

## A Survey on the Impact of Covid-19 on the Labor Market

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### Abstract

The consequences of the Covid-19 pandemic had numerous social, political, and economic consequences. However, many studies suggest the labor market is the most affected area compared to the others. This is because some of the workers were forced to quit due to the presence of the pandemic at their places of employment. This particular paper focuses on performing a comprehensive survey on the effects of Covid-19 on labor markets. It is well known that the Covid pandemic has led to widespread job losses and a decrease in labor force participation. The unemployment rate had risen significantly, and the number of people out of work increased by millions. The labor market was also being affected by decreased working hours and increased temporary layoffs. The literature on labor economics is divided into two distinct areas of the effect of the pandemic. On one side, there are papers conducted on the general impact of the pandemic on the labor market, including demand and supply of labor, unemployment, and the heterogeneous effect of Covid on different groups and ages. On the other side, some studies are related to the Covid specific topics which are new to the literature of labor economics, such as work from home, remote working, lockdowns, and social distancing. One other evolving part is the Post Covid era and the recovery phase.

**Keywords:** Covid-19; Unemployment; Social distancing; Work from home; Inequality.

### 1. Introduction

Economists have experienced the same significant disruptions caused by Covid-19 as the rest of the population, and they are motivated by the economic effects of Covid. Since the beginning of the pandemic, economists have utilized their skills to attempt to comprehend current occurrences and examine policy solutions. The Covid-19 outbreak raises theoretical and empirical questions in various areas of economics, including but not limited to health, industrial organization, macroeconomics, finance, history, development, inequality, political economy, public finance, and labor economics.

Before Covid-19, the study of pandemic economics was relatively new. Pandemics was mostly a field of study within the medical and biological sciences, although there was some research on the economics of pandemics. As a result of economists' surprising interest in pandemics, a nearly new field of study has emerged, largely ignoring previous studies. Both theoretically and empirically, rapid advancement has been made. This new field emerged from the economics of Covid and became Covid Economics.

The Covid-19 outbreak has numerous implications for the economy and the daily lives of individuals. Following the pandemic, labor markets in both developed and developing nations saw significant adjustments. The pandemic caused one of the worst employment crises to affect the world since the Great Depression. Governments were obligated to take all necessary measures to solve labor market challenges. While some nations have recovered from the pandemic, others are still struggling to restore their former status (Anderton *et al.*, 2021).

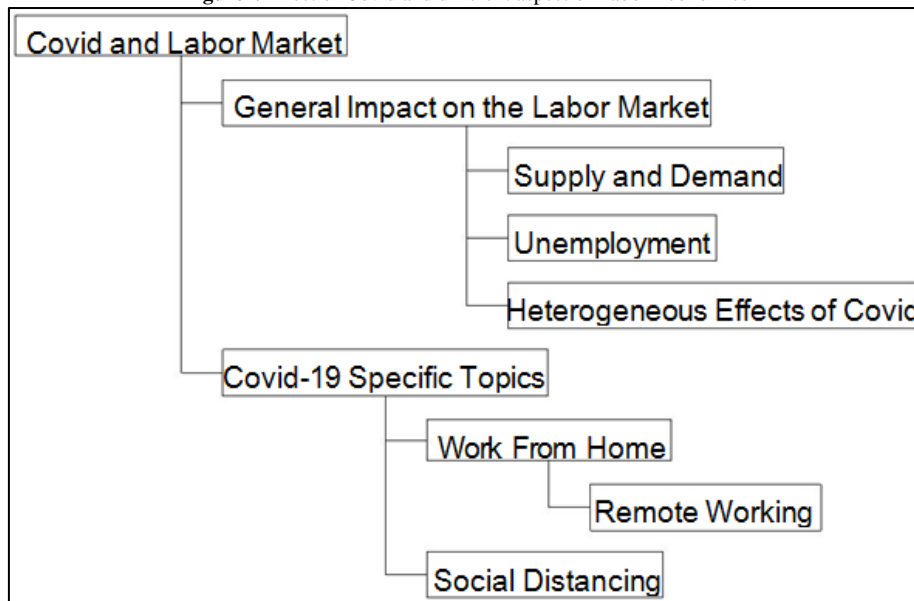
The labor market was hit by a massive wave that caused the unemployment rate to jump and forced many workers to quit their jobs (Eichhorst *et al.*, 2020). According to estimates, women experienced significantly higher unemployment rates than men. Young people, those with less education, immigrants, and minorities all experienced substantial employment losses. In addition, the pandemic led to an increase in the inequality gap and poverty. By February 2021, there were 8.5 million fewer employees in the United States than there were in February 2020. It is suggested that it could take three years to recover from the kind of severe loss that was experienced. If efforts are made to boost the employment rate and the number of work opportunities, there is a probability that the recovery will go more quickly. Similarly, it is believed that in order to improve the prospects of recovery, better policies will need to be put in place to address the economic effects of the pandemic in different areas.

