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A Comparison of the CPS and NAWS Surveys of Agricultural Workers

Until 1988, the only continuing national survey of agricultural workers was the Census Bureau's Current Population Survey (CPS). Several researchers contend that, because the CPS samples based on household location, it undersamples migratory and immigrant agricultural workers (especially undocumented workers) so that it provides a biased view of the agricultural labor market. As mandated by the Immigration Reform and Control Act, the U. S. Department of Labor is conducting the National Agricultural Workers Survey (NAWS) from 1988 to 1992. Because the NAWS sampling method is based on employment and not residence, it may avoid the biases to which the CPS may be prone.

We compare the CPS and NAWS samples to determine their differences and similarities. In addition to comparing the means and standard deviations of various important variables in the two surveys, we examine the implications of the two surveys for some standard econometric questions that these surveys are designed to answer.

In the first section, the two surveys are described. In the second section, the national means and standard deviations of several important variables are compared. In the third section, regional comparisons are used to determine if the two surveys differ more in certain regions than others. In the fourth section, equations for wages, hours, earnings, and the method of payment (piece rate vs. hourly) are estimated using multivariate regression and probit analyses and tests are conducted for differences in coefficients across the samples. In the last section, we draw conclusions and discuss the likely biases from relying on only one or the other of these samples. The policy implications are also analyzed.

The Surveys

There are substantial differences in the sample designs of these two national surveys, which employ random sampling. The Current Population Survey (CPS) is a survey of households; whereas the National Agricultural Worker Survey (NAWS) is a survey of employed crop

and nursery workers. We first discuss each of the samples and then explain how we compare them.

The CPS

The CPS is conducted monthly by the Department of Commerce, Bureau of the Census.[1] The size of this sample has changed over time, but in most years it has been 50,000 or more, though the number of agricultural workers within the sample is, of course, much smaller. The CPS is based on a random sample of housing units. Though all types of housing are to be included, critics claim that agricultural workers who live in non-standard housing units or who may be illegal tenants or sub-tenants are likely to be missed.[2]

Although many farm workers live in households composed of the immediate nuclear family, other types of settings are also common. The first is the crowded "crash pad" household made up of 2 to 12 male immigrant farm workers unaccompanied by their nuclear families. A second type is the "anchor nuclear family" household which has one or two unaccompanied immigrants living temporarily in the household.[3] A third type is two or more nuclear families sharing cramped space at one address. Finally, in many farm worker communities, garages, shacks, and even fields are rented or assigned to farm workers as their living space.

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[1] For details on how the survey is conducted, see United States, Bureau of the Census, *The Current Population Survey: Design and Methodology*, (Technical Paper — U. S. Bureau of the Census: 40), 1977. Reports based upon this survey include the now extinct Hired Farm Work Force (HFWF) of the USDA and the CPS monthly reports issued by the Bureau of Labor Statistics.

[2] Some case studies substantiate the difficulty in locating farm worker housing units. See Edward Kissam, David Griffith, and David Runsten, *Final Report, Farm Labor Supply Survey*, Office of the Assistant Secretary for Policy, 1991, forthcoming and Monica Heppel and Sandy Amendola, "Immigration Reform: Compliance or Circumvention," Center for Immigration Studies, 1991.

[3] Annual report of the National Agricultural Workers Survey, Office of the Assistant Secretary for Policy, U. S. Department of Labor, 1991.

The NAWS

The National Agricultural Workers Survey (NAWS) covers only Seasonal Agricultural Service (SAS) workers,[4] whom the U. S. Department of Agriculture defines as field workers in perishable crops.[5] The NAWS collects comprehensive job history information on SAS workers to measure fluctuations in hours worked. Only farmworkers employed in SAS labor are interviewed for the NAWS.

Each year, approximately 2,500 interviews are collected from a random sample of employed SAS workers. Currently, three interviewing cycles (which may take up to eight weeks to complete) are conducted each year beginning in January, May, and September. The sample was designed to ensure that the worker who performed any given hour of SAS work has an equal probability of being represented in the survey.

To ensure regional coverage while keeping interviewing costs down, site (county) area sampling is used to obtain a nationally representative cross section of farm workers. Sampling is restricted to 72 counties, in 25 states, which were randomly selected from 12 distinct agricultural regions covering the entire continental United States.[6] At least four counties were selected from each region.

