

BLS Measurement of Telework During and Shortly After the Pandemic—An On-the-Ground Perspective of How it Happened

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When the coronavirus (COVID-19) pandemic began to develop in March of 2020, it was immediately apparent that the impact on the labor market would be sharp and widespread. Many businesses closed or reduced their hours of operation, travel was sharply curtailed, and many workers began to telework from home. Staff at the Bureau of Labor Statistics (BLS), knowing there was a clear need for quantitative information beyond its regularly produced metrics, immediately began to explore how to collect data about the effect of the pandemic on the labor market and its impact on various demographic groups. One obvious way to collect information about a wide range of demographic groups was to harness the power of one of BLS's existing surveys, the Current Population Survey (CPS).

Statistics from the CPS—which is best known for the national unemployment rate—are among the country's most timely economic indicators, typically published each month about 3 weeks after the data are collected. In addition to providing extensive information about employment and unemployment, CPS data can be broken out by a variety of demographic characteristics, such as age, gender, race, ethnicity, and educational attainment. The CPS is a survey of approximately 60,000 sampled households jointly sponsored by BLS and the Census Bureau.¹ The core part of the survey—referred to as the monthly CPS—provides information such as the unemployment rate, the labor force participation rate, the number of people working part time for economic reasons, and usual weekly earnings. While these measures would obviously provide critical information about the effects of COVID-19 on the job market, BLS staff wanted to collect additional data in the monthly CPS in a timely enough manner to shed light on changes in the labor market while the pandemic was unfolding.

This paper will describe how two sets of questions were temporarily added to the CPS to capture data specific to the pandemic. An initial set of questions focused on the immediate impacts of the pandemic on the labor market—including a question asking if people were teleworking because of the pandemic—was fielded from May 2020 to September 2022. As the pandemic waned, the data from these questions became less relevant, and interest in long-term changes increased. Thus, a second set of questions that focused entirely on telework was fielded starting in October 2022.²

I. First set: questions about the effect of the pandemic on the labor market

Assessing the possibility of adding questions to the CPS

While BLS staff strongly believed adding pandemic-related questions to the monthly CPS could provide timely information about the ongoing crisis, changes are made very rarely to the monthly CPS. In general, both BLS and the Census Bureau are very reluctant to increase the length of the monthly survey. Doing so not only increases respondent burden but also could make people unwilling to continue answering the survey for themselves and others in their household or cause them to refuse to take the survey in future months. In addition, there is always the possibility that a change in the monthly survey could adversely affect responses to other questions, including those related to unemployment. While such an effect may be unlikely, BLS and Census take great care to ensure changes to the monthly CPS do not affect the unemployment rate and other key statistics.

Fortunately, there was a fairly recent precedent for adding questions to the monthly CPS in response to a crisis. In October 2005, BLS added four questions to the CPS to collect information about people who had been evacuated from their homes due to Hurricane Katrina, which made landfall in August 2005. At that time, there was a great deal of interest in labor market outcomes of hurricane evacuees. Therefore, BLS developed four questions to be asked directly after the household roster to identify evacuees. The development of questions, programming the questions, testing the instrument, training the interviewers, and fielding the new questions was all done in less than two months after the hurricane struck.³

Could BLS add questions to the CPS as they did after Hurricane Katrina? In mid-March 2020, staff at BLS and Census began conferring about whether adding pandemic-related questions to the CPS would be possible. The urgent need for the data limited the project's scope and imposed several constraints. For example, as with the Katrina questions, the pandemic-related questions needed to be simple, be a set of consecutive questions, and have no complicated skip-and-fill patterns between questions or use different wording to tailor a question for various situations.⁴ Also, there was no additional funding for pandemic-related questions, which necessarily meant that only a small number of questions could be added.

Placement of the questions was straightforward. Unlike the Katrina questions, where the intent was to identify people residing in a household who had evacuated, any pandemic-related questions would explore how people had changed their labor market behavior in response to the pandemic. Therefore, staff at both agencies agreed the new pandemic-related questions should be asked after all the other monthly CPS questions related to the labor force. The new pandemic-related questions would be added at the end of the monthly survey, prior to any CPS supplements, should there be any.⁵

By mid-March, the two agencies had agreed to add no more than four questions to the CPS to be asked after all the monthly labor force questions. The goal was to add these questions to the CPS in May 2020. The next step was to decide what topic areas should be covered, and once topic areas were decided, how the questions should be worded. Time would need to be allotted to program the data collection instrument, thoroughly test the instrument, and train the interviewers. Therefore, to meet the goal of adding questions to the May 2020 CPS, question topics and wording needed to be finalized by the end of March—approximately 2 weeks after the decision to add questions had been made.

Developing the questions

Identifying question topics

With both agencies committed to adding a small set of pandemic-related questions to the CPS, a BLS team immediately began discussing what topics the four questions should focus on. The team decided the questions should focus on how the pandemic was affecting the labor market. Unlike other possible topics such as the spread of the virus or the effects on health, labor-market-related questions would supplement other CPS labor force measures and would be in BLS's area of expertise. While it was unclear how long the new questions would be included in the CPS, the team also thought the questions should be useful over at least several months, as opposed to being of interest just in May 2020.

