

Measuring Employee Hours in Government Surveys

Prepared by the
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I. Introduction

A. Background

At the December, 2000 meeting of the Federal Economic Statistics Advisory Council, an interagency team of behavioral scientists from the Bureau of Labor Statistics (BLS) and the U.S. Census Bureau discussed the use of cognitive methods to improve establishment survey questionnaires (Cognitive Interagency Working Group, 2000 and O'Brien, Fisher, and Goldenberg, 2001). The paper prepared for the presentation included a review of cognitive theory as it pertains to survey research, descriptions of several cognitive methods, and an application of two of these methods in the evaluation of a questionnaire used in BLS's Current Employment Statistics survey program. Attendees at this session indicated that further investigations of establishment surveys using cognitive methods would be desirable. In particular, one suggestion was to evaluate how the same concept was operationalized in the questions and instructions across several government surveys.

After considering several concepts, it was decided that the team would explore the measurement of employee hours in both BLS and Census Bureau surveys. We identified the following surveys that collect employee hours:

- Current Employment Statistics (CES) Survey at BLS
- Hours at Work Survey (HWS) at BLS
- Occupational Safety and Health Survey (OSH) at BLS
- Employer Cost Index Survey (ECI) at BLS
- Annual Survey of Manufactures (ASM) at the Census Bureau (which is also part of the Economic Census for manufacturing industries during the census years)
- Economic Census of Mineral Industries (CMI) at the Census Bureau
- Survey of Plant Capacity and Utilization (PCU) at the Census Bureau.

Although all of the surveys were analyzed, the focus of this paper will be on the CES, ASM, and CMI. These are the surveys that publish estimates of employee hours. The HWS and ECI will be discussed where appropriate.

The research was done in three stages. Once we identified the surveys, the team conducted an expert review of the questionnaires. At the next stage, focus groups were held with

program managers, program staff involved in data collection, and users of the measures of employment and employee hours. The final stage involved a comparison of the selected data items from CES, ASM, and CMI.

Following this introduction, we briefly describe the surveys discussed in the paper. In Section II we turn to the methods used across all stages of the research. Section III presents the results of the analysis, and it includes a discussion of the prospects for measuring all employee hours. Because comparisons between estimates are limited to manufacturing and mining, we do not address measurement of nonsupervisory employees in the analysis. Section IV contains a comparison of the actual estimates from the surveys. The final section draws conclusions and asks several questions about future work in this area.

B. The Surveys

This section provides a brief background on the surveys covered in this analysis to help put the results in context.

CES. The Current Employment Statistics survey is a monthly BLS survey with a sample of approximately 370,000 business establishments, and is the source of data on over-the-month change in U.S. payroll employment, hours, and earnings, by detailed industry. For purposes of this research, the survey collects total employment, production (or nonsupervisory) worker employment, and production (or nonsupervisory) employee hours. Panels of respondents report monthly, some by mail or fax, some by Computer Assisted Telephone Interview (CATI). The majority of respondents participate by Touchtone Data Entry (TDE). Regardless of mode, CES respondents use questionnaires tailored to their establishments' industries to compile information. This research examined the CES Manufacturing and Mining questionnaires, which are identical except for the specifications of production workers.

HWS. The Hours at Work Survey is an annual BLS mail survey of about 6000 employers, with a sample drawn from the BLS ES-202 Longitudinal Database. The purpose of the survey is to generate ratios of hours worked to hours paid, which feed into BLS productivity analyses. Ratios are computed at the SIC major division (2-digit) level. The survey collects total employment, which it benchmarks to the CES; production or nonsupervisory worker employment; and total hours worked and hours paid for the production workers at the establishment during the previous year. No employment or hours data based on the HWS are published.

ASM. The Annual Survey of Manufactures (ASM) is a panel survey of establishments in manufacturing industries conducted annually by the Census Bureau. It consists of a mail-out/mail-back survey of approximately 55,000 selected establishments, supplemented by administrative data for small employers and new businesses. The mail survey represents all establishments that received a form in the previous economic census for manufacturing industries. The ASM is conducted as part of the Economic Census during the census years, which end in 2 and 7. At that time, comparable data are collected from all manufacturing establishments above a specified size. For purposes of this research, the ASM (and the quinquennial Economic Census for manufacturing industries) obtains and publishes information on total employment and on production worker employment and hours.

CMI. The Census of Mineral Industries (CMI) is also part of the Economic Census, and is collected by the Census Bureau every 5 years during years ending in 2 and 7. From a universe of approximately 25,000 establishments, the mail component consists of approximately 15,000 of the large single-establishment companies and all of the multi-establishment companies with payroll classified in the Mining Sector. Estimates for the remaining 10,000 establishments are developed using industry averages in conjunction with data that are obtained from administrative records of other Federal agencies. The CMI uses essentially the same questions and instructions as the ASM (except for quarterly employment) to collect information on employment, production worker employment, and production employee hours. Published CMI data include total and production worker employment for the first quarter and annual production employee hours.

ECI. The Employment Cost Index (ECI) is a quarterly index that measures the change over time in the cost of labor, free from the influence of employment shifts among occupations and industries. It measures that change for total compensation (wages, salaries, and employer costs for employee benefits), for wages and salaries only, and for benefit costs only. The ECI is collected from establishments in both the private sector and the Federal Government. Specific job categories are selected to represent broad occupational categories within a participating establishment. The ECI is being integrated into the National Compensation Survey (NCS) beginning in 2001 and will be collected from a subset of the NCS sample. About 18,000 units in the NCS sample have been designated as wage plus benefits schedules, and these units will

comprise the sample for the ECI.¹ Employee hours are collected for all the occupations covered by the survey, not just for production occupations.

II. Methods

A. Expert Review

The preliminary step in evaluating the concepts under study was an expert review. In general, expert review is a process by which experienced and knowledgeable content or methods experts apply a systemic approach to evaluate a topic or content area. For the purposes of this study, the team reviewed the surveys shown in Section I and assessed the way the concepts of “all employees”(or "total employment"), “production workers,” and “employee hours,” have been operationalized.

As we worked our way through the Expert Review, we identified three dimensions along which to evaluate the different concepts. These are:

- The survey reference period.
- The strategy for asking questions on the survey instrument or data collection form.
- The strategy for asking questions in the instructions for the survey.

The product of this activity is a summary of definitions and the differences and similarities in operationalizing each of the study concepts (See the Appendix.). Information gained from the expert review was used to generate a series of questions to be addressed with informed advisors in group discussions.

B. Meetings with Advisors

Two meetings were conducted with expert advisors, who were generally program managers or similar level representatives for each of the surveys under review. The first meeting took place with two advisors from the Census Bureau, and represented three of their surveys: the ASM, the CMI, and the PCU. A second meeting was conducted at the Bureau of Labor Statistics with four advisors, representing the CES, the HWS, the OSH, and the ECI.

