Covid-19 and labor dynamics in the U.S. leisure and hospitality supersector

by

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Abstract

The COVID-19 pandemic has had a significant impact on the U.S. labor market. This study focuses on the labor dynamics in the Leisure and Hospitality Super-Sector. The Leisure and Hospitality Super-Sector comprises two sectors: Accommodation and Food Services; and Arts, Entertainment, and Recreation Sector. The research employed Bureau of Labor Statistics data to compare the changes in total separation, hires, and job opening rates between the Leisure and Hospitality Super-Sector and the Private Sector and between the Accommodation and Food Services and the Arts, Entertainment, and Recreation sectors resulting from the global COVID-19 pandemic. The study is important because while numerous studies have been conducted on the effects of the pandemic on the economy, there has not been a specific analysis of its effects on the Leisure and Hospitality Super-Sector, which has been indicated to encompass food services.

Many governments, including the U.S. Government, responded to the pandemic with the immediate closure of the economy, which led to massive losses of the most jobs in the shortest time ever in recent history. The losses were most severe in the Leisure and Hospitality Super-Sector because of the precautionary policy of social distancing, which was difficult in businesses making up the sector. For example, the total separation rate in March 2020, when the global pandemic was declared, was 12.3% across the US economy, equivalent to about 15.75 million people. Total separation was about 5.3 million in the months prior and three months following March 2020.

The study showed that the average total separation rate for the private sector was about 3.97% in the period prior to the pandemic and 4.67% during the pandemic. The difference of -0.70% was statistically significant ($t = 5.87$; $p < 0.000$). The average total separation rate for the leisure and hospitality sector was 6.18% and 8.35% in pre-pandemic and pandemic periods, the

difference was statistically significant ($t = 5.23$; $p < 0.000$). The average total separation rate for the Accommodation and Food Services sector was 6.07% and 8.42%, respectively, in the pre-COVID and COVID periods ($t = 5.76$; $p < 0.000$). Similarly, the average total separation rate for the Arts, Entertainment, and Recreation sector was 6.83% prior to the pandemic and 7.99% after the pandemic ($t = 2.70$;$p < 0.007$). The research showed that the differences between the average total separation in the U.S. private sector and the Leisure and Hospitality Super-Sector were statistically significant in both the pre-COVID-19 and the COVID-19 periods. However, the difference in during the COVID-19 period was -3.68% ($t = -3.45$; $p < 0.001$) compared to -2.21 ($t = 42.008$; $p < 0.000$) in the pre-COVID-19 period. Similar observations were made for quits, hires, and job opening rates.

Total separation, quits, and hire rates were defined as a function of unemployment rate, wage rate, median CPI, whether the economy was in a recession, and the impact of COVID for the whole economy, the Leisure and Hospitality Super-Sector, and its component sectors. The results showed that the regression coefficients for all the independent variables were statistically significant with the exception of the hourly wage rate. Specifically, the COVID-19 pandemic increased total separation in the private by 1.06% than without the pandemic. Comparatively, the COVID-19 coefficient for the Leisure and Hospitality Super-Sector was 3.39%, about three times that for the whole economy. This supports observations and other arguments that the COVID-19 pandemic had a much more serious impact on labor dynamics in the Leisure and Hospitality Super-Sector than it did on the general economy.

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Dedication

This thesis is dedicated to my parents, Mr. and Mrs. Akinjo, who have always supported and encouraged me in my academic endeavors, and who has been an inspiration and a rock for me throughout this journey. This thesis would not have been possible without your constant love, faith, and support. Thank you all for your love, I sincerely appreciate you.

Chapter 1 - Introduction

1.1 Background

The COVID-19 pandemic is one of the most severe pandemics in modern history. It has substantially impacted almost all industries in virtually all countries (Lu et al., 2021). The global COVID-19 pandemic, caused by an airborne virus, has affected people worldwide with dire consequences, including serious illness, hospitalization, and death (Amanor-Boadu, 2022; McGarry et al., 2022). The US labor market was affected by the COVID-19 pandemic effect, which resulted in how work was done, as social distances were introduced to reduce physical contact and combat the pandemic (Kantamneni, 2020). As the virus spread rapidly, posing a great threat to the health of many workers, US governments implemented lockdowns and travel restrictions to contain its spread (Jacobs, 2021).

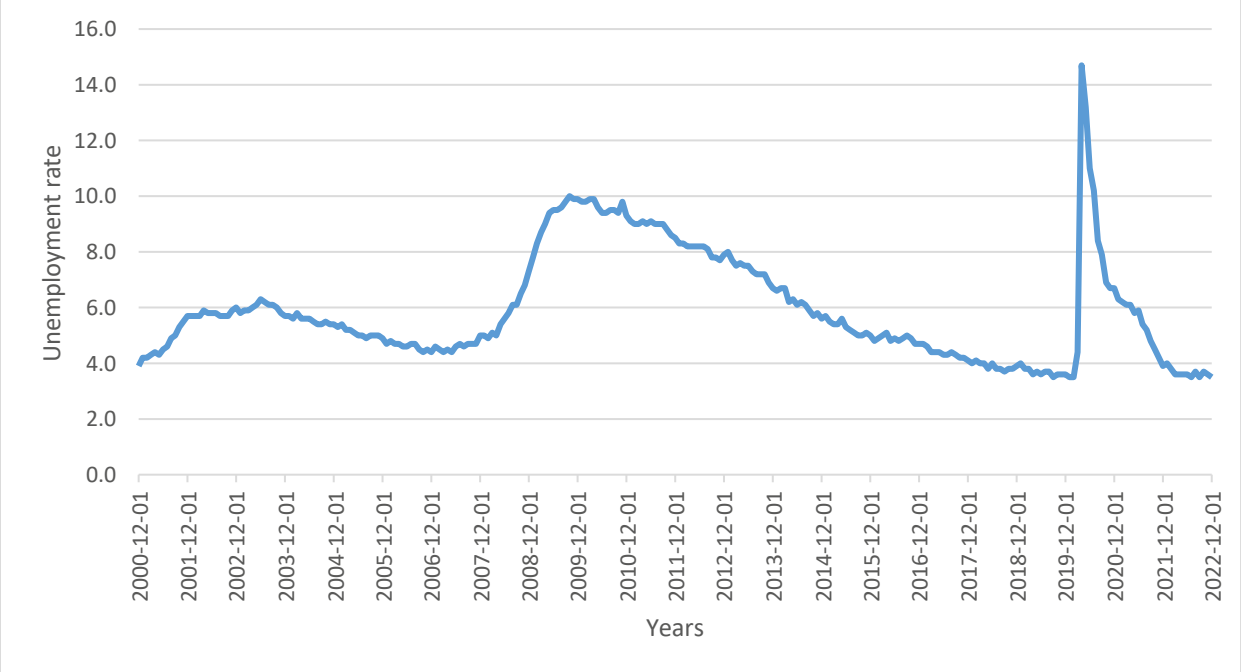
Despite the lockdowns initiated in many countries, including the U.S., the pandemic continued to spread, infecting 173.1 million people and causing 3.73 million deaths globally by early June 2021 (Johns Hopkins, 2021). The United States accounted for the highest number of cases and fatalities, with approximately 33.4 million cases and 598,000 deaths (Johns Hopkins 2021).

COVID-19's impacts in the U.S. have extended beyond infections and deaths, resulting in secondary impacts such as job losses, school closures or remote learning, drug abuse, violence, and even suicide resulting from mental health challenges such as isolation and hopelessness (Song et al., 2021). COVID-19 epidemic also halted economic growth and cost 8.8 million civilian job losses in the U.S. very early in its outbreak (Handwerker et al., 2020; Smith et al., 2021).

Figure 1.1 shows that the US experienced a mild recession following the dot-com bubble burst, which led to a rise in the unemployment rate from 3.9% to 5.0% between December 2000

to 2007. The Great Recession, caused by the subprime mortgage crisis, resulted in a steep increase in the unemployment rate from 5.0% in December 2007 to a peak of 9.9.0% in December 2009. The US economy gradually recovered from the Great Recession, with the unemployment rate declining steadily from 9.8% in 2010 to 3.6% in 2019. The COVID-19 pandemic caused a sudden and severe shock to the US economy, resulting in massive job losses as businesses shut down or reduced their operations. The unemployment rate soared from 4.4% in March 2020 to a peak of 14.4% in April 2020, the highest level since the Great Depression. Just as its sudden increases, the unemployment rate recovered quickly. In the second quarter of 2020, the unemployment rate was 13%, and 6.7% in the fourth (Smith et al., 2021).

Figure 1.1: The Unemployment rate in the US from 2000 to 2022



Source: Bureau of Labor Statistics, 2022.

The sectoral impact of the COVID-19 pandemic has not received enough attention beyond the recognition that it caused unemployment, layoffs, across many sectors (Cajner et al., 2020; Groshen, 2020). Because the Accommodation and Food Service and the leisure and hospitality

sectors are major employers of often low-wage workers, the impact of COVID-19 on the labor dynamics in those sectors presents an interesting opportunity. (As the U.S. economy has shifted to a service economy from a manufacturing economy over the past several decades, these two sectors accounted for about 20% of the U.S. GDP and employed about 30% of the U.S. labor force (International Trade Administration 2018). The accommodation and Food Services sector was hit particularly hard by the policy response to the pandemic, i.e., the closure of many restaurants and hotels for longer durations than most other sectors and the slower return of customers to these establishments even after the economy was opened as a result of social distancing policies and fear of infection (Khan et al., 2020). The Leisure and Hospitality sector, which includes entertainment and tourism, has also been impacted severely by the pandemic, as many events and attractions were canceled (Khan et al., 2020; Li et al., 2022; Ozdemir et al., 2021).

