

Disability by Occupation, After the Start of the Covid-19 Pandemic

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1 Introduction

This paper seeks to investigate increase in individual’s reported disability by occupation, over the course the Covid-19 pandemic.

There is increasing evidence of Long Covid affecting a large percentage of the population in life-altering ways, at least while the Long Covid symptoms persist. This paper theorizes that over the past two years, Occupations with higher rates of in-person contact have more employees that have been disabled and attempts to measure those differences.

I find that health support workers are most likely to see the greatest increase in likelihood of being disabled and of becoming disabled after the start of the pandemic. Similarly, I show that occupations with higher levels of physical proximity to others increases the workers’ likelihood of being disabled and of becoming disabled after the start of the pandemic.

2 Literature Review

There is growing evidence of Long Covid prevalence in the general population [Groff et al., 2021]. Long Covid is often defined as symptoms at 12 weeks and beyond. These can be anywhere from mild to very severe and include, but are not limited to, symptoms like fatigue, “brain fog” or severe difficulty concentrating, shortness of breath, and poor memory [Perlis et al., 2022]. The most recent Household Pulse data estimates that 14 million Americans have Long Covid symptoms that limit their daily activities and 4.5 million have long Covid symptoms that limit daily activities “a lot” [noa, 2022c].

A more limited number of papers focus on Long Covid in the workforce. These estimates are preliminary and relatively wide-ranging. One working paper estimates that 500,000 workers are out of the workforce due to Covid-19 illness [Goda and Soltas, 2022]. Another working paper finds similar results [Sheiner and Salwati, 2022]. However, a third estimates that 2-4 million full-time equivalent workers are currently out of the workforce with Long Covid [Bach, 2022].

But on the individual level, many workers do not lose the ability to work altogether. A recent federal reserve paper found that 24.1 percent of individuals who have had Covid now have Long Covid, and 25.9 percent of those Long Covid sufferers reported reduced hours or

paychecks due to Long Covid symptoms. The author also found that that workers often stay in the same type of employment after becoming ill [Ham, 2022]. A recent federal reserve blog also found that the percent disabled workers had increased since the start of the pandemic [Diaz, 2022].

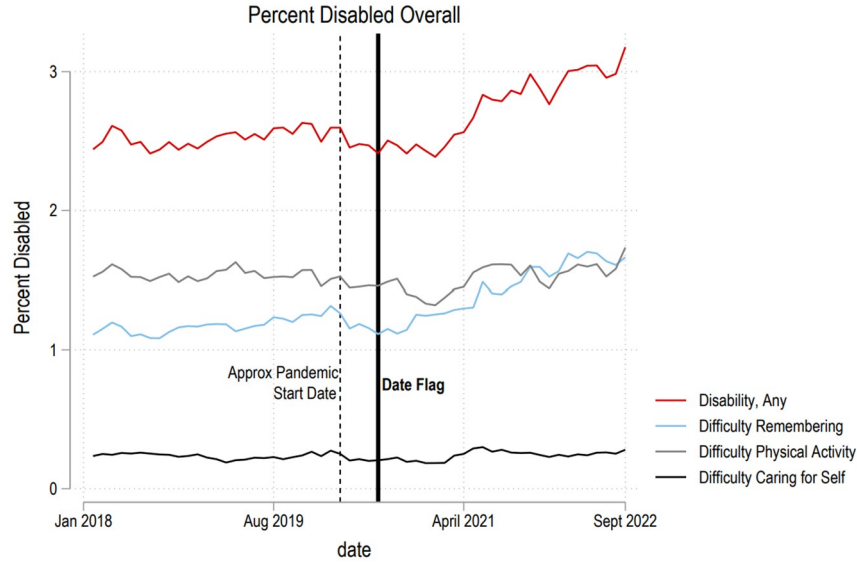
Odds of getting long Covid are increased when ones odds of getting Covid are increased [Labos, 2022]. Throughout the pandemic, some jobs could not be done remotely [Mongey et al., 2021] and CDC reports have found especially high rates of outbreaks and mortality in occupations like public transportation in California [Heinzerling, 2022]. Other papers found especially high rates of Covid deaths among people working in agriculture, transportation or logistics, facilities, emergency, and manufacturing in California [Chen et al., 2022, Cummings et al., 2022].

3 Data Description

This paper uses longitudinal data from the Current Population Survey (CPS), following workers who go from non-disabled to disabled using the occupation categories from the Census Bureau. Respondents are included in the CPS for 4 months, surveyed monthly, then not interviewed for eight months, and then included in the CPS for another 4 months [noa, 2022a].

The CPS does not directly ask about Covid or Long Covid symptoms, but it does ask six questions about disability. Long Covid include a wide variety of symptoms including general tiredness, respiratory and heart problems, neurological problems, and others [noa, 2022b]. These symptoms could easily lead an individual to say yes to the following three questions: 1) Because of a physical, mental, or emotional condition, does anyone have serious difficulty concentrating, remembering, or making decisions; 2) Does anyone have serious difficulty walking or climbing stairs; and 3) Because of a physical, mental, or emotional condition, does anyone have difficulty doing errands alone such as visiting a doctor’s office or shopping? [noa, 2015].