Multistage sampling is used to select farm workers for each interview period. Approximately 30 of the 72 counties are randomly selected as interviewing sites. Site selection and interview allocations are proportional to seasonal payroll size. Seasonal payroll is determined by multiplying a seasonality index by the SAS agricultural payroll figures reported in the most

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[4] The NAWS does not sample all farm workers. It does not cover livestock workers, sugar cane workers, and those who work on fodder for animals. It covers most nursery products. It is estimated to cover approximately 70 percent of field farm workers, with livestock workers being the main excluded group.

[5] Under the Immigration Reform and Control Act of 1986, the Secretaries of Agriculture and Labor are charged with determining annually if there is a shortage of Seasonal Agricultural Services (SAS) Workers. The U. S. Department of Labor commissioned the NAWS to collect the information to make such a determination.

[6] In the 1988 sample, which is used below, only 60 counties were included.

recent Census of Agriculture.[7] Employer names are obtained from various government sources and a random sample of SAS employers is generated for each of the selected sites.

NAWS Regional Coordinators contact selected employers to obtain access to the work site. Bilingual interviewers visit the work site and ask a random sample of workers to participate. Individual interviews take place at each worker's home or at another location selected by the worker.

Because the NAWS randomly samples agricultural workers by job site, many workers who do not live in fixed locations or standard housing are included.[8] As a result, one might expect the NAWS to contain a higher percent of undocumented workers and those who do not live in traditional household settings.

How the Surveys were Compared

In this paper, we compare results from the first set of NAWS interviews, conducted in October and November 1988 to the 1988 CPS. In this first cycle of NAWS interviews, interviews were conducted in 60 counties and 25 states, representing all 12 geographic regions. Because the number of agricultural workers from the CPS sample is small (especially for regional

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[7] For the first four cycles of interviews (which include the data reported here), the 1982 Census was used. For more recent cycles, the 1987 Census was used. In the first four cycles, the seasonality index was a weighted average of six different seasonality indexes: two (state and regional) derived from seasonal fluctuations in UI data; two (state and regional) additional measures based on cropping patterns; USDA Farm Labor information; and subjective information from county cooperative extension experts. In later cycles, a weighted index of county level fluctuations in UI data and the subjective judgements of county crop extension experts were used. The weights are designed to make each measure directly proportional to the percent of the County's agricultural payroll covered by unemployment insurance.

[8] Post-sampling weights are used to adjust for discrepancies inherent in the interview collection process. A random sample of SAS workers is chosen using multi-stage sampling proportional to the size of the seasonal SAS payroll. The first post-sampling weight accounts for the under-sampling of part-time workers, because their brief work schedules reduce their probability of being sampled. A second post-sampling weight is applied at the county level to correct for interviews allocated but not completed. The third post-sampling weight ensures the correct regional distribution of workers. As a result, the weighted NAWS data represent the characteristics of the individual doing the typical day of SAS work, not the characteristics of the typical SAS worker.

comparisons) for the October-November period alone, we compare the NAWS data with that of the CPS for the last quarter of 1988 and for the entire year.

To make the two sample as comparable as possible, we restricted both samples in four ways. First, we only use individuals who are at least 16 years old (though both have a small number who are younger). Second, we only compare agricultural workers in crops, agricultural services, and horticulture. That is, we drop those who work with livestock (approximately 4 in 10 of the CPS sample), because the NAWS does not cover those workers. Third, we do not include managers and foremen because both surveys include relatively small numbers of them. Fourth, only data from the 48 continental states are used (the NAWS does not cover Hawaii or Alaska).

The two surveys have different geographical coverage. For the purpose of comparisons, the regions are defined to include the following states:

Regions	States
North East	CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT
Appalachia	KY, NC, TN, VA, WV
South East	AL, AR, FL, GA, LA, MS, SC
Mid West	IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, SD, WI
Southern Plains	OK, TX
West	AZ, CA, CO, ID, MT, NM, OR, NV, UT, WA, WY

Also, separate information is provided for California, the state with the greatest agricultural production and most agricultural workers. Table 1 shows the sample sizes and regional coverage of the two surveys using unweighted data so the reported shares reflect the number

of people in the samples.[9] The NAWS survey has a higher proportion of Californians and a lower proportion of those in the Mid West, North East, and Appalachia.

One cause of the regional differences is that the CPS samples randomly by housing units (independent of agricultural employment), whereas the NAWS samples randomly based on the amount of SAS work done. To facilitate the national comparisons, means for the CPS survey are reported both unweighted and weighted in proportion to the number of interviews in each NAWS region. Thus, for example, a Californian receives a higher weight in the CPS average than does a worker in North Dakota.

