COVID-19 Pandemic Effects on the Composition of the Population with Disabilities*

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Abstract

We consider the evolution of employment rates among the population identified as persons with disabilities (PWD) in the United States during the onset of the COVID-19 pandemic. Using data from the Survey of Income and Program Participation (SIPP), we analyze flows into and out of the population with reported disabilities and document compositional changes during the pandemic's first year. We find an important composition shift among the PWD population, with a higher share reporting that they suffer from disabilities in surveys conducted after March 2020. Importantly, those reporting PWD status during 2020 were more likely to have stronger employment histories than observed for years before COVID. Furthermore, the cohort reporting disability in 2020 differs from previous cohorts in terms of the types of impairments affecting them, with a sizable increase in the share reporting cognitive/mental health difficulties. The increase in disability reported in 2020 came disproportionately from those employed and working from home at least some days a week, with smaller increases among those working away from home, or not working at all. We also find that while the share of workers in telework-amenable occupations rose among non-PWD workers during the early stages of the pandemic, it declined among PWD workers – signaling that potential structural changes in the labor market favoring these types of occupations and remote work might not have been advantageous for promoting employment among PWD. In a preliminary analysis of the SSA's Disability Analysis File Public Use File (DAF PUF), we document increases in mortality for SSDI recipients in 2020 and 2021 relative to the previous eight years. This increase in mortality explains a nontrivial portion of the reduction in active claims in 2020 and 2021.

1 Introduction

Data from the Current Population Survey (CPS) shows that the US employment-to-population ratio (EPOP) declined sharply at the outset of the COVID-19 pandemic but

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has now largely recovered (see Figure 1.1). Surprisingly, employment among the population with reported disabilities has surpassed pre-pandemic levels: their EPOP fell from 19% in February 2020 to a low of 16% in April 2020 before rising to 21% in March 2022. While this trend is consistent with beneficial factors – e.g., reduced barriers through remote work, less discrimination in virtual interviews, and direct benefits of a tighter market – it might also be explained by composition changes in the population with disabilities toward those with a higher propensity for employment, or even changes in disability reporting behavior.

Figure 1.1

If the employment trends in the CPS reflect reduced barriers to work, then there are strong implications for the welfare of people with disabilities and the allocative efficiency of labor markets – along with related implications for disability insurance policy due to changes in claims and income tax revenue for people with disabilities. However, if much of the trend is driven by compositional changes or changes in reporting behavior, then the implications for welfare and Social Security Disability Insurance (SSDI) policy are less clear.

Our objective is to analyze flows into and out of the population with reported disabilities and document compositional changes during the first year of the pandemic among those identified as persons with disabilities (PWD). Furthermore, we focus on changes that speak to potential explanations for the EPOP patterns. In our analysis of the composition of the PWD population and employment outcomes, we rely on data from the public use files from the Survey of Income and Program Participation (SIPP). We exploit the panel structure of the SIPP, which follows respondents' outcomes during a four-year period (2017-2020), to analyze disability flows and employment for a nationally representative sample of respondents with

several years of pre-pandemic data.[1] The SIPP allows us to condition on a longer history of disability reporting and employment than possible with the CPS's rotating panel structure.

Our main results indicate that after the outset of the COVID-19 pandemic, there was an important composition shift among the PWD population, with a higher share of individuals reporting that they suffer from disabilities in surveys conducted after March 2020. Importantly, those reporting PWD status during the 2020 reference year were more likely to have stronger histories of attachment to the labor force and employment than observed for years before COVID. Furthermore, the cohort of individuals reporting disability in 2020 differs from previous cohorts regarding the types of impairments affecting them, with a sizable increase in the share reporting cognitive/mental health difficulties.

We provide evidence that the increase in disability reported in 2020 came disproportionately from those employed and working from home at least some days a week, with smaller increases among those working away from home, or not working at all. We also find that the share of workers in telework-amenable occupations declined among PWD during the pandemic while rising for non-PWD workers – signaling that structural changes in the labor market that might favor these types of occupations and remote work that took place during the early stages of the pandemic may not have been advantageous for promoting employment for PWD.

We supplement our findings from the SIPP with a preliminary analysis of the SSA's Disability Analysis File Public Use File (DAF PUF). In particular, we document a rise in mortality for SSDI recipients in 2020 and 2021 relative to the previous eight years. Higher mortality was most pronounced among beneficiaries with endocrine/nutritional/metabolic diseases, circulatory, digestive, genitourinary, nervous, or respiratory system diagnoses.[2] This increase in mortality explains a nontrivial portion of the reduction in active claims in the DAF PUF in 2020 and 2021. We leave it to future work to explore the implications of these mortality patterns for employment.

This study's descriptive nature does not permit us to assess the causes of increased reported disability. The evidence we present does not rule out the possibility that part of the increase could be an effect of COVID itself as a lingering effect of the disease (Ham, 2022; Price, 2022; Goda and Soltas, 2023; Karpman et al., 2023), or that the emotional and psychological toll of the pandemic has increased the prevalence of mental health disability in the population. Another possibility is that during the health crisis, discussions about mental health shifted social norms, making people more likely to identify and feel confident reporting disabilities, especially those related to mental well-being. Future research avenues include studying what can be learned about employment trends, pre- and post-pandemic in a potential outcomes framework that explicitly allows for misreported disability status and changing thresholds for reporting impairments.[3]

[1] As detailed below, respondents were asked about the reference period in a yearly survey conducted in the following year, in this case 2018-2021.

[2] A potential avenue for future work would be to use the detailed diagnosis codes from the restricted use DAF to explore these mortality trends at a more disaggregated level.

[3] Measurement error in health status has been accepted as a central problem in social science research (Institute of Medicine and National Research Council, 2002). Bound and Burkhauser (1999) express concern that "those who apply for SSDI and especially those who are awarded benefits tend to exaggerate the extent of their work limitations." More generally, a number of writers have suggested that the threshold for claiming an impairment may be lower for those who find themselves out of the labor force, either voluntarily or involuntarily (Bound and Burkhauser, 1999; Kreider, 1999; Lindeboom and Kerkhofs, 2009; Black, Johnston, and Suziedelyte,

2 Previous Literature

Autor, Maestas, and Woodbury (2020) summarize previous work on disability incidence and enrollment in SSDI since the 1990s, with overall incidence flattening for men and increasing for women as the gender gap in incidence and enrollment in SSDI shrank (Poterba, Venti, and Wise, 2017; Carey, Miller, and Molitor, 2022). Those with lower incomes are much more likely to enroll in SSDI benefits, and the income gap widens as workers age. Poterba, Venti, and Wise (2017) emphasize the importance of the interaction between education and health, which is related to sizable portions of the SSDI enrollment gap between those with higher and lower education levels, especially among women. Interestingly, Rutledge et al. (2014) attribute an overall decline in health for SSDI applicants in the two decades before 2013 to a change in the composition of applicants, as more educated applicants tend to apply for SSDI only when facing starker health problems.

Moffitt and Ziliak (2020) describe the patchwork of safety-net programs in the US and its paucity of automatic stabilizer features among its components. They emphasize the system's limitations and inadequacy to respond to an economic downturn as intense and pervasive as the one triggered by the pandemic. Maestas, Mullen, and Strand (2021) establish that labor market conditions might trigger an increase in SSDI rolls as individuals anticipate their applications in response to economic difficulties. Furthermore, some who might not have applied are induced to apply for disability insurance protections, with important impacts both economically and on the Social Security system's future stability requirements. Using SIPP panel data, Rothstein and Valletta (2017) similarly consider labor force participation decisions and applications to safety net programs by individuals who exhausted their available Unemployment Insurance (UI) benefits during recessions. They find increases in self-reported disability of around 4% just after job loss, followed by a similar rise after UI benefits exhaustion. This increase in self-reported disability is more important among older (50+) and lower-income individuals.