By analyzing data from the Bureau of Labor Statistics, this study will provide a comprehensive understanding of the pandemic's impact on these industries. The findings of this research will be useful to policymakers and stakeholders as they develop strategies to mitigate the economic consequences of the pandemic and aid in the recovery of these industries. By identifying which sector had been the hardest hit by the pandemic and which had been able to adapt and recover more quickly, policymakers can target their efforts and resources more effectively. Ultimately, this research will contribute to a better understanding of the pandemic's impact on the US labor market and inform policies and decisions aimed at supporting economic recovery and growth.

1.2 Problem and Question

In the United States, the pandemic has had varying effects on different sectors, with some experiencing a more severe impact than others. These constitute a gap in knowledge that is worth

researching. This research aimed to contribute to this gap by comparing the effects of COVID-19 on labor market conditions in two key subsectors in the U.S. economy: Accommodation and Food Service, and Arts, Entertainment, and Recreation.

The Accommodation and Food Services sector (NAICS 72) encompasses businesses providing lodging and/or food and beverages to customers for immediate consumption. The sector is defined to cover both accommodation and food services because it is common to find both being provided together. It is part of the Leisure and Hospitality super sector, which includes Arts, Entertainment, and Recreation (NAICS 71). The Arts, Entertainment, and Recreation sector encompasses several businesses that serve customer's cultural, entertainment, and recreational needs. This sector includes (1) establishments that produce, promote, or participate in public performances, events, or exhibits; (2) establishments that preserve and exhibit objects and sites of historical, cultural, or educational interest; and (3) establishments that operate facilities or provide services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests (BLS, 2020)

As noted, the two subsectors of interest are critical contributors to the U.S. economy. Understanding how the pandemic affected their labor market conditions could provide insights into how they may be organized to protect the larger economy in future disruptions. The need to prepare the economy from future disruptions such as the pandemic is the challenge this research sought to contribute a solution to. Given that both the Accommodation and Food Services sector and the Arts, Entertainment and Recreation sectors are both essential sectors in the United States. The research question is this: To what extent was the impact of the pandemic on the identified sectors different from each other?

1.3 Objectives

The aim of this study is to analyze the effect of COVID-19 on labor market conditions in the U.S. Leisure and Hospitality Supersector (Accommodation, and food services & Arts, Entertainment and Recreation Sector). To achieve the aim of this study, the following specific objectives were set:

i. Review the literature on the U.S. labor market to gain a broad understanding of the forces that influence labor market conditions in the U.S.

ii. Analyze hire rates, and total separation rates in the selected sectors in the US economy from 2000 through 2022; and

iii. Test for the statistical differences between the two sectors to determine which sectors have statistically different labor market conditions prior to pandemic (non-Covid) period.

iv. Explore potential implications of the observations from the research for policymaking.

1.4 Overview of Methods

To achieve the foregoing objectives, this study used monthly data from the Job Openings and Labor Turnover Survey (JOLTS) of the U.S. Bureau of Labor Statistics (BLS). The JOLTS database covers hires, quits, and job openings. The research also used inflation and unemployment data from the Federal Reserve Economic Data (FRED). The study employed statistical analyses in achieving the foregoing objectives. These are further discussed in Chapter 3.

1.5 Thesis Outline

This thesis is divided into five essential Chapters. The first Chapter provides background to the study. A thorough review of the impact of COVID-19 on the Accommodation and Food Service and Leisure and Hospitality Sectors was conducted in Chapter 2. Chapter 3 describes the

data and methods adopted for this study, while Chapter 4 details the data analysis, result, and interpretation. Finally, the conclusion section is presented in Chapter 5.

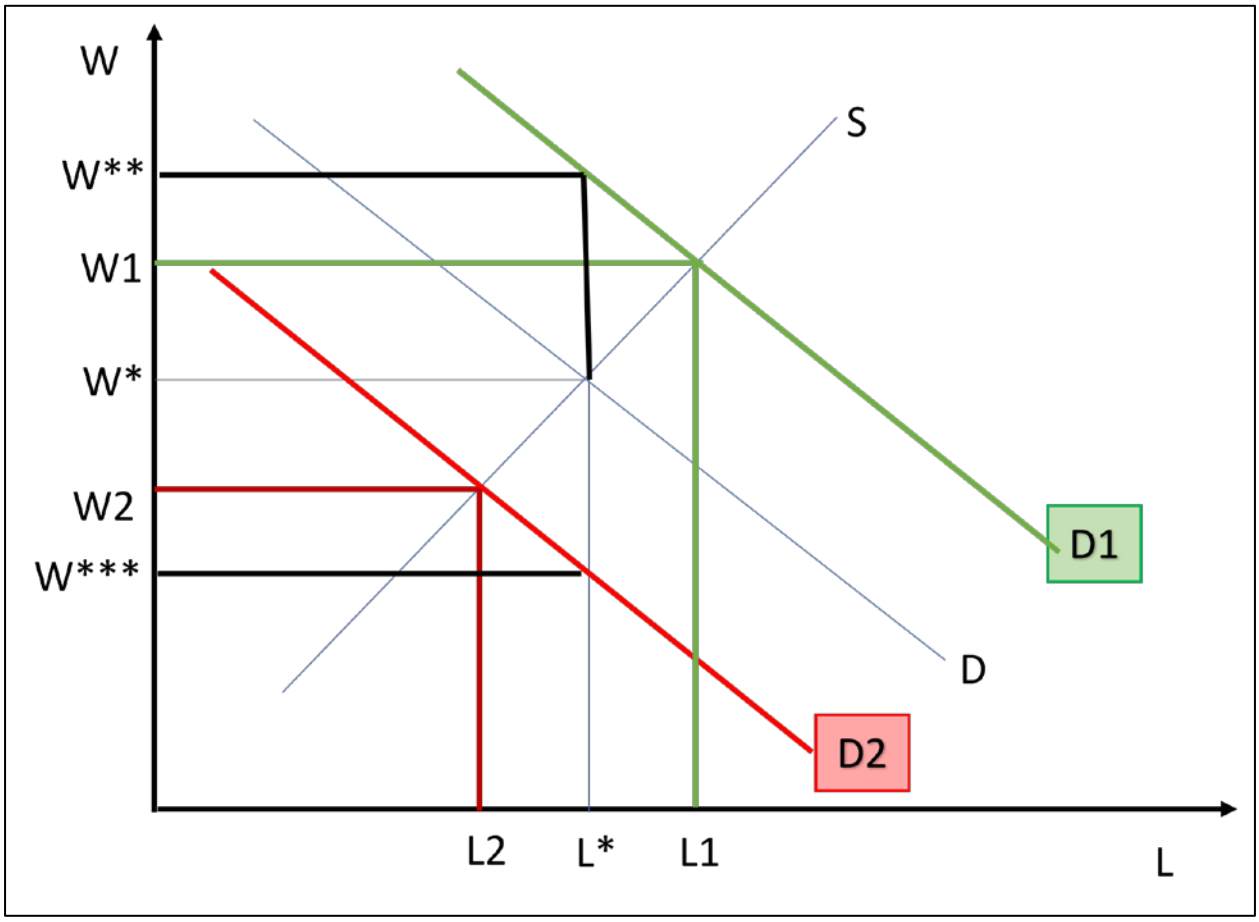
Chapter 2 - Literature Review

This chapter presents a review of the relevant literature on labor market dynamics in recent years. It is organized into three sections. The first section reviews the economic theory of labor market dynamics, focusing on the major forces that have been identified as factors influencing these dynamics. The second section focuses on the dynamics in the accommodation and food services sector while the final section discusses the dynamics in the Leisure and Hospitality sector. The sections present a review of the literature on assessment of labor market dynamics in these sectors, identifying the gaps in the literature and discovering opportunities supporting the need for this research.

2.1 Labor Market Dynamics in the U.S. Economy

The labor market is a crucial component of the economy, it is where employers and employees come together to exchange labor for wages (Beaman, 2012). The labor market consists of the supply and demand for labor, with employees supplying their time, intelligence, and effort and employers demanding these (Bakar et al., 1998) to meet their complementary objectives of meeting their income needs and achieving their profitability objectives. Changes in the supply and demand of labor influence the wages and compensation in the labor market (Figure 2.1). At every point in time, the economy is in an equilibrium state as employers bid for labor and pay a price that allows all those who want to work, L*, to be working at the specified wage rate, W*. Demand for labor may increase as a result of new opportunities, shifting the labor demand curve from D to D1. Assuming the labor market is already at its maximum, then the increased demand would increase the equilibrium wage rate to W** without changing the labor level, L*. This wage rate is higher than the wage rate in the presence of labor supply response increasing to L1 and settling the equilibrium wage at W1.

Figure 2.1: Labor Market Equilibria Under Alternative Demand Conditions



When demand for labor decreases due to economic downturns, the opposite conditions prevail. That is, demand for labor shifts from D to D2 and labor employed at equilibrium shifts from L* to L2. With more people willing to work than employers are willing to employ them, the wage rate without any adjustment in labor supply could go down to W***. However, wages are sticky downwards, that is, it is difficult to reduce wages once they are established. Therefore, employers reduce employment levels to L2 and pay a slightly higher wage rate than what they could have paid keeping their original level of employment. The usual forces shifting demand for labor are the business cycle forces, such as inflation, interest rates, and recessions, and technological changes and sudden changes in demand for certain goods. as such. For example, the sudden need for ammunition during the Second World War and the addition of aircraft to the

arsenal of warfare created the demand for labor to meet the war needs. This brought, for the first time, massive numbers of women into the workforce in the U.S. (Hale, 2013). The foregoing theoretical explanation of the labor market is often influenced in practice by institutions such as public policies and labor unions (Agénor, 1996).

