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Examining the Impacts of the Pandemic on Work-from-Home for Individuals with Disabilities

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Abstract

The COVID-19 pandemic has impacted many lives in one way or another. The shift from the typical workplace to a more remote work environment is arguably one of the most noticeable impacts the pandemic has caused. This research explores whether individuals with disabilities have been disproportionally impacted by the pandemic and its corresponding measures enacted by officials to curb the spread of the virus. More specifically, we examine working-from-home opportunities for individuals with disabilities as they compare with individuals without disabilities. A nationwide comprehensive and multi-wave survey, i.e., the COVID Future survey, was collected, providing information about how the COVID-19 pandemic impacted the lives of individuals. The results suggest that individuals with disabilities are disproportionately impacted in realizing the benefits of telecommuting. In general, individuals with disabilities were less likely to have the option to work from home during the pandemic compared with their counterparts without disabilities.

Keywords

Pandemic, Work-from-Home, Disability

1. Introduction

In early March 2020, the Novel Coronavirus was declared a pandemic by the World Health Organization. Government officials across the globe acted swiftly to limit the spread of the contagious virus. Many protective and restrictive

measures had to be enacted to preserve the public's safety. Such efforts include social distancing, protective face coverings, and a total lockdown, forcing businesses and institutions to close their doors and, in some cases, halt their operations. Many such entities are adapted by resorting to working-from-home as an alternative to reporting to the typical workplace (Dey, Frazis, Loewenstein, & Sun, 2020). The shift from working in the typical workplace to working from home is arguably one of the most noticeable changes resulting from the pandemic.

Despite the vast body of literature on telecommuting and its impacts, studies on the effects of telecommuting on individuals with disabilities are few. Studies examining the impacts of the pandemic on individuals with disabilities are fewer or nonexistent to the authors' knowledge. As a result, this research examines the impacts of the ongoing pandemic on working-from-home as a form of telecommuting for individuals with disabilities. The authors aim to understand if the pandemic has had a disproportional effect on individuals with disabilities as they compare with those with no disabilities in the context of working-from-home. Moreover, this study explores potential factors contributing to and explaining such effects.

Working from home is a form of telecommuting. Telecommuting can be defined as "telecommunication technology to partially or completely replace the commute to and from work" (Nilles, 1988). The benefits of telecommuting are well documented in the literature. For example, added flexibility in replacing commute time (Shafizadeh, Niemeir, Mokhatarian, & Salomon, 1998), enhanced quality of life (Van Sell & Jacobs, 1994), energy savings (Fuhr & Pociask, 2011), higher job satisfaction (Golden & Veiga, 2005), reasonable accommodation for individuals in need (Sullenger, 2006), etc. More importantly, working from home likely contributed to limiting the spread of the virus during the pandemic while allowing many businesses and institutions to continue providing their services and products.

Before the onset of the COVID-19 pandemic, a shift from the typical workplace to telecommuting was taking place for some people. It was happening on a small scale compared to the pandemic-induced change accelerating such a shift on a larger scale. Despite the fear of reduced productivity that some businesses have against telecommuting, many that were forced to adopt it during the pandemic were pleased with its outcomes. In some cases, productivity was increased, and operational costs were decreased. Moreover, some businesses promote telecommuting as a long-term option even when the ongoing pandemic is no longer a concern.

Since the Americans with Disabilities Act became law in 1990, the U.S. court system saw an influx of lawsuits against employers regarding adequate accommodations for workers with disabilities. One of the significant areas of concern regarding this law was whether to allow employees with disabilities to work from home as an alternative to reporting to the typical workplace. Telecommuting as a reasonable accommodation has yet to find favor in such lawsuits however (Kreismann & Palmer, 2001).

2. Survey and Data Collection

The data used in this study analyze the first wave of a nationwide comprehensive and multi-wave survey, i.e., the COVID Future survey, collected to provide information about how the COVID-19 pandemic impacted the lives of individuals. This first wave of the COVID Future was deployed from April to October 2020. It covered many topics such as travel behavior, shopping and dining habits, working-from-home, education, and attitudinal and risk perception-related information. The survey was implemented through Qualtrics Online Panel survey organization. For more information regarding the data, see Chauhan et al. (Chauhan, Bhagat-Conway, Capasso da Silva, Salon, Shamshiripour, Rahimi, et al., 2021). With regards to disability, the survey collected information on all six disability categories except the self-care category. Approximately 21% of respondents in the survey reported having at least one type of disability. **Figure 1** shows the distribution of disability types in the collected data.

