Equity of COVID-19-induced job loss duration and effect of unemployment insurance generosity on labor supply

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Abstract

I study COVID-19-induced job losses using administrative data on the universe of Unemployment Insurance claims for the state of Indiana. I show that during the pandemic, women and Blacks not only lost more jobs but also stayed unemployed longer. Using difference-in-difference strategy exploiting the eligibility for Lost Wages Assistance (LWA) benefits, I find that a change in benefit amount by $300 per week is associated with a 30-35% change in exit rate from unemployment in opposite direction. Indiana's unemployment rate in August 2020 would have been lower by 0.1 percentage points (=7.2%) if not for $300 per week LWA benefits. The magnitude of the effect suggests that Unemployment Insurance payments were unlikely to be a major factor in explaining the difficulty business faced in finding workers in the first half of 2021.

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1 Introduction

The COVID-19 pandemic caused large job losses. U.S. unemployment rose to 14.8% in April 2020, the highest rate since the great depression high of 24.9% (Margo, 1993). To address the economic impacts of the pandemic, the U.S. government passed the Coronavirus Aid, Relief, and Economic Security (CARES) Act. It included several provisions such as establishing the Federal Pandemic Unemployment Compensation (FPUC) to increase unemployment benefits for workers who were out of work because of the COVID-19 pandemic. The FPUC paid unemployed workers an extra $600 per week in addition to the regular Unemployment Insurance (UI) benefits. After expiration of FPUC, additional $300 per week was provided at different points in time until September 2021.

Two issues related to the pandemic have received large media attention. First, women and people of color experienced a disproportionate share of job losses (Bateman and Ross, 2021; Cohen, 2021; Tedeschi and Bui, 2020). The disproportionate effect on women is opposite of what has been observed in previous downturns and has led to the COVID-19-induced recession being referred to as the "shecession" (Holpuch, 2020). This inequity in job losses is largely attributed to the fact that women and people of color are more likely to be employed in industries and occupations which suffered more from the pandemic. Additionally, for women, the closure of schools meant additional household care giving responsibilities due to children learning from home, termed as the "COVID motherhood penalty" (Fairlie et al., 2021). Secondly, the extra $600 and $300 payments per week, resulted in weekly UI payments greater than the wage earnings for many workers, which may have encouraged them to become unemployed and to delay joining their jobs (Mulligan and Moore, 2020). This work disincentive effect, also known as the moral hazard problem of unemployment insurance, is a common argument against increasing UI benefits and was one of the reasons being proposed for businesses not being able to find enough workers in the first half of 2021 (Melchior, 2021).

In this paper I study these issues by answering two research questions. First, did women and Blacks suffer disproportionately during the pandemic in terms of unemployment duration? Second, did the generous UI benefits during the pandemic affect labor supply by discouraging workers from returning to work? To answer these questions, I use administrative data on the universe of Unemployment Insurance claims for the state of Indiana. These are individual-level panel data containing UI payments information for half a million Indiana workers, about 16% of state's labor force. To study the equity of job loss duration, I compare unemployment duration by gender and race. To study the work disincentive effect of UI, I observe the rates of workers exiting unemployment after expiration of extra benefits.

I find higher duration of unemployment for women and Blacks: Women were unemployed for an extra 0.9 weeks (9%) as compared to men, while Blacks were unemployed for an extra 2.8 weeks (30%) as compared to whites. I also find higher incidence of UI receipt for women and Blacks: women were 1 percentage point more likely (=16%) to receive UI as compared to men, while Blacks

were 8 percentage point more likely (=22%) to receive UI as compared to whites. Thus, the inequity in job loss incidence by gender and race, established by previous literature, is evident in job loss duration too. The differences in job loss duration for Black-whites are much bigger than men-women. The relatively modest effects by gender are consistent with Goldin (2022). In absence of pre-pandemic differences in duration, I cannot attribute the differences to the pandemic.

Exploring the determinants of the duration, I find that the differences in duration emerge due to later ending of the unemployment spell rather than early beginning. This is consistent with the last hired but not with the first firing of Blacks during weak economic periods examined in Freeman et al. (1973) and Couch and Fairlie (2010). Industry and occupation characteristics, the two leading reasons for disproportionate job losses, explain around 37% of the men-women gap and 17% of white-Black gap. Moreover, at least 11% of the difference in men-women duration and 64% of the difference in white-black duration persist after accounting for differences in industry, occupation, age, location, and pre-separation wage. The difference in duration is larger for women likely to have childcare responsibilities which suggest that childcare responsibilities likely played a role in the longer unemployment duration of women.

To study the work disincentive effect of UI, I exploit the timing of expiration of Federal Pandemic Unemployment Compensation (FPUC) and Lost Wages Assistance (LWA) benefits. These expirations were somewhat of a surprise since it was expected that Congress would pass legislation to continue these payments. First, I document sharp reductions in the aggregate number of UI recipients after the expiration of FPUC ($600) and LWA ($300) payments. These discontinuous declines in a short time are consistent with UI benefits negatively affecting labor supply. Second, for a subsample of low-wage workers, I employ difference-in-difference and event-study strategies by exploiting the LWA eligibility cutoff. I focus on a sample of workers above and below the eligibility cutoff and study their exit rates from unemployment around FPUC and LWA expiration.

I find that a change in benefit amount is associated with a change in exit rates in opposite direction , consistent with UI negatively affecting labor supply. Workers who lose $300 have a lower probability of exiting unemployment by 1.4 percentage points compared to workers who lose $600, and a higher probability of exiting unemployment by 3.5 percentage points compared to workers whose benefits do not change. Taken together, a change in benefit amount by $300 per week is associated with a 30-35% change in exit rate from unemployment in opposite direction. To get a sense of magnitude of this effect, I estimate the counterfactual unemployment in August 2020 in absence of $300 LWA payments. The unemployment rate in August 2020 would have been lower by 0.1 p.p (=7.2%) if not for LWA.

The paper is related to two streams of literature. The first stream of literature is on the labor market effects of recessions that has well documented heterogeneous impacts by gender and race. During the great recession, men suffered severely as compared to women while Blacks suffered

severely as compared to whites (Hoynes et al., 2012). While COVID-19 is different from other recessions in terms of its length and underlying causes, the impacts of the COVID-19 recession on different races are similar to those of previous recessions (Cortes and Forsythe, 2020; Couch et al., 2020).[1] Interestingly, the gendered impacts are opposite: Women fared worse during COVID-19 due to their employment in industries and occupations severely affected by the pandemic as well as increased childcare needs (Albanesi and Kim, 2021; Alon et al., 2020, 2021, 2022; Cajner et al., 2020; Deryugina et al., 2021; Fairlie et al., 2021; Furman et al., 2021; Garcia and Cowan, 2022; Hansen et al., 2022; Montenovo et al., 2020). In a more recent analysis, Goldin (2022) shows that the disproportionate effects on women during the pandemic depends on the counterfactual used. The paper notes that "The pandemic downturn was "she-cession" relative to other recessions and relative to the January (or February) 2020 figure. But gender differences month by month in employment outcomes, relative to pre-pandemic level, are not large. The big differences are by education rather than gender, and that makes it more similar to previous recessions."

The variation in the duration of unemployment by gender and race remains an understudied aspect of COVID-19 job losses. This paper complements the literature by showing that during the COVID-19 recession, women and Blacks not only lost more jobs but also stayed unemployed longer. Thus, the adverse effects of the COVID-19 recession on these groups were worse than implied by only the job losses considered in the existing literature.

The second stream of literature the paper relates to is on work disincentive effects of UI. Extensive literature exploring this topic has typically found that an increase in UI benefits increases unemployment duration (See the excellent summaries in Krueger and Meyer, 2002 and Schmieder and Von Wachter, 2016). During the great recession, extension of the UI benefit period had a small effect on unemployment (Boone et al., 2021). There is emerging literature on the effects of COVID-19 era UI programs on labor supply, driven by the observation that the statutory replacement rates (UI benefit /lost wage earnings) due to these programs were higher for a majority of workers (Ganong et al., 2020). This might lead individuals to become unemployed voluntarily or stay unemployed longer.[2] But Boar and Mongey (2020) build a simple dynamic model to understand conditions under which workers may choose to return to work even when UI pays more than their wage. This is because the expected costs of expiration of the job offers, search frictions, and wage losses out of unemployment in a recession may be enough to offset the temporary benefits. Similar evidence is presented in Petrosky-Nadeau (2020) that estimates the reservation benefit for a wide range of U.S. workers and argues that few would turn down an offer to return to work at the previous wage under the increased UI payments provided by the CARES act.

[1] As per National Bureau of Economic Research (2021), the COVID-19 recession lasted only two months (March and April 2020). The decrease in economic activity was more due to the fear of a disease rather than structural issues in the economy.

[2] Individuals are typically ineligible for UI if they become unemployed voluntarily. But the terms of FPUC were very generous. For example, no documentation was required to prove COVID-19 infection.

Empirical evidence has found no or small negative effects of COVID-19 era UI programs on labor supply. Using data from Homebase, a private firm that provides scheduling and time clock software to small businesses, Bartik et al. (2020) and Finamor and Scott (2021) show that the employment trends at the introduction and expiration of the FPUC benefits do not suggest large negative effects of FPUC on employment. Using data from the Household Pulse Survey, Dube (2021) finds that the probability of employment after FPUC expiration is higher but insignificant in states with higher median replacement rates. Using data from Chase bank account holders Ganong et al. (2021b) finds that the job-finding rate jumps up when FPUC expired in August 2020 and falls again when new supplements begin in January 2021. Using data from a financial services company, Earnin, Coombs et al. (2021) find that ending pandemic unemployment insurance increased employment by 4.4 percentage points in 22 states that stopped the extra $300 in UI benefits in June 2021. Using Current Population Survey data, Holzer et al. (2021) shows that the flow of unemployed workers into employment increased by 14 percentage points after the termination of benefits as compared to states where benefits expired in September 2021. Using similar identification and data from Job Openings and Labor Turnover Survey (JOLTS), Albert et al. (2022) finds that the elimination of enhanced UI benefits in many states in mid-2021 was associated with a small increase in hiring activity but no differences in measured unemployment.

The paper adds to the literature by studying the effect of UI generosity during the COVID-19 pandemic using UI administrative data and a new source of identifying variation. Consistent with the literature, I find that generous UI payments during the pandemic likely increased unemployment. However, given the small magnitude, it seems unlikely that these payments were a major factor in explaining the difficulty business faced in finding workers in the first half of 2021. This highlights the need to study other reasons for the labor shortage such as exits from the labor force, childcare and health concerns, and changing worker preferences.

The results enrich our understanding of the unequal effects of the COVID-19 pandemic on the labor market and the extent to which UI generosity influenced worker behavior in this somewhat unusual experiment. This is useful while designing policies to stabilize labor markets during downturns by targeting policies to reach the most affected population. The evidence on the work disincentive effects of UI should help policymakers when considering increasing UI benefits in the future.

2 Unemployment Insurance

For 85 years, Unemployment Insurance (UI) has served as the main government program designed to assist workers who lose a job through no fault of their own and stabilize the U.S. economy in times of macroeconomic contraction (Gould-Werth, 2020). UI is funded by a tax imposed on the employers and is administered by individual states who decide on eligibility criteria, benefit amount and duration. UI benefits are treated as taxable wages for federal tax purposes. Some states do not tax benefits at all, some states allow to deduct a part of it and others tax benefits as regular

wage income.

In Indiana, an individual can claim UI benefits for a maximum of 26 weeks.[3] The maximum benefit amount is 0.47 times average weekly income in the 4 quarters preceding the quarter in which applying, also known as the base period.[4] The minimum and maximum weekly UI payments are $50 and $390. Indiana taxes UI benefits but allows some amount to be deducted.