There are a few literature review articles that discuss the research in the field of economics of Covid, such as Brodeur *et al.* (2021); Padhan and Prabheesh (2021); however, their approach is different in terms of both

categorizing research studies and the diversity of publications. In addition to that, they completed a broader analysis of the literature; conversely, this survey is focused on studies conducted within the field of labor economics.

This paper aims to explore and clarify the influence of Covid-19 on labor markets in a few important dimensions. The research on Covid and labor economics can be broken down into two categories, each addressing a different aspect of the pandemic's impact. On the one hand, there are articles that have been written on the broad impact that the pandemic has had on the labor market. These papers include topics on the demand and supply of labor, unemployment, and the heterogeneous effect that Covid has had on various ages and groups. On the other hand, there are studies centered on Covid specific themes that are new to the literature of labor economics. These subjects include work from home policies, lockdowns, and social distancing. The structure of the literature on the effect of Covid on the labor market has shown in 1.

Figure1. Effect of Covid and different aspect of Labor Economics



## 2. General Impact on the Labor Market

### 2.1. Supply and Demand of Labor

The initial collection of studies on Covid-19's impact on the labor market focused on how it affected the labor supply and demand. Although there is some theoretical work in this area, the main focus of these works is to examine the data to determine how the pandemic affected firms' decisions on hiring and the participation of individuals in the workforce.

One of few theoretical work which is incorporating the SIR model<sup>1</sup> of pandemics into the DMP2 model of the labor market, [Bradley et al. \(2021\)](#) constructs a choice theoretic equilibrium model of the labor market in the face of a pandemic. In examining the effects of lockdown regulations, their article underlines the significance of population and employee variability. They use the fact that worker and company behavior alters in the presence of the virus, which has equilibrium related effects on the infection rate. They calibrated the model to the United Kingdom and examined hypothetical lockdown measures. In both the evolution of the virus and the labor market, they discover a different response to lockdown policies. A laissez faire strategy results in loss of life and a negative economic shock. In the absence of alternative interventions, a lockdown strategy will lower the number of lives lost but increase the cost burden. Consistent with recent evidence, they show that individuals with the lowest incomes are disproportionately affected by the economic consequences of a lockdown. Another work that develops a macro model is [Bredemeier et al. \(2020\)](#) and it studies the ability of fiscal policy to stabilize employment by occupation and industry during the Covid-19 crisis. They use a multi sector, multi occupation macroeconomic model and investigate different fiscal policy instruments that help the economy recover faster. They show that fiscal stimuli foster job growth for hardhit pink collar workers, whereas stimulating blue collar job creation is more challenging. They show that a cut in labor taxes performs best in stabilizing total employment and employment composition.

In the family of macro models, [Chaar and Bromwich \(2021\)](#) estimate a Bayesian structural vector auto regression (SVAR) using monthly statistics of hours worked and real earnings in order to measure labor demand and supply shocks at the sector level around the Covid-19 outbreak. These shocks are measured in relation to the Covid-19 outbreak. They demonstrate that the majority of sectors were hit by significant negative labor supply and demand shocks in March and April of 2020, with a significant amount of variation in the magnitude of shocks between sectors. According to their calculations, labor supply is responsible for accounting for around two thirds of the slowdown in the overall growth rate of hours that occurred between March and April of 2020.

Transitioning from macro models, there are a few research that uses online job posting data as a very useful way to analyze the effect of Covid on the labor market. [Campos-Vazquez et al. \(2021\)](#), examine the impact of the pandemic on labor demand in Mexico by scraping job postings from the most popular job search website. They demonstrate that, similar to the U.S., the number of vacancies in Mexico decreased significantly during the shutdown

(38 percent). In April 2020, there was a shift in the composition of labor demand, which resulted in a decrease in wages. By May, however, both pay distribution and job ad distribution by occupation had returned to prepandemic levels. Also, they show that there was a momentary increase in the demand for low skilled workers. It is surprising that contrary to expectations, telecommuting opportunities decreased throughout the pandemic. They claim that there is no evidence of a large or permanent change in labor demand during the Covid based on Mexico's data.

Also, using data from the online jobs portal Glassdoor3, [Marinescu et al. \(2021\)](#) predict the impact of Federal Pandemic Unemployment Compensation (FPUC) on job applications and openings from March to July 2020. They found that a 10% increase in unemployment benefits resulted in a 3.6% decrease in applications but had no effect on the creation of vacancies; hence, FPUC increased labor market tightness (vacancies/applications). Their findings suggest that the beneficial effect of FPUC on tightness was likely welfare improving: FPUC reduced candidate competition at a time when jobs were exceptionally scarce. Their findings also help to explain reports indicating that FPUC did not harm employment.

Another research is [Campello et al. \(2020\)](#) that employs big data on job listings to demonstrate that enterprises have reduced postings for high skill jobs more than for low skill jobs, with small businesses essentially halting all new hiring. In addition, they claim that layoffs are more severe in unionized industries and the non tradable sector. Access to credit influences business hiring, with credit constrained companies posting fewer job openings.