With this in mind, the team proposed adding questions to cover the following four topic areas:

1. *Identify people who teleworked due to the pandemic.* In mid-March, when BLS staff first began thinking about adding questions to the CPS, asking about telework was an obvious choice. Because many businesses were encouraging or requiring their employees to work from home in efforts to control the spread of COVID-19, many users were seeking data about the prevalence and characteristics of people who were teleworking because of the virus. The CPS did not regularly ask about how many people work at home, nor did any other BLS survey that produces monthly or quarterly data. Thus, data about teleworking would help fill an information gap, providing insight into the number and characteristics of people who were teleworking because of the pandemic. Data on this topic would provide information about the number of people who were able to continue working at their jobs due to accommodations allowing for social distancing. In conjunction with information about work hours, industry, and work absences already collected in the CPS, these data would shed light on whether telework was helping businesses maintain their employment, thus facilitating understanding of how different sectors were

impacted by the pandemic. Combined with the extensive demographic information collected in the CPS, these data would shed light on whether some population groups were teleworking in response to the pandemic more than others. Such information might help inform policy decisions about how to facilitate telework options for various groups.

2. *Identify whether people did not work due to pandemic-related shutdowns or reductions in hours of operation.* Data about the number of people who had stopped working due to businesses shutting down or reducing their hours of operation because of the pandemic, in conjunction with data collected in the monthly CPS, would permit analysis of which industries, occupations, groups, and regions of the country were most affected. Data on the characteristics of people who had stopped working might inform policy decisions about job training programs and programs to assist groups more likely to be impacted. The information also could provide insight into observed changes in estimates derived from the monthly CPS data, such as changes in the number of people who were unemployed or variation in the number of hours people worked.
3. *Identify whether people who did not work due to pandemic-related shutdowns or reductions in hours of operation were paid for their time off by their employer.* Data about whether people received pay for the time they were not working would provide insight on the prevalence and types of workers who received pay from their employers while they were not working. This information could help determine if earnings losses caused by the pandemic were being mitigated. The information also might help identify people in particular industries, occupations, and demographic groups who had little access to paid leave.⁶ Finally, at the time the topics were being formulated, Congress was in the process of discussing and passing the Payroll Protection Program. The intention of the program was to help businesses maintain workers on their payrolls even if the businesses had to shut down because of the pandemic. Data about whether people had stopped working because of the pandemic, in combination with information about whether they were receiving pay from their employers while not working, might help identify people receiving money through the program and assist in assessing the effects of the program on workers.
4. *Determine whether people stopped looking for work because of the pandemic.* Although the CPS produces a wealth of information on the labor market, by far the most closely watched of its measures is the national unemployment rate. Except for people on temporary layoff who expect to be recalled to their jobs, people need to be actively looking for work in order to be classified as unemployed in the

CPS. From the inception of the survey in 1940, the CPS measure of unemployment has been predicated on an activity concept—that is, what people were actually doing to find work—rather than on whether people want or are able to work. An activity-based measure is thought to be more objective than a measure that relies on people’s desires, which might vary from day to day.⁷ However, the measure was not developed with a pandemic in mind. BLS staff thought it very possible that people would be less likely to look for work during a pandemic for a variety of reasons, such as fear of contracting the disease, widespread business closures, or the general uncertainty surrounding the labor market situation. Therefore, collecting information about whether people did not look for work because of the pandemic could provide a better understanding of the unemployment rate. Coupled with the information already collected in the CPS—specifically, demographic characteristics and the industry and occupations of individuals’ last job—these data could provide a more complete picture of specific groups in need of economic assistance because of curtailed job search. It also could inform policy decisions about how to facilitate job search for people in heavily impacted industries or demographic groups.⁸

Development of Question Wording

After identifying the topic areas, a BLS team turned to focusing on the question wording. In developing this wording, there were two features of the CPS survey design the team needed to take into account—people answering for others in their household and the reference period used in various monthly CPS questions.

People answering for others in their household. In the CPS, one person answers the survey questions about everyone living in the household. Thus, respondents provide data about themselves (self reports) and others living with them (proxy reports). People may not be able to answer detailed questions about their household members’ employment arrangements or job search behavior. Therefore, the questions needed to be simple enough for respondents to answer both for themselves and for others.

Reference period. One of the key decisions the BLS team needed to make was the time period about which the new questions would ask, also referred to as the reference period. Because the four new questions would follow the monthly CPS questions and would be used to supplement other data collected in the survey, it would make sense to use the same reference period as other CPS questions. However, not all CPS questions use the same reference period. The classification of employment hinges on a “last week” reference period—that is, the week including the 12th of the month. Specifically, respondents are asked whether they did any work for pay or profit “last week;” if the answer is “yes,” they are classified as employed. By contrast, for the questions on job search activity—which are key to the classification of

unemployment—the reference period is the “last 4 weeks.” This raised the question of which reference period to use.

For the new question about the cessation of job search, the BLS team thought it was critical to use the 4-week reference period; otherwise, it would be difficult to determine how the unemployment rate might be affected by the pandemic. The BLS team also thought it would be prudent to use the same reference period for all four questions to limit confusion. In addition, the longer reference period would allow for measures that could pick up pandemic-related impacts over a longer period.

Adding a fifth question

Because of the extraordinary nature of the pandemic, the BLS Commissioner of Labor Statistics decided to extend the possibility of adding a question to the Center for Disease Control and Prevention’s National Center for Health Statistics (NCHS). When extending the offer, the Commissioner made it clear that the question would need to be simple and could not jeopardize participation in the survey or taint the data collected in the labor force section. He also made it clear that BLS would need to know exactly what question NCHS wanted to add by the end of March.