The primary focus of this study is to examine whether individuals with disabilities have been disproportionately impacted by the pandemic and the underlying factors that may explain such impact. Working-from-home opportunities before and during the early stages of the pandemic for individuals with disabilities as they compare with individuals with no disabilities are studied. As a result, individuals who were not employed before or during the pandemic are excluded from this study. The final sample considered in this study includes 5073 employed individuals in the pre-pandemic period, of which 1984 report having the option to work from home. For the period during the pandemic, the sample comprises 4435 employed individuals, of which 2724 report having the option to work from home. Of the 5073 employed individuals in the pre-pandemic period, 771 individuals report having at least one type of disability, 305 of which report having the option to work from home. Of the 4435 employed individuals during the pandemic period, 643 individuals report having at least one type of disability,

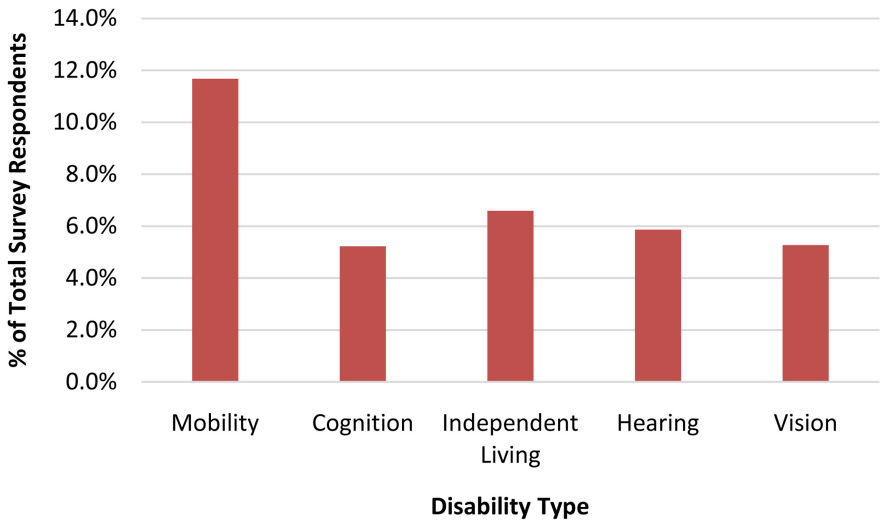

Figure 1. Distribution of disability type.

362 of which report having the option to work from home.

A descriptive analysis of the data is presented below, highlighting some of the pandemic impacts on working-from-home for individuals in the considered samples.

In the pre-pandemic period, 39% (n = 1679) of employed individuals with no disabilities had the option to work from home. This compares with 40% (n = 305) of individuals with a disability. During the pandemic, 62% (n = 2362) of individuals with no disabilities and 56% (n = 362) of individuals with disabilities have the option to work from home. This increases 23% (62% - 39%) for individuals with no disabilities compared with only 17% (56% - 40%) for individuals with disabilities as can be seen in Figure 2.

Employed individuals with no disabilities with educational attainment at or above a bachelor's degree experienced an increase of 2% (77% - 75%) in having the option to work from home during the pandemic. This compares with 3% (68% - 65%) for employed individuals with disabilities. Moreover, individuals with no disabilities with educational attainment below a bachelor's degree experienced a decrease of 2% (23% - 25%) in having the option to work from home compared with 3% (32% - 35%) for individuals with disabilities as seen in Figure 3.

The data show fewer individuals commuted to work five days per week during the pandemic as seen in Figure 4. Employed individuals with no disabilities experienced a decrease of 33% (22% - 55%) compared with 17% (24% - 40%) of individuals with disabilities. Likewise, fewer employed individuals having the option work from home commuted five days per week to work during the pandemic. a decrease of 34% (7% - 41%) was experienced by individuals with no disabilities compared with a decrease of 16% (11% - 27%) experienced by individuals with disabilities.

Similarly, reduced transit usage was experienced amongst employed everyday

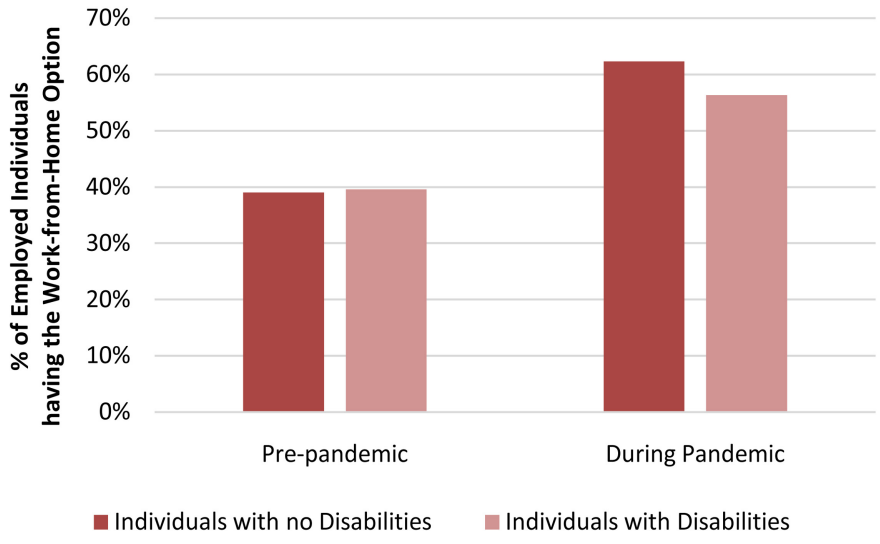

Figure 2. Change in having the option to work-from-home.