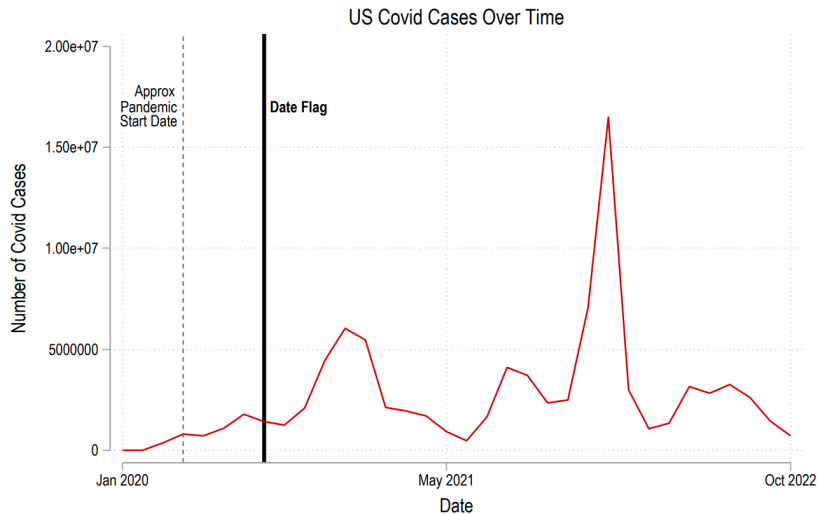
Figure 1: Percentage of Disabled People in the Whole Population, According to Three CPS Questions.



4 Methodology

In all tables the time period flag divides responses between pre-July 2020 (including July) and post-July 2020. US case rates began to pick up in April 2020 and the earliest those individuals could have experienced Long Covid would have been August.

Figure 2: Official US Covid Cases Over Time.



All tables also refer to the 23 different occupation categories created by Census [Census, 2021].

Table 2 is a set of log odds ratios and does not use or account for the longitudinal nature of the data. This table examines interactions between occupations and time periods. Its

Table 1: Occupations and their Prevalence within Dataset

| Occupation | Count | Percent |
|--|--------------|----------------|
| Management | 481,783 | 12.32 |
| Business and financial operations | 201,252 | 5.15 |
| Computer and mathematical science | 123,557 | 3.16 |
| Architecture and engineering | 78,981 | 2.02 |
| Life, physical, and social science | 41,725 | 1.07 |
| Community and social service | 69,851 | 1.79 |
| Legal | 49,112 | 1.26 |
| Education, training, and library | 239,507 | 6.12 |
| Arts, design, entertainment, sports, and media | 81,841 | 2.09 |
| Healthcare practitioner and technical | 239,135 | 6.11 |
| Healthcare support | 102,126 | 2.61 |
| Protective service | 75,719 | 1.94 |
| Food preparation and serving related | 204,259 | 5.22 |
| Building and grounds cleaning and maintenance | 145,318 | 3.72 |
| Personal care and service | 126,402 | 3.23 |
| Sales and related | 381,697 | 9.76 |
| Office and administrative support | 431,172 | 11.02 |
| Farming, fishing, and forestry | 33,238 | 0.85 |
| Construction and extraction | 209,423 | 5.35 |
| Installation, maintenance, and repair | 124,157 | 3.17 |
| Production | 209,611 | 5.36 |
| Transportation | 145,291 | 3.71 |
| Material moving | 115,899 | 2.96 |
| Total | 3,911,056 | 100 |
| Observations | 3,911,056 | |

Notes: Occupations are the 23 detailed groups listed by the Census

Data is from the Current Population Survey (CPS) January 2017 - September 2022

outcome variable is the disability flag that incorporates these three questions (if any are “yes”, flag=1). I include individuals who are in the labor force in each period and have an occupation.

Additionally, I include controls for age, age squared, sex, and race, by category, as well as the interaction between those variables and the time period. Each regression in Table 2 is of the format:

$$\text{prob}(\text{disability}) = \frac{e^{\text{DateFlag}*\beta_{1i} + \text{Occupation}*\beta_{2i} + \text{DateFlag}*\text{Occupation}*\beta_{3i}}}{1 + e^{\text{DateFlag}*\beta_{1i} + \text{Occupation}*\beta_{2i} + \text{DateFlag}*\text{Occupation}*\beta_{3i}}} + \epsilon_i$$

While the output in Table 3, an odds ratio is of the form:

$$\text{Ratio} = \frac{\frac{\text{Prob}(\text{Disability})}{1 - \text{Prob}(\text{Disability})}}{\frac{\text{Prob}(\text{NoDisability})}{1 - \text{Prob}(\text{NoDisability})}}$$

Figure 3: Percentage of Disabled Workers in the Labor Force, by Selected Occupations.