The NCHS welcomed the opportunity to add a question to the CPS and decided to focus this question on access to health care. Their justification for this focus was that access to health care is a fundamental determinant of health, and its equitable distribution across the population is a critical issue of health services research and policymaking. Unmet needs are generally the result of cost-related barriers, accessibility problems (lack of transportation or lack of availability in area), and acceptability (personal preferences). The pandemic had the potential to greatly exacerbate these causes of inequitable distribution of care, especially accessibility problems (for example, doctor’s offices limiting in-person appointments, urgent care clinics focusing on COVID-19 care and excluding other health concerns, or public transportation systems cutting back on service). The inclusion of a question about whether people’s access to care had been reduced because of COVID-19 provided an opportunity to examine the prevalence of people with recent unmet needs, whether that prevalence had changed over time, and whether historic demographic inequities in access to care was widening.

Evaluating the draft questions

Once the BLS team had developed draft questions, attention turned to figuring out how to determine whether the questions would work as intended. Typically, this question evaluation phase involves multiple steps.

The first of these is cognitive testing, which involves administering a sample questionnaire to recruited participants and then asking a series of debriefing questions. BLS almost always cognitively tests any proposed new questions before making changes to survey questionnaires. In addition to conforming with Office of Management and Budget (OMB) guidelines for statistical surveys, this testing can be valuable in ensuring that questions measure the intended concepts.⁹ Question wording is often adjusted after cognitive testing to clear up possible sources of confusion.

In addition, new questions for the CPS typically go through a great deal of review to ensure that they will meet stakeholder needs. This generally includes presentations to experts in the area, consultation with BLS advisory committees, and an OMB clearance process that allows for comment from the public. However, in the case of the pandemic-related questions, very little outreach could be done due to the lack of time.

Further, because the COVID-19 questions were designed to quickly capture information about a serious economic shock, any testing would have significantly delayed the implementation of the questions. The CPS, as a monthly survey, could provide valuable insight into how the pandemic was affecting the labor market on an ongoing basis, and the information would be enhanced if it were to be incorporated into the survey quickly.

Therefore, OMB allowed BLS to add questions to the CPS through an emergency clearance process and did not require cognitive testing prior to fielding. BLS did, however, conduct cognitive testing after the questions were fielded to ensure that there were no obvious issues with the questions.

In the absence of cognitive interviews and stakeholder outreach, the BLS team submitted the questions to several survey methodologists who had not been involved in the question development. The questions were also submitted to the CPS staff at the Census Bureau for review. Finally, although the emergency clearance process did include a public comment period prior to the fielding of the questions, OMB reviewers also provided comments about the questions. Suggestions from these independent reviews resulted in several refinements to the wording.

Final question wording

After the independent reviews, the team finalized the question wording.

In order to prepare respondents for a set of questions related to COVID-19, interviewers would read a short introduction:

I now have a few questions related to work activities affected by the Coronavirus-COVID-19 pandemic. Efforts to contain the Coronavirus have included business and school closures, social

distancing, and other disruptions. The following questions refer to the last 4 weeks. By the last 4 weeks, I mean the 4-week period ending last Saturday.

The question on teleworking would be:

- 1. At any time in the LAST 4 WEEKS, did (you/name) telework or work at home for pay BECAUSE OF THE CORONAVIRUS PANDEMIC?*

This question would be asked only of the employed. An instruction on the screen informed interviewers to enter “no” if the respondent worked entirely from home before the pandemic.

There would be two questions related to temporary workplace closures. The first question, which would be asked of everyone age 16 and over, regardless of their labor force status, would be:

- 2. At any time in the LAST 4 WEEKS, were (you/name) unable to work because (your/his/her) EMPLOYER CLOSED OR LOST BUSINESS due to the Coronavirus pandemic?*

For this question, an instruction on the screen directed interviewers to enter “yes” if the respondent was self-employed and lost work or customers due to the pandemic.

The next question only would be asked of those who answered “yes” to question 2:

- 3. Did (you/name) receive any pay from (your/his/her) EMPLOYER for the hours (you/he/she) DID NOT work in the last 4 weeks?*

For question 3, an instruction on the screen directed interviewers to enter “no” if the respondent was self-employed and received no pay from customers.

The question about the impact on the job search would be:

- 4. Did the Coronavirus pandemic prevent (you/name) from looking for work in the LAST 4 WEEKS?*

This question would be asked of all people not in the labor force—that is, all those who are neither employed nor unemployed.

The final question, on access to care, would be:

- 5. At any time in the last 4 weeks, did you or anyone in your household need medical care for something other than Coronavirus, but not get it because of the Coronavirus pandemic? Please include all adults and children in the household.*

Unlike the other four questions, which were limited to people age 16 and over, this question was designed to collect information about all members of the household, including children. The collection instrument instructed interviewers to enter “no” if everyone in the household voluntarily cancelled or delayed medical care for themselves or another household member. If the answer to the question was “yes,” a follow-up question would ask:

5a. Who was that?

Interviewers would then record all the people who had delayed receiving health care in the household.

Preparing for fielding

BLS provided Census with the final question wording in late March. Census Bureau staff programmed the data collection instrument for the CPS, adding the four new questions to the end. Census and BLS staff then performed instrument testing to ensure the pandemic-related questions appeared on the screen as expected and all skip-and-fill patterns were correct. In addition, the Census Bureau tested the processing system before fielding.