2.1 Unemployment insurance during COVID-19 pandemic

A number of provisions of the CARES Act related to unemployment insurance. This included relaxing a number of restrictions on receiving UI and new programs that paid the workers unemployed during the COVID-19 pandemic. These programs differed in the generosity of payments, eligibility and time periods. Among other things the CARES Act (i) increased the maximum number of weeks the UI benefits can be paid by 13, (ii) added an extra $600 per week in addition to the amount the regular UI paid by establishing the Federal Pandemic Unemployment Compensation (FPUC), and (iii) made self-employed and contract workers (including gig-economy workers), and those who have insufficient wage history eligible for the payments.[5] The size of the FPUC payment — $600 — was designed to replace 100% of the mean U.S. wage when combined with mean state UI benefits. The CARES Act implemented a fixed supplement to all workers in part because it was viewed as infeasible to implement policies that depended on individual earnings (American Enterprise Institute, 2021; Ganong et al., 2020). Workers working at reduced hours were eligible to receive benefits as long as they receive at least $1 in regular UI.

After the expiration of FPUC, almost all states provided an additional $300 per week for up to six weeks through Lost Wages Assistance (LWA). Fewer workers (those receiving at least $100 in regular UI and suffered job loss due to COVID-19) were eligible for LWA payments. These payments continued for 3-6 weeks. The Continued Assistance to Unemployed Workers Act of 2020 (CAUWA) (became law on December 27, 2020) extended many of the Unemployment Insurance programs from the CARES Act through the week ending March 13, 2021. CAUWA added a smaller amount, extra $300 per week, to the regular UI benefits. These payments were further extended through the week ending September 4, 2021 by the American Rescue Plan Act of 2021 (which became law on March 11, 2021).

[3]Most of the information in this section is from Unemployment Insurance Claimant Handbook of Indiana Department for Workforce Development.

[4]To meet the minimum eligibility for UI, (i) total wages during the base period must be equal to at least one and one-half (1.5) multiplied by wages in the highest quarter of your base period, (ii) base period wages must total at least $4,200, with (iii) at least $2,500 of those wages earned in the last six (6) months of the base period.

[5]These provisions were much liberal as compared to those during the great recession, when the federally funded benefits were extended upto to 79 weeks and supplemental weekly payment of $25 was added (American Enterprise Institute, 2021).

2.2 Other relaxations

To receive UI benefits, workers are required to be able, available, and actively seeking full-time work. During the COVID-19 pandemic, Indiana, like many other states relaxed this work search requirement for receiving UI benefits.[6] This requirement was restored on June 1, 2021.[7] UI benefits up to $10,200 received in 2020 were exempt for federal tax purposes. Many states, including those who do tax UI benefits, decided to exclude $10,200 from the taxable amount for 2020. The federal exemption for up to $10,200 of unemployment compensation received in 2020 did not apply for Indiana.

3 Data

The main source of data for this study is the universe of weekly Unemployment Insurance (UI) claims in the state of Indiana between January 2020 - July 2021. These are administrative data provided by the Indiana Department of Workforce Development, the state agency that administers UI in Indiana. The individual and week level data includes information such as the amount of UI benefits paid, demographic characteristics (age, gender, race), industry, occupation, and geographic location of UI recipients.[8] For each payment, I observe if it includes any deductions are made. I also observe the wage before getting unemployed, and whether the recipient joins the pre-separation employer after ending an unemployment spell. The data only contain payments made under regular UI and not all the programs introduced through CARES Act.[9] I discuss more details of the data in Appendix B. The data on labor force by gender and race, employment by industry and occupation and the monthly number of unemployed comes various programs of the U.S. Bureau of Labor Statistics (Geographic Profile of Employment and Unemployment, Occupational Employment and Wage Statistics, Quarterly Census of Employment and Wages, and Local Area Unemployment Statistics).

For the analysis, I focus on data for 2020 since these reflect the period when the COVID-19 effects were strongest. More than 550,000 workers received UI benefits for at least one week in this period which is around 16% of the total labor force in January 2020. The total benefit amount distributed was more than $3 billion ($\approx$ $5,500 per worker). The demographic, industry and occupational characteristics for the recipients are shown in Table 1. Women constitute 48% of recipients, Whites constitute 77% while Blacks constitute 13%. The largest proportion of recipients are from

[6] Executive Order 20-05 as mentioned in the Indiana UI COVID FAQ dated March 26,2020

[7] Executive Order 21-13

[8] The geographic location is available at the Economic Growth Region (EGR) level. All the 92 counties in Indiana are grouped into 11 Economic growth regions (EGR) based on economic and social ties, specifically commuting patterns, demographics, and other quantifiable factors (Indiana Nonprofits Project, 2007).

[9] I observe FPUC (extra $600 between May 2020 - July 2020) and CAUWA (extra $300 between January 2021 - March 2021) payments but not LWA (extra $300 in September 2020) payments. I also do not observe payments made under PEUC (extension of 13 weeks) or PUA (payments made to self employed and others not typically covered in UI).

Table 1: Recipient characteristics

	Count	Proportion
Gender		
Women	251,009	0.48
Race		
White	400,906	0.77
Black	70,096	0.13
Asian	9,164	0.02
American Indian or Alaska Native	2,351	0.00
Hawaiian Native or Pacific Islander	796	0.00
Other	40,153	0.08
Ethnicity		
Hispanic	27,757	0.05
NAICS		
Manufacturing	159,536	0.32
Accommodation and Food Services	63,701	0.13
Health Care and Social Services	52,596	0.11
Retail Trade	43,155	0.09
Admin./ Support / Waste Mgt. / Rem. Services	39,117	0.08
All other	140,823	0.28
Occupation		
Production Occupations	91,852	0.18
Office and Administrative Support Occupations	68,700	0.13
Management Occupations	61,083	0.12
Food Preparation and Serving Related Occupations	51,471	0.10
Sales and Related Occupations	33,020	0.06
Construction and Extraction Occupations	32,021	0.06
All other	175,553	0.34
Age group		
16-24	67,253	0.13
25-34	132,650	0.25
35-44	111,885	0.21
45-54	101,979	0.19
55-64	85,097	0.16
Region		
Region 1 (North)	58,079	0.11
Region 2 (North)	61,782	0.12
Region 3 (North)	66,567	0.13
Region 4 (North)	42,702	0.08
Region 5 (Central)	138,032	0.26
Region 6 (East)	22,644	0.04
Region 7 (West)	13,053	0.02
Region 8 (South)	16,730	0.03
Region 9 (South)	26,988	0.05
Region 10 (South)	18,829	0.04
Region 11 (South)	32,505	0.06
Return to same employer	292,514	0.72

manufacturing industry (32%), followed by Accommodation and Food Services (13%), Health Care and Social Services (11%), and Retail Trade (9%). Largest proportion of recipients are from production occupations (18%), followed by Office and Administrative Support Occupations (13%), Management Occupation (12%), and Food Preparation and Serving Related Occupations (10%). Age group 25-34 and 35-44 constitute 46% of recipients. The largest share of recipients, 26%, are from the region 5, that also contains the state capital. Seventy-two percent of the employees return to the same employer after the unemployment spell, much higher than pre-pandemic rates of 20% (Ganong et al., 2021a). These job losses are likely to be furloughs. The average annual earnings is $39,876 and the average weekly benefit amount is $562. For comparison, the median household income in Indiana in 2019 was $56,303 and the per capita income was $29,777 (U.S. Census Bureau, 2019). The average annual wage and hence benefit amounts are smaller for women and Blacks as compared to men and whites respectively (Appendix B).

4 COVID-19-induced job losses

4.1 Gender and race

Table 2: Job loss severity - Gender and Race

Group	UI recipients	Labor force	Recipients/Labor force	UI weeks
Men	270,993	1,806,500	0.15	9.5
Women	251,009	1,581,500	0.16	10.4
White	400,906	2,903,000	0.14	9.6
Black	70,096	318,000	0.22	12.4
Other	52,464	167,000	0.31	9.4

Table 2 shows that women were 1 percentage point more likely to receive UI benefit, unemployed for an extra 0.9 weeks, and 2 percentage point more likely to suffer a layoff as compared to men. A total of 270,993 men received benefits in 2020, which is 15% of their labor force in 2019. Similarly, a total of 251,009 women received benefits in 2020, which is 16% of their labor force in 2019.[10] For men, the average weeks of UI receipt was 9.5, while for women, the average weeks was 10.4. For men, 27% of the job losses were likely to be layoffs, as compared to 29% for women. Thus women have a higher incidence of UI receipt, duration of unemployment and likelihood of a layoff as compared to men.

Table 2 shows that Blacks were 8 percentage point more likely to receive UI benefit, unemployed for an extra 2.8 weeks, and 1.8 times more likely to suffer a layoff as compared to whites. A total of 400,906 whites received benefits in 2020, which is 14% of their labor force in 2019. Similarly, a total of 70,096 Blacks received benefits in 2020, which is 22% of their labor force in 2019. For whites, the average weeks of UI receipt was 9.6, while for Blacks, the average weeks was 12.4. For whites, 26% of the job losses were likely to be layoffs, as compared to 46% for Blacks, an increase of 1.8 times.

[10]The time variation in incidence is shown in Appendix B.5

Thus Blacks have a higher incidence of UI receipt, duration of unemployment and likelihood of a layoff as compared to whites.

How does UI incidence relate to unemployment rate? Past evidence during non-recessionary times suggests that unemployed women are less likely to receive UI benefits as compared to unemployed men (U.S. Bureau of Labor Statistics, 2020a).[11] There is also evidence that shows that unemployed Blacks are less likely to receive UI benefits as compared to unemployed whites (Gould-Werth and Shaefer, 2012; Kuka and Stuart, 2021).[12] Similar differences were also observed during the great recession (Nichols and Simms, 2012). An exception is U.S. Bureau of Labor Statistics (2020a), that does not find racial differences in application or receipt of UI benefits for UI applicants in 2018. During the COVID-19 pandemic, Black workers were more likely to be unemployed but less likely to get unemployment benefits (ProPublica, 2020).[13] Taken together, it is likely that the ratio of UI recipients to labor force is likely an underestimate of true unemployment rate and that the bias is bigger for women and Blacks as compared to men and whites respectively.

Table 3: UI start and end dates by Gender and Race

Group	Avg. start date	Avg. end date
Men	2020-05-16	2020-08-03
Women	2020-05-16	2020-08-07
Black	2020-05-30	2020-09-05
White	2020-05-13	2020-07-30

The longer duration could be either due to differences in the beginning of unemployment spell or end or both. Table 3 shows that the average start date of receiving UI benefits is similar for men and women, but the average end date is later for women. For Blacks, both the average start and end dates are later as compared to whites, but the difference between end dates is much larger. This is consistent with the last hired but not with the first fired explanation proposed in Freeman et al. (1973) and examined in Couch and Fairlie (2010).[14]

How much of the differences in duration can be explained by observables? To analyze this, I study the differences in duration using a regression framework controlling for observables. I estimate regression of the following form

$$total\_weeks_i = \beta_0 + \beta_1 women_i + X_i\alpha + \epsilon_i \tag{1}$$

The term $total\_weeks_i$ is the total weeks of unemployment in 2020 for worker i, $women_i$ is an indicator variable that turns 1 if the worker i is women, X_i is a vector of observables that control

[11]The difference arising due to a lower likelihood of women to apply for benefits and not in receiving benefits conditional on application.

[12]The difference is due to both likelihood of applying for the benefit and receiving benefit conditional on applying.

[13]Carey et al. (2021) finds that application and receipts rates as a proportion of *population* were only different for Blacks and not for women.

[14]Slow recovery of employment among Blacks is also documented in Montenovo et al. (2020).

for differences in industry, occupation, age, wage and geographic location of the individuals. The coefficient of interest is β_1 that indicates the difference in total weeks of unemployment between women and men after controlling for observables. It is not causal estimate but indicates how much of the difference in duration remains after controlling for observable differences.

Table 4: Unemployment duration explained by observables - Gender

	(1) weeks	(2) weeks	(3) weeks
Women	0.91***	0.57***	0.10***
	(0.02)	(0.02)	(0.03)
Women x White			
Women x Black			
Women x Other			
Wage quartile			-1.21***
			(0.01)
Constant	9.49***		
	(0.02)		
Observations	522,002	512,283	504,346
Industry FE		X	X
Occupation FE		X	X
Age FE			X
Location FE			X
R-sq	0.00	0.07	0.10

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Estimates for coefficients of equation 1.