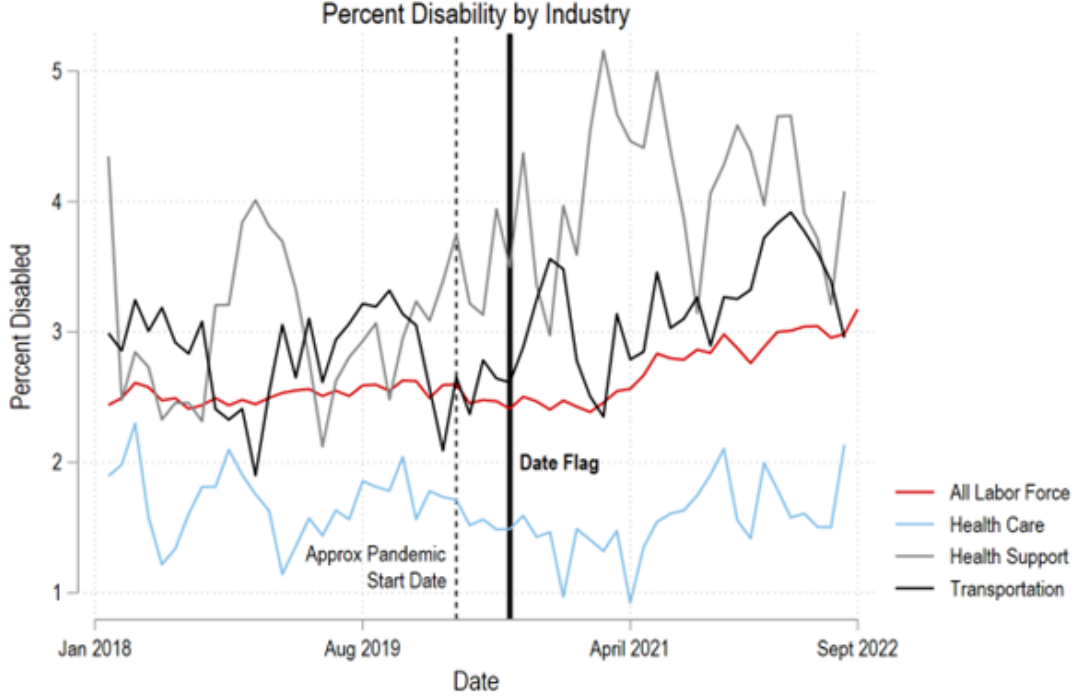


Table 3 is a set of fixed panel regressions. The fixed panel regression reduces bias because it captures and removes unchanging individual effects by creating time-demeaned data in which observed and unobserved traits of the individual are subtracted out.

This table examines interactions between occupations and time period. I use the same time period flag in this table. In Table 3 I take the disability flag used in Table 2 and make it into a “new disability” flag that switches on when the individual started the survey without a disability but changes their respond in the following months. The flag stays on after that “yes”. This eliminates all individuals who entered the labor market with a disability and may been more successful finding employment post July 2020.

I include individuals who are in the labor force in any period, and who’s sex, race, age (within plus or minus 5 years) and occupation (within the broad 23 categories) exist in at least one period and are either consistent or missing between all periods. I do not and cannot control for any personal characteristics that remain relatively constant over time.

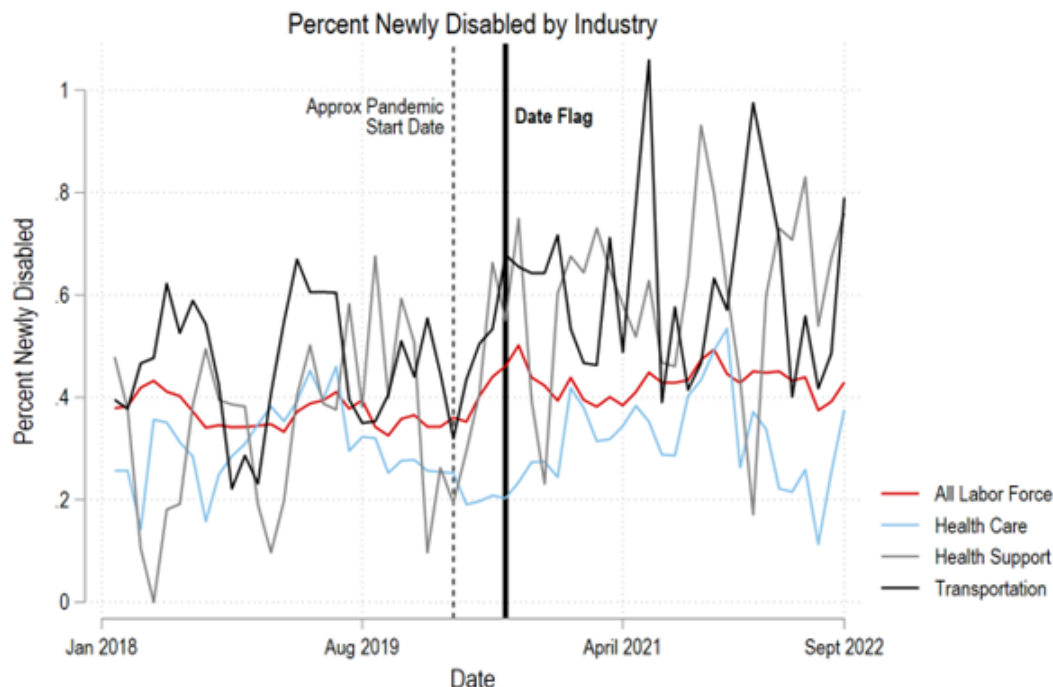
Similarly, each fixed panel regression is of the form:

$$\text{NewDisability}_{it} = \text{DateFlag} * \beta_{1i} + \text{Occupation} * \beta_{2i} + \text{DateFlag} * \text{Occupation} * \beta_{3it} + \epsilon_{it}$$

Last, I use Mongey et al.’s rankings and to find a relationship between physical proximity present in occupations, ability to work from home, and the outputs used in tables 2 and 2: disability and new disability [Mongey et al., 2021]. Rankings go from occupations that involve the most physical proximity (1) to least (23) and from least ability to work from

home (1) to most ability to work from home (23). Rankings can be found in Appendix B.