The pandemic was a unique factor in labor market changes because it came from outside the market and was global. Governments mandated the closure of all economic activities to control the spread of the virus. Businesses could not continue paying hourly wage employees in the absence of worked hours, which meant the demand for that type of labor shifted downwards overnight. We show later that the Leisure and Hospitality Super-Sector was probably one of the most affected sectors with respect to labor market conditions. The sector probably has the most hourly wage employees. It comprises two principal sectors: Arts, Entertainment, and Recreation; and Accommodation and Food Services. This study focuses on the later segment.

2.2 Accommodation and Food Services: An Overview

The leisure and hospitality sector encompasses a vast array of organizational operations and activities. It is sometimes regarded to encompass parks, recreational centers, and event planning in a broader sense (Aigbedo, 2021). It also includes small museums, miniature golf locations, dance companies, small amusement centers, and historical sites. The United States Bureau of Labor Statistics (BLS) classifies these operations as the Leisure and Hospitality Super Sector (BLS, 2020), which consists of Arts, Entertainment, and Recreation sector (North American Industry Classification System (NAICS) code 71) and Accommodation and Food Services sector (NAICS code 72). This research focuses on the latter.

The Accommodation and Food Services sector is primarily engaged in providing lodging and culinary services for immediate consumption to consumers (Aigbedo 2021). It encompasses

hotels, dormitories, and other forms of lodging, as well as full-service and limited-service restaurants, food vendors, and imbibing establishments (Hiner 2019). This sector does not include civic and social organizations and entertainment facilities, such as theatres and amusement parks, that provide culinary services as a by-product (Aigbedo 2021).

The Leisure and Hospitality Super-Sector accounted for about 10.21% (Standard deviation (SD) = 0.006%) of total employees in the private sector of the U.S. economy pre-pandemic from January 2000 through March 2020. The super-sector's share dropped compared to 9.23% (SD = 0.011%) in the first 12 months of the COVID-19 pandemic between March 2020 and February 2021. From March 2022 to March 2023, the average share of total private sector employees accounted for by the Leisure and Hospitality super-sector is almost back to its pre-pandemic levels at about 10.18% (SD = 0.004%). Accommodation sector employees accounted for 16.01% (SD = 0.118%) while the Food Services sector accounted for nearly 84% (SD = 0.118%) of the Leisure and Hospitality super-sector's employees in the pre-pandemic period. These shares were, respectively 1.64% and 87.35% during the first 12 months of the pandemic and 12.76% and 87.24% from March 2022 through March 2023. The standard deviations declined from about 0.153% in the first 12 months of the pandemic to about 0.534% since, suggesting a more stable share of the sectors' employment levels within their super-structure sector. Figure 2.2 shows that the onset of the pandemic actually had a more adverse effect on the accommodation sector than the Food Services sector regarding employment share in the Leisure and Hospitality Sector.

Figure 2.2: Trend in Shares of Employment Levels for Leisure and Hospitality and Its Components

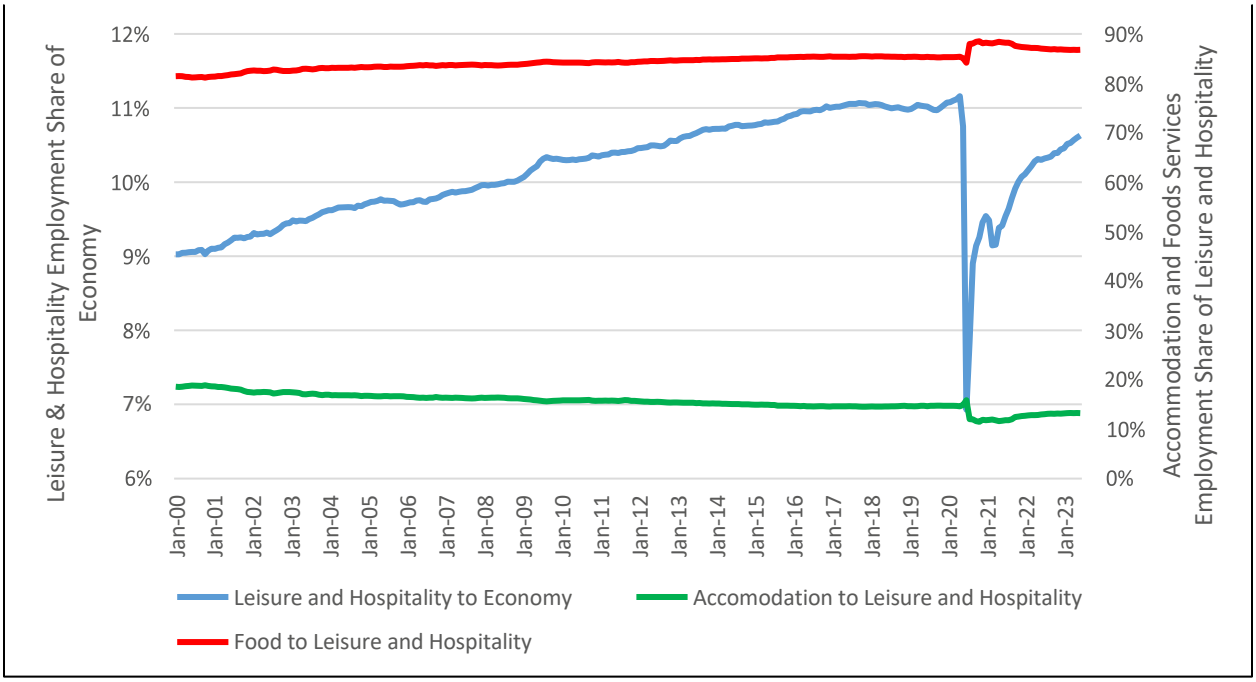


Figure 2.2 shows that while the share of the total private sector employment level accounted for Leisure and Hospitality Sector increased at a steady pace of about 0.09% points per month from January 2000 till the onset of the pandemic and the share of Food Services' employment level in the Leisure and Hospitality sector increased by 0.02% points per month, the share of Leisure and Hospitality sector accounted for by the Accommodation sector declined at about -0.1% points per month. The figure shows that while the onset of the pandemic caused the share of Food Services' employees in the Leisure and Hospitality Sector to increase, the opposite effect was found in the Accommodation Sector. Figure 4.3 shows that the relative number of employees in the Food Services Sector increased during the first 12 months of the COVID-19 pandemic. It averaged about 5.3 times in the period before the pandemic, seven times in the first 12 months of the pandemic, and about 6.9 times (and trending down) in the period since the first 12 months. Pairwise comparison of the relative employment levels between the Leisure and Hospitality super-sector's components shows that while the pairwise comparison of the relative

sizes in both the first 12 months and the period after were statistically different ($p = 0.000$), the difference between the first 12 months and the period following that are not statistically different ($p = 0.360$).

In the five years preceding 2019, the domestic unemployment rate declined by an annualized 9.6% to 3.7% in the accommodation and food sector (Hiner 2019). This decrease in the unemployment rate gave more people with stable work and, as a result, increased financial stability. Following that, during the same five-year period, per capita disposable income climbed at an annualized rate of 2.4%. Individuals account for more than 80.0% of the market for sector services, therefore this expansion benefited sector enterprises (Hiner 2019).

COVID-19 has had a significant impact on the accommodation and food sector economy in the United State. The sector, which includes hotels, restaurants, bars, and other businesses related to travel and hospitality, was hit hard by the pandemic due to restrictions on travel and public gatherings. One of the major impacts of COVID-19 on the accommodation and food sector was the decline in demand for tourism and travel (Chen et al., 2020; Ozdemir et al., 2021).

Revenues for food services and drinking places dropped nearly in half, from $65.4 billion in February to $32.4 billion in April 2020, marking the lowest volume since March 2005 (National Restaurant Association, 2020). In addition, with many restaurants and drinking places remaining closed due to state orders, employment in the restaurant industry has declined by more than 40% (Dixon, 2020).

Furthermore, as the pandemic spread, people cancelled their travel plans, and hotels and resorts were forced to close their doors. Some restaurant industries, for instance, employ service robots as waiters, chefs/cooks, and drones to deliver food and beverages. This resulted in a significant decline in revenues (Parvez et al., 2022). Another impact of the pandemic on the

accommodation and food sector was the implementation of social distancing measures and restrictions on public gatherings. Restaurants and bars were forced to limit their capacity or close altogether, resulting in a decline in revenue for those businesses. Many restaurants and other food establishments had to shift to takeout and delivery services to stay afloat.

Since 1991, it has taken progressively longer for jobs to recover following each US recession. It took until 2014 for the United States to recoup the number of jobs lost during the Great Recession. The US government issued a nationwide policy as a response to the spread of the COVID virus. This policy includes limiting and reducing human contact. This policy has affected how businesses, especially food businesses, run (Lund et al., 2020). Restaurants now use take-outs. By 2020, it was predicted that restaurants, which had employed 15.6 million people, will close, costing over 8 million jobs. Nearly 60% of the employment lost in the US in March 2020 was in restaurants and bars. Additionally, it was predicted that job losses would cause a $225 billion economic hit between March and May 2020 (Sönmez et al., 2020).