The coefficients in Model 1 of Table 4 suggest that men were unemployed for 9.49 weeks and women are unemployed for an extra 0.91 weeks or 9% longer than men. Since industry and occupation has been proposed as the two leading reasons for this difference, in Model 2, I add industry and occupation fixed effects.[15] Adding these fixed effects reduces the coefficient in magnitude but it remains positive and statistically significant. Thus, even after accounting for differences in occupation and industry, women stay unemployed longer by 0.57 weeks. Alternatively, industry and occupation can explain only 37% of the gap. In Model 3, I additionally control for the pre-separation wage quartile, age, location fixed effects. The difference in weeks is now only 0.10 weeks. Thus almost 11% of the difference in the duration cannot be explained by observables. There is considerable heterogeneity by race of the women as can be seen from estimates in Model 4 where the women indicator is interacted with race. Black women have are unemployed for 2.35 weeks longer than men.

To study residual duration for different races after controlling for observables, I estimate equation 1 by replacing $women_i$ with a vector of indicators for race. The coefficients of Model 1 in in Table 5 suggest that Blacks were unemployed for an extra 2.88 weeks as compared to whites. Controlling for industry and occupation in Model 2, Blacks remained unemployed for 2.38 weeks longer. Industry

[15]Cortes and Forsythe (2020) show the distribution of women and Blacks in industries and occupations more severely affected by the pandemic.

Table 5: Unemployment duration explained by observables - Race

	(1) weeks	(2) weeks	(3) weeks
Black	2.88***	2.38***	1.87***
	(0.03)	(0.03)	(0.03)
Asian	-0.46***	-0.63***	-0.98***
	(0.08)	(0.08)	(0.08)
American Indian or Alaska Native	0.35*	0.18	0.35*
	(0.16)	(0.16)	(0.16)
Hawaiian Native or Pacific Islander	-0.15	-0.57*	-0.25
	(0.28)	(0.28)	(0.28)
NA or Other	-0.16***	-0.29***	-0.15***
	(0.04)	(0.04)	(0.04)
Wage quartile			-1.14***
			(0.01)
Constant	9.56***		
	(0.01)		
Observations	523,466	513,723	505,757
Industry FE		X	X
Occupation FE		X	X
Age FE			X
Location FE			X
R-sq	0.02	0.08	0.11

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Estimates for coefficients of equation 1 with *women* replaced by race indicators.

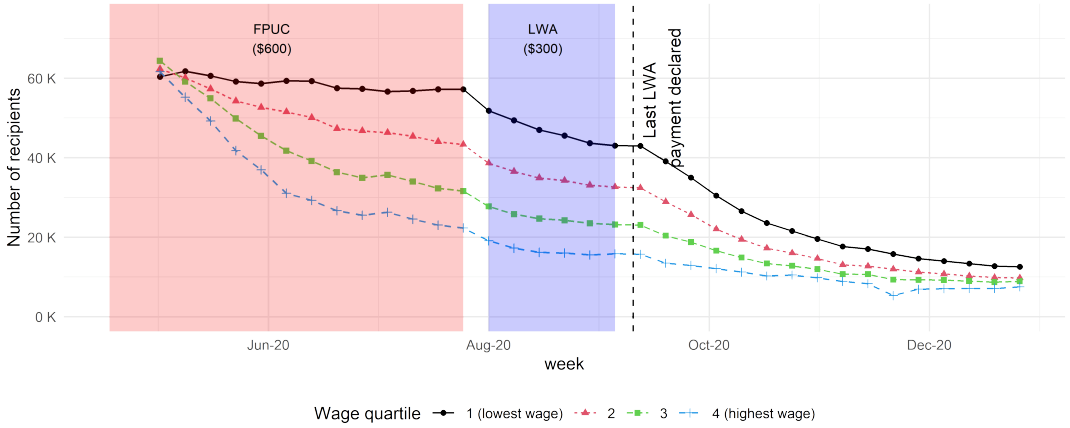
and occupation can explain only 17% of the gap. In Model 3, I additionally control for the pre-separation wage quartile, age, location fixed effects. The difference in weeks is now about 1.87 weeks. Thus almost 64% of the difference in the duration cannot be explained by observables.

The longer unemployment duration for women and Blacks indicate that the inequity in job loss, established by previous literature, is evident in job loss duration too. The adverse effects of the COVID-19 recession were thus worse than implied by only the job losses. The longer duration is a result of later ending of the unemployment spell rather than early beginning. The differences in duration are much bigger for Black-whites than men-women, and at least 20% of the difference persists after accounting for differences in industry, occupation, age, location, and pre-separation wage.

5 UI generosity and labor supply

I am interested in studying if the extra $600 and $300 in UI benefits made individuals stay unemployed for longer duration. To do this, I exploit the timing of expiration of the FPUC and LWA programs. The FPUC program paid all unemployed workers an extra $600 per week and expired on July 25, 2020. The LWA program paid unemployed workers an extra $300 per week and expired on September 12, 2020. The expirations were somewhat of a surprise. While both had a pre-determined date of expiration, it was expected that Congress would pass legislation to extend these payments further (Iacurci, 2020a).

Figure 1: Number of UI recipients by pre-separation wage quartiles



The nominal thresholds for annual wages are $17,450 (25th percentile), $31,000 (50th percentile), $47,900 (75th percentile), and $149,950 (100th percentile).

5.1 Sharp reductions after FPUC and LWA expiration

Graphical evidence for changes occurring after FPUC and LWA expiration is presented in Figure 1 that shows the weekly number of UI recipients by pre-separation wage quartiles. There are sharp reductions in the number of recipients in each wage quartile after expiration of FPUC ($600) and LWA ($300) payments. The reduction in UI recipients can be for several reasons such as seasonality in claims, increase in the number of job openings, and school openings. However, the sharp decline for all wage quartiles in *short* time suggests expiration of benefits was responsible for some of the decline.[16] Thus the expiration of benefits is associated with a decline in the number of UI recipients, which is consistent with UI benefits negatively affecting labor supply.

5.2 UI generosity and exit rates

For causal estimates of UI generosity on labor supply, I exploit the eligibility rule for Lost Wages Assistance (LWA) program. The LWA program went into effect immediately after FPUC expiration, but unlike FPUC, not all workers were eligible for the $300 per week payments. To be eligible, workers' regular UI payments needed to be at least $100.[18] This creates two instances when benefits for LWA eligible and ineligible groups change by different amounts. First, after the $600 per week FPUC payments expired, the UI payments for LWA eligible workers reduced by $300 per week, while those for the LWA ineligible workers reduced by $600 per week. Second, after LWA expiration six weeks later, the UI payments for LWA eligible workers reduced by $300 per week, while those

[16]The rate of decline in the number of UI recipients, after reaching the peak in mid-April, is proportional to the wage quartile; fastest for workers in the 4th quartile (highest-wage workers) and slowest for workers in the 1st quartile (lowest-wage workers). This could be because the high wage jobs recovered faster or that the accumulated savings enabled low wage workers to search for better jobs i.e. liquidity effect (Chetty, 2008). Overall, the figure suggests that the recovery from recession was much faster for high wage workers as compared to low wage workers.[17] This unequal rate of recovery also restricts the use of difference-in-difference for the entire sample as the pre-trends before expiration are different.

[18]The rule was made to ensure people who lost side gigs can't collect the subsidy (Iacurci, 2020b).

for the LWA ineligible workers were unchanged. This motivates estimating a difference-in-difference model comparing workers just above and below the LWA eligibility cutoff separately around FPUC and LWA expiration.

$$ExitUnemployment_{i,t} = \delta_1 EligibleLWA_i + \delta_2 Post_t + \beta EligibleLWA_i * Post_t + \epsilon_{i,t} \quad (2)$$

where $ExitUnemployment_{i,t}$ is an indicator that turns one if worker i was unemployed (received UI benefit) at time $t-1$ and employed (did not receive UI benefit) in period t, $EligibleLWA_i$ is an indicator that turns one if worker i is eligible for LWA, else zero. $Post_t$ is an indicator that turns one for weeks after FPUC or LWA expiration. The coefficient of interest is β which is the difference in the probability of exiting unemployment after FPUC or LWA expiration for those eligible for LWA as compared to those ineligible for LWA. Around FPUC expiration, it will indicate the differential response of losing 300 vs losing 600 on probability of exiting unemployment. Around LWA expiration, it will indicate the effect of losing 300. Since these payments were determined by past wages, it is unlikely that workers could manipulate becoming eligible for the payments.

Consistent identification of β requires that in absence of benefit expiration, the probability of exiting unemployment after benefit expiration would have trended similarly as when benefits are active. To study the plausibility of parallel trends assumption, I estimate an event study model

$$ExitUnemployment_{i,t} = \delta EligibleLWA_i + \gamma_t + \sum_{t=1}^{34} \beta_t eligibleLWA_i * week_t + \epsilon_{i,t} \quad (3)$$

where γ_t is the week fixed effect and $EligibleLWA_i$ is as defined in equation 2. The coefficients of interest are β_t that indicates the difference in probability of exiting unemployment for the groups eligible and ineligible for LWA. Parallel trends assumption is likely satisfied if β_t equals zero before the benefit expiration.

I estimate these models using workers just above and before the LWA eligibility cutoff where eligibility is inferred using observed UI payments in August 2020. A worker is considered eligible if the UI payments in August 2020 were in the range [\$125, \$175] and ineligible if UI payments were in the range [\$50, \$75]. Table 6 compares these workers. The annual wage of workers eligible for LWA is \$20,351, around two times of those ineligible.[19] These workers have similar characteristics but there also exist notable differences in some characteristics including industry and occupation.[20]

Figure 2 shows that the exit rates for workers eligible and ineligible for LWA are similar during FPUC that suggests parallel-trends assumption is likely satisfied. The exit rates increase for both groups after expiration of FPUC but they increase more for group ineligible for LWA (that loses \$600 per week in benefits) as compared to the group eligible for LWA (that lose \$300 per week in benefits). After expiration of LWA the exit rate increases more for group eligible for LWA (that loses

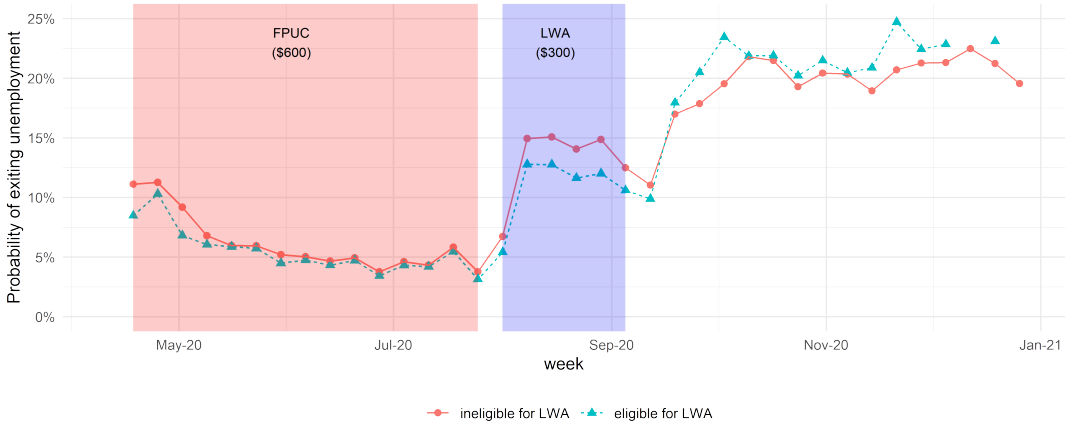
[19]The minimum wage for Indiana in 2020 was \$7.25 per hour or \$15,080 per year. The ineligible group thus are more likely to have worked part-time or worked for less than full year.

[20]The groups are also comparable in terms of number of exits or unemployment spells = 1.75.