Figure 4: Percent of Newly Disabled Workers in the Labor Force, by Selected Occupations.



5 Results

In Table 2 we can see that disability is more prevalent across the board post after July 2020 (in the second time period, singled by Date Flag). Generally, workers are about 1.6-1.7 times more likely to be disabled in the second time period.

Most notably, results for health care workers and health support workers are statistically significant and opposite. Healthcare workers is a category that includes physicians, registered nurses, and other specialists like audiologists and dietitians. Health care workers were always less likely than workers in other occupations to be disabled (by an odds of 0.695:1), but the interaction shows that in the post period they are still less likely to be disabled (by an odds of 0.822:1).

Health support workers, a category which includes nursing assistants, personal care aids, and home health aides, were always slightly more likely to be disabled; in the first time period they were slightly more likely to be disabled than other occupations (a 1.082:1 odds). In the post period health support workers saw a large increase in disability: in the second period health support workers were 1.291 times more more likely to be disabled than workers in other occupations.

Beyond healthcare workers, jobs in legal, maintenance, production (machine operators, assemblers, etc.), farming (farming, fishing, forestry), and material moving (truck/tractor

Figure 5: Logistic Regression with Disability as the Outcome, and Selected Occupations as the Inputs and Controls for Age, Sex, and Race.

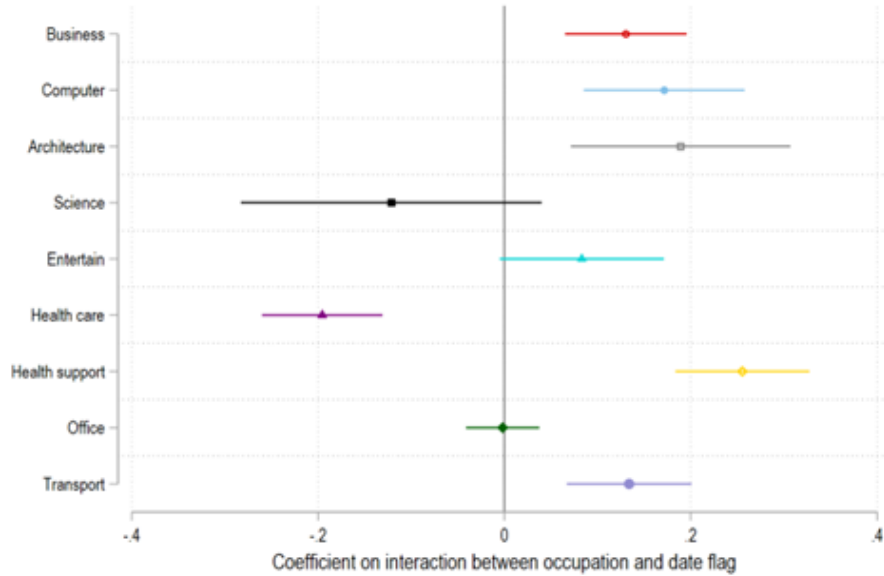


Table 2: Log Odds Ratios with Disability as the Outcome, and Selected Occupations as the Inputs and Controls for Age, Sex, and Race

| VARIABLES | (1) all | (2) business | (3) computer | (4) architect | (5) science | (6) entertain | (7) healthcare | (8) healthsupport | (9) office | (10) transport |
|--------------|------------|-----------------|-----------------|------------------|----------------|------------------|-------------------|----------------------|---------------|-------------------|
| Date Flag | 1.661*** | 1.657*** | 1.664*** | 1.666*** | 1.663*** | 1.656*** | 1.654*** | 1.628*** | 1.667*** | 1.667*** |
| Occupation | | 0.700*** | 0.796*** | 0.594*** | 0.664*** | 0.982 | 0.695*** | 1.082*** | 1.182*** | 0.997 |
| Interaction | | 1.139*** | 1.187*** | 1.208*** | 0.886 | 1.087* | 0.822*** | 1.291*** | 0.998 | 1.143*** |
| Observations | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 |

*** p<0.01, ** p<0.05, * p<0.1

Notes: Outcome variable, "disability" is 1 when the respondent says yes to any of the three relevant disability questions. Controls include sex, age, age squared, race/ethnicity (Black, Asian, Hispanic, white, and other), as well as the interaction between Date Flag and those variables.

Data is from the Current Population Survey (CPS) January 2017 - September 2022

operators, stockers, etc.) all saw odds less than one (between .788 and .887) of the workers being disabled—as compared to other occupations—in the second period.¹

Occupations like business (HR, analysts, event planners, etc.), computer (developer, programmer, mathematical sciences, etc.), architecture, entertainment (artists, coaches, media, etc.), and transportation all saw small, but statistically significant increases in likelihood of the workers being disabled (with odds between 1.082:1 and 1.186:1).

