

THE PANDEMIC LABOR MARKET & THE GREAT RESIGNATION

By

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## **Abstract**

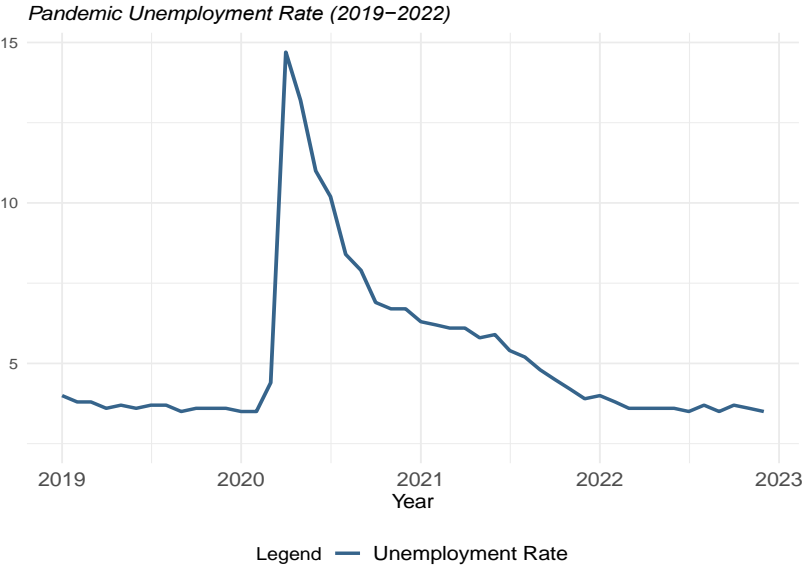
The COVID-19 pandemic has impacted nearly every aspect of the US economy. This paper looks specifically at the impacts that the pandemic has had on the labor market. First, a summary is provided of the major developments in the labor market with the onset of the pandemic. This includes measures such as the unemployment rate, labor force participation rate, and indicators of job turnover. It details the spike in unemployment, drop in labor force participation, and an on-going trend of increased voluntary job departures (a trend coined “The Great Resignation”). A literature review is then conducted to gather additional details on these trends. The literature describes differences in employment losses by gender and ethnicity with women, African Americans, and Hispanics all facing larger losses in employment. In addition, the literature empirically verifies the Great Resignation trend. Finally, three empirical models are created to see how different macroeconomic trends affect quits and separately how different demographic factors influence labor force nonparticipation.

## **Overview of the Pandemic Labor Market**

In this section, a broad overview is presented on how the US labor market has been affected by the coronavirus pandemic. Specifically, the key factors of the labor market examined are the unemployment rate, labor force participation rate, voluntary quit rate, hire rate, job opening rate, and layoff/discharge rate.

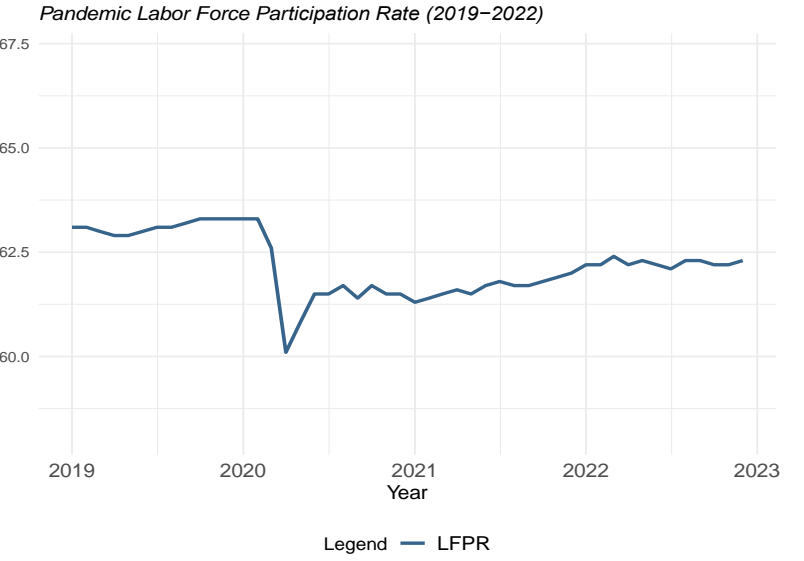
With the initial onset of the pandemic in March 2020, restrictions were put in place to prevent the spread of COVID-19 which forced many Americans to stay at home and restricted their ability to purchase goods and services. The service industry was particularly hard hit since while consumers could still purchase many goods remotely – the same could not be done with services. Facing an industry wide drop in revenues, many firms cut employees to stay in business. The layoff rate, defined by the Bureau of Labor Statistics as “the number of layoffs and discharges during the entire month as a percent of employment” rose to 8.6 % in March 2020 compared to 1.2% in January 2020. This ushered in a wave of unemployment with the unemployment rate spiking to 14.7% in April 2020 compared to 3.5% in January 2020. Along with this, many workers departed the labor force with the labor force participation rate falling to 60.1 % in April 2020 from to 63.3 % in January 2020. The economic literature finds that this spike in unemployment and drop in labor force participation was felt across all sectors and workers but was felt particularly hard in certain sectors and by certain demographic groups. This is reviewed in the next section. Trends in unemployment and labor force participation are illustrated in Figures 1 and 2 respectively.

