The Relationship Between Household Moving, Nonresponse, and Unemployment Rate in the Current Population Survey.

John Dixon, Bureau of Labor Statistics, Room 4915, 2 Massachusetts Ave., NE,
Washington, DC 20212-0001
Dixon_J@bls.gov
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Introduction

In the Current Population Survey, a household survey from which labor force estimates are produced, selected housing units remain in sample during a 16-month period. The households are interviewed during the first 4 and last 4 months of this period. During this time, the household occupying a sample housing unit may change.

Matching households between months allows an analysis of the relationship between whether a household moves and estimates of the employment rate. Many households move during the 16 months they are in sample. Since change in employment may be related to the household's decision to move, the estimates of employment status may be affected. "In-movers" don't completely make up for the number of "out-movers" so their relative effect may not be offset. Moreover, they may differ on important characteristics, e.g.; response rate. The current study examines the nature of this relationship through an analysis of movers and nonresponse and their resulting effect on labor force estimates.

A study by Tucker and Kojetin (1997) showed that unemployment rates were related to nonresponse in the CPS. Movers have not been studied as extensively, but Groves and Couper (1998) suggested in-movers would be more likely to participate. The impact of movers on estimates hasn't been well studied. Few studies were found which examined both movers and non-response in terms of their effects on estimates. Dolton et. al. (1999) found movers exited unemployment at a higher rate than other types of nonresponse. They also found shorter duration of unemployment for movers. Unemployed households moving to find work was theorized as the mechanism for both effects.

Gross Flows

In this study "gross flows" uses the availability of information on one month to contrast the estimates from another month. For example, labor force estimates in month 1 are contrasted based on whether a household responded in month 2, and labor force estimates in month 2 are contrasted based on whether a household responded in month 1. A similar comparison is made based on whether a household moves or not, since information isn't available for the month before they move in or the month after they move out.

Design

The CPS is a the monthly household labor force survey for the United States conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics. Households were matched for the years 1997 through 1999. Only the first and second months-in-sample were used. Approximately 48,000 eligible households are sampled each month in a two-stage clustered design. Households which didn't respond the first two months or didn't move into the selected housing unit until after the first two months were excluded from the analysis, since no estimates of labor force status were available. Persons in the household who were not eligible for the labor force (e.g. under 16 years old) were also excluded.

Analysis

Since movers and non-respondents both lack data for one of the months the joint effect cannot be completely studied. A comparison of the gross flows from mover status and response status may help explicate their relationship. The following tables are based on CPS 1st and 2nd month-in-sample data weighted by the base weight, which reflects the probability of selection, but doesn't adjust for non-response. Because of the differences in weighting, the labor force estimates won't be comparable to published estimates. The percentages reported are relative to the other categories, not the traditional unemployment rate, which is only relative to those in the labor force. The effective weighted sample size was 338129 persons. The

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Mantel-Haenszel test provides a comparison of the availability of the data (non-response or mover status separately).
The Cochran-Mantel-Haenszel test provides a test of the comparability of the tables between months, and can be used as an indicator of the gross flow effect. None of the p-values are adjusted for multiple testing. The complex sampling used by the CPS was not accounted for in the p-values of the models.

Results

The impact of non-response on labor force estimates was examined by comparing two 3 by 2 tables. The 2nd month non-response was related to the 1st month labor force status (Mantel-Haenszel=15.182, p<0.001). Unemployment and employment were higher while those not in the labor force were lower for the non-response group. Similarly, the 1st month non-response was related to the 2nd month labor force status (Mantel-Haenszel-5.582, p<0.018). Employment was higher while unemployment and not-in-labor-force were lower. This difference between the two tables is reflected in the Cochran-Mantel-Haenszel test (45.945, df=2, p<0.001) which contrasts the rows of the two tables. The gross flow of employment status from month to month is impacted by non-response, with unemployment reversing direction depending on whether the non-response occurred in the first or second month.