Study team members used questions identified during the expert review to query the advisors. Questions covered the background and history of the survey, previous approaches to

¹ ECI data collection procedures differ from those of the other surveys. The program does not use a fixed data collection instrument or single set of questions, but rather depends on trained field economists to obtain data meeting survey specifications from employer records. For this reason, we did not include the ECI in the expert review. An ECI representative participated in the Survey Advisors meeting, but because of scheduling constraints the program was not represented in the focus groups.

assessing the construct, problems in current operationalization(s), issues associated with collecting data from respondents about each concept, and how the survey used each of the key concepts. In addition, advisors were asked whether they had plans to consider changing the current operationalization of the concepts or data collection procedures.

C. Focus Groups

Overview of Focus Group Methods. Focus groups are guided discussions conducted with a small number of individuals selected because they are members of a target population. A moderator guides a focus group discussion using a discussion guide. The purpose of a focus group is to collect the opinions, attitudes, and beliefs of participants about a given topic or issue.

Focus Group Composition. Participants were recruited for three focus groups: one group with staff from each agency involved in the day-to-day operations of collecting and producing the data (the “producer focus group”), and two groups with users of the data (“user focus groups”). Eight agency staff members participated in the producer focus group and a total of nine data users, primarily economists from BLS, the Bureau of Economic Analysis (BEA), the Census Bureau, and the Federal Reserve Board (FRB), participated in the user focus groups.

Focus Group Protocol. A protocol was developed as a guide to structure each discussion. The protocol contained specific questions that were intended to promote the flow of ideas, encourage expression of participants' opinions, and address issues of particular importance to the participants relative to the topics under study. Table 1 shows the topics addressed in the producers' focus group. Topics for the two user groups appear in Table 2.

TABLE 1: Topics for Producer Focus Group

FOR “TOTAL EMPLOYEES” AND “PRODUCTION WORKERS,” RESPECTIVELY:	
<ul style="list-style-type: none">• What the concept represents in the data collection process• What elements are included and excluded• How the concept is currently measured and how it has been measured in the past	<ul style="list-style-type: none">• Problems respondents have providing data for the concept• Users’ opinions about the quality of data collected for the concept• Procedures necessary to collect data a different way
FOR “HOURS WORKED” AND “HOURS PAID,” RESPECTIVELY	
<ul style="list-style-type: none">• How the concept is currently collected and how it has been measured in the past• Problems respondents have providing data for the concept• Users’ opinions about the quality of the data collected for the concept	<ul style="list-style-type: none">• Problems respondents have providing data for the concept• Procedures necessary to collect data in a different way
FOR “ALL EMPLOYEE HOURS”	
<ul style="list-style-type: none">• Whether the survey has considered collecting “all employee hours”• Benefits/limitations of collecting “all employee hours”	<ul style="list-style-type: none">• Ways to operationalize and measure “all employee hours”• Possible data users' interest in this concept

TABLE 2: Topics for User Focus Groups	
FOR “TOTAL EMPLOYEES,” “PRODUCTION WORKERS,” AND “EMPLOYEE HOURS,” RESPECTIVELY:	
<ul style="list-style-type: none"> • How data element is used • What components the user assumes are included within the concept • Consumers/audiences that access this data 	<ul style="list-style-type: none"> • What other users think about the data • Usefulness of the concept as currently measured • Other issues
FOR “HOURS WORKED” AND “HOURS PAID,” RESPECTIVELY	
<ul style="list-style-type: none"> • How data element is used • How user defines each concept • Comparison of concepts: similarities and differences • Concept most useful to user and reasons why this is so 	<ul style="list-style-type: none"> • Other users’ opinions about each concept • Does concept address user needs • How can measurement be improved for each concept • Other issues
FOR “ALL EMPLOYEE HOURS”	
<ul style="list-style-type: none"> • How users define “all employee hours” • Which data users would like to see “all employee hours” collected and why 	<ul style="list-style-type: none"> • Benefits/limitations of collecting “all employee hours” • How “all employee hours” could be operationalized and measured

D. Estimates

Using the data. When we began this project, we thought it would be instructive to compare estimates of data collected by BLS and the Census Bureau for the key concepts by industry. We anticipated being able to match up what should be similar data items, and to see the effect on survey estimates of any differences in conceptual bases. What we found, unfortunately, was a more complex situation.

Not all surveys publish hours data. While all seven of the surveys we reviewed collect data on employee hours, not all of them publish the data. Among BLS surveys, the CES publishes average weekly hours for production workers in mining and manufacturing industries. The HWS publishes ratios of hours worked to hours paid, figures that proved useful when we compared BLS and Census Bureau hours data. The ECI publishes data only for selected occupations. On the Census Bureau side, manufacturing production employee hours are available from the ASM, and from economic censuses for years ending with 2 and 7. Mining hours are available from the CMI for census years.

Industry. Economic statistics are generally obtained within and published by industry. The late 1990s have been a period of transition for industrial classification, marked by the shift from the Standard Industrial Classification (SIC) system to the North American Industry Classification System (NAICS). The two systems have different conceptual structures, and one consequence is that many of the industry categories are not comparable. The Census Bureau used NAICS codes for the 1997 Economic Censuses. Since Census Bureau economic surveys follow the census, they have published industry data on a NAICS basis since 1997. The CES will not publish on a NAICS basis until 2003. As a consequence of the different NAICS implementation schedules, we confined our analysis of estimates to 2-digit SIC-based data for manufacturing from 1996. For Mining, only available from the Census Bureau in years of the economic censuses (most recently 1997), we identified the NAICS industries that were available at the detailed 3- or 4- digit level in CES publications from 1997, and compared them.

Presentation of data. There are agency differences in presentation as well as differences in industrial classification structures. The most pertinent of these differences involves the presentation of hours data. The Census Bureau publishes total aggregate hours for production workers for the year, while the BLS CES survey publishes average weekly hours for production workers. We addressed the problem of aggregate work hours versus average weekly hours by converting both to a per worker annual figure. For Census, we divided the aggregate total hours by the number of production workers. We annualized the BLS weekly hours data by multiplying by 52, a decision that seemed reasonable given that BLS data include paid leave.

Comparing published estimates. We built a series of spreadsheets that allowed us to compare total employment, production worker employment, and production worker hours between the ASM and the CES and between the CMI and the CES. In the case of total employment, we used Census Bureau data that include employment from auxiliary establishments, because the CES data do not differentiate between auxiliary and other units. We looked at the CMI for 1997 and compared it to the CES, but unfortunately there were only a few NAICS mining industries that we could compare directly and that were also published in the CES. In all cases, we computed ratios of published Census Bureau employment and production worker figures to their published BLS counterparts. We also computed ratios of the normalized hours estimates. As a further analytic tool, we compared the Census Bureau:CES hours ratio to the hours worked:hours paid (HW:HP) ratios produced by the BLS HWS survey.

