Estimating the Cumulative Impact of the Pandemic on Workers Using Administrative Unemployment Insurance Data

By: Alexander Bell, TJ Hedin, Peter Mannino, Roozbeh Moghadam, Carl Romer, Geoffrey Schnorr, and Till von Wachter*

*Von Wachter: UCLA (tvwachter@econ.ucla.edu), Schnorr: California Employment Development Department (geoffrey.schnorr@edd.ca.gov), Romer: California Policy Lab (carlromer@ucla.edu), Moghadam: California Employment Development Department), Mannino: California Policy Lab (pmannino@g.ucla.edu), Hedin: UCLA (hedin@g.ucla.edu), Bell: California Policy Lab (alexbell@g.ucla.edu)

The COVID-19 pandemic had a staggering impact on the labor market in the U.S. and many other countries, with extensive job loss and long-term unemployment affecting particularly less-advantaged workers. Standard measures such as the unemployment rate capture the state of the labor market at a point in time, typically in a given month. Yet, research has shown that events such as a job loss or an unemployment spell can affect workers' employment and wage outcomes for a long time, especially in recessions (Davis & von Wachter, 2011). As a result, the recent employment history of workers will likely influence their job search activity, layoff risk, labor supply, and training activity even once they are employed. Cumulative measures based on longitudinal data that reflect workers' recent employment history not only better measure which workers and communities were most impacted by a recession, but can also provide a more comprehensive view of the state of the labor market and likely employment and earnings dynamics.

Survey datasets typically used to assess the labor market, such as the Current Population Survey, are limited in their ability to capture workers' labor market histories. Administrative data from the Unemployment Insurance (UI) system on program use and earnings follow the entire covered workforce over time and hence make it possible to generate cumulative measures of labor market health. These data also allow for statistical analyses across more detailed geographical units and demographic groups. Furthermore, cumulative measures of incidence of

UI claims (on the extensive margin) and long-term duration of UI receipt (on the intensive margin) provide important insights into the extent and differences of UI use in the population.

The California Policy Lab (CPL) at the University of California has obtained access to California's administrative UI records through a partnership with the state's Employment Development Department (EDD). These data were used for a series of reports that analyzed the state of the California labor market throughout the COVID-19 pandemic, and provided a deeper understanding of the UI system and its data. This article briefly describes the administrative UI data, presents estimates of the cumulative impact of the COVID-19 crisis over its first year at the extensive and intensive margin, and compares how it differed for workers of various demographic groups. We find that during the first year of the crisis, 30% of the labor force filed a UI claim, over 50% of recipients spent more than six months on the program, and the mean work time lost was 13 weeks. Less advantaged workers and counties saw much higher rates of claiming and long-term unemployment.

I. Standard Measures vs. Cumulative Measures

Standard measures of employment treat workers who remained employed throughout an entire period the same as workers who lost their job, spent time in unemployment, and were recently re-employed. This would fully capture the state of the labor market if job losers were in the same economic position after jobs loss as they were before, thereby ignoring both search dynamics and "scarring" effects from job loss. Yet, job losers have a higher likelihood to change jobs again (e.g., Krolikowski 2017), switch industry or occupations (e.g., Jackson 2021), or suffer from repeated job loss (e.g., Stevens 1997) and unemployment (Bell et al. 2021). Workers losing stable jobs at good employers experience substantial future earnings declines (Davis and von Wachter 2011), a pattern accentuated for workers experiencing longer unemployment spells

(Schmieder, von Wachter, and Bender 2016). Hence, the recent work history of the current labor force can aid our understanding of labor market dynamics. By capturing the overall earnings losses afflicting a community or group of workers, the total extent of job loss or long-term unemployment will also better capture the cost of recessions, and can be a useful indicator of where government support is most needed. Finally, cumulative measures can be particularly helpful for characterizing the cost of recessions for marginalized groups who often experience above-average levels of unemployment. Differences in unemployment rates at points in time will accumulate over long periods to create larger absolute differences in the total unemployment between groups.