The pandemic has disproportionately impacted immigrant workers due to several factors (Olayo-Méndez et al., 2021). One of the factors is overrepresentation in essential jobs. Immigrant employees, most of whom are undocumented, in the US have been forced to accept unpleasant and low-status employment because of their low socioeconomic position (Olayo-Méndez et al., 2021). This has led to their overrepresentation in essential jobs such as food production and delivery services, which has put them at higher risk of exposure to COVID-19. They are often employed in jobs with low pay, poor working conditions, and limited workplace protections (Hargreaves et al., 2019; Moyce & Schenker, 2018). Many have reported inadequate personal protective equipment and lack of social distancing measures in their workplace, putting them at increased risk of

contracting COVID-19 (Cleaveland & Waslin, 2021). In addition, they tend to live in a dangerous locality with little to no access to social and health benefits.

Many immigrant workers do not have health insurance, which makes them vulnerable to COVID-19. Even those with health insurance may not seek medical attention due to concerns about immigration status and the potential for deportation (Berk & Schur, 2001; Cavazos-Rehg et al., 2007; Raymond-Flesch et al., 2014). In the US in 2019, there were roughly 17.4% of immigrant employees in the labor force. The hotel and food services industries account for most of these workers, making up about 60% (Sönmez et al., 2020). The high stress levels, which was increased by the pandemic, that immigrant workers in the hotel and food services industry endure have a negative impact on their health. In addition, they have limited or no paid leave and insufficient unemployment benefits (Sönmez et al., 2020).

Undocumented and some legal immigrants are not eligible for government assistance programs such as unemployment benefits and stimulus payments (Disney et al., 2022). This has left many immigrant workers without a safety net during the pandemic. Due to the virus's origins, the pandemic has also increased discrimination and xenophobia toward immigrant workers, particularly those of Asian descent (Dhanani & Franz, 2021).

To lessen the impact of COVID-19 on the lodging and food service industries, the US government implemented several programs, including the Paycheck Protection Program (PPP), which provided loans to businesses to cover payroll and other expenses (Wang & Kang, 2023). The government also provided financial assistance to individuals who lost their jobs or experienced reduced hours due to the pandemic. Other policies include Economic Injury Disaster Loans (EIDL), Employee Retention Tax Credit (ERTC), Restaurant Revitalization Fund (RRF), Eviction Moratorium (EM), Pandemic Unemployment Assistance (PUA)(Byttebier, 2022).

EIDL was designed to help small businesses impacted by COVID-19 to meet their financial obligations and operating expenses (Belitski et al., 2022). The ERTC, a refundable tax credit, incentivized firms to maintain their payrolls throughout the pandemic. The credit was available to eligible employers, including those in the accommodation and food sectors, impacted by COVID-19 (Singh & Kaur, 2022). The RRF was a grant program established by the American Rescue Plan Act of 2021 to provide financial assistance to restaurants, bars, and other eligible businesses in the accommodation and food services sector that were impacted by COVID-19 (Patel & Devaraj, 2021). The U.S. government implemented the EM to prevent tenants from being evicted from their homes during the pandemic. This policy prevented homelessness and provided relief to individuals in the accommodation and food services sectors who were struggling to pay their rent. Workers who lost their jobs due to the pandemic were eligible for unemployment benefits under the PUA program, including those in the accommodation and food services sectors.

Overall, these policies helped mitigate the impact of COVID-19 on the accommodation and food services sectors in the US by providing financial assistance and support to businesses and workers impacted by the pandemic. Nevertheless, the COVID-19 pandemic has significantly impacted the accommodation and food sector economy in the United States. While the sector has begun to recover as restrictions have been lifted, it may take some time for the industry to recover to pre-pandemic levels fully.

The hospitality and leisure sector has become a significant component in the development of the global economy. The sector has a substantial economic impact in the United States (Tribe, 2020). This industry comprises museums, the arts, and recreational centers (Travel Association, 2019). In 2017, the sector played a significant role in uplifting the US labor market. For instance, it contributed 20% to the U.S. GDP and recruited over 30% of the US labor force (International

Trade Administration 2018). In 2018, the hospitality and leisure sector generated $2.5 trillion and created jobs for over 15.7 million US residents (Khan et al., 2021). In the US, one out of every 10 jobs are supported by the Health Care and Social Assistance sector, whether directly or indirectly (Tribe, 2020). As a result, it is ranked the seventh largest employer sector in the US (Bureau of Labor Statistics, 2020a).

Data show that the Leisure and Hospitality sector globally has been found to be highly sensitive to extreme events, such as epidemics/pandemics (Min, 2005). Previous tragedies in the US Health Care and Social Assistance industry have reduced salaries and employment levels (Kosová & Enz, 2012; Prideaux et al., 2020). One such event was the COVID-19 pandemic, which caused lower occupancy rates in hotels, restaurants, fitness clubs, parks, and other recreational centers, leaving many employees laid off (Khan et al., 2021).

The COVID-19 pandemic has had an even more severe impact on the US leisure and hospitality industry with a projected occupancy rate lower than that of the Great Depression across all related sectors (Khan et al., 2021). This situation has created significant risks and uncertainty for industry operators and employees (Bagnera et al., 2020). By mid-March, many US states had declared emergencies and issued stay-at-home orders, resulting in major layoffs and revenue losses. Casinos, hotels, restaurants, bars, resorts, and theme parks were forced to close, with Marriott furloughing thousands of its associates on March 18th, 2020 (Karmin, 2020), and Hilton closing most of its properties (Bagnera et al., 2020). Disney also announced the closure of all Walt Disney World resort hotels, while Wynn and MGM Resorts closed all their Las Vegas properties (Khan et al., 2021). In addition, museums and heritage sites closed their doors, and performing arts and entertainment companies shifted their schedules to 2020 (Khan et al., 2021).

The COVID-19 situation in the hospitality sector has demanded better understanding lately, so studies have been conducted in the US context. For example, Ozdemir et al. (2021) conducted a study to estimate the economic implications of COVID in the hotel industry in the US. Furthermore, Huang et al. (2021) investigated the effect of COVID-19 policies on hospitality performance in the US. Also, to understand the adoption of robotics-induced unemployment in the US hospitality industry, Parvez et al. (2022) developed a Structural Equation Model to unravel the influential variables. Further, Aigbedo (2021) examined the impact of the pandemic on the hospitality sector from a supply perspective. Likewise, a COVID-19 policy response impact on the US leisure sector was researched (Chen et al., 2020).

Despite the various contributions from extant studies, the effect of COVID-19 on the hotel and leisure industry, with a complete focus on job openings, layoffs, and turnover, has yet to be done in the literature. Also, comparing the performance of other sectors with the leisure and hospitality sector in response to COVID-19 has yet to be done in the literature. Thus, this knowledge gap makes this current study worth researching.

Chapter 3 - Data and Methods

This chapter provides a detailed discussion of the data sources and statistical methods used in this research on the impact of COVID-19 on labor market conditions in the US Accommodation and Food Service Sectors. The first section of the chapter outlines the data sources used in this study, including the Bureau of Labor Statistics (BLS), all data are seasonally adjusted, to ensure the accuracy and consistency of the data. The second section discusses the statistical methods used in this study, including time series analysis and a paired sample t test.

3.1 Data

This study utilizes monthly data obtained from the Job Openings and Labor Turnover Survey (JOLTS) of the U.S. Bureau of Labor Statistics (BLS) to investigate the impact of the COVID-19 pandemic on labor market conditions in the Accommodation and Food Service sector. The JOLTS dataset offers information on labor market conditions at the sector level by firm size and region. The interest of this study was at the national level and focused on hires, quits, job openings, and total separations. Additionally, data on inflation, wage rates, and unemployment were obtained from the Federal Reserve Economic Dataset system maintained by the Federal Reserve of St. Louis.

3.2 Methods

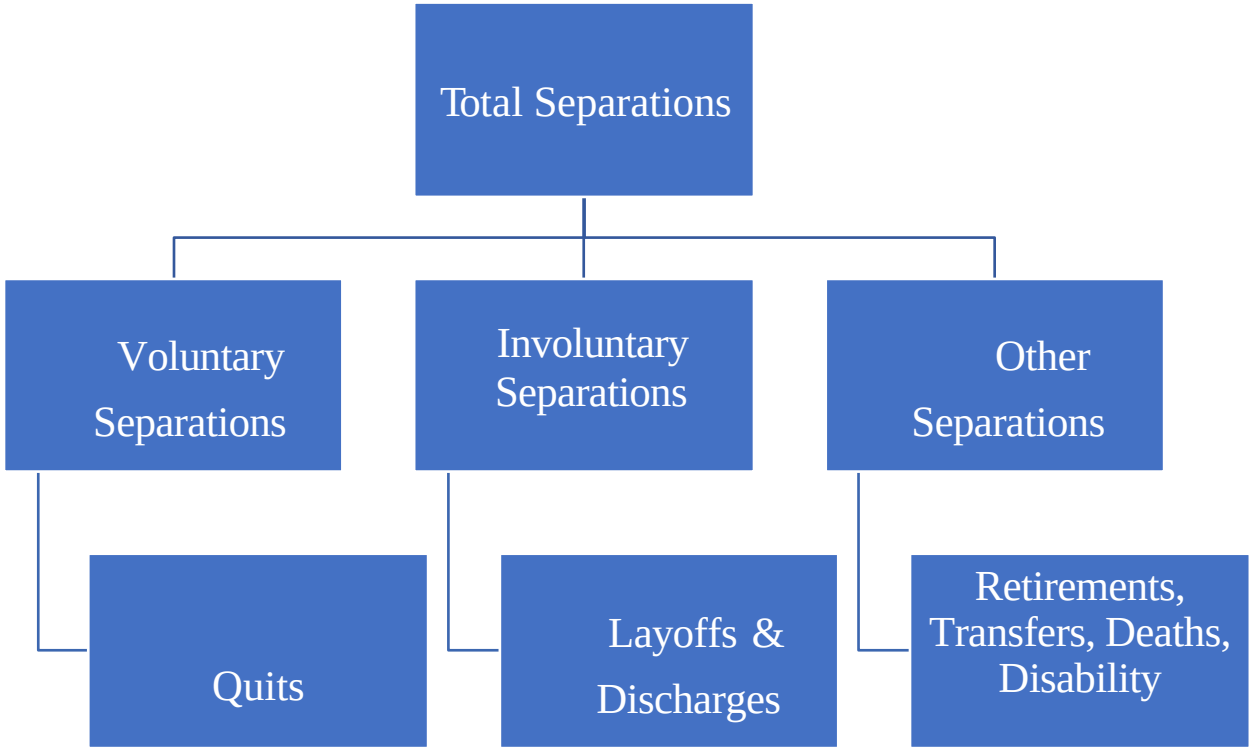
The methods employed to achieve the research objectives were as follows:

A. Literature Review: This was done in the previous chapter where the theory of labor market dynamics was reviewed and contextualized. The specific forces influencing the Leisure and Hospitality super-sector of the U.S. economy are further investigated in the ensuing segments of the study.