Government policies related to the pandemic are another important aspect of research and [Bennedsen et al. \(2020\)](#) examines the influence of the Covid-19 pandemic and government policies on the employment decisions of businesses. They collect survey data from 10,642 small, medium, and large Danish businesses, as well as administrative accounting data and government records of all aid supported furloughed workers during the pandemic. Compared to a typical year, 30 percent more businesses have seen revenue decreases. By comparing employers' actual layoff and furlough decisions to their reported counterfactual options in the absence of assistance, they estimate that 81,000 fewer workers were laid off and 285,000 workers were furloughed.

[Bennedsen et al. \(2020\)](#) findings indicate that the aid policy was effective in preserving job matching at the outbreak's onset. In comparison to enterprises that did not accept government aid, those that did were more likely to grant furloughs and less likely to lay off employees. In general, among enterprises getting assistance, the proportion of workers on furlough rises as the firm's income declines, indicating that the policy is having the desired effect. The proportion of employees laid off by aid accepting companies appears to be substantially independent of the revenue loss. Companies that did not accept aid implement more layoffs than furloughs when revenue declines by more than 50 percent, but the difference is not statistically significant at lower levels of financial distress. Sweden as one of the countries whose government chose a different approach is also interesting and [Juraneck et al. \(2021\)](#) examines Covid 19 pandemic non pharmaceutical interventions (NPIs) on labor markets. They focus on the Nordic countries, which had one of the biggest variations in NPIs despite having similar community spread of Covid-19 at the start of the pandemic: Denmark, Finland, and Norway imposed rigorous measures ('lockdowns'), while Sweden chose lighter restrictions. They compare Sweden's labor market outcomes with its neighbors using novel administrative data on weekly new unemployment and furlough spells from all 56 Nordic areas. Their data reveals that the pandemic significantly impacted all labor markets, with Sweden performing slightly better. The Swedish labor market worsened 2 to 3 weeks later than the other Nordic nations, and its cumulative aggregate of new unemployment and furlough spells remained much lower (20–25%) over their research (up to week 21 of 2020).

Finally, an interesting way to look at the labor market is how new jobs are affected by Covid pandemic. [Kuhlmann et al. \(2020\)](#), assert that the shock of the Covid-19 pandemic spearheaded development within the public health professionals that many individuals have advocated for. In the wake of the pandemic, many employment opportunities were created for healthcare professionals. It is because the population of individuals affected by the pandemic was shooting day after day. Countries subjected to lockdown measures viewed healthcare employees as heroes in all their endeavors. There was no option left but to confine the professionals to recover from the pandemic. Therefore, even though the pandemic resulted in the loss of employment in most areas, which affected the economy, the healthcare sector demanded a lot of employees more than those even there.

## 2.2. Unemployment

It goes without saying that the most important indicator of the labor market is unemployment. Because of that one of the main areas of research on the effect of Covid is to see how this variable responded. One of the early works on the effect of Covid on the labor market is [Coibion et al. \(2021\)](#) and they utilize a large scale survey of households to characterize how the Covid-19 epidemic is affecting labor markets. In this work, they describe several facts. First, job loss has been substantially greater than suggested by actual unemployment claims: they anticipate 20 million lost jobs by April 6, 2020, which is significantly higher than the number of jobs lost over the entirety of the Great Recession. Second, many of the unemployed are not actively seeking new employment. Consequently, they expect that the increase in the unemployment rate during the same time will be a relatively small 2 percentage points. Third, workforce participation has decreased by seven percentage points, an unprecedented loss that surpasses the three percentage point cumulative decline from 2008 to 2016.

[Khamis et al. \(2021\)](#), suppose that, according to preliminary evidence drawn from the survey conducted by the World Bank in 39 developing nations, significant work disruption was witnessed in the second quarter of 2020. According to the research, 36% of individuals stated that they had left their work in the wake of the pandemic, 20% claimed that their employers were subjecting them to partial payment and 9% of the individuals claimed that they had left their jobs and picked other jobs. It is deemed that countries all over the world, including the United States,

have been making efforts to recover from the pandemic. There has been a partial but remarkable recovery from the pandemic, and there is hope that the countries will be in their rightful places by the end of 2022.

Utilizing job vacancy data, initial unemployment insurance (UI) claims, and Bureau of Labor Statistics (BLS) employment data, Forsythe *et al.* (2020) examine the effect of Covid-19 on the labor market. They found that the number of open jobs dropped dramatically in the second half of March 2020. By late April, numbers had decreased by approximately 40 percent. They suggest that this economic downturn affected all U.S. states, irrespective of the timing of stay at home regulations. They demonstrate that UI claims and BLS employment statistics also generally correspond to similar patterns. They imply that the recession was not caused exclusively by the stay at home rules and hence cannot be reversed by removing them.