Interestingly, controlling for age, sex, and race had a relatively small effect on interactions, as we can see in Table 1 of Appendix A. This suggests that the easily measured characteristics of each occupation had experienced relatively few changes between the first and second period.

¹All occupations, including those with non-significant changes, can be seen in Table 2 of Appendix A.

Table 3: Fixed Panel Regressions with Robust Standard Errors, with New Disability Flag as the Outcome, and Selected Occupations as the Inputs.

| VARIABLES | (1) panel | (2) business | (3) computer | (4) architect | (5) science | (6) entertain | (7) healthcare | (8) healthsupport | (9) office | (10) transport |
|--------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| Date Flag | 0.0016*** (0.0001) | 0.0017*** (0.0001) | 0.0016*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) |
| Occupation | | -0.0014*** (0.0001) | -0.0014*** (0.0001) | -0.0010*** (0.0002) | -0.0004 (0.0003) | 0.0003 (0.0003) | -0.0004*** (0.0001) | 0.0000 (0.0002) | 0.0001 (0.0001) | 0.0006*** (0.0002) |
| Interaction | | -0.0006*** (0.0002) | 0.0010*** (0.0004) | -0.0010** (0.0004) | -0.0017*** (0.0006) | -0.0013*** (0.0005) | -0.0008*** (0.0003) | 0.0018*** (0.0005) | 0.0006** (0.0003) | 0.0014*** (0.0005) |
| Observations | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 |
| R-squared | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |

Robust standard errors in parentheses

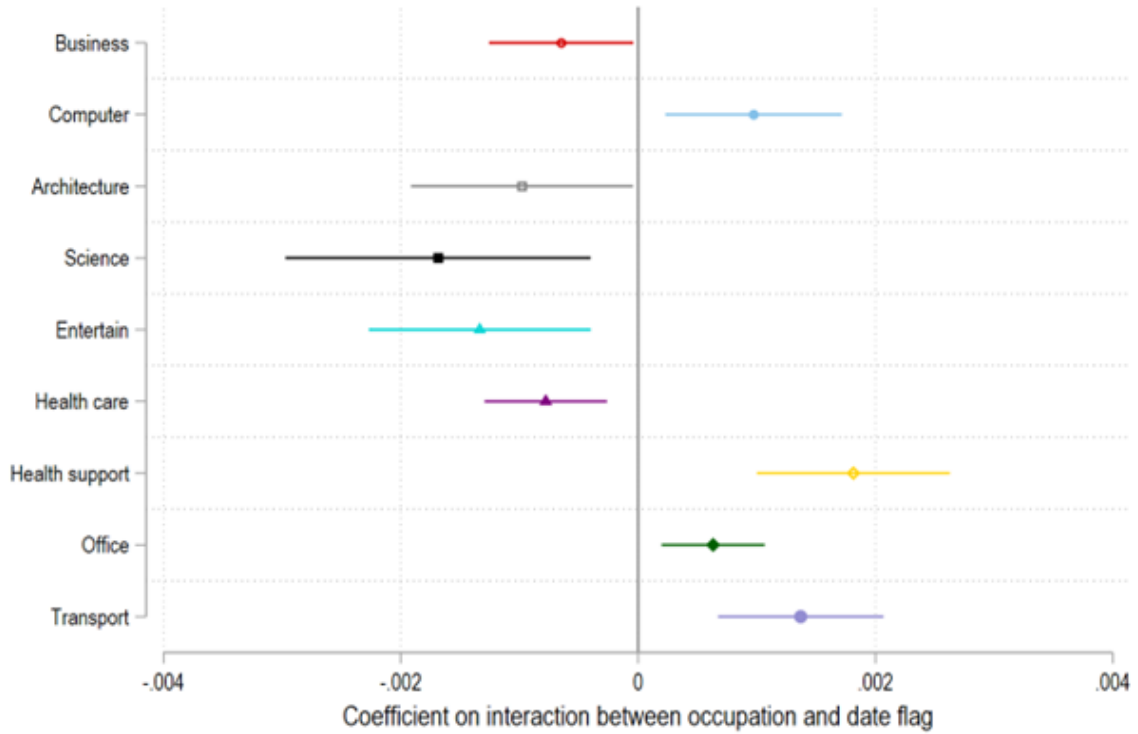
*** p<0.01, ** p<0.05, * p<0.1

Notes: Outcome variable, "new disability" is 1 when the respondent says "yes" to any of the three relevant disability questions when they had previously said "no".

Occupations are the 23 broad categories chosen by census in the CPS.

Data is from the Current Population Survey (CPS) January 2017 - September 2022

Figure 6: Fixed Panel Regression with Robust Standard Errors, with New Disability Flag as the outcome, and Selected Occupations as the Inputs.



There are relatively few respondents who became disabled during the 16 months where the CPS follows a respondent, yet respondents were still statistically significantly more likely to become disabled in the second period (by approximately 0.16 percent).

The notable difference between health care workers and health support workers remains the same. Workers are more likely to have a disability than in the previous period, yet health care workers are .08 percent less likely to gain a new disability, in the post July 2020 period in relation to other workers in the post period. Meanwhile, health support workers are 0.18 percent more likely to gain a new disability.