**Figure 1**



Note: Seasonally Adjusted. Data Source: U.S. Bureau of Labor Statistics, Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/UNRATE>, April 2023.

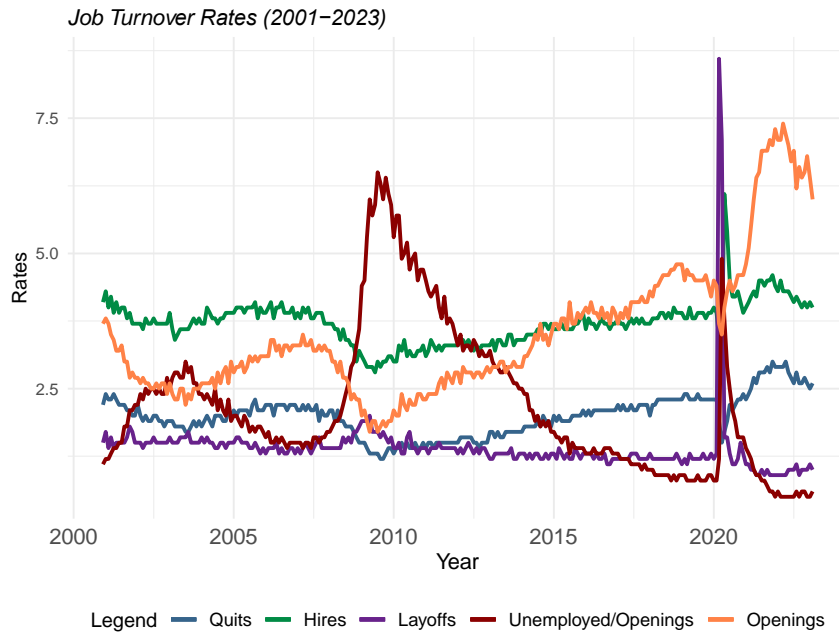
**Figure 2**



Note: Seasonally Adjusted. Data Source: U.S. Bureau of Labor Statistics, Labor Force Participation Rate [CIVPART], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CIVPART>, April 2023.

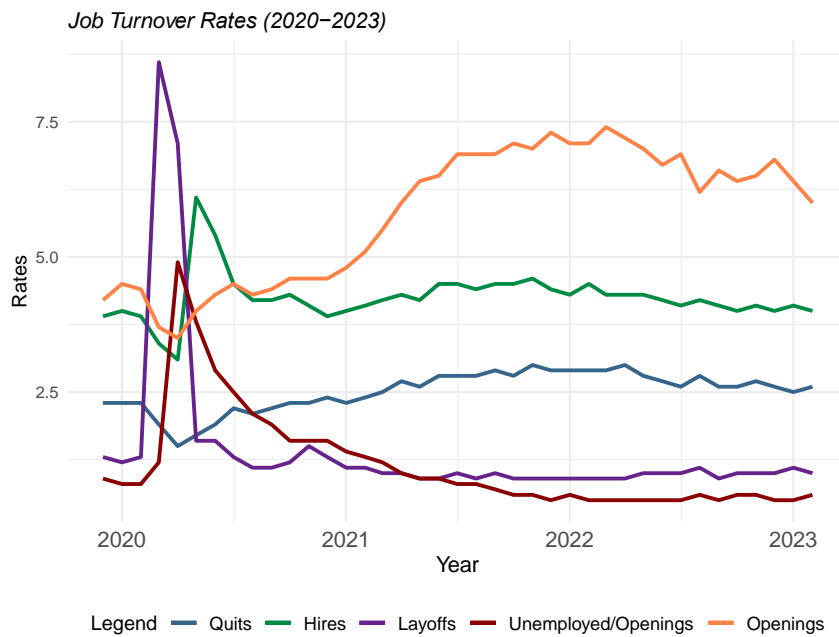
Along with immediate changes in unemployment and labor force participation rates as a direct effect of pandemic layoffs, another labor force trend has been noticed by economists since 2020. While voluntary quits initially dropped with the onset of the pandemic to 1.5% in April 2020 from 2.3% in January 2020, the quit rate quickly rebounded and began rising. The quit rate peaked at 3.0% in November 2021 which is a historical high since data collection began in 2001. This is notable because typically during difficult economic times, quits trend downwards, and this was the case for the 2008 recession. This change in 2020 was found to be statistically significant (Amador-Boadu, 2022). Along with this, the job openings rate has surged as well to 7.4% in March 2022. A third trend is that after the drop in labor force participation in early 2020 while the rate has recovered, it remains below pre-pandemic levels. As of March 2023, the labor force participation rate is 62.6% compared to 63.3% in January 2020. Gregory and Steinberg find that a major driver of this is retirements and workers leaving the labor force to take care of their home and family (Gregory & Steinberg, 2022). Additionally, the share of workers out of the labor force for reasons other than retirement, disability, or taking care of their family has remained high. A later section of this paper will approach that issue. Together, the US Labor Market has seen historically high rates of quitting and job openings as well as a labor force participation rate that remains low. With workers leaving their jobs and some not returning, this trend has been coined “The Great Resignation.” Economic literature assesses the degree of this trend as well as discusses possible causes. These trends are further illustrated by Figures 3 and 4 where the spike in quits and job openings can be clearly seen.