National Comparison

We now examine the means and standard deviations for a number of key variables at a national level. The type and location of housing of agricultural workers according to the two surveys are compared in Table 2. The responses to questions on type of housing illustrates the differences between the two sample methodologies. More than twice as many the CPS workers are likely to own a home than are NAWS workers; however, sample members in both surveys are equally likely to be provided rent-free housing by their employer. As expected, agricultural workers included in the CPS are more likely to own or rent houses than are those included in the NAWS.

In part because the CPS covers a higher proportion of people who live in houses, it has a lower proportion of Hispanics; however, it has a higher proportion of blacks (Table 3). Part of the explanation for a higher proportion of Hispanics and especially Mexicans in the NAWS is due to its greater sampling in California — as shown by comparing the weighted and unweighted CPS data or by examining the regional data discussed below.

Other demographic characteristics are compared in Table 4. The mean and distribution of age is virtually identical. The fraction of workers who are married, the faction who are

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[9] In 1988 the CPS cut back on its interviews, particularly in California and New York. The CPS provides population weights, which were not used.

female, and the characteristics of children are very close in the two samples. The NAWS workers have less education and live with fewer family members (again, consistent with the difference in the sample approach).

The differences in educational levels and household composition between the samples can be explained in large measure by the much larger proportion of immigrant Latin Americans and the larger share of fruit, vegetable and horticultural workers in the NAWS sample.[10] First, immigrant Latin Americans have a median education level of 7 years as compared to 11 for native born workers.[11] Second, one third of immigrant farm workers have left their wives (or husbands) and children abroad.

According to both surveys, four out of five of these workers work on crops (Table 5). The NAWS reports the rest work in horticulture. The CPS finds few horticultural workers but reports a substantial number of agricultural service workers. Agricultural services refers to work situations in which the agricultural producer does not directly hire those who work on his or her land. Thus, some agricultural services employees may also work on crops.[12]

Based on a comparison with the CPS data from September-December using NAWS weights, the NAWS workers earn 8% more per hour than CPS workers, work 19% more hours per

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[10] A farm labor supplement to the CPS in December 1987 found that one fourth of all workers surveyed were livestock workers, half were field crop and cash grain workers, and one quarter worked in labor intensive fruit, vegetable, and horticultural industries. Richard Mines, "National Agricultural Worker Survey: A Comparison with Other Studies," Office of the Assistant Secretary for Policy, U. S. Department of Labor, July 1989, p. 2.

[11] Annual Report of the National Agricultural Workers Survey, Office of the Assistant Secretary for Policy, U. S. Department of Labor, 1991.

[12] The share of labor-intensive, fruit, vegetable, and horticultural work is probably much higher in the NAWS than in the CPS. Although the CPS does not determine the type of crop, a supplement to the December CPS in 1987 (see *The Agricultural Work Force of 1987*, Economic Research Service, U. S. Department of Agriculture, Report No. 609, May 1989, p. 5) shows that of those crop workers who identified their main crop, only 32 percent worked in fruit, vegetables, and horticulture and the rest worked in the less labor-intensive field crop and cash grain industries. In contrast, in the first three cycles of the NAWS, 1988-1989, over 80 percent of the sample worked in these labor-intensive crops (Richard Mines, "National Agricultural Worker Survey: A Comparison with Other Studies," Office of the Assistant Secretary for Policy, U. S. Department of Labor, July 1989, Table 8).

week, and receive weekly earnings that are 28% higher (Table 6); however, these differences are not statistically significantly different at standard confidence levels.[13] These differences are slightly higher if unweighted CPS data are compared to the NAWS because a larger proportion of NAWS workers in California and the West where pay is high and hours are long. These differences in means are more pronounced in some regions than in others, as we show in our regional comparisons.

Regional Comparison

The differences between the two surveys are more pronounced in some regions than others. Some of this variation by region may be due to relatively small sample sizes (as reflected in the standard errors). NAWS regional sample sizes range from 60 to 350 interviews for the quarter and CPS samples are even smaller, ranging from 21 to 63 respondents for the quarter and from 52 to 218 for the year. Neither sample was designed to provide estimates of agricultural workers characteristics by region. Thus, caution should be exercised in making regional comparisons.

