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Measuring labor market activity today: are the words work and job too limiting for surveys?

The Current Population Survey (CPS) produces some of the nation's most closely watched labor market statistics, including the national unemployment rate. However, some researchers have recently suggested that the labor force questions used in the CPS do not correctly capture workers in informal employment arrangements, causing an undercount in employment. Although we cannot directly measure how many workers might be missed in the CPS, we use data on income-generating activities from the American Time Use Survey to explore possible misclassification of employment in the CPS.

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Tina Brown, journalist and magazine editor, in describing today's economy, said, "No one I know has a job anymore. They've got Gigs."[1] This quote illustrates the current interest among labor economists in people who make their living going from one short-term work opportunity to another.[2] The arrival of the internet and smartphone applications (apps) has facilitated this type of work. For example, people now use their own cars to drive others around, obtaining customers through mobile apps; others move furniture or do household chores after identifying customers through websites. These recent changes in the economy have led to widespread discussion of "gig workers," although no clear consensus currently exists on what constitutes gig work. Most definitions include many self-employed workers, temporary workers, and independent contractors. Many definitions also include people who do gig work as their primary source of income as well as employed people who supplement their earnings with gig work.

Despite anecdotal evidence of a great increase in the number of independent contractors and freelancers, data from the Current Population Survey (CPS), the nation's monthly labor market household survey, show that the percentage of workers who are self-employed has actually trended down over the past two decades.[3] Talk of

increasing numbers of people doing gig work in addition to their traditional jobs is countered by the fact that CPS statistics show that the share of the employed who have more than one job has remained relatively constant in recent years.[4] How should we interpret these contradictions?

Some researchers have suggested that the questions used in the CPS—questions that have served as a model for many surveys in the United States and in other countries—are outmoded and no longer relevant for today's economy.[5] They contend that gig workers and people in informal employment arrangements do not think of their assignments as "work" or a "job," causing surveys relying on these words in their questionnaires to undercount employment. Some researchers are also concerned that the CPS and other surveys may fail to capture people who do gig or informal work as a second job.

If it is true that many people no longer think of themselves as working or having jobs, the employment statistics that the CPS and a host of other surveys produce may no longer be accurate, which is worrisome. Although we cannot directly measure how many workers might be missed in the CPS, measures of time spent in income-generating activities from the American Time Use Survey (ATUS) can be used to investigate possible misclassification.[6] ATUS respondents report activities done for a single day in a diary. If gig and informal workers do not consider their tasks work, we expect ATUS to capture these moneymaking activities done "on the side" or under informal arrangement in measures of income-generating activities, measures that are not available from the CPS. The ATUS is one of the many surveys with CPS-style questions to measure employment, but it is unique in that it also has data on income-generating activities.

In this article, we use ATUS data on income-generating activities to explore possible measurement error in classifying labor force status in the CPS. First, we describe how the CPS and ATUS measure employment and multiple jobholding. Next, we describe ATUS data on income-generating activities. Finally, we present estimates of the size of possible undercounts in employment and multiple-jobholding statistics. Unless otherwise stated, all estimates are from the ATUS for the combined years 2012–16.[7]

Measuring employment using the CPS

Since the inception of the CPS in 1940, labor economists and policymakers have relied on the survey's monthly labor market estimates—most notably, the national unemployment rate. The CPS is a monthly survey that collects labor force information about everyone age 15 or over living in participating households. Typically, one individual provides information about all household members. The CPS includes a standard set of questions that is used to define each person's labor force status and categorize the person as either employed, unemployed, or not in the labor force. This series of questions refers to a person's labor market activity during a particular week of the month, which is called the reference week and is generally the week containing the 12th of the month. Data collection begins the following week, typically the week containing the 19th of the month.

The most basic of the labor force questions asks, "LAST WEEK, did you (name) do ANY work for pay (either pay or profit)?"

When people who are responding about others in the household are asked this question, the household member's name is used. Respondents who have already indicated that someone in the household has a farm or business are asked the question with the wording in the second set of parentheses.

Although other questions are required for fully categorizing each person's labor force status, a person who responds "yes" to this question is classified as employed. Survey methodologists and subject matter experts at the U.S. Bureau of Labor Statistics (BLS) believe this question is broad enough to capture those people who do gig or informal work during the reference week as well as those who are in more traditional employment arrangements. An additional question included in the CPS asks if people have a job from which they were absent for the entire reference week; people who respond "yes" to this question are also classified as employed.

Once labor force status has been established, employed people in the CPS are asked additional questions about their work. These include a question about whether they (or another household member) have more than one job: "LAST WEEK, did you (name) have more than one job (or business), including part-time, evening, or weekend work?"

Again, respondents are asked about others in the household by name. Those who have already established that they have a business are asked the question that includes the phrase in parentheses.[8]

As mentioned earlier, some researchers are concerned that the words "work" and "job" do not resonate with gig workers or people in informal employment arrangements and thus that the CPS questions do not identify all workers. BLS has not specifically evaluated how those who engage in gig or informal work respond to the words "work" and "job" in the labor force questions. Absent specific experiments using different question wording, we turn to the ATUS for insight into the validity of critics' concerns.