**Figure 3**



Note: Seasonally Adjusted. Data Source: Bureau of Labor Statistics, U.S. Department of Labor, *Job Openings and Labor Turnover Survey*, on the Internet at <https://www.bls.gov/jlt/> (visited April 2023)

**Figure 4**



Note: Seasonally Adjusted. Data Source: Bureau of Labor Statistics, U.S. Department of Labor, *Job Openings and Labor Turnover Survey*, on the Internet at <https://www.bls.gov/jlt/> (visited April 2023)

## Literature Review

There is a substantial amount of economic literature about the economic effects of the pandemic that has already been published as well as a likely even more substantial amount still being researched. This section reviews selected articles from the economic literature discussing more detailed effects of COVID on the labor market as well as trends surrounding the “Great Resignation.”

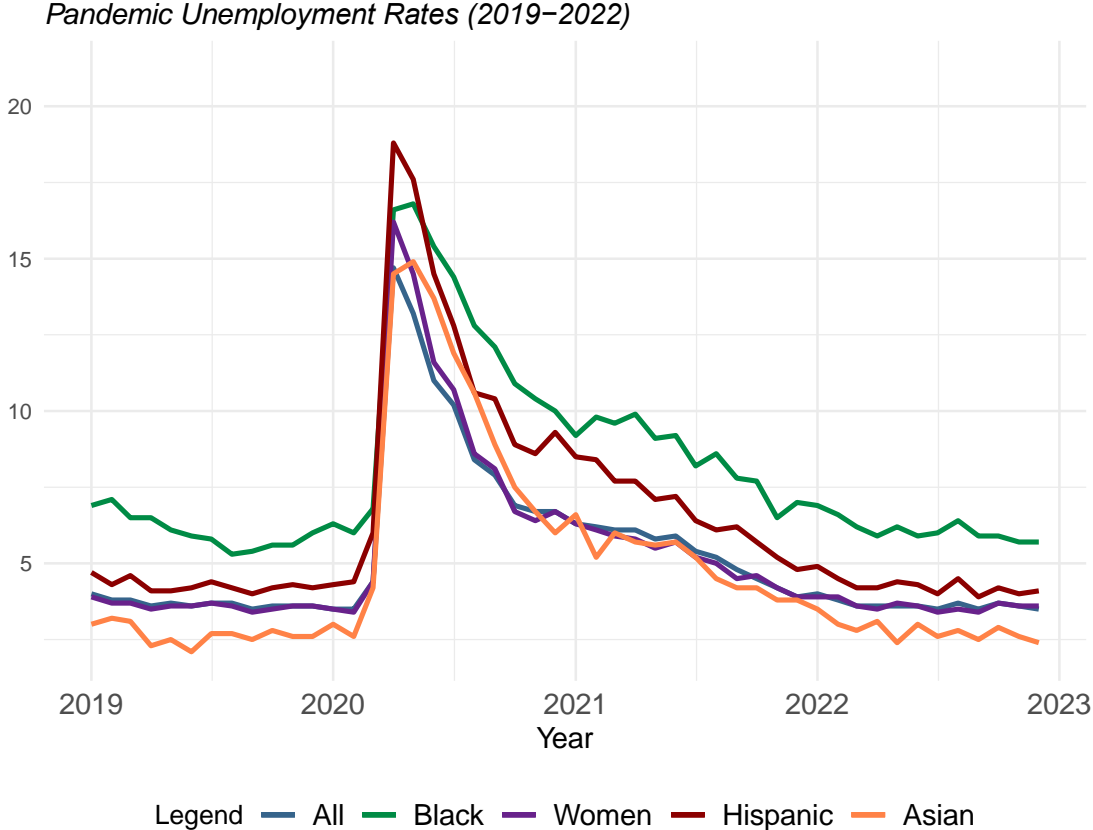
The previous section discussed how with the onset of the pandemic there was a surge in unemployment and a drop in the labor force participation rate. More detailed economic discussions have focused on whether these effects were felt equally among different worker groups by ethnicity, gender, sector, and other characteristics. Albanesi and Kim (2021) find that employment losses were greater for women. In addition, they found that for women this employment loss extended to all demographic groups. This pattern is a departure from past trends where recession employment losses for women were generally less than those for men due to the pattern of women entering the labor force and getting jobs to supplement their family’s income during tough economic times. Their analysis reviewed both demand and supply-side reasons for the discrepancy in women’s employment losses. Gender differences by occupation partly explain the difference in female employment losses with higher proportions of women working in services which suffered the most job losses during the early pandemic phases. In analyzing jobs by characterizing and by flexibility for online work and exposure risk to COVID, they found that the inflexible/high-contact jobs most vulnerable to pandemic shock have female workers in much higher proportions. Examples given for these are healthcare practitioners, healthcare support staff, food preparation and serving, and