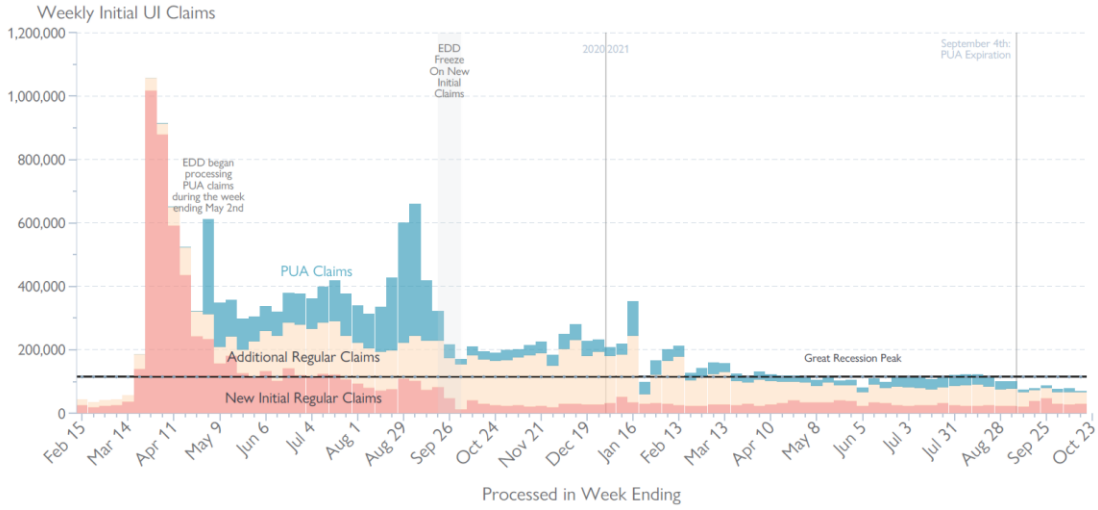
Such cumulative measures are particularly salient in the context of the UI program. UI recipients are of interest in their own right, since they can experience large earnings losses and long unemployment spells (e.g., Jacobson, LaLonde, and Sullivan 1993), and are often the focus of retraining or job search assistance programs. At the same time, cumulative measures can better characterize the overall reach of the UI system, which has been long criticized for low coverage, particularly among less-advantaged workers (e.g., Bell et al. 2022).

II. Description of Administrative UI Data

We generate cumulative measures of unemployment over the COVID-19 pandemic using longitudinal UI administrative records from two data sets. The initial claims files contain the universe of new and additional claims for UI submitted by workers in California and include detailed demographic and geographic characteristics. Figure 1 illustrates the large rise in weekly new initial claims in the first months of the COVID-19 pandemic. The figure also shows that starting in mid-2020 a large and growing proportion of initial claims came from UI claimants that had found a job, stopped receiving benefits, and then returned to UI via a so-called

additional claim.[1] This large amount of churn, discussed in CPL's UI reports, underscores the importance of deduplicating initial UI claims when assessing the total impact of the crisis.

Figure 1: Weekly Initial UI Claims (including PUA) During the COVID-19 Crisis in California (3/15/2020 - 10/16/2021)