Measuring employment, work, and income-generating activities using the ATUS

The ATUS, which uses the CPS as its sampling frame, provides estimates of how people spend their time in a whole range of activities, from childcare to working to leisure. One individual age 15 or over from each of the sampled households is asked to participate in this one-time telephone survey about his or her own time use. In the early part of the survey, ATUS interviewers ask CPS-style questions about labor force status, which is important because the time use of employed people differs from that of people who are not employed. Because the ATUS is conducted nearly every day of the year and not during a specific week of the month as is the CPS, the ATUS labor force questions are modified to refer to the "last 7 days" instead of "last week."

The most basic of these questions is, "In the LAST SEVEN DAYS, did you do ANY work for pay (either pay or profit)?"

The multiple-jobholding question is similarly modified: "In the LAST SEVEN DAYS, did you have more than one job (or business), including part-time, evening, or weekend work?"

The questions and the classification of labor force status are designed to mirror the CPS as much as possible.[9] Definitions of employment are thus very similar to those in the CPS.[10]

The labor force questions are followed by the core part of the ATUS interview—a time diary in which respondents describe their activities on the previous day and how much time they spent doing them. Interviewers start by asking respondents what they were doing "yesterday" at 4 a.m. Most people say they were sleeping, after which the interviewers ask, "What time did you wake up?" followed by "What did you do next?" Using a conversational

style, the interviewers then guide respondents through their activities for a full 24-hour period, ending at 4 a.m. on the day of the interview. Respondents' verbatim answers are coded into 1 of over 400 different activity codes.[11]

Many respondents report working at a job or business in the time diary. They may also report other activities they did as part of their job that may not be clearly work, such as responding to email or attending a convention. To ensure that paid work is fully captured, interviewers ask followup questions after the completion of the time diary. Specifically, they ask respondents to identify the activities they did as part of their job. If the respondent is a multiple jobholder, interviewers ask which activities were done for the main job and which for a second job.[12] All activities that the respondents identify as being done for their job or business are coded as either "working, main job" or "working, other job."

However, some respondents—whether or not they are employed—report doing activities for pay that are not part of a job or business, such as participating in a yard sale or bake sale. To ensure such activities are correctly coded, interviewers ask respondents—after the time diary has been completed—to identify non-job-related activities for which they expect to be paid.[13] The ATUS classifies these paid non-job-related activities as "income-generating activities." The five different codes for income-generating activities are shown in table 1, along with a nonexhaustive list of examples of each.[14] Note that only one code is assigned per activity; codes for work and for income-generating activities do not overlap.

Table 1. Excerpt from the American Time Use Survey Activity Coding Lexicon on income-generating activities

Activity	Examples
Income-generating hobbies, crafts, and food	Preparing food or drink for sale
	Drawing, painting, or sketching for sale
	Making pottery for sale
	Making furniture for sale
	Making baskets for sale
	Doing woodworking for sale
	Making tapestries/quilts for sale
	Making dinners for sale
Income-generating performances	Playing in a band for pay
	Acting in a play for pay
	Singing for pay
	Dancing for pay
Income-generating services	Babysitting for pay
	Mowing lawns for pay
	Doing household chores for pay
	Shoveling snow for pay
	Home improvements for pay
	Typing paper for pay
Income-generating rental property activities	Maintaining and/or renovating rental property
	Making repairs to rental property
Other income-generating activities, not elsewhere classified	Redeeming winning lottery ticket
	Selling items at auction, yard sale
	Selling items at flea market
	Selling own used textbooks for pay
	Sorting items for garage sale
	Listing/selling items online

See footnotes at end of table.

Table 1. Excerpt from the American Time Use Survey Activity Coding Lexicon on income-generating activities

Activity	Examples
	Collecting aluminum cans to sell for self
	Selling items at a garage sale
	Organizing items for yard sale

Source: U.S. Bureau of Labor Statistics, American Time Use Survey.

As an example, in the time-diary portion of the interview, an employed respondent says he “took photographs at a wedding”—an activity that may or may not be paid. After completing the time diary, the interviewer asks two followup questions designed to identify labor market activities. First, the interviewer asks the respondent to identify any activities performed during the day that he did for a job or business. Second, the interviewer asks which activities the respondent expects to be paid for that he did not do for work or a business. If the respondent says he did the photography activity for a job or business, the activity is coded as working. If the respondent instead says the photography was a paid activity he did not do for a job or business, the activity is coded as an income-generating activity. If the respondent does not identify the photography activity in either of the followup questions, the activity is coded as “arts and crafts as a hobby.”

Some of the income-generating activities listed in the examples—such as doing household chores for pay or playing in a band for pay—would likely be considered work under most definitions. However, most economists would not define all income-generating activities as work, because economic theory generally defines employment as an arrangement in which people are paid for services performed (labor) rather than as renting or selling property (capital). For example, activities such as “selling own used textbooks for pay,” “selling items at a garage sale,” or “redeeming a winning lottery ticket,” although sources of income, would not typically be considered paid work. We do not mean to suggest that work cannot involve a return on capital in addition to a return on labor. Many independent contractors and self-employed workers have specialized equipment that is necessary for their jobs; however, these jobs still involve a high degree of return on labor.