Longitudinal Labour Force Survey is a very comprehensive source of data that is used in Guven *et al.* (2020) to estimate person fixed effects models to investigate the shortterm labor market consequences of Covid 19 and the Australian lockdown. Covid-19 decreased labor force participation (LFP) by 2.1%, increased unemployment by 1.1%, and decreased weekly working hours by 1.1. LFP dropped 3.3%, unemployment rose 1.7%, and weekly working hours dropped 2.5. The lockdown increased working fewer hours, being on leave, working shifts, not having enough work, and losing jobs, while Friday work declined by 10%. The outbreak and shutdown boosted underemployment and job seeking activities. Their data showed that those with up to high school education had greater LFP and working hour reductions. However, immigrants and those with shorter job tenure or jobs unsuitable for remote work were severely hurt by unemployment.

Seeing the future effect of the pandemic is also very crucial. Bui *et al.* (2020), address potential future consequences of the Covid-19 outbreak and recession on the employment outcomes of older employees in the United States and highlight some of the early effects. Using Current Population Survey (CPS) data, they assess the early effects of the Covid-19 pandemic and recession on employment and unemployment rates by age group and gender. They calculate employment and unemployment rates in different ways to account for the complexity of the labor market and the possibility of survey inaccuracy. In April 2020, the unemployment rate for individuals aged 65 and above grew to 15.43%, compared to 12.99% for those aged 25-44. In addition, they find that Covid-19 and the recession have disproportionately impacted women, with women reaching higher unemployment rates than males across all age groups.

A country specific research is Betcherman *et al.* (2021) that assesses the shortterm effects of the Covid-19 lockdown on the Greek labor market and its unemployment trends. Findings indicate that flows into unemployment have not increased; in fact, separations were lower than expected given trends over the past few years. Moreover, by the end of June 2020, employment was around 12 percent lower than it would have been without the epidemic. Their methodologies, which include interrupted time series and difference in differences estimations, imply that this was owing to a significant slowdown in hiring during months when job creation generally peaks in normal years, particularly in the tourism industry.

A good way to look at the labor market is by asking about the workers and their perception of the pandemic. Baert *et al.* (2021), assess the perceived impact of Covid on people by surveying Belgian employees under 65 years old. They show that about 21% of them are worried about losing their employment as a result of the economic crisis, and 14% are concerned about losing their employment in the near future. In addition, 26% anticipate not receiving promotions they would have received if the Covid-19 problem had not occurred. This fear is more prevalent among vulnerable groups, such as migrants. In addition, they note that many individuals anticipate they will view the labor market and their work related priorities differently in the future.

### 2.3. Heterogeneous Effects of Covid

The one crucial aspect of studies on the job market and the Covid pandemic is how the impact of Covid varies among groups and ages. According to the overall reviewed literature, it may be assumed that those who are most vulnerable are also the most severely affected. For example, Croda and Grossbard (2021) shows that when compared to men, women have paid more, and Kochhar and Bennett (2021) implies that the Covid-19 pandemic had many negative implications on the minority races compared to the majority races.

Bluedorn *et al.* (2021), presents evidence that the pandemic has varied effects on men and women. Using a quarterly sample of 38 advanced and emerging market economies, the authors demonstrate that there is a high degree of variation across nations, with over half to two thirds demonstrating greater decreases in women's employment rates than men. On average, these gender variations in the duration of Covid-19's effects only last a quarter or two. They also demonstrate a substantial relationship between this issue and Covid-19's effects on gender ratios in employment within sectors.

Also, Casarico and Lattanzio (2022) explores the shortterm effects of Covid-19 on labor market flows and how labor market policy affects these outcomes. Using Italian data between 2009 and the second quarter of 2020, they demonstrate that, prior to the pandemic, a higher percentage of female workers than male workers, younger workers than older workers, and less educated workers than highly educated workers were engaged in nonessential activities. When examining the change in hirings and separations beginning in the ninth week of 2020 the time when the first cases and deaths attributable to Covid-19 were reported a significant decline in hirings and terminations of fixed term contracts is observed. As a result of government action, the number of layoffs and quits increases after the ninth week and then declines dramatically. The removal of the lockdown initiates a gradual recovery of labor market flows. Young workers, those with temporary contracts, low educated workers, those employed in the South, and those without work from home options experience a greater decline in separation likelihood, indicating that

government policy partially covered them from the effects of the recession on the labor market. The probability of separation decreases more slowly for women than for males.

Another important work on the Italian economy as the first European country hit by Covid is [Del Boca et al. \(2020\)](#) and it starts by saying the fact that recessions tend to have a higher impact on male dominated sectors.

The Covid-19 pandemic has had widespread economic, health, and social impacts. They examine the effects of Covid-19 related working arrangements on housework, childcare, and homeschooling in couples where both partners work using April 2020 survey data from a representative sample of Italian women.

