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WORK IN THE TIME OF COVID: RESULTS FROM THE YALE LABOR SURVEY

By

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Work in the Time of COVID:
Results from the Yale Labor Survey[1]
June 25, 2020

By Christopher Foote, William Nordhaus, and Douglas Rivers

Summary

Overview

The Yale Labor Survey (YLS) uses online panels to estimate the state of the US labor market in real time. It is designed to parallel the US government's monthly labor force survey and present weekly information rapidly and inexpensively. Using an experimental design, the YLS estimates that the US unemployment rate peaked in late April and improved substantially by mid-June. The YLS unemployment rate in mid-June is estimated to be 15%, down about 2 percentage points from mid-May.

YLS approach

This paper presents the design and initial results of a rapid-fire survey that collects weekly data on the labor market experience of US households. The Yale Labor Survey, or YLS, uses an online panel from YouGov with an approach that parallels the monthly Current Population Survey (CPS), the official source of labor force statistics in the United States. The YLS asks a battery of questions concerning current and retrospective employment, hours, and income. Because the YLS draws from an existing panel of potential respondents, it can generate results inexpensively and quickly (within 24 hours).

This report contains the initial results of an ongoing experimental project that is being refined and developed. The YLS has conducted 35,000 online interviews that ask about the labor market and related activities. The interviews cover a period that begins in

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mid-March and continues through the week of June 7-13. The experimental YLS reveals the major labor market stress in April 2020 and then tracks a slow improvement in labor market conditions from April to June. It corroborates the recent improvement in labor market conditions that surprised many analysts when the May CPS results were released in early June.

The questions in the YLS differ from those in the CPS for two reasons. First, it would be too costly to replicate the full CPS questionnaire; second, we wrote questions intended to reflect the unusual circumstances faced by labor market participants during the pandemic.

The CPS was not designed with pandemic-induced lockdowns in mind. As a result, in estimating the standard unemployment rate (called U3), many unemployed persons were incorrectly categorized by the CPS as "employed, but temporarily absent from work." The BLS has suggested that these workers should be classified as unemployed rather than employed. Using microdata from the CPS, and following a method used in recent BLS publications, we create an alternative unemployment measure (U3-alt) to correct for the misclassification. This corrected unemployment rate is conceptually similar to the unemployment rate generated by the YLS. [2]

Overview of findings

The significant finding of this report is that the labor market has improved markedly since the end of April 2020. Looking at the population 20+ years for the CPS survey week, the YLS estimated unemployment rates of 18.0% for April, 17.2% for May, and 15.3% for June 2020. These estimates are about 1% ppt (percentage point) lower than the corrected CPS rate (U3-alt) in April and 1½ ppt higher than the corrected CPS rate in May. These differences are within the margin of the YLS sampling error.

The government reported that the ratio of employment to population over 20 years dropped sharply between February and April 2020 – by 13 ppt, from 63% to 50%. According to the YLS, that ratio has risen from 52% in early April to 55% in mid-June.

Because the YLS also includes demographic information, it can estimate the labor market experience of different segments of the population. Among the key findings of the YLS in the April - June period are the following (details are provided later in this report):

- The unemployment rate rose more sharply for women than for men.
- There was a much greater deterioration in jobs for the youngest workers.
- Less-educated groups had a larger rise in unemployment rates than college graduates.
- Unemployment rates for white and black workers are surprisingly similar in June, while rates for Hispanics have continued to rise and are now well above white and blacks.
- Workers in leisure and hospitality experienced extraordinary deterioration in their job situation, with an unemployment rate in the YLS peaking at 54% in May but then declining sharply in June.

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[2] The "U3-alt" name is chosen because the BLS's headline unemployment rate is called "U3." A full definition of the difference between U3 and U3-alt along with the reasons for preferring the alternative are provided in the body of the report and in the technical appendix.

Assessment

One purpose of the experimental YLS is to deliver early information on the state of the labor market and to do so in a format that allows rapid survey adjustment to abrupt changes in the labor market environment.