B. Statistical Analysis: The historical and current trends in the two sectors of the Leisure and Hospitality super-sector of the U.S. economy were analyzed using statistical tools and the hypotheses that the mean estimates of the labor market indicators of interest were the same between the total private sector and the Leisure and Hospitality sector and between the Accommodation and Food Services sector and the Arts, Entertainment, and Recreation sector were the same and this was tested.

C. Econometric Analysis: Models of the labor markets were developed to test the extent to which macroeconomic conditions and the COVID-19 pandemic influenced the variables of interest, including total separation rate and opening rate. The specific interest is to assess the extent to which the COVID-19 pandemic affected the estimated coefficients explaining these variables of interest.

Figure 3.1: Types of Total Separations.



The two variables of interest are total separation rate and hire rate. Total separation rate, TSR, is the month-on-month change in total separations, where total separation is defined as voluntary and involuntary separations from an employer. Voluntary separations include quits, deaths, and retirements. Involuntary separations are layoffs and dismissals. The hire rate is defined as the month-on-month change in hiring, which is defined to include people changing jobs within the same company.

Let the different sectors are defined by subscript $i = \{1, 2, 3, 4\}$ where total private sector is 1, the Leisure and Hospitality Super-Sector is 2, Accommodation and Food Services sector is 3, and Arts, Entertainment, and Recreation is 4. The hire rate, and total separation rate are defined by subscript $j = \{1, 2\}$. Therefore, the hire rate of the total private sector level is represented as X_{12} and the total separation rate in the Accommodation and Food Services sector is X_{33}. The variables are defined in Table 3.1.

Table 3.1: Definition of Variables by Sector and Hire Rates and Total Separation Rates

	Hire Rate (1)	Total Separation Rate (2)
Private Sector (1)	X_{11}	X_{12}
Leisure and Hospitality Super-Sector (2)	X_{21}	X_{22}
Accommodation and Food Services (3)	X_{31}	X_{32}
Arts, Entertainment, and Recreation (4)	X_{41}	X_{42}

The following hypotheses were proposed:

- The null hypotheses are that there is no difference between the mean statistics of the private sector and the Leisure and Hospitality Super-Sector variables, and the alternative hypotheses are that they are different. That is: $H_0 : \mu_{1j} = \mu_{2j}$ $H_A : \mu_{1j} \neq \mu_{2j}$ $j = 1,2$

- The null hypotheses are that there is no difference between the mean statistics for Accommodation and Food Services and Arts, Entertainment, and Recreation, and the stated alternative hypotheses are that they are different. That is: $H_0 : \mu_{3j} = \mu_{4j}$ $H_A : \mu_{3j} \neq \mu_{4j}$ $j = 1,2$

- Let k = {0, 1} represent the period prior to COVID-19 and the COVID-19 period, respectively. The former is defined from the beginning of the dataset to February 2020 and the latter from March 2020 to the end of the dataset. It is hypothesized that the mean statistics of the different sectors are equal between the prior and COVID-19 periods. The alternative hypotheses are that they are different. That is: $H_0 : \mu_{ij0} = \mu_{ij1}$ $H_0 : \mu_{ij0} \neq \mu_{ij1}$ $j = 1,2; i = 1,2,3,4$

The total separation and hires rates in the Leisure and Hospitality Super-Sector are hypothesized to be determined by the following model: (1)

$$XX_{iiii} = aa_0 + aa_{1ii}ww_1 + \beta\beta_{1ii}zz_1 + \rho\rho_{ii}RR + \gamma\gamma_{ii}CC + \varepsilon\varepsilon_{ii} \quad (1)$$

where w is a vector of independent variables encompassing real hourly wage rate in the sector, z is a vector encompassing U.S. unemployment rate, R is a dummy indicating whether the economy is in recession (1) and not in recession (0), and C is a dummy variable capturing the period prior to COVID-19 (0) and the COVID-19 period (1). There were no data on average hourly wage rate

by the sectors comprising the Leisure and Hospitality super-sector, and therefore, the aggregate for the super-sector was used for the analyses.

Table 3.2: Definition of Variables and Expected signs on each variable describing the Total Separate Rate.

Independent Variable	Definition	A Priori Expectation	
		Total Separation Rate	Hire Rate
Unemployment Rate (%)	Number of unemployed people as a percentage of total labor force	?	-
Real Wage Rate ($/hour)	Average monthly wage rate by sector level	+	-
Recession (Binary)	NBER definition of the onset of the financial crisis (Dec. 2007-June 2009)	+	-
COVID (Binary)	WHO Declaration of Global Pandemic (March 2020-Present)	-	-

Chapter 4 -Results and Analysis

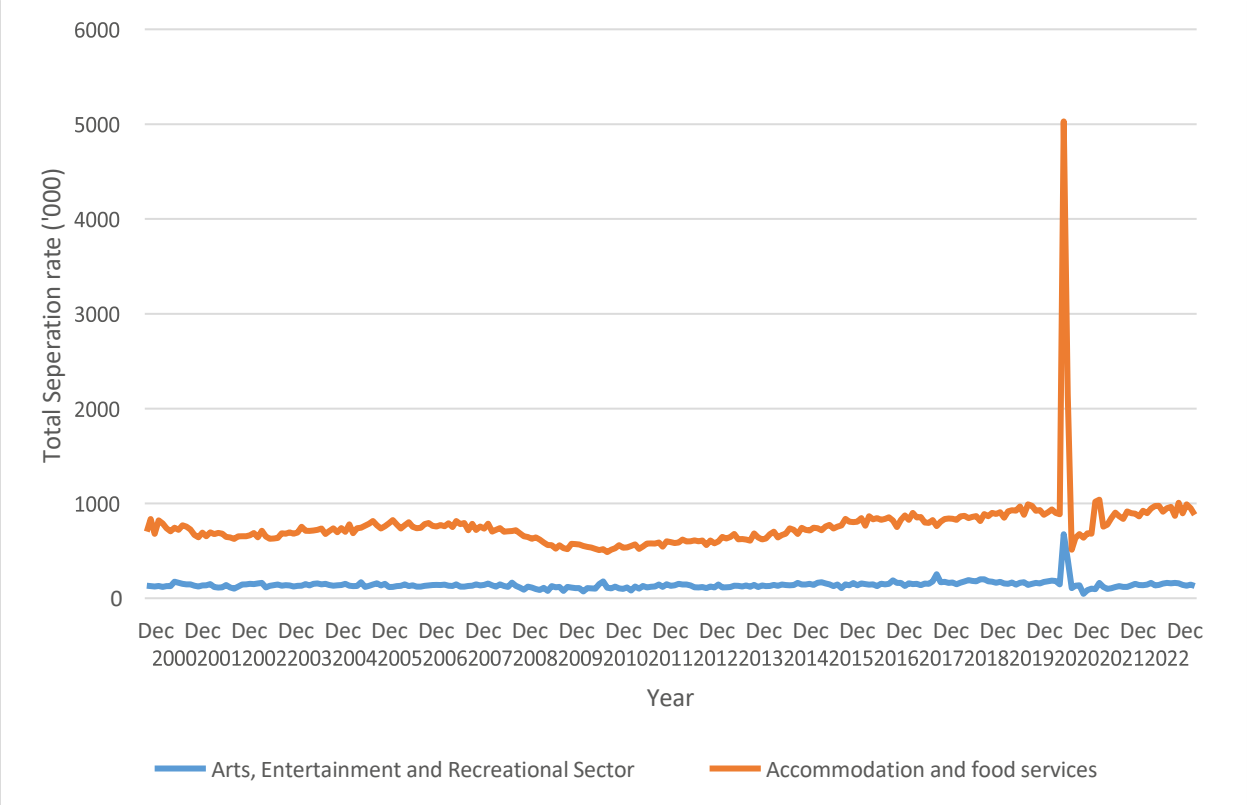
4.1 Labor Market Dynamics 2002-2023

This chapter presents the findings of the research study and the methods used to analyze those findings. The main objective of this study was to analyze the effect of COVID-19 on labor market conditions in the U.S. with a focus on **hire rates** and **total separation rates.** The chapter is organized into several sections. The first section describes the graph analysis for the total separation rates and the hire rates. The second section presents the summary statistics for the focus sectors prior to COVID-19 and during COVID-19, using statistical analysis. The third section presents the results of the regression analysis. Finally, the chapter concludes with a discussion of the key findings and their implications for the research question.