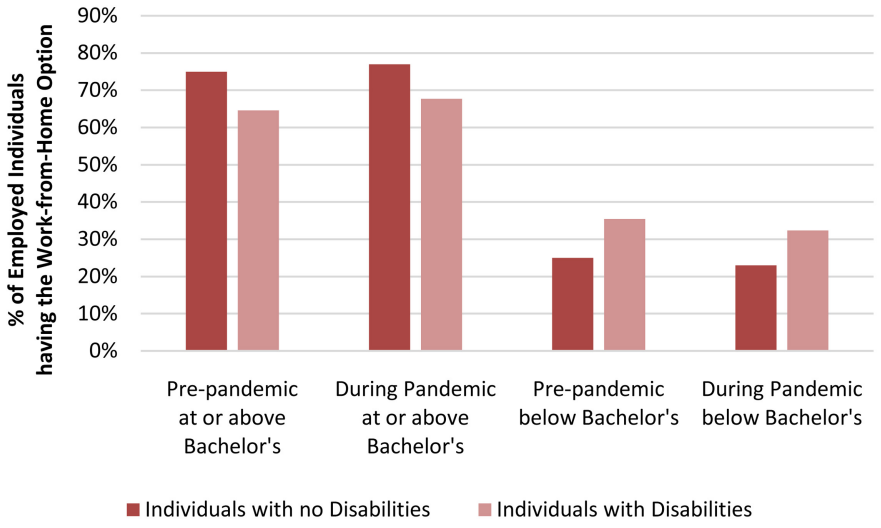

Figure 3. Educational attainment and work-from-home.

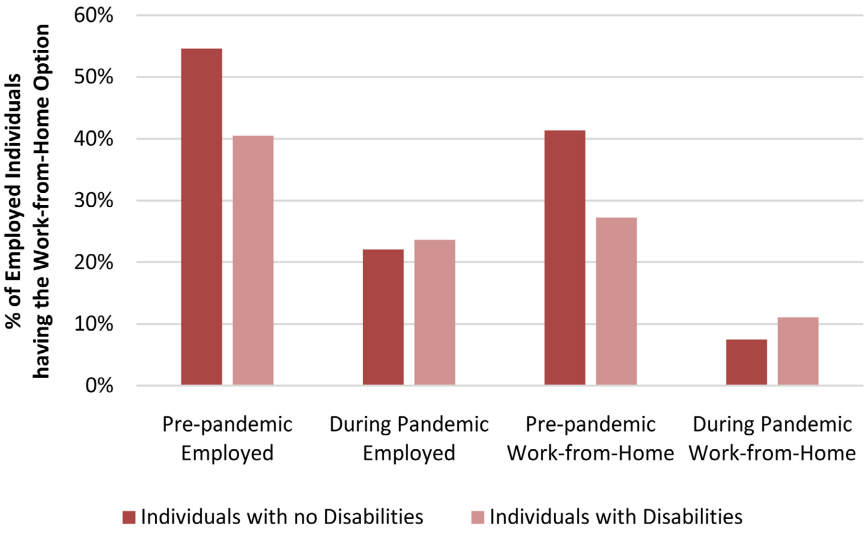

Figure 4. 5-day commute to work and work-from-home.

users in both survey samples as seen in Figure 5. A reduction of 12% (3% - 15%) was experienced by individuals with no disabilities compared with 11% (5% - 16%) experienced by individuals with disabilities. The most reported reason for such decreased usage is no longer feeling safe sharing space with strangers, followed by expecting to work from home more for individuals with no disabilities and planning to replace transit trips with other means of transportation for individuals with disabilities.

Not surprisingly, the private vehicle remained as the primary commute mode to work. As can be seen in Figure 6, individuals with no disabilities underwent an increase of 6% (91% - 85%) in using a private vehicle as their primary mode to work. This compares with no change for individuals with disabilities.

The data reveal a general trend of reduction in the number of employed individuals during the pandemic across all job categories except the professional,

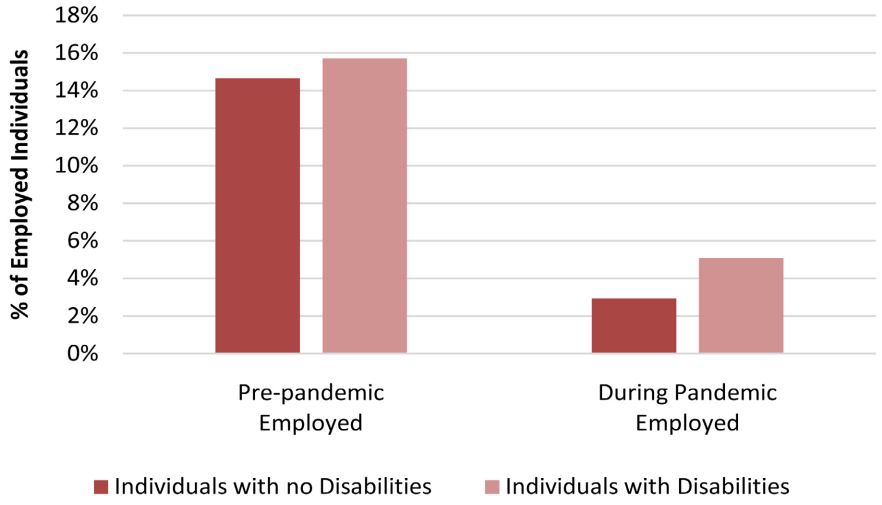

Figure 5. Transit usage for employed individuals.