Just as important is the methodological innovation. Online surveys have become widely used in the last two decades, particularly in election polling. However, they have been little used to measure labor market activity and other complex population characteristics. Moreover, particularly for demographic and economic surveys, there is sparse evidence on the relative reliability of online surveys as compared to phone, mail, in-person, and mixed formats.

With respect to the usefulness of online surveys, we believe that this study has shown that it is feasible to provide fast, inexpensive, and rapidly adapting estimates of the state of the national labor market. A further goal – testing the reliability of online panels – must await further testing and analysis in the months ahead.

The Approach of the Yale Labor Survey

The Yale Labor Survey is designed to capture the major employment trends of the Bureau of Labor Statistics/Census Bureau Current Population Survey (CPS) and to illuminate unusual elements of the labor market stemming from the COVID-19 pandemic. This short report will briefly describe the results and methods. A full report on methods will be forthcoming shortly.

The core CPS questions divide the adult civilian non-institutional population into three groups: employed (E), unemployed (U), and not in the labor force (NILF). In the YLS, the CPS-related questions are simplified to focus on the major components of labor market activity. The YLS also includes several COVID-related questions. These include whether individuals are working at their typical workplace or at home; whether they were paid by their employers even though they did not work; whether they have applied for or are receiving unemployment insurance; their recent hours of work; their income; and when they held their last job.

YLS is administered by YouGov, a UK-based survey firm. After two pilot tests, the survey was conducted two to five times per week in waves of 1000 – 2000 respondents for up to 5000 respondents per week. This report discusses the waves through the week of June 7 – 13, 2020.

Basic definitions

Like the CPS, the YLS divides the US adult civilian population into three groups: employed (E), unemployed (U), and not-in-the-labor-force (NILF). Because of survey limitations, we have limited our analysis to the population age 20 and over.

- Employed persons worked for either pay or profit during the reference week. We added to this group respondents who answered that they received pay even though they did not work during the reference week. (See the technical note at the end of this section for an explanation of how the YLS employment definition is designed to avoid classification errors that appeared in recent CPS data.)
- Unemployed persons are those who did not work for pay but were on temporary layoff or actively looking for work. In the YLS survey, the unemployment pool is

comprised of: (1) Respondents actively who searched for work in the last 4 weeks and were available for work within 7 days, and (2) those who were on layoff or furlough and expecting to return to their job.

- Persons who are not in the labor force (NILF) are those who are neither employed nor unemployed.

Technical note on measuring employment. A central issue in assessing the CPS estimates in the pandemic concerns the potential misclassification of unemployed persons who did not work and did not get paid because they were displaced by the pandemic. The CPS questionnaire resulted in many such persons being misclassified as employed. To be specific, the CPS first asks whether the respondent worked for pay during the survey week. The CPS then asks respondents who answer "no" to the initial work-for-pay question whether they "had a job" during the survey week, including a job from which they were temporarily absent. Many persons displaced by the pandemic who did not work during the survey week answered "yes" to the second question, which resulted in them being classified as employed but absent from their jobs.

Because the YLS employment classification has a different structure, it is less susceptible to this classification error. The YLS first asks a work-for-pay question like the one in the CPS. It then follows up by asking all respondents to characterize their work situation. The "work-situation" question asks respondents if they worked in their usual place, if they worked at a different location, if they did not work but still got paid, or if none of these situations applied. Persons are classified as employed in the YLS if they answer yes to the initial work-for-pay question *or* if they indicate in the work-situation question that they either worked for pay or received pay. The YLS definition therefore avoids the ambiguity of whether someone who did not work and did not get paid should be counted as employed because they had a job from which they were temporarily absent.

