

The National Agricultural Workers Survey: Its Strengths and Making It Stronger

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The National Agricultural Workers Survey (NAWS) randomly samples U.S. hired seasonal crop workers, collecting demographic, employment, and health data in face-to-face interviews. This note briefly discusses the history of the National Agricultural Workers Survey (NAWS), its strengths, and how it could be made even more useful for both government policy and research.

The NAWS grew out of the debate on the Immigration Reform and Control Act (IRCA) of 1986, which provided amnesty to certain seasonal agricultural undocumented workers (among other effects). During the debate on IRCA, farmers intensively lobbied Congress because that they feared that the law would cause many of their employees to leave agriculture. Consequently, the final version of IRCA directed the Secretaries of Agriculture and Labor to determine if farmers faced a shortage of seasonal agricultural workers (SAWS) annually. The Department of Labor (DOL) was charged with estimating the availability of seasonal farm labor.

NAWS data are also relied upon to monitor the terms and condition under which such workers are employed, to provide regional estimates of the share of farm workers who are eligible for training and employment services through the Employment and Training Administration's National Farmworker Jobs Program, and to estimate the sizes of populations eligible for assistance via farm worker and farm worker-related programs.¹

This brief note discusses the current NAWS sampling methodology, the questions that we can use the NAWS to address, and some suggestions for modifications of the NAWS survey and sampling methodology.

Sampling Methodology

Richard Mines (DOL) and others realized a new approach to surveying seasonal farm workers was necessary.² A key reason why the DOL created the NAWS was that the existing survey used a methodology that was likely to seriously undercount SAWS. The key methodological innovation in the NAWS is to select workers based on their place of employment, rather than on the residence of workers, the methodology traditionally used.

¹ The Federal Government currently allocates approximately \$1 billion per year to programs administered by the Department of Health and Human Services (Migrant Health and Migrant Head Start), the Department of Education (Migrant 1 Education), and the DOL (National Farmworker Jobs Program).

² Disclaimer: Near its inception, I provided advice on the NAWS methodology to Richard Mines and Susan Gabbard (then with Aguirre International).

Current Population Survey Methodology

Prior to the introduction of the NAWS in 1988, the only continuing national survey of agricultural workers was the Census Bureau's Current Population Survey (CPS). The CPS collects information on employment and demographic characteristics of the general population.

A supplement was added in 1977 covering people who did farm work. While the CPS is conducted monthly, the agricultural supplement was collected only once a year in a season when relatively few seasonal workers were active.

The housing-centric CPS methodology is not well suited to studying seasonal agricultural workers. The CPS randomly samples by housing units. Workers are selected by where they live, focusing on standard housing units. As many seasonal agricultural workers migrated throughout the country and lived in non-standard housing, the CPS survey missed them.

Though the CPS is supposed to include all types of housing, several critics argued that agricultural workers who live in non-standard housing units or who may be illegal tenants or sub-tenants are likely to be missed. 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. 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.

NAWS Methodology

The National Agricultural Workers Survey (NAWS) covers only seasonal agricultural workers, whom the U. S. Department of Agriculture defines as field workers in perishable crops. The initial purpose of the NAWS was to collect comprehensive job history information on SAWS to measure fluctuations in hours worked. The NAWS only surveys farmworkers employed in seasonal agricultural labor.

The use of an employer-based sample rather than a household-based sample increases the likelihood that migrant workers will be interviewed in the NAWS. In addition, the survey is designed to capture workers engaged in seasonal agricultural tasks by conducting interviews over three cycles (seasons).³ Because state and federal agencies use several definitions for "migrant" and "seasonal" workers, the NAWS collects data to allow analysts to use these various definitions.

To ensure regional coverage while keeping interviewing costs down, site (county) area sampling was used to obtain a nationally representative cross section of farm workers. Initially, the NAWS only covered 72 (60 in 1988) counties in 25 states, which were randomly selected from 12 distinct agricultural regions covering the continental United States. At least four counties were selected

³ From the beginning, the NAWS used three interviewing cycles (which may take up to 12 weeks to complete) each year beginning in January, May, and September.

from each region. The NAWS still uses multistage sampling in which a given geographic area is randomly selected in each cycle (see www.doleta.gov/naws/pages/methodology/ for an overview of the basic methodology today). Out of its 497 farm labor areas (counties or a small group of counties) today, it samples 90 or more in a given cycle.