personal care and service jobs. On the supply side, they found that women contributed to 68% of the flow from employment to labor force non-participation during the early pandemic phases. A possible reason for this is that during the pandemic there was a lack in options for childcare and schooling as many of those facilities no longer operated in-person. During past recessions, women could enter the labor force, even part time, as they did not have to worry about taking care of children during school hours; however, this was not the case during the pandemic.

Aside from the effects of the pandemic on women, the literature also discusses the impacts on workers of varying ethnicities and incomes. Hershbein and Holtzer (2021) point out that the initial loss in employment was greater for African American workers, Hispanic workers, and workers in industries such as retail, leisure, and hospitality. Throughout the fall of 2020, they observed that the duration of unemployment and the number of permanent job losses was increasing. While unemployment was broadly high, it was highest within the lowest wage quartile and the least educated workers. For African American and Hispanic workers, the losses in employment were not entirely explained by differences in occupation or education. By using data on pandemic work restrictions to model its impact on employment, it was found that lagged effects of restrictions were not statistically significant. The authors reasoned that this suggests that restrictions did not have much impact on employment once lifted. Anecdotally, this can be viewed that once businesses were allowed to open, they would re-hire their staff relatively quickly. Additional research might be conducted on whether there is a cumulative effect of restrictions on employment and movements into labor force nonparticipation. As of 2021, the recovery in employment losses for

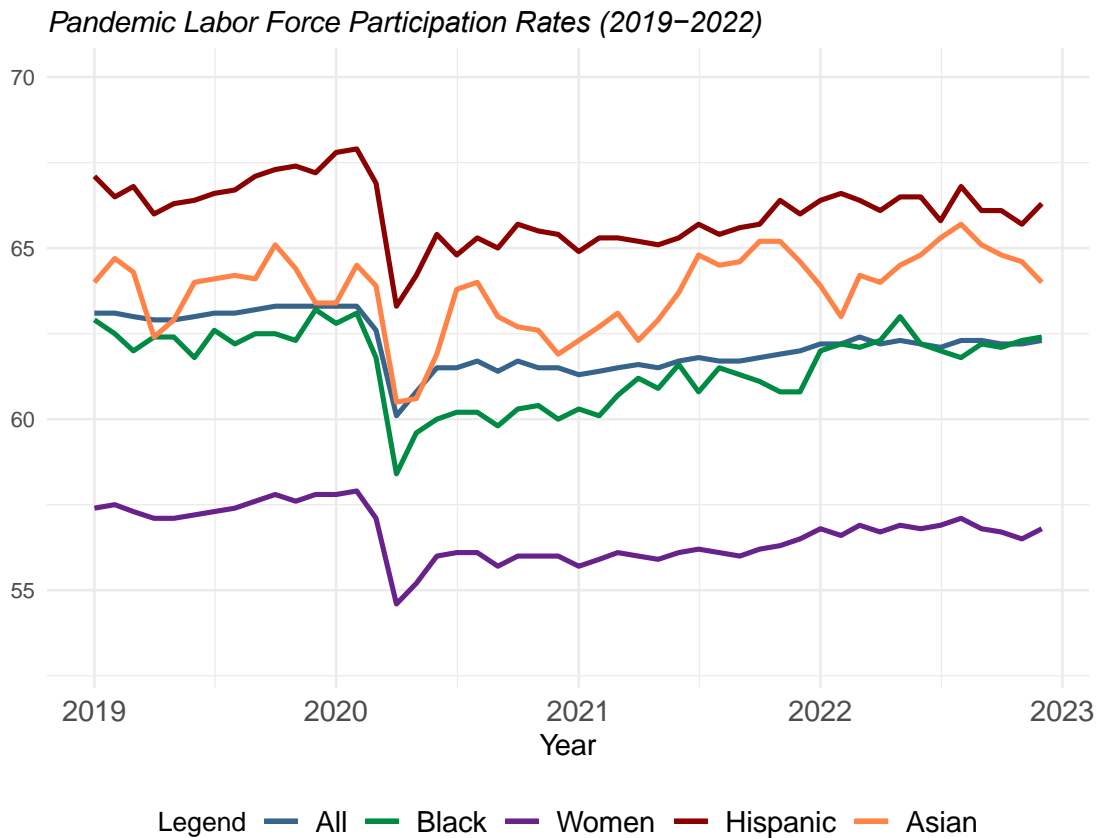
African Americans grew in line with the general population but this was not true for Hispanic workers who continued to see a disadvantage in regaining employment. This trend was not fully explained by differences in occupation, wage, or education. More current data can allow researchers to test the persistence of this trend, and these papers are likely currently in progress. Figures 5 and 6 show unemployment rates and labor force participation rates for different demographic groups with data including 2022.