In FAQs published with employment reports for March, April, and May, BLS suggested that one way to assess the degree of CPS classification error is to reclassify as unemployed those persons who are recorded as employed but absent from their jobs for "other reasons." These are reasons besides the usual ones (which include sickness, vacation, maternity/paternity leave, etc.). We follow this suggestion (with some minor differences) to create the CPS U3-alt rate. Because the constructed CPS U3-alt rate corrects for the CPS classification error, it provides an apples-to-apples comparison with the unemployment rate in the YLS, where the CPS classification error is much less likely to occur.[3]

Results for the Population 20 Years and Over

The first set of results is for the entire population aged 20 and over.[4] The YLS estimates closely parallels the labor market experience as described by the CPS. Figure 1 shows the weekly estimates of the unemployment rate for the YLS as the solid line, with the CPS-based estimates (the official U3 rate and our U3-alt rate) as the dashed lines. Tables 1

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[3] For details of the construction of U3-alt, see the "Errors" section at the end of this report.

[4] Persons under 18 are excluded from the sample because the protection of human subjects requires parental consent to participate in a survey. Although persons aged 16 – 19 years have low labor force participation, they also have high unemployment rates, so there is a non-trivial difference between the 16+ unemployment rate and the 20+ unemployment rate. For the last two decades, the 16+ rate has been about ½ ppt higher than the 20+ rate, although this difference has trended lower since 2013.

and 2 show the weekly results for the YLS and a comparison with the CPS. The YLS tends to be higher than the CPS U3 but close to U3-alt. As noted in the technical appendix below, the difference between the YLS and the U3-alt is within the YLS margin of sampling error.
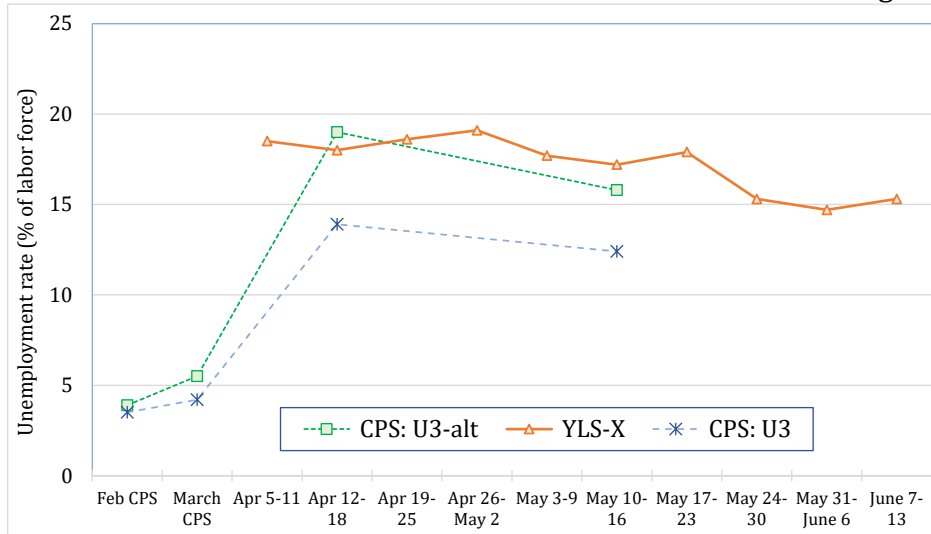
Figure 1. Unemployment rate according to CPS and YLS

YLS Labor Force Statistics by Reference Week, 20 years and over (Not Seas Adj)

Labor Force Status	Apr 5-11	Apr 12-18	Apr 19-25	Apr 26-May 2	May 3-9	May 10-16	May 17-23	May 24-30	May 31-June 6	June 7-13
	%	%	%	%	%	%	%	%	%	%
Fraction of population										
Employed	52.0	51.7	51.6	53.2	54.6	55.5	55.2	55.4	56.2	55.7
Unemployed	11.8	11.3	11.8	12.5	11.7	11.5	12.0	10.0	9.7	10.1
Not in Labor Force	36.3	36.9	36.6	34.3	33.7	32.9	32.8	34.6	34.2	34.2
Labor Market Status										
Unemployment Rate	18.5	18.0	18.6	19.1	17.7	17.2	17.9	15.3	14.7	15.3
Employment/Population	52.0	51.7	51.6	53.2	54.6	55.5	55.2	55.4	56.2	55.7
LF Participation Rate	63.7	63.1	63.4	65.7	66.3	67.1	67.2	65.4	65.8	65.8