In related work, Carey, Miller, and Molitor (2022) find that between 1991 and 2015 the number of applications and awards to SSDI rose during economic recessions, with 4.2% more awards for every one-point increase in unemployment. Exploiting an age-based discontinuity in SSDI eligibility rules, they strive to disentangle two potential sources of the relationship between economic conditions and disability insurance claims: (a) that recessions lead to reductions in health (and commensurate increases in disabilities), and (b) that diminished labor market opportunities lead more individuals to apply for SSDI as income insurance. In particular, they examine the relaxation of the eligibility criteria in the SSDI determination process for claimants between the ages of 50 and 55, reducing entry costs for those with low work capacity. They find an increase in SSDI entry at age 50 and evidence that these entrants are substantially healthier than their peers who entered SSDI at a slightly younger age. Further, the relationship between economic cycles and SSDI entry is stronger at the age cutoffs related to more relaxed criteria for the receipt of SSDI benefits.

Armour, Button, and Hollands (2018) consider the heterogeneous impacts of disability discrimination laws on the labor market. They emphasize that the margin at which discrimination may occur in the labor market (e.g., hiring, payment, or retention) depends on the severity of the disability and how easily the employer can observe it at different stages of

2017).

the employment relationship. Separately considering physical and mental conditions, they find positive impacts of the laws for hiring individuals with non-salient physical disabilities, with statistically insignificant impacts for workers with salient physical and mental disabilities. Likewise, Maestas, Mullen, and Rennane (2021) show that a sizable share of workers who would benefit from accommodation had that need unmet before the pandemic. Furthermore, a greater willingness of employers to provide accommodation in the later stages of the pandemic – both as an ancillary effect of more flexible work-from-home policies and as a response to the tight labor market – might have altered the salience of particular disabilities to employers and expanded labor force participation opportunities for PWD.

Early in the pandemic, studies had already indicated the disproportionately negative impact of COVID-19 on older workers and women (Bui, Button, and Picciotti, 2020). More recently, using CPS data, Cortes and Forsythe (2023) consider the heterogeneous impacts of COVID-19 on employment across occupations and industries. Focusing on employment flows, they find larger and more persistent negative effects for lower-paid occupations. Such heterogeneity helps explain the disparate effects of the crisis on Hispanic and non-White workers, groups that suffer the dual pressures of being over-represented in those industries and having disproportionate increases in the likelihood of being displaced compared with their non-Hispanic White peers.

Using CPS data through June 2022, and closely related to the current manuscript, Ne'eman and Maestas (2022) consider the relative impacts of COVID-19 on the employment trends of PWD and their non-PWD peers.[4] They find a 3.7% increase in labor force participation of PWD by early 2022, with most of the gains accruing during 2021. The authors record an increase in the number of PWD by early 2022 relative to the first quarter of 2019, a higher share of young adults in the PWD population, and a shift in the type of disabilities reported by PWD – which starts in 2020 and becomes more important toward 2022. Nevertheless, Ne'eman and Maestas (2022) conclude that demographic composition shifts are not the most likely drivers of higher employment rates for the population with disabilities in the post-pandemic period. The authors emphasize their finding that the faster employment growth experienced by PWD relative to non-PWD is concentrated in "teleworkable, essential, and non-frontline occupations," which suggests a positive structural shift in the labor market toward jobs and conditions that might be more amenable to PWD relative to the pre-pandemic labor market status quo.

Goda et al. (2021, 2022, 2023) provide a detailed analysis of the impact of the pandemic on older workers. Using data from the CPS, Social Security administrative data, and Google Trends, they estimate important reductions in employment for this group. They find declines in disability as a prominent reason to exit the labor force compared with what would have been predicted during other recessions. They emphasize the pandemic's particular threat to older and physically vulnerable workers, as well as the additional margins at which such workers can respond to the crisis given the potential availability of Social Security safety net payments to older and disabled workers such as Supplemental Security Income (SSI), SSDI, or retirement benefits. Those effects combined to affect both labor supply and labor demand among those groups.

In an event study analysis, Goda et al. (2021) find that applications for SSI declined

[4]Due to the nature of the CPS data collection and disruptions during the first few months of the pandemic, they choose the first quarter of 2019 as their reference/comparison period.

substantially, with a reduction of more than 0.44 years in the average age of applicants. They suggest that these "missing" older workers' disability applications partially explain the decline. In their subsequent work, Goda et al. (2022) revisit and update the analysis for adults aged 50-70 using the CPS up to March 2022. They confirm depressed labor force participation and SSI applications relative to pre-pandemic levels despite some recovery in employment and unemployment measures. Interestingly, the reduction in labor force participation observed in the first year of the pandemic remained an important factor in its second year, accounting for most of the reduction in employment among older workers. Exploiting state-level variation in the timing of expiration of expanded UI benefits and relief payments included in the CARES Act and the American Rescue plan, they provide evidence that these programs dissuaded some individuals from pursuing SSDI benefits.

Finally, recent studies have been documenting the longer-term effects of the pandemic. Karpman et al. (2023) examine a nationally representative sample of non-elderly individuals from December 2022 and report that 18% of the respondents report long-term-COVID symptoms. Compared with other adults who had COVID-19, those with lingering symptoms reported lower labor force participation, especially due to disability and health reasons. Ham (2022) uses the longitudinal Understanding America Study to observe that close to a quarter of the people who got sick with COVID-19 were "long-haulers" and that a quarter of those who reported these symptoms had their employment and work hours affected. Price (2022) uses data from the CPS and the Household Pulse Survey to establish that individuals with long-term symptoms report physical and cognitive impairments at higher rates, as well as an increase (relative to pre-pandemic trends) in nonparticipation in the labor force attributed to disability. The trends reported by these studies tend to become clearer during 2021, a period not covered by the SIPP data used in our analysis.

3 Data

3.1 SIPP

For our main analysis, we rely on the 2018 panel of the SIPP that was surveyed each year from 2018 until 2021.[5] In each of the four survey waves, respondents were asked a series of retrospective questions about the previous reference year – providing detailed longitudinal data covering monthly employment and SSDI claimant histories from 2017-2020. Importantly, questions about disabilities were asked as of the time of the survey – not the reference year. Therefore, when discussing disability reporting, we focus on the survey year for our analysis. However, when we look at outcomes during the reference periods by disability reporting status, we use the disability report from the same survey. For example, when considering employment by disability in 2017, we use reported disability status at the time of the survey in 2018. Throughout, we use the four-year longitudinal weights provided in the 2018 SIPP panel. Finally, in a few cases we will also use the 2014 SIPP panel (surveyed in each year from 2014 to 2017) with accompanying four-year longitudinal weights as a comparison for how a SIPP panel might evolve in the absence of the COVID shock.

[5] We chose to focus on the 2018 panel because the 2019 panel was dropped after the first wave, and problems were documented with lower initial participation of households for the 2020 panel during the pandemic. See 2020 SIPP Data User Note on data collection during COVID-19 here.

3.2 Teleworking Occupations

To investigate whether SIPP respondents are employed in occupations that are conducive to remote work – or telework – we follow Ne'eman and Maestas (2022) by using the binary indicators for teleworkable occupations created by Dingel and Neiman (2020).[6] We match the Dingel and Neiman (2020) teleworkable indicators recorded for O*NET occupation codes to the 2018 SIPP census occupation codes using a series of crosswalks.[7] After the series of crosswalks, a small number of O*NET and Census codes had not been matched. To match these final codes, we iteratively matched on fewer occupation code digits (from six digits to five digits, to four, and so on) and manually verified that the code descriptions in the O*NET and Census were appropriate matches. Finally, as multiple O*NET occupation codes could be matched to a single census code in the SIPP, we used the modal teleworkable indicator among O*NET codes matched to an occupation code in the SIPP as our teleworkable measure. In the case of ties (i.e., an equal number of teleworkable and not teleworkable O*NET codes matched to a Census code), we recorded the SIPP occupation as being teleworkable.