Table 6: Summary statistics

	LWA eligible	LWA ineligible
Annual wage	20,351	10,327
Gender		
Women	.59	.62
Race		
White	.67	.65
Black	.23	.25
Other	.1	.096
Weeks	19	18
NAICS		
Manufacturing	.14	.073
Accommodation and Food Services	.23	.3
Health Care and Social Services	.11	.087
Retail Trade	.1	.13
Admin./ Support / Waste Mgt. / Rem. Services	.13	.15
All other	.28	.26
Occupation		
Production Occupations	.11	.064
Office and Administrative Support Occupations	.17	.16
Management Occupations	.1	.084
Food Preparation and Serving Related Occupations	.18	.23
Sales and Related Occupations	.07	.11
Construction and Extraction Occupations	.048	.033
All other	.32	.32
Age group		
16-24	.15	.27
25-34	.31	.27
35-44	.22	.19
45-54	.15	.12
55-64	.11	.087
Region		
Region 1 (North)	.13	.13
Region 2 (North)	.097	.092
Region 3 (North)	.1	.1
Region 4 (North)	.063	.061
Region 5 (Central)	.33	.32
Region 6 (East)	.043	.046
Region 7 (West)	.028	.033
Region 8 (South)	.036	.041
Region 9 (South)	.037	.037
Region 10 (South)	.039	.038
Region 11 (South)	.058	.061
Return to same employer	.49	.45
N	48,303	34,434

Figure 2: Exit rate by LWA eligibility



$300 per week in benefits) as compared to the group ineligible for LWA (whose benefits does not change). Thus, around both expirations, the change in exit rates is proportional to change in benefit amount. Table 7 shows the average exit rates around FPUC and LWA expiration. The increase in exit rate for LWA eligible is smaller by 1.4 percentage points (0.067-0.053) after expiration of FPUC and larger by 3.5 percentage points (0.101-0.066) after expiration of LWA. The purpose of the table is to be transparent in understanding the source of estimates from the regression model.

Table 7: Average exit rates around FPUC and LWA expiration

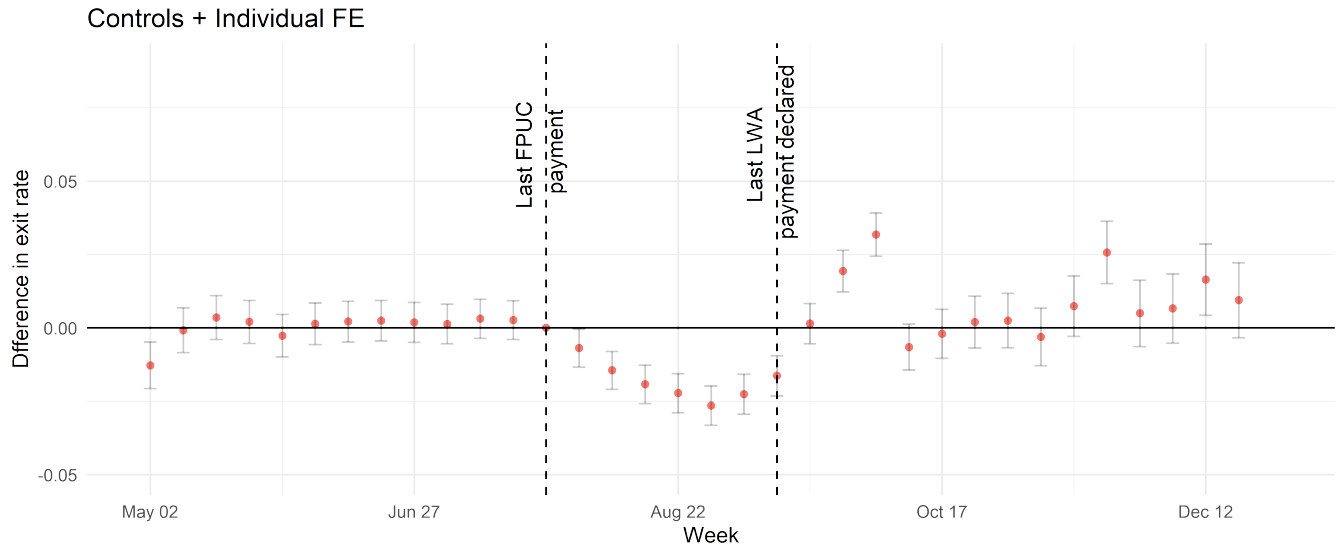
LWA eligibility	FPUC	post FPUC	Difference	LWA	post LWA	Difference
Eligible	0.047	0.099	0.053	0.099	0.200	0.101
Ineligible	0.049	0.116	0.067	0.116	0.182	0.066

A more robust comparison of pre-trends is shown in Figure 3 that shows the estimate of β_t treating the last week before FPUC expiration as the reference week. There is no statistically significant difference in probability of exiting unemployment for those eligible and ineligible for LWA until the last week of FPUC. After FPUC expiration, the probability of exiting unemployment for those eligible for LWA is lower than those ineligible for payments. After LWA expiration, the probability of exiting unemployment for eligible group is higher or similar. The absence of differential pre-trends before FPUC expiration suggests the parallel trends assumption is likely to be satisfied. The timings and directions of the change are consistent with payments affecting exit rates. Lastly, the probability of exiting unemployment after LWA expiration is higher for LWA eligible group which could be because of differential recovery for the higher wage group.

Table 8 shows the effect of FPUC and LWA expiration on exit rates.[21] Models 1-4 study changes around FPUC expiration. Estimates in model 1 indicate that after FPUC expiration, those ineligible

[21]The LWA payments were effective for period Aug 1 - Sept 5, 2020, recipients received them starting Sept 21, 2020, around 1.5 months later than they were due. I assume that since the benefits and eligibility were announced in early August, workers responded *as if* they are receiving benefits when they were due. Similar to what I have assumed during FPUC payment delays.

Figure 3: Event-study estimates



Estimates for β_t in equation 3. Relative probability of exiting from unemployment for group that lose \$300, then \$300 as compared to those whose lose \$600, then \$0. The reference week is the last week before FPUC expiration.

for LWA had a higher probability of exiting unemployment by 7.0 p.p. Those eligible for LWA had a lower probability of exiting unemployment by 1.4 percentage points compared to those ineligible for LWA. Controlling for observable differences between groups in model 2, the estimates do not change much. Model 3 controls for individual unobservables which increases the magnitude of the estimate. Model 4 controls for week fixed effect which further increases the magnitude of the estimate. The negative estimate implies that a smaller reduction in benefit is associated with a smaller increase in exit rates. Models 5-8 study changes around LWA expiration. Estimates in model 5 indicate that after LWA expiration, those eligible for LWA had a higher probability of exiting unemployment by 3.5 percentage points. This changes to 3.0 percentage points after controlling for observable differences between groups in model 6. Model 7 controls for individual unobservables which decreases the magnitude of the estimate. Model 8 controls for week fixed effect which further increases the magnitude of the estimate. The positive estimate implies that a reduction in benefit is associated with an increase in exit rates. Thus, the results are consistent with benefits amounts affecting exit rates.

Around FPUC expiration (models 1-4), the estimate indicate the differential response of losing 300 vs losing 600, or a relative gain of \$300 per week. Thus, a gain of \$300 is associated with a decrease in exit rate by 1.4 p.p. or 30% of the pre-period rate of 4.7%. Around LWA expiration (models 5-8) the estimate indicate the effect of losing 300. This loss of \$300 is associated with an increase in exit rate by 3.5 p.p. or 35% of the pre-period rate of 9.9%. Thus a change in benefit amount by \$300 per week is associated with a change in exit rate from unemployment by 30-35% in the opposite direction. The magnitude of change in exit rate is proportional to change in benefit amount but the directions are opposite. Alternatively, the \$300 benefits depressed exit rates by one-third.

Table 8: Effect of FPUC and LWA expiration - DID estimates

	post FPUC				post LWA			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
eligibleLWA * post	-0.014***	-0.017***	-0.019***	-0.020***	0.035***	0.030***	0.023***	0.027***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
eligible LWA	-0.003***	-0.011***			-0.017***	-0.025***		
	(0.001)	(0.001)			(0.001)	(0.001)		
post	0.070***	0.071***	0.077***		0.066***	0.070***	0.163***	
	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	
Observations	1,044,634	951,229	948,114	948,114	762,472	710,265	707,375	707,375
R-sq	0.01	0.02	0.20	0.21	0.02	0.02	0.20	0.22
Controls		X	X	X		X	X	X
Individual FE			X	X			X	X
Week FE				X				X

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Estimates for coefficients of equation 2 based on 48,303 LWA eligible and 34,434 ineligible workers. Controls include age, gender, race, industry, occupation, place of residence, and wage quartile.

6 Discussion

Heterogeneity analysis by gender, race and age show that the estimates for women are larger in magnitude while those for Blacks are smaller (Appendix H). Thus women are more responsive and blacks less responsive to change in benefit amount compared to men and whites respectively. Similarly, workers more than 55 years of age are more responsive to benefit expiration.

How do these estimates compare with those in the literature? The estimates are comparable to those in Ganong et al. (2021b) who find that expiration of FPUC benefits increases exit rate from unemployment. A one percent larger reduction is associated with a 1.4 - 1.7 p.p. increase in exit rates into a new job. Holzer et al. (2021) estimates are much bigger. States that ended benefits early had an increased exit rate by 13 p.p., or around 66%.The different time period examined in Holzer et al. (2021) might be responsible for the different response.

This estimate using low-wage workers is likely an overestimate of the response of the average worker. This is because an average worker is likely to be less responsive to benefit changes. The estimate is likely generalizable to other states. The median statutory replacement rate (UI benefit/wage) for Indiana during FPUC was 143%, which is similar to that for the US of 145% (Ganong et al., 2020). Unless the demand-side factors such as recovery from the pandemic were drastically different in Indiana, we can expect the estimate to be generalizable to other states. The estimates are likely not generalizable to non-pandemice periods because the labor demand conditions are likely going to be different during non-pandemic periods. However, the response to UI benefit means that UI has the capacity to stabilize markets during downturns.

The estimate indicates the immediate response to benefit expiration. This is likely smaller than the true response if there is delay in responding to benefit expiration for reasons including worker inattention, expectation of continuation of benefits or savings. Hence, it is likely that the estimates

are smaller than the true "long-run" response.

One concern for identification is the measurement error in the outcome variable, exit from unemployment. This variable turns 1 if the worker stops receiving regular UI. It is possible that after this, the worker may have continued to receive benefits (through PEUC) leading to measurement error in the outcome variable. Moreover, the error is likely higher for the eligible group since they are more likely to exhaust regular UI and go on PEUC as they stay unemployed longer because of LWA payments. I argue that this likely does not affect the estimates much for two reasons. First, only a small proportion of workers exhaust 26 weeks of regular UI only after which they can apply for PEUC (2719 in ineligible and 5976 in eligible group).

How much did LWA increase unemployment in August 2020? Let U^*= counterfactual unemployment in August 2020. We can estimate U^* as follows

$$U^* = U + \beta * U_{-1} \tag{4}$$

where U= Actual unemployed in August, and U_{-1} = actual unemployed in July 2020. U^* = 238,890-0.015*(162,391) which translates to an unemployment rate of 7.2%, smaller than actual value of 7.3%. Thus, the unemployment rate in August 2020 would have been smaller by 0.1 percentage point if not for LWA.[22]

7 Conclusion

I study COVID-19-induced job losses using administrative data on the universe of Unemployment Insurance claims for the state of Indiana. While the literature has studied the inequity in job loss incidence, I focus on job loss duration. I show that women and Blacks not only lost more jobs in the COVID-19 pandemic but also remained unemployed for a longer duration. Thus, the disproportionate effects of the pandemic were even worse than what has been implied in the literature studying job losses.

The expiration of FPUC($600) and LWA($300) benefits is associated with sharp reductions in the aggregate number of UI recipients. Using difference-in-difference estimation strategy, I find that exit rates from unemployment increase after benefit expiration and the increase is proportional to the magnitude of loss in benefit amount but in the opposite direction. A change in benefit amount by $300 is associated with a 30-35% change in exit rate in unemployment opposite direction. The small magnitude of effect highlights the need to study other reasons for the labor shortage in early 2021 such as exit from the labor force, childcare and health concerns, and changing worker preferences.

[22]This estimate does not depend the number of PUC recipients.