For our analysis, we create two broad categories of income-generating activities. We combine the first three categories in table 1 under the label “income-generating hobbies, crafts, food, performances, and services.” We believe these income-generating activities would be considered work under most definitions because they generally involve a return on labor. The latter two categories—income-generating rental property activities and other income-generating activities, not elsewhere classified—we combine under the label “other income-generating activities.” These activities generally involve a return on capital rather than labor and would likely be considered work only under broad definitions.[15]

Interpreting estimates of income-generating activities

ATUS data on income-generating activities and on working are presented in table 2. People are much less likely to do income-generating activities on a given day than to work. Just 1 percent of the population did income-generating activities on an average day in 2012–16, compared with 42 percent who worked. Those who did income-generating activities on a given day spent 2.6 hours doing them, considerably less time than the 7.6 hours that people who worked on a given day spent working. Although not trivial—2.3 million people did income-

generating activities on an average day in 2012–16—these numbers do not suggest that a substantial portion of American workers are being missed in measures of employment, estimated by the ATUS at 155.0 million.

Table 2. Time spent working and in income-generating activities, by employment status, averages for the combined years 2012–16

Activity and employment status	Average number engaged in activity per day (thousands)	Average percent engaged in activity per day	Average hours per day for those who engaged in activity
Total			
Working	106,355	42.1	7.62
Working, main job	104,614	41.4	7.56
Working, second job	5,192	2.1	3.62
Income-generating activities	2,289	0.9	2.61
Income-generating hobbies, crafts, food, performances, and services	1,182	0.5	2.59
Income-generating hobbies, crafts, and food	326	0.1	2.18
Income-generating performances	(1)	(2)	2.14
Income-generating services	909	0.4	2.50
Other income-generating activities	1,258	0.5	2.31
Income-generating rental property activities	(1)	(2)	(3)
Other income-generating activities, not elsewhere classified	1,165	0.5	2.32
Employed			
Working	105,799	68.3	7.64
Working, main job	104,068	67.2	7.58
Working, second job	5,181	3.3	3.61
Income-generating activities	1,242	0.8	2.22
Income-generating hobbies, crafts, food, performances, and services	525	0.3	2.29
Other income-generating activities	761	0.5	2.04
Employed, single jobholder			
Working	94,521	67.0	7.62
Working, main job	94,480	67.0	7.61
Income-generating activities	1,007	0.7	2.26
Income-generating hobbies, crafts, food, performances, and services	413	0.3	2.41
Other income-generating activities	629	0.4	2.03
Employed, multiple jobholder			
Working	11,277	80.7	7.83
Working, main job	9,588	68.6	7.26

See footnotes at end of table.

Table 2. Time spent working and in income-generating activities, by employment status, averages for the combined years 2012–16

Activity and employment status	Average number engaged in activity per day (thousands)	Average percent engaged in activity per day	Average hours per day for those who engaged in activity
Working, second job	5,113	36.6	3.65
Income-generating activities	235	1.7	2.04
Income-generating hobbies, crafts, food, performances, and services	112	0.8	1.86
Other income-generating activities	132	0.9	2.06
Unemployed			
Income-generating activities	250	1.9	3.06
Income-generating hobbies, crafts, food, performances, and services	147	1.1	2.50
Other income-generating activities	125	0.9	3.18
Not in the labor force			
Income-generating activities	797	0.9	3.07
Income-generating hobbies, crafts, food, performances, and services	510	0.6	2.92
Other income-generating activities	371	0.4	2.58

(1) The estimate is less than 0.05 percent of the population.

(2) The estimate is approximately zero.

(3) The estimate is suppressed because it does not meet the American Time Use Survey (ATUS) standard for quality and reliability.

Notes: Estimates are for the civilian noninstitutional population age 15 and over and are based on information in the ATUS time diary. Estimates for a second job include information for people who have more than two jobs and work at a job other than their main job. Not shown are estimates of the number, percentage, and time spent working for a small number of unemployed and not in the labor force. Also not shown are estimates of the number, percentage, and time spent working at a second job for a small number of single jobholders.

Source: U.S. Bureau of Labor Statistics.

We can also look at the more detailed income-generating activity categories. Less than 1 percent of the population did income-generating hobbies, crafts, food, performances, and services—the income-generating activities captured by the ATUS that are most likely to be considered work. This percentage is the same as for those who did other income-generating activities. Estimates for each of the five income-generating activity categories show that the percentage of the population who did them on an average day was quite small, with each category constituting one-half of 1 percent or less. People who engaged in any of the five detailed activities spent between 2.1 and 2.5 hours doing them.

ATUS does not have a long historical data series because the survey was first conducted in 2003. However, over the period the survey has been collected, the estimates for income-generating activities have changed little. For example, about 1 percent of the population engaged in income-generating activities on an average day in 2003–07, and those who engaged in these activities spent 2.7 hours doing so. These estimates are similar to those for

2012–16. They do not support the claim that official estimates of employment have missed a large increase in gig or informal work that has occurred over the past decade.