To be interviewed, workers must be hired by an eligible establishment and working at an eligible task: crop production or support activities for crop production. Eligible tasks include work in pre-harvest, harvest, and post-harvest activities, as well as supervising workers (if working with the crew), operating machinery, and packing crops. However, workers who field pack crops are sampled, which those working in packing shed are interviewed only if employed on or adjacent to the sampled crop producer, and the facility is owned by and primarily packs crops for that producer.

Since its beginning, the fundamental focus of the NAWS has been on recording the employment and demographic characteristics of SAWS. More recently, questions on health and other issues have been added.

Comparison of the CPS and the NAWS

Both the CPS and NAWS rely on interviews of individuals rather than employers. The NAWS includes only people currently working in seasonal agriculture, whereas the CPS has a cross-section of most of the entire population (including people who are in school, unemployed, or otherwise out of the labor market).

Because of differences in sampling methodologies, geographic weighting, and timing of interviews, the two surveys have some differences. A comparison of the CPS and the NAWS from the time of the first NAWS interviews indicates that these varying methodologies matters result in somewhat different characteristics of the workers covered:⁴

- NAWS workers had less education and lived with fewer family members (consistent with the difference in the sampling approach.)
- The NAWS covered a larger proportion of Hispanics but a lower proportion of blacks.
- Most other basic demographic variables were similar (age, fraction who are married, characteristics of children).
- Both surveys found that four out of five employees work on crops (with the NAWS finding the rest in horticulture, while the CPS found few horticultural workers but many agricultural service workers).
- A larger percentage of surveyed individuals in the NAWS were in the West, particularly in California (where pay is higher and hours longer).

⁴ The following is based on Susan M. Gabbard, Richard Mines, and Jeffrey M. Perloff (1991), "A Comparison of the CPS and NAWS Surveys of Agricultural Workers," IRLE Working Paper No. 32-91. <http://irle.berkeley.edu/workingpapers/32-91.pdf>. See also Rick Mines, "Comparing the Characteristics of Farmworkers in the NAWS and the CPS," manuscript, October 23, 1998.

- NAWs workers earned 8% more per hour than CPS workers and worked 19% more hours per week (though these differences weren't statistically significant at standard confidence levels).

Research Questions

What questions can we examine using NAWs?

The initial key question for the NAWs was whether we would have a shortage of workers. The NAWs was supposed to determine the supply of SAWS and the Department of Agriculture was supposed to determine the demand for SAWS. Obviously that method was inherently flawed—for example, it ignores the effect of wages on the number of workers supplied and demand—but it was dictated by Congress. The NAWs can be used to examine questions about the composition of the labor force (the DOL puts out regular reports on the composition), but its methodology is not ideally suited to count the number of workers. It has been used to examine farmers' initial fear: Will a change in legal status cause workers to leave agriculture?

The NAWs has led to much fruitful research completed or underway. Here's a partial list of topics:

- *Piece rate*: Which workers are employed in piece rate and which are compensated hourly?
- *Legal status*
 - How does the legal status affect wages, earnings, and hours of SAWS?
 - How does turnover (entry and exit from farm work) in agricultural labor markets vary with legal status?
 - Which employers are more likely to hire undocumented workers?
 - How does legal status affect which SAWS live with their families?
 - How does legal status affect which SAWS settle in the United States?
 - How does legal status affect type of housing of SAWS?
 - How does legal status affect the income distribution among SAWS?
- *Employment*: Effects of wages, benefits and working conditions:
 - What determines retention and duration of employment of SAWS?
 - Which SAWS work for farmers and which for farm labor contractors?
- *Efficiency Wages*: How do employers use efficiency (high) wages and deferred payments to retain top workers?
- *Migration*
 - Which SAWS migrate within the United States and which stay put?
 - Why has the migration rate of SAWS plummeted in recent years?
- *Minimum Wage Laws*
 - What effect does minimum wage laws have on agricultural wages?
 - What is the impact of the minimum wage on health insurance?
- *Health*
 - What are the effects of field sanitation laws on sanitation and on workers' health?
 - What effects does the Affordable Care Act have on the health care and health of SAWS and their families?