Science, computer, and transport all follow the same trend as in Table 1: scientists are less likely than workers in other occupations to gain a new disability during this period (by 0.17 percent), while computer and transport workers are more likely to gain new disabilities (by 0.10 percent and 0.14 percent, respectively).

Business and entertainment workers flip from the previous period; as shown in Table 2 business and entertainment workers are more likely to be disabled, yet Table 3 shows that they are less likely to gain new disabilities during the second period.

Other Occupations gained statistical significance, like office (postal workers, clerks, dispatchers, etc.). Office workers are 0.06 percent more likely to gain a new disability, compared to other occupations, post July 2020. Conversely, construction gained significance in the other direction. Construction workers are 0.07 percent less likely to gain a new disability in the second period.

A full table of fixed panel regressions, with all 23 occupations can be found in Table 3 of Appendix A.

Mongey et al. made clear connections between the need for in-person work and amount of in-person contact of that work, and odds of the worker losing employment in the first few months of the pandemic [Mongey et al., 2021]. Now we can see that using their measures, there is a relationship between new disability, the second time period, and physical proximity to others in the workplace.

Their work from home measures may be outdated, the authors checked them against the American Time Use Survey in 2020, but work environments could have changed over the course of the previous 3 years: in 2020 computer or office workers may have been especially able to work from home, but in 2022 and beyond that may no longer be the case.

Of the 23 occupations they ranked healthcare support as the occupation with the highest physical proximity and the 3rd least able to work from home. Transport was ranked as the 8th least able to work from home and the 12th highest in physical contact, while health care stood out. It was ranked as the 11th least able to work from home, and the 2nd highest in physical contact.

Table 4: Disability and New Disability, by Occupations' Proximity to Others and Ability to Work Remotely.

| VARIABLES | (1) Logit: Disability | (2) Fixed Panel: New Disability |
|---------------------------------|-----------------------------|---------------------------------------|
| Date Flag | 0.46034*** (0.05215) | 0.00180*** (0.00017) |
| Proximity to Others | 0.00211*** (0.00076) | -0.00001 (0.00001) |
| Ability to WFH | -0.02571*** (0.00075) | -0.00005*** (0.00001) |
| Date Flag * Proximity to Others | -0.00234* (0.00126) | -0.00002** (0.00001) |
| Date Flag * Ability to WFH | 0.00430*** (0.00124) | -0.00001 (0.00001) |
| Observations | 3,882,873 | 3,139,475 |
| R-squared | | 0.0002 |

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Outcome variable, "disability" is 1 when the respondent says yes to any of the three relevant disability questions.

"New disability" is 1 when the respondent says "yes" to any of the three relevant disability questions when they had previously said "no". Proximity and WFH ability are rankings from Mongey et al (2021). Occupations are the 23 broad categories chosen by Census in the CPS. Controls include sex, age, age squared, race/ethnicity (Black, Asian, Hispanic, white, and other), as well as the interaction between Date Flag and those variables.

Data is from the Current Population Survey (CPS) January 2017 - September 2022

6 Discussion

My most important finding is that since July 2020 not only are more disabled people in the work force—as other researchers have found—but more workers are becoming disabled. This means, although some of the increases seen in Table 2 may be due to disabled workers joining the workforce in a hot labor market with more remote options, it is not exclusively due to that. Rather, workers live in a more dangerous world—and some may work in newly dangerous jobs—since these new disabilities are not evenly spread across all occupations. This is likely especially true in occupations like health support and transport.

Occupation has a relationship to disability and new disability, but in-person work (as of early 2020) does not have a consistent relationship. Physical proximity to others in the workplace has a relationship to disability and new disability. Additionally, health care, which involves a considerable amount of physical proximity to others, bucks the trend. Health care workers may be more likely to have access to personal protective equipment and information on how and why to use it. Health researchers have found that pre-vaccination, the risk of Covid infection in direct health providers was similar to that of nonclinical staff, suggesting that mitigation strategies at work reduce risk to community or average levels [Mohr et al., 2022].

6.1 Limitations

CPS data will continue to shed further light on this issue, but more detailed data would be useful. These disability questions are imperfect measures of Long Covid. Additionally, both Covid rates and occupations may not be spread evenly across the country. Alternatively, some occupations may be more likely to have workers become infected with Covid and then Long Covid for indirect reasons. For example, lower wage occupations may lead to workers living in more crowded households. This could lead to under/overestimations in some occupations.

6.2 Freedom of Contract Model

At its most basic, the freedom of contract model assumes that workers have different preferences for safety, but all prefer it to some degree. Safety measures are generally assumed to have some cost to the employer. In a perfectly competitive market, employers must pay to attract a worker and make up for any extra danger with a compensating wage differential, otherwise the more dangerous job remains empty.

Even if this is not fully true because markets are not perfectly competitive or workers (and even employers) are not perfectly informed, if jobs with greater levels of in-person proximity are clearly more dangerous than in the past, then it is reasonable that workers are less willing to take those jobs. Shortages may continue in crucial occupations like elder care and transportation.