These findings reveal that women do most of the Covid-19 related housework and childcare, but couples share childcare more than house work. They found that women's emergency housework does not depend on their partners' work schedules. All women questioned spend more time on housework than previously, save those who continue to work. Men spend more time on housework if their partners continue to work at their regular workplace. If they work away from home, more women and men spend less time with their children. Finally, they show that Covid-19 makes work-life balance harder for working women with children under 5. Another country specific research is [Farre et al. \(2021\)](#) that examines Spain, as one of Europe's toughest Covid-19 lockdowns, and shows during the lockout, "quarantined" and "nonessential" sectors with no remote work lost many jobs. Low educated people suffered disproportionately from temporary job losses. Women were more likely to work from home and lose their jobs than men. Since schools were closed and outsourced, the lockdown increased childcare and housework. Men did more house work and childcare, but women did most of it before the lockdown. They conclude by saying that, in the short run, the Covid-19 pandemic appears to have worsened gender inequality in paid and unpaid employment. One of the research that has a surprising result is [Hupkau and Petrongolo \(2020\)](#) which investigates the consequences of the Covid-19 crisis and related economic activity constraints on paid and unpaid labor for men and women in the United Kingdom. They discover evidence that the labor market outcomes for men and women were nearly equally influenced at the extensive margin, as assessed by the frequency of job loss and furloughing. In contrast, women experienced lesser losses at the intensive edge, as their hours and wages changed marginally less. Also, they show in the typical family, women provided a greater proportion of increasing childcare demands, but in a significant proportion of households, fathers became the primary childcare providers.

In contrast to [Hupkau and Petrongolo \(2020\)](#) there are papers like [Reichelt et al. \(2021\)](#) that show a different outcome. They use a representative sample of respondents in the U.S., Germany, and Singapore and find that women have more often transitioned to unemployment, reduced working hours, and working from home than males. They also show that among couples who were employed before the pandemic, men express more egalitarian gender role attitudes if they became unemployed but their partners remained employed, whereas women express more traditional attitudes. These findings suggest gender role beliefs may change with life. They argue that as economies recover, how men and women change their employment relationships will determine the long term effects.

In the same group of researchers, using a triple differences method that takes advantage of differences between states, between times, and between women who did and did not have young children, [Russell and Sun \(2020\)](#) evaluate the results of state level policies that forced the closure of child care institutions or imposed class size restrictions. They show that both measures are associated with an increase in the short-term unemployment rate of mothers of young children. Also, they find, as expected of a persistent side effect on the availability of child care, the impact of mandated closures on unemployment grows with time and continues even after states stop closings.

[Montenovo et al. \(2020\)](#), present a number of improvements to the understanding of the sociodemographic disparity in labor market responses to the Covid-19 outbreak and associated policies, using two prior recessions as a baseline. First, they show that monthly Current Population Survey (CPS) statistics indicate that Hispanics, younger workers, and those with a high school diploma and some college will experience higher job drops in April and May 2020 compared to February. Between April and May, employment was restored by all demographic segments. With the exception of Blacks, who experienced a smaller bounce, the rate of reemployment in May was roughly proportionate to the rate of decline in April.

In addition, they demonstrate that, compared to the 2001 recession and the Great Recession, employment losses in the early Covid-19 recession were smaller for people with very low or very high education (as opposed to medium education). Furthermore, they demonstrate that occupations requiring more human contact and those that cannot be performed remotely lost more jobs. Additionally, they find that the pre Covid-19 sorting of workers into occupations and industries along demographic lines can account for a substantial percentage of the gender, racial, and ethnic disparities in new unemployment.

For instance, despite the fact that women suffered more job losses than males, their disproportionate pre-pandemic sorting into occupations compatible with remote labor protected them from what would have been even greater employment losses during the epidemic. Nevertheless, considerable disparities in employment losses between groups persist that cannot be explained by socioeconomic differences. When they incorporate the "employed but absent from work" measure present in the CPS in addition to the more typical employment and unemployment measures, they discover bigger gaps in labor market effects.

[Kochhar and Bennett \(2021\)](#), argue that during the wake of the pandemic, a high number of women quit the work market during the initial year of the pandemic. According to statistics, it is deemed that from February 2020 to 2021, 2.4 million women left their work compared to 1.8 million men. Therefore, women accounted for a significant employee decrease within the labor market. It is asserted that during the Covid-19 pandemic, women were affected the most compared to the case during the Great Recession, where men were the ones who got affected the most. It is deemed that from 2007 to 2009, the number of women who ditched their work was 84,000, while on the other end, the number of men who ditched their job was 929,000.

Kochhar and Bennett (2021), further argue that the Black and Hispanic women happened to comprise the larger population of the women that quit their places of work. Therefore, in tandem with this statement, it is evident that the Covid-19 pandemic had many negative implications on the minority races compared to the majority races. According to statistics, of all the women who left their jobs during the pandemic within one year, 582,000 were Hispanic women, while 511,000 were black women. In general, Black and Hispanic women were 46% of the entire population of women that left their jobs.

According to Queisser (2021), the Covid-19 pandemic affects men and women to various degrees. For instance, women as caregivers minimize their working hours or decide to change their work and take on other opportunities that may have much flexibility and minimal time for commuting. It is equally explained that women happened to be significantly affected during the pandemic compared to men because of inequality issues within the places of work. It is because in certain areas when it came to reducing the number of employees to ease the payment of salaries, the women were the ones who got laid off from their jobs first.