**Figure 5**



Note: Seasonally Adjusted. Data Source: U.S. Bureau of Labor Statistics, Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/UNRATE>, April 2023.

**Figure 6**



Note: Seasonally Adjusted. Data Source: U.S. Bureau of Labor Statistics, Labor Force Participation Rate [CIVPART], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/CIVPART>, April 2023.

In addition to how the pandemic has impacted different demographics of workers, economic literature has also been approaching the issue of the Great Resignation. While much discussion of this trend in the media tends to be anecdotal, economic studies have found that there is significant statistical evidence for the trend of lower labor force participation and higher rates of quits. Gregory and Steinberg (2022) report that the labor force remains low with an increasing share of departures due to retirement. Faria e Castro (2021) estimates the labor force fell by 4.2 million in 2020

with 2.4 million excess retirements. Prior to the pandemic, retirements were expected to increase due to aging Baby Boomers; however, the increase in retirements during the pandemic outpaces those expected retirements suggesting that the pandemic has motivated workers to retire at younger ages. Possible reasons for this include older workers being more concerned with the risks of catching COVID and rising asset values allowing them to retire earlier than planned. Another reason cited for labor force nonparticipation is taking care of home or family. This group has a much higher concentration of women as discussed in earlier articles. Gregory and Steinberg estimated that 37% of women left the labor force citing taking care of their home and family as the reason compared to 16% of men. Their analysis finds that these two categories (retirements and housework) are the major drivers of increasing labor force departures during the pandemic period.

Along with increased labor force departures, there has also been an increase in quits. Typically, quits rise during expansionary periods and fall during recessionary periods as workers feel more or less confident in their chances of finding a better job. Both Amanor-Boadu and Gittleman find that the rise in quits during the pandemic is statistically significant. Specifically changes of 0.2 are significant at a .05 level. Since 2000, the Bureau of Labor Statistics uses the Job Openings and Labor Turnover Survey of firms to provide estimates on quits. Gittleman uses historical economic data to estimate quit rates prior to 2000 and finds that the highest historical quit rates were in 1973 towards the end of a period of economic expansion at around 3.0. During the pandemic period, decomposition of quit rates revealed the highest quit rates were in retail trade, professional and business services, accommodation and food service, and

healthcare and social assistance. In addition, sectors with higher compensation tended to have lower quit rates.

Aside from quits in specific industries, there are macroeconomic factors that influence quit rates with the most important being labor market tightness. Using unemployment as a measure of labor market tightness, Gittleman finds that unemployment indeed has a negative relationship to quits, and he also finds that the quit rates during the pandemic are higher for all levels of unemployment compared to before the pandemic. Amanor-Boadu produces similar regression results with unemployment and hourly earnings carrying negative, significant relationships with quits, and job openings rate and hiring rate carrying positive, significant relationships with quits.

Birinci and Amburgey (2022) point out that not all quits indicate workers leaving the labor force. Quits are also associated with workers simply finding better jobs but not leaving the labor force or being unemployed. They coin this “The Great Reallocation.” Their research finds that for different industries, quits may be a signal of the “Great Resignation” or instead the “Great Reallocation.” For the leisure industry, increasing quits is the result of increasing job-to-job transitions. In other industries such as manufacturing and construction, this is not the case with higher quits not being caused by job transitions.

Having established the rise in quits, the question turns to the cause. What is motivating the rise in quits during the pandemic? For this, the economic literature has not developed a clear or definite answer. Papers suggest that economic factors like pay are a major reason while also speculating that the pandemic has changed the

expectations that workers have for jobs as well as changed the general way society views work. A survey by the Pew Research study in 2021 among workers who quit their jobs in 2021 finds that “low pay (63%), no opportunities for advancement (63%) and feeling disrespected at work (57%)” were the most cited reasons for quitting (Parker & Horowitz 2022). Their survey also finds that many of those workers who quit did not feel that finding a new job was difficult and that for the most part, workers see their current job as an improvement over their past job.