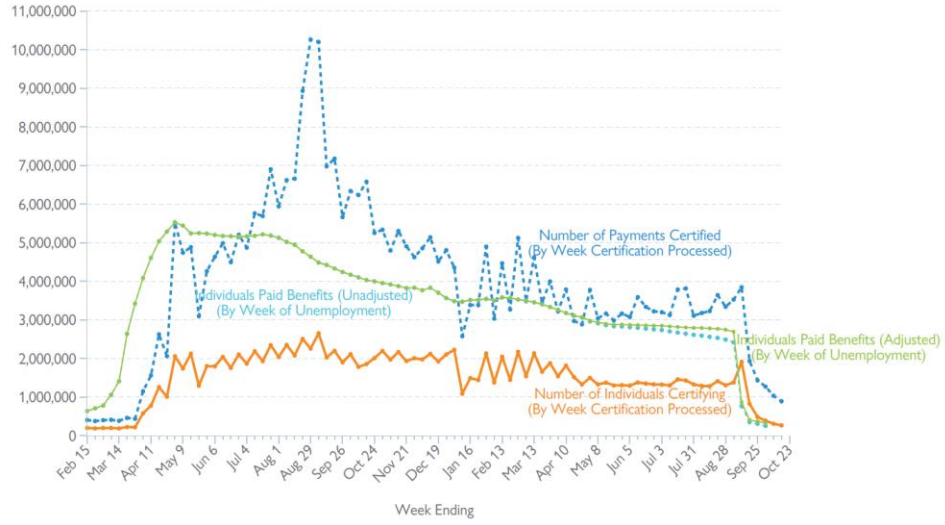
Notes: New Initial Regular Claims includes new initial claims for regular state UI. Additional Regular Claims includes additional claims for regular state UI and additional claims for extension programs. This figure does not include transitional claims, as DOL does not include them in their headline initial claim number nor do they represent flows into the UI system. Source: California Employment Development Department

The continuing claims files contain the records of all UI claims paid each week, including the amounts paid and the weeks of unemployment for which those claims were paid. The continuing claims series published by the Department of Labor (DOL) reports payments by the week they were processed. Due to administrative delays or retroactive claims, payments are often processed several weeks after the week of unemployment that the payment is for. Moreover, not all processed claims are actually paid (for example, if a worker reports earnings above a threshold for the particular week). An advantage of the administrative data is that we can account for differences in timing and fluctuations in benefit denial by counting the number of

[1] In contrast, the publicly available data from the DOL only provides new and additional claims by month.

individuals that received benefits for a given week of unemployment, shown in Figure 2 over the course of the COVID-19 pandemic.[2]

Figure 2: Total Number of Individuals Paid Benefits by Week of Unemployment, Total Number of Individuals Certifying for Benefits by Week of Certification, and Total Number Payments Certified by Week of Certification (All Claims)



Notes: The "Number of Payments Certified" refers to the number of payments that were certified during a given week (the common definition of continued UI claims). The "Number of Individuals Certifying" refers to the number of people that certify for UI benefits in a given week (which is roughly half of the number of payments because certification is bi-weekly in California). The "Individuals Paid Benefits by Week of Unemployment" refers to the number of individuals paid benefits for the week they experienced unemployment either adjusting for historical lags in claiming behavior ("Adjusted") or not ("Unadjusted"). This figure includes claimants receiving benefits for regular UI, PUA, and PEUC. Source: California Employment Development Department

III. Cumulative Measures of Unemployment

We exploit the longitudinal nature of the administrative data just described to create two cumulative measures of unemployment along the extensive and intensive margins.

A. Extensive Margin: Unique UI Claimants as a Share of the Pre-Pandemic Labor Force

The first cumulative measure of labor market disruption from the COVID-19 pandemic is the share of the pre-crisis labor force that applied at least once for regular state unemployment

[2] The claims by week of unemployment graph comes with an additional adjustment to account for retroactive claims as outlined in Bell et al. 2021.

insurance between March 2020 and March 2021.[3] We interpret this as a measure of the total number of workers who experienced job loss during the crisis.[4] The advantage of administrative data over surveys like the CPS or Job Opening and Labor Turnover survey (JOLTS) is that the administrative data can be used to get a count of unique individuals affected by a recession over long periods of time. In the publicly available DOL data, summing monthly new initial claims series could provide a closer estimate of our measure, but would still suffer from some duplication from claimants who file multiple claims.[5] Crucially, the publicly available data do not provide the new initial claims series with demographic or detailed geographic breakdowns.