Table 1. Results for weekly YLS labor market status

Summary Statistics, 20 years and over (Not Seas Adj)

Labor Force Status	February 2020			March 2020			April 2020			May 2020			June 2020		
	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X
Fraction of population															
Employed	63.0	62.7	na	61.8	61.0	na	53.5	50.3	51.7	54.9	52.8	55.5	na	na	55.7
Unemployed	2.3	2.5	na	2.7	3.5	na	8.6	11.8	11.3	7.7	9.9	11.5	na	na	10.1
Not in Labor Force	34.8	34.8	na	35.5	35.5	na	37.9	37.9	36.9	37.3	37.3	32.9	na	na	34.2
Labor Market Status															
Unemployment Rate	3.5	3.9	na	4.2	5.5	na	13.9	19.0	18.0	12.4	15.8	17.2	na	na	15.3
Employment/Population	63.0	62.7	na	61.8	61.0	na	53.5	50.3	51.7	54.9	52.8	55.5	na	na	55.7
LF Participation Rate	65.2	65.2	na	64.5	64.5	na	62.1	62.1	63.1	62.7	62.7	67.1	na	na	65.8

Table 2. Comparison of YLS and CPS labor market status

Major highlights from the tables on aggregate figures are the following:

- The weekly unemployment rate from the YLS peaked at 19.1% of the labor force in the week of April 26- May 3. Since that time, it declined gradually and was 15.3% in the week of June 7 – 13.
- Comparing the CPS survey weeks, the CPS U3-alt unemployment rate was 19.0% in April compared to 18.0% for the YLS. For May, these estimates were 15.8% for the CPS compared to 17.2% for the YLS. (Note that the estimates for the population aged 16+ are about ½ ppt higher than for 20+.)
- The weekly employment-population ratio (EPR) declined sharply from 63% in the February 2020 CPS. According to the YLS, it hit a trough of 51.6% in April 19 – 25. Since that time, it rebounded to 55.7% in the week of June 7 – 13.
- Comparing the CPS survey weeks, the employment-population ratio (using the U3-alt definition) for the CPS was 50.3% in April compared to 51.7% for the YLS. For May, these estimates were 52.8% for the CPS compared to 55.5% for the YLS.
- The labor force participation rate (LFPR) was much less variable than the unemployment rate and the employment-population ratio. The LFPR declined only 3 ppt from the February CPS to the April CPS. The low of the weekly LFPR for the YLS was 63.1% in April 12 – 19. Since that time, it increased to 65.8% in the week of June 7 – 13.
- Comparing the CPS survey weeks, the CPS LFPR was 62.1% in April compared to 63.1% for the YLS. For May, these estimates were 62.7% for the CPS compared to 67.1% for the YLS. (The U3-alt adjustment does not affect the LFPR, because it only reallocates persons from employed to unemployed, and both of these groups are in the labor force.)

Results for major groups

Additionally, the YLS provides estimates of the labor market status of major groups. Table 3 shows the results by gender, age, and race. The YLS captures the major differences by these groups quite closely. The poor experience of the youngest group is striking. A major surprise is that the unemployment rate of the black population moved very close to that of the white population by mid-June.

Summary Statistics, 20+ (Not Seas Adj)