Both the NAWS and the CPS show that the characteristics of farm workers vary across regions. Hispanic, black and other non-white farm workers form the majority of the farm labor force in the Southeast and the West; whereas, U. S.-born whites are more prevalent in the North East and Midwest. In each region, the NAWS finds a higher proportion of Hispanic workers than does the CPS, but in some regions, the CPS finds more blacks. Difference in nationality across regions were also shown by both surveys.

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[13] Based on social security numbers, 85 percent of NAWS workers with California job histories could be matched to California Employment and Development Department's Unemployment Insurance (UI) records. For those that matched, weeks worked according to UI data were 93 percent of those worked according to the NAWS interviews.

In the CPS, hourly earnings are calculated by dividing earnings per week by usual weekly hours. That is, hourly earnings reflect both wage earnings and piece-work payments. A larger share of the NAWS workers are paid by the hour (rather than on a piece-rate basis).

In most regions, the NAWS finds more foreign-born farm workers, fewer farm workers who own their own homes, and workers with consistently lower levels of education than does the CPS. On the other hand, in most parts of the country, the NAWS and the CPS report similar average ages of farm workers and similar fractions of women workers. Discrepancies between the wages, hours and earnings reported by the CPS and the NAWS were not significant in most regions due to relatively large standard errors, which probably are the result of small sample sizes.

Econometric Comparison

A major reason to collect large surveys is to answer a variety of economic and other questions. Agricultural labor economists often analyze how wages and hours vary by demographic and other characteristics. We estimated ordinary least squares hourly-earnings and usual weekly hours equations using data from both surveys.[14] Agricultural labor economists also try to explain which workers are paid on an hourly basis (as opposed to performing piece work). We estimated a probit equation for who is paid on an hourly basis.

We then tested whether the two surveys have comparable implications. The relevant F-tests (for the natural logarithm of wage and usual hours ordinary least squares equations) and χ^2-tests (for a paid-by-the-hour probit equation) for equality of coefficients across the NAWS and CPS samples for various demographic groups are reported in Table 14.[15]

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[14] The CPS sample is restricted to those sampled in September through December. In all our equations and in both samples, all individuals were weighted equally. The explanatory variables were six regional dummies; dummy variables for black, Hispanic, and male; experience and experience squared; and education.

[15] There were too few non-Hispanic blacks in certain regions to run the same equations as for the other demographic groups. If we drop a few regional dummies, however, we can run comparable equations. Based on those equality tests of demographic coefficients across the two surveys, we cannot reject equality of coefficients across the samples. The F-statistics for the ln wage and usual hours equations are $F(4, 72) = 1.66$ and 1.01. The $\chi^2(4)$ statistic for paid-by-the-hour is 6.75.

In the wage equation, we cannot reject the null hypothesis that the coefficients are equal across the two samples for most of the coefficients. The coefficients that did differ significantly were the constant and the age variables for the entire sample; age squared for the non-Hispanics, and the North East and Other West dummies for the Hispanic subsample. In the usual hours equation, the variables for which we can reject equality are Southern Plains and the age variables for the entire sample; none for the non-Hispanics; and the constant, Appalachia, South East, Southern Plains, and the age variables for the Hispanic sample. In the probit for paid-by-the-hour, no individual equality was rejected for any sample except for blacks for the non-Hispanic sample.

There are some regional differences (particularly in wage equations). In the wage equation, we cannot reject the hypothesis that the coefficients for whites are the same in the two samples. We are not concerned about regional differences, however, because the CPS sample is more uniformly spread across any given region than is the NAWS sample.

We also fail to find differences in the demographic variables for the whites and the Hispanic; however, there are significant differences for all non-Hispanics and for the entire group. Testing for particular demographic variables, however, only the effect of the age variable differs (as noted above).

Except for regional dummies and the constants, there are no significant differences between the two samples for the hours equation. Except for the demographic characteristics for whites, there are no significant differences in the paid-hourly probit equations.

Thus, overall, it appears that the two samples give similar results. There does not appear to be any one variable that systematically differs across samples for these demographic groups or equations.

Conclusions

A comparison of agricultural workers in the Current Population Survey (CPS) and the National Agricultural Workers Survey (NAWS) finds both similarities and differences in the samples. Both samples, however, seem to produce similar econometric results.

Although the CPS and the NAWS use very different approaches to choosing a sample, the agricultural workers in both samples have many similarities. Farm workers sampled in both surveys are on average young and poorly educated. Most of the workers are males. Slightly less than half are married and living with their spouses. Most work long hours and are paid less than workers in many other sectors of the economy. We conclude from these comparisons that the two surveys are similar overall in most dimensions, which we find reassuring.