In addition to analyzing the effect of the pandemic, seeing how minorities are affected by Covid is also very crucial. Couch *et al.* (2020), shows early Covid-19 pandemic effects on minority unemployment in the US. After states adopted social distancing measures in March, unemployment jumped to 14.5% but 24.4%. Using the official criteria, African American unemployment grew by less than expected (to 16.6%) in April 2020, and Latinx unemployment (18.2%) surged for the first time to the highest among significant groups.

Moreover, difference indifference estimates of Couch *et al.* (2020) show that the initial unemployment disparity between whites and blacks in April was similar to prepandemic levels, but the gap widened as white unemployment fell in the next two months while black unemployment remained unchanged. Whites and Latinx had identical unemployment rates in May and June, despite April's big gap. Nonlinear decomposition demonstrates that a favorable industry distribution somewhat preserved black employment during the early pandemic, but an unfavorable occupational distribution and lower average skills levels put them at higher risk of job losses. As trying to hire increased, the Latinxwhite unemployment gap narrowed. They point out a very important thing and say these findings of disproportionate minority unemployment raise worries about lost incomes and wealth and the pandemic's longterm effects on US racial inequality.

Also, Borjas and Cassidy (2021) use the CPS data and show that immigrants were hit hardest by the employment decrease resulting from the Covid outbreak. The immigrant men had more jobs than native men, however, Covid-19 wiped out immigrant employment advantages and by April 2020, immigrant men were less employed than native men. Immigrants were less likely to work in remote jobs and suffered uneven employment outcomes as the lockdown allowed individuals with "remotable" abilities to work from home. Also, they show that undocumented men lost more jobs than legal immigrants during the pandemic.

Mongey *et al.* (2021), creates two measures of an occupation's potential exposure to social distancing measures using O\*NET data<sup>4</sup> and they use them to examine the characteristics of workers in various types of jobs. Their findings indicate that workers in low work from home and high physical proximity occupations are more economically vulnerable across a range of measures derived from the CPS5 and PSID6: they are less educated, have lower incomes, possess fewer liquid assets relative to income, and are more likely to be renters. Consistent with the hypothesis that high physical closeness or low work-from-home occupations were more sensitive to the Coronavirus shock, they demonstrate that the sorts of employees projected to be employed in these occupations saw larger employment decreases throughout the pandemic. In the final result, by comparing the aggregate employment losses in these occupations to their employment losses during the 2008 recession, they find evidence that these occupations were disproportionately subject to the pandemic shock, and were not just comprised of more cyclically sensitive individuals.

Finally, Lee *et al.* (2020) posit that the Covid-19 pandemic resulted in a worldwide crisis in terms of its poverty related consequences. The crisis went further or transformed into a labor market and economic shock, which led to massive labor challenges. The authors claim that recovery in the labor market during and after the pandemic happened to be much slower and more painful, which affected the economy's recovery. It is equally deemed that the pandemic had massive implications on the income and living of the informal workers. Worldwide, it was approximated that the pandemic would drag the relative poverty levels among casual and informal workers from 26% to 59%. In other regions, it is deemed that the challenge might shoot up to 80%.

### 3. Covid-19 Specific Topics

#### 3.1. Work from Home (WFH)

The impact of working from home on the labor market relies on a number of variables, including the sort of work being done, the industry in which it is being done, and the location of the workers. Working from home, according to some experts, can boost the labor market by expanding the pool of potential workers, cutting the expense of commuting, and giving both companies and employees more flexibility. Working from home has a number of drawbacks as well, such as being isolated from coworkers, dealing with distractions at home, and lacking discipline, and time management. We can say working from home has become the new normal for many people since the outbreak of Covid-19 and there are many studies in the field of labor economics to analyze the effect of this new phenomenon. For example, Delaporte and Pena (2020), estimates the proportion of employment that can be completed at home in 23 Latin American and Caribbean (LAC) nations and investigates the characteristics of workers associated with such jobs. To conduct this study, this paper employs extensive household surveys and gives two tele work ability indices. The percentage of people who can work from home ranges from 7% in Guatemala to

16% in the Bahamas, according to the researchers. They reveal substantial heterogeneity in the ability to work from home among jobs, industries, geographies, and socioeconomic characteristics of workers. Their findings indicate that some individuals are better equipped than others to deal with Covid circumstances.

Another important question is the type of work that can be done remotely. [Dingel and Neiman \(2020\)](#), classify the feasibility of working from home for all occupations and combine this classification with employment statistics by occupation. 37% of employment in the United States can be completed fully at home, with significant variance across cities and industries. These jobs often offer higher compensation than those that cannot be performed at home and account for 46% of all U.S. wages. The application of their occupational classification to 85 other nations demonstrates that economies with lower incomes have a lower proportion of jobs that can be performed at home.