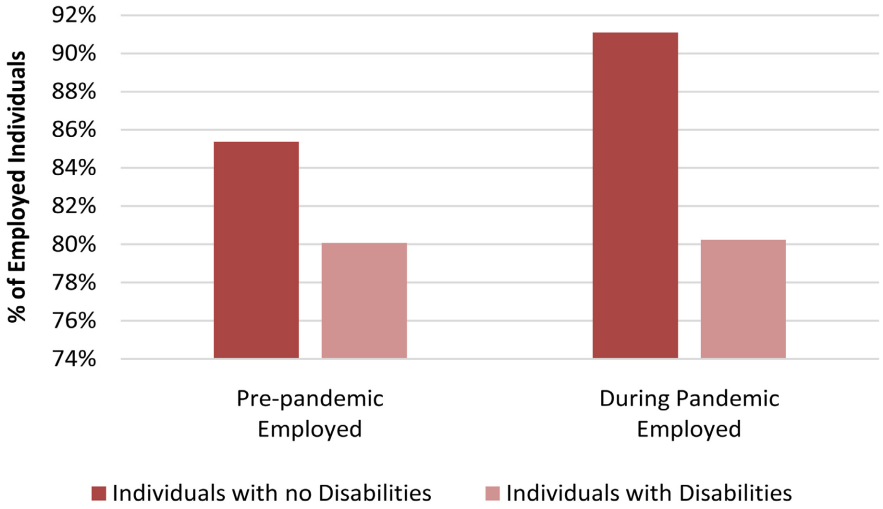

Figure 6. Private vehicle usage as primary commute mode.

managerial, or technical job category for individuals with disabilities. Looking at that job category, individuals with no disabilities experienced a reduction of 6% (45% - 51%) in employment, while individuals with disabilities experienced no change as seen in Figure 7.

3. Methods

There are many approaches to model discrete choices in the literature for predicting the likelihood of choosing to work from home for an individual. In this research, a binary response choice model is considered for modeling the opportunity to work from home for two population groups from the same sample. The first population group is comprised of individuals with no disabilities, while the second group considers only individuals with disabilities. This will allow for the comparison of individuals with disabilities compared with those with no disabilities.

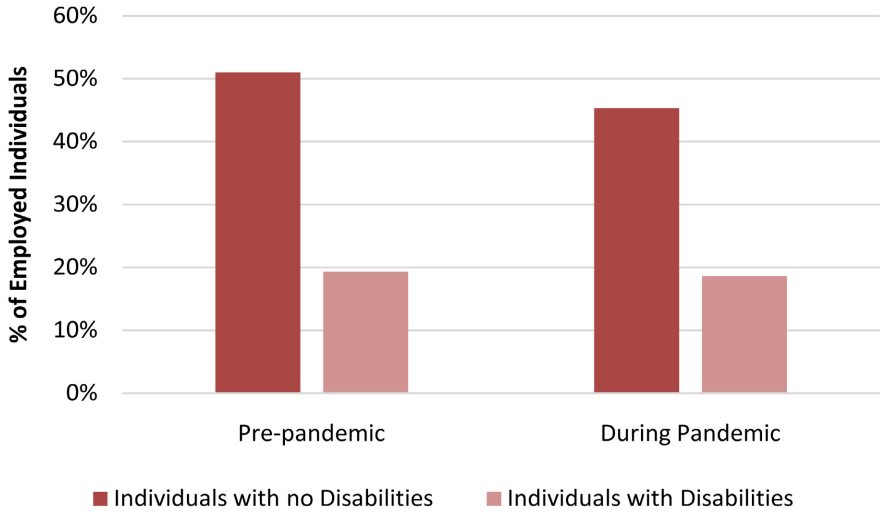

Figure 7. Professional, managerial, or technical job category.

A binary logit model was implemented. In this model, the opportunity to work from home is used as a binary response variable denoting 1 for having the option to work from home and 0 for not. For more details on the modeling approach and its estimation technique see McFadden (McFadden & Daniel, 1976).

Four separate models are estimated. Two models are estimated for individuals with no disabilities, and two for individuals with disabilities. For both survey populations, one model is estimated for the period before the pandemic, and the other is estimated for the period during the pandemic.

To provide for a representative analysis, they survey data are weighted. Two separate sets of weight are developed one for each survey population. Weights are estimated using the control variables age, gender, education, employment by age, and employment type by age. Each survey sample is weighted to match distributions on labor force characteristics published by the U. S. Department of Labor.

4. Results

In this research, two choice alternatives were used: having the option to work from home and not having such option. The estimated models are developed for two population groups: the population of individuals with and the population without disabilities. Two models are estimated for each group: one for a pre-pandemic period and the other during the pandemic. The final structure for each model includes statistically significant variables that capture helpful information in five important avenues: sociodemographic characteristics, socioeconomic characteristics, travel behavior attributes, work-related attributes, and attitudinal attributes. The resulting model coefficients are estimated at or above the 90% confidence level.