There are two notable differences, however. The CPS, due to its sampling of households, finds a higher proportion of agricultural workers who live in houses than does the NAWS, which samples workers. Presumably as a result, the NAWS finds a substantially higher proportion of Latin American immigrants, who are less likely to be found by sampling by street addresses than U. S.-born workers.

Due to the differences in the sample selection techniques, each of the surveys has relative strengths and weaknesses for policy purposes. We conclude that the NAWS is likely to provide a more realistic picture of the composition of the agricultural work force than does the CPS due to the underrepresentation of Latin American immigrants who live in alternative housing in the CPS. Were policy makers to rely on only the CPS sample, there could be adverse policy implications for this important demographic group.

On the other hand, the NAWS selects only workers who were employed at the initial interview. Thus, the CPS is more appropriate for answering policy questions about unemployment or underemployment (especially the U. S.-born unemployed).

Despite these differences in the two samples, the corresponding econometric analyses of wages, hours, or the fraction of workers doing piece work are similar. We do not find any

systematic difference between the relationship between these dependent variables and workers characteristics based on the two samples, though some statistically significant differences were found. Even where statistically significant differences were found, these differences tended to be small in size.

Table 1
Share of Workers (%) in Each Region

Region	NAWS Survey Oct - Nov 1988	Current Population Survey	
		Sept - Dec 1988	1988
	Sample Size		
	803	212	783
North East	7.8	9.9	6.6
Applachia	7.7	12.3	11.2
Southeast	16.3	15.6	19.7
Mid West	17.6	23.1	27.2
Southern Plains	7.0	7.5	7.0
West	43.7	29.7	26.5
Florida	9.5	4.2	7.9
California	30.4	17.0	12.6

Table 2
Share of Workers (%) by Type of Housing

Type and Location of Housing		NAWS Survey	Current Population Survey			
			Sept - Dec 1988		1988	
			un-weighted	NAWS Weights	un-weighted	NAWS Weights
On Farm Housing		20.2*	19.3	17.9	21.6	20.4
House or Apartment	Own	16.5	42.0	37.7	43.2	40.4
	Rent		40.6	43.5	43.3	45.3
Mobile Home	Own	6.8	8.0	6.9	6.3	5.4
	Rent		8.0	10.0	6.9	8.5
Other Housing			1.4	1.8	0.3	0.3
Own		23.0	50.0	44.6	49.4	45.9
Rent			32.5	37.2	30.8	36.2
Employer Provides Housing Rent Free		19.8	17.5	18.2	19.8	17.8

* Defined as grower provided housing = 20.2%, defined as employer provided housing = 24.9.

Note: In the NAWS, workers are asked wheter they own a home or mobile home in order to identify assets. They are also asked about employee benefits such as employer provided housing. Workers are nto specifically asked questions about housing that identifies owners, renters, homeless workers, and so forth as mutually exclusive categories.

Table 3
Share of Workers (%) of each Ethnicity and Race

Ethnicity and Race	NAWS Survey	Current Population Survey			
		Sept - Dec 1988		1988	
		un-weighted	NAWS weights	un-weighted	NAWS weights
Hispanic	63.8	24.5	33.4	24.8	37.6
Mexican	51.6	17.0	25.1	18.0	29.4
Mexican-American	6.0	7.5	8.4	5.6	7.0
Black	6.7	13.2	10.4	13.0	9.6
Other Nonwhite	6.7	1.9	1.1	2.6	1.5

Table 4
Characteristics of Workers

Worker Characteristics	NAWS Survey	Current Population Survey			
		Sept - Dec 1988		1988	
		un-weighted	NAWS weights	un-weighted	NAWS weights
Age (mean, s.d.)	35.4 (12.7)	35.9 (15.5)	35.5 (14.6)	34.2 (15.1)	34.0 (14.6)
16 to 25 Years (%)	27.3	26.9	25.3	32.2	31.0
26 to 45 Years (%)	50.7	43.9	47.9	42.1	44.3
Over 45 Years (%)	22.0	25.9	23.7	22.1	21.0
Married, Living with Spouse (%)	47.9	49.1	50.3	42.7	44.2
Household Size (mean, s.d.)	2.4 (1.4)	3.8 (2.2)	4.0 (2.4)	4.0 (2.2)	4.1 (2.2)
Female (%)	18.1	17.5	19.1	18.3	18.2
Education (mean, s.d.)	7.2 (4.0)	10.5 (3.8)	10.0 (4.2)	10.8 (3.7)	10.2 (3.9)
8 to 12 Years of School (%)	40.9	31.6	26.3	33.9	29.6
Some College	4.4	48.6	45.0	49.4	44.8
Children (mean, s.d.)	1.2 (1.6)	1.0 (1.4)	1.2 (1.6)	1.1 (1.5)	1.1 (1.5)
0 Children (%)	50.6	58.5	54.1	54.2	53.6
1 to 2 Children (%)	29.4	25.9	25.1	29.5	29.3
3 to 4 Children (%)	16.0	12.7	16.4	13.3	13.4
5 plus Children (%)	4.0	2.8	4.4	3.1	3.6