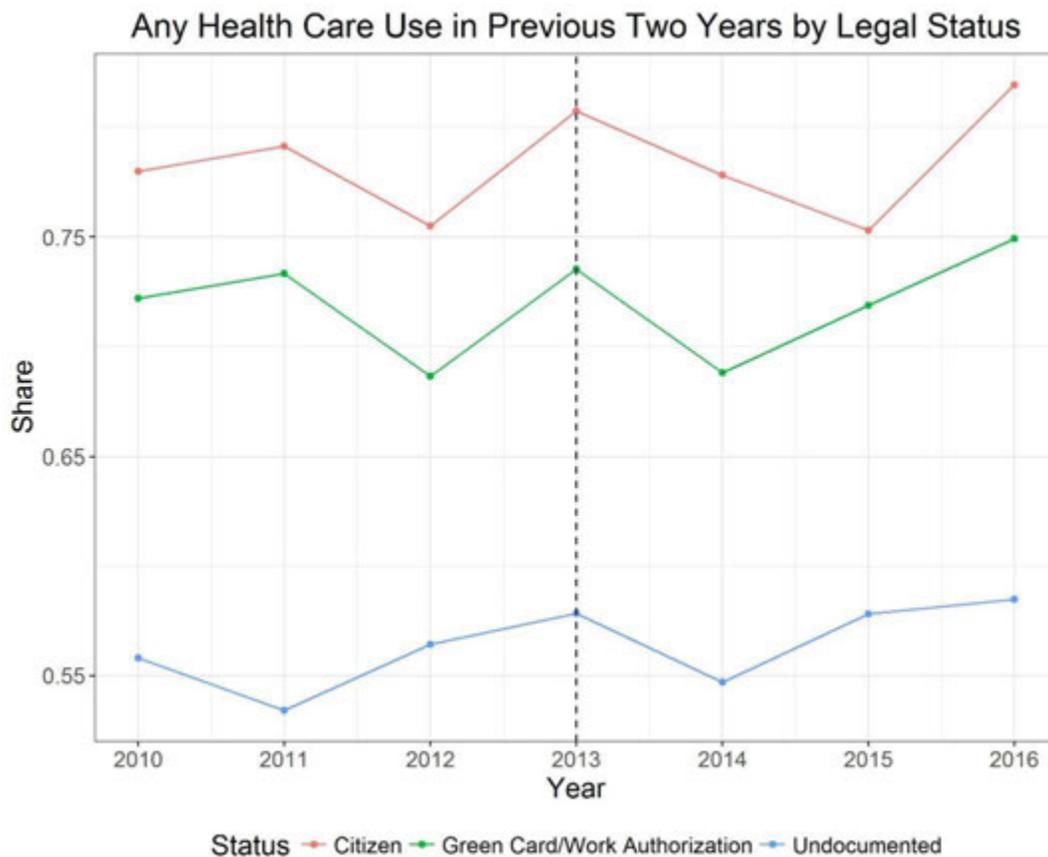
How is occupational exposure related to health among SAWS?

- *Welfare*: Do undocumented SAWS make use of public transfer programs or private aid?
- *Recessions*: What effect do recessions have on agricultural labor markets?
- *Testing*

Is the Borjas legal-status imputation algorithm biased for SAWS?