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Appendix A Abbreviations

- CARES: Coronavirus Aid, Relief, and Economic Security Act. The CARES Act, signed into law in March 2020, provided over $2 trillion of economic relief to workers, families, small businesses, industry sectors, and other levels of government hit hard by the public health crisis created by the Coronavirus Disease 2019 (COVID-19). Three important provisions created by the act were
  1. PUA: Pandemic Unemployment Assistance. The PUA created a federal unemployment insurance program for individuals not otherwise eligible for UI benefits, including the self-employed, independent contractors, gig economy workers, those seeking part-time employment, and individuals lacking sufficient work history.[23]
  2. FPUC: Federal Pandemic Unemployment Assistance. The FPUC provided $600 per week to those eligible for regular UI or Pandemic Unemployment Insurance (PUA).
  3. PEUC: Pandemic Emergency Unemployment Compensation. This extended unemployment benefits by an additional 13 weeks (up to 39 weeks for Indiana).
- LWA: The Lost Wages Assistance. The LWA program provided benefits of $300 per week after the expiration of FPUC to unemployed workers impacted by the COVID-19 pandemic.
- CAUWA: Continued Assistance for Unemployed Workers Act. The CAUWA legislation was designed to continue unemployment insurance benefits for those who were receiving relief from the CARES Act and continued many of the same or similar programs. It restarted FPUC @ $300 per week and extended PEUC by 11 more weeks.
  - MEUC: Mixed Earner Unemployment Compensation. The MEUC program introduced by CAUWA was designed to cover workers with both earned wages and self employment income, such as part-time musicians and performing arts professionals. They often qualified for regular UI but received disproportionately low benefits due to their previous wage history. The MEUC program provided these workers an additional federally funded $100 weekly benefit.
- ARPA: America Rescue Plan Act. ARPA, enacted in March 2021, extended PUA, expanded PEUC eligibility for up to 53 weeks, and continued the $300 FPUC through early September.

[23]The benefit amount was decided based on tax filing status. If the applicant filed as single tax filer, income from 2019 was to be used, If the individual did not file taxes or filed as married filing jointly, the individual will receive a minimum benefit amount. The minimum benefit amount varied for states and was $149 per week for Indiana. Those eligible for regular UI could also receive payments through PUC if they exhause EB, or the state is not triggered on and the person in unemployed due to COVID-19.

Appendix B Data

The UI data from Indiana Department Of Workforce Development (DWD) contains initial and continued claims and I cannot separate the two. I cannot identify workers working part-time. I also cannot identify Hispanics. The UI data from DWD are different from the initial weekly UI claims data released by the Department of Labor (DOL).[24] The DOL data contains all claims made in the week regardless of whether the claims were paid or denied. The DWD data contains only those claims that were paid.

In the Unemployment Insurance raw benefits file, a row represents recipients (Universal_ID) and columns the weeks. The values are the amounts received in respective weeks. The benefit amounts are rounded to the nearest $25. Weeks in which no benefits were paid to a recipient are marked as NA. Each id may have multiple rows indicating multiple spells (or benefit years) of unemployment. These are identified by variable "bnftstartdate". Some rows do not have any benefit amount. These are those who filed that initial claim but did not receive a payment, whether their claim is on hold or it is denied. The benefit amount for a particular week is the amount that was due for that week. If there are delays in the application review, the actual payment may have happened at a later late that included all due past payments. There are many IDs that do not receive any payments. Most of these claimants are duplicate UI initial claims filed in order to continue with an active PUA claim which they are required to file at the beginning of each quarter. (Only after this can they apply for PUC). I remove these observations that do not contain any non-zero payments as advised by the Indiana Department for Workforce Development (DWD). This removes some claims that were denied, as well as some of the PUC claims. Some of these denied claims could well be PUC claims as those eligible for regular UI were also eligible for PUC after they exhaust regular UI, PEUC, and EB.

The annual wage earnings are rounded to the nearest $50. These are earnings in the previous four quarters prior to the quarter first filed for UI. There are multiple wage values in case of multiple unemployment spells. I consider the wage associated with the earliest benefit year as the "base wage". Since a majority of benefit start dates are in 2020, this is typically wage in 2019. I drop wages less than $5000 and greater than $100,000 (4% of the observations).

Table B.1: Weekly wage and benefit amount

	Men	Women	White	Blacks
Weekly wage ($)	917	582	787	531
Average UI amount ($)	590	532	576	478
N	270,993	251,009	400,906	70,096

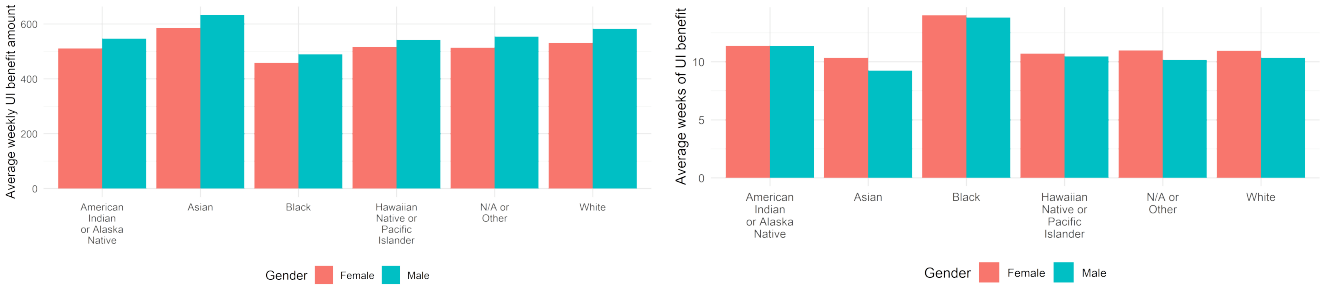
The difference in weekly wage and benefit amounts by gender and race are shown in Table B.1. The

[24] `https://oui.doleta.gov/unemploy/claims.asp`

average annual wage and hence benefit amounts are smaller for women and Blacks as compared to men and whites respectively. Thus women earn 0.63 times the wage of men which is comparable to what was found in Institute for Women's Policy Research (2018).

Figure B.1 shows that the gender gaps in average weekly benefit amounts and unemployment duration are observed in all races.

Figure B.1: Average weekly benefit amounts and duration by race and gender



B.1 Breaks in unemployment

To study if there are "breaks" in the total unemployment duration, I count the instances when the individual enters unemployment. Table B.2 suggests that almost 65% of individuals have only one instance of unemployment, 87% have 2 or less instances of unemployment. Hence, the duration can be thought of as a continuous period without many breaks. For most of the analysis, I consider the first spell of job loss since this is most likely to be related to COVID disruption. Ganong et al. (2021a) has more discussion on long-term unemployment during COVID-19.

Table B.2: Number of entries

Number of entry events	N	Cumulative sum	Cumulative proportion
1	330,313	330,313	0.65
2	102,847	433,160	0.85
3	34,726	467,886	0.92
4	13,557	481,443	0.95
>=5	26,814	508,257	1.00

B.2 How likely were workers to exhaust regular UI benefits?

I study the consequence of longer duration on probability of using the extra weeks of benefits provided by the CARES Act. The results are shown in Table B.3. In model 1, I do not control for any observables. Men were 10.4% likely to use the extra weeks of benefits. This probability is higher for women by 1.1 percentage points. In model 2, I control for observables. Adding observable fixed effects reduces the coefficient in magnitude but it remains positive and statistically significant. In model 3, I do not control for any observables. Whites were 10.1% likely to use the extra weeks of benefits. This probability is higher for Blacks by 6.1 percentage points. In model 4, I control for observables which reduces the coefficient in magnitude but it remains positive and statistically significant. Even after accounting for differences in observables women and Blacks were more likely than men and whites respectively to exhaust regular UI and use the extra weeks of benefits provided by the CARES Act.

Table B.3: Probability of exhausting the regular UI

	(1)	(2)	(3)	(4)
Women	0.070*	0.001		
	(0.028)	(0.001)		
Black			0.047***	0.033***
			(0.001)	(0.001)
ln(wage)				
Constant	12.260***		0.076***	
	(0.020)		(0.000)	
Observations	552,037	504,346	523,466	504,346
Control for observables		Yes	No	Yes
R-sq	0.00	0.03	0.00	0.03

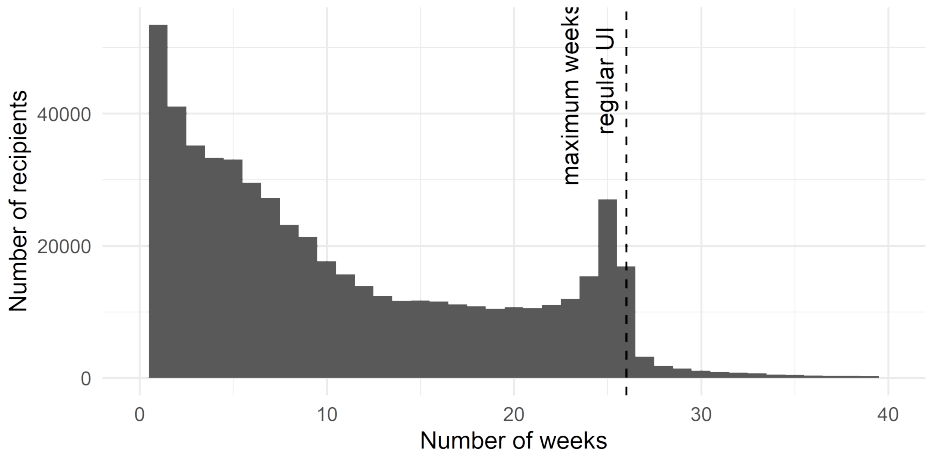
Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Observables include industry, occupation, wage, age, and location.

B.3 Distribution of weeks of unemployment

In Figure B.2, I show the distribution of total weeks of unemployment for the population in 2020. Since the data only contains payments made under regular UI, the duration is best thought as duration under regular UI. A bump is observed around 26 weeks, which is the maximum weeks of UI benefits allowed by the state of Indiana. Those receiving more than 26 weeks are claimants who may have received partial benefits in a given week, which would extend the number of weeks for receiving benefits.

The duration is an underestimate of true unemployment duration because the data does not contain any benefits paid through PEUC extension of 13 weeks. So, the weeks for recipients who continued receiving benefits through PEUC are not counted. However, this bias is likely to be small as the PEUC extension went into affect only after regular UI was exhausted which does not happen for 91% of the sample. About 11% (57,753) of recipients, received benefits for 25 or 26 weeks and potentially received benefits for more weeks through PEUC. The claim that not many used the PEUC, also indicates that it is reasonable to assume a non-receipt of UI as return to employment.

Figure B.2: UI duration histogram



B.4 Start and end date densities

In Figure B.3, I compare the start and end dates of UI receipts by gender and race. For women, the start dates are similar to men, but the end dates are later than men. Thus, both get unemployed around the same time but the longer duration of unemployment for women is due to women returning to work later. Comparing Blacks and whites, it also seems to be the case that the start dates are similar to white, but the end dates are later.