We can also examine differences by labor force status. If large numbers of gig or informal workers are misclassified as not employed, we would expect to observe relatively large estimates for the share of the unemployed and those not in the labor force who engaged in income-generating activities on a given day. Likewise, if employed people supplementing their incomes with gig or informal work are misclassified as single jobholders, we would expect to see relatively high proportions of the employed (particularly single jobholders) doing income-generating activities on a given day. However, estimates of the proportion of people who engaged in income-generating activities on an average day for all labor force statuses were quite low. In 2012–16, 1 percent of the employed, 2 percent of the unemployed, and 1 percent of those not in the labor force engaged in income-generating activities on an average day. Although these numbers indicate that there may indeed be misclassification of labor force status, they suggest the effect on overall levels of employment is small.[16]

Estimating undercount of employment

Although the number does not appear to be large, ATUS data do indicate that some workers may not be classified as employed. Can we use these data to estimate the number of workers who should have been classified as employed but were not? We can, but to do so, we will have to make some assumptions, which are described in this section.

According to ATUS estimates, an average of 105.8 million employed people worked per day in 2012–16, much lower than the 155.0 million who were employed. Why the large difference? Different sets of questions are used to produce the two estimates, and these questions are used to measure different things. The average number who worked per day relies on the ATUS time diary and describes an average day, and not every employed person works every day.[17] The number of employed relies on the CPS-style questions and describes those who did any work for pay over a 7-day period or had a job from which they were absent.

Total employment figures for people who worked in the last 7 days cannot be derived from the data collected in the ATUS time diary. Similarly, an estimate of the number of people who engaged in income-generating activities in the last 7 days cannot be derived from the ATUS time-diary data. Thus, the number who would have been classified as employed had their income-generating activities been counted as employment in the CPS-style questions cannot be directly estimated. However, we do know the average number of people who did income-generating activities per day. By using this information and by making some assumptions about how frequently people did these income-generating activities throughout the week, we can create upper- and lower-bound estimates of the size of the possible undercount in employment.

Specifically, if we assume that all people who engaged in an income-generating activity on a given day did so every day of the week, the total number who did income-generating activities in the previous 7 days would equal the number of people who did these activities on a given day. Conversely, if people who engaged in income-generating activities only did so 1 day a week—and thus, in a 7-day period, different people did these activities each day—the total number engaged in income-generating activities in the previous 7 days would be 7 times the number who engaged in those activities on a given day.

To create upper- and lower-bound estimates for the number of workers who may have been misclassified as not employed, we make two further restrictions. First, we limit our estimates to those who were either unemployed or not in the labor force. Second, we restrict our income-generating activities to those more likely to be classified as work—that is, the category we label as income-generating hobbies, crafts, food, performances, and services.

As shown in table 3, an average of 657,000 people who were not employed did income-generating activities per day in 2012–16. If we assume that the same 657,000 people do these activities each day of the week, the minimum number who could have done these activities over a given week is thus 657,000. The opposite assumption is used to estimate the upper bound—that is, each day of the week, a different 657,000 people did income-generating activities, or 4.6 million total over 7 days. Neither assumption is very likely—the lower bound is almost certainly too low, and the upper bound is almost certainly too high. If reclassified, these workers would increase total employment by between 0.4 percent and 3.0 percent.

Table 3. Upper and lower bounds of the amount of misclassification of employment, by age, gender, and educational attainment (numbers in thousands), averages for the combined years 2012–16

Characteristic	Total employed	Not employed				Percent increase in employment because of misclassification	
		Total	Number who did income-generating hobbies, crafts, food, performances, or services			Lower bound	Upper bound
			On a given day	In a given week			
				Lower bound	Upper bound		
Total, 15 years and over	154,973	97,438	657	657	4,599	0.4	3.0
Age							
15 to 24 years	22,054	20,774	304	304	2,128	1.4	9.6
25 to 54 years	98,846	25,974	185	185	1,295	0.2	1.3
55 years and over	34,073	50,690	168	168	1,176	0.5	3.5
Gender							
Men	82,275	39,706	224	224	1,568	0.3	1.9
Women	72,698	57,732	433	433	3,031	0.6	4.2
Educational attainment							
Total, 25 years and over	132,919	76,663	353	353	2,471	0.3	1.9
High school diploma or less	44,960	40,582	187	187	1,309	0.4	2.9
Some college or higher	87,959	36,081	165	165	1,155	0.2	1.3

Notes: Estimates of the total employed and the total not employed are based on labor force questions patterned after those in the Current Population Survey. Estimates of the number who did income-generating hobbies, crafts, food, performances, or services are based on information in the American Time Use Survey time diary.

Source: U.S. Bureau of Labor Statistics.

Upper and lower bounds, however, are higher for some demographic groups than for others. Misclassification of workers has potentially the largest effect on the estimate of youth employment. Reclassifying uncounted workers among those age 15 to 24 could raise employment by between 304,000 and 2.1 million, or a maximum of 9.6

percent. The greater effect on this group is perhaps not surprising because young adults have traditionally been associated with informal work, such as babysitting, house sitting, and yard work.

The estimate of women's employment would increase by a maximum of 4.2 percent, more than twice the maximum estimate of 1.9 percent for men. On the basis of workers' educational attainment, the increase in employment is higher for those with a high school diploma or less (a maximum of 2.9 percent) than for those with more than a high school diploma (a maximum of 1.3 percent).