In cooperation with staff at the Census Bureau and NCHS, the BLS team developed training materials that were given to interviewers prior to the first collection of data. These materials explained the intent of the questions and covered special situations the team thought were likely to occur, such as details about how to handle self-employed workers. BLS finalized training materials in late April. These training materials were provided to interviewers prior to the introduction of the new questions in May 2020.

Collecting and processing the data

The COVID-19 questions were fielded for the first time in May 2020. BLS and Census staff monitored the data each month to identify any possible issues. No major problems with these new questions were reported by interviewers during the data collection period.

After collection, there were several steps involved in processing the data. These steps included verifying that people who were supposed to be asked the questions were in fact asked and verifying the format in which the data were recorded. As with most CPS questions, some respondents refused to answer or did not know the answer to the questions. In addition, because these questions appeared at the end of the monthly CPS, answers were not collected for respondents who had terminated the interview early. Nonresponse to survey questions is typically not random, and so missing data for the new questions were allocated using a hot-deck allocation matrix, the method used to impute most CPS item nonresponse.¹⁰

Cognitively testing the questions

As discussed above, BLS conducted cognitive testing after the questions were fielded to ensure that there were no obvious issues with the questions; this was done after the questions were fielded due to the urgent need to quickly obtain data about the impact of the pandemic.

To evaluate the COVID-19 questions, BLS survey methodologists conducted 9 cognitive interviews by telephone. A trained cognitive interviewer administered an abbreviated version of the CPS, along with the five new questions. The interviewer then debriefed participants to gain insight into their response process in order to uncover any sources of error in what was reported and ways to improve the questions. One researcher conducted the interview, and, in almost all cases, a second researcher listened and took notes.

In addition to the cognitive testing, BLS survey methodologists supplemented their findings with insights from an online assessment of questions from another survey, the Census Bureau's Household Pulse Survey. Two rounds of this online Web Probe Assessment were conducted with independent samples. In the first round, there were two questions similar to the CPS questions. The second round included several of the specific CPS COVID-19 questions.

The evaluation of the questions showed the four questions crafted by BLS worked as intended. A wording change was suggested for the introductory language, but BLS did not make the suggested change because it would have involved the reference period. No other wording changes for these four questions were recommended.

During the cognitive testing, BLS testers found the question about access to health care to be somewhat problematic. Specifically, the wording of the question was complicated, making the objective not entirely clear. Therefore, the cognitive testers encouraged NCHS to prioritize their measurement objectives given the limited space that could be allocated to the question and also recommended wording changes.¹¹

Dropping the final question

The estimates from the question on access to health care were considerably lower than those from other surveys that asked similar questions, such as the Household Pulse Survey. This is likely due to the fact that the CPS uses a different sampling frame and the question was worded a bit differently than in other surveys. At the request of NCHS, the healthcare question was discontinued after October data collection.

Publication

BLS published the first CPS data from the first four COVID-19 questions on its website in July 2020.¹² Only data from the first four questions were tabulated for this first publication since BLS did not have

expertise on the final question, which was about access to health care. Starting with the publication of data for August 2020, information from these four questions were included in the Employment Situation news release.¹³

An extract file containing public-use variables for the COVID-19 questions is available to researchers on the Census Bureau website.¹⁴ These variables can be linked to the CPS public-use microdata files, enabling researchers to conduct their own analyses. Also, starting with the release of data for January 2021, variables for all questions were included on the CPS public-use microdata files.

II. Second set: telework only questions

Modifying the questions

Including the questions specifically related to pandemic effects on the labor market in the CPS provided a timely picture of the effects of COVID-19. However, as much of the US population became vaccinated, social distancing measures became less prevalent, and labor market indicators returned to pre-pandemic levels, these questions became less relevant. At the same time, there was strong and growing interest in data about telework and whether the pandemic had caused a fundamental shift in where people worked.

Cognizant of these realities, in March 2022, BLS staff began to investigate modifying the existing questions to increase their relevancy. Under the terms of the OMB clearance, the questions could be modified to address labor market issues that had emerged due to the pandemic. However, a request for a non-substantive change would be needed.

Developing the modified questions focusing on telework

Identifying expanded telework topics

A BLS team began to think about topic areas that might be of interest. As with the existing pandemic-related questions, there could only be 4 questions and the wording of the questions needed to be simple with no complicated fill-and-skip-patterns. The team quickly decided to focus all of the questions on telework.

Specifically, the team proposed collecting information on the prevalence of people teleworking, the proportion of their work time teleworkers teleworked, and whether there had been in a shift in who and how much people teleworked before and after the pandemic.

The team chose these topic areas because data on the prevalence of telework, in combination with the demographic and industry and occupation information collected in the monthly CPS, would provide information about the characteristics of workers who teleworked and the sectors of the economy where telework was most prevalent. Examination of demographic groups that were and were not teleworking also might help expose inequalities in the workplace. At the same time, analysis of the specific groups amongst whom teleworking was more prevalent could highlight groups who were disproportionately teleworking and thus might place a high priority on or see particular benefits in teleworking.

The proportion of their work hours teleworkers spent teleworking would provide information on whether teleworkers were working all of their hours remotely or were working in a hybrid arrangement where they teleworked part of their hours and worked at another workplace part of their hours. If teleworkers were in a hybrid arrangement, a measure of the share of their hours teleworking would permit an examination of whether they were only teleworking a small or large proportion of their work hours. A monthly measure of the proportion of their hours teleworking also would provide information about the stability of these work arrangements and provide a picture of how telework was evolving across time.