Figure B.3: Distribution of start and end dates of UI receipt

B.5 Time variation in incidence

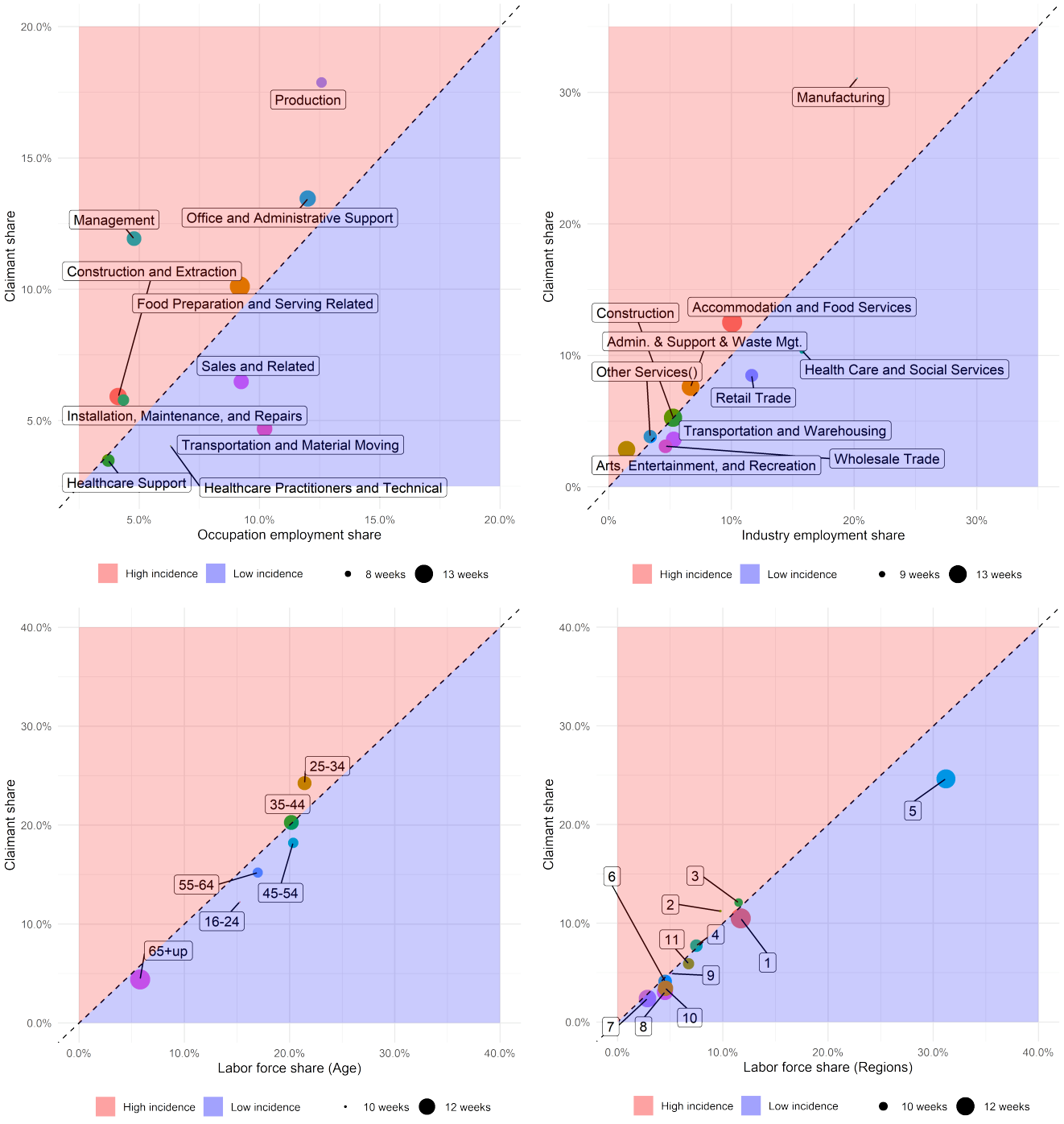
The time variation in incidence (proportion of recipients over labor force) is shown in Figure B.4. For women and Blacks, a larger share of labor force received benefit in each month in 2020. However, the gap bigger for Blacks.

Figure B.4: Incidence (UI recipients by Labor force (2019)) by time

B.6 UI Claimant vs population shares

To understand how the proportion of claimants compare to the employment shares, Figure B.5 compares population and claimant shares by occupation, industry, age groups and regions. On the X-axis, I plot the group's proportion in the population and on the Y-axis, I plot the proportion of the group observed in the claimant data. A 45-degree line is also shown for reference. If a group is above the line, it means that the group has a larger share of claims than their population or a higher incidence of UI recipiency. Likewise if a group is below the 45-degree line, the group has a lower incidence of UI recipiency. The size of the circle indicates the average weeks of UI receipt. Many industries and occupations had a disproportionate share of UI recipiency as compared to their population share as can be seen from the top two figures. This is consistent with the claim that some industries and occupations were hit harder during the COVID-19 pandemic than others. Comparatively, the shares by age groups and regions are quite comparable to their population shares suggesting that the all age groups and regions were similarly affected.

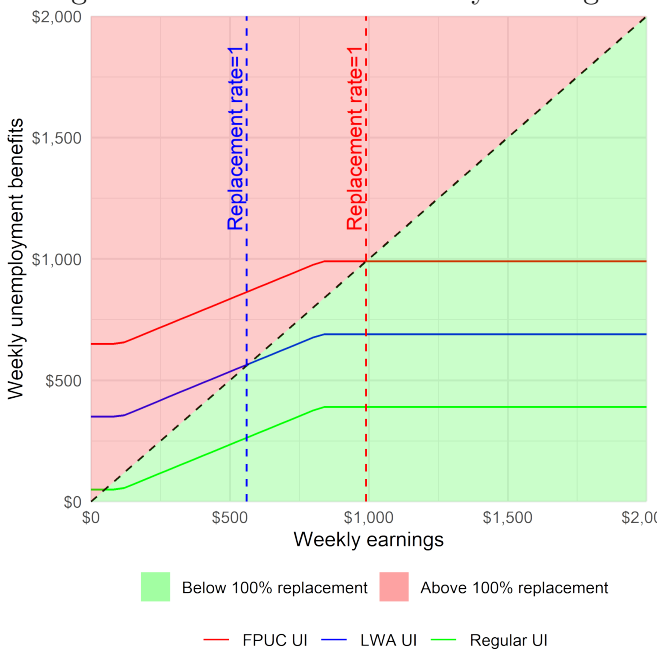
Figure B.5: Claimant vs population shares



B.7 Effect of the extra $600 and extra $300

Figure B.6 shows the effect of the extra $600 and extra $300. With regular UI, the benefits are always below the weekly earnings for any level of earnings. With the extra $600, the UI benefits are higher than the earnings for weekly earnings <$990 (equivalent to $24.75 per hour or $51,480 annual wage) which is true for around 78% of UI claimants.[25] With the extra $300, the UI benefits are higher than the earnings for weekly earnings <$560 (equivalent to $14 per hour or $29,120 annual wage) which is true for around 45% of UI claimants.

Figure B.6: UI benefit vs weekly earnings



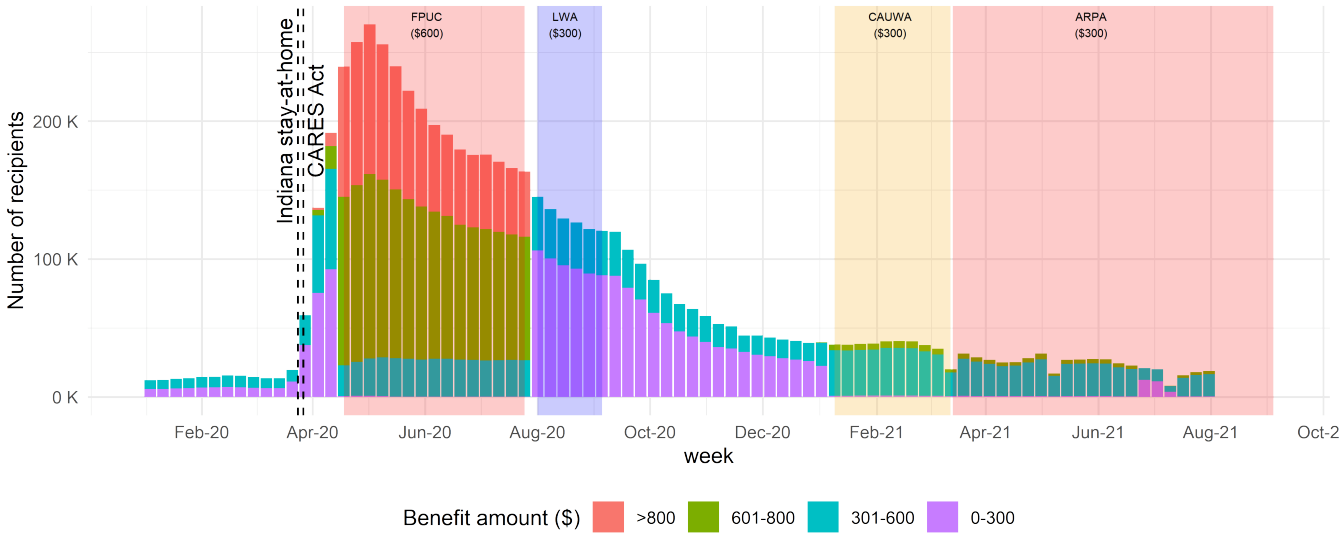
B.8 Recipients by time

Figure B.7 shows the total recipients broken down into amount received. There is a steep increase in the number of recipients in the weeks of April following the introduction of Indiana's Stay-at-Home order and passage of the CARES Act. There is a lag of two weeks after the extra $600 benefits was signed in law (March 27, 2020) and when the payments started (April 18, 2020). The increase continues until mid-May and then starts to decline. The UI benefit amount increases in the months of April until July due to the extra $600 FPUC benefit. The payments <$600 are likely because of deductions made for garnishments (due to child support, taxes, etc.) or recovery of past overpayments. Not more than 50% of FPUC payments could be deducted for such purposes (U.S. Department of Labor).

Figure I.1 shows the distribution of start and end dates of unemployment spells for LWA eligible and ineligible groups. Since I argue that the groups are similar, I expect the distributions to look

[25]This is comparable to the number in Ganong et al. (2020) who find that at the national-level 76% of unemployed workers have a statutory replacement rate above 100%.

Figure B.7: Number of recipients



similar until FPUC expiration and after LWA expiration and different during LWA benefits. The eligible group has earlier start dates and later exit dates as compared to ineligible group. The later end dates can be because of delay in return to work. However, it is not very clear why they have earlier start dates. The ineligible group has earlier end dates during the LWA period which is expected. This also highlights the importance of controlling for benefit exhaustion.

Appendix C Important dates

- 2020
  - Mar 6 - Public health emergency declared in Indiana
  - Mar 19 - Public schools closed in Indiana
  - Mar 23 - Indiana issues stay-at-home (SAH) orders
  - Mar 26 - CARES Act signed into law
  - May 1 - Indiana starts to re-open
  - Aug 08 - Up to $44 billion made available from Federal Emergency Management Agency's (FEMA) Disaster Relief Fund to provide financial assistance to Americans who have lost wages due to the COVID-19 pandemic.
  - Aug 22: Indiana approved for a FEMA grant under the Lost Wages Assistance program.
  - Sept 10 - Indiana declares to start disbursing $300 LWA payments beginning Sept. 21
  - Sept 21 - Indiana starts disbursing $300 LWA payments retrospectively
  - Sept - Final opening stage for Indiana businesses
- 2021
  - May 17 - Indiana announced that the extended unemployment would end by June 19.
  - Jul 13 - Indiana was advised to continue benefits while the court considered the lawsuit against the state. The benefits continued until September 2021.

Appendix D Women and Black recipients by industry and occupation

In Table D.1, I study the distribution of women and Blacks in top 10 industries that generated the most claims. Out of all the claims from manufacturing industry workers, 34% are women and 12% are Blacks. Since women are roughly 47% of the labor force, this suggests that women are less likely to be employed in manufacturing. Out of all the claims from Health Care and Social Services Industry, 89% are women, suggesting that women are more likely to be employed in this industry. Analogous data for occupation is shown in Table D.2. Blacks constitute 10% of the population of Indiana. Thus, they seem to be more likely to be employed in Admin support and health care and Social Services industries, and in Healthcare Support Occupations.