3.3 DAF PUF

When studying the population receiving SSDI, we also take advantage of the SSA's Disability Analysis File Public Use File (DAF-PUF) 2021 data. The DAF-PUF is a de-identified 10% random subsample of the restricted use DAF which contains detailed administrative information on all SSI and SSDI disability beneficiaries who received disability benefits at any point since 1996. We use the monthly Ledger Account File variable to identify beneficiaries who receive SSDI in a given month as those with a current payment status. We also use the information on a beneficiary's primary impairment aggregated into eight groups from the four-digit diagnosis codes recorded in the DAF. Finally, we will use the month of death information when considering differential mortality for claimants.[8]

4 Reported Disability

We focus on the 2018 Panel of the SIPP and describe the general patterns in disability-type reporting. We use the SIPP's standard definition of disability in which an individual reports in the affirmative to having one of the *six core conditions*.[9] [10] The survey waves (2018-

[6] Available at https://github.com/jdingel/DingelNeiman-workathome/blob/master/occ_onet_scores/output/occupations_workathome.csv

[7] The crosswalks include a 2010 O*NET to 2010 SOC crosswalk made available by Dingel and Neiman (2020) (https://github.com/jdingel/DingelNeiman-workathome/blob/master/downloaddata/output/2010_to_SOC_Crosswalk.xlsx), a 2010 SOC to 2018 SOC crosswalk from the BLS (https://www.bls.gov/soc/2018/crosswalks.htm), and 2018 SOC to Census occupation code crosswalk from the Census Bureau (https://www.census.gov/topics/employment/industry-occupation/guidance/code-lists.html).

[8] See https://www.ssa.gov/disabilityresearch/documents/daf_puf/DAF21-Public-Use-File-Documentation.pdf for more details on the DAF-PUF.

[9] For both the SIPP and the CPS, the *six core conditions* include that the person (a) is deaf or has serious difficulty hearing, (b) is blind or has serious difficulty seeing even when wearing glasses, (c) has serious difficulty concentrating, remembering, or making decisions because of a physical, mental, or emotional condition, (d) has serious difficulty walking or climbing stairs, (e) has difficulty dressing or bathing, (f) has difficulty running errands alone such as visiting a doctor's office or shopping because of a physical, mental, or emotional condition.

[10] The SIPP also provides a broader measure of disability, which classifies someone as a PWD if reporting any of the core, children, or work-related disabilities that are part of the questionnaire. The three child disabilities

2021) took place during those years in which respondents were asked about their outcomes in the reference year (2017-2020). The question on the timing of the interview is of particular importance when examining the COVID-19 pandemic, as the 2020 wave interview might have taken place during the pandemic, even though the responses refer to the pre-pandemic period in 2019.[11]

Even in years without significant disruptions to overall public health, there are sizeable changes in the number of individuals reporting disabilities. One of the main challenges in studying disability in the context of surveys such as SIPP and the CPS is that disability status is self-reported. Hence, the PWD status is subject to the respondent's own conception of disability, the social norms about self-describing as someone suffering from a disability, and the particular economic and emotional condition of the individual when responding to the survey.

It is possible that the pandemic affected individuals' perspectives regarding physical and mental health and might have shifted the norms and willingness to report having a disability. In that case, we might observe some spillover of the effects of the pandemic to the outcomes/status reported for reference year 2019.[12]

At the time of the interview for a particular wave of the SIPP, respondents were asked about having these six conditions. As a consequence, the indicator for disability is observed only at the yearly level. That other variables are measured in a similar fashion, coupled with the tendency of individuals to report changes in outcomes in the first month covered in a new interview wave,[13] can lead to sudden shifts in data statistics around the new calendar year. Furthermore, since the panel of respondents being interviewed is kept constant, we expect that the share of respondents with disabilities will rise in each survey wave as people age and have more time to develop and report a disability.

We also take advantage of the longitudinal nature of the SIPP to decompose the sample groups based on their disability reporting history over the entire four-year SIPP panel. For those observed in all waves of the SIPP, there are 16 possible patterns for disability reporting. These patterns can be described by the vector of disability indicators in each wave $\mathcal{D} = (D_1, D_2, D_3, D_4)$ where $D_w \in 0, 1$, and $D_w = 1$ denotes reporting a disability in wave w. We refer back to these "reporting histories" to clarify subgroups considered in the analysis below.

4.1 Descriptive Features: changes in stock, inflows, and outflows

Table 4.1 shows the estimated share of PWD in the population aged 16 years and older at the time of the interview. While the share is relatively stable at around 22% during the panel period, we witness the anticipated rise in the share of PWD over the years, with increases for

include (a) limited ability to play with other children of the same age, (b) limitations in the ability to do regular school work, and (c) developmental condition or delay that limits ordinary activities. The three work-limiting disabilities include physical, mental, or emotional problems that result in (a) difficulty finding a job or remaining employed, (b) limits to the kind or amount of work they can perform, and (c) preventing one from working.

[11] The public use files for SIPP do not have specific information about the date the interview was conducted. An interesting question for future investigation is whether there are shifts in reported disability depending on how long into the pandemic individuals responded to the questionnaire.

[12] The Census Bureau shifted interviews to phone-only interviewing on March 19, 2020 through the end of the collection period for the 2020 wave, which led to disruption in data collection and follow-up with respondents. See 2020 SIPP Data User Note on data collection during COVID-19 here.

[13] This type of measurement issue has been described as "seam bias" Rothstein and Valletta (2017).

the 2021 survey about twice as large as the shift between the first two waves. Columns 3-8 present the share of respondents with a specific core disability in the population aged 16 and older. While the shifts in shares of each group are small[14], the shares reported in 2021 for each condition are statistically significantly larger than those for 2018-19 at the 10% confidence level for disabilities related to hearing, cognition, self-care, and the ability to run errands. Table 4.2 presents similar information but with a focus on the composition of the PWD population by looking at the share of reported disability types among the PWD population in each year. While less precise, we see a higher proportion reporting hearing, cognitive, self-care, and errands difficulties by 2021. Together, this indicates that the composition of PWD is changing during the period.[15]

The relative stability of the share of PWD can be misleading, as it results from substantial dynamics of disability status at the individual level. These dynamics can be described by considering inflow and outflow cohorts within the SIPP 2018 panel. In particular, there are three inflow cohorts, determined by disability reporting patterns in which a person declared to be a PWD in one interview after having reported not suffering from disabilities a year earlier in the previous wave: $D_w - D_{w-1} = 1$. Similarly, there are three outflow cohorts in which a person declared not to be a PWD after reporting having a disability in the previous interview, that is $D_w - D_{w-1} = -1$.[16]

Table 4.3 summarizes the inflows and outflows in reported disability, permitting us to compare the disability type composition for different inflow/outflow cohorts. In the 2019-2021 waves of the SIPP, a share close to 9% of people who had declared none of the six core disabilities in the previous wave shifted into the PWD group (inflow), and a share of 30% respondents who were disabled in the previous interview reported not suffering from disabilities in the subsequent wave. This implies yearly inflows and outflows into disability for more than 15% of the population aged 16 and older. The net increase in the share of PWD in the 2021 survey results from higher inflows and lower outflows.

We next turn to comparing the "inflow" in the third and fourth SIPP waves to the second wave – i.e., those respondents who declared having a disability during the reference year (2019 and 2020) after not being classified as PWD in the previous year versus those doing the same in 2018. Comparing the changes in the composition between the 2018 and 2020 PWD inflow waves, we can reject the hypothesis that there was no change in the disability type composition. There is a statistically significant increase in the share of people suffering from cognition-related issues (5%). At the same time, when comparing the "outflow" cohorts for the same periods, we observe reduced shares of people facing vision difficulties and cognition among those no longer reporting being disabled. However, we cannot estimate these declines precisely enough to reject that the shares have not changed relatively to 2019 at usual significance levels.