Column 1 of Table 1 shows the percent of the February 2020 labor force in California that applied for Regular UI benefits through March 2021.[6] It also provides this estimate for selected demographic groups. Over the first year of the COVID-19 crisis, a staggering 31% of the California labor force applied for regular UI benefits. Table 1 also shows the accumulated disparity between groups is substantial, and much larger than what would be implied by a comparison of, say, monthly unemployment or UI claim rates. In particular, we find that less-educated workers have been hit hardest over the course of the pandemic, with over half of workers with a high school degree or less having applied for Regular UI benefits in the first year (over three times the filing rate of workers with a Bachelor's degree), and that women filed for UI at a higher rate than men.

[3] While fraud has been widely reported in the Unemployment Assistance (PUA) program, this was much less of an issue for regular UI claims that we focus on here.

[4] This interpretation is reasonable in our context, as UI recipiency rates among the unemployed reached nearly 90% in California during the pandemic (Bell et al., 2022). Prior to the pandemic, recipiency rates in California were only around 20%, such that our measure would yield an important metric for the extent of UI claims.

[5] This could be the case if the Employment Development Department website experienced crashes from high usage and users resubmitted their claims because they were unsure if their first claim was received. Alternatively, it could happen if employers submit claims on an employee's behalf and an employee submits a claim themselves (Cajner et al. 2020). As shown in Figure 1, the duplication issue would be substantial for all initial claims.

[6] Unlike in other states, in California PUA claimants did not need to first file and be rejected for regular UI, and hence they do not affect these numbers.

Table 1: Cumulative Measure of UI Claims at the Extensive and Intensive Margin During the First Year of the COVID-19 Crisis

	Unique Claimants as Percent of Pre-Crisis LF	Mean UI Duration Among Recipients	Time Lost Due to Pandemic	Long Term Unemployed Among Recipients
Statewide	31.2%	25.9	8.1	46.5%
Panel A : Age Group				
16-24	51.8%	24.5	12.7	42.4%
25-34	35.0%	26.2	9.2	47.3%
35-44	25.5%	26.0	6.6	46.9%
45-54	24.8%	25.3	6.3	45.0%
55+	27.4%	27.0	7.4	49.7%
Panel B : Race/Ethnicity				
Asian (Non-hispanic)	NA	26.6	NA	48.1%
Black (Non-hispanic)	NA	29.2	NA	55.7%
Hispanic	NA	24.8	NA	43.2%
White (Non-hispanic)	NA	25.2	NA	44.2%
Panel C : Education				
HS or Less	47.9%	27.0	13.0	49.6%
Some College	30.6%	25.7	7.9	46.8%
Bachelors or More	13.2%	23.9	3.2	41.3%
Panel D : Gender				
Women	34.6%	26.4	9.1	47.9%
Men	28.3%	25.3	7.2	45.0%

Notes: The unique claimants and the long-term unemployed are totals from March 2020 to March 2021. The pre-crisis labor force was calculated from the February 2020 Current Population Survey. Figure excludes all PUA claims. Race/ethnicity are not included in Column 1 because the data is collected differently between the UI data and the CPS, making comparisons difficult. Source: California Employment Development Department.