The total separation rates for the Accommodation and Food Services, Arts, Entertainment and Recreation Sector from December 2000 to December 2022 are shown in Figure 4.1. The graph demonstrates that during the past 20 years, the total separation rate in both sectors has been largely stable. The Arts, Entertainment, and Recreation sectors as well as the sector of Accommodation and Food Services were both significantly impacted by the Great Recession, which lasted from December 2007 to June 2009. The total separation rate in the Accommodation and food services was 758,000 in December 2007, but the total separation rate in the sector of Arts, Entertainment, and Recreation was 135,000. By June 2009, the total separation rate in the Accommodation and food services had declined to 560,000, while it had risen to 128,000 in the Arts, Entertainment, and Recreation Sector. After the recession, the total separation rate in the Accommodation and Food Service sector began to increase as a result of economy growth, from 522,000 in July 2007 to 936,000 in December 2019, between that period there was a brief decline in the total separation rate in this sector, it declined to 886,000 in February 2020. Afterwards, when COVID-19 pandemic

started, there was a massive increase in the total separation rate in this sector to about 5 million in March 2020, this is the highest recorded in the time period, and after few months the economy began to boom and there has been a gradual decrease in the total separation rate in the Accommodation and Food Services.

Figure 4.1: Total Separation Level in the Accommodation and Food Services and Arts, Entertainment and Recreation Sectors (in 1000s) Between December 2000 and December 2022



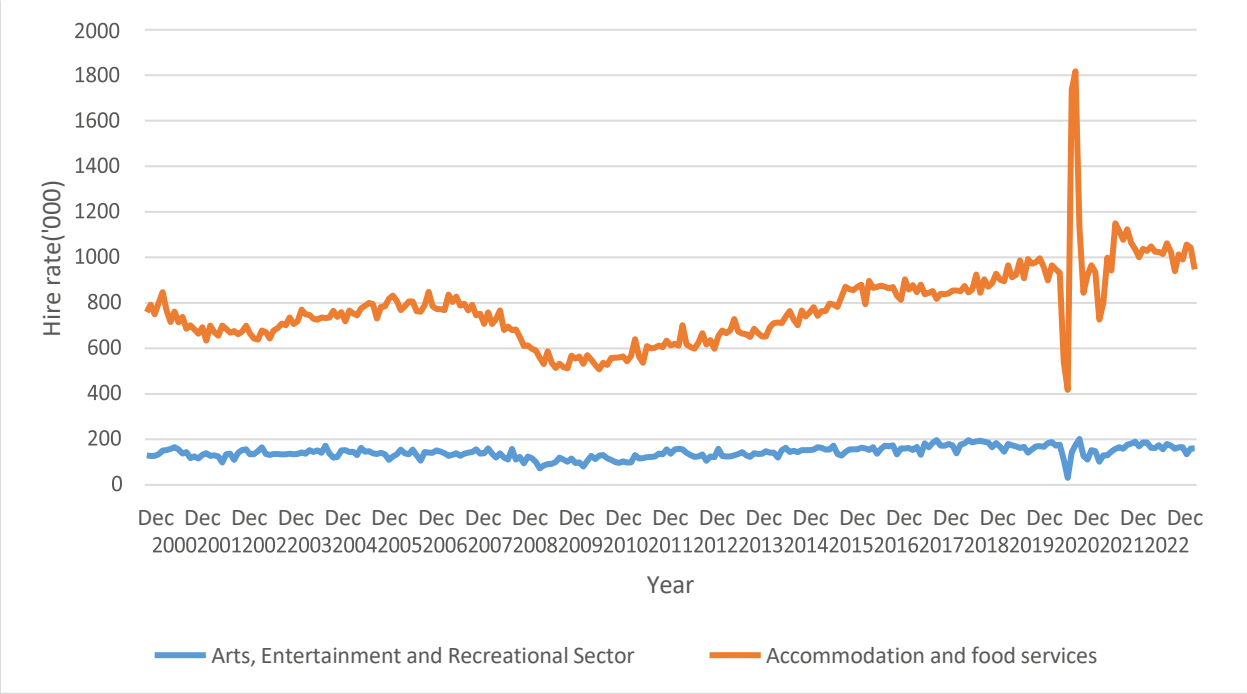
In contrast, Figure 4.1 shows that the total separation rate trends in the Arts, Entertainment, and Recreation sector had been more stable. During the Great Recession, the industry saw a dip in total separation rate, with the number of jobs dropping from a peak of roughly 135,000 in December 2007 to a low of 72,000 in February 2010. Afterwards, the sector experienced a higher total separation rate, it was about 147,000. However, COVID-19 pandemic, which started in March 2020, caused a substantial increase in the total separation levels across the U.S. economy, with the

Arts, Entertainment, and Recreation sector experiencing an increase of about 675,000 total separations, about 369.18% increase from February 2020.

Since December 2000, the hire rates in the Accommodation and Food services as well as Arts, Entertainment, and Recreation have displayed distinct patterns. Figure 4.2 shows that as following the dot com downturn, the hire rates in the accommodation and food services sector have consistently declined, from a low of 759,000 in December 2000 to 752,000 in December 2007. During the great recession the hire rate in Accommodation and Food services further decreased to 537,000 in June 2007. After this period, the economy began to grow gradually and hire rate increased to 932,000 in February 2020, until the start of the covid, there was only a decline in March and April 2020, afterwards the hire rate increased to about 1.8 million in June 2020. There were many fluctuations between that time till December 2022.

In contrast, the hiring trends in the Arts, Entertainment, and Recreation sector have been more stable. During the Great Recession, the industry saw a dip in hiring rates, with the number of jobs dropping from a peak of roughly 752,000 in December 2007 to a low of 81,000 in February 2010. After thereafter, the industry went through a period of expansion, peaking in February 2020 with about 177,000 new hires. The COVID-19 pandemic, which started in March 2020, caused a substantial downturn in hire rates, with the sector declining to 31,000, a 82.48% drop.

Figure 4.2: Hire rates in the Accommodation and Food Services and Arts, Entertainment and Recreation Sectors (in 1000s) (December 2000 - December 2022).



4.2 Summary Statistics for Focus Sectors Prior to and During COVID-19

The total separation rate is a labor market indicator that measures the rate at which workers separate from their jobs, whether voluntarily or involuntarily. A test for the statistical differences between the total private sector and the Leisure and Hospitality super-sector was conducted to determine (1) if the average total separation were equal; and (2) if the average separation rates before and during the COVID-19 periods were equal. Table 4.2 shows that the average quit rate for the total private sector of the economy was 4.06% over the whole period compared to 6.46% for the Leisure and Hospitality super-sector. The difference of -2.40% was statistically significant ($t = -15.68$; $p < 0.000$). This means the total separation in the whole economy (excluding government) was lower than in the Leisure and Hospitality super-sectors. The nature of the super-sector – its seasonality- may explain this situation.

Table 4.2: Summary Statistics for Total Separation Rates (Pre-Covid vs Covid Period)

Periods	Total Separation Rates	N	Mean	SD	SEM
0	Total Private	231	3.97	0.32	0.02
	Leisure & Hospitality	231	6.18	0.73	0.05
	Accommodation & Food	231	6.07	0.77	0.05
	Arts, Entertainment & Recreation	231	6.83	0.96	0.63
1	Total Private	35	4.67	1.67	0.28
	Leisure & Hospitality	35	8.35	6.07	1.03
	Accommodation & Food	35	8.42	6.16	1.04
	Arts, Entertainment & Recreation	35	7.99	6.08	1.04
Total	Total Private	266	4.06	0.71	0.04
	Leisure & Hospitality	266	6.46	2.40	0.15
	Accommodation & Food	266	6.38	2.45	0.15
	Arts, Entertainment & Recreation	266	6.98	2.36	0.15

Recall that there are two sectors within the Leisure and Hospitality super-sector. The results show that the difference between the average total separation rates in the Accommodation and Food Services and Arts, Entertainment, and Recreation was -0.60% ($t = -2.89$; $p < 0.004$), indicating that the average total separation rate in the Arts, Entertainment, and Recreation sector was higher and statistically different from that in the Accommodation and Food Services sector over the full duration of the dataset.

The findings revealed that the average total separation rate across all Total Private sectors in the US during the pre-COVID-19 period was 3.97% compared to 4.67% for the COVID period, an increase of nearly 18%. The difference was statistically significant ($t = -5.78$; $p < 0.000$). This suggests that the average total separations in the private sector was statistically higher in the COVID-19 period than in the pre-COVID-19 period. The average of the total separation rates in the Leisure and Hospitality sector prior to COVID-19 was 6.18% compared to 8.35% in the Covid-19 period. The difference was statistically significant ($t = -5.23$; $p < 0.000$). The total separation

rate in the Leisure and Hospitality sector during COVID was confirmed to be higher than in the pre-COVID-19 period. The results were similar for both Accommodation and Food Services and the Arts, Entertainment, and Recreation sectors.

To further explore these trends, we analyzed the hourly wages within each sector. Table 4.3 shows that while all sectors experienced an increase in average hourly wages, there were differences in how wages increased across the wage distribution. One key finding of this analysis is the substantial increase in average hourly wages in both the Accommodation and Food Service sector and the Arts, Entertainment, and Recreation sector during the COVID-19 period compared to the non-COVID period. Specifically, the average hourly wage for the accommodation and food service sector increased by 35.74% from $13.06 to $17.72, and the average hourly wage for the Arts, Entertainment, and Recreation sector increased by 28.62% from $19.47 to $25.04. The differences were all statistically significant at the 5% level.

