Impact of COVID-19 on jobs in Ohio's Healthcare Sector

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Summary

- Background & Research Idea
- Data
- Method
- Results

Contribution: Purely empirical. Evidence for decline in jobs in Ohio's healthcare sector.

JEL codes: I11, I18, J21 [1]

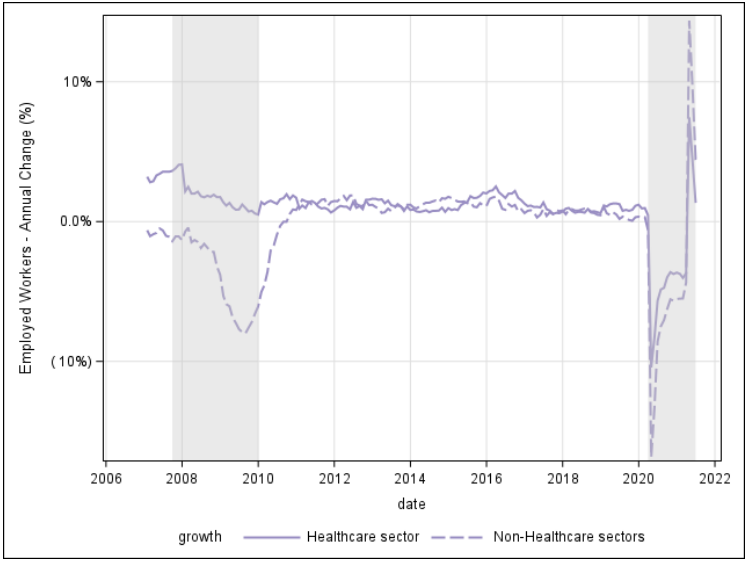
[1] I11: Analysis of Health Care Markets, I18: Government Policy, Regulation & Public Health, J21: Labor Force and Employment, Size, and Structure

Background & Research Idea

- Studies have measured the economic impact of COVID-19 crisis (Adams-Prassl et al. 2020)
- Previous studies show U.S healthcare sector behaves differently from U.S non-healthcare sectors (Wager and Hughes-Cromwick 2021)
- At 14%, Ohio has one of the highest workforce employment rate in Healthcare sector (KFF 2021)

Main question: How did COVID-19 change labor market dynamics for Ohio's Healthcare sector?

Healthcare vs Non-Healthcare: History



Data

Source: Ohio Department of Job and Family Services (ODJFS) collects employment data as per Ohio Revised Code (ORC) 4141.13 (G) (see Ohio Department of Job and Family Services (2021))

Period: January 2006 to June 2021

Variables:

1. Unique Location Identifier (a.k.a unit): A particular location or address related to Healthcare sector
2. NAICS code: used to code industries as per U.S Census (2022). Code 62 corresponds to Healthcare sector. Within Healthcare sector, we have -
    1. 621: Ambulatory Healthcare
    2. 622: Hospitals
    3. 623: Nursing and Residential Care
    4. 624: Social Assistance
3. Number of Employed persons: number of individuals that were reported to ODJFS by a unit and were part of its payroll

Methodology

Let E_{it} be defined as the number of people on i^{th} company's payroll during t^{th} time period, where $i \in \{1, 2, ..., N\}$ for some $N \in \mathbb{N}$ and $t \in \{1, 2, ..., T\}$ for some $T \in \mathbb{N}$

Let monthly job creation be $JC_t = \frac{1}{N} \sum_{i=1}^{N} JC_{it}$, where

$$JC_{it} = \begin{cases} E_{it} - E_{it-1} & \text{, if } E_{it} - E_{it-1} \geq 0, \\ 0 & \text{, if } E_{it} - E_{it-1} < 0 \end{cases}$$

Let monthly job destruction be $JD_t = \frac{1}{N} \sum_{i=1}^{N} JD_{it}$, where

$$JD_{it} = \begin{cases} 0 & \text{, if } E_{it} - E_{it-1} \geq 0, \\ -(E_{it} - E_{it-1}) & \text{, if } E_{it} - E_{it-1} < 0 \end{cases}$$

Methodology

Let annual Job creation rate be $JCR_t = \frac{JC_t}{\sum_{i=1}^{N} E_{it}} - \frac{JC_{t-12}}{\sum_{i=1}^{N} E_{it-12}}$

Let annual Job destruction rate be $JDR_t = \frac{JD_t}{\sum_{i=1}^{N} E_{it}} - \frac{JD_{t-12}}{\sum_{i=1}^{N} E_{it-12}}$

Let Reallocation rate be $RR_t = JCR_t + JDR_t$

Let Net Employment rate be $NER_t = JCR_t - JDR_t$

Further, let $\widetilde{T}$ be the period when lockdown was announced in Ohio

Let average Job-creation rate before and after COVID be $\overline{JCR_0}$ and $\overline{JCR_1}$, where