B. Intensive Margin: Long-Term Unemployment Rate

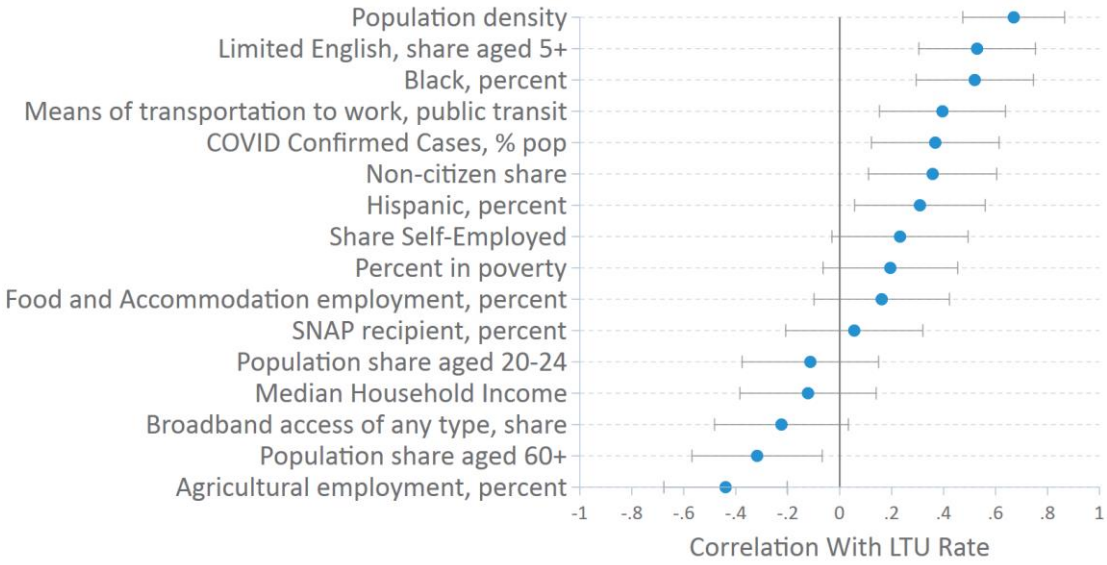
The second cumulative labor market indicator we calculate is the share of UI claimants who have received more than 26 weeks of unemployment benefits in the first year of the crisis. To account for the high degree of churn seen in the data, our measure is based on the total time spent on UI in a year, ignoring temporary returns to employment. In contrast, the rate of long-term unemployment (LTU) is defined by the Bureau of Labor Statistics as the share of the unemployed who have been jobless for over 26 weeks (Bureau of Labor Statistics 2022). Again, an advantage of our measure is that it captures the extent of chronic loss of employment over a longer time period. Moreover, the administrative UI data allows us to measure the incidence of long unemployment durations at more detailed geographic and demographic levels.

One potential limitation compared to the CPS is that UI-based measures will depend on the maximum number of weeks available to claimants. During the pandemic, the federal

Pandemic Emergency Unemployment Compensation (PEUC) program and the state Extended Benefits programs made the maximum benefit duration well over 26 weeks. In regular economic times, considering mean total UI duration or a lower threshold is more appropriate.[7]

As a particularly salient use case, Figure 3 presents county-level correlations between the LTU rate calculated from the UI data and a series of economic and demographic attributes from the 2019 American Community Survey. It demonstrates that areas that were already vulnerable before the crisis were still affected by above-average incidence of LTU in the year leading up to March 2021. For example, counties with more limited English speakers were also counties where claimants were more likely to experience LTU, as were counties with higher population densities and counties with a greater share of limited-English-speaking residents.

Figure 3: County Level Correlations Between Long-Term Unemployment Insurance Receipt in the First Year of the COVID-19 Crisis and County Characteristics



Source: California Employment Development Department. ACS data via (Ruggles et. al 2021).

[7] It is also the case that not all claimants qualify for the maximum benefit duration, which could bias the measure across different types of workers. In principle, the microdata could be used to identify the subset of claimants who qualify for the whole duration and the rate of LTU could be calculated using that sample.

C. Combining the Intensive and Extensive Margins: Weeks Lost to Unemployment

Finally, the administrative UI data can be used to generate an indicator of the cumulative labor market impact of the COVID-19 pandemic by combining extensive and intensive margin measures. We calculate the average number of weeks that members of the California labor force spent on UI as:

(1) $$E(\text{time on UI}) = Pr(\text{UI claim}) * E(\text{time spent on UI} \mid \text{UI claim}),$$

where the PR(UI claim) is the extensive margin measure discussed in Section III.A, and the E(time spent on UI | UI claim) is an alternate intensive measure representing the mean number of weeks a claimant received UI benefits. In Table 1, columns 1-3 show the combined measure and both constituent parts. Column 3 indicates that in the first year of the pandemic, the average member of the labor force spent nearly two months receiving regular UI benefits. Across the demographic groups, less educated, female, and younger members of the labor force experienced more weeks on UI than other demographic groups.