Table D.1: Industry Employment by gender and race

NAICS 2-digit code	N	Women proportion	Black proportion	Age 50+ proportion
Manufacturing	1,366,217	0.34	0.12	0.33
Accommodation and Food Services	892,874	0.65	0.16	0.21
Admin. Support Waste Mgt. Rem. Services	508,955	0.50	0.30	0.26
Retail Trade	468,207	0.59	0.16	0.31
Health Care and Social Services	453,855	0.89	0.22	0.28
Construction	397,612	0.10	0.06	0.31
Transportation and Warehousing	221,877	0.37	0.26	0.37
Other Services(Except Public Administration)	210,443	0.62	0.12	0.30
Arts, Entertainment, and Recreation	181,900	0.55	0.17	0.32
Wholesale Trade	174,589	0.35	0.15	0.38

Table D.2: Occupation Employment by gender and race

Occupation	N	Women proportion	Black proportion	Age 50+ proportion
Production	839,150	0.35	0.13	0.31
Office and Administrative Support	811,123	0.68	0.24	0.31
Food Preparation and Serving Related	720,827	0.65	0.14	0.20
Management	643,088	0.51	0.15	0.33
Construction and Extraction	411,266	0.06	0.09	0.28
Sales and Related	366,657	0.64	0.15	0.32
Installation, Maintenance, and Repair Occs	282,112	0.12	0.10	0.31
Transportation and Material Moving	277,344	0.21	0.23	0.40
Healthcare Support	166,831	0.94	0.27	0.17
Personal Care and Service	156,568	0.78	0.16	0.22

Appendix E Characterizing the job losers

E.1 Industry

Table E.1 shows the average weeks of UI receipt by industry. There is a lot of variation in weeks of unemployment by occupation. Noticeably, manufacturing industry that represents almost one-third of claimants has the one of the smallest duration of unemployment.[26]

Table E.1: Top and bottom 5 industries by weeks of UI receipt

NAICS 2-digit code	weeks	NAICS 2-digit code	weeks
Accommodation and Food Services	14.13	Public Administration	10.51
Construction	13.16	Management of Companies and Enterprises	9.64
Information	12.96	Health Care and Social Services	8.81
Admin. & Support & Waste Mgt. & Rem. Services	12.95	Manufacturing	8.55
Real Estate and Rental and Leasing	12.76	Utilities	6.26

E.2 Occupation

Table E.2 shows the average weeks of UI receipt by occupation. There is a lot of variation in weeks of unemployment by occupation. Noticeably, production occupations, that represent 18% of claimants, has the one of the smallest duration of unemployment. Someone in Healthcare occupations is unemployed for an average of 7.48 weeks, that is roughly half of someone in Food preparation and Serving Related occupation (14.06).

Table E.2: Top and bottom 5 occupations by weeks of UI receipt

Occupation	weeks	Occupation	weeks
Food Preparation and Serving Related	14.03	Installation, Maintenance, and Repairs	9.36
Building and Grounds Cleaning and Maintenance	12.82	Production	9.04
Legal	12.78	Military Specific	8.85
Construction and Extraction	12.27	Architecture and Engineering	8.79
Arts, Design, Entertainment, Sports, and Media	11.81	Healthcare Practitioners and Technical	7.48

The results for job loss severity by industry and occupation are shown in Table E.3 and Table E.4. Manufacturing industry represents one-third of the claims had a higher incidence (Recipients/ Employment) but lower duration of unemployment. Thus, a higher share of manufacturing seems to have helped the region in recovering relatively quickly. Workers employed in accommodation and food service industry, working in Office and Administrative Support as well as Food Preparation and Serving Related occupations are among the most severely affected. They more likely than average to receive UI benefit (18%), weeks of unemployment (11) and suffer a layoff (28%).

[26] Cortes and Forsythe (2020) shows that the COVID-19 induced employment losses have been substantially larger in lower-paying occupations and industries.

Table E.3: Job loss severity - Industries

Industry	UI recipients	Employment (Feb 2020)	Recipients/Employment	weeks	Layoff
Manufacturing	157,150	535,856	0.29	8.7	0.18
Accommodation and Food Services	63,040	266,008	0.24	14.2	0.33
Health Care and Social Services	50,414	417,385	0.12	9.1	0.24
Retail Trade	42,654	308,265	0.14	10.7	0.30
Admin. & Support & Waste Mgt.	38,221	176,657	0.22	13.1	0.51
Construction	28,533	138,683	0.21	13.9	0.35
Other Services	19,257	89,315	0.22	10.9	0.23
Transportation and Warehousing	18,402	140,061	0.13	12.0	0.33
Wholesale Trade	15,144	122,149	0.12	11.2	0.30
Arts, Entertainment, and Recreation	14,275	38,490	0.37	12.7	0.18

Table E.4: Job loss severity - Occupations

Occupation	UI recipients	Employment (2019)	Recipients/Employment	weeks	Layoff
Production	91,351	386,740	0.24	9.1	0.21
Office and Administrative Support	67,783	369,170	0.18	11.7	0.34
Management	58,010	147,080	0.39	11.2	0.30
Food Preparation and Serving Related	50,915	282,350	0.18	14.1	0.33
Sales and Related	32,398	284,150	0.11	11.1	0.32
Construction and Extraction	31,543	127,000	0.25	12.9	0.32
Installation, Maintenance, and Repairs	29,446	133,440	0.22	9.5	0.24
Transportation and Material Moving	24,104	313,990	0.08	11.5	0.29
Healthcare Practitioners and Technical	18,696	193,730	0.10	8.0	0.21
Healthcare Support	17,543	114,240	0.15	9.9	0.31

E.3 Age

The results for job loss severity by age groups are shown in Table E.6. The age group 25-34 is among the most severely affected with higher than average values of UI receipt, weeks of unemployment and likelihood of a layoff. The high duration for 65 and above age group is consistent with health risk of COVID-19 being more for this age group. This group also has the lowest likelihood of returning to labor force(64%) as compared to other groups (Appendix E.6).

Table E.5: Job loss severity - Age

Age	UI recipients	Labor force (2019)	Recipients/Labor force	weeks	Layoff
16-24	66,293	518,408	0.13	10.0	0.42
25-34	131,348	727,481	0.18	11.4	0.34
35-44	109,772	684,873	0.16	11.6	0.28
45-54	98,648	690,432	0.14	10.7	0.23
55-64	82,317	576,533	0.14	10.7	0.18
65+up	23,858	196,776	0.12	13.0	0.14

E.4 Wage

Job loss duration by wage quartiles are shown in Table E.6.[27] The high wage workers received benefits for the shortest duration and highest likelihood of a permanent job loss. The duration of receipt increases for low wage. The fact that low wage workers are least likely to return to the same employer is consistent with changed preference of workers.

Table E.6: Duration - Wage

Wage quartile	Recipients	weeks	Layoff
1 (lowest wage)	125,823	13.0	0.44
2	124,889	12.1	0.33
3	125,029	10.3	0.23
4 (highest wage)	125,358	8.7	0.17

E.5 Region

The results for job loss severity by regions are shown in Table E.7. Region 5 included the capital city Indianapolis and labor force are higher as compared to other regions. This region has a relatively high weeks of unemployment and likelihood of permanent job loss but the recipients/ labor force is among the lowest. While there is some variation by geographical regions, no region does worse on recipiency, duration and layoffs.

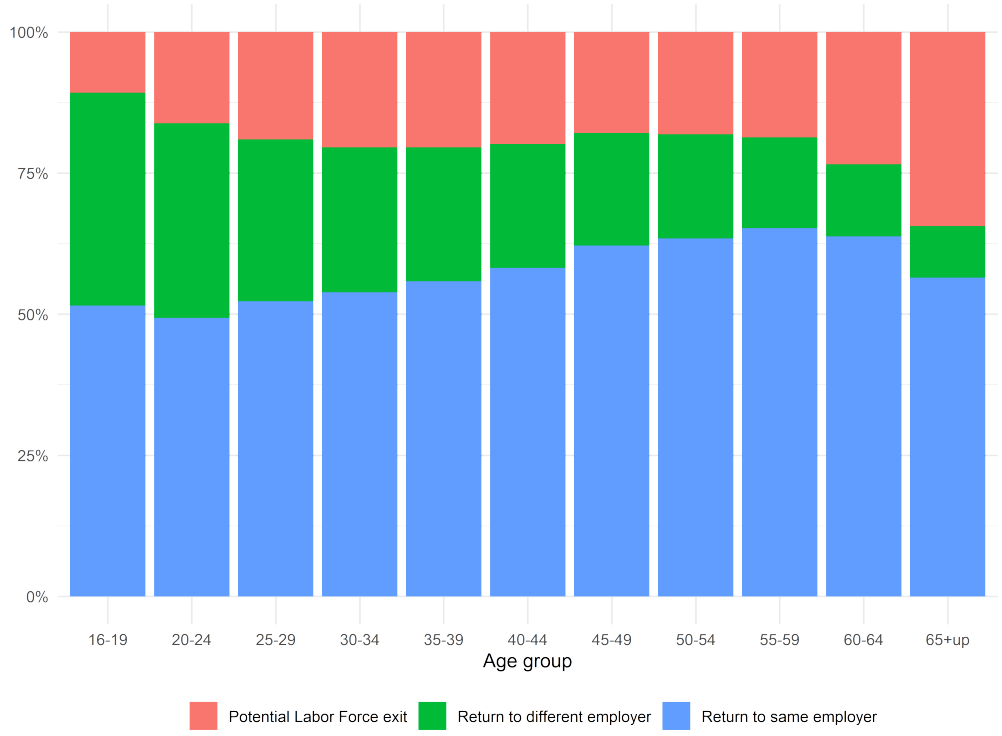
Table E.7: Job loss severity - Regions

EGR	UI recipients	Labor force (2019)	Recipients/Labor force	weeks	Permanent loss
1	51,686	384,117	0.13	12.4	0.27
2	57,229	320,840	0.18	9.4	0.29
3	61,040	377,127	0.16	9.9	0.25
4	38,353	245,638	0.16	10.5	0.24
5	124,664	1,022,682	0.12	12.3	0.37
6	21,050	148,322	0.14	10.7	0.28
7	11,959	93,351	0.13	11.6	0.30
8	15,378	147,860	0.10	11.4	0.29
9	25,335	167,110	0.15	9.4	0.20
10	17,566	149,218	0.12	11.1	0.27
11	30,202	221,611	0.14	10.3	0.26

[27]The nominal thresholds for annual wages are $18,100 (25th percentile), 31,500 (50th percentile), 48,600 (75th percentile), and 149,950 (100th percentile)