The CPS did not regularly collect data about telework before the pandemic, so there was no baseline to use to determine how telework had changed. However, data users expressed a strong interest in knowing whether telework had increased since the start of the pandemic, whether those who were currently teleworking had done so prior to the pandemic, and whether there were specific demographic groups who were currently teleworking who had not done so prior to the pandemic. A measure of whether those currently teleworking had done so prior to the pandemic would help fill these information gaps and shed light on how workers' telework experience had changed.

Information about the characteristics of people who telework, and teleworkers' share of work hours spent teleworking would benefit policy makers, business leaders, urban planners, people planning their careers, and others. Data about how teleworking had changed compared to prior to the pandemic also would further understanding of the impact of the pandemic on the labor market. Information on those currently teleworking who had not done so prior to the pandemic could provide an indication of the groups most likely to exert pressure on employers regarding telework policies.

Development of question wording

While the BLS team settled on the topic areas quickly, as with the first set of questions, several key decisions needed to be made. For example, the team needed to determine what reference period to use, who should be asked the questions, how to measure the proportion of their time people teleworked, and how to measure the change in teleworking since prior to the pandemic.

Reference period. Because the modified questions focused solely on telework, and telework is only associated with the employed, it would be logical to use the reference period that is used for the monthly CPS employment questions. The monthly employment questions ask about work for pay “last week,” with the hours of work, industry, and occupation corresponding to the work done in that week (generally the week containing the 12th of the month). Consequently, to make the telework questions correspond to the work questions in the monthly CPS, the team decided to use a “last week” reference period. In addition to corresponding to the reference period of the monthly CPS measurement of work, by asking about recent experience over a short time period, the use of a “last week” reference period would provide more precise information about who and how much people were teleworking than would using a longer reference period.

Who would be asked the questions. The team decided the questions would only be asked of employed people who actually worked during this reference period (the week containing the 12th of the month). By definition, people who were absent from work the entire reference period would not be teleworking that week. Concentrating on those teleworking during the reference week period would provide a current, accurate measure of people’s telework behavior and avoid complications involved in defining usual behavior during a time period of rapid change.

How to measure the proportion of their work time teleworkers spent teleworking. Another issue to address was how to measure the share of their time teleworkers spent teleworking within the context of only being able to ask a few questions. If one was only interested in measuring whether people spent all of their work hours teleworking versus people working in a hybrid arrangement where they teleworked some of their work hours and worked the remainder of their hours at another workplace, a question about whether people teleworked for “some” or “all” of their work hours would have been sufficient. Instead, the team decided to ask about the number of hours people teleworked, as this would enable more refined measures of the degree to which people teleworked. Measuring the number of hours people teleworked and combining it with the total hours people worked from the monthly CPS would permit the construction

of a measure of the number of people who worked all of their hours fully remotely and those who only teleworked some of their hours in a hybrid arrangement. At the same time, the collection of telework hours would provide information about the proportion of work hours those working in a hybrid arrangement teleworked.

The monthly CPS collects two measures of hours worked, the number of hours people usually work and the number they actually worked during the reference week. Either one of these measures could be compared with a measure of the number of hours people telework. The question thus arose whether to ask about the number of hours people usually telework or the number they actually teleworked in the reference week. The team decided to focus on the number of hours people actually teleworked for several reasons. First, the number of hours people actually teleworked corresponded most closely to the first question, which would provide a prevalence measure of teleworking in the reference week. Second, asking about the number of hours people actually teleworked in the reference week tied the measure to a specific time period and avoided reporting issues for those whose telework hours vary across time. Further, if the question asked about hours teleworked during the reference week a ratio of telework hours to total work hours worked could be constructed for everyone who was working. If the question had asked about usual hours instead, this ratio could not have been constructed for people whose usual work hours are reported to vary. For those whose usual hours are reported to vary in the monthly CPS, only information about whether the person worked more or less than 35 hours is recorded. Additionally, the team believed asking about the number of hours people teleworked last week would be less burdensome and cognitively easier for respondents than asking about the number of hours they usually teleworked. The burden would be reduced, and correspondingly answers would be expected to be more accurate because asking about telework hours in the reference week would be asking about recent, actual behavior rather than typical behavior.

Finally, to make the question easier for respondents, information people reported early in the monthly survey about their actual work hours could be included in the question about hours teleworked. Including the reported number of hours worked as part of the question would likely result in greater consistency between the reported hours worked and the reported hours teleworked. The ability to insert hours information from the monthly CPS reinforced the benefit of asking about actual hours teleworked because a numeric hours answer would exist for everyone.

Measuring telework prior to the pandemic. When deciding how to measure the change in teleworking since the onset of the pandemic, two issues were considered. The first was determining an appropriate

anchor point for “before” the pandemic. The second was deciding how much precision was desired in the measurement of change.

For the anchor point, the team decided on February 2020. In February 2020, state-mandated restrictions had not yet been enacted, most business closings had yet to materialize, and rates of COVID-19 infection were relatively low. However, to reinforce that information about what people were doing prior to the pandemic was desired, the team agreed that the questions should explicitly use the phrase “before the COVID-19 pandemic” in addition to the February 2020 date.

In terms of whether people had changed their telework behavior since the pandemic, the team decided to implement a relatively broad measure. Because the questions would ask about people’s behavior at least two years ago, the team thought many people would not be able to provide the precise amount of time they teleworked prior to the pandemic. Therefore, the team agreed to first ask whether someone had teleworked in February 2020, prior to the pandemic. People who had teleworked both in the month of the interview and prior to the pandemic would then be asked if in the current month they had teleworked more, less, or the same amount as in February 2020. People who had teleworked only in the current month or only in February 2020 would not be asked the question because the information could be inferred from the responses already provided.