[14] We again see the anticipated small rise in the share of the population suffering from each one of the disabilities. Recall that individuals can report having multiple disabilities concomitantly.

[15] The increase in the population facing cognitive impairments is in line with findings in Ne'eman and Maestas (2022) using the CPS data, but other patterns differ. This can be partially due to differences in CPS and SIPP collection and longitudinal structures and partially because in the SIPP individuals are responding to questions about disability status in 2020 during the first half of 2021.

[16] The first inflow cohort includes individuals with reporting patterns $\{(0,1,0,0),(0,1,1,0),(0,1,0,1),(0,1,1,1)\}$. In the meantime, the first outflow cohort will include those with the reporting patterns $\{(1,0,0,0),(1,0,1,0),(1,0,0,1),(1,0,1,1)\}$. Analogous definitions hold for the second and third cohorts.

Table 4.1

Share of People With Disabilities by Year

	Over 16	Hearing	Seeing	Cognit	Ambulat	Selfcare	Errands
Survey Year=2018	0.2183	0.0685	0.0451	0.0893	0.1127	0.0352	0.0624
	(0.0041)	(0.0022)	(0.0019)	(0.0030)	(0.0029)	(0.0017)	(0.0024)
	[0.4675]	[0.7393]	[0.6191]	[0.9466]	[0.2716]	[0.8791]	[0.0862]
Survey Year=2019	0.2210	0.0692	0.0440	0.0895	0.1158	0.0355	0.0665
	(0.0041)	(0.0022)	(0.0019)	(0.0030)	(0.0029)	(0.0019)	(0.0024)
	[.]	[.]	[.]	[.]	[.]	[.]	[.]
Survey Year=2020	0.2224	0.0686	0.0431	0.0880	0.1183	0.0360	0.0708
	(0.0041)	(0.0021)	(0.0019)	(0.0030)	(0.0029)	(0.0017)	(0.0024)
	[0.7241]	[0.8068]	[0.6933]	[0.6196]	[0.3628]	[0.8297]	[0.0661]
Survey Year=2021	0.2289	0.0733	0.0446	0.0969	0.1198	0.0409	0.0741
	(0.0041)	(0.0022)	(0.0019)	(0.0030)	(0.0029)	(0.0018)	(0.0025)
	[0.0464]	[0.0694]	[0.7659]	[0.0202]	[0.1650]	[0.0116]	[0.0027]

Source: 2018 SIPP panel with four-year longitudinal weights

Standard Errors in parentheses; p-value for difference with 2019 in square brackets

Table 4.2

Share of Reported Impairments for PWD by Year

	Hearing	Seeing	Cognit	Ambulat	Selfcare	Errands
Survey Year=2018	0.3136	0.2064	0.4091	0.5163	0.1614	0.2858
	(0.0090)	(0.0081)	(0.0104)	(0.0103)	(0.0074)	(0.0094)
	[0.9344]	[0.4229]	[0.6987]	[0.4931]	[0.9433]	[0.1562]
Survey Year=2019	0.3128	0.1989	0.4049	0.5240	0.1608	0.3008
	(0.0090)	(0.0078)	(0.0103)	(0.0102)	(0.0078)	(0.0094)
	[.]	[.]	[.]	[.]	[.]	[.]
Survey Year=2020	0.3086	0.1938	0.3958	0.5320	0.1617	0.3184
	(0.0087)	(0.0078)	(0.0102)	(0.0102)	(0.0070)	(0.0093)
	[0.6402]	[0.5842]	[0.4308]	[0.4928]	[0.9194]	[0.0925]
Survey Year=2021	0.3203	0.1950	0.4236	0.5235	0.1786	0.3237
	(0.0086)	(0.0075)	(0.0099)	(0.0099)	(0.0072)	(0.0092)
	[0.4327]	[0.6860]	[0.1160]	[0.9608]	[0.0563]	[0.0392]

Source: 2018 SIPP panel with four-year longitudinal weights

Standard Errors in parentheses; p-value for difference with 2019 in square brackets

Table 4.3

Composition of Flows In and Out of Disability Reporting

	All Types	Hearing	Seeing	Cognit	Ambulat	Selfcare	Errands
Inflow							
Survey Year=2019	0.0891	0.0214	0.0190	0.0301	0.0384	0.0074	0.0129
	(0.0033)	(0.0015)	(0.0015)	(0.0020)	(0.0022)	(0.0014)	(0.0013)
	[.]	[.]	[.]	[.]	[.]	[.]	[.]
Survey Year=2020	0.0924	0.0231	0.0181	0.0327	0.0360	0.0064	0.0181
	(0.0033)	(0.0015)	(0.0016)	(0.0022)	(0.0019)	(0.0008)	(0.0016)
	[0.4753]	[0.4216]	[0.6674]	[0.3802]	[0.3952]	[0.5373]	[0.0105]
Survey Year=2021	0.0945	0.0254	0.0171	0.0367	0.0366	0.0083	0.0153
	(0.0032)	(0.0016)	(0.0014)	(0.0022)	(0.0020)	(0.0010)	(0.0013)
	[0.2075]	[0.0580]	[0.3366]	[0.0208]	[0.5166]	[0.6081]	[0.1794]
Outflow							
Survey Year=2019	0.3018	0.2458	0.2349	0.3625	0.3722	0.0698	0.1624
	(0.0097)	(0.0157)	(0.0168)	(0.0197)	(0.0187)	(0.0097)	(0.0165)
	[.]	[.]	[.]	[.]	[.]	[.]	[.]
Survey Year=2020	0.3101	0.2685	0.1966	0.3483	0.3783	0.0614	0.1236
	(0.0097)	(0.0168)	(0.0150)	(0.0192)	(0.0181)	(0.0092)	(0.0126)
	[0.5250]	[0.3240]	[0.0886]	[0.6064]	[0.8125]	[0.5313]	[0.0618]
Survey Year=2021	0.2941	0.2548	0.2221	0.3284	0.3878	0.0830	0.1663
	(0.0095)	(0.0164)	(0.0169)	(0.0195)	(0.0187)	(0.0107)	(0.0154)
	[0.5470]	[0.6804]	[0.5856]	[0.2125]	[0.5442]	[0.3648]	[0.8629]

Source: 2018 SIPP panel with four-year longitudinal weights

Standard Errors in parentheses; p-value for difference with 2019 in square brackets

When taken into consideration jointly, the increased inflow and decreased outflow for disabilities indicate a perceptible shift toward increased disability reporting in the SIPP during the pandemic, with an increased prevalence of individuals reporting difficulties in cognitive, self-care, and running errands. The increase in cognitive disabilities we observe for 2020 can be seen as evidence of the early stages of the important increase in mental health impairments associated with long-COVID recently reported for later years using different datasets, Price (2022). This bolsters our confidence that the SIPP can capture relevant developments in the composition of the PWD population earlier in the pandemic despite challenges in data collection during 2020 and 2021.

To look more closely into the outflows, Table 3 presents the "transition matrix" for individuals who reported being disabled. For each individual who reported having a disability in a survey year, we consider four possible outcomes in the following survey: (a) they remain PWD, reporting the same set of core disabilities, (b) they remain PWD, reporting a different set of core disabilities, (c) report no disabilities, leaving the PWD group, (d) leave the sample (missing value for disability status).

Table 4.4 shows that while around a quarter of PWD report the same core disabilities in the following year, most individuals report a different set of difficulties.[17] This finding reinforces the notion that disabilities and illnesses are very dynamic, change over time, and that one type of disability might affect the development of other conditions. Effective targeting of policies toward PWD requires flexibility to the changing circumstances faced by individuals.[18]

[17] This includes people suffering from a more permanent disability who add or subtract an ancillary condition.