III. Results

A. The Concepts: Total Employment and Production Workers

Expert review. This research began with the intent to look at how the concept "employee hours" has been operationalized by different agency surveys. Almost immediately, however, it became clear that we could not look at hours without putting them into a broader context. Most of the surveys collect hours for production workers (or nonsupervisory workers), rather than for all employees. Therefore, we needed to look at how the surveys defined production workers. We found that some survey instruments requested this count as a subset of total employment, whereas others requested it as one of two components to be added to compute total employment. These different question strategies change the context within which the questions are asked. Therefore, we extended the expert review of employee hours to include the concepts of total employment/all employees, production or nonsupervisory workers, and production or nonsupervisory employee hours. We do not discuss results for nonsupervisory workers in this paper.

Establishment surveys conducted by or for U.S. government agencies are directed in the *Statistical Policy Handbook* to refer to "the payroll period containing the 12th of the month" (OMB, 1978). Most of the surveys we reviewed conform to this guideline, but do so for different points in the year. The ASM instructs respondents to include all employees reported to the Internal Revenue Service on IRS form 941. Beginning in 2000, however, the survey has asked employers to augment this figure with workers who might not be part of the 941 payroll but who are part of the establishment's labor force--"co-employees" or "leased employees." The CMI and the CES use payroll employment as their base for all employees. In addition, the CMI, the CES, and the HWS specifically exclude employees of contractors, while the ASM does not explicitly mention them.²

The team discovered that the Census Bureau and BLS surveys use different approaches to obtain total employment and production worker employment on their data collection forms. The CES questionnaire is a large matrix with a response row for each of 12 months. All Employees is

² Professional employer organizations (PEOs) that take over administrative responsibilities for a staff and "lease" the employees back to the establishment are a relatively new phenomenon. More research is needed, however, to determine whether or not employers consider PEO employees to be contractors.

one of the column headings, followed by its definition, and Production Workers follow in another column. HWS has questions with self-contained response spaces and built-in instructions, including one describing how to report total employment. Both the CES and the HWS use a "top down" strategy, in which they ask first for the total number of employees and then for the number of production workers. The ASM and the CMI also ask for employment on self-administered forms. These surveys follow a "bottom up" strategy, in which the survey first requests the number of production workers and then the number for "all other employees." On the ASM, the production worker component is the average number of production workers across four quarters. The respondent adds this average to the number of All Other Employees to compute total employment. Because of the bottom-up strategy, the ASM and the CMI forms explicitly collect All Other Employees, a component of employment not shared by the BLS surveys.

The team observed a variety of methods for presenting questions, definitions, and other respondent materials. The CES is short and relatively self-contained, with instructions printed on the back of the form. The HWS integrates the questions and instructions on the data collection form. The ASM and the CMI have separate instruction booklets. Our review assumes that respondents read and follow the instructions as they compile their data, although we know that this frequently does not happen. The ASM and CMI instructions have headings called Employment, which present global instructions describing who to count. In this sense the instructions offer a top-down strategy, which is different from what appears on the survey instrument.

All of the surveys discussed here have a similar sense of who is a production worker, but they employ different methods to convey that information. Each survey has a set of detailed "includes" and "excludes" for production workers. Some use bullet lists or short lists, while others present lists in paragraph format. We know from research over the past fifteen years that bullet lists are easier to read and understand than lists in paragraph format. We also see different words, probably intended to mean the same thing: line-supervisor level, working supervisor level, working supervisors who may be "in charge." The CMI defines production workers as "PRODUCTION, DEVELOPMENT, AND EXPLORATION WORKERS." This very specific-sounding title offers no information about who or what might constitute the employees who are to be counted here.

Advisors. Both the Census Bureau and BLS advisors noted that the core definitions for the employment concepts have been extremely stable over time, but the population being measured has undergone tremendous change. Any differences in the definitions in these surveys over time primarily reflect these changes. The advisors from the Census Bureau were most concerned with how well the current instrument designs capture the changing structure of employment arrangements between worker and employer, e.g. contract labor, leased employees, and temporary employees. Where ‘non-traditional’ employee arrangements are expanding or taking over a plant, they worry that the Census Bureau may "lose" plants on their sampling frames. There will be some attempt to measure the prevalence of these emerging employment arrangements in the ASM 2001.

The advisors indicated that “production workers” is an important data element collected on many BLS and Census surveys, and that its operationalization has been the same for many years. This finding emerged even though the advisors acknowledged that there have been a number of shifts in employment that might impact production worker data. Chief among these is the increase in the number of workers who are not actual employees of the establishment, such as leased employees and co-employees. It is still not clear whether the factory would have records documenting leased employee hours or what they are being paid.

The CES advisor estimated that approximately 70 percent of employers now use standard accounting or payroll software packages. Therefore, the CES (and other surveys) asks respondents if their staff can talk to payroll or accounting personnel who report for the establishment. The pervasive use of software packages may make it more difficult for respondents to provide production worker data, since the payroll packages seldom, if ever, have an option available to classify workers as “production workers.” Thus, respondents generally have to make this distinction themselves in some other way in order to provide CES with production worker estimates.

Producers. The first concern voiced by producers regarding data quality was respondent difficulty in computing simple sums and averages. These types of error are readily identified in automated edits whereas problems such as reporting data for the wrong pay periods are more difficult to detect. Because of the relative infrequency of the Census economic censuses and surveys, respondents are less familiar with the routine and logic of reporting employment for the pay period including the 12th of March. It is also the case that 5-8% of CES

respondents are new to the task each month. Producers noted that the timing of internal payroll reports was an impediment to firms reporting for the correct pay period in the CES. In the CES and other surveys mentioned here, producers indicated that respondents often use available records to estimate totals if information for the pay period of the twelfth is not available.

On the whole, this group of producers felt that establishments had little trouble reporting either all employees or production workers. A larger issue, they believed, was reporting for a designated sample establishment. Respondents sometimes have difficulty reporting for the sampling unit defined for a survey. One example was mentioned here in connection with the conduct of manufacturing censuses and surveys. The Census Bureau periodically sees respondents having a problem assigning employee numbers where two distinct business activities coexist at one location, e.g. a raw sugar operation (agriculture) and a sugar refinery operation (manufacturing).

Several survey producers remarked they were concerned that respondents would not call to obtain clarification about questions they were confused about. Another complication results from the fact that many establishments have third parties, such as contracted accountants or payroll companies, complete their government surveys. These third parties are unlikely to know the establishment's employee base well enough to be able to say who qualifies as a production worker and who does not.