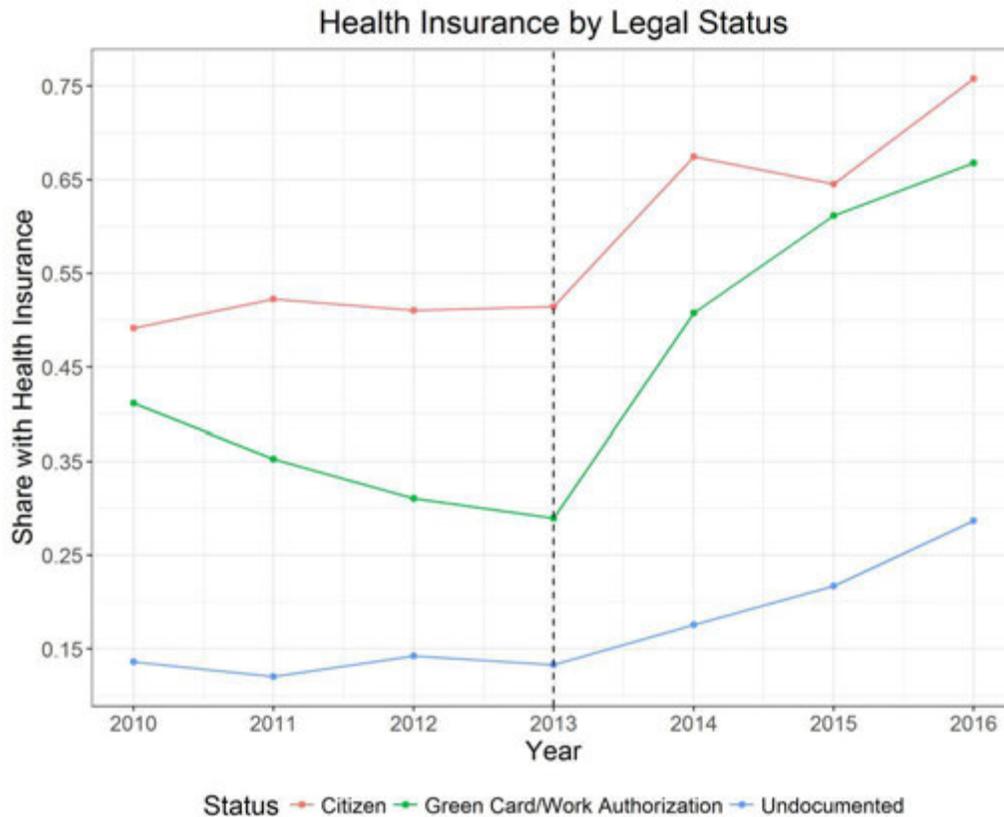
Are growers' estimates of the share of undocumented workers accurate?

Notice that the NAWS can be used to examine both questions at the individual level and at an aggregate level. For example, we can investigate how occupational exposure affects the health of individual SAWS. We can similarly look at how health care usage (services from doctors, nurses, dentists, clinics, or hospitals in the United States) in the previous two years varies by legal status.⁵



But we can also use aggregate data to examine how the Affordable Care Act affected the share of SAWS with health insurance by legal status.

⁵ This figure and the following one are from ongoing research I am conducting with Kwabena Donkor and Susan Gabbard.



Extending the NAWS Coverage, Sampling Methodology, and Survey Design

The ideal sampling and survey depends on the questions that we want to answer.

To examine some new issues (e.g., effects of training or digital literacy), all we have to do is add additional questions to the survey. However, to address other issues (effects of a wage differential between agriculture and other sectors on SAWS), we would need to modify the NAWS methodology.

New Questions

Over time, the NAWS has added new questions to examine a number of important public policy questions. The list of potential topics is very long. I will mention just a few important topics.

The NAWS has added or will add questions on health decisions and education and training programs.⁶ However, more focused questions are necessary to identify and measure the effects of various types of insurance, training programs, and so forth on workers' well-being and labor market decisions.

⁶ www.doleta.gov/naws/pages/overview/docs/NAWS_Justification.pdf.

For example, the health variables refer to health over a worker's lifetime and not health conditions at the time of the interview. We could certainly use more details on current health conditions of workers and their families.

The NAWS does not collect sufficient information to allow us to connect working conditions with current health conditions. More detailed information about agricultural tasks and personal hygiene practices (particularly with respect to pesticide exposure) would allow us to better evaluate workers' risks.⁷

More detailed information on education and training will allow us to examine the effect of these programs on earnings, hours worked, and other decisions by workers. Similarly, new questions on digital literacy would facilitate evaluations of the cross-agency federal digital initiative under the National Broadband Plan.

An extremely important issue that is constantly debated concerns the use of government and private welfare and other assistance by undocumented workers. By collecting more detailed information on not only which assistance they receive but why they made use of one or another type of assistance would be very useful.

If feasible, collecting information about workers beliefs about their risks from government immigration enforcement could be extremely valuable. For example, it could help us determine why people choose to work at certain jobs, in certain states, or make other decisions. Perhaps it would help explain what the rate of migration of SAWS within the United States is plummeting over time.

On a purely technical note, obtaining more "exogenous" variables to explain which workers are likely to be undocumented would be very valuable for academic research.

Obviously adding questions without end would raise the cost of the NAWS and would make participation by respondents more challenging. However, we can add and subtract questions over time. We can also use different questions for various subsamples of the NAWS.