Overall, economic literature finds that pandemic job losses hit female workers, Hispanic and African American workers, and low-wage workers the hardest. The literature also finds a statistically significant rise in quits contrary to historical patterns as workers seek new jobs or exit the labor force altogether. With the trends seen in rising quits and falling labor force participation rates, further research could be undertaken on how these trends alter with worker characteristics, industry, and location. Additionally, with rising interest rates cooling off the labor market and economists expecting an economic slowdown (as of April 2023) later in 2023 and 2024, researchers should keep an eye on how these trends in quits and labor force participation evolve.

## Empirical Investigation

This section seeks to use econometric methods to answer two major questions  
1) What macroeconomic factors influence quit rates? 2) What demographic factors are influencing labor force nonparticipation for reasons other than disabled, retired, or taking care of family/home? Regression is employed as the primary econometric tool.

### Model 1

Model 1 focuses on the macroeconomic factors that affect quit rates. Prior literature uses unemployment as a measure of labor market tightness. Like prior literature this model includes unemployment, but it also includes real hourly wages, savings rate, and the consumer confidence index to test whether these have significant impacts on quit rates. The coefficient for real wages is expected to be negative since as economy-wide real wages increase, there may be a decline in quits if workers are more content with current wages. The prediction for savings rate is a positive coefficient since if the savings rate is higher, there should be an increase in quits as workers will feel more comfortable leaving their current job as they have savings to fall back on. A positive coefficient is expected on the consumer confidence index since if workers have more confidence in the economy, they may be more likely to quit their jobs. Finally, a dummy variable is included to indicate a COVID year. Thus Model 1 is specified as such:

$$\begin{aligned} (\text{Quit Rate})_t = & \beta_0 + \beta_1(CCI_t) + \beta_2(\text{Wage}_{t-1}) + \beta_3(\text{Unemp.}_{t-1}) + \beta_4(\text{Savings}_t) \\ & + \delta_1(\text{COVID}_t) + \varepsilon_t \end{aligned}$$

where wage and unemployment are lagged by one time period. Data is sourced from the JOLTS survey and FRED for 2001-2023 with a monthly frequency. The model is

estimated using OLS with heteroskedasticity robust standard errors and results are presented in Table 1.

**Table 1**

*Regression Results for Quit Rate*

<b>MODEL 1</b>		
<b>VARIABLE</b>	<b>Coefficient</b>	<b>P-Value</b>
INTERCEPT	-5.39	0.11
CONSUMER CONFIDENCE INDEX	0.070	0.00003
AVERAGE REAL WAGE IN PREVIOUS MONTH	0.126	0.079
UNEMPLOYMENT RATE IN PREVIOUS MONTH	-0.010	0
SAVINGS RATE	-0.026	0.074
COVID	0.715	0

$R^2 = 0.87$ , F-stat p-value = 0

From these results, the coefficient signs on consumer confidence and unemployment are as expected. However, the signs on lagged real wage and savings rate are not as expected. An increase in real wages in the previous month is correlated with a .126 increase in the quit rate. This could be either a model misspecification or a consequence of historical trends where during expansionary periods both quits rise and real wages increase. Savings rate exhibits a negative relationship – as savings increase, quits decrease. This might also be caused by historical macroeconomic trends. It is also worth noting that these two variables are only weakly significant at the .1 significance level, so they likely do not have much explanatory power. These results agree with prior literature that the unemployment rate has the greatest statistical and economic significance in explaining quit rates. A new result is that the Consumer Confidence Index has both an economically significant and statistically significant effect on the quit rate. The dummy variable for COVID shows that on average during the

pandemic, quit rates were .715 higher which is also in-line with previously discussed trends.

### Models 2 & 3

Models 2 and 3 both try to identify how demographic factors impact the likelihood of labor force nonparticipation. More specifically, these models focus on individuals who reported being out of the labor force for reasons other than disability, retirement, illness, taking care of home/family. This means that this category of individuals will comprise discouraged workers and those who have other reasons for not looking for work. This category is particularly interesting because in trying to understand why workers left the labor force during the pandemic, it is important to understand the demographics of these groups.

To implement this, a logistic regression model is implemented using data from the Annual Social and Economic Supplement survey conducted by the BLS from 2017-2022. The dependent variable for this model is an indicator function with 1 denoting an individual is not in the labor force for reasons other than disability, illness, retirement, or taking care of home/family and 0 indicates an employed individual. Various demographic factors are used in the unobserved latent variable. The model is specified:

$$\mathbb{P}(y_i = 1) = \frac{y_i^*}{1 + e^{y_i^*}}$$
$$y_i = \begin{cases} 1, & \text{if } i^{\text{th}} \text{ individual not in labor force} \\ 0, & \text{if } i^{\text{th}} \text{ individual is employed} \end{cases}$$
$$y_i^* = \mathbf{X}\boldsymbol{\beta}$$

With the various explanatory variables in  $y_i^*$ :

- Age
- Number of Children

- Number of Children Under 5
- Real Household Income
- Gender {1 if male, 0 else}
- 1<sup>st</sup> or 2<sup>nd</sup> Generation Immigrant {1 if true, 0 else}
- Hispanic
- Real Personal Social Security Income
- Real Personal Welfare Income
- Disability Status
- Marital Status
- White
- Black
- Asian
- General Health (Ordinal 1-5 with 1 being “Excellent” and 5 being “Very Poor”)

A third model is created with the same logistic setup but the unobserved latent variable  $y^*$  is a linear function of all the above variables and the interactions of the above variables with an indicator variable that takes values {1 if observation in a COVID period (2020, 2021, 2022), 0 else}.