[Mongey and Weinberg \(2020\)](#), categorize jobs by the likelihood of working from home and low workplace proximity. They show that low work from home workers are less likely to be white, have a college degree, or have employer provided healthcare, more likely to be in the bottom half of the income distribution, and more likely to rent. Single, non US born workers are less likely to use informal insurance channels. They are also more likely to have been unemployed in the past year, less likely to work fulltime, and less likely to work in large companies. Females are more likely to work in high work from home and high physical proximity occupations, suggesting that wide social distancing measures may have fewer employment effects on women but make later economic integration harder. [Brynjolfsson et al. \(2020\)](#), found that roughly half of the population works from home, including 35.2% who previously commuted but have lately transitioned to working from home. In addition, 10.1% have been laid off or given unpaid leave since the beginning of Covid-19. There is a substantial negative correlation between the proportion of a state's work force that commutes to work and the proportion that works from home. They discover that the proportion of persons transferring to remote work may be predicted by the incidence of Covid-19 and that younger individuals are more likely to make the switch. Moreover, states with a greater proportion of employment in information work, which includes managerial, professional, and related industries, were more likely to transition to ward working from home and had fewer individuals laid off or furloughed. [Gottlieb et al. \(2020\)](#), examines how the share of jobs that can be performed from home fluctuates in relation to national wealth. They find that in urban areas, this proportion is approximately 20% lower in poor countries than in wealthy ones (almost 40% vs. 20%). This result is driven by selfemployed workers: in poor countries, their proportion of the labor force is high, and their occupational structure is not conducive to working from home. The proportion of employment in poor countries that can be performed from home, relative to rich ones, is conditional on the ability of farmers to work from home on a national scale. This result comes from the high proportion of agricultural workers in developing nations.

One important aspect of WFH is its effect on health measures and [Boeri et al. \(2020\)](#) indicates that the share of jobs that can be performed without exposing workers to the danger of developing Covid-19 is limited and likely falls short of 50 percent. Notably, the proportion is not larger in strategic industries that provide services to the health sector. Therefore, there appears to be room for automation in many businesses, particularly those that require capacity expansion. Young employees could be mobilized in these industries because they are less in danger from Covid-19, but they are underrepresented in unsafe jobs and overrepresented in jobs that can be completed through smart working. This mismatch could be remedied by reclassifying young people into part time employment or temporary unemployment benefits. They could also be productively deployed in the event of labor shortages in enterprises that have changed production lines to produce health sector requested strategic equipment.

Understanding the productivity of working from home is also very critical. UK survey data is used in [Etheridge and Spantig \(2022\)](#) to investigate home workers' self reported productivity under lockdown. Workers report being as productive as before the outbreak. However, these average hides significant variability across industries, working romhome intensities, and worker characteristics. According to objective metrics, workers in industries and occupations ideal for WFH7 are more productive. While those who always worked from home report productivity reductions, those who have increased their intensity of working from home claim productivity rises. Women and those in low paying jobs had the worst productivity reductions. They demonstrate a causal relationship between productivity and wellbeing using stated explanations for productivity declines. Also, [Bartik et al. \(2020\)](#) presents survey data from small and big firms on remote work prevalence, productivity, and predictions for its continuation beyond the Covid-19 pandemic. They poll 1770 small business CEOs and 70 business economists. The summary of their findings is as follows: First, remote work is high but varies by industry. They think remote labor in many businesses is difficult. Second, remote labor is more common in higherpaid, bettereducated businesses. Third, in the wider study, employers believe remote workers in highereducated and higherpaid industries lose less productivity. Fourth, more than one third of companies that switched to remote work expect it to continue after the Covid-19 pandemic.

[Morikawa \(2020\)](#), investigates the practice of working from home (WFH) during the COVID-19 pandemic in Japan, including its frequency, prevalence, and productivity. It shows that approximately 32% of employees, according to the findings, practiced WFH. WFH arrangements accounted for almost 19% of all working hours in terms of labor input. The average WFH productivity was between 60% and 70% of what it would have been at the typical workplace, and it was lower for workers who began WFH practices only after the Covid-19 pandemic had begun to spread. While longdistance commuters and those with high education levels tended to show a relatively slight decline in WFH productivity.

Finally, [Mueller-Langer and Gomez-Herrera \(2020\)](#) examines the implications of Covidrelated mobility constraints on the demand, supply, and employment outcomes for remote versus onsite jobs. They gain from the fact that countrybycountry, timebytime, and levelbylevel implementation of stayathome rules vary. They utilize company data from a substantial online European labor market. Their findings indicate that stayathome rules benefit the

demand, supply, and hiring of remote labor compared to onsite jobs. Furthermore, they find that the impact of stay at home regulations on the demand, supply, and hiring of remote employment relative to onsite work varies significantly over time. Additional research indicates that the stay at home effect is nonlinear for the demand and supply of remote work but linear for the hiring of remote workers. Overall, these findings show that the adaptability of online labor markets may promote adapting labor demand and supply to unpredictable, mobility restricted conditions.