Retrospectively, collecting information about telework in February 2020 from those currently working would shed light on the prevalence of telework in February 2020 prior to the pandemic, but it would not be a comprehensive measure. Some people who had been employed in February 2020 but did not work during the current reference period would not be asked about their telework in February 2020. For example, people who retired between February 2020 and the current interview would not be included.

Retrospectively collecting information about telework in February 2020 prior to the pandemic would comprehensively identify “new teleworkers”—that is, people currently teleworking who had not done so in February 2020 prior to the pandemic. The identification of “new teleworkers” does not depend on people’s employment status in February 2020. For instance, people who had been unemployed or not working for other reasons in February 2020 but were currently teleworking would be considered “new teleworkers.”

Based on the decisions outlined above, the BLS team drafted a set of telework questions. These questions were then shared with BLS survey methodologists and Census staff in mid-March.

Evaluating the expanded telework questions

When the first set of questions were developed, it was critical to field the questions quickly because the pandemic was evolving so rapidly. However, there was greater stability when the second set was being developed, allowing BLS to follow its standard question development practices. In accordance with the standard procedures required by OMB to obtain approval for question modifications, BLS survey methodologists first undertook an expert review of the questions and then cognitively tested them. The expert review was completed in early April and a final cognitive report on the questions was completed at the end of August. Several modifications to the wording of the questions and skip instructions were made based on the expert review.

The cognitive testing consisted of 14 one-on-one cognitive interviews (10 people reported for themselves, 4 of whom also reported about another person living with them) and 165 self-administered online tests of the questions. Similar probing questions were included in both the one-on-one cognitive interviews and the self-administered online tests. The 10 one-on-one participants were recruited through a Craig's List ad for Raleigh North Carolina. The interviews were conducted either by telephone or using Microsoft Teams. The online participants were recruited through Amazon Mechanical Turk (mTurk). Participants for both parts of the study had to satisfy the requirements that they or a member of their household was over 18 years old, currently had a job, and currently teleworked.

Both the cognitive interviews and the online testing indicated that participants understood the questions well and were able to answer the questions as intended. Participants in the one-on-one cognitive interviews felt the questions were straightforward and easy to answer. Of particular concern was the saliency of asking about teleworking in February 2020 prior to the pandemic, as a significant amount of time had elapsed between the reference period and testing. Testing showed this concern to be largely unfounded. Because people's experiences during the pandemic were so salient, the testing indicated it generally was easy for people to understand the question and to remember a time period right before the pandemic started. Because the testing did not uncover any critical issues, the survey methodologists recommended that the questions be administered as worded. However, they also recommended that interviewer training emphasize the on-screen instruction for multiple jobholders to include the hours they telework on all jobs combined.¹⁵

Final wording of the expanded telework questions

The expanded telework questions were finalized after incorporating recommendations from the expert review, feedback from the Census Bureau, and the results of the cognitive testing.

To prepare respondents both for questions about teleworking and questions about whether the COVID pandemic had changed where people work, interviewers would first read a short introduction:

I now have some questions related to how the COVID-19 pandemic affected where people work.

The question on the prevalence of teleworking during the reference week would be:

1. *At any time LAST WEEK did (you/name) telework or work at home for pay?*

The question on the number of hours people teleworked would be:

2. *Last week, (you/name) worked [fill: person's total hours worked last week] hours [fill for multiple jobholders: total, at all jobs]. How many of these hours (did you/name) telework or work at home for pay?*

This question would only be asked of those who answered “yes” to question 1—that is, people who teleworked. For those with more than one job, this question would include the total hours they worked during the reference week on all jobs, as well as the phrase “total, at all jobs.” In addition, the collection instrument instructed interviewers to consider all jobs combined for multiple jobholders. Two characters were allowed for the response, so interviewers were instructed to enter “99” for hours of 100 or greater.

The question to establish whether people teleworked prior to the pandemic would be:

3. *Did (you/name) telework or work at home for pay in February 2020 before the COVID-19 pandemic started?*

This question would be asked of all those who worked during the reference week. The collection instrument instructed interviewers to enter “no” if the person was not employed in February 2020.

The final question would be:

4. *LAST WEEK, did (you/name) do more, less, or the same amount of telework or work at home for pay as in February 2020 before the COVID-19 pandemic?*

This question only would be asked of those who teleworked during the reference week (“yes to question 1) and in February 2020 (“yes” to question 3).

These questions were submitted to OMB for clearance under a non-substantive change request at the beginning of August. Although the cognitive testing and expert review were completed prior to submission for clearance, because this was a non-substantive change request there was no public comment period.

Preparing to field the expanded telework questions

At the beginning of May 2022, BLS provided the Census Bureau a “near final” set of questions for programming the data collection instrument. In mid-June, the developers delivered an instrument for Census and BLS staff to test. Testers verified that the telework questions appeared on the screen as expected and all skip-and-fill patterns were correct. The instrument was finalized by the end of July, and the Census Bureau tested the processing system in early August.

In tandem with the instrument programming and cognitive testing, BLS and Census staff prepared interviewer training materials. These materials provided guidance on issues that might arise and included instructions for rounding reported telework hours, as the hours data would be recorded as integers in the instrument.