Labor Force Status by Interview Status			
1st Month Labor Force	**2nd Month interview**	**2nd Month nonresponse**	
Not in labor force	33.45%	29.24%	Mantel-Haenszel= 15.182, p< 0.001
Employed	63.01%	66.64%	
Unemployed	3.54%	4.13%	
2nd Month Labor Force	**1st Month interview**	**1st Month nonresponse**	
Not in labor force	34.33%	27.14%	Mantel-Haenszel= 5.582, p< 0.018
Employed	62.54%	70.90%	
Unemployed	3.12%	1.96%	
	Cochran-Mantel-Haenszel (row mean scores)= 45.945 (df=2) p< 0.001		

The impact of moving status on labor force estimates was examined by comparing two 3 by 2 tables. The 2nd months moving status was related to the 1st months labor force status (Mantel-Haenszel=24.848, p<0.001). Those who moved out had higher unemployment and lowered employment and not in labor force estimates. The 1st months moving status was not related to the 2nd months labor force status (Mantel-Haenszel=0.633, p<0.426). Those who moved in were not seen as different from those who didn't move. The difference between the two tables was tested with a Cochran-Mantel-Haenszel test (260.928, df=2, p<0.001). The gross flow of labor force estimates are impacted primarily by out movers, which have relatively higher unemployment rates.

Labor Force Status by Moving Status			
1st Month Labor Force	**No move**	**Out move**	
Not in labor force	33.38%	31.06%	Mantel-Haenszel= 24.848, p<0.001
Employed	63.07%	62.18%	
Unemployed	3.55%	6.77%	
2nd Month Labor Force	**No move**	**In move**	
Not in labor force	34.33	31.88	Mantel-Haenszel= 0.633, p<0.426
Employed	62.55	63.62	
Unemployed	3.12	4.51	
	Cochran-Mantel-Haenszel (row mean scores)= 260.928 (df=2) p<0.001		

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The relationship between non-response and moving was examined by comparing two 2 by 2 tables. The 2nd months moving status was related to the 1st months non-response (Mantel-Haenszel=99.013, p<0.001). Those who moved out had a lower non-response rate. The 1st months moving status was related to the 2nd months non-response (Mantel-Haenszel=64657.649, p<0.001). Those who moved in had a very high non-response rate. The difference between the two tables was tested with a Cochran-Mantel-Haenszel test (21792.469, df=1, p<0.001). The non-response rate for in-movers was higher than for out-movers.

Interview Status by Moving Status – Unweighted			
1st Month Interview	**No move**	**Out move**	
Interview	96.89%	98.30%	Mantel-Haenszel=
Nonresponse	3.11%	1.70%	99.013 p< 0.001
2st Month Interview	**No move**	**In move**	
Interview	98.25%	45.36%	Mantel-Haenszel=
Nonresponse	1.75%	54.64%	64657.649 p< 0.001
	Cochran-Mantel-Haenszel (row mean scores)= 21792.469 (df=1) p<0.001		

Discussion

Similar to the Tucker and Kojetin study, this study found small differences in the flow of labor force estimates depending on nonresponse. This study also found small differences in labor force estimates related to mover status with movers having higher unemployment rates and out-movers related to the highest unemployment rates. This effect may be moderated by non-response, since in-movers have higher non-response than out-movers, so some of the unemployed may be hidden by the combination of moving status and nonresponse.

The limitations of the study would include the assumption that the partial responders represent the same relationship between response and labor force estimates. We also assume the joint relationship between nonresponse and moving and their effect on labor force estimates can be represented by their marginal relationships.

These results suggest that strategies which attempt to reduce non-response bias might best be aimed at out-movers through statistical means, since it is probably too difficult to predict who will move. The higher non-response rates of in-movers may hide some of the relationship between non-response and labor force estimates for in-movers. Since it is known which households have moved into the eligible survey sample, those households may be targeted with procedures to gain their cooperation.

Additional methods may be useful in studying the three-way table examined here. Census/CPS match data would provide a more complete picture of nonresponse. Examining the characteristics of movers based on a question in a CPS supplement which asks if the household has moved in the past year could help describe movers more completely.

References:

- Agresti, A., Categorical Data Analysis, Wiley, New York, 1990.
- Allen, T.M., and Petroni, R.J., "Mover nonresponse adjustment research for the Survey of Income and Program Participation", Presented at the Joint Statistical Meetings, 1994.
- Dolton, P., Lindeboom, M., and Van den Berg, G.J., "Survey attrition: A taxonomy and the search for valid instruments to correct for biases", in Statistical Policy Working Paper 30, 1999 Federal Committee on Statistical Methodology Research Conference.
- Groves, R., and Couper, M., Nonresponse in Household Interview Surveys, Wiley, New York, 1998.

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- Tucker, C., and Kojetin, B., "The Impact of Nonresponse on the Unemployment Rate in the Current Population Survey", Paper presented at the International Workshop on Household Survey Nonresponse, 1997.

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