We can use other assumptions to obtain alternative estimates of the possible employment undercount because of missed workers. One such assumption might be that those workers who are misclassified engage in their gig or informal work exactly as they would work—that is, they are as likely to do gig or informal work on an average day as the employed are to work. Under this assumption, the ratio of the number of employed people who worked on an average day to the total number of employed people is the same as the ratio of the number of misclassified workers who worked on an average day to the total number of misclassified workers. Mathematically, this is expressed as

$$\frac{\text{Employed who worked on an average day}}{\text{Total employed as published}} = \frac{\text{Misclassified workers who worked on an average day}}{\text{Total misclassified workers.}}$$

For this estimate of misclassified workers, we again use the number of not employed people who did income-generating hobbies, crafts, food, performances, or services on a given day (657,000, as just mentioned). From this number and from the ratio of the number who worked on a given day to total employment (0.68), we estimate the number of misclassified workers who worked during a given week. However, if missed workers do gig or informal work more sporadically than employed people work, this method may overestimate the number of misclassified workers.

These ratio-based estimates are presented in table 4. For all groups, the estimate of misclassified workers is considerably closer to the lower bound than to the upper bound shown in table 3. Under these assumptions, the estimate of total employment would increase by 0.6 percent.

Table 4. Estimated undercount of employment, by age, gender, and educational attainment, calculated with the ratio of the number who worked on a given day to total employed (numbers in thousands), averages for the combined years 2012–16

Characteristic	Employed			Not employed		Estimated percent increase in employment because of misclassification
	Total	Number who worked on a given day	Ratio of number who worked on a given day to total employed	Number who did income-generating hobbies, crafts, food, performances, or services on a given day	Estimate of misclassified workers	
Total, 15 years and over	154,973	105,799	0.68	657	962	0.6
Age						
15 to 24 years	22,054	13,431	0.61	304	499	2.3
25 to 54 years	98,846	69,178	0.70	185	264	0.3
55 years and over	34,073	23,190	0.68	168	247	0.7
Gender						
Men	82,275	58,169	0.71	224	317	0.4
Women	72,698	47,629	0.66	433	661	0.9
Educational attainment						
Total, 25 years and over	132,919	92,368	0.69	353	508	0.4
High school diploma or less	44,960	30,424	0.68	187	276	0.6
Some college or higher	87,959	61,943	0.70	165	234	0.3

Notes: Estimates of the total employed and the total not employed are based on labor force questions patterned after those in the Current Population Survey. Estimates of the number who worked and the number who did income-generating hobbies, crafts, food, performances, or services are based on information in the American Time Use Survey time diary.

Source: U.S. Bureau of Labor Statistics.

The ratio-based estimates are closer to the lower-bound estimates (as shown in table 3) for some demographic groups than for others. These differences largely reflect a group's likelihood of working full time. For example, the estimate for those age 25 to 54 is closer to its lower bound (0.3 percent, compared with a lower bound of 0.2 percent) than is the estimate for those age 15 to 24 (2.3 percent, compared with a lower bound of 1.4 percent). The former group is far more likely to work full time than the latter group, and full-time workers are more likely to work on an average day than part-time workers.

To evaluate the stability of the estimated undercount in employment, we also generated estimates using 2003–07 ATUS data. Estimates of the undercount are very similar for 2003–07 and 2012–16. With the use of both the upper- and lower-bound estimates, the percent increase in total employment ranged between 0.4 percent and 3.0

percent, the same as for 2012–16. The percent increase using the ratio estimate is also the same in 2003–07 and 2012–16 (0.6 percent). Estimates for different demographic groups are similar in 2003–07 and 2012–16.

Estimating undercount of multiple jobholders

Some researchers are concerned that the CPS-style labor force questions may miss gig or informal work that employed people do to supplement their incomes. Short-term work that people do outside of their regular jobs during the 7-day reference period should be captured through the question about multiple jobs. However, if employed people who supplement their incomes with gig or informal work do not think of themselves as having a second job, the estimate of the number of multiple jobholders may be too low because some multiple jobholders may not be correctly identified. We can estimate the size of this possible undercount using methods similar to those used in the previous section.

We developed upper and lower bounds for the possible multiple-jobholding undercount using the number of single jobholders who did income-generating hobbies, crafts, food, performances, and services on a given day (413,000, as shown in table 5). Our results give a lower bound of 413,000 and an upper bound of 2.9 million. This range is smaller than the range estimated for the total employment undercount. However, because the overall number of multiple jobholders is so much smaller than total employment, the percent change in the estimate is greater. Reclassifying people misclassified as single jobholders would increase the number of multiple jobholders by 3.0 percent to 20.7 percent. The largest effects again were among youth and women, for which the multiple-jobholding estimates could increase by up to 42.0 percent and 27.1 percent, respectively.