New Methodology

Many questions that we care about require us to examine workers' decisions over time (e.g., migration, health care decisions, whether to work for a farmer or a farm labor contractor, education decisions) and the effects of differences between workers in various agricultural activities and with legal status. I'll discuss why extensions of the NAWS sample in three ways may help answer a variety of questions.

If we want a complete view of the employment history of agricultural workers and their migration patterns, we should expand the coverage of the NAWS. The NAWS interviews only hired

⁷ In 2013–2014, in cooperation with the Environmental Protection Agency, a special supplement investigated some aspects of this issue. Workers were asked how long they were actually working with crops during the day (i.e., not on break), how soon after leaving work that they showered, and what type of clothing they wore and whether the clothing they were wearing had been worn the day previously and if so, had it been washed.

employees who are currently working in seasonal agriculture. Farm workers who have been out of work for over a year are not interviewed.

For many different important policy and research questions, the NAWS has two limitations: it does not survey many agricultural workers, and it does not follow workers over time.

Cover More Types of Workers

First, the NAWS surveys only some seasonal agricultural workers. It does not include agricultural workers

- with a H-2A visa (for temporary employment of foreign agricultural workers),
- who are not involved in seasonal crop work (those who work with livestock, program crops, or other areas of agriculture),⁸
- who are not currently employed in agriculture (e.g., because they are recovering from injury, searching for a job, move from one area to another, engaged in non-seasonal agricultural work, or working in another sector).

Ideally, we would like to know how relatively unskilled workers move between seasonal agriculture, other areas of agriculture, and other sectors. For example, we would like to know how many people work in seasonal agriculture during peak demand periods, such as harvest time, but work as laborers in construction or in the service sector at other times.⁹ We would like to be able to determine what affects movements between these sectors, such as relative wages. Similarly, by including H-2A workers, we could examine how and why employers substitute between H-2A and other workers. (Given that the number of H-2A positions have more than doubled over the last decade and a half, we should pay more attention to their role in agricultural labor markets.)

Follow Workers Over Time

Second, the NAWS no longer collects much information from a given worker over time. Originally, the NAWS followed workers over time. In various years, the NAWS has collected work and health histories of various lengths (“time-series” information) by asking workers retrospective questions. (I don’t know about you, but I sure don’t trust my memory to accurately describe what I was doing over the last year.)

⁸ The DOL broadly defines “seasonal.” Currently, the NAWS surveys anyone working on “crops” defined by North American Industry Classification System (NAICS) 111: Crop agriculture, which includes cash grains and row crops, fruits, vegetables, miscellaneous. It also cover all of NAICS 1151: Support activities for crop agriculture which include farm labor contractors, crop dusters and a host of other activities in which the person engages in field work (including aerial spraying).

⁹ The NAWS does collect retrospective data for the previous year. It appears that most respondents continue to work in fields related to agriculture, such as food processing, when not working in seasonal agriculture.

Hired agricultural workers typically have a series of short-term jobs. When a particular crop has been picked, they need to search for a new job. These workers may move between various areas of the country following crops' harvesting patterns, visit relatives, spend time in school, or move between agricultural work and other relatively low-skilled jobs such in the service sector or construction. We would like to be able to follow workers as they migrate between jobs and move in and out of agriculture.

To achieve a balanced view of this workforce—in statistical-speak, avoid sample selection bias—we need to know about the workers whom we miss because they are temporarily not working in seasonal agricultural jobs. By only surveying currently employed SAWS, we risk over-sampling

- the best workers who are employed for an extended period of time with one employer,
- workers with limited English skills who do not work outside of agriculture (perhaps),
- people who work as a family group,
- or other people with special characteristics.

Moreover, if we could follow workers over time, we could investigate many important questions.¹⁰ For example, we could determine how changes in the relative wage in agriculture to those in other sectors affected the availability of agricultural workers. We could better examine how workers' health care decisions were affected by the Affordable Care Act.¹¹ We could investigate whether farmworkers' health is deteriorating over time, or they are more likely to go to the doctor over time. We could obtain more insight into why the rate at which SAWS migrate within the United States has fallen precipitously in recent years.

Even if we cannot follow the same worker over time, we could benefit from following workers in a given area systematically over time. Currently, the NAWS has 497 farm labor areas but samples 90 of them in a cycle. Thus, we do not have repeated samples from a given area over time. Rather, we are surveying workers from different areas in each successive cycle.