IV. Conclusion

Administrative datasets from the UI system can be a valuable source of insight into the labor market, but are not often made available to researchers. In this paper, we put forward three cumulative measures of the labor market that can be calculated from UI administrative data and used them to measure the impact of the COVID-19 pandemic in California. Along with generating these measures from the UI microdata, CPL published a series of briefs using the UI data to better understand the UI system.[8] Caution should be applied when extending these analyses and results beyond California, as different U.S. states may not only have weathered the

[8] https://www.capolicylab.org/california-unemployment-insurance-claims-during-the-covid-19-pandemic/

pandemic in different ways, but also have very different UI systems (e.g., Bell et al 2022). Future collaboration between state agencies and researchers that unlock these state-level administrative datasets would improve our understanding of labor markets and UI systems across the U.S.

References

Bell, Alexander, Thomas Hedin, Peter Mannino, Roozbeh Moghadam, Geoff Schnoor, and Till Von Wachter. 2022. "Disparities in Access to Unemployment Insurance During the COVID-19 Pandemic: Lessons from U.S. and California Claims Data." Department of Labor: California Policy Lab.

Bell, Alexander, Thomas Hedin, Roozbeh Moghadam, Geoff Schnoor, and Till Von Wachter. 2021. "An Analysis of Unemployment Insurance Claims in California During the COVID-19 Pandemic." UI Report. California Policy Lab. https://www.capolicylab.org/wp-content/uploads/2021/12/June-30th-Analysis-of-Unemployment-Insurance-Claims-in-California-During-the-COVID-19-Pandemic.pdf.

Bureau of Labor Statistics. 2022. "Concepts and Definitions (CPS)." 2022. https://www.bls.gov/cps/definitions.htm.

Cajner, Tomaz, Andrew Figura, Brendan M. Price, David Ratner, and Alison Weingarden. 2020. "Reconciling Unemployment Claims with Job Losses in the First Months of the COVID-19 Crisis," July. https://www.federalreserve.gov/econres/feds/reconciling-unemployment-claims-with-job-losses-in-the-first-months-of-the-covid-19-crisis.htm.

Steven J., and Till von Wachter. 2011. "Recessions and the Costs of Job Loss [with Comments and Discussion]." *Brookings Papers on Economic Activity*, 1–72.

Jackson, Osborne. 2021. "Job Displacement and Sectoral Mobility." Federal Reserve Bank of Boston Research Department Working Papers 21–19. Federal Reserve Bank of Boston Research Department Working Papers. Federal Reserve Bank of Boston. https://doi.org/10.29412/res.wp.2021.19.

Jacobson, Louis S., Robert J. LaLonde, and Daniel G. Sullivan. 1993. "Earnings Losses of Displaced Workers." *The American Economic Review* 83 (4): 685–709.

Krolikowski, Pawel. 2017. "Job Ladders and Earnings of Displaced Workers." *American Economic Journal: Macroeconomics* 9 (2): 1–31. https://doi.org/10.1257/mac.20140064.

Schmieder, Johannes F., Till von Wachter, and Stefan Bender. 2016. "The Effect of Unemployment Benefits and Nonemployment Durations on Wages." *American Economic Review* 106 (3): 739–77. https://doi.org/10.1257/aer.20141566.

Stevens, Ann Huff. 1997. "Persistent Effects of Job Displacement: The Importance of Multiple Job Losses." *Journal of Labor Economics* 15 (1): 165–88.

Ruggles, Steven Sarah Flood, Sophia Foster, Ronald Goeken, Jose Pacas, Megan Schouweiler and Matthew Sobek. 2021. IPUMS USA: Version 11.0 [dataset]. Minneapolis, MN: IPUMS,. https://doi.org/10.18128/D010.V11.0