Users. Generally, users understood the way the all employee concept is defined in the major surveys (CMI, ASM and CES). Users would like to include the self-employed, to get a better measure of macroeconomic activity, to produce more complete productivity estimates and so on. BEA, in particular, is interested in employment, hours, and earning measures for the self-employed. Other users would like to have contract workers counted both where they are paid *and* where they work in order to support better productivity estimation. Users and respondents are both somewhat frustrated by the use of the pay period of the 12th as a reference. Whereas respondents may be unaware of the logic using such a reference date, the users clearly would prefer a more complete measure of total employment, perhaps a monthly measure, rather than a sample of employment within the month. The concern with the current design is that it may miss within-month variability and events such as strikes or shutdowns.

Whereas producers and advisors were using the all employee number for benchmarks, for validity checks on sampled units, and as a key edit and frame variable, users were relying on this

figure as a key economic indicator. They use it, along with other elements, to measure economic activity at the industry and national level, to understand the business cycle, and to support macroeconomic models that forecast changes in the US economy. Because users favor timeliness over completeness of the data, they rely more on the CES than on the more comprehensive Census Bureau economic surveys and censuses.

A source of user frustration with the production worker data is that it is somewhat unclear who is currently included in the production worker estimate, in particular, whether contract, leased, and temporary employees are included. Users almost uniformly agree on a preferred definition of production workers that can be effectively summarized by one user's definition "as nonsupervisory people on the factory floor who are not managers." The preferred definition includes leased and contract workers. The data are not always this comprehensive. Users report that their optimal choice for production worker data would be to have number of workers, hours they worked, and person day figures available for each plant, and, ideally, to have this data for a month (preferably first to last of month).

B. The Concepts: Employee Hours

Expert review. Depending on the survey, employee hours means either *hours worked* or *hours paid*, but, except for the ECI, hours are collected only for production workers. Hours worked refers to all time spent on the job, including overtime, standby time, and time traveling between job sites (but not commuting). Hours paid includes paid time worked as well as various forms of paid leave. The Census Bureau surveys all collect hours worked. At BLS, the CES collects hours paid, perhaps because it is benchmarked to the ES-202, which collects total wages for hours paid. The HWS is a special-purpose survey that exists primarily to produce ratios of hours worked to hours paid, and so collects both. The reference period for work hours for the Census Bureau's ASM and CMI is the entire previous year. Among the BLS surveys, the reference period for the HWS is the entire previous year, while for the CES it is always the pay period including the 12th of a specific month.

Both question wording and question flow are issues for work hours items. The ASM asks for "Plant hours worked by production workers (Annual)", and uses the word "Total" as part of a subheading. The choice of "Plant hours" may be intended to convey the idea of work performed in a factory setting. The CMI specifies "Hours worked by production, development, and exploration workers in [year]," also with a subheading that begins with the words "Total annual

hours worked...." The different wording is reasonable given that development and exploration work, especially, could take place in processing plants or settings other than existing mineral extraction facilities. The CES asks for production employee hours paid, in a column headed "Production Employee hours: Report the total production employee hours paid, including overtime, for the pay period that includes the 12th of the month." The HWS strikes a similar note: "In [year], how many hours, including overtime, were all production workers paid directly from the employer? Annual Total, [year] (Include all production workers on the payroll at any time during the year.)"

Question flow also is an aspect of the hours data elements as they appear on their respective questionnaires. On the ASM and CMI, multi-part items dealing with payroll immediately follow the questions on employment and production workers. Although one of the subitems is production worker payroll, other subparts of the payroll item are not related to the number of production workers and also lie between production worker employment and the hours for those workers. The interruption could affect the way respondents seek out relevant records. While the CES also has a payroll question following the count of production workers, it refers specifically to production workers, so the context is the same. The HWS asks for production employee hours paid immediately after the number of relevant employees. As noted above, the HWS seeks both hours paid and hours worked. Since most employers have records on hours paid, but not necessarily on hours worked, the questionnaire gives respondents the option of reporting either hours worked or hours of paid leave.

The instructions reflect the question flow described above. Once again, instructions provide considerably more information about what is to be reported on some of these questionnaires than appears on the form itself. The CMI begins its directions by defining an hour worked "as the work of one person for 1 hour," and encourages respondents to use records if records are available. The direction has a bullet list of items to include, among which are "all hours worked or paid (except hours paid for vacations, holidays, or sick leave)" and "actual hours worked by an employee who elects to work during a vacation period." The expert review team found the first of these items a bit confusing, because we thought that time paid but not worked was paid leave, and that is specifically excluded. The ASM's directions are essentially the same as those for the CMI, but in paragraph form, with an important exception. While the CMI excludes contractor hours, the ASM tells respondents to include hours worked by co-employees.

Instructions on the BLS surveys for hours paid list various types of paid leave to include as well as regular work hours. On the HWS, hours paid excludes unpaid leave, unpaid meal time, and normal commuting time, while the direction for hours at work tells respondents to exclude the hours actually used for paid holidays, vacation, sick leave, etc. On the CES, the instruction tells respondents that hours paid is the sum of hours worked, hours paid for "portal-to-portal, stand-by, or reporting time," and hours of paid leave. There are no "includes" or "excludes" listed on the CES form.

Advisors. The meetings with survey advisors identified various complexities associated with employee hours. In addition to the hours worked-hours paid distinction, additional issues arose concerning hours worked and certain types of employee groups, such as piece workers. The CES staff believes that it is possible to obtain an hours estimate for piece workers, even though time is not the basis for their compensation. The HWS excludes piece workers and commission workers, because of the difficulty respondents have with estimating the number of hours worked or hours paid for these workers. On the Census Bureau side, the ASM excludes paid leave, and advisors thought this was because the ASM is using BLS definitions for the purposes of productivity measurement.

Producers. The data producers generally agreed that it was much easier for respondents to provide an hours paid estimate than to report on employee hours worked. All of the producers also reported that there were no significant planned upcoming changes in definitions or in ways of collecting hours information. Some producers reported that there is a substantial amount of missing hours data. This problem is more pronounced for nonsupervisory workers, but it also exists in the case of production workers in the manufacturing sector. Establishments often cannot provide this information, because they do not classify employees as production workers but, instead, make distinctions on the basis of hourly vs. salaried or exempt vs. nonexempt.

Users. Users were asked questions about hours paid and hours worked data and their preferences for different types of data in doing their economic analyses. The discussion indicated that there were some common interests in specific data elements among economists in different agencies, as well as some variation regarding what data users would like to have available to them. Users were also quick to point out that economists are aware of the missing information; indeed, many economists attempt to use proxy data to fill in gaps in existing data, or at least, attempt to account for how missing hours data affect their economic models.