Table 5
Share of Workers (%) in Each Industry and Occupation

Sector	NAWS Survey	Current Population Survey			
		Sept - Dec 1988		1988	
		un-weighted	NAWS weights	un-weighted	NAWS weights
Crops	80.5	84.9	80.5	88.0	83.7
Horticulture	19.0	0.5*	0.4	0.5	0.8

* Represents only one worker (horticulture is 9.3% and 6.6% of the CPS samples including managers and formen).

Table 6
Economics Variables

Economic Variables	NAWS Survey	Current Population Survey			
		Sept - Dec 1988		1988	
		un-weighted	NAWS weights	un-weighted	NAWS weights
Union Member (%)	NA	1.4	0.8	1.1	0.9
Paid by the Hour (%)	73.5	64.6	62.0	65.3	63.4
Hourly Earnings (mean ($), s.d.)	4.90 (1.3)	4.46 (1.8)	4.52 (1.8)	4.51 (2.3)	4.65 (2.2)
Usual Weekly Hours (mean, s.d.)	48.3 (14.3)	40.2 (13.9)	40.5 (13.7)	38.9 (15.6)	39.0 (15.1)
Weekly Earnings (mean ($), s.d.)	235.06 (93.4)	179.69 (92.7)	183.51 (91.0)	174.52 (102.5)	180.69 (104.0)

Table 7

North East	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	62	21	52
Hispanic	57.5	4.8	5.8
Mexican	8.9	4.8	1.9
Mexican-American	2.6	0.0	0.0
Black	5.9	0.0	7.7
Other Nonwhite	0.0	0.0	0.0
Age (mean, s.d.)	38.5 (12.8)	38.8 (18.4)	36.1 (17.7)
Married, Living with Spouse (%)	36.4	47.6	40.4
Female (%)	25.1	28.6	25.0
Education (mean, s.d.)	9.0 (3.0)	12.4 (1.7)	11.9 (2.7)
Children (mean, s.d.)	1.0 (2.0)	0.3 (0.7)	0.7 (1.3)
Crops	91.4	66.7	80.8
Union Member (%)	NA	0.0	1.9
Paid by the Hour (%)	85.7	66.7	59.6
Hourly Earnings (mean ($), s.d.)	4.67 (0.7)	5.59 (3.0)	4.97 (2.48)
Usual Weekly Hours (mean, s.d.)	47.9 (10.5)	41.9 (12.9)	39.8 (16.3)
Weekly Earnings (mean ($), s.d.)	218.20 (47.3)	235.90 (137.9)	193.90 (118.18)
On Farm Housing	45.6	4.8	9.6
Own	36.8	47.6	51.9
Employer Provides Housing Rent Free	40.2	4.8	19.2

Table 8

Appalachia	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	61	26	88
Hispanic	14.0	7.7	20.5
Mexican	14.0	7.7	17.0
Mexican-American	0.0	0.0	0.0
Black	2.6	46.2	38.6
Other Nonwhite	0.0	3.8	5.7
Age (mean, s.d.)	37.4 (15.6)	38.7 (16.3)	37.0 (16.9)
Married, Living with Spouse (%)	62.1	42.3	35.2
Female (%)	9.4	26.9	21.6
Education (mean, s.d.)	8.0 (4.4)	10.2 (2.7)	9.9 (3.2)
Children (mean, s.d.)	1.1 (1.5)	0.6 (1.0)	0.8 (1.2)
Crops	42.8	100.0	95.5
Union Member (%)	NA	0.0	0.0
Paid by the Hour (%)	82.0	73.1	75.0
Hourly Earnings (mean ($), s.d.)	5.27 (1.81)	3.97 (1.1)	3.95 (1.0)
Usual Weekly Hours (mean, s.d.)	43.7 (10.2)	34.1 (11.8)	36.7 (11.3)
Weekly Earnings (mean ($), s.d.)	232.40 (100.50)	138.81 (66.0)	147.67 (65.1)
On Farm Housing	42.5	11.5	14.8
Own	29.9	50.0	44.3
Employer Provides Housing Rent Free	38.2	15.4	31.8