Labor Force Status	February 2020			March 2020			April 2020			May 2020			June 2020		
	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X
Gender															
Male	3.8	4.2	na	4.5	5.6	na	12.9	17.8	16.0	11.3	14.3	16.0	na	na	14.4
Female	3.1	3.5	na	3.9	5.4	na	15.1	20.4	20.2	13.6	17.5	18.5	na	na	16.4
Age Category															
20-24	6.7	6.8	na	8.6	9.9	na	25.0	29.9	27.7	23.2	26.6	27.2	na	na	24.6
25-54	3.3	3.6	na	3.9	5.0	na	12.6	17.4	16.1	11.2	14.3	14.8	na	na	13.3
55+	2.8	3.4	na	3.5	5.1	na	13.4	19.4	19.0	11.5	15.8	18.7	na	na	16.7
Race															
White	2.8	3.3	na	3.2	4.4	na	12.3	16.8	16.3	10.2	13.4	14.8	na	na	12.7
Black	5.7	6.0	na	6.3	7.5	na	16.0	21.7	20.5	15.9	19.6	20.3	na	na	13.5
Hispanic	4.4	4.6	na	5.8	7.7	na	17.8	23.8	21.9	16.4	19.7	22.3	na	na	24.2
Other	3.3	3.8	na	4.6	6.2	na	14.5	21.4	18.3	14.7	19.8	19.1	na	na	19.4

Table 3. Unemployment rates for demographic groups

Table 4 shows the results for education and marital status. The YLS tracks the CPS well here except for some marital groups. Note the sharp difference in the unemployment experience of college and post-graduate groups compared to less-educated groups. Additionally, married workers fare much better than others.

Summary Statistics, 20+ (Not Seas Adj)

Labor Force Status	February 2020			March 2020			April 2020			May 2020			June 2020		
	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X
Education Level															
HS or below	5.3	5.6	na	6.2	7.6	na	18.9	25.4	23.1	16.6	20.4	22.2	na	na	20.4
Some college	3.5	3.9	na	4.4	5.7	na	16.4	22.3	23.8	14.8	18.9	20.6	na	na	17.0
College grad	2.4	2.7	na	2.6	3.9	na	10.0	13.7	13.1	8.9	11.9	12.9	na	na	11.7
Post grad	1.6	2.0	na	2.3	3.5	na	6.3	9.2	6.4	5.3	7.4	9.1	na	na	9.6
Marital status															
Married	2.3	2.7	na	2.8	4.1	na	11.0	16.0	12.6	9.5	12.9	12.4	na	na	11.9
Widowed	3.6	4.9	na	4.8	6.1	na	15.9	22.6	18.5	15.7	20.0	20.1	na	na	16.2
Divorced	3.8	4.2	na	4.5	5.7	na	13.9	19.4	22.1	11.8	15.3	21.5	na	na	17.3
Separated	6.7	6.9	na	9.0	10.7	na	19.4	26.3	18.9	16.8	21.0	15.8	na	na	13.3
Never Married	5.4	5.7	na	6.3	7.5	na	18.8	23.8	24.3	17.4	20.8	22.8	na	na	20.2
Domestic / civil partnership	na	na	na	na	na	na	na	na	22.4	na	na	19.5	na	na	17.0

Table 4. Unemployment rates for demographic groups

The final table shows the unemployment rates by industry. These estimates sometimes diverge from the CPS. The average absolute difference in April and May between the CPS and the YLS is a little more than 3 ppt. In part, this gap may arise from respondents' lack of knowledge about their industry, but the results for agriculture suggest selection bias. Note that the YLS accurately captures the change for the sector that is most severely impacted – leisure and hospitality – with unemployment rates over 50% at the peak.

Summary Statistics, 20+ (Not Seas Adj)