Collecting and Processing the Data

The expanded telework questions were fielded for the first time in October 2022. No major problems were reported by interviewers during the data collection. However, review of the collected data by Census Bureau and BLS staff revealed some issues. For example, the proportion of telework hours recorded as “98” or “99” was larger than expected in October 2022. Investigation revealed that the telework hours question had been programmed to record answers as character values instead of as numeric values. In the CPS, responses of “Don’t Know” and refusals are assigned values of “98” and “99” for character variables. To distinguish valid reports of teleworking for 98 or 99 hours from “Don’t Know” responses and refusals, BLS staff compared the total actual hours reported in the monthly CPS with the recorded telework hours. Census staff corrected the microdata file accordingly. Starting in November, the hours people teleworked were collected in a numeric variable, with “Don’t Know” responses and refusals recorded as “-2” and “-3.”

In addition, data review revealed that a small number of respondents who should have been asked the telework questions never received them. People who did not report a birth date but indicated they were over 16 in a follow-up question were not asked the questions in October and November 2022.¹⁶ This issue was fixed starting in December 2022.

In January 2023, the rate of missing data for the telework questions was again higher than anticipated. Investigation by Census Bureau staff revealed the elevated missing rate was due to a mistake related to the January supplementary questions on tobacco use. The CPS Tobacco Use Supplement questions are designated as self-response only. Thus, if the interviewer is not talking to a household member who uses tobacco, the interviewer is required to call back to obtain the information from the person who uses tobacco. When an interviewer called a person back to collect the tobacco use information, the data collected for the telework questions was not retained by the instrument. Census staff members used a trace file—a record of what questions people had been asked and interviewers' keystrokes while interacting with the instrument—to recover responses to the telework questions.

Although the microdata were corrected for these issues, some data were missing because some respondents did not know or refused to provide answers to the telework questions. In addition, because the questions appeared at the end of the monthly CPS, answers were not collected from respondents who had terminated the interview prior to the telework questions. Because nonresponse is rarely missing at random, all missing data were allocated. As with the initial pandemic labor market effects questions, a hot-deck matrix was used for each question. The specification and implementation of the allocation was somewhat more complicated than for the initial questions. For example, because people should not be allocated telework hours greater than the total number of hours they actually worked, a ratio was constructed for each person who reported both total hours worked and hours teleworked. These ratios were then allocated to people with missing telework hours using a hot-deck matrix. The number of hours a person with missing data teleworked was then generated by multiplying the person's total work hours by the ratio the person had been allocated.

Publication

On September 27, 2023, estimates for October 2022 through August 2023 were published on the BLS website.¹⁷ The Census Bureau released public use files and technical documentation soon afterward. The public use files were released as extract files that could be linked to CPS data from

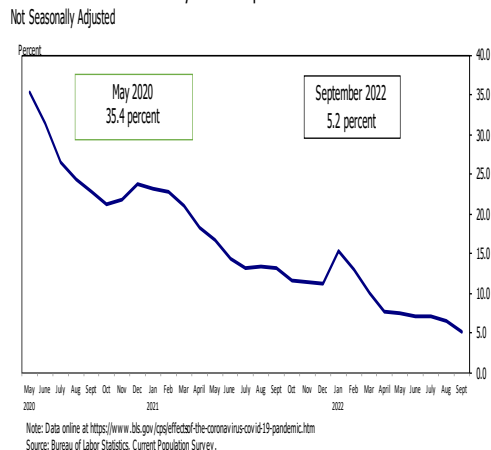
the monthly survey. Starting in October 2023, BLS published telework tables and the Census Bureau released telework microdata monthly.

CPS estimates of teleworking from the two sets of questions

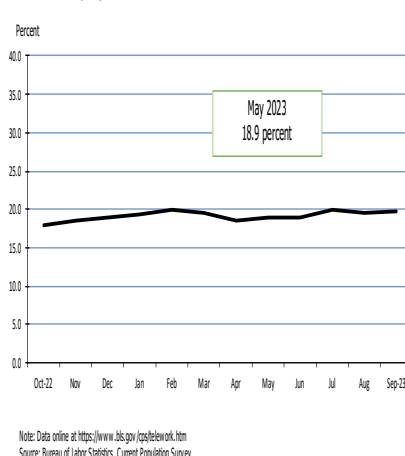
Panel A in Graph 1 below displays estimates of the proportion of the employed who were teleworking because of the COVID-19 pandemic from May 2020 through May 2022. Panel B displays estimates from October 2022 through September 2023 of the proportion of people at work who were teleworking during the reference week. The estimates in these two graphs are not comparable as they are based on different concepts. The estimates in panel A show the proportion of those employed who teleworked because of the COVID-19 pandemic in the prior 4 weeks; thus, people who teleworked prior to the pandemic are not included in these estimates. The estimates in panel B show the proportion of those at work during the reference week who teleworked during that week. A cursory examination indicates both the level and pattern across time of the monthly estimates in Panels A and B are quite different. In May 2020—at the height of the pandemic—35.4 percent of employed people had teleworked in the last 4 weeks because of the pandemic. From May 2020 to September 2022—as the pandemic subsided—the percentage of the employed who were teleworking because of COVID-19 generally decreased. By September 2022, the percentage of the employed who teleworked because of the coronavirus pandemic had decreased to 5.2 percent.

Starting in October 2022, when the telework questions no longer included the requirement that people be teleworking because of the coronavirus pandemic, the percentage of those at work who teleworked in the reference week was 17.9 percent. The percentage of those working who teleworked remained relatively constant between October 2022 and September 2023, averaging 19.2 percent.