Table 5. Upper and lower bounds of the amount of misclassification of multiple jobholders, by age, gender, and educational attainment (numbers in thousands), averages for the combined years 2012–16

Characteristic	Total multiple jobholders	Single jobholders				Percent increase in multiple jobholders	
		Total	Number who did income-generating hobbies, crafts, food, performances, or services			Lower bound	Upper bound
			On a given day	In a given week			
				Lower bound	Upper bound		
Total, 15 years and over	13,972	141,001	413	413	2,891	3.0	20.7
Age							
15 to 24 years	2,366	19,688	142	142	994	6.0	42.0
25 to 54 years	8,739	90,108	194	194	1,358	2.2	15.5
55 years and over	2,867	31,206	76	76	532	2.7	18.6
Gender							
Men	7,399	74,875	160	160	1,120	2.2	15.1
Women	6,572	66,126	254	254	1,778	3.9	27.1
Educational attainment							
Total, 25 years and over	11,606	121,313	271	271	1,897	2.3	16.3

See footnotes at end of table.

Table 5. Upper and lower bounds of the amount of misclassification of multiple jobholders, by age, gender, and educational attainment (numbers in thousands), averages for the combined years 2012–16

Characteristic	Total multiple jobholders	Single jobholders				Percent increase in multiple jobholders	
		Total	Number who did income-generating hobbies, crafts, food, performances, or services			Lower bound	Upper bound
			On a given day	In a given week			
				Lower bound	Upper bound		
High school diploma or less	2,837	42,123	92	92	644	3.2	22.7
Some college or higher	8,769	79,190	179	179	1,253	2.0	14.3

Notes: Estimates of total multiple jobholders and total single jobholders are based on labor force questions patterned after those in the Current Population Survey. Estimates of the number who did income-generating hobbies, crafts, food, performances, or services are based on information in the American Time Use Survey time diary.

Source: U.S. Bureau of Labor Statistics.

To create a different estimate of the undercount in multiple jobholding, we assume that workers who are misclassified as single jobholders do their gig or informal work exactly as they would work on a second job—that is, they are as likely to do gig or informal work on a given day as multiple jobholders are to work at a second job. This estimate can be expressed mathematically as

$$\frac{\text{Multiple jobholders who worked at their second job on a given day}}{\text{Total multiple jobholders as published}} = \frac{\text{Misclassified single jobholders who did gig or informal work on a given day}}{\text{Total workers misclassified as single jobholders.}}$$

For our estimate of workers misclassified as single jobholders, we use the number of people with only one job who did income-generating hobbies, crafts, food, performances, or services on a given day (413,000, as shown in table 6). From this number and from the ratio of the number of multiple jobholders who worked at a second job on a given day to the total number of people with more than one job (0.37), we estimate the number of workers misclassified as single jobholders. Under these assumptions, the overall estimate of the number of workers misclassified as single jobholders was 1.1 million, which would increase the multiple jobholding estimate by 8.1 percent. The estimate rose by 19.0 percent for youth and 10.8 percent for women.

What effect would undercounting gig or informal workers have on the overall percentage of the employed who are multiple jobholders? Because the multiple-jobholding rate relies on two statistics—overall employment and the number of multiple jobholders—an estimate of the rate must account for possible undercounts in both measures. Using the employment and multiple-jobholding undercount estimates shown in tables 3 through 6, table 7 shows lower-bound, upper-bound, and point estimates of the multiple-jobholding rate. Estimates of the multiple-jobholding rate range between 9.2 percent and 10.6 percent, or 0.2 percentage point to 1.6 percentage points higher than the

rate measured by the ATUS. The largest increases were among youth (a maximum increase of 3.2 percentage points) and women (a maximum increase of 2.0 percentage points).

Table 6. Estimated undercount of multiple jobholders, by age, gender, and educational attainment, calculated with the ratio of the number of multiple jobholders who worked at other job(s) on a given day to total multiple jobholders (numbers in thousands), averages for the combined years 2012–16

Characteristic	Multiple jobholders			Single jobholders		Estimated percent increase in multiple jobholders because of misclassification
	Total	Number who worked at other job(s) on a given day	Ratio of number who worked at other job(s) on a given day to total multiple jobholders	Number who did income-generating hobbies, crafts, food, performances, or services on a given day	Estimate of workers misclassified as single jobholders	
Total, 15 years and over	13,972	5,113	0.37	413	1,129	8.1
Age						
15 to 24 years	2,366	746	0.32	142	450	19.0
25 to 54 years	8,739	3,303	0.38	194	513	5.9
55 years and over	2,867	1,065	0.37	76	205	7.1
Gender						
Men	7,399	2,769	0.37	160	428	5.8
Women	6,572	2,345	0.36	254	712	10.8
Educational attainment						
Total, 25 years and over	11,606	4,368	0.38	271	720	6.2
High school diploma or less	2,837	902	0.32	92	289	10.2
Some college or higher	8,769	3,466	0.40	179	453	5.2

Notes: Estimates of total multiple jobholders and total single jobholders are based on labor force questions patterned after those in the Current Population Survey. Estimates of the number of multiple jobholders who worked and the number of single jobholders who did income-generating hobbies, crafts, food, performances, or services are based on information in the American Time Use Survey time diary.

Source: U.S. Bureau of Labor Statistics.