Users were asked to specify the hours data they used and how they used them. A significant issue for these users was the difference between hours paid versus actual hours on the job. Users ranged in their description of their uses of hours data. One user reported that “hours are a cyclical indicator of the economy,” and that they “provide a better sense of overall demand for labor.” Another uses hours data to assess long-run growth, which he described as a key part of the economic forecasting process. A third user collects hours data from the CES to obtain a “production workers hour measure of input to factories,” and also accesses production worker hours data from the ASM and Census of Manufactures. He noted that although the ASM exhibited some sampling error on employment, he found it very useful to compare the CES and ASM production worker hours, because he believed they assess two very similar concepts.

When queried about their preferences for hours data, users almost uniformly reported they would most like to have “hours worked” available. On the other hand, hours paid figures are important to those studying employee earnings. A few economists would prefer to have both data elements available to them, that is, both an hours worked and an hours paid estimate, as the presence of both would give them the greatest amount of information. Further, an hours paid estimate could be used to help assess the economic value of actual hours worked. One economist reported he would like to have an hours worked figure, but would also like to have the benefits and hours paid data; this user utilizes ECI data to obtain benefits measures. BEA uses both measures, but its most critical need is for high quality estimates of compensation.

Users were asked to identify those components they believed should be included within an hours worked figure. Several users agreed that telecommuting and actual time at the job site should definitely be included. There was less agreement about commuting time to and from work and other time “off the clock,” such as work at home after hours. The users recognized the difficulty respondents could have estimating actual hours worked when at home (such as accounting for frequent interruptions).

Users differed in their opinions about how to collect hours data for certain employee groups where an hours worked figure is likely to be especially problematic, such as pieceworkers. Some of the users were unsure how to collect “hours worked” versus “hours paid” for these employees, while others stated they believed that hours data would still be meaningful, even if only as a “proxy” indicator of worker productivity.

When asked what could be done to improve current data collection activities in the surveys we studied, a number of economists reported they would like to obtain an “hours paid” figure for supervisory workers, as well as an hours worked figure. One economist noted that there is an approximately constant ratio between hours paid and hourly earnings; he was particularly concerned that the incidence of “off the clock” work might be cyclical and not reflected in hours paid data. As one economist pointed out, estimates of hours differ between the CES and the Current Population Survey (CPS), with the CPS figure being higher. One type of comparison made by some of the users was between the CES and CPS workweeks to determine whether there was cyclical variability in the gap between these two estimates.

Users were concerned that the hours series is not benchmarked to any other data and noted that movements in the data over time are especially important for this information. They are concerned about the potential effect on time series of a substantive change in data collected, despite the obvious potential gains to be made from such changes.

C. The Concepts: All Employee Hours

Advisors. We asked the advisors to consider the advisability of collecting a new item, hours for all employees. They pointed out several issues that would have to be addressed, including how the concept would be operationalized, whether it would be worth disrupting existing time series to collect this new information, and whether users would be interested in seeing this data.

The BLS is considering collecting hours paid for all employees, and may decide to do so in the future for both the CES and the HWS. The CES staff is particularly concerned about whether shifting data collection from production employee hours to all employee hours would result in increased measurement error in respondent reporting of hours paid. The ECI usually estimates hours for salaried workers, based on a standard workweek. An example of possible impediments to ECI’s collection of all employee hours would be unpaid “mandatory overtime,” which is unlikely to be readily collected from respondents. The ECI staff projects that a special protocol would be needed to capture these and other variations in hours data.

When asked whether it would be better to ask for component parts of all employee hours versus asking respondents for a total figure, the CES advisor indicated it would be necessary for them to ask for distinct components. This would especially be true when there are different payroll frequencies, for example, hourly versus salaried personnel could be paid on different

time schedules. Another important issue is that many user groups don't want to lose the production workers series. The HWS staff is concerned primarily with following the CES methodology, but they would prefer to ask respondents to generate one total estimate. The ECI staff doesn't want or need to collect all employee hours. Advisors expressed some agreement that users might prefer that BLS switch from collecting hours paid to collecting hours at work. Although there is a sense that government users would prefer all employee hours and all employee payroll data, there is also a significant concern that changes to current data collection activities would need to be minimal so as not to upset existing time series or disrupt the agencies' ability to meet user information needs. In any case, the costs and benefits of any changes should be weighed carefully, especially if most users are concerned with trends and not levels.

Regarding whether there are benefits and/or limitations to collecting all employee hours, the ASM advisor believes that records are not available for salaried employees. There is no record of whether ASM users have ever requested hours worked for all employees. The ASM does not, in general, receive too many questions about hours items. Instead, they get queries that focus on employment and payroll issues.

Users. Although data producers did not see much demand for all employee hours, users generally agreed that they would like to have all employee hours available to them, if possible. "All employee hours worked is the measure we want," said one user, echoing the sentiments of several of the participants. One of the most common drawbacks identified by users was the lack of hours data for supervisors, even though all acknowledged that it would be difficult to collect this information accurately.

Users derive needed figures in several ways. One uses information from the ECI benefit series. Another pointed out that, for service industries, BEA assumes supervisory workers work the same number of hours as nonsupervisory workers. Other users make the "leap" from blue collar to white collar to measure the hours of non-production workers, but agree that they sometimes miss some other worker groups such as janitorial or security workers.

Users recognized the difficulty of measuring hours worked by salaried workers but were unable to provide much in the way of solutions. There was some discussion of moving to an hourly/salaried concept, but some users were not sure this would solve the problem. Users pointed out that data reported for salaried workers often were based upon a 40-hour-work-week

model, and agreed that respondents are likely to find it difficult to accurately estimate how many hours salaried workers actually worked within a given week. Two users indicated that it was more critical for them to have hours worked data for supervisors than a general estimate of hours worked for all employees. Others would like to see monthly estimates of all employee hours, because this periodicity would allow them to use all employee data in the construction of their forecasting models and in observing ongoing economic trends. In any case, the users reported they would prefer an hours worked figure; as one said, “we live with” the hours paid figure. Most wanted to maintain the production worker series.

IV. The Data

Cognitive methods are useful for pointing out differences in concept definitions and the way these are operationalized on the survey forms, but it always pays to look at the data to see what else might be uncovered. Table 3 provides comparisons between the CES and ASM for total employment, numbers of production workers, and employee hours from 1996 in manufacturing industries.³ As noted in Section II, 1996 is the last year for which the Census Bureau published economic data on an SIC basis. At that time, there was not a systematic effort to collect information on “co-employees” on the ASM. The term “co-employee” was added to the collection instrument in 2000.