Table 9

South East	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	131	33	154
Hispanic	62.0	6.1	20.8
Mexican	53.7	6.1	18.2
Mexican-American	5.2	0.0	1.3
Black	21.2	48.5	40.9
Other Nonwhite	1.9	0.0	0.6
Age (mean, s.d.)	34.1 (10.7)	40.9 (15.8)	36.4 (14.0)
Married, Living with Spouse (%)	34.9	57.6	44.2
Female (%)	12.3	12.1	18.8
Education (mean, s.d.)	5.9 (3.6)	9.1 (3.4)	9.7 (3.7)
Children (mean, s.d.)	1.3 (1.9)	0.5 (1.1)	0.8 (1.2)
Crops	71.8	84.8	87.0
Union Member (%)	NA	0.0	0.0
Paid by the Hour (%)	66.0	72.7	63.0
Hourly Earnings (mean ($), s.d.)	4.63 (1.2)	4.02 (1.2)	4.09 (1.4)
Usual Weekly Hours (mean, s.d.)	41.8 (8.9)	40.9 (10.4)	38.4 (12.0)
Weekly Earnings (mean ($), s.d.)	195.23 (64.8)	163.30 (57.5)	156.95 (73.5)
On Farm Housing	21.1	12.1	16.9
Own	15.7	45.5	32.5
Employer Provides Housing Rent Free	33.3	27.3	26.6

Table 10

Mid West	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	140	49	213
Hispanic	32.7	4.1	1.9
Mexican	31.3	0.0	0.0
Mexican-American	1.4	4.1	1.9
Black	0.0	0.0	0.5
Other Nonwhite	0.0	0.0	0.5
Age (mean, s.d.)	35.5 (17.8)	33.4 (17.0)	32.4 (15.8)
Married, Living with Spouse (%)	49.7	42.9	38.5
Female (%)	23.7	10.2	16.4
Education (mean, s.d.)	10.4 (4.3)	12.3 (2.2)	12.5 (2.3)
Children (mean, s.d.)	0.9 (1.9)	0.9 (1.2)	1.1 (1.4)
Crops	84.0	93.9	93.0
Union Member (%)	NA	0.0	0.0
Paid by the Hour (%)	63.0	61.2	65.3
Hourly Earnings (mean ($), s.d.)	4.90 (2.1)	4.18 (1.7)	4.74 (3.2)
Usual Weekly Hours (mean, s.d.)	49.4 (25.9)	40.6 (16.4)	39.2 (19.6)
Weekly Earnings (mean ($), s.d.)	236.81 (158.5)	170.55 (112.3)	178.15 (112.8)
On Farm Housing	29.4	36.7	31.9
Own	25.6	65.3	62.9
Employer Provides Housing Rent Free	19.0	12.2	12.2

Table 11

Southern Plains	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	56	16	55
Hispanic	40.8	56.3	56.4
Mexican	38.3	25.0	20.0
Mexican-American	0.0	31.3	36.4
Black	36.1	0.0	0.0
Other Nonwhite	0.0	0.0	3.6
Age (mean, s.d.)	35.8 (13.7)	36.5 (12.1)	34.4 (14.2)
Married, Living with Spouse (%)	54.8	50.0	56.4
Female (%)	2.0	6.3	12.7
Education (mean, s.d.)	7.2 (4.6)	9.3 (4.6)	9.7 (3.7)
Children (mean, s.d.)	1.9 (2.0)	1.0 (1.3)	1.2 (1.9)
Crops	78.8	81.3	81.8
Union Member (%)	NA	0.0	0.0
Paid by the Hour (%)	83.7	81.3	67.3
Hourly Earnings (mean ($), s.d.)	4.23 (1.32)	3.75 (1.2)	3.96 (1.6)
Usual Weekly Hours (mean, s.d.)	54.4 (17.9)	33.6 (9.5)	35.3 (13.9)
Weekly Earnings (mean ($), s.d.)	227.93 (105.18)	130.50 (58.3)	143.02 (74.7)
On Farm Housing	50.9	6.3	3.6
Own	11.8	50.0	56.4
Employer Provides Housing Rent Free	50.9	12.5	12.7