### 3.2. Social Distancing

Because Covid-19 can spread from person to person, social distancing<sup>8</sup> restrictions were one of the earliest ways to stop the pandemic and protect people. Because social distancing had direct implications on people's interaction in the workplace it is one of the Covid related topics integrated into labor economics.

Using a panel threshold model with highfrequency data on unemployment across U.S. states and allowing for heteroscedasticity, [Dreger and Gros \(2021\)](#) assesses the shortterm impact of social distancing measures on the labor market. Labor is a fundamental factor in production and a good indicator of the status of the economy. The authors found that changes in the strictness of required social distancing, as measured by the Oxford Stringency Index, have a significant effect on unemployment. The majority of unemployment's response to a change in social distancing limits does not occur immediately but with a delay of two to four weeks. Moreover, the impact is asymmetrical. The unemployment rate rises more rapidly and has a greater absolute value if the government adopts stricter laws than if it adopts a looser policy. The pandemic's status is a minor factor, as measured by the number of new infections and fatalities. Another work is [Aum et al. \(2021\)](#) that uses a difference in difference (DiD) method to examine the causal effect of the Covid-19 outbreak on the labor market. Unlike many other countries, Korea did not put a lockdown on the economy and performed testing and tracing to combat the pandemic. Until the summer of 2020, only one region had a significant number of infections, and it allowed them to estimate the causal effect of the outbreak on the labor market. They find that a one per thousand increase in the number of infections caused a 2 to 3 percent drop in local employment. They explain the reasons that caused employment losses by local outbreaks in the absence of lockdowns as follows:

- Due to reduced hiring by small establishments
- Concentrated on jobs in the accommodation/food, education, real estate, and transportation industries
- The damages are worst for vulnerable workers who are less educated, young, in low wage occupations, and on temporary contracts

[Aum et al. \(2021\)](#), argue that these patterns are similar to what they observed in the US and UK. It means that the unequal effects of Covid-19 were the same with or without lockdowns. Their findings are consistent with the lifting of lockdowns having led to only modest employment recoveries in the US and UK, absent larger drops in infection rates. The intuition behind these results could be the fear of Covid itself had the same result as lockdowns.

To see the effect of lifting social distancing restrictions, [Avdiu and Nayyar \(2020\)](#) analyzes the vulnerability of jobs to social distancing by measuring the importance of face to face interactions with consumers. They use the fact that as lockdowns ease, activities intensive in faceto face interactions with consumers will likely be slower to recover as people continue to exercise social distancing precautions. This paper uses data on 900 job titles from the Occupational Information Network database for the United States to demonstrate substantial heterogeneity in the importance of faceto face interactions across industries, income groups, and gender. They show that:

- First, industries vary in whether they emphasize faceto face interactions and home based work; the two do not always go hand in hand.
- Second, occupations that are more intensive in face to face interactions are primarily concentrated among lower wage deciles.
- Third, a larger share of women's employment is accounted for by occupations that are intensive in faceto face interactions.

Also, they find that the difficulty of doing home based work and the importance of face to face interactions with consumers diverges in some industries, so it is essential to distinguish between the two. For example, while neither accommodation and food services nor construction activity can be performed from home, the latter does not involve face to face interactions with consumers and is therefore likely to resume earlier as home based work, those with low face to face interactions with consumers, such as in manufacturing, might see workers return to their jobs more easily as lockdown restrictions ease.

Finally, using O\*NET and Irish Census data, [Crowley et al. \(2020\)](#) estimate the variability of people who engage in remote work and social distancing. Despite having a relatively high potential for remote work, persons who commute by car are less likely to be able to engage in social distancing in the workplace. While this may be detrimental to employment chances in the short term, it may have favorable short and long term environmental consequences.

## 4. Conclusions

The most significant workplace disruptions prior to Covid-19 were caused by emerging technologies and trade relations. For the first time, Covid-19 has increased the significance of the physical aspect of labor. As a result, a new component influencing labor economics research is the physical aspect of employment, which health and safety concerns have brought to light. This line of research includes the effect of working from home, remote working,



social distancing, etc., on the labor market. These changes are likely to have varying effects on countries and the workplace, and they also create additional challenges for firms.

Furthermore, the implications of Covid on labor market issues such as supply and demand, unemployment, and so on will continue, with a focus on long term impacts. Additionally, there is a developing part of the literature that explores post Covid economies and how labor market policies and recovery strategies are progressing.

Finally, standard definitions of the labor market may not be adequate to properly reflect labor market dynamics during and after the pandemic, according to the disruptions resulting from the crisis. Variations in unemployment, for instance, may be misleading given the many mobility limitations and social distancing mechanisms already in place. International Labor Organization (ILO) 9 demonstrates how some countries have experienced issues with data collection and data interpretation. To address difficulties linked to low response rates and nonrandom patterns, modifications to survey instruments, data collection techniques, and weighting schemes are now required.

## Author Contributions

The author is responsible for the entirety of the submitted paper.

The author read and approved the final manuscript.

## Availability of Data and Materials

None

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## Declarations

### Competing interests

The author declares that he has no competing interests.

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