Under SIC classifications, establishments can be either operating establishments or auxiliaries. Auxiliary establishments are separate special-purpose establishments, such as headquarters, warehouses, laboratories, and repair shops that provide support services for operating establishments. Auxiliaries receive the same SIC classification as the operating establishments they serve, but the ASM only collects survey data from the operating establishments (manufacturing plants). In off-Census years such as 1996, the Census Bureau obtains auxiliary unit employment from a separate source, the Company Organization Survey. The CES makes no distinction between operating and auxiliary employment and gathers total employment data from its sampled establishments according to industry (SIC).⁴ To make the

³ CES data for 1996 were downloaded from the BLS Internet site and reflect annual averages, not seasonally adjusted, for that year. ASM data were taken from the PDF file of the 1996 Census Bureau publication, *1996 Annual Survey of Manufactures. M96(AS)-I. Statistics for Industry Groups and Industries*, downloaded from the Census Bureau Internet Site. Total employment comes from Table 1b.

⁴ Note that this changes under NAICS, because auxiliary units will have separate industry classifications that reflect their true economic activities.

two surveys' figures for total employment comparable, we included the employment in auxiliary units in the ASM total employment numbers. It should be pointed out, however, that the Census Bureau estimate for auxiliary workers in manufacturing was higher than the BLS estimate in 1996 (1.35 million vs. 0.8 million). We also computed the ratio of ASM to CES total employment. Notice that in some cases the ASM is higher and in others the CES is higher. For a majority of the industries, the two numbers are within 5 percent of each other. These discrepancies could be a result of the different ways the surveys go about collecting total employees as reported in Section III. Other possible explanations include sampling error and differences in the classification of units by industry.

In some cases, particularly for transportation equipment, tobacco products, and leather and leather products, the proportional differences in the two estimates are sizeable. The latter two are the two smallest manufacturing industries, and this could account for the large differences. This is not true for transportation equipment, where the difference might be a function of a sensitivity to the method of data collection, that is, the "top-down" versus "bottom-up" approaches. Again, it also could be the result of different classification schemes.

Parallel data are presented for production worker employment. The differences there are larger. The CES figures are usually greater than the ones from the ASM. Although many of the discrepancies are within 5 percent, they can range as high as 29 percent, and six of the industry differences are greater than 10 percent. These differences could be the result of the way the concept is operationalized in the two surveys, but could also be caused by the differences in the classification of operational and auxiliary units as described above.

The results in Table 3 indicate that, as would be expected, the average hours paid per year from the CES is larger than the average number of hours worked from the ASM. More interesting, a comparison between the ratio of ASM to CES production worker hours and the ratio of Hours Worked to Hours Paid from the HWS reveals that the former ratio is consistently larger than the latter.⁵ The correlation between the two ratios is a modest 0.4. Of course, it is possible that our efforts to make the two figures comparable were not successful, but it is just as likely that the methods for measuring hours worked in the ASM and HWS are not comparable. As we learned from our research, hours worked is more difficult to measure than hours paid.

⁵ Of course, the ASM and the CES were not designed to produce a ratio of hours worked to hours paid.

Table 4 gives the same information for comparing estimates from mining industries. In this case, only comparisons at the NAICS code level for selected industries can be made, and we were unable to obtain auxiliary unit information for these industries. Thus, the comparisons for total employment suffer. For production worker employment, the BLS numbers again are higher. There are discrepancies between the ratios of ASM to CES production worker hours and Hours Worked to Hours Paid from HWS, but they are in the opposite direction from those in manufacturing.

After analyzing these data, we recontacted our users from the focus groups. When asked about the differences we found, most of them again reported that they only use one of the surveys and not both. Some knew about the different treatment of auxiliaries in the two surveys, and some did not. Since most of the analysts are looking at changes over time and not levels, the levels differences are less important. They have observed about the same changes from both surveys. Being able to benchmark to universe files also reduces the concern. On the other hand, for those interested in knowing about the level of production worker employment, there are some rather large differences between the two surveys. Interestingly, some were not aware of the changes in the treatment of auxiliaries under NAICS, where they will be in a separate category as in the current ASM.

Table 3. Comparing CES and ASM for 2-digit SIC groups, 1996
(ASM All Employees include both operating and auxiliary establishments)

		CES AE	ASM AE	AE	CES PW	ASM PW	PW	CES PW	CES PW	ASM PW	ASM PW		BLS	Difference,
		Annual	(000s)	Ratio	Annual	(000s)	Ratio	Average	Average	Total	Average	Ratio	1996	(ASM:CES) -
		average		ASM:	average		ASM:	Weekly	hours paid	hours in	hours	ASM:	HWS	(HW:HP)
		(000s)		CES	(000s)		CES	Hours	per year,	millions	worked	CES	Ratio	
								Paid	52 week		per year		HW:HP	
									year		year			
Employment, not seas adjusted	SIC	1996	1996	1996	1996	1996	1996	1996	1996	1996	1996			
Manufacturing		18495.0	18665.6	1.009	12776.0	12167.8	0.952	41.6	2163.200	25010.2	2055.441	0.950	0.918	0.032
Durable goods		10789.0	10814.1	1.002	7386.0	7118.6	0.964	42.4	2204.800	14718.0	2067.541	0.938	0.915	0.023
Lumber and wood products	2400	778.4	758.9	0.975	639.6	612.8	0.958	40.8	2121.600	1248.6	2037.533	0.960	0.949	0.011
Furniture and fixtures	2500	504.3	527.0	1.045	398.4	414.2	1.040	39.4	2048.800	836.7	2020.039	0.986	0.932	0.054
Stone, clay, and glass products	3200	543.8	549.6	1.011	423.1	402.3	0.951	43.3	2251.600	835.8	2077.554	0.923	0.931	-0.008
Primary metal industries	3300	710.5	710.7	1.000	553.4	542.9	0.981	44.2	2298.400	1170.9	2156.751	0.938	0.913	0.025
Fabricated metal products	3400	1448.7	1529.0	1.055	1088.3	1114.4	1.024	42.4	2204.800	2338.8	2098.708	0.952	0.918	0.034
Industrial machinery and Equipment and computer equipment	3500	2114.6	2112.8	0.999	1320.9	1287.0	0.974	43.1	2241.200	2685.1	2086.325	0.931	0.916	0.015
Electronic and other electrical Equipment	3600	1660.6	1724.0	1.038	1056.0	1006.3	0.953	41.5	2158.000	2030.8	2018.086	0.935	0.915	0.020
Transportation equipment	3700	1784.9	1599.8	0.896	1209.6	1032.2	0.853	44.0	2288.000	2153.2	2086.030	0.912	0.891	0.021
Instruments and related products	3800	855.4	889.4	1.040	423.1	423.1	1.000	41.7	2168.400	850.3	2009.690	0.927	0.890	0.037
Miscellaneous manufacturing Industries	3900	387.8	412.9	1.065	273.3	283.4	1.037	39.7	2064.400	567.8	2003.529	0.971	0.928	0.043
Nondurable goods, all employees		7706.0	7851.5	1.019	5390.0	5049.2	0.937	40.5	2106.000	10292.2	2038.382	0.968	0.922	0.046
Food and kindred products	2000	1691.9	1643.1	0.971	1253.7	1112.6	0.887	41.0	2132.000	2300.8	2067.949	0.970	0.927	0.043
Tobacco products	2100	41.4	45.9	1.109	32.0	22.7	0.709	40.0	2080.000	45.7	2013.216	0.968	0.894	0.074
Textile mill products	2200	626.5	603.5	0.963	529.4	489.0	0.924	40.6	2111.200	1015.8	2077.301	0.984	0.937	0.047
Apparel and other textile products	2300	867.7	906.0	1.044	711.2	726.5	1.022	37.0	1924.000	1356.3	1866.896	0.970	0.945	0.025
Paper and allied products	2600	683.6	677.4	0.991	519.0	487.5	0.939	43.3	2251.600	1051.0	2155.897	0.957	0.903	0.054
Printing and publishing	2700	1540.3	1614.6	1.048	841.3	800.7	0.952	38.2	1986.400	1573.4	1965.031	0.989	0.919	0.070
Chemicals and allied products	2800	1033.8	1081.0	1.046	575.4	476.8	0.829	43.2	2246.400	1014.2	2127.097	0.947	0.903	0.044
Petroleum and coal products	2900	142.1	141.3	0.994	92.0	69.1	0.751	43.6	2267.200	160.6	2324.168	1.025	0.914	0.111
Rubber and miscellaneous plastics Products	3000	982.7	1057.2	1.076	762.0	799.7	1.049	41.5	2158.000	1649.5	2062.648	0.956	0.919	0.037
Leather and leather products	3100	95.7	81.5	0.852	73.9	64.6	0.874	38.1	1981.200	124.9	1933.437	0.976	0.945	0.031