4.1. Population with No Disability

The population with no disability model results across both periods can be seen

in Table 1.

Age is considered a sociodemographic characteristic in the Pre- and During Pandemic models. The coefficient for age group between 18 - 44 years is found to be positive and significant only in the During Pandemic model. For an age group that makes up 57% of the workforce as of August 2020, this is expected and is likely due to the major shift from the typical workplace to working from home that took place in trying to curb the spread of the virus and protect people (Department of Labor, 2021b). Odds ratio for having the work-from-home option in during the pandemic period is 1.27. Individuals in the age group between 18 - 44 years are 1.27 times more likely to have the work-from-home option than those in other age groups in during the pandemic period.

Household income and educational attainment are considered socioeconomic characteristics in the Pre- and During Pandemic models. In the Pre-Pandemic model, the coefficient for annual household income greater than $125K is found to be positive and significant as it relates to having the option to work from home. This is also the case in the During Pandemic model. This may indicate

Table 1. Estimation results of working-from-home choice for periods pre and during the pandemic.

		Population with no Disabilities		Population with Disabilities	
Categories	Independent Variables	Pre-Pandemic	During Pandemic	Pre-Pandemic	During Pandemic
Constant		−0.71	−0.25	−1.20	−1.18
Sociodemographic	Age	-	0.24	-	0.34
Socioeconomic	Household Income	0.46	0.74	0.55	0.66
	Educational Attainment	−0.62	−1.56	−0.74	−1.23
Travel Behavior Attributes	Commute Days	0.70	−0.82	1.13	−0.72
	Transit use Frequency	0.30	0.27	0.42	1.01
	Primary Commute Mode to Work	−1.01	-	−0.91	-
Work Attributes	Job Category	0.72	1.37	0.77	1.09
	Online Work Participation before	0.94	-	1.34	-
Attitudinal Attributes	Like Working-from-Home	1.06	1.83	1.62	1.60
	Productivity Change	-	0.29	-	0.65
Risk Perception	Concern for Self from COVID	-	0.20	-	0.46
McFadden R^2		0.20	0.27	0.29	0.26
Log-Likelihood		−2894.5	−2133.6	−366.3	−323.9

Coefficients are estimated at or above the 90% confidence level.

that working-from-home is more available to individuals with higher income than lower income. High-income jobs are usually jobs with increased autonomy. Odds ratio for having the work-from-home option increased by 0.51 (1.58 to 2.10) during the pandemic. Individuals with a household income greater than $125K experienced an increase of 0.51 in the odds of having the work-from-home option than those with lower household income in during the pandemic period.

The coefficient for educational attainment level below a bachelor's degree is found to be negative and significant in both models. This is consistent with findings from the Bureau of Labor Statistics indicating that individuals with higher levels of education were more likely to work from home during the pandemic than those with lower education levels (Department of Labor, 2021a). Odds ratio for having the work-from-home option decreased by 0.33 (0.54 to 0.21) during the pandemic. Individuals with an educational attainment level below a bachelor's degree experienced a decrease of 0.33 in the odds of having the work-from-home option than those with higher educational attainment level in during the pandemic period.

The frequency of commute days per week, being a transit user, and the primary commute mode to work are considered travel behavior attributes in the Pre- and During Pandemic models. The coefficient for commuting 3 - 4 days per week is found to be significant in the Pre- and During Pandemic models. It is found to be positive in the Pre-Pandemic model but negative in the During Pandemic model. In the Pre-Pandemic model, this may be an indication of the desire of such commuters for a more flexible work schedule that allows them to perhaps participate in other activities in replacement of their commute time. In the During Pandemic model, this variable is found to be negative, as mentioned above. This likely represents individuals who must commute four days per week. Such individuals could be in job categories with duties that cannot be performed remotely or are deemed essential and must report to work on-premises. Odds ratio for having the work-from-home option changed direction during the pandemic. Individuals who commute 3 - 4 days per week were 2.01 times more likely to have this option than those commuting in different frequencies in the pre-pandemic period. On the other hand, those individuals became 0.44 time less likely to have this option than commuting in different frequencies during the pandemic.

The coefficient for being a transit user is found to be positive and significant in both models. This indicates that individuals who use transit are more likely to work from home in the pre- and during the pandemic periods. While this finding is counterintuitive, as one may think that working from home is likely associated with lower transit usage, i.e., the lack of the work trip, it may suggest a different trip purpose than the work, especially in urban areas where public transit is more prevalent. For instance, individuals who work from home may have extra time, i.e., time otherwise spent on commute, that could be utilized for

other purposes like visiting a friend or buying groceries. Odds ratio for having the work-from-home option decreased by 0.04 (1.35 to 1.31) during the pandemic. Individuals who are transit users experienced a slight decrease of 0.04 in the odds of having the work-from-home option than those who don't use transit in during the pandemic period. The coefficient for using a private vehicle as the primary mode to work is found to be negative and significant only in the Pre-Pandemic model. For individuals who don't have the option to work from home, this may indicate their desire to be more in control of their departure times and destinations. Odds ratio for having the work-from-home option in the pre-pandemic period is 0.36. Individuals who use a private vehicle as their primary mode to work are 0.36 times less likely to have the work-from-home option than those who use other modes of transportation as their primary mode to work in the pre-pandemic period.