Yet even if wages rise, in the long-term disability is costly. Even if on aggregate workers see raises in wages in occupations with increased danger, the cost born by a few unlucky individuals will be disproportionate. And the overall cost is large. This paper does not

account for those who are out of work due to Long Covid, and it does not calculate hours missed, but Ham and Bach suggest that the number may be large [Ham, 2022, Bach, 2022].

7 Conclusion

Although, researchers have rightly discussed the new opportunities that remote work brings for some disabled workers, we must consider those who are most likely to be newly disabled by Covid-19. Workers who could not work remotely throughout the pandemic were more likely to lack a college degree and earn less than the median degree [Mongey et al., 2021]. This analysis shows that health support workers see the greatest increase in likelihood of being disabled and of becoming disabled between the first and second time period. Additionally, I show a relationship between physical proximity to others and likelihood of being disabled and of becoming disabled between the first and second time period.

In 2022 the median health support workers made about \$30,000 a year and transportation worker made about \$45,000.² Additionally, 11 percent of health support workers and 12 percent of transportation workers did not have insurance in the past year. Measures should be taken to decrease the danger and the impact in order to lessen the burden on workers and society.

²Numbers taken from the 2022 ASEC.

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A Appendix A

Table A.1: Log Odds Ratio, Disability is the Outcome, and Occupations are Inputs

| VARIABLES | (1) all | (2) manager | (3) business | (4) computer | (5) architect | (6) science | (7) community | (8) legal | (9) education | (10) entertain | (11) healthcare | (12) healthsupport |
|--------------|------------|----------------|-----------------|-----------------|------------------|----------------|------------------|--------------|------------------|-------------------|--------------------|-----------------------|
| Date Flag | 1.088*** | 1.089*** | 1.085*** | 1.085*** | 1.087*** | 1.090*** | 1.090*** | 1.091*** | 1.085*** | 1.086*** | 1.095*** | 1.075*** |
| Occupation | | 0.751*** | 0.715*** | 0.636*** | 0.540*** | 0.622*** | 1.156*** | 0.820*** | 0.822*** | 1.024 | 0.717*** | 1.101*** |
| Interaction | | 1.010 | 1.115*** | 1.186*** | 1.161** | 0.890 | 0.911* | 0.756*** | 1.058* | 1.099** | 0.823*** | 1.341*** |
| Observations | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 |

| VARIABLES | (13) protective | (14) foodprep | (15) maintenance | (16) service | (17) sales | (18) office | (19) farming | (20) construction | (21) installation | (22) production | (23) transport | (24) materialmoving |
|--------------|--------------------|------------------|---------------------|-----------------|---------------|----------------|-----------------|----------------------|----------------------|--------------------|-------------------|------------------------|
| Date Flag | 1.088*** | 1.083*** | 1.101*** | 1.102*** | 1.090*** | 1.090*** | 1.090*** | 1.086*** | 1.090*** | 1.096*** | 1.085*** | 1.086*** |
| Occupation | 0.908*** | 1.293*** | 1.764*** | 1.270*** | 1.113*** | 1.273*** | 1.008 | 0.745*** | 0.938*** | 1.081*** | 1.056*** | 1.607*** |
| Interaction | 1.007 | 1.096*** | 0.833*** | 0.974* | 0.995 | 1.010 | 0.861* | 1.048 | 0.957 | 0.877*** | 1.082** | 0.926** |
| Observations | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 |

Notes: Outcome variable, "disability" is 1 when the respondent says yes to any of the three relevant disability questions. Occupations are the 23 broad categories chosen by Census in the CPS.
Data is from the Current Population Survey (CPS) January 2017 - September 2022

Table A.2: Log Odds Ratio with Robust Standard Errors and Fixed Effects, Disability is the Outcome, and Occupations are Inputs

| VARIABLES | (1) all | (2) manager | (3) business | (4) computer | (5) architect | (6) science | (7) community | (8) legal | (9) education | (10) entertain | (11) healthcare | (12) healthsupport |
|--------------|------------|----------------|-----------------|-----------------|------------------|----------------|------------------|--------------|------------------|-------------------|--------------------|-----------------------|
| Date Flag | 1.661*** | 1.658*** | 1.657*** | 1.664*** | 1.666*** | 1.663*** | 1.662*** | 1.659*** | 1.652*** | 1.656*** | 1.654*** | 1.628*** |
| Occupation | | 0.681*** | 0.700*** | 0.796*** | 0.594*** | 0.664*** | 1.038 | 0.716*** | 0.771*** | 0.982 | 0.695*** | 1.082*** |
| Interaction | | 1.043* | 1.139*** | 1.187*** | 1.208*** | 0.886 | 0.935 | 0.788*** | 1.057* | 1.087* | 0.822*** | 1.291*** |
| Observations | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 |

| VARIABLES | (13) protective | (14) foodprep | (15) maintenance | (16) service | (17) sales | (18) office | (19) farming | (20) construction | (21) installation | (22) production | (23) transport | (24) materialmoving |
|--------------|--------------------|------------------|---------------------|-----------------|---------------|----------------|-----------------|----------------------|----------------------|--------------------|-------------------|------------------------|
| Date Flag | 1.661*** | 1.649*** | 1.656*** | 1.714*** | 1.670*** | 1.667*** | 1.667*** | 1.664*** | 1.659*** | 1.657*** | 1.667*** | 1.625*** |
| Occupation | 0.964 | 1.519*** | 1.785*** | 1.217*** | 1.068*** | 1.182*** | 1.103** | 0.877*** | 1.048** | 1.172*** | 0.997 | 1.847*** |
| Interaction | 1.002 | 1.000 | 0.833*** | 0.959*** | 0.981 | 0.998 | 0.803*** | 1.049 | 0.963 | 0.881*** | 1.143*** | 0.887*** |
| Observations | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 | 3,896,184 |