Labor Force Status	February 2020			March 2020			April 2020			May 2020			June 2020		
	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X	CPS	CPS-alt	YLS-X
Industry															
Agriculture and related	8.5	8.9	na	6.0	6.7	na	6.9	9.7	10.3	4.2	5.2	13.7	na	na	9.1
Mining	5.6	6.0	na	5.3	5.6	na	10.0	12.4	8.2	8.0	9.8	11.5	na	na	16.8
Construction	5.1	5.4	na	6.3	8.1	na	15.5	22.7	22.2	11.8	15.9	12.1	na	na	12.6
Manufacturing	3.8	4.0	na	4.0	4.4	na	12.9	15.8	11.6	11.3	13.2	17.2	na	na	10.1
Wholesale and retail trade	3.9	4.2	na	4.5	5.3	na	16.0	21.4	21.7	14.0	17.3	19.0	na	na	15.2
Transportation and utilities	3.2	3.6	na	4.4	5.8	na	12.2	17.3	13.2	12.8	16.3	18.3	na	na	13.4
Information	2.5	3.1	na	1.8	3.5	na	10.9	14.2	9.4	11.4	14.3	13.0	na	na	10.6
Financial activities	1.8	2.1	na	2.2	3.0	na	5.4	8.8	6.1	5.8	7.6	7.7	na	na	6.4
Professional and business services	4.0	4.6	na	4.7	5.6	na	9.6	13.7	15.3	8.7	11.6	13.7	na	na	11.1
Educational and health services	1.9	2.1	na	2.8	4.7	na	11.1	15.1	11.2	9.7	12.9	12.0	na	na	15.0
Leisure and hospitality	5.6	6.1	na	7.6	10.1	na	37.8	47.8	54.1	35.3	42.1	43.8	na	na	33.3
Other services	2.7	3.3	na	3.8	5.4	na	21.8	34.8	23.5	17.2	26.5	19.0	na	na	18.0
Public administration	1.3	1.5	na	1.1	1.4	na	4.7	7.5	9.9	3.3	4.7	7.4	na	na	8.8
Armed Forces	na	na	na	na	na	na	na	na	-	na	na	8.1	na	na	1.5

Table 5.Unemployment rate by industry

Next steps

The present report is circulated to the survey community for comments on methods. The authors recognize that the experimental YLS has several drawbacks relative to the CPS. It is a much smaller survey, it lacks respondents who are experienced with CPS questions, it may be biased from imperfect representativeness of the sample, and it does not have a long history of trial, error, and correction.

Despite these shortcomings, we believe that internet surveys will be a valuable addition to the toolbox available for gathering societal information. In light of the increasing penetration of the internet into the US society – a trend that is bound to accelerate during the COVID crisis – it seems likely that internet panels will be increasingly important in the future. At least for the moment (June 2020), in-person surveys have become virtually impossible, mail surveys face high hurdles during the pandemic, and the response rate for many phone surveys is under 10%.

This study has three principal purposes. The first is to determine *whether it is feasible* to provide rapid-turnaround estimates of the state of the national labor market. We believe that the YLS passes this test. The second goal is to *provide more timely estimates* of the state of the labor market. Here again, the YLS can provide timely and flexible information and has passed this test. The third goal is to *test the reliability of online panels.* The goal of reliability has not yet been achieved and will await further testing in the months ahead.

Technical Appendix

Methods

In contrast to the CPS, the YouGov panel is an opt-in sample, and all interviews are conducted online. Online panels have the advantage of rapid turnaround and low cost. They have the disadvantage of selection bias and rely upon statistical adjustments to correct for differences between panel participants and the target population.

The validity of a high-response-rate probability sample, like the gold-standard CPS, depends mainly upon its design. Inferences from an opt-in panel are necessarily model-based and mostly untestable. One of the motivations for this study is to determine whether the data from rapid and inexpensive online surveys can provide useful insights before and between waves of more expensive and slower surveys like the CPS.

There are two critical elements for obtaining estimates from the YouGov panel: the selection of respondents and the weighting of responding panelists. The panel itself is manifestly not representative of the population on some characteristics (such as age, race, education, and even employment status). Instead, it provides a pool of respondents that can answer the questions and can be adjusted (weighted) to provide results that are representative of the US population.

For the YLS survey, the sample was chosen to be representative in terms of age, gender, education, and race using quota sampling. Panelists were allocated to 96 quota cells, based upon the cross-classification of their age (18-29, 30-44, 45-64, or 65+), gender (male or female), education (high school or less, some college, college degree, post-graduate degree), and race (white, black, or Hispanic). For each cell, a target number of respondents was selected proportional to the number of adults in the March 2020 Current Population Survey. We then constructed post-sample weights from a larger set of variables for which we have reliable estimates from the February CPS. In all, we used seven weighting variables: the four listed above, along with marital status, presence of children, and imputed February employment status.