Job category and the frequency of online participation in work meetings are considered work attributes in the Pre- and During Pandemic models. The coefficient for the professional, managerial, or technical job category is found to be positive and significant in both models. The Pre-Pandemic model may indicate having more control over job duties for individuals in such job categories leading to having more opportunities to perform such duties remotely. In the During Pandemic model, this may represent the ease at which such job categories can transition from the typical workplace to a remote work environment. Odds ratio for having the work-from-home option increased by 1.88 (2.05 to 3.94) during the pandemic. Individuals in the professional, managerial, or technical job category experienced an increase of 1.88 in the odds of having the work-from-home option than those in other job categories in during the pandemic period.

The coefficient for the case of participating in online meetings for work a few times per week is found to be positive and significant only in the Pre-Pandemic. This is not surprising because in-person meetings are notorious for the large amount of time they demand. This may be an indication that individuals who work from home especially prefer to conduct meetings online. Odds ratio for having the work-from-home option in the pre-pandemic period is 2.56. Individuals who participated in online meetings a few times per week are 2.56 times more likely to have the work-from-home option than those participating at different frequencies in the pre-pandemic period.

Whether an individual likes working from home and changes in individuals' productivity since the start of the pandemic are considered attitudinal attributes in the Pre- and During Pandemic models. The coefficient for liking working from home is found to be positive and significant in both models. This is predictable because individuals provided the option to work from home usually have a pleasant experience. More importantly, this is likely to be more favorable in a pandemic scenario because it might, to some extent, limit exposure to the virus. Odds ratio for having the work-from-home option increased by 3.35 (2.89 to 6.23) during the pandemic. Individuals who like working from home expe-

rienced an increase of 3.35 in the odds of having the work-from-home option than those who don't in during the pandemic period.

The coefficient for increased productivity is only included in the During the Pandemic model. This is interesting and not surprising because individuals who work from home can potentially utilize commute time for other activities. But they could also use such time to complete more work, resulting in increased productivity. Odds ratio for having the work-from-home option in during the pandemic period is 1.34. Individuals reporting increased productivity are 1.34 times more likely to have the work-from-home option than those reporting decreased or unchanged productivity in during the pandemic period.

Whether an individual perceives a risk of having a severe reaction to contracting the virus is a considered risk perception variable in the Pre- and During Pandemic models. The coefficient for the variable representing perceived risk of having a severe reaction from contracting the virus is only included in the During Pandemic model. It is found to be positive and significant. This is sensible because, in general, cautious individuals take precautionary measures to protect themselves. Working from home may be perceived as a precautionary measure in limiting exposure to the virus. Odds ratio for having the work-from-home option in during the pandemic period is 1.22. Individuals perceiving a risk of having a severe reaction from contracting the virus are 1.22 times more likely to have the work-from-home option than those not reporting such a concern in during the pandemic period.

4.2. Population with Disability

The results of the population with disability model across both periods can be seen in Table 1.

Like the population with no disability models, age is considered a sociodemographic variable in the Pre- and During Pandemic models. The coefficient for age group between 18 - 44 years is found to be positive and significant only in the During Pandemic model. Similar to the population with no disability, this age group comprises a large proportion of employed individuals with a disability. It makes up 46% of the workforce as of August 2020, holding the same plausible interpretation provided for the model results on individuals without disabilities relating to the major shift from the typical workplace to working from home (Department of Labor, 2021b). Odds ratio for having the work-from-home option in during the pandemic period is 1.4. Individuals in the age group between 18 - 44 years are 1.4 times more likely to have the work-from-home option than those in other age groups in during the pandemic period. This odds ratio is greater than the one resulting from the population with no disability model. This is consistent with findings reported by the Department of Labor. In their Economic News Release in 2019, the Bureau of Labor Statistics reports that individuals with disabilities are more likely to work from home than individuals with no disabilities (Department of Labor, 2021a).

Household income and educational attainment are considered socioeconomic characteristics in the Pre- and During Pandemic models. In the Pre-Pandemic model, the coefficient for annual household income greater than $125K is found to be positive and significant as it relates to having the option to work from home. This is also the case in the During Pandemic model. This result is in line with the result from the population with no disability model indicating that working-from-home may be more available to individuals with higher than those with lower income. Odds ratio for having the work-from-home option increased by 0.20 (1.73 to 1.93) during the pandemic. Individuals with a household income greater than $125K experienced an increase of 0.20 in the odds of having the work-from-home option than those with lower household income in during the pandemic period. While models from populations with and without disability show a trend of the increased likelihood of working from home during the pandemic, the increase in the population with no disability model is higher.