E.6 Return to labor force

Figure E.1: Return to labor force



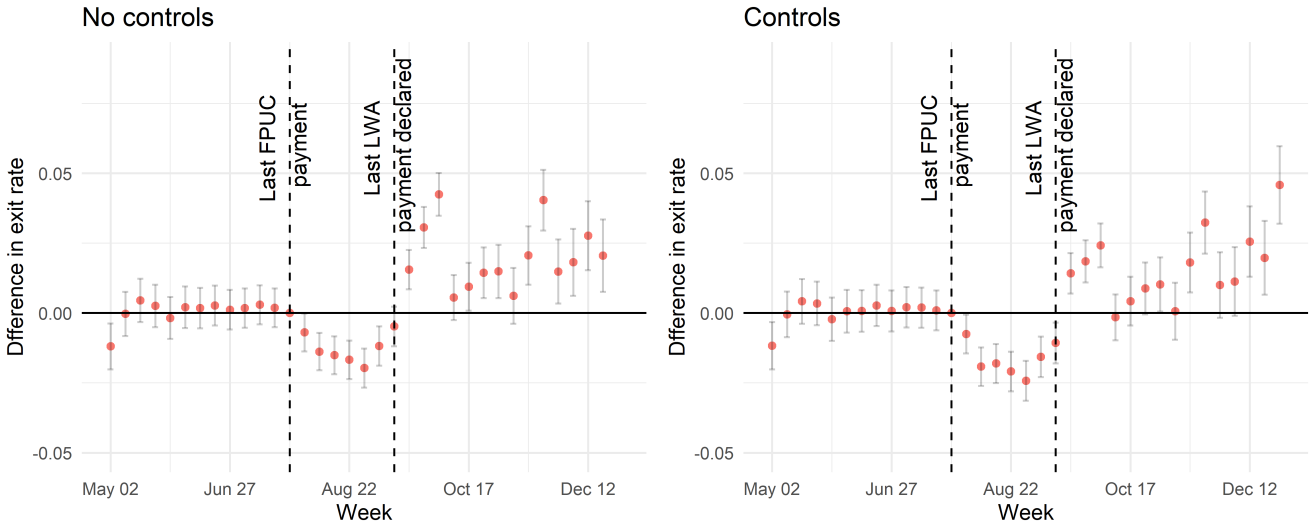
Appendix F Event-study estimates

Table F.1: Effect of LWA expiration - Event-study estimates

	(1)	(2)	(3)
week 1	-0.012**	-0.012**	-0.013**
	(0.004)	(0.004)	(0.004)
week 2	-0.000	-0.000	-0.001
	(0.004)	(0.004)	(0.004)
week 3	0.005	0.004	0.003
	(0.004)	(0.004)	(0.004)
week 4	0.003	0.003	0.002
	(0.004)	(0.004)	(0.004)
week 5	-0.002	-0.002	-0.003
	(0.004)	(0.004)	(0.004)
week 6	0.002	0.001	-0.001
	(0.004)	(0.004)	(0.004)
week 7	0.002	0.001	0.000
	(0.004)	(0.004)	(0.004)
week 8	0.003	0.003	0.002
	(0.004)	(0.004)	(0.004)
week 9	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)
week 10	0.002	0.002	0.001
	(0.004)	(0.004)	(0.003)
week 11	0.003	0.002	0.002
	(0.003)	(0.004)	(0.003)
week 12	0.002	0.001	0.002
	(0.003)	(0.004)	(0.003)
week 13	0.000	0.000	0.000
	(.)	(.)	(.)
week 14	-0.007*	-0.008*	-0.007*
	(0.003)	(0.003)	(0.003)
week 15	-0.014***	-0.019***	-0.020***
	(0.003)	(0.003)	(0.003)
week 16	-0.015***	-0.018***	-0.022***
	(0.003)	(0.003)	(0.003)
week 17	-0.017***	-0.021***	-0.026***
	(0.003)	(0.004)	(0.003)
week 18	-0.020***	-0.024***	-0.030***
	(0.003)	(0.004)	(0.003)
week 19	-0.012***	-0.016***	-0.025***
	(0.004)	(0.004)	(0.003)
week 20	-0.005	-0.011**	-0.021***
	(0.004)	(0.004)	(0.004)
week 21	0.016***	0.014***	0.001
	(0.004)	(0.004)	(0.004)
week 22	0.031***	0.018***	0.009*
	(0.004)	(0.004)	(0.004)
week 23	0.043***	0.024***	0.015***
	(0.004)	(0.004)	(0.004)
week 24	0.006	-0.002	-0.013**
	(0.004)	(0.004)	(0.004)
week 25	0.009*	0.004	-0.006
	(0.004)	(0.004)	(0.004)
week 26	0.014**	0.009	-0.002
	(0.005)	(0.005)	(0.005)
week 27	0.015**	0.010*	0.000
	(0.005)	(0.005)	(0.005)
week 28	0.006	0.001	-0.006
	(0.005)	(0.005)	(0.005)
week 29	0.021***	0.018***	0.008
	(0.005)	(0.005)	(0.005)
week 30	0.040***	0.032***	0.022***
	(0.005)	(0.006)	(0.005)
week 31	0.015**	0.010	0.004
	(0.006)	(0.006)	(0.006)
week 32	0.018**	0.011	0.005
	(0.006)	(0.006)	(0.006)
week 33	0.028***	0.026***	0.020**
	(0.006)	(0.006)	(0.006)
week 34	0.021**	0.020**	0.014*
	(0.006)	(0.007)	(0.007)
week 35	0.120***	0.046***	0.041***
	(0.007)	(0.007)	(0.007)
Observations	1,391,687	1,278,839	1,277,170
R-sq	0.04	0.05	0.17
Treatment			
Control			

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure F.1: Event-study estimates - with and without controls



Estimates for β_t in equation 3. Relative probability of exiting from unemployment for group that lose \$300, then \$300 as compared to those whose lose \$600, then \$0. The reference week is the last week before FPUC expiration.

Appendix G Recipiency rate

I provide additional evidence that the propensity to apply for UI increased during the months of FPUC and LWA. I study how the number of UI recipients relate to the number of unemployed workers and how the relationship changes during the COVID-19 pandemic. The number of UI recipients is expected to be smaller than the number of unemployed workers. This is because many unemployed workers do not receive benefits because they either think or are ineligible for benefits (for example self-employed and gig economy workers), or they do not need the money, or have a negative attitude about UI, or have problems with the application process (U.S. Bureau of Labor Statistics, 2020a; Gould-Werth and Shaefer, 2012; Wandner and Stettner, 2000). Forsythe (2021) shows that during the COVID-19 pandemic, 40% of unemployed did not receive benefits because they thought they are ineligible to apply. Additionally, the sudden increase in UI applicants during COVID-19 pandemic strained the state UI systems and may have resulted in some eligible individuals not receiving benefits (Huang, 2020; Landergan, 2021). This is also suggested by the observation that job losses during COVID-19 pandemic were much higher than the implied by new unemployment claims (Coibion et al., 2020).

Table G.1: UI recipients and the number of unemployed

Month	Unemployed	UI recipients	Recipients/Unemployed
January 2020	119,356	19,023	0.16
February 2020	114,552	22,051	0.19
March 2020	123,603	65,664	0.53
April 2020	528,808	304,881	0.58
May 2020	388,902	349,978	0.90
June 2020	340,905	240,431	0.71
July 2020	298,074	218,104	0.73
August 2020	238,890	176,433	0.74
September 2020	200,335	143,141	0.71
October 2020	171,600	114,030	0.66
November 2020	161,074	78,957	0.49
December 2020	146,233	62,624	0.43
January 2021	156,607	63,788	0.41
February 2021	155,827	54,580	0.35
March 2021	153,244	44,138	0.29
April 2021	140,724	40,127	0.29
May 2021	152,072	42,976	0.28
June 2021	159,703	31,871	0.20
July 2021	142,656	28,397	0.20

* The data on number of unemployed comes from the Local Area Unemployment Statistics (LAUS) program of the U.S. Bureau of Labor Statistics.

In Table G.1, I compare the number of UI recipients to the number of unemployed.[28] As expected,

[28]The number of unemployed is the U-3 measure, which is smaller than the U-6 measure that includes marginally attached and underemployed workers. This can also contribute to the large increase in the recipiency rate during the pandemic. Another reason for the high ratio might be an overcounting of unemployed by UI recipients if many workers are working at reduced hours, they will counted as receiving UI but would not be counted as unemployed in

the number of UI recipients is lower than the number of unemployed. But the relationship changes during the COVID-19 pandemic as seen from the ratio of number of recipients to the number of unemployed, also known as recipiency rate (Wandner and Stettner, 2000). The recipiency rate is less than 0.2 in the months of January and February 2020, rises to 0.9 in May 2020 and declines after.[29] The recipiency rate is >70% during the months of FPUC and LWA (April 2020 - September 2020). Thus, the UI recipiency rate increased during the pandemic and is especially high during the months of enhanced UI payments during 2020.

Note that the increase in recipiency rate is not because of expansion of UI to include the self-employed and contract workers (including gig-economy workers) through the CARES Act. These newly eligible workers are not contained in our data and hence not included in the count of recipients. Adding them will increase the recipiency rate even more. Thus, the increase is because of a larger share of unemployed workers who are already eligible for regular UI applying for benefits. It is possible that increased benefit amounts, the uncertainty about being able to back to work, and health concerns while at work, made eligible employees more likely to apply.[30]

BLS data.

[29]The recipiency rate for January and February are comparable to 0.18, the Indiana average recipiency rate in 2019.

[30]Another reason for the increase could be an undercounting of the number of unemployed in the Current Population Survey (CPS), which is one of the inputs the BLS uses to calculate the number of unemployed at the state level. In the early months of the pandemic, the CPS data likely classified many unemployed as "employed but absent from work" leading to an under-counting of the unemployed (U.S. Bureau of Labor Statistics, 2020c). However, the magnitude of the misclassification was small (6% of the total unemployed) and started decreasing since months before July 2020 (U.S. Bureau of Labor Statistics, 2020b). The other input in calculating unemployment is UI claims which would bias the recipiency rate upwards (California Policy Lab, 2022).

Appendix H Heterogeneity

Table H.1 show the heterogeneity in response to FPUC and LWA expiration by gender and race. Each model uses a subset of data and the dependent variable turns one if worker exits unemployment and zero if stays unemployed. In model 1 the estimates indicate the difference in the probability of exiting unemployment after FPUC or LWA expiration for those *males* eligible for LWA as compared to those *males* ineligible for LWA, which seems the most obvious comparable group. Similar interpretations are in Table H.2. Interpretation of estimates in Table H.3 is different. Here, the difference is in the outcome variable used in each model. In model 1, the estimates indicate the difference in probability of exiting unemployment to *same employer* after FPUC or LWA expiration for those eligible for LWA as compared to those ineligible for LWA.

Table H.1: Effect of FPUC and LWA expiration - Gender and Race

	post FPUC				post LWA			
	(1) Men	(2) Women	(3) White	(4) Black	(5) Men	(6) Women	(7) White	(8) Black
eligibleLWA * post	-0.015***	-0.019***	-0.023***	-0.007***	0.025***	0.033***	0.033***	0.022***
	(0.002)	(0.001)	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
eligible LWA	-0.008***	-0.012***	-0.011***	-0.010***	-0.023***	-0.026***	-0.029***	-0.015***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
post	0.068***	0.073***	0.081***	0.043***	0.071***	0.070***	0.071***	0.069***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	371,471	579,758	650,150	209,617	286,609	423,656	456,207	186,734
R-sq	0.02	0.02	0.02	0.01	0.02	0.02	0.02	0.02

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Estimates for coefficients of equation 2.

Table H.2: Effect of FPUC and LWA expiration - Age

	post FPUC			post LWA		
	(1) 16-24	(2) 25-54	(3) 55+	(4) 16-24	(5) 25-54	(6) 55+
eligibleLWA * post	-0.015***	-0.012***	-0.021***	0.023***	0.031***	0.027***
	(0.003)	(0.001)	(0.002)	(0.004)	(0.002)	(0.004)
eligible LWA	-0.003	-0.013***	-0.015***	-0.020***	-0.025***	-0.032***
	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.003)
post	0.090***	0.064***	0.066***	0.065***	0.069***	0.084***
	(0.002)	(0.001)	(0.002)	(0.003)	(0.002)	(0.003)
Observations	183,550	601,972	165,689	129,273	461,250	119,728
R-sq	0.03	0.02	0.02	0.01	0.02	0.03

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Estimates for coefficients of equation 2.

Table H.3: Effect of FPUC and LWA expiration - Type of exit

	post FPUC			post LWA		
	(1) same employer	(2) different employer	(3) unknown employer	(4) same employer	(5) different employer	(6) unknown employer
eligibleLWA * post	-0.004***	-0.006***	-0.007***	0.016***	0.008***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
eligible LWA	-0.008***	-0.001**	-0.001**	-0.014***	-0.006***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
post	0.027***	0.025***	0.019***	0.005***	0.020***	0.045***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
Observations	951,229	951,229	951,229	710,265	710,265	710,265
R-sq	0.01	0.01	0.01	0.02	0.01	0.02

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Estimates for coefficients of equation 2.

Appendix I Unemployment spells and change in exit rate

Figure I.1: Unemployment spell start and end dates by LWA eligibility

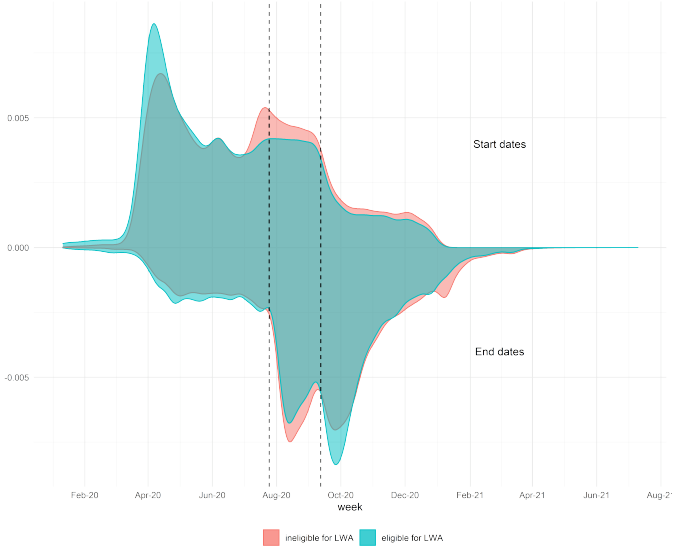


Figure I.2: Change in benefit amount and exit rates