The model with full COVID interaction variables is denoted Model 2 while the model without interaction terms is denoted Model 3. The results for Models 2 and 3 are presented in Table 2. P-values are denoted by asterisks, and the table reports for both models the beta coefficients as well as the average marginal effects.

**Table 2**

*Regression Results for Logit Models*

VARIABLE	MODEL 2		MODEL 3	
	Coefficient	Average Marginal Effect	Coefficient	Average Marginal Effect
INTERCEPT	-1.515 ***		-1.512 ***	
AGE	0.075 ***	0.010 ***	0.073 ***	0.010 ***
COVID INTERACTION WITH AGE	-0.004 ***	-0.001 ***		
# CHILDREN	-0.039 ***	-0.005 ***	-0.051 ***	-0.007 ***
COVID INTERACTION WITH # CHILDREN	-0.028 ***	0.004 ***		
# CHILDREN UNDER 5	0.138 ***	0.019 ***	0.159 ***	0.022 ***
COVID INTERACTION WITH CHILDREN <5	0.047 **	0.006 **		
REAL HOUSEHOLD INCOME	0.000003 ***	0.0000004 ***	0.000003 ***	0.0000004 ***
COVID INTERACTION WITH INCOME	0.0000006	0.00000008		
MALE	0.752 ***	0.103 ***	0.738 ***	0.101 ***
COVID INTERACTION WITH MALE	-0.029 .	-0.004 .		
1 <sup>ST</sup> OR 2 <sup>ND</sup> GENERATION IMMIGRANT	-0.270 ***	-0.038 ***	-0.274 ***	-0.039 ***
COVID INTERACTION WITH IMMIGRANT	-0.008	-0.001		
HISPANIC	-0.116 ***	-0.016 ***	-0.096 ***	-0.013 ***
COVID INTERACTION WITH HISPANIC	0.041 .	0.006 .		
REAL PERSONAL SOCIAL SECURITY INCOME	-0.0002 ***	-0.00003 ***	-0.0002 ***	-0.00003 ***
COVID INTERACTION WITH SS INCOME	0.00001 *	0.000002 *		
REAL PERSONAL WELFARE INCOME	-0.0003 ***	-0.00004 ***	-0.0003 ***	-0.00005 ***
COVID INTERACTION WITH WELFARE INCOME	-0.00007 .	-0.00001 .		
DISABILITY	-1.046 ***	-0.169 ***	-0.944 ***	-0.151 ***
COVID INTERACTION WITH DISABILITY	0.214 ***	0.028 ***		
MARRIED	0.078 ***	0.011 ***	0.091 ***	0.013 ***
COVID INTERACTION WITH MARRIED	0.028	0.004		
WHITE	0.179 ***	0.025 ***	0.208 ***	0.030 ***
COVID INTERACTION WITH WHITE	0.061 *	0.008 *		
BLACK	0.245 ***	0.032 ***	0.231 ***	0.030 ***
COVID INTERACTION WITH BLACK	-0.032	-0.004		
ASIAN	-0.063 *	-0.008 *	-0.018	-0.002
COVID INTERACTION WITH ASIAN	0.095 *	0.013 *		
HEALTH (1-5)	-0.111 ***	-0.015 ***	-0.104 ***	-0.014 ***
COVID INTERACTION WITH HEALTH	0.016 *	0.002 *		

Note. Asterisks denote p-values with: 0 ‘\*\*\*’, 0.01 ‘\*\*’, 0.05 ‘\*’, 0.1 ‘.’ Data Source: IPUMS CPS Data

**Table 3***Relationship Signs for Model 3*

Positive	Negative
<ul style="list-style-type: none"> <li>• AGE</li> <li>• # CHILDREN UNDER 5</li> <li>• REAL HOUSEHOLD INCOME</li> <li>• MALE</li> <li>• MARRIED</li> <li>• WHITE</li> <li>• BLACK</li> </ul>	<ul style="list-style-type: none"> <li>• # CHILDREN</li> <li>• 1<sup>st</sup> OR 2<sup>nd</sup> GENERATION IMMIGRANT</li> <li>• HISPANIC</li> <li>• REAL SOCIAL SECURITY INCOME</li> <li>• REAL PERSONAL WELFARE INCOME</li> <li>• DISABILITY STATUS</li> <li>• ASIAN (not significant)</li> <li>• HEALTH</li> </ul>

*Note.* Sign of relationship indicates direction of variable's effect on the probability of labor force non-participation for reasons other than retirement, housework, disability, or illness.