Table 4.3: Summary Statistics for Average Hourly Wage Rate (Pre-Covid vs Covid Period)

Period	Average Hourly Wage	N	Mean	SD	SE
0	Total Private	168	23.99	2.28	0.18
	Leisure & Hospitality	168	13.93	1.38	0.11
	Accommodation & Food	168	13.06	1.34	0.10
	Arts, Entertainment & Recreation	168	19.47	1.76	0.14
1	Total Private	36	30.65	2.08	0.35
	Leisure & Hospitality	35	18.69	1.36	0.23
	Accommodation & Food	35	17.72	1.43	0.24
	Arts, Entertainment & Recreation	36	25.04	1.03	0.17
Total	Total Private	204	25.17	3.39	0.24
	Leisure & Hospitality	203	14.76	2.26	0.16
	Accommodation & Food	203	13.86	2.22	0.16
	Arts, Entertainment & Recreation	204	20.45	2.69	0.19

Table 4.4 shows the summary statistics for the quits rate, which measures the proportion of individuals who leave their jobs voluntarily. The results show similar outcomes as seen in other variables. During the pandemic, there was an increase in the quit rate for all three sectors, with the accommodation and food service sector having the highest rate, followed by the leisure and hospitality sector and the private sector. The percentage increase in the quit rate during the pandemic ranged from 30% to 31%, with the mean quit rates reaching 2.82%, 5.01%, and 5.31% for the private sector, leisure and hospitality sector, and accommodation and food service sector, respectively. In short, the quits rate in the Leisure and Hospitality super-sector was about twice that of the private sector's quits rate. However, the quits rate in the Arts, Entertainment, and Recreation sector was lower than in the Accommodation and Food Service sector. The differences between the means and between pre-COVID-19 and post-COVID-19 periods were statistically significant. In short, the pandemic increased the quits rates in both sectors of the Leisure and Hospitality super-sector and the increases were both statistically significant.

Table 4.4: Summary Statistics for Quit Rates (Pre-Covid vs Covid Period)

Period	Average Quits Rate	N	Mean	SD	SE
0	Total Private	231	2.15	0.33	0.02
	Leisure & Hospitality	231	3.85	0.66	0.04
	Accommodation & Food	231	4.06	0.72	0.05
	Arts, Entertainment & Recreation	231	2.68	0.56	0.04
1	Total Private	35	2.82	0.41	0.07
	Leisure & Hospitality	35	5.01	0.78	0.13
	Accommodation & Food	34	3.11	0.71	0.12
	Arts, Entertainment & Recreation				
Total	Total Private	266	2.24	0.41	0.03
	Leisure & Hospitality	266	4.01	0.78	0.05
	Accommodation & Food	266	4.22	0.85	0.05
	Arts, Entertainment & Recreation	265	2.74	0.60	0.04

4.3 Regression Results

The regression result for Total Private Sector separation rate is presented in Table 4.5. It shows that the regression model was statistically significant (F (4, 197) = 19.69; Prob > F = 0.000). The R-squared was 0.2856, it means that 28.56% of the variation in the dependent variables (Total Private TSR) was explained by the independent variables (Unemployment rate, real wage rate, recession, and COVID-19), about 71.44% of the variation in the dependent variable is still unexplained by the dependent variables in the model. The regression results show that a dollar increase in the real national wage rate would not significantly change the Total Private Total Separate Rate. This is not too different from our a priori expectation, there would only be a little decline in TSR.

A 1%-point increase in the unemployment rate would decrease the Total Private TSR by 0.70% ($t = -3.14$; $p < 0.002$). Since there would be a decline in TSR, this implies that fewer people are leaving their jobs, because they may be unable to find another job. Similarly, the recession, as expected, increases the total separation rate by 0.82% ($t = 5.57$; $p < 0.000$) this is similar to the a priori expectation, and it is reasonable because recession often leads decrease in demand for goods and services, thereby lower revenue for business and increase in number of layoffs and termination. The results also show that the COVID-19 increased the total separation rate by about 0.85% compared to the pre-COVID-19 period ($t = 6.67$; $p < 0.000$), this is also true with the a priori expectation as pandemic causes disruptions in businesses leading to job losses and business closure. In conclusion, unemployment rate, recession and COVID-19 are statistically significant.

Table 4.5: Regression Results for Total Private Total Separation Rate

Total Private Total Separation Rate	Coefficient	Std. err.	t	P>t	[95% C.I.].	
Unemployment Rate	-0.70***	0.02	-3.14	0.002	-0.11	-0.03
Real National Hourly Wage	-0.00	0.00	-0.753	0.815	-0.00	0.00
1.Recession	0.82**	0.15	5.57	0.000	0.53	1.10
1.Covid	0.85***	0.13	6.67	0.000	0.60	1.10
_cons	4.21***	0.14	29.06	0.000	3.92	4.4
N = 221	Prob>F= 0.000	Adj R-square =0.27				94

1% = ***; 5% = **; 10% = *

The total private hires rate was regressed on wages, unemployment rate, recession, and COVID-19. The results show that the model was statistically significant (F(4, 197) = 68.12; Prob > F = 0.000) and the R-squared is about 0.5804, it means that 58.04% of the variation in the dependent variables (Total Private Hire Rate) was explained by the independent variables (Unemployment rate, real wage rate, recession, and COVID-19), about 41.96% of the variation in the dependent variable is still unexplained by the dependent variables in the model. . Table 4.6 shows the regression result that a dollar increase in the real national wage rate would not significantly change the Total Private Hire Rate. This is not too different from our a priori expectation, there would only be a little decline in Hire Rate.

A 1%-point increase in the unemployment rate would decrease the Total Private HR by 0.08% (t = -7.57; p < 0.000). This correlates with the a priori expectation, this implies that a greater unemployment rate suggests an increase in job applicants, which would raise competition among job seekers and diminish their bargaining power with employers. This may lead to lower wages and benefits, which can make hiring more attractive for employers. Similarly, the recession, decreases the hire rate by 0.30% (t = -4.38; p < 0.000) this is similar to the a priori expectation, and it is reasonable because recession often leads to lower sales, and firms would hire fewer workers during economic downturn. The results also show that the COVID-19 increased the total

hire rate by about 0.75% compared to the pre-COVID-19 period (t = 12.63; p < 0.000), this is also true with the a priori expectation as pandemic causes disruptions in businesses, leading to reduced labor demand, employers are less likely to hire new workers, especially if demand for their products or services is uncertain. In conclusion, unemployment rate, recession and COVID-19 are statistically significant.

Table 4.6: Regression Results for Total Private Total Hire Rate

Total Private Hire Rate	Coefficient	Std. err.	t	P>t	[95% C.I]	
Unemployment Rate	-0.08***	0.01	-7.57	0.000	-0.09	-0.06
Real National Hourly Wage	-0.00	0.00	-0.19	0.846	-0.00	0.00
1.Recession	-0.30***	0.07	-4.38	0.000	-0.44	-0.16
1.Covid	0.75***	0.06	12.63	0.000	0.64	0.87
_cons	4.47***	0.06	66.33	0.000	4.33	4.6
R-square = 0.5804	Prob>F= 0.000	Adj R-square =0.57		Root MSE=0.3159		

1% = ***; 5% = **; 10% = *

The Leisure and Hospitality super-sector total separation rate regressed on sector real hourly wages, unemployment rate, recession, and COVID-19. The results show that the model was statistically significant (F (4, 197) = 11.99; Prob > F = 0.000) and the R-squared is about 0.1958, it means that 19.58% of the variation in the dependent variables (Leisure and hospitality TSR) was explained by the independent variables (Unemployment rate, real wage rate, recession, and COVID-19), about 80.42% of the variation in the dependent variable is still unexplained by the dependent variables in the model. Table 4.7 shows the regression result that a dollar increase in the leisure & Hospitality real hourly wage rate would not significantly change the Leisure and Hospitality Total Separate Rate. This is not too different from our a priori expectation, there would only be a little decline in TSR.

A 1%-point increase in the unemployment rate would decrease the Leisure and Hospitality TSR by 0.09% (t = -1.20; p < 0.231). Since there would be a decline in TSR, this implies that fewer people are leaving their jobs in the Leisure and Hospitality sector, because they may be unable to

find another job. Similarly, the recession, as expected, increases the total separation rate by 2.34% ($t = 4.35$; $p < 0.000$) this is similar to the a priori expectation, and it is reasonable because recession often leads to decrease in demand for goods and services, thereby lower revenue for business and increase in number of layoffs and termination. The results also show that the COVID-19 increased the total separation rate by about 2.62% compared to the pre-COVID-19 period ($t = 5.62$; $p < 0.000$), this is also true with the a priori expectation as pandemic causes disruptions in businesses leading to job losses and business closure. In conclusion, recession and COVID-19 are statistically significant.

Table 4.7: Regression Results for Leisure and Hospitality Sector Total Separation Rate

Leisure and Hospitality Total Separation Rate	Coefficient	Std. err.	t	P>t	[95% C.I]	
Unemployment Rate	-0.09**	0.08	-1.20	0.231	-0.25	0.06
Real Leisure & Hospitality Hourly Wage	-0.00	0.00	-0.56	0.578	-0.00	0.00
1.Recession	2.34***	0.54	4.35	0.000	1.28	3.40
1.Covid	2.62***	0.47	5.62	0.000	1.70	3.50
_cons	6.24***	0.52	11.85	0.000	5.20	7.2
R-square = 0.1958	Prob>F= 0.000	Adj R-square =0.18				15

1% = ***; 5% = **; 10% = *

The Leisure and Hospitality super-sector hires rate was also regressed on sector average hourly wages, unemployment rate, recession, and COVID-19. The results show that the model was statistically significant ($F(4, 197) = 26.80$; $Prob > F = 0.000$) and the R-squared is about 0.3524, it means that 35.24% of the variation in the dependent variables (Leisure and Hospitality HR) was explained by the independent variables (Unemployment rate, real wage rate, recession, and COVID-19), about 64.76% of the variation in the dependent variable is still unexplained by the dependent variables in the model. Table 4.8 shows the regression results that a dollar increase in the real Leisure & Hospitality wage rate would not significantly change the Total Private Hire

Rate. This is not too different from our a priori expectation, there would only be a little decline in HR.

