ_{45}	0.527	2.88	5: Transportation/Communication
δ_{46}	1.104	3.22	6: Utilities
δ_{47}	0.431	2.68	7: Trade
δ_{48}	0.561	3.21	8: Finance
δ_{49}	0.431	2.73	9: Service
			Job Search
δ_{51}	0.050	0.53	1: Contacted employer directly/interview (577)
δ_{52}	-0.035	-0.31	2: Contacted public employment agency (78)
δ_{53}	0.324	2.08	3: Contacted private employment agency (24)
δ_{54}	-0.238	-1.44	4: Contacted friends or relatives (21)
δ_{55}	-0.033	-0.31	5: Sent out resumes/filled out application (151)
δ_{56}	0.468	2.24	6: Checked union/professional registers (11)
δ_{57}	-0.124	-0.88	7: Placed or answered ads (33)
δ_{58}	0.020	0.12	8: Other active (19)
α	2.198	8.27	Constant
R^2	0.223	SE	0.609	F(27,931)	11.06

Note: In the sample of observation units for EUE, Job search method "contacted school/university employment center," "attended job training programs/courses," "nothing," and "other passive" have zero or too small observation so we dropped these observations in the regression analyses.

Table 20: Males

Wage Regression for Job Changers: $ln(w_t/w_{t-1})$

Coeff	Estimate	t-ratio	Variable (# of responses for Job Search Method))
β_1	-0.500	-10.22	Wage(before)
β_2	0.003	0.15	Unemployment duration in month (mean = 5.592)
β_3	-0.003	-1.22	Age
			Marital Status
δ_{11}	0.157	2.11	1: Married
δ_{12}	0.099	0.94	2: Widowed/divorced/separated
			Race
δ_{21}	-0.021	-0.21	1: Black
δ_{22}	-0.539	-1.92	2: American Indian/Aleut/Eskimo
δ_{23}	0.222	1.37	3: Asian/Pacific Islander
			Education
δ_{31}	-0.002	-0.03	1: Middle
δ_{32}	0.201	2.21	2: High
			Industry
δ_{41}	0.803	2.45	1: Agriculture/Forestry/Fishery
δ_{42}	0.754	1.98	2: Mining
δ_{43}	1.004	3.39	3: Construction
δ_{44}	0.793	2.73	4: Manufacturing
δ_{45}	0.871	2.80	5: Transportation/Communication
δ_{46}	1.157	2.53	6: Utilities
δ_{47}	0.721	2.49	7: Trade
δ_{48}	0.863	2.69	8: Finance
δ_{49}	0.751	2.61	9: Service
			Job Search
δ_{51}	0.009	0.06	1: Contacted employer directly/interview (328)
δ_{52}	-0.111	-0.65	2: Contacted public employment agency (35)
δ_{53}	0.369	1.47	3: Contacted private employment agency (9)
δ_{54}	-0.147	-0.68	4: Contacted friends or relatives (14)
δ_{55}	-0.120	-0.76	5: Sent out resumes/filled out application (63)
δ_{56}	0.460	1.89	6: Checked union/professional registers (10)
δ_{57}	-0.281	-1.34	7: Placed or answered ads (16)
δ_{58}	0.005	0.02	8: Other active (9)
α	2.169	5.17	Constant

R^2	0.212	SE	0.614	F(27,477)	5.97

Note: In the sample of observation units for EUE, Job search method "contacted school/university employment center," "attended job training programs/courses," "nothing," and "other passive" have zero or too small observation so we dropped these observations in the regression analyses.