**Table 4***Relationship Signs for Model 2*

Positive	Negative
<ul style="list-style-type: none"> <li>• AGE</li> <li>• #CHILDREN*COVID</li> <li>• # CHILDREN UNDER 5</li> <li>• # CHILDREN UNDER 5*COVID</li> <li>• REAL HOUSEHOLD INCOME</li> <li>• REAL HOUSEHOLD INCOME*COVID</li> <li>• MALE</li> <li>• HISPANIC*COVID</li> <li>• SS INCOME*COVID</li> <li>• DISABILITY*COVID</li> <li>• MARRIED</li> <li>• MARRIED*COVID (not significant)</li> <li>• WHITE</li> <li>• WHITE*COVID</li> <li>• BLACK</li> <li>• HEALTH*COVID</li> </ul>	<ul style="list-style-type: none"> <li>• AGE*COVID</li> <li>• # CHILDREN</li> <li>• MALE*COVID</li> <li>• 1<sup>st</sup> OR 2<sup>nd</sup> GENERATION IMMIGRANT</li> <li>• IMMIGRANT*COVID (not significant)</li> <li>• HISPANIC</li> <li>• REAL SOCIAL SECURITY INCOME</li> <li>• REAL PERSONAL WELFARE INCOME</li> <li>• WELFARE INCOME*COVID</li> <li>• DISABILITY STATUS</li> <li>• BLACK*COVID (not significant)</li> <li>• ASIAN</li> <li>• HEALTH</li> </ul>

*Note.* Sign of relationship indicates direction of variable's effect on the probability of labor force non-participation for reasons other than retirement, housework, disability, or illness. Italics indicate interaction variable.

Tables 3 and 4 indicate the direction of relationships found by the regressions. Starting with Model 3 (no interaction variables). The strongest average marginal effects from Model 3 are gender and disability with the average marginal effect on the probability of nonparticipation of .101 and an average marginal effect of being disabled on the probability of nonparticipation being -.151. It is possible the strength of these relationships is due to the fact that these groups might be more likely to select another reason for nonparticipation, recall that housework and disability are explicit categories which were excluded from this model. A surprising result is that the number of children has a negative effect on the probability on nonparticipation yet the number of children *under 5* has a positive relationship. This may be the result of social policies or family dynamics such that as the number of children increases it may become more necessary to be in the labor force to provide income, but if the children are very young, it may be more necessary to stay at home. Negative signs on immigrant status, Hispanic ethnicity, social security income, and welfare income suggest that workers with these traits or higher levels of income from those sources have higher probabilities of being out of the labor force.

Model 2 containing interactions with COVID maintains the signs of these relationships from Model 3. The interaction effects of age, gender, and welfare income with COVID carry negative signs meaning that during the pandemic age, being male,

and receiving more welfare income are associated with lower probabilities of nonparticipation for reasons other than disability, housework, or retirement. All other interaction variables contain positive signs meaning for these variables probabilities of being out of the labor force are higher compared to before the pandemic. A result which the literature previously discussed is that for COVID periods, Hispanic workers have a higher probability of labor force non-participation signaling they may be harder hit by pandemic labor conditions. A somewhat surprising result from both models is that supplementary income from Social Security and welfare corresponds to a lower probability of being out of the labor force for a reason other than retirement, disability, housework, or illness. This may be because those receiving those payments would classify themselves as disabled or retired. Additionally, certain job search or work requirements for welfare would classify those receiving payments as unemployed – thus in the labor force.

To test whether a structural change occurred during the pandemic, a likelihood ratio test is conducted with Model 2 being treated as the full model as it allows marginal effects to vary with COVID, and Model 3 is treated as the restricted model as it confines the marginal effects to a single value regardless of pandemic status. Results are presented in Table 5.

**Table 5**

*Likelihood Ratio Test for Models 2, 3*

Model	DFs	Log Likelihood	Chi-Squared	P-value
<b>Model 2</b>	31	-225868		
<b>Model 3</b>	16	-225938	140.2, DF=15	0

The results of the likelihood ratio test indicate that a structural change in the effects of demographic factors on the probability of labor force participation during the pandemic as the unrestricted models better explains the data.

## **Conclusion**

With the outbreak of the pandemic, the labor market in the US felt a shock. Unemployment surged and the labor force participation rate fell. These effects were felt most strongly by women, African Americans, Hispanics, and low-wage workers. In addition, a growing trend of increased voluntary job resignations has been recorded. A strong indicator of quits is unemployment, and regression analysis indicated that the consumer confidence also significantly explains quit rates. Using logistic regression, various demographic factors can be examined for their effect on labor force non-participation to examine the makeup of discouraged workers.

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