[18] Given the disruptions in data collection during the first year of the pandemic, we find an increase in the

Table 4.4

Transition Matrix for individuals declaring a disability

	2018	2019	2020
Stay and Report Same	0.2704	0.2565	0.2644
	(0.0090)	(0.0087)	(0.0088)
	[0.2012]		[0.4728]
Stay but report different	0.4277	0.4326	0.4371
	(0.0101)	(0.0101)	(0.0099)
	[0.6829]		[0.7155]
Leave to not disabled	0.2996	0.3097	0.2897
	(0.0097)	(0.0097)	(0.0095)
	[0.4388]		[0.1234]
Leave to missing	0.0023	0.0012	0.0088
	(0.0011)	(0.0008)	(0.0019)
	[0.4466]		[0.0003]

Source: 2018 SIPP panel with four-year longitudinal weights
Standard Errors in parentheses; p-value for difference with 2019 in square brackets

In Section 5, we explore how the changes in the level and composition of inflows and outflows into reported disability types are reflected in labor market participation and employment during the COVID-19 pandemic.

5 Labor Market Participation and Disability

5.1 Changes before and during the first phase of the COVID-19 pandemic

As a starting point, we attempt to replicate the patterns from the CPS depicted in Figure 1.1 using the 2018 Panel in the SIPP. Specifically, Figure 5.1a traces out EPOP over time separately by disability reporting status at the time of the interview. To ease comparisons with Figure 1.1, we normalize the employment proportion to be 100 in February 2020 for both groups. Importantly, the divergence in relative EPOP for the disabled population in Figure 1.1 develops during 2021, which occurs after the currently available employment data in the SIPP covering the end of 2020. Therefore, we cannot trace out the employment recovery for disabled respondents in the SIPP. Unlike the CPS, we observe a slight decline in the proportion of disabled people in employment leading up to 2020, followed by a sudden upward jump in January 2020. This jump is associated with the change in disability reporting at the 2021 survey interview and could, therefore, reflect a composition change among those reporting disabilities in 2021 toward a group with a higher propensity for employment. In February 2020, we see a sharp decline in employment for both groups. Unlike in the CPS which shows EPOP declines of a similar (relative) magnitude at the onset of COVID for the two groups – for the 2018 SIPP panel, we see larger declines for the group reporting a disability.

In Figure 5.1b, we further decompose the disability group based on the reported impair-

proportion of individuals who transition from having reported a disability to missing disability status in the following year. While still a relatively small fraction of the total PWD population, that share increases by close to four times between waves 2017-18 and 2020-21 (from 0.23% to 0.88%). However, this is based on a very small number of observations for each wave, ranging from just three in 2019-20 to 29 in 2020-21.

ment type.[19] Here, we do not rescale the employment proportion to be 100 in February 2020 for each group – thus allowing us to look at both the historical differences in employment levels by impairment type as well as the shifts by year and with the onset of COVID. We see that the increased employment for disabled people in January 2020 seen in Figure 5.1a was likely driven by a statistically significant (p-value=0.005) increase in employment for those reporting cognitive impairments from 55% in December 2019 to 61% in January 2020. For this group, the proportion employed stays above pre-COVID levels throughout 2020. Recall from Section 4 that there was a statistically significant increase in cognitive impairments reported at the 2021 SIPP interview corresponding to the 2020 reference period. Considering the inflow and outflow cohorts as defined in Section 4 reveals that the inflow (outflow) cohort for Wave 4 had significantly higher (lower) employment rates than the equivalent cohort for Wave 3 for those reporting cognitive impairments. Taken together, this points toward changes in composition in the PWD population as a potential driver of post-COVID employment patterns, as the increased reporting of cognitive impairments might be concentrated among those with higher employment probabilities.

To focus on the period most impacted by the COVID pandemic, we consider four different groups:[20]

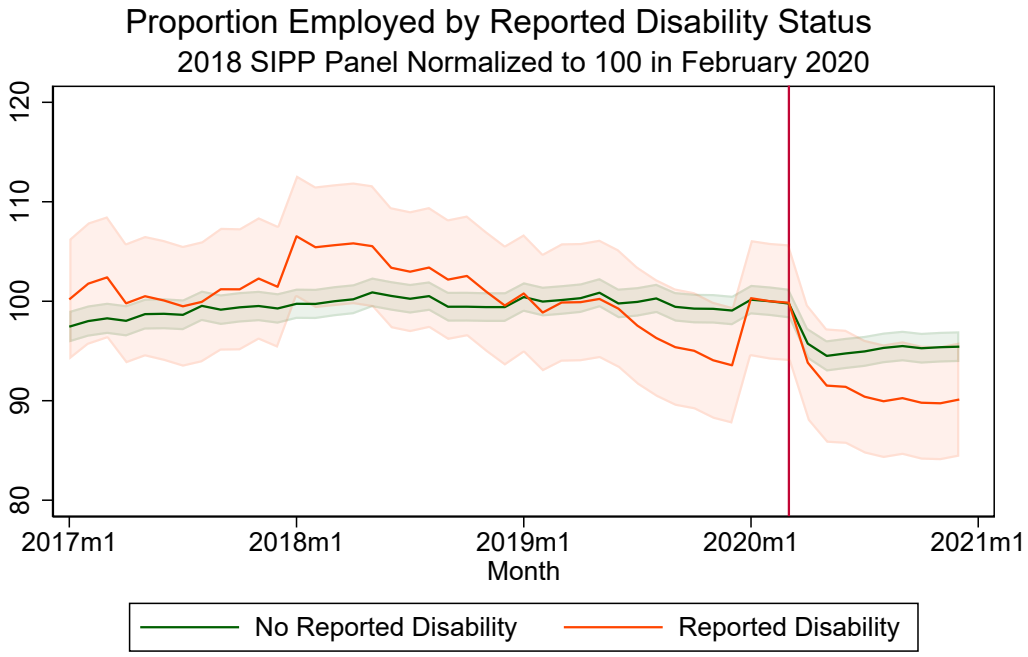
1. Never Report: Those who never report a disability across the four waves of the survey;
2. Flow into Reporting in Wave 4: Those who do not report a disability in Wave 3, but do in Wave 4;
3. Do not report in Wave 4: Those who report a disability at some point in the panel, but not in Wave 4;
4. Report in Wave 4 (continued): Those who report a disability in Waves 3 and 4, but not in every wave;
5. Always Report: Those who report a disability in every wave of the survey.

This partitioning of the sample allows us to distinguish respondents who are likely marginal in terms of the disability reporting decision (groups 2, 3, and 4) while separating out those who flow into reporting a disability in Wave 4 – associated with the 2020 reference year. Specifically, we would like to look for unusually high or low prior employment for the group that flows into reporting a disability in the final wave of the survey. Naturally, labor force attachment is likely to differ across these categories. Therefore, to provide a point of comparison for what might be expected for these groups in the absence of the COVID shock, we repeat the exercise using the 2014 SIPP panel which was surveyed between 2014-2017 (reference years 2013-2016).