Table 7. ATUS, lower-bound, upper-bound, and point estimates of multiple-jobholding rate, by age, gender, and educational attainment (numbers in thousands), averages for the combined years 2012–16

Characteristic	As measured in ATUS			Lower-bound estimates			Upper-bound estimates			Point estimates		
	Employment	Multiple jobholders	Multiple job-holding rate	Increase in employment	Increase in multiple jobholders	Multiple job-holding rate	Increase in employment	Increase in multiple jobholders	Multiple job-holding rate	Increase in employment	Increase in multiple jobholders	Multiple job-holding rate
Total, 15 years and over	154,973	13,972	9.0	657	413	9.2	4,599	2,891	10.6	962	1,129	9.7
Age												
15 to 24 years	22,054	2,366	10.7	304	142	11.2	2,128	994	13.9	499	450	12.5
25 to 54 years	98,846	8,739	8.8	185	194	9.0	1,295	1,358	10.1	264	513	9.3
55 years and over	34,073	2,867	8.4	168	76	8.6	1,176	532	9.6	247	205	9.0
Gender												
Men	82,275	7,399	9.0	224	160	9.2	1,568	1,120	10.2	317	428	9.5
Women	72,698	6,572	9.0	433	254	9.3	3,031	1,778	11.0	661	712	9.9
Educational attainment												
Total, 25 years and over	132,919	11,606	8.7	353	271	8.9	2,471	1,897	10.0	508	720	9.2
High school diploma or less	44,960	2,837	6.3	187	92	6.5	1,309	644	7.5	276	289	6.9
Some college or higher	87,959	8,769	10.0	165	179	10.2	1,155	1,253	11.2	234	453	10.5

Notes: Estimates of employment and multiple jobholders as measured in the ATUS are based on labor force questions patterned after those in the Current Population Survey. ATUS = American Time Use Survey.

Source: U.S. Bureau of Labor Statistics.

Estimates of the multiple-jobholding undercount were slightly higher in 2003–07 than in 2012–16. The percent increase in the number of multiple jobholders ranged from a lower bound of 3.4 percent to an upper bound of 24.1 percent in 2003–07, versus 3.0 percent to 20.7 percent in 2012–16. The increase in the multiple-jobholding rate in 2003–07 ranged between 0.3 percentage point to 2.0 percentage points higher than the rate measured by the ATUS; by contrast, the increase in the rate for 2012–16 ranged between 0.2 percentage point to 1.6 percentage points higher than the ATUS rate. Percent increases in multiple-jobholding measures were larger in 2003–07 than in 2012–16 for some demographic groups, particularly for youth.

Summary

The CPS and ATUS questions used to classify labor force status are similar, and both rely on the words “work” and “job.” Some researchers feel that these questions fail to resonate with gig workers and those in informal employment arrangements. They argue that, as a result, two widely used measures could be considerably undercounted—the total number of employed and the number of multiple jobholders. If it is true that these questions do not capture large numbers of gig or informal workers, then we would expect ATUS estimates for income-generating activities—such as babysitting or mowing lawns—to be relatively large. However, ATUS estimates indicate that few people engage in income-generating activities on a given day. In the combined years 2012–16, just 1 percent of the population engaged in income-generating activities on a given day. People who engaged in income-generating activities also spent little time doing these activities compared with the amount of time spent working by those who worked—2.6 hours versus 7.6 hours. These statistics suggest that the effect on employment of misclassifying gig and informal workers’ labor force status is small.

Despite anecdotal evidence of a large increase in the number of gig workers in recent years, ATUS estimates do not show a marked increase since 2003–07 in either the percentage of people who did income-generating activities or in the amount of time spent by those who did these activities. The fact that the estimates are relatively stable suggests that the ATUS labor force questions—which are similar to those of the CPS—continue to perform as they have in the past.

However, data from the ATUS do support the idea that some gig and informal work might not be reported as work. Ideally, the ATUS labor force questions would identify people as employed if they had done income-generating hobbies, crafts, food, performances, or services in the prior 7 days. In some cases, however, these activities are reported by people who are classified as unemployed or not in the labor force through the CPS-style labor force questions. Using the assumptions described here, we estimate that if workers who may have been incorrectly classified were reclassified, the 2012–16 employment estimate would increase by between 0.4 percent and 3.0 percent.

We also investigated the possibility that employed people who do gig or informal work outside of their main job may not be correctly classified as multiple jobholders. Our analysis shows that misclassification may be more pronounced for the multiple-jobholding estimate than for the overall employment estimate. Our results indicate that, if workers misclassified as single jobholders were classified correctly, the estimate of multiple jobholders would be between 3.0 percent and 20.7 percent higher in 2012–16 than the current figure.

Although some workers may be misclassified in surveys that use CPS-style questions, we conclude that, on the basis of our analysis of ATUS data, the effect on the total employment estimate is likely to be small. The effect on the estimate of the number of multiple jobholders may be somewhat greater, however.

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NOTES

1 Tina Brown, “The gig economy,” *The Daily Beast*, January 12, 2009, https://www.thedailybeast.com/articles/2009/01/12/the-gig-economy.html.

2 See, for example, Sara Horowitz, “Freelancers in the U.S. workforce,” *Monthly Labor Review*, October 2015, https://www.bls.gov/opub/mlr/2015/article/freelancers-in-the-us-workforce.htm.