With regards to educational attainment, the coefficient for a level below a bachelor's degree is found to be negative and significant in both models. This is consistent with findings that working from home is more available to individuals with higher educational attainment levels. Odds ratio for having the work-from-home option decreased by 0.18 (0.48 to 0.29) during the pandemic. Individuals with an educational attainment level below a bachelor's degree experienced a decrease of 0.18 in the odds of having the work-from-home option than those with higher educational attainment level in during the pandemic period. The decrease in odds experienced by the population with no disability is greater in magnitude.

The frequency of commute days per week, being a transit user, and the primary commute mode to work are considered travel behavior attributes in the Pre- and During Pandemic models. Following the same trend as in the models for the population with no disability, the coefficient for commuting 3 - 4 days per week is found to be significant in the Pre- and During Pandemic models. It is found to be positive in the Pre-Pandemic model but negative in the During Pandemic model. In the Pre-Pandemic model, this may reflect on employment status, i.e., full-time vs. part-time, and reasonable accommodation difficult to attain in a remote work environment at an out-of-pocket cost. Individuals with disabilities are employed part-time at a higher rate than those in the general population (Department of Labor, 2021a), and despite having the option to work from home, they may, in some cases, elect to report to the typical workplace so they can utilize reasonable accommodation that must be provided, by law, through their employers to provide them equal opportunity to perform their duties adequately. In the During Pandemic model, this variable is found to be negative, as previously mentioned. Like the population with no disability model, individuals who must commute four days per week are likely in job categories with duties that are either very difficult to perform remotely or are deemed essential and must conduct their duties in person. Individuals who commute 3 - 4 days per week were 3.1 times more likely to have this option than those commuting in

different frequencies in the pre-pandemic period. On the other hand, those individuals became 0.49 time less likely to have this option than commuting in different frequencies during the pandemic. Despite that models from both population groups are showing the same change in direction in odds of working from home during the pandemic, the magnitude of change in the population with no disability models is lower.

The coefficient for being a transit user is found to be positive and significant in both models. The results suggest that individuals with a disability who use transit are more likely to work from home in the pre- and during the pandemic periods. Similar to the results from the population with no disability model this finding is counterintuitive. For individuals with disabilities in general, mobility disabilities specifically, using public transit could require a considerable investment of one's time due to scheduling uncertainty or boarding and alighting times. Having the option to work from home may mean that time spent on the commute trip can be reallocated to different trip purposes. Odds ratio for having the work-from-home option increased by 1.22 (1.52 to 2.75) during the pandemic. Individuals who are transit users experienced an increase of 1.22 in the odds of having the work-from-home option than those who don't use transit in during the pandemic period. This is greater than the increase resulting from the population with no disability model. The major shift from the typical workplace to working from home may have resulted in a significant time reallocation for individuals with a disability potentially spent on other trip purposes. Transit may have been the mode of choice due to its prevalence and general increased compatibility, especially in urban areas.

Looking at the primary transportation mode to work, the coefficient for using a private vehicle as the primary mode to work is found to be negative and significant only in the Pre-Pandemic model. The same rationale used to interpret the result from the population with no disability model holds for individuals with a disability. This may be an indication of the desire to control departure times and destinations. Odds ratio for having the work-from-home option in the pre-pandemic period is 0.40. Individuals who use a private vehicle as their primary mode to work are 0.40 times less likely to have the work-from-home option than those who use other modes of transportation as their primary mode to work in the pre-pandemic period. This finding is relatively of the same magnitude as the one from the population with no disability model.

Job category and the frequency of online participation in work meetings are considered work attributes in the Pre- and During Pandemic models. As is the case in the population with no disability models, the coefficient for the professional, managerial, or technical job category is found to be positive and significant in both models. The Pre-Pandemic model may indicate having more control over job duties for individuals with a disability in such job categories resulting in a higher probability to perform such duties remotely. In the During Pandemic model, this may partially represent the ease at which such job categories

can transition from the typical workplace to a remote work environment. Odds ratio for having the work-from-home option increased by 0.81 (2.16 to 2.97) during the pandemic. Individuals in the professional, managerial, or technical job category experienced an increase of 0.81 in the odds of having the work-from-home option than those in other job categories in during the pandemic period. It should be noted that despite the relative ease at which such job categories could transition to a remote work environment, for individuals with a disability, it might be more difficult to transition employer-provided accommodations to one's home. This increase in odds is considerably lower than the increase resulting from the population with disability model.

The coefficient for the case of participating in online meetings for work a few times per week is found to be positive and significant only in the Pre-Pandemic model. In addition to the considerable time saving associated with online meetings, perhaps this may represent observed adequate work-related performance in duties that led to employer-justified work-from-home accommodation for individuals with a disability. Odds ratio for having the work-from-home option in the pre-pandemic period is 3.82. Individuals who participated in online meetings a few times per week are 3.82 times more likely to have the work-from-home option than those participating at different frequencies in the pre-pandemic period. This finding is considerably greater than the finding from the population with disability model.