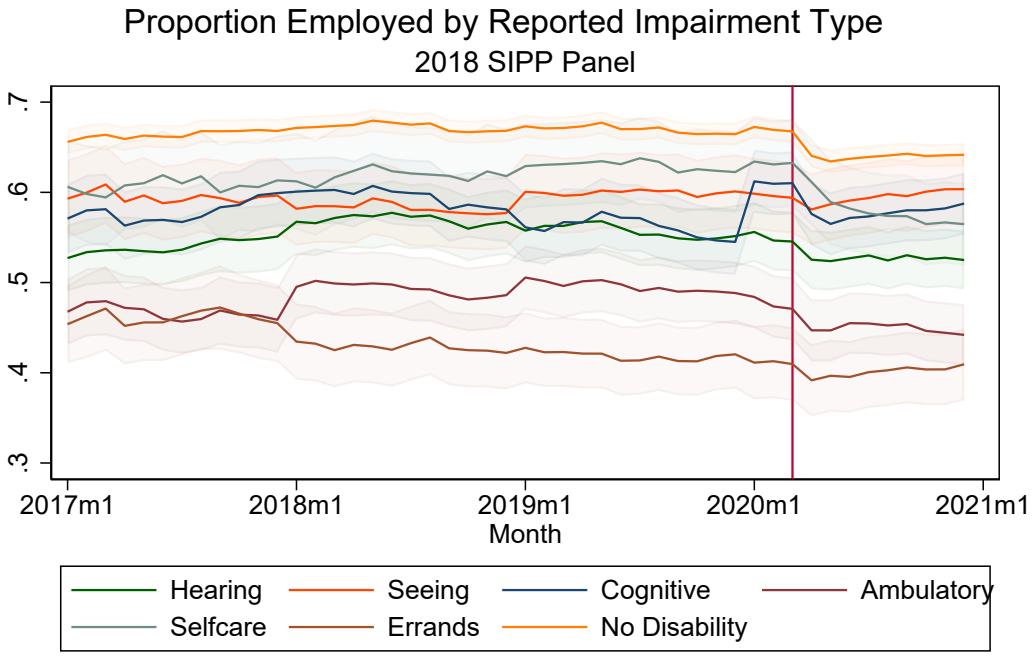
Table 5.1 displays the (weighted) proportion of respondents in each group for the 2014 and 2018 panels, as well as the difference in these proportions across panels. We see that the 2018 panel has a lower rate of Never Reporting a disability – over three percentage points lower

[19] Once again, we allow respondents to show up in multiple impairment groups.

[20] Never Report: $\mathcal{D} = (0,0,0,0)$; Flow into Reporting in Wave 4: $\mathcal{D} = \{(0,0,0,1),(1,0,0,1),(0,1,0,1),(1,1,0,1)\}$; Do not report in Wave 4: $\mathcal{D} = \{(1,0,0,0),(0,1,0,0),(0,0,1,0),(1,1,0,0),(0,1,1,0),(1,0,1,0),(1,1,1,0)\}$; Report in Wave 4 (continued): $\mathcal{D} = \{(0,0,1,1),(1,0,1,1),(0,1,1,1)\}$; Always Report: $\mathcal{D} = (1,1,1,1)$.


Proportion Employed by Reported Disability Status
2018 SIPP Panel Normalized to 100 in February 2020
120
110
100
90
80
2017m1
2018m1
2019m1
2020m1
2021m1
Month
No Reported Disability
Reported Disability
Source: SIPP; Four year longitudinal weights; Disability reported at time of interview;
Age 16+ at reference period

(a)


Proportion Employed by Reported Impairment Type
2018 SIPP Panel
.7
.6
.5
.4
.3
2017m1
2018m1
2019m1
2020m1
2021m1
Month
Hearing
Seeing
Cognitive
Ambulatory
Selfcare
Errands
No Disability
Source: SIPP; Four year longitudinal weights; Disability reported at time of interview;
Age 16+ at reference period

(b)

Figure 5.1

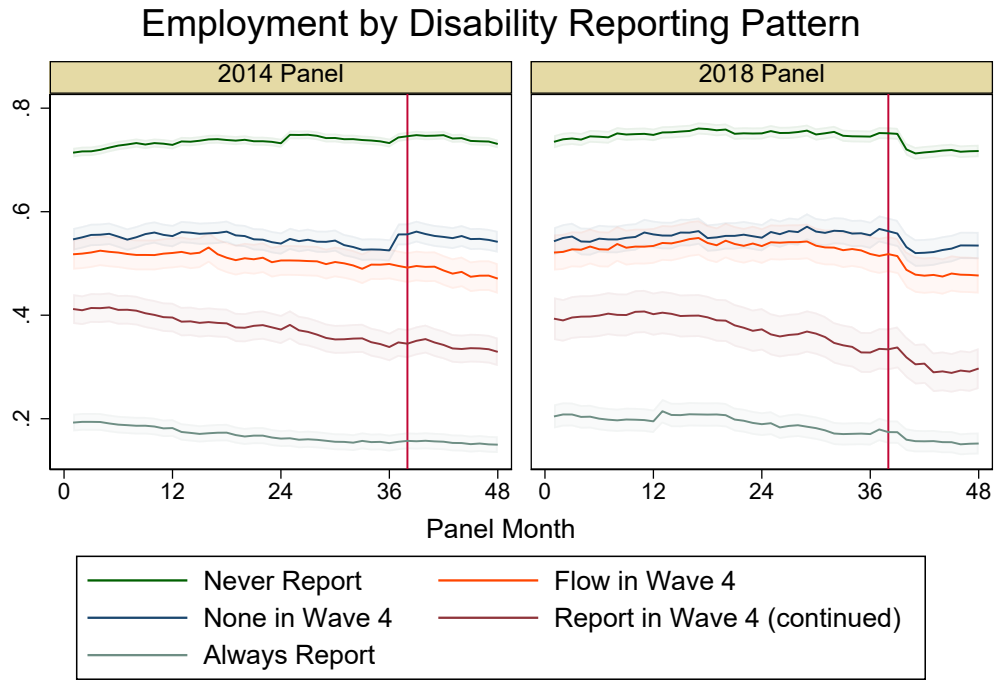
– while both panels show that close to 10% of individuals report a disability in every wave. Importantly, we see a larger proportion flowing into disability reporting in the final wave for the 2018 panel and a larger proportion not reporting in Wave 4 – with both differences from 2014 statistically significant at the 1% level. Note that the 1.5pp increase in the Wave 4 flow group represents 6.3% of those who report a disability in Wave 4 for the 2018 panel – a nontrivial share.

Figure 5.2a displays the proportion employed by month for the disability reporting patterns separately for the 2014 and 2018 panels. Across both panels, the highest and lowest employment rates are among those who Never and Always report a disability, respectively. Among the marginal reporting groups, the lowest employment is among those who report in both Waves 3 and 4 (effectively conditioning on at least two consecutive waves of reporting a disability) – while those who do not report in Wave 4 (but do in a previous wave) have higher employment than those who flow into reporting in Wave 4. Notably, the group that flows into disability reporting in Wave 4 has relatively high employment among those who report a disability at some point in the panel – therefore, the fact that this group grew in size from the 2014 to 2018 panels implies a shift in the composition of those reporting a disability to respondents with a higher mean propensity for employment.

Some comparisons across the 2014 and 2018 panels for the employment rates of these different reporting pattern groups align with the idea that the pandemic changed the composition of the population reporting disabilities toward those more attached to the labor force. The jump in employment rates for those "not reporting in Wave 4" present in 2014 reflects that group's history of disability and presumed improvement in health leading to exiting PWD status in the last year of the panel. For the 2018 panel, the equivalent jump is subdued by the outflow cohort for Wave 4, which has lower employment rates than earlier cohorts, as mentioned above. Similarly, the smaller gap in employment history between the "not reporting in Wave 4" and "reporting in Wave 4" groups for 2018 reflects the increased prevalence of people with relatively strong employment records reporting disabilities after the outset of the COVID-19 public health crisis.