3 The Current Population Survey (CPS) is a monthly national sample survey conducted by the U.S. Census Bureau for the U.S. Bureau of Labor Statistics. The survey, best known as the source of the official unemployment rate, produces a variety of statistics about employment and unemployment among the U.S. civilian noninstitutional population 16 years and over. For more information on the CPS, see https://www.bls.gov/cps/. Information on self-employment trends can be found in Steven F. Hipple and Laurel A. Hammond, “Self-employment in the United States,” *Spotlight on Statistics*, March 2016, https://www.bls.gov/spotlight/2016/self-employment-in-the-united-states/home.htm.

4 For multiple-jobholding rates, see Databases, Tables and Calculators by Subject.

5 For example, see Katharine G. Abraham and Ashley Amaya, “Probing for informal work activity,” National Bureau of Economic Research, Working Paper 24880 (Cambridge, MA: National Bureau of Economic Research, August 2018), http://www.nber.org/papers/w24880; and Anat Bracha and Mary A. Burke, “Who counts as employed? Informal work, employment status, and labor market slack,” Working Paper 16–29 (Federal Reserve Bank of Boston, December 2016), https://www.bostonfed.org/publications/research-department-working-paper/2016/who-counts-as-employed-informal-work-employment-status-and-labor-market-slack.aspx.

6 The American Time Use Survey (ATUS) is a national sample survey that the U.S. Census Bureau conducts nearly every day of the year for the U.S. Bureau of Labor Statistics. For more information on the ATUS, see https://www.bls.gov/tus.

7 ATUS estimates tend to be fairly stable over time. Because the survey is small, this article combined 5 years of ATUS data (over 56,000 interviews).

8 See all CPS labor force questions at https://www2.census.gov/programs-surveys/cps/techdocs/questionnaires/Labor%20Force.pdf.

9 The complete 2011–16 ATUS questionnaire is available at https://www.bls.gov/tus/tuquestionnaire.pdf.

10 Despite these similarities, employment estimates tend to be higher in the ATUS than in the CPS. An analysis of 2003–06 data showed that among those age 16 and over, the percentage who were employed was 2.9 percentage points higher from the ATUS than from the CPS. Differences in the employment–population ratios calculated with ATUS and CPS data were greater for those age 16 to 24 (7.7 percentage points higher using the ATUS) than among those age 25 and over (2.0 percentage points higher using the ATUS). The multiple-jobholding rate was 4.6 percentage points higher using the ATUS. Because identical questions in different surveys can yield results that do not match, it is not surprising that ATUS and CPS estimates should differ given the many methodological differences between the two surveys. Much of the disparity may be explained by the fact that people selected for the

ATUS were more likely to participate if they were employed. Also, employment among youth is reported more often in self-responses than in reports provided by others. Thus, some of the divergence between estimates of youth employment from the two surveys may be attributed to the fact that ATUS is entirely self-reported.

11 For a full list of activity codes, see the BLS "American Time Use Survey Activity Lexicon, 2003–16," at https://www.bls.gov/tus/lexiconnoex0316.pdf.

12 The question wording is, "We are interested in measuring the amount of time people spend working both inside and outside their usual workplace. You said that you were working from [start and stop time of worked at main job from time diary]. Were there any [other] activities that were done as part of your job or business?"

13 The question wording is, "Sometimes people do things that bring in money like selling crafts or babysitting. Were there any activities that you did yesterday that you were paid for or will be paid for?" If the respondent has already reported doing activities for his or her job or business, a variant of this question is used: "You told me about the activities that were done as part of your job(s). Were there any other activities that you were paid for or will be paid for?"

14 One additional detailed income-generating activity is not reported here—"waiting associated with income-generating activities." Most ATUS activity categories include a "waiting" category. A very small number of respondents reported doing this activity, and it is thus omitted from this analysis.

15 An examination of the verbatim responses for the final category—"income-generating activities, not elsewhere classified"—confirmed that many activities in this category involved selling personal property.

16 As with all surveys, the ATUS includes some error. For example, although all activities are independently coded twice so error is reduced, a review of coded verbatim responses showed that not all activities were coded correctly. In addition, a small number of respondents who were identified through the labor force questions as not employed—that is, as unemployed or not in the labor force—also reported that they spent some time working. In 2012–16, ATUS estimates show that about 1 percent of the unemployed worked on an average day, and those who worked spent 3.4 hours doing so. Less than 1 percent of people classified as not in the labor force worked, and those who did so spent an average of 3.9 hours working. The cause of the discrepancy between how people are classified through the labor force questions and the work times recorded in the diary is unclear, but the percentage of those not employed who worked on an average day has changed little over time. Also important is that instances of not-employed people performing paid work are rare. In 2012–16, just 100 respondents who were classified as not employed reported working in their time diaries. This result compares with more than 22,000 not-employed respondents who did not report working and with about 20,000 respondents who were classified as employed and reported working.

17 The measure of an average day reflects an average distribution across all people in the reference population and all days of the week. The ATUS collects data about daily activities from all segments of the population age 15 and over, including people who are employed and not employed.

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