A 1%-point increase in the unemployment rate would decrease the Leisure & Hospitality HR by 0.07% (t = -1.72; p < 0.086). This gives explanation to the a priori expectation, this implies that a greater unemployment rate suggests an increase in job applicants, which would raise competition among job seekers and diminish their bargaining power with employers in Leisure and Hospitality sector. This may lead to lower wages and benefits, which can make hiring more attractive for employers in this sector. Similarly, the recession, decreases the hire rate by 0.61% (t = -2.25; p < 0.025) this is similar the a priori expectation, and it is reasonable because recession often leads to lower sales, and firms would hire fewer workers during economic downturn. The results also show that the COVID-19 increased the total hire rate by about 6.60% compared to the pre-COVID-19 period (t = 9.52; p < 0.000), this is also true with the a priori expectation as pandemic causes disruptions in businesses, leading to reduced labor demand, employers are less likely to hire new workers, especially if demand for their products or services is uncertain. In conclusion, recession and COVID-19 are statistically significant.

Table 4.8: Regression Results for Leisure and Hospitality Sector Hires Rate

Leisure and Hospitality Hires Rate	Coefficient	Std. err.	t	P>t	[95% C.I]	
Unemployment Rate	-0.07**	0.04	-1.72	0.086	-0.15	0.01
Real Leisure & Hospitality Hourly Wage	-0.00	0.00	-0.15	0.881	-0.00	0.00
1.Recession	-0.61**	0.27	-2.25	0.025	-1.15	-0.07
1.Covid	2.24***	0.23	9.52	0.000	1.77	2.7
_cons	6.60***	0.27	24.89	0.000	6.08	7.10
R-square = 0.3524	Prob>F= 0.000	Adj R-square =0.34				42

1% = ***; 5% = **; 10% = *

The Accommodation and Food Service sector's hires rate regressed on the sector real hourly wages, unemployment rate, recession, and COVID-19. The results show that the model was

statistically significant (F (4, 197) = 25.52; Prob > F = 0.000) and the R-squared is about 0.3584, it means that 35.84% of the variation in the dependent variables (Accommodation and Food HR) was explained by the independent variables (Unemployment rate, real wage rate, recession, and COVID-19), about 64.16% of the variation in the dependent variable is still unexplained by the dependent variables in the model. Table 4.9 shows the regression result, that a dollar increase in the Accommodation & Food real wage rate would not significantly change the Accommodation & Food Service Hire Rate. This is not too different from our a priori expectation, there would only be a little decline in HR.

A 1%-point increase in the unemployment rate would decrease the Accommodation & Food Service HR by 0.07% (t = -1.52; p < 0.129). This correlates with the a priori expectation, this implies that a greater unemployment rate suggests an increase in job applicants, which would raise competition among job seekers and diminish their bargaining power with employers in the Accommodation & Food Service. This may lead to lower wages and benefits, which can make hiring more attractive for employers. Similarly, the recession, decreases the Accommodation & Food Service hire rate by 0.54% (t = -1.88; p < 0.061) this is similar to the a priori expectation, and it is reasonable because recession often leads to lower sales, and firms in the Accommodation & Food Service would hire fewer workers during the economic downturn. The results also show that the COVID-19 increased the Accommodation & Food Service hire rate by about 2.44% compared to the pre-COVID-19 period (t = 9.82; p < 0.000), this is also true with the a priori expectation as pandemic causes disruptions in businesses, leading to reduced labor demand, employers are less likely to hire new workers, especially if demand for their products or services is uncertain. In conclusion, recession and COVID-19 are statistically significant in the Accommodation & Food Service.

Table 4.9: Regression Results for Accommodation & Food Service Sector Hires Rate

Accommodation & Food Service Hires Rate	Coefficient	Std. err.	t	P>t	[95% C.I]	
Unemployment Rate	-0.07**	0.04	-1.52	0.129	-0.15	0.01
Real Accommodation & Food Service Hourly Wage	-0.00	0.00	-0.33	0.742	-0.00	0.00
1.Recession	-0.54**	0.29	-1.88	0.061	-1.11	0.02
1.Covid	2.44***	0.24	9.82	0.000	1.95	2.9
_cons	6.45***	0.28	23.00	0.000	5.90	7.0
R-square = 0.3584	Prob>F= 0.000	Adj R-square =0.34				64

1% = ***; 5% = **; 10% = *

The Art, Entertainment, and Recreation sector's hires rate was regressed on sector average hourly wages, unemployment rate, recession, and COVID-19. The results show that the model was statistically significant (F (4, 197) = 155.27; Prob > F = 0.000) and the R-squared is about 0.7592, it means that 75.92% of the variation in the dependent variables (rt, Entertainment, and Recreation sector HR) was explained by the independent variables (Unemployment rate, real wage rate, recession, and COVID-19), about 24.08% of the variation in the dependent variable is still unexplained by the dependent variables in the model. Table 4.10 shows the regression result, that a dollar increase in the Art, Entertainment, and Recreation sector real hourly wage would not significantly change the Art, Entertainment, and Recreation Hire Rate. This is not too different from our a priori expectation, there would only be a little decline in HR.

A 1%-point increase in the unemployment rate would decrease the Art, Entertainment, and Recreation Hire Rate by 0.32% (t = -10.92; p < 0.000). This correlates with the a priori expectation, this implies that a greater unemployment rate suggests an increase in job applicants, which would raise competition among job seekers and diminish their bargaining power with employers in the Art, Entertainment, and Recreation sector. This may lead to lower wages and benefits, which can

make hiring more attractive for employers. Similarly, the recession, decreases the Art, Entertainment, and Recreation hire rate by 0.69% (t = -3.55; p < 0.000) this is similar to the a priori expectation, and it is reasonable because recession often leads to lower sales, and firms in the Art, Entertainment, and Recreation would hire fewer workers during economic downturn. The results also show that the COVID-19 increased the Art, Entertainment, and Recreation hire rate by about 3.51% compared to the pre-COVID-19 period (t = 28.33; p < 0.000), this is also true with the a priori expectation as pandemic causes disruptions in businesses, leading to reduced labor demand, employers are less likely to hire new workers, especially if demand for their products or services is uncertain. In conclusion, unemployment rate, recession and COVID-19 are statistically significant in the Accommodation & Food Service.

Table 4.10: Regression Results for Art, Entertainment, and Recreation Sector Hires Rate

Accommodation & Food Service Hires Rate	Coefficient	Std. err.	T	P>t	[95% C.I]	
Unemployment Rate	-0.32**	0.03	-10.92	0.000	-0.38	-0.26
Real Accommodation & Food Service Hourly Wage	0.00	0.00	0.29	0.771	-0.00	0.00
1.Recession	-0.69**	0.19	-3.55	0.000	-1.07	-0.00
1.Covid	3.51***	0.17	20.73	0.000	3.17	3.8
_cons	5.40***	0.19	28.33	0.000	5.03	5.70
R-square = 0.7592	Prob>F= 0.000	Adj R-square = 0.75				53

1% = ***; 5% = **; 10% = *

Chapter 5 - Summary, Conclusions, and Recommendations

This chapter summarizes the findings of the study and draws conclusions about the extent to which the impact of the COVID-19 pandemic differed between the Total Private sector and Leisure and Hospitality super sector, The Accommodation and food service and Arts, Entertainment and Recreation sectors in the United States. The chapter also discusses the implications of the findings for workers, businesses, policymakers, and other stakeholders, and provides policy recommendations for mitigating the negative impact of the pandemic on these sectors. The chapter is organized into three subsections:

5.1 Summary and Conclusion

This study aimed to investigate the extent to which the impact of the COVID-19 pandemic on the Leisure and Hospitality Super sector (Accommodation and Food Services and Art, Entertainment, and Recreation sector differed from each other. To achieve this objective, the study analyzed unemployment rate, total separation rate and hire rate data collected by the Bureau of Labor Statistics from 2000 to 2022. However, there are fluctuations within this trend that are influenced by factors such as economic conditions, labor market trends, and changes in employment policies.

In conclusion, the results of this study suggest that the Total Separation Rates in the sectors increased during the pandemic period compared to the pre-Covid period and they are all statistically significant during the pandemic period. The hire rate in the sectors increased during the pandemic period compared to the pre-Covid period and they are all statistically significant during the pandemic period. The Total separation rate in the Leisure and Hospitality super sector was higher than the Total Private sector. The real wage rate in the Private total Sector was higher

than in other sectors. Since the higher wage rate in the Leisure & hospitality super sector was lower, this led to a higher total separation rate in this sector.

5.2 Limitations of the study and recommendations

Time and resources limited the scope of the study. While the BLS dataset is very comprehensive, these limitations caused the study to be limited to a more aggregated level of analysis. It would have been insightful to have looked at the foregoing at the regional and firm size levels. This would have allowed insights about whether certain regions and specific firm sizes differed in their COVID-19 impacts.

The study's findings underscore the need for policymakers and employers in the focused sectors to prepare for future major disruptions to the economy. For example, the government could have envisaged the deep effects of the social distancing policies on the Leisure and Hospitality Super-Sector and developed more appropriate policies. Advance policies to protect jobs in the Super-Sector could also have prevented the massive job losses. In this sense, a more targeted Paycheck Protection policy could have yielded more beneficial outcomes.

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