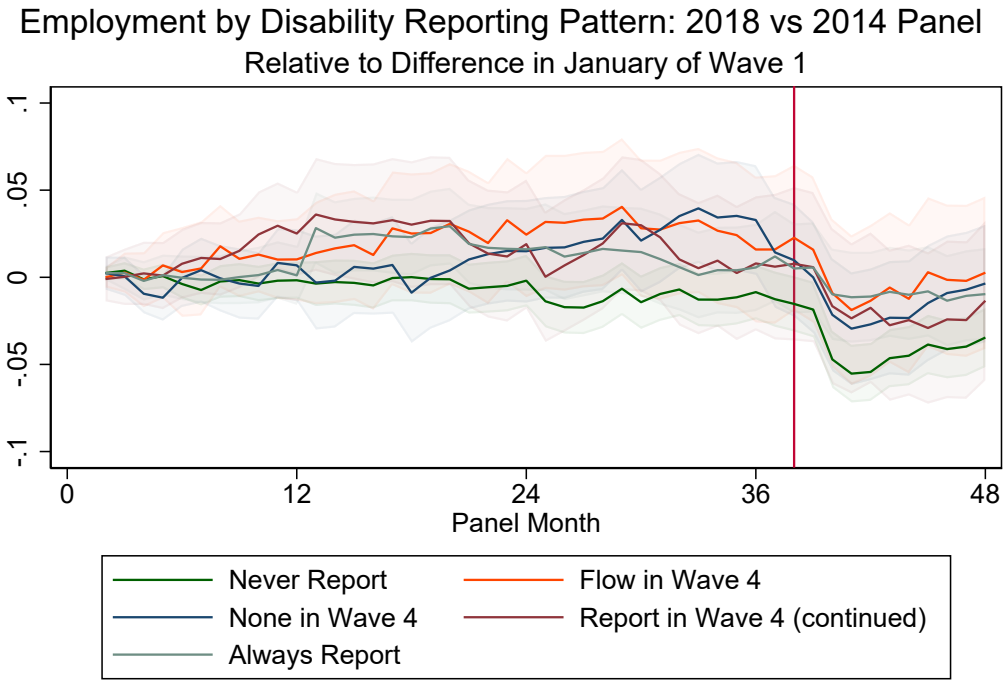
Recall that Figure 5.1b suggested that the group reporting a cognitive disability for the 2020 reference period had noticeably higher employment than in previous waves. Therefore, we break up the groups reporting a disability in Wave 4 based on whether the Waves 3 and 4 responses include Cognitive impairments. Unfortunately, the SIPP is underpowered to draw strong inferences at this level of disaggregation, so our results that follow should be cautiously interpreted.

Table 5.2 displays the proportion of those reporting a disability in Wave 4 that fall into the different reporting categories by panel, along with the difference across panels. The group labels follow the previous categories, followed by two indicators for whether they reported a cognitive impairment in Waves 3 and 4. For example, "Flow into Reporting in Wave 4 0 0" are those we observe flowing into disability reporting in the final wave who do not report a cognitive impairment in either Wave 3 or 4, and "Flow into Reporting in Wave 4 0 1" are those who flow into reporting in Wave 4, do not report a cognitive impairment in Wave 4 but not in wave 3. We see that the increase in those flowing into reporting a disability in Wave 4 for the 2018 panel is roughly split between those who report a cognitive impairment in Wave 4 and those who do not – however, this represents a larger relative increase for those reporting cognitive impairments. For people who reported PWD status continuously for Waves 3 and 4, the share suffering from conditions that exclude cognitive impairment is 3.6pp smaller for the



Source: SIPP; Four year longitudinal weights

(a)



Source: SIPP; Four year longitudinal weights

(b)

Figure 5.2

Table 5.1

Disability Reporting Patterns by SIPP Panel

	2014	2018	diff
Never Report	0.6607	0.6296	-0.0311***
	(0.0036)	(0.0050)	(0.0061)
Flow in Wave 4	0.0596	0.0741	0.0145***
	(0.0017)	(0.0026)	(0.0031)
None in Wave 4	0.1200	0.1402	0.0202***
	(0.0025)	(0.0036)	(0.0043)
Report in Wave 4 (continued)	0.0589	0.0523	-0.0066**
	(0.0017)	(0.0022)	(0.0028)
Always Report	0.1009	0.1038	0.0029
	(0.0021)	(0.0028)	(0.0035)

*** p<.01, ** p<.05, * p<.1, p<1

Source: 2018 and 2014 SIPP panel with four-year longitudinal weights

Standard Errors in parentheses

2018 panel. The other categories show similar proportions in both the 2014 and 2018 panels. To summarize, those who flow into reporting in Wave 4 make up a larger proportion of those declaring a disability in the last year of the 2018 panel –associated with the COVID shock. The rise in shares is similar (2.4- 2.6%) between those reporting a cognitive impairment and those who do not, but proportionally more important for cognitive disabilities, which start from a significantly lower base. On the flip side, there has been a reduction in the share of individuals who continually reported disabilities other than cognitive impairment in both Waves 3 and 4.

Comparing the 2014 and 2018 panels, Figure 5.3a displays employment for those who flow into disability reporting in Wave 4 separately for those who report a cognitive impairment and those who do not. Across panels, it is clear that individuals who become PWD in Wave 4 reporting a cognitive disability in 2020 have stronger employment histories in the previous three years compared with those reporting similar conditions in 2016 (Wave 4 of the 2014 Panel); the groups' relative employment propensities flip between panels. For that same group, there is an upward trend in employment across the 2017-19 reference years – a pattern not observed in the earlier waves for the 2014 panel. Further, the absence of a sudden increase in employment at the beginning of 2020 suggests that the overall increase for those with cognitive impairment in Figure 5.1b could be driven by the inflow of this relatively high employment group into PWD status.

For the 2014 panel, the history of employment among those joining disability ranks in Wave 4 reporting a cognitive impairment was weaker than for their peers reporting other types of disabilities. The employment levels between the groups converge toward the end of the year in which the disability was reported, mainly due to PWD with non-cognitive conditions facing lower employment rates – likely due to the disability becoming an increased hurdle to work. For the 2018 panel, we observe a similar decline in employment among those with other impairments, but those with mental health impairments remain in a relatively stronger work position. Both groups see declines in employment at the beginning of the pandemic, but those in the cognitive PWD group appear to start recovering earlier.

To consider the differences in employment dynamics between the 2014 and 2018 panels,

Table 5.2

Disability Reporting Patterns by SIPP Panel: Cognitive vs. Other

	2014	2018	diff
Flow in Wave 4 0 0	0.1737	0.1974	0.0238**
	(0.0058)	(0.0077)	(0.0096)
Flow in Wave 4 0 1	0.0981	0.1245	0.0264***
	(0.0048)	(0.0071)	(0.0085)
Report in Wave 4 (continued) 0 0	0.1483	0.1129	-0.0355***
	(0.0052)	(0.0057)	(0.0077)
Report in Wave 4 (continued) 0 1	0.0311	0.0251	-0.0060
	(0.0026)	(0.0029)	(0.0039)
Report in Wave 4 (continued) 1 0	0.0245	0.0191	-0.0054
	(0.0024)	(0.0025)	(0.0035)
Report in Wave 4 (continued) 1 1	0.0645	0.0701	0.0057
	(0.0039)	(0.0063)	(0.0074)
Always Report 0 0	0.2047	0.2032	-0.0015
	(0.0058)	(0.0073)	(0.0093)
Always Report 0 1	0.0481	0.0482	0.0001
	(0.0030)	(0.0039)	(0.0049)
Always Report 1 0	0.0522	0.0448	-0.0075
	(0.0032)	(0.0039)	(0.0050)
Always Report 1 1	0.1548	0.1548	-0.0000
	(0.0055)	(0.0073)	(0.0092)

*** p<.01, ** p<.05, * p<.1, p<1

Source: 2018 and 2014 SIPP panel with four-year longitudinal weights

Standard Errors in parentheses

Figure B.1 presents changes in the two panels relative to January of the first wave of each survey. The patterns do not seem to indicate important differences across panels or groups of impairments. Unfortunately, the wide confidence intervals make drawing strong inferences difficult in this case.[21]

A natural question arising from these patterns is the interplay between the reporting of a disability (especially of a cognitive nature), employment status, and the pandemic shock. The descriptions above would be consistent with a situation in which individuals connected to the labor force became more likely to recognize and report suffering from cognitive disabilities after the onset of the pandemic. There are multiple possible channels, such as the increased discussion and acceptance of mental health as a crucial part of well-being during the pandemic, or the additional work and social pressures in that period might have exacerbated mental challenges, increasing the incidence of disability more intensely among those working, etc. Another interesting aspect is that, at least in the initial nine months of the pandemic, there is no clear evidence of increased employment rates for PWD beyond those brought by the change in the composition of the population reporting disabilities. Below, we consider a preliminary exploration of these questions, with the understanding that a full analysis is beyond the scope of this work.