Notes: Outcome variable, "disability" is 1 when the respondent says yes to any of the three relevant disability questions. Occupations are the 23 broad categories chosen by Census in the CPS. Controls include sex, age, age squared, race/ethnicity (Black, Asian, Hispanic, white, and other), as well as the interaction between Date Flag and those variables.
Data is from the Current Population Survey (CPS) January 2017 - September 2022

Table A.3: Fixed Panel Regression with Robust Standard Errors, with New Disability Flag as the Outcome, and Occupations are Inputs

| VARIABLES | (1) panel | (2) manager | (3) business | (4) computer | (5) architect | (6) science | (7) community | (8) legal | (9) education | (10) entertain | (11) healthcare | (12) healthsupport |
|--------------|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|-----------------------|------------------------|------------------------|-----------------------|
| dateflag | 0.0016*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0016*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0016*** (0.0001) |
| Occupation | | -0.0007*** (0.0001) | -0.0014*** (0.0001) | -0.0014*** (0.0001) | -0.0010*** (0.0002) | -0.0004 (0.0003) | -0.0010*** (0.0002) | 0.0001 (0.0003) | 0.0002 (0.0001) | 0.0003 (0.0003) | -0.0004*** (0.0001) | 0.0000 (0.0002) |
| Interaction | | -0.0001 (0.0002) | -0.0006*** (0.0002) | 0.0010*** (0.0004) | -0.0010** (0.0004) | -0.0017*** (0.0006) | 0.0005 (0.0005) | -0.0007 (0.0006) | 0.0001 (0.0003) | -0.0013*** (0.0005) | -0.0008*** (0.0003) | 0.0018*** (0.0005) |
| Observations | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 |
| R-squared | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |

| VARIABLES | (13) protective | (14) foodprep | (15) maintenance | (16) service | (17) sales | (18) office | (19) farming | (20) construction | (21) installation | (22) production | (23) transport | (24) materialmoving |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|
| Date Flag | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0017*** (0.0001) | 0.0016*** (0.0001) | 0.0016*** (0.0001) |
| Occupation | 0.0003 (0.0003) | 0.0007*** (0.0002) | 0.0027*** (0.0003) | 0.0000 (0.0001) | 0.0001 (0.0001) | 0.0001 (0.0001) | -0.0005 (0.0004) | -0.0003* (0.0002) | -0.0003 (0.0002) | 0.0006*** (0.0002) | 0.0006*** (0.0002) | 0.0005* (0.0003) |
| Interaction | -0.0000 (0.0005) | 0.0005 (0.0004) | 0.0000 (0.0005) | 0.0003 (0.0002) | 0.0003 (0.0003) | 0.0006** (0.0003) | 0.0003 (0.0008) | -0.0007** (0.0003) | -0.0006 (0.0004) | -0.0004 (0.0003) | 0.0014*** (0.0005) | -0.0002 (0.0004) |
| Observations | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 | 3,158,854 |
| R-squared | 0.0002 | 0.0002 | 0.0003 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 | 0.0002 |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: Outcome variable, "new disability" is 1 when the respondent says "yes" to any of the three relevant disability questions when they had previously said "no". Occupations are the 23 broad categories chosen by census in the CPS.

Data is from the Current Population Survey (CPS) January 2017 - September 2022

B Appendix B

Table B.1: Rankings from Mongey et al.

| Occupation | Rank: Likelihood of WFH | Rank: Proximity |
|--|--------------------------------|------------------------|
| Installation, maintenance, and repair | 1 | 10 |
| Construction and extraction | 2 | 7 |
| Healthcare support | 3 | 1 |
| Production | 4 | 13 |
| Material moving | 5 | 11 |
| Protective service | 6 | 5 |
| Installation, maintenance, and repair | 7 | 16 |
| Transportation | 8 | 12 |
| Food preparation and serving related | 9 | 4 |
| Farming, fishing, and forestry | 10 | 22 |
| Healthcare practitioner and technical | 11 | 2 |
| Personal care and service | 12 | 3 |
| Sales and related | 13 | 8 |
| Life, physical, and social science | 14 | 20 |
| Community and social service | 15 | 9 |
| Office and administrative support | 16 | 15 |
| Arts, design, entertainment, sports, media | 17 | 14 |
| Management | 18 | 19 |
| Architecture and engineering | 19 | 18 |
| Business and financial operations | 20 | 21 |
| Computer and mathematical science | 21 | 17 |
| Legal | 22 | 23 |
| Education, training, and library | 23 | 6 |

Notes: Occupations are the 23 detailed groups listed by the Census. Proximity and WFH ability are rankings from Mongey et al (2021).

Data is from the Current Population Survey (CPS) January 2017 - September 2022