Whether an individual likes working from home and changes in individuals' productivity since the start of the pandemic are considered attitudinal attributes in the Pre- and During Pandemic models. The coefficient for liking working from home is found to be positive and significant in both models. This may indicate that working from home may serve to overcome built environment barriers that may limit employment opportunities and thus be more favorable for individuals with a disability. Odds ratio for having the work-from-home option decreased by 0.1 (5.05 to 4.95) during the pandemic. Individuals who like working from home experienced a decrease of 0.1 in the odds of having the work-from-home option than those who don't in during the pandemic period. This decrease in odds compares with a significant increase experienced by the population with no disability. Although working from home might, to some extent, limit exposure to the virus, the rapid shift from the typical workplace to working from home might have made it difficult to adequately transition employer-provided reasonable accommodation to one's home and thus wasn't as available for individuals with a disability despite liking it.

Examining productivity change during the pandemic, the coefficient for increased productivity is only included in the During Pandemic model and is found to be positive and significant. The same rationale provided in interpreting the result from the population with no disability model holds for individuals with a disability, i.e., individuals who work from home can potentially utilize commute time for activities other than work or for work in which case it results in increased productivity. Odds ratio for having the work-from-home option in

during the pandemic period is 1.92. Individuals reporting increased productivity are 1.92 times more likely to have the work-from-home option than those reporting decreased or unchanged productivity in during the pandemic period. This finding is higher than the finding resulting from the model on individuals without disabilities. There could be another conceivable and related explanation for individuals with a disability causing such a difference from individuals with no disability. Individuals with a disability who rely on transit services for their commute trips are likely to allocate extra time for commuting. This may be the result of scheduling uncertainty or boarding and alighting times. While many individuals who work from home might experience commute time savings, it may especially be the case for individuals with a disability contributing to their increased productivity.

Whether an individual perceives a risk of having a severe reaction to contracting the virus is a considered risk perception variable in the Pre- and During Pandemic models. The coefficient for the variable representing perceived risk of having a severe reaction from contracting the virus is only included in the During Pandemic model and is found to be positive and significant. It is reasonable to assume that individuals who are more vulnerable to contracting the virus may take extra precautions in protecting themselves. According to the CDC, some individuals with a disability may be more susceptible to contracting the virus or having severe illness from it. Working from home may be perceived as a preventive measure in limiting exposure to the virus. Odds ratio for having the work-from-home option in during the pandemic period is 1.58. Individuals perceiving a risk of having a severe reaction from contracting the virus are 1.58 times more likely to have the work-from-home option than those not reporting such a concern in during the pandemic period. This finding is higher than the finding resulting from the population with no disability model. This may be due to the increased vulnerability to contracting the virus for some individuals with a disability.

5. Conclusion

There are many benefits to telecommuting for the general population, including added flexibility, improved quality of life, and limited exposure to the contagious virus in the context of the pandemic. In addition, for individuals with disabilities, working from home may be a viable reasonable accommodation measure that would limit life disruptions by providing more control of the work environment, result in a more inclusive workforce, and provide a better balance of the work environment.

Despite the significant shift from the typical workplace to working in a remote work environment enacted proactively to limit the spread of the virus, the results of this research indicate that individuals with disabilities were less fortunate to realize the benefits of telecommuting compared with those with no disabilities. This was the case reflected by many of the considered explanatory variables on the probability of having the option to work from home.

This research indicates that despite experiencing an increase in the likelihood of having the work from option across the same household income thresholds, individuals with disabilities exhibited less than half the increase realized by their counterparts with no disabilities during the pandemic. In addition, both population groups experienced a decrease in the likelihood of having the work-from-home option across the same educational attainment slightly favoring individuals with disabilities.

It is also indicated that individuals with disabilities and their counterparts without disabilities experienced a decrease in the likelihood of having the work-from-home option across the same frequency of commute days during the pandemic; individuals with disabilities became considerably less likely to have this option. On the other hand, the results on transit usage show a different trend. Individuals with disabilities experienced a significant increase in the likelihood of having the work-from-home option compared with a relatively unchanged likelihood of having such option for those without disabilities. Moreover, both population groups were less likely to have the work-from-home option across the same primary commute mode to work, i.e., the private vehicle, than those using other modes in the pre-pandemic period.

Conversely, individuals with disabilities and those without disabilities experienced an increase in the likelihood of having the work-from-home option across the same job category, i.e., professional, managerial, or technical during the pandemic; individuals with disabilities, however, became half as likely to have this option.

The results from this research warrant further examination and analysis of barriers and problems related to including individuals with disabilities in telecommuting contributing to a more inclusive workforce. Pandemic preparedness and planning are essential to ensure equal opportunity for inclusivity in the workforce for and protect the livelihood of individuals with disabilities. An important measure that can improve planning, is including individuals with disabilities as a stakeholder in the planning process. While employers cannot specifically ask whether an employee has a disability that may make them unavailable to report to the workplace due to an event such as a pandemic, employers may make inquires that are not disability-related with the aim of identifying which of their employees may need special accommodations to continue working. Measures such as assigning a coordination and planning team that has or seeks expertise in equal employment opportunity to develop a plan with a goal of addressing the needs of individuals in the event of a pandemic can potentially limit disproportionate impacts experienced by individuals with disabilities or any other vulnerable population group resulting in a more equitable response to unforeseen extreme events such as the pandemic.

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Conflicts of Interest

The authors declare no conflicts of interest related to the publication of this paper.

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