Table 4. Mining Industries, NAICS Based Data, 1997

			Total Employment			PW Census of mineral Industries	Production Workers		Production Employee hours				
			AE Census of mineral Industries	CES AE (000s)	Ratio Census: BLS		CES PW	PW Ratio Census: BLS	PW Hours Worked Census of mineral Industries	PW Census Avg hours worked per year	CES PW Avg. weekly hours paid	CES Avg. hours paid per year, 52 week year	Ratio Census: BLS
			1997 (Mar)	Mar-97	1997.00	1997	Mar-97	1997.00	1997	1997	Mar-97	1997.00	1997
NAICS97		SIC											
211111	Crude Petroleum and Natural Gas Extraction	1311	100308	143.1	0.70	58289	81.9	0.71	116712	2002.299	42.6	2215.200	0.904
	Bituminous Coal Mining	1220	86699	90.4	0.96	74469	74.2	1.00	156303	2098.900	46.5	2418.000	0.868
212111	Bituminous Coal and Lignite Surface Mining	1221	36502			30339	-	-	64682	-	-	-	-
212112	Bituminous Coal Underground Mining	1222	50197			44130	-	-	91621	-	-	-	-
212210	Iron Ore Mining	1011	7920	8.5	0.93	6787	7.0	0.97	15326	2258.141	48.6	2527.200	0.894

V. Discussion

All of the surveys discussed here have a similar sense of who is a production worker, but they employ different methods to convey that information. The HWS includes the details as part of the question, while the CES puts them on the back of a page. The ASM and the CMI are longer, more detailed surveys, and place detailed guidelines in separate booklets--a practice questioned by Dillman (2000) on several grounds, including the increased likelihood that the instructions will be ignored. In some cases the survey instrument appears to approach a topic in a way that is inconsistent with the detailed instructions.

Does it matter whether a respondent looks first at total employment and then at production workers, or the reverse? The top-down and bottom-up approaches require very different cognitive tasks. Implicit in both types of request is the expectation that employers can and do identify production workers in their records, an expectation that often is not warranted (Goldenberg, 1994; Goldenberg and Stewart, 1999). Therefore, the way the task is presented could matter, if total employment is available in records, while groups approximating production workers and "all other employees" are not. Or it might matter if a respondent compiles production workers and all other employees separately rather than subtracting one of them from the total, because the two subgroups might not sum to the total on payroll records.

There are differences in format across the surveys. Some use bullet lists or short lists, while others present lists in paragraph format. We know from research that bullet lists are easier to read and understand than lists in paragraph format. We see different words, probably intended to mean the same thing: line-supervisor level, working supervisor level, working supervisors who may be "in charge." There are differences in the underlying population: BLS surveys and the CMI do not include any type of contract employee, while the ASM asks for the inclusion of leased employees.

As for employee hours, the different data collection schedules dictate that the surveys will arrive at somewhat different estimates. The CES is conducted monthly, and the ASM collects quarterly production worker figures. The CMI is collected only once every five years. The Census Bureau's surveys collect hours worked. Perhaps this is a more difficult concept to measure than hours paid, which is the focus of the CES. Although the HWS measures hours worked, it usually does so by subtraction. The BLS surveys and the Census Bureau surveys start with a different frame, and, as we have discovered, treat auxiliaries differently in published

estimates. Although we feel we were able to achieve some conceptual comparability in the published figures for total employment, we are less certain about the figures for production workers. The differences in the way the employee hours numbers are collected make it difficult to produce comparable yearly averages.

It appears that users do not always know the details behind the numbers from these surveys. They were not even aware of some of the surveys we discussed. Although BEA has noted differences between the estimates from the CES and the ASM, not much formal work has been done to compare results across the surveys. On the other hand, some users were not concerned with the differences we found, all the way from definitions to the final estimates, as long as comparable changes in series were observed. Nonetheless, we find the differences between the figures for production worker employment and the two ratios for hours worked to hours paid somewhat troubling.

Regarding hours data for all employees, users clearly would like this information. Some data producers, however, seem not to be aware of this desire. This could be because of the different uses of the data by the external versus the internal users. Both producers and users seem to understand the difficulty of collecting these data and both were concerned that only the usual hours or a standard workweek would be collected for supervisory workers. Users could not offer good suggestions on how to overcome this problem. Most would want to maintain the production worker series, but create an hours series for other employees.

We have a number of ideas for further research on this topic. The reconciliation of the differences noted in tables 3 and 4 is at the top of the list. The sample designs for BLS surveys are quite different from the designs for the Census Bureau surveys. The impact of these differences on the estimates should be studied in more detail. A comparison of the classification of a matched sample of units by industry and by the operational/auxiliary designation should be undertaken. To investigate the effects of the different collection strategies, cognitive interviews with establishments should be done using the different survey instruments. Obtaining the respondent's point of view would round out the picture of potential measurement error begun by considering the perspectives of data users, program managers, and data producers. We concentrated only on users in the Federal government, but users from industry, academia, and interest groups should be polled. We note, however, that this research should be done before any

changes are made in survey instruments or data collection procedures. We believe that time series should not be disturbed unless there is strong evidence of measurement error.