$\overline{JCR_0} = \frac{\sum_{t=1}^{\widetilde{T}-1} JCR_t}{\widetilde{T}-1}$ and $\overline{JCR_1} = \frac{\sum_{t=\widetilde{T}}^{T} JCR_t}{T-\widetilde{T}+1}$

Methodology

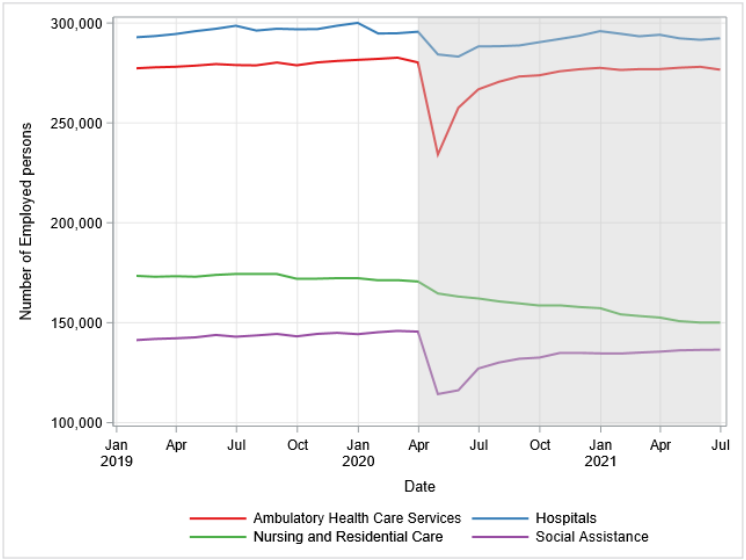
Similarly, Let average Job-destruction rate before and after COVID be $\overline{JDR_0}$ and $\overline{JDR_1}$, where

$$\overline{JDR_0} = \frac{\sum_{t=1}^{\widetilde{T}-1} JDR_t}{\widetilde{T}-1} \text{ and } \overline{JDR_1} = \frac{\sum_{t=\widetilde{T}}^{T} JDR_t}{T-\widetilde{T}}$$

Then, our job loss measure (JL) is defined as

$$JL = (\overline{JDR_1} - \overline{JDR_0}) - (\overline{JCR_1} - \overline{JCR_0})$$

Results


300,000
250,000
200,000
150,000
100,000
Number of Employed persons
Jan 2019
Apr
Jul
Oct
Jan 2020
Apr
Jul
Oct
Jan 2021
Apr
Jul
Date
Ambulatory Health Care Services
Hospitals
Nursing and Residential Care
Social Assistance

Results

Table 1: Measure of Job Loss (per sub-sector)

Category	Period	Job Creation	Job Destruction	Job Reallocation	Net Employment	Measure
Ambulatory Healthcare	Pre-COVID	3.26%	3.11%	6.38%	0.15%	
Ambulatory Healthcare	Post-COVID	3.88%	4.15%	8.02%	-0.27%	
		0.61	1.04			0.42
Hospitals	Pre-COVID	1.09%	1.01%	2.11%	0.08%	
Hospitals	Post-COVID	1.13%	1.19%	2.33%	-0.06%	
		0.04	0.18			0.14
Nursing and Residential Care	Pre-COVID	2.53%	2.52%	5.05%	0.01%	
Nursing and Residential Care	Post-COVID	2.84%	3.68%	6.52%	-0.83%	
		0.31	1.15			0.84
Social Assistance	Pre-COVID	3.45%	3.17%	6.62%	0.28%	
Social Assistance	Post-COVID	4.19%	4.84%	9.03%	-0.64%	
		0.74	1.67			0.93
Healthcare Sector	Pre-COVID	2.39%	2.27%	4.66%	0.12%	
Healthcare Sector	Post-COVID	2.77%	3.10%	5.87%	-0.33%	
		0.39	0.83			0.44

Note: Job Creation & Destruction Flows as a percentage of total employment

Technical Notes

- This document was written in R Markdown, using the `rmarkdown` (Xie, Allaire, and Grolemund 2018) and `knitr` (Xie 2015) packages.

References

Adams-Prassl, Abi, James Cloyne, Monica Costa Dias, Matthias Parey, and James P Ziliak. 2020. “The COVID-19 Economic Crisis.” *Fisc. Stud.* 41 (3): 489–92.

KFF. 2021. “Health Care Employment as a Percent of Total Employment.” https://www.kff.org/other/state-indicator/health-care-employment-as-total/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D.

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Wager, Cox, Amin, and Hughes-Cromwick. 2021. “What Impact Has the Coronavirus Pandemic Had on Health Employment?” https://www.healthsystemtracker.org/chart-collection/what-impact-has-the-coronavirus-pandemic-had-on-healthcare-employment/#Cumulative%20change%20in%20health%20sector%20and%20non-health%20sector%20employment%20since%20January%201990%C2%A0.