¹⁰ Sampling people over time may be feasible. The NAWS was initially a panel study, designed to measure the changes in the number of days that individuals worked in agriculture. For three years, NAWS conducted follow-up interviews with the initial sample. In the first year, there was not enough time to wait for a year's worth of data, so the estimate on the number of changes was based on a six month follow up. The response rate was 84%. The NAWS conducted annual follow ups for next few years. Workers sampled in 1989 had both 6 and 12 month follow ups. Workers interviewed in 1990 and 1991 had one-year follow ups. The response rate for the one-year follow ups was 75%, because that was the number specified in the contract.

¹¹ Currently, the NAWS asks about workers' most recent past health event but provides information about whether the workers have health insurance on their current job. Similarly, we know the state in which workers currently are employed, but not where they were during that health event, hence we do not know about their coverage under the Affordable Care Act.

Extensions of the Sampling Methodology

How could we collect such data? First, we would need to survey a larger universe of workers—not just SAWs. Second, we would have to repeatedly survey the same worker over time or at least survey workers in the same local labor markets each period.¹²

Of course, collecting from a given worker over time is unusually challenging for this highly mobile population that is relatively isolated from digital media. However, by providing financial incentives for such workers to stay in touch over time, it may be possible to survey them repeatedly.

I doubt that funds are available to construct the ideal data set. However, we have some less costly alternatives. One possible compromise would be to continue with the current methodology for most of the sample, but to shift some funds to examine H-2A workers and to follow some workers over time (or to survey certain geographical areas each cycle).

Depending on the question—especially measuring the effects of new or changed government policies (such as the Affordable Care Act, changes in Immigration and Customs Enforcement, and building walls along the border)—we want to examine, following workers over time might lower surveying costs. We learn much more from repeated samples of the same worker over time than from examining different worker each period, so that we might be able to get statistically reliable information by interviewing fewer workers.

Robert Hall, in his study of the experimental negative income tax on labor supply, compared the effectiveness of using information about individuals at a point in time (cross-sectional data) versus information about individuals over time (time-series data).¹³ He argues that comparing a person who is subject to a program (or law) to those who are not contains less information than examining that person before and after exposure to this program. That is, we want to let people “serve as their own controls.” For this experiment, he concluded that properly constructed time-series information on 200 families would have provided the same amount of information as was collected from cross-sectional information on 1,200 families.

Employers

Third, we could collect information from workers’ employers.

¹² Sampling people over time may be feasible. The NAWS was initially a panel study, designed to measure the changes in the number of days that individuals worked in agriculture. For three years, NAWS conducted follow-up interviews with the initial sample. In the first year, there was not enough time to wait for a year’s worth of data, so the estimate on the number of changes was based on a six month follow up. The response rate was 84%. The NAWS conducted annual follow ups for next few years. Workers sampled in 1989 had both 6 and 12 month follow ups. Workers interviewed in 1990 and 1991 had one-year follow ups. The response rate for the one-year follow ups was 75%, because that was the number specified in the contract.

¹³ Hall, Robert E., “Effects of the Experimental Negative Income Tax on Labor Supply,” in Pechman, Joseph A., and Michael P. Timpane (eds.), *Work Incentives and Income Guarantees: The New Jersey Negative Income Tax Experiments*, The Brookings Institution, 1975.

In contrast to the greater expense of collecting data on more types of workers or from the same worker or area over time, we have one very inexpensive extension that would be valuable: collect information from employers. Currently, before employees can be interviewed, the NAWS has to contact employers to identify their employees. At the same time, we could ask employers about which commodities they are currently producing, the total number of workers they employ, other farm size measures, whether they also pack, and other information. We could also ask about whether they use piece rates and other information that we collect for workers as a check on the accuracy of workers' responses.

This new information would allow researchers to examine a variety of questions such as why compensation and job tenure vary across types of farms and commodities.

Releasing Data

One final suggestion concerns making better use of the NAWs by researchers. The survey would be much more valuable if we instituted a regular data release schedule. Also, research studies would be based on more timely data if the data were released sooner after their collection.

Conclusions

The current NAWS methodology provides us with the best, national random sample of seasonal agricultural workers. Research based on this data set has been valuable in national debates on public policy.

As valuable as it has been, it could be made more valuable by including additional question, expanding the coverage (particularly to other agricultural jobs and the H-2A workers), and collecting information from some or all workers over time.