Table 21: Females

Wage Regression for Job Changers: $ln(w_t/w_{t-1})$

Coeff	Estimate	t-ratio	Variable (# of responses for Job Search Method))
β_1	-0.465	-10.72	Wage(before)
β_2	-0.026	-1.38	Unemployment duration in month (mean = 5.627)
β_3	-0.002	-0.58	Age
			Marital Status
δ_{11}	-0.020	-0.26	1: Married
δ_{12}	0.003	0.03	2: Widowed/divorced/separated
			Race
δ_{21}	-0.011	-0.13	1: Black
δ_{22}	-0.125	-0.76	2: American Indian/Aleut/Eskimo
δ_{23}	0.041	0.23	3: Asian/Pacific Islander
			Education
δ_{31}	0.124	1.84	1: Middle
δ_{32}	0.326	3.64	2: High
			Industry
δ_{41}	0.130	0.36	1: Agriculture/Forestry/Fishery
δ_{42}	-1.065	-1.68	2: Mining
δ_{43}	0.380	1.28	3: Construction
δ_{44}	0.264	1.30	4: Manufacturing
δ_{45}	0.266	1.10	5: Transportation/Communication
δ_{46}	1.405	2.21	6: Utilities
δ_{47}	0.269	1.38	7: Trade
δ_{48}	0.445	2.13	8: Finance
δ_{49}	0.266	1.40	9: Service
			Job Search
δ_{51}	0.069	0.52	1: Contacted employer directly/interview (249)
δ_{52}	0.036	0.23	2: Contacted public employment agency (43)
δ_{53}	0.306	1.49	3: Contacted private employment agency (15)
δ_{54}	-0.475	-1.68	4: Contacted friends or relatives (7)
δ_{55}	0.049	0.34	5: Sent out resumes/filled out application (88)
δ_{56}	0.286	0.45	6: Checked union/professional registers (1)
δ_{57}	0.008	0.04	7: Placed or answered ads (17)
δ_{58}	0.058	0.25	8: Other active (10)
α	2.376	6.50	Constant
R^2	0.243	SE	0.600 F(27,426) 6.32

Note: In the sample of observation units for EUE, Job search method "contacted school/university employment center," "attended job training programs/courses," "nothing," and "other passive" have zero or too small observation so we dropped these observations in the regression analyses.

Table 22: Both Sexes

Unemployment Duration for Job Changers

Coeff	Estimate	t-ratio	Variable (# of responses for Job Search Method))
β_1	-0.113	-1.42	Wage(before)
β_2	-0.006	-1.05	Age
			Marital Status
δ_{11}	0.143	1.05	1: Married
δ_{12}	0.250	1.43	2: Widowed/divorced/separated
			Race
δ_{21}	0.023	0.14	1: Black
δ_{22}	0.265	0.73	2: American Indian/Aleut/Eskimo
δ_{23}	0.076	0.25	3: Asian/Pacific Islander
			Education
δ_{31}	-0.151	-1.24	1: Middle
δ_{32}	0.158	0.99	2: High
			Industry
δ_{41}	0.018	0.03	1: Agriculture/Forestry/Fishery
δ_{42}	-0.508	-0.70	2: Mining
δ_{43}	0.365	0.82	3: Construction
δ_{44}	0.248	0.59	4: Manufacturing
δ_{45}	0.293	0.62	5: Transportation/Communication
δ_{46}	-0.662	-0.74	6: Utilities
δ_{47}	0.124	0.30	7: Trade
δ_{48}	0.559	1.23	8: Finance
δ_{49}	0.263	0.64	9: Service
			Job Search
δ_{51}	0.035	0.14	1: Contacted employer directly/interview (577)
δ_{52}	0.131	0.44	2: Contacted public employment agency (78)
δ_{53}	0.158	0.39	3: Contacted private employment agency (24)
δ_{54}	0.131	0.31	4: Contacted friends or relatives (21)
δ_{55}	0.041	0.15	5: Sent out resumes/filled out application (151)
δ_{56}	-0.080	-0.15	6: Checked union/professional registers (11)
δ_{57}	-0.215	-0.58	7: Placed or answered ads (33)
δ_{58}	0.052	0.12	8: Other active (19)
α	6.128	9.29	Constant

R^2	-0.010	SE	1.580	F(26,932)	0.63

Note: In the sample of observation units for EUE, Job search method "contacted school/university employment center," "attended job training programs/courses," "nothing," and "other passive" have zero or too small observation so we dropped these observations in the regression analyses.