Graph 1 Panel A
Percent of employed people who teleworked because of the coronavirus pandemic
 May 2020–September 2022



Graph 1 Panel B
Percent of people at work who teleworked
 October 2022–September 2023



Analysts should be aware that both sets of estimates include self-employed workers in addition to wage and salary workers (that is, employees). Those who are particularly interested in employer-employee relations may want to restrict their analyses to wage and salary workers. From October 2022 to September 2023, an average of 27.1 percent of the self-employed teleworked, compared to 18.3 percent of wage and salary workers.

Telework Questions in the CPS Going Forward

Although both sets of questions described in this paper were intended to be temporary, BLS is currently seeking OMB approval to retain the first two telework questions from the second set in the monthly CPS. If approved, the questions on whether and how much people telework will be included in the monthly CPS for the foreseeable future.

The CPS also includes supplementary questions that vary by month and may contain periodic questions about telework. For example, the Work Schedules and Work at Home Supplement scheduled to be administered in September 2024 will include additional questions about work at home.

¹ For more information about the CPS, see <https://www.bls.gov/opub/hom/cps/>.

² BLS engaged in numerous other activities to measure the effect of the pandemic on the labor market. These included fielding a new establishment survey—the Business Response Survey—to collect data about effects of the pandemic from employers’ perspectives. In addition, a special COVID-19 supplement about work, working

conditions, health, and children’s schooling was included in the National Longitudinal Survey of Youth 1997 (NLS97) from February 2021 to May 2021. For a fuller description of some of the activities BLS undertook in response to the pandemic, see <https://www.bls.gov/blog/2020/innovations-at-bls-during-the-covid-19-pandemic.htm>.

³ For a description of the questions added to the CPS after Hurricane Katrina, see Lawrence S. Cahoon, Diane E. Herz, Richard C. Ning, Anne E. Polivka, Maria E. Reed, Edwin L. Robison, and Gregory D. Weyland, “The Current Population Survey Response to Hurricane Katrina,” *Monthly Labor Review*, August 2006, pp. 40-51, www.bls.gov/opub/mlr/2006/08/art4full.pdf.

⁴ To limit respondent burden, surveys are often designed so that respondents are asked questions based on how they answered earlier questions. In the CPS, for example, people who said they have a job are asked a series of questions about their employment, questions that are not asked of people without jobs. The ways respondents are routed through the survey questions are referred to as “skip patterns.” Also, the wording of particular questions is often conditional on information obtained earlier in the survey. For instance, a question about a particular household member may include a “fill” of the household member’s name.

⁵ The CPS periodically includes supplemental questions on a variety of topics that are asked after the monthly labor force questions are asked of everyone in the household. Because these supplementary questions are not always directly related to people’s current labor force status and the pandemic-related questions would be, staff decided to place the pandemic-related questions prior to any supplementary questions.

⁶ People who are absent from a job an entire week are asked in the monthly CPS if they received pay from their employers for any of the time they did not work. However, people who worked, but were absent some hours during the week and those who are on temporary layoff are not asked about the receipt of pay from their employers.

⁷ For more information about the activity concept and the history of the CPS, see Megan Dunn, Steven E. Haugen, and Janie-Lynn Kang, “The Current Population Survey—tracking unemployment in the United States for over 75 years,” *Monthly Labor Review*, January 2018, <https://www.bls.gov/opub/mlr/2018/article/the-current-population-survey-tracking-unemployment.htm>.

⁸ Researchers sometimes compare the CPS measure of unemployment and the number of people filing for Unemployment Insurance (UI) benefits under the Unemployment Insurance program. Usually, the two series track well. During the pandemic, a discrepancy developed between the estimates, with the number of people claiming UI being higher. During the pandemic, UI programs waived the requirement that people must search for work in order to claim UI benefits, which may explain some of the discrepancy. When the pandemic-response questions were drafted, UI programs had not yet waived the job search requirement to receive UI benefits. However, information on whether people did not work due to their employers shutting down or reducing their hours because of the pandemic, in combination with information about whether people had stopped looking because of the pandemic, could be used to investigate the discrepancy.

⁹ For Office of Management and Budget standards and guidelines for cognitive interviews, see https://obamawhitehouse.archives.gov/sites/default/files/omb/inforeg/directive2/final_addendum_to_stat_policy_dir_2.pdf.

¹⁰ For a description of the editing processes used in the CPS, see pages 132-134 of Technical Paper 77, available at <https://www2.census.gov/programs-surveys/cps/methodology/CPS-Tech-Paper-77.pdf>.

¹¹ The cognitive test results were included as attachment J to the November 2020 OMB clearance for the monthly CPS and are available from BLS on request.

¹² These estimates can be found at <https://www.bls.gov/covid19/employment-situation-covid19-faq-august-2020.htm>.

¹³ https://www.bls.gov/news.release/archives/empsit_09042020.pdf

¹⁴ https://www.census.gov/data/datasets/time-series/demo/cps/cps-supp_cps-repwgt/cps-covid.html

¹⁵ For more information on the cognitive testing, see Appendix B of OMB Clearance package #202004-1220-009 or by contacting BLS staff at CPSinfo@BLS.gov.

¹⁶ People who only report that they are over the age of 16 do receive the labor force questions every month.

¹⁷ See <https://www.bls.gov/cps/telework.htm>.