The validity of the estimates depends upon certain model-based assumptions. It assumes that selection is on observables, so survey variables (such as April employment) are assumed to be conditionally independent of sample inclusion given the variables used for selection and weighting. Further, the weighting procedure also places restrictions upon higher-order interactions between the weighting variables. These are strong assumptions and almost certainly do not hold exactly. In practice, however, it is usually possible to find a set of variables that make the sample selection mechanism "missing at random" given these variables.

A full description of the methods used to correct for sampling bias is forthcoming in a future report.

Errors

As with other surveys, there are several reasons why unemployment and participation estimates generated by the YLS could differ from underlying population values. This "total survey error" can come from several sources. The major ones are sampling error, non-response error, errors from question-wording, interviewer error, and respondent error.

The first type, sampling error, is easily calculated. The standard errors of the estimate of the unemployment rate of the YLS for the CPS survey weeks of April, May, and June are calculated to be 0.7%. Table A-1 shows the comparison of the uncertainty range of the YLS compared to the CPS for the survey months. The survey error for the unemployment rate in the CPS is estimated to be 0.1 ppt.

The other sources of error are likely to be larger than sampling error, especially for the CPS, where sampling error is very small. The adjustment for U3-alt will illustrate the point. A key question in the CPS concerns workers who are employed but absent from work. Typically, absent workers have jobs, but they do not work during the reference week because they are on vacation, sick at home, etc. During the pandemic, many people consider themselves with jobs but "absent from work" because their employer has temporarily shut down. In April 2020, for example, 8 million workers in this category were classified as "employed." However, in reviewing the results, the BLS determined that they should have been classified as unemployed on temporary layoff. This reclassification would have raised the overall unemployment rate by 4.8 ppt in April and 3.1 ppt in May.

For purposes of comparison, we created a corrected unemployment rate, U3-alt, which reclassified from employed to unemployed those workers who report that they were absent because of "other reasons." These other-reasons absences are absences not due to usual reasons such as vacation, illness, bad weather, a labor dispute, family leave, etc. For simplicity in calculating U3-alt for different groups, our estimate of U3-alt moves all other-reasons absences into the unemployment pool, not just the excess over an expected level of such other-reasons absences. Consequently, our U3-alt rates are likely to be a few tenths of a ppt higher than BLS's calculations. [5]

Aside from the large change in the CPS unemployment rate, the main point is that the major identifiable error in the CPS came from interviewer error, not sampling error (5ppt for the former as compared to 0.1ppt for the latter in April). We found similar issues in the YLS. One problem is that about 1½% of those who said they worked for pay or profit stated they did not work for pay or profit in a later follow-up question. Similarly, we found that approximately 2% of respondents who said they worked for pay or profit stated that their main job was responding to online surveys. While this might be classified as work for pay, the YLS panel overrepresents those who answer online surveys. Whether these workers would have been unemployed or not-in-the-labor-force is not easily determined.

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[5] In its recent FAQs, BLS calculated alternative unemployment rates for only the aggregate 16+ population. When we apply our method to the 16+ group in March, April and May, we generate U3-alt rates that are from 0.3 to 0.4 ppt higher than the alternative unemployment rates presented in the BLS FAQs.

Margin of error, unemployment rate, YLS-X										
Error bounds,	Apr 5-11	Apr 12-18	Apr 19-25	Apr 26-May 2	May 3-9	May 10-16	May 17-23	May 24-30	May 31-June 6	June 7-13
Unemployment rate	%	%	%	%	%	%	%	%	%	%
Upper rate	22.0	20.5	22.1	22.6	21.2	19.7	21.4	18.8	18.2	17.8
Mean	18.5	18.0	18.6	19.1	17.7	17.2	17.9	15.3	14.7	15.3
Lower rate	15.0	15.5	15.1	15.6	14.2	14.7	14.4	11.8	11.2	12.8
CPS (U3-alt)		19.0				15.8				

Table A-1. Error bounds for the unemployment rate, YLS

The upper and lower rates are the mean plus or minus two standard errors of the estimated unemployment rate.