Table 23: Males

Unemployment Duration for Job Changers

Coeff	Estimate	t-ratio	Variable (# of responses for Job Search Method))
β_1	-0.011	-0.09	Wage(before)
β_2	-0.001	-0.13	Age
			Marital Status
δ_{11}	-0.053	-0.27	1: Married
δ_{12}	0.091	0.33	2: Widowed/divorced/separated
			Race
δ_{21}	0.134	0.52	1: Black
δ_{22}	0.772	1.05	2: American Indian/Aleut/Eskimo
δ_{23}	-0.304	-0.72	3: Asian/Pacific Islander
			Education
δ_{31}	-0.331	-1.85	1: Middle
δ_{32}	0.108	0.46	2: High
			Industry
δ_{41}	0.477	0.56	1: Agriculture/Forestry/Fishery
δ_{42}	-0.275	-0.28	2: Mining
δ_{43}	0.666	0.86	3: Construction
δ_{44}	0.581	0.77	4: Manufacturing
δ_{45}	1.414	1.74	5: Transportation/Communication
δ_{46}	0.353	0.30	6: Utilities
δ_{47}	0.498	0.66	7: Trade
δ_{48}	0.543	0.65	8: Finance
δ_{49}	0.590	0.78	9: Service
			Job Search
δ_{51}	-0.274	-0.75	1: Contacted employer directly/interview (328)
δ_{52}	-0.136	-0.30	2: Contacted public employment agency (35)
δ_{53}	-1.243	-1.90	3: Contacted private employment agency (9)
δ_{54}	-0.114	-0.20	4: Contacted friends or relatives (14)
δ_{55}	-0.265	-0.65	5: Sent out resumes/filled out application (63)
δ_{56}	-0.050	-0.08	6: Checked union/professional registers (10)
δ_{57}	-0.269	-0.49	7: Placed or answered ads (16)
δ_{58}	-0.020	-0.03	8: Other active (9)
α	5.428	5.08	Constant
R^2	-0.011	SE	1.606	F(26,478)	0.79

Note: In the sample of observation units for EUE, Job search method "contacted school/university employment center," "attended job training programs/courses," "nothing," and "other passive" have zero or too small observation so we dropped these observations in the regression analyses.

Table 24: Female

Unemployment Duration for Job Changers

Coeff	Estimate	t-ratio	Variable (# of responses for Job Search Method))
β_1	-0.188	-1.71	Wage(before)
β_2	-0.008	-1.08	Age
			Marital Status
δ_{11}	0.351	1.78	1: Married
δ_{12}	0.388	1.65	2: Widowed/divorced/separated
			Race
δ_{21}	-0.017	-0.08	1: Black
δ_{22}	0.038	0.09	2: American Indian/Aleut/Eskimo
δ_{23}	0.658	1.42	3: Asian/Pacific Islander
			Education
δ_{31}	0.042	0.24	1: Middle
δ_{32}	0.361	1.59	2: High
			Industry
δ_{41}	-0.196	-0.21	1: Agriculture/Forestry/Fishery
δ_{42}	0.705	0.44	2: Mining
δ_{43}	0.130	0.17	3: Construction
δ_{44}	0.173	0.33	4: Manufacturing
δ_{45}	-0.758	-1.23	5: Transportation/Communication
δ_{46}	-2.852	-1.76	6: Utilities
δ_{47}	-0.075	-0.15	7: Trade
δ_{48}	0.533	1.00	8: Finance
δ_{49}	0.037	0.08	9: Service
			Job Search
δ_{51}	0.414	1.22	1: Contacted employer directly/interview (249)
δ_{52}	0.448	1.12	2: Contacted public employment agency (43)
δ_{53}	1.035	1.99	3: Contacted private employment agency (15)
δ_{54}	0.435	0.60	4: Contacted friends or relatives (7)
δ_{55}	0.414	1.13	5: Sent out resumes/filled out application (88)
δ_{56}	-2.474	-1.52	6: Checked union/professional registers (1)
δ_{57}	-0.023	-0.05	7: Placed or answered ads (17)
δ_{58}	0.311	0.53	8: Other active (10)
α	6.285	7.13	Constant

R^2	0.016	SE	1.532	F(26,427)	1.27

Note: In the sample of observation units for EUE, Job search method "contacted school/university employment center," "attended job training programs/courses," "nothing," and "other passive" have zero or too small observation so we dropped these observations in the regression analyses.