Table 12

West	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	350	63	208
Hispanic	90.4	57.1	51.0
Mexican	75.3	42.9	41.3
Mexican-American	10.8	14.2	8.7
Black	0.0	0.0	0.0
Other Nonwhite	12.0	1.6	1.0
Age (mean, s.d.)	34.9 (11.2)	33.2 (13.1)	32.5 (13.7)
Married, Living with Spouse (%)	50.6	54.0	45.7
Female (%)	20.7	20.6	16.8
Education (mean, s.d.)	5.6 (3.2)	9.4 (5.0)	10.1 (4.4)
Children (mean, s.d.)	1.3 (1.3)	1.7 (1.8)	1.4 (1.8)
Crops	87.2	77.8	83.2
Union Member (%)	NA	1.6	1.4
Paid by the Hour (%)	75.2	52.4	61.5
Hourly Earnings (mean ($), s.d.)	5.08 (1.2)	4.78 (1.9)	4.75 (2.1)
Usual Weekly Hours (mean, s.d.)	49.9 (10.9)	43.3 (14.7)	40.8 (15.5)
Weekly Earnings (mean ($), s.d.)	254.07 (78.1)	201.98 (84.1)	195.80 (118.3)
On Farm Housing	9.0	22.2	26.4
Own	22.5	41.3	46.6
Employer Provides Housing Rent Free	6.5	23.8	20.2

Table 13

California	NAWS Survey	Current Population Survey	
		Sept - Dec	Year
Sample Size	243	36	99
Hispanic	95.3	69.4	74.7
Mexican	79.1	61.1	65.7
Mexican-American	11.1	8.3	9.1
Black	0.0	0.0	0.0
Other Nonwhite	12.7	2.8	0.2
Age (mean, s.d.)	35.5 (12.7)	32.7 (10.1)	33.5 (12.6)
Married, Living with Spouse (%)	56.0	50.0	50.5
Female (%)	20.1	27.8	16.2
Education (mean, s.d.)	5.7 (3.2)	8.7 (4.7)	8.5 (4.2)
Children (mean, s.d.)	1.5 (1.4)	2.1 (1.9)	1.3 (1.6)
Crops	93.8	69.4	72.7
Union Member (%)	NA	2.8	2.0
Paid by the Hour (%)	73.0	50.0	61.6
Hourly Earnings (mean ($), s.d.)	5.09 (1.3)	4.92 (2.0)	5.26 (2.2)
Usual Weekly Hours (mean, s.d.)	51.3 (13.2)	42.1 (13.8)	39.7 (13.5)
Weekly Earnings (mean ($), s.d.)	261.45 (90.2)	204.97 (90.9)	205.70 (103.2)
On Farm Housing	7.6	13.9	19.2
Own	21.8	27.8	36.4
Employer Provides Housing Rent Free	6.9	16.7	10.1

Table 14
Hypothesis Tests

		Non-Hispanics		
	All	Whites	All	Hispanics
Degrees of freedom:	902	280	362	520
ln wage (F)				
Region	1.30	0.78	0.64	80.41*
Demographics	2.83*	1.61	2.51*	0.25
All but constant	2.59*	1.05	1.71	111.13*
All	4.90*	1.69	3.00*	176.86*
Usual hours (F)				
Region	3.60*	1.00	1.11	5.75*
Demographics	1.63	1.47	0.50	1.89
All but constant	2.94*	1.32	0.80	4.17*
All	6.69*	2.57*	2.24*	14.62*
Paid by the hour (χ^2)				
Region	3.82	3.96	4.99	1.01
Demographics	6.48	13.28*	8.62	2.84
All but constant	11.33	14.65	10.06	4.10
All	22.19	15.34	13.95	7.30

* Indicates statistically significantly different at the 0.05 level.

Notes: For the χ^2-statistics, the degrees of freedom for Region are 6; for Demographics are 6 for the entire sample (includes black and Hispanic dummy variables), 5 for non-Hispanics (includes black dummy variable), and 4 for Hispanics; for All-but-constant are 12 for the entire sample (includes region and demographic dummies), 11 for the non-Hispanics subsample, and 10 for the Hispanic subsample; and for All are 13 for the entire sample, and 12 for the non-Hispanic subsample, and 11 for the Hispanic subsample. For the F-statistics, the first degree of freedom is the same for all samples, and the other degree of freedom is shown at the top of the table.