We close with the following questions that need to be answered:

- Is it important to operationalize economic concepts in exactly the same way across different surveys?
- What are the tradeoffs between improving measurement and disrupting time series?
- How important is it to collect hours for all employees? Any suggestions for how to do it?
- What additional research in this general area should be done?

VI. References

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Appendix

Concept	Annual Survey of Manufactures	Census of Mineral Industries	Current Establishment Statistics (Mining and Manufacturing)	Hours at Work Survey
	Census Bureau	Census Bureau	BLS	BLS
Total Employment	Derived figure	Derived figure	Record-based figure	Record-based figure
• Reference period	- Production workers (PW): Pay period including the 12th for one month of a specified quarter of the previous year - Other employees: pay period 12th of March	Pay period that includes March 12th of the previous year	Monthly: pay period including the 12th	Pay period that includes March 12th of the previous year
• Strategy for asking on form	Strategy: Identify components of employment and sum them - Form asks for number of PW in designated pay periods for each quarter - Form directs respondent to sum quarterly PW figures and divide by 4 for annual average - Form asks for All Other Employees for pay period including March 12 - Form directs respondent to sum PW average and All Other Employees to get total	Strategy: Identify components of employment and sum them - Form asks for number of production, development, and exploration workers in pay period including March 12 - Form asks for All Other Employees - Form directs respondents to sum PW and All Other Employees for total	Strategy: Start with total - Form asks for total employment for pay period including 12th of reference month	Strategy: Start with total - Form asks for number of paid employees who worked or received pay for pay period including 12th of March
• Strategy for asking in instructions	Separate instruction booklet - Describes who to count as employee and co-employee (leased employee) - Instructs respondents to exclude agricultural employees from specific industrial activities, as well as proprietors and partners - Lists who to include as PW (paragraph) - Directs respondent to compute average number of PWs - Lists employee categories to include as All Other Employees (paragraph; no pay period specified), and directs respondents to exclude proprietors or partners	Separate instruction booklet - Lists who to include and who to exclude based on payroll status and specific criteria (e.g., paid on per-ton or per-car basis) - Lists workers to include as production, development, exploration workers by work function (bullets), and directs respondents to exclude supervisor and contractor employees from PW - Lists workers by function to include as All Other Employees (bullets), with direction to exclude contractor employees	Instructions on back of form - Lists employees to include in total employment (corporate officials, employees on paid leave, part timers) - Lists employees to exclude from total employment (proprietors and partners, unpaid family workers, people not in pay status during reference period, outside contractors)	Instructions incorporated into question - Lists employees to include and exclude (similar to CES)
• Basis of figure	- Employees reported on IRS form 941 - Also "co-employees" or "leased employees" who work on site for professional employer organizations (PEOs)	"Full and part-time employees on the payroll of this establishment" during pay period including March 12	Persons who worked or received pay for any part of the reference pay period	Persons who worked or received pay for any part of the March pay period

Concept	Annual Survey of Manufactures	Census of Mineral Industries	Current Establishment Statistics (Mining and Manufacturing)	Hours at Work Survey
Production Workers				
• Reference period	Pay period including 12th of March, May, August, November (months 3,5,8,11) of the previous year	Pay period that includes March 12th of the previous year	Monthly: pay period including the 12th	Pay period that includes March 12 th of the previous year
• Strategy for asking on form	- Form asks for number of PW for each quarter - Form directs respondent to compute average number of PW per year	- Form asks for number of <i>production, development, and exploration workers</i> , pay period including March 12	- Form asks for number of employees who are production workers	- Form asks for number of employees who are production workers
• Strategy for asking in instructions	Separate instruction booklet - Lists categories of workers to include as PW based on work functions (paragraph) - Lists workers who are not PW as All Other Employees with direction on who to include - Directs respondents to include workers up through the <i>line-supervisor level</i> - Directs respondents to exclude proprietors and partners.	Separate instruction booklet - Lists workers by function to include as production, development, and exploration workers - Directs respondents to include workers <i>up through the working supervisor level</i> - Directs respondents to exclude supervisory employees and employees of contractors	Instructions on back of form - (Mining) Lists different occupations to include as PW by mining or extraction industry - (Manufacturing) Lists one set of occupations to include for all manufacturing industries - Directs respondents to include <i>working supervisors and group leaders who may be "in charge" of a group of employees, but whose supervisory functions are only incidental to their regular work</i> - Directs respondents to exclude managers and employees performing any of the nonproduction occupations shown	Instructions incorporated into questions: - Defines PW in terms of what they are not: "employees whose major responsibility is <u>not</u> to supervise, plan, or direct the work of others." - Contains list of employees to include that combines work functions and method of payment ("hourly and salaried;" "recordkeeping primarily related to production") - Has list of occupations to exclude that is broader than initial PW definition - Directs respondents to exclude piece workers, commission-only workers
Production Worker Hours				
• Reference period	Annual, previous year	Annual, previous year	Monthly: pay period including the 12th	Annual, previous year
• Hours paid or hours worked	"Total plant hours worked by PW"	Hours worked	Hours paid	Hours paid <i>and</i> Hours worked or Hours of paid leave
• Strategy for asking on form	Plant hours worked by PW (Annual)	Hours worked by <i>production, development, and exploration</i> workers in reference year (annual)	- Total PW hours paid, including overtime, for the pay period that includes the 12th of the month - Separate collection of PW overtime hours for manufacturing (subset of total hours)	- Hours paid: Hours including overtime that PW were paid directly from the employer - Collects "Hours of paid leave actually used" as alternate data item if that is available instead of hours worked
• Strategy for asking in instructions	Separate instruction booklet - Includes all PW hours worked or paid for <u>except paid leave</u> - Includes overtime - Includes hours worked by co-employees from professional employer organization (PEO) or employee leasing company	Separate instruction booklet - Defines an hour worked - Includes overtime - Excludes paid leave - Excludes contractor hours - Excludes hours of proprietors or partners	Instructions on back of form Hours Paid is the sum of: - Hours worked, including overtime - Hours paid for portal-to-portal, standby, or reporting time - Hours of paid leave Defines overtime: - Hours for which overtime premiums were paid because hours exceeded scheduled hours	Instructions incorporated into questions Hours Paid: - Includes paid leave - Bases hours for salaried PW on normally scheduled work hours - Excludes piece rate and commission-only workers Hours Worked: - Hours Paid minus paid leave