5.2 Work from Home

One of the defining features of the changes in the workplace and the workforce spurred by the COVID-19 pandemic was the increase in work-from-home (WFH) arrangements.

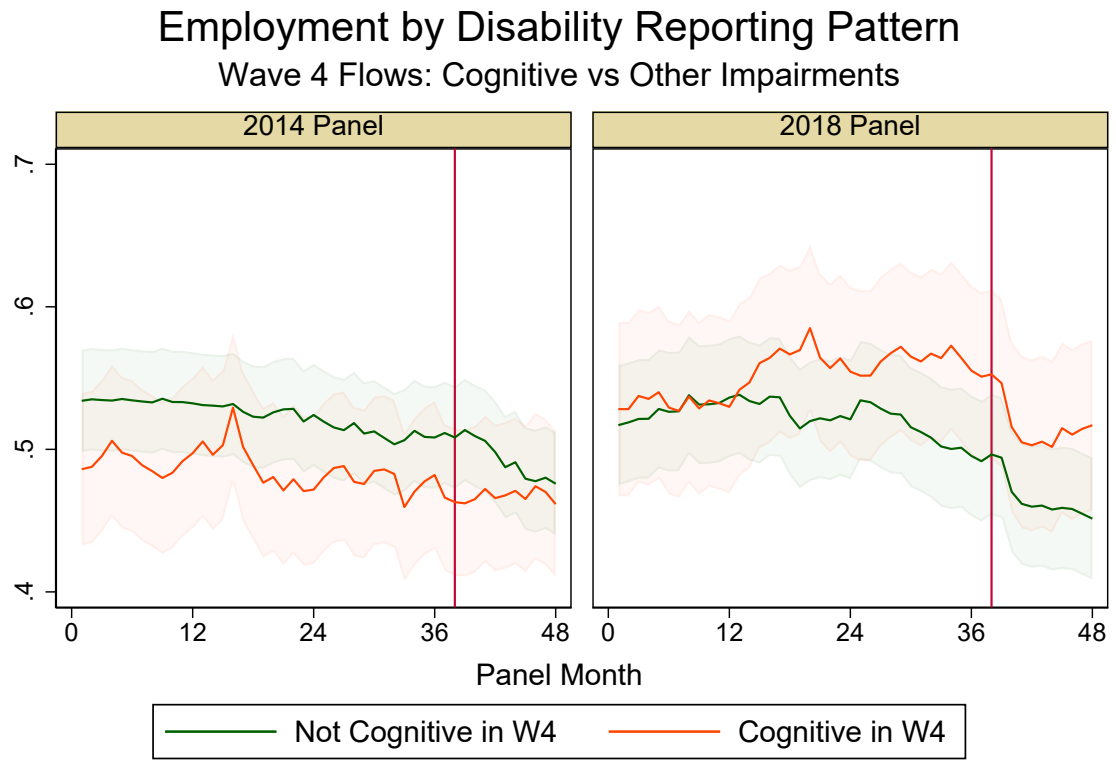
While the SIPP provides important information regarding the prevalence of work-from-home and its relationship with health and disability status, careful attention is required to interpret the results. In particular, information on days worked from home is derived from the SIPP's section on commuting, and responses are recorded at the job spell level and then transformed into the person-month format for the SIPP data release by copying the response to each month the job was held. Therefore, the variable for days working from home will change only across jobs, not within jobs, or when a new interview provides information for a new reference year on a job previously held. Given the nature of the data release, we expect to see increases in work from home in January 2020 before COVID lockdowns, rather than March, reflecting the commuting situation in a given job spell throughout the rest of the year.

As a starting point, we consider three mutually exclusive employment categories:

1. Not Employed
2. Employed: No Work From Home
3. Employed: Some work from Home

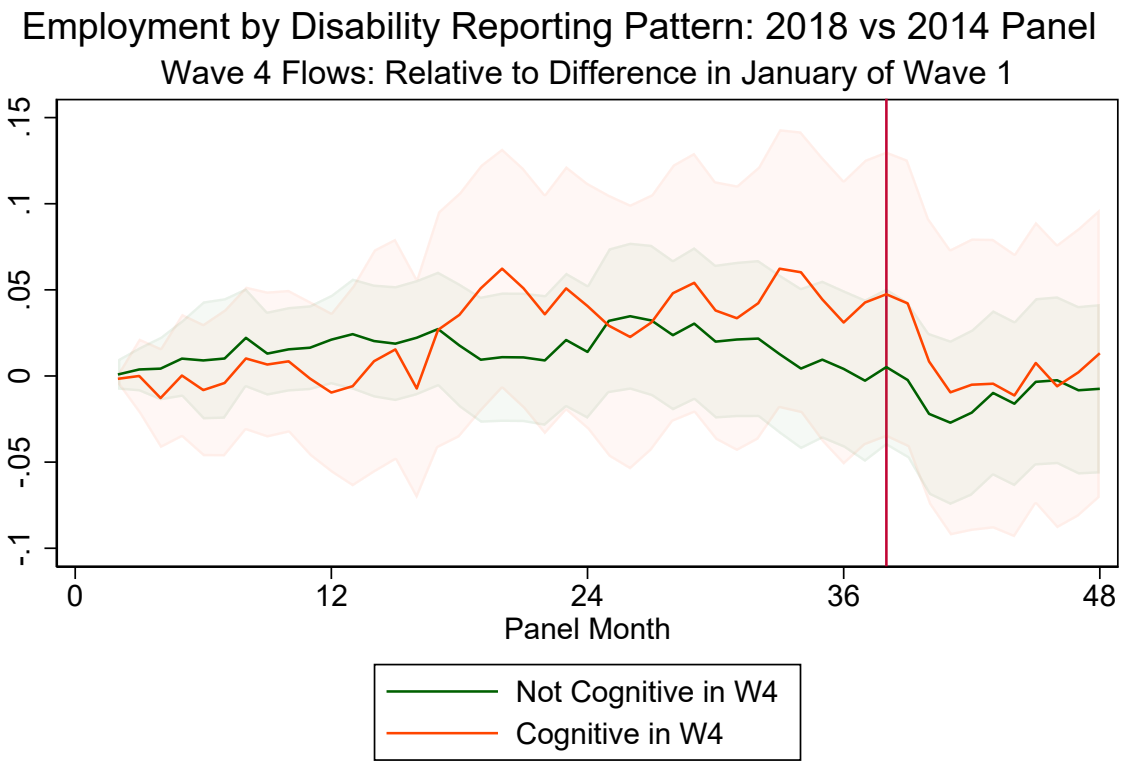
Respondents are categorized as having some work-from-home arrangements if they worked at least one day from home in a typical week for at least one job in a month. Figure 5.4a depicts the proportion of each group over time for the 2018 SIPP panel, separately by disability reporting status, while Figure 5.4b rescales the proportions to be 100 in December 2019 to

[21] Appendix Figures B.1 and B.2 display analogous trends for the other groups in Table 5.2.



Source: SIPP; Four year longitudinal weights

(a)



Source: SIPP; Four year longitudinal weights

(b)

Figure 5.3

make the relative changes for each group clearer.[22]. The former are useful for showing the size of these groups, while the latter help emphasize the size of the relative changes.

For those not reporting a disability, we see a large decline in the proportion of employed and not working from home in 2020 that is associated with increases in non-employment and employment with some work from home. Note that the initial decline in employment with no remote work in January of 2020 and the concurrent increase in employment with remote work is likely due to job spells that continue later in the year and have the days worked from home recorded at the point of the interview. We also see a second decline in employment with no remote work after February, which is associated with a similar increase in non-employment. Relative employment with and without remote work stays somewhat stable after March 2020. Taken together, these facts point toward much of the shift to remote work being due to within job changes in remote work rather than a movement to new jobs that provided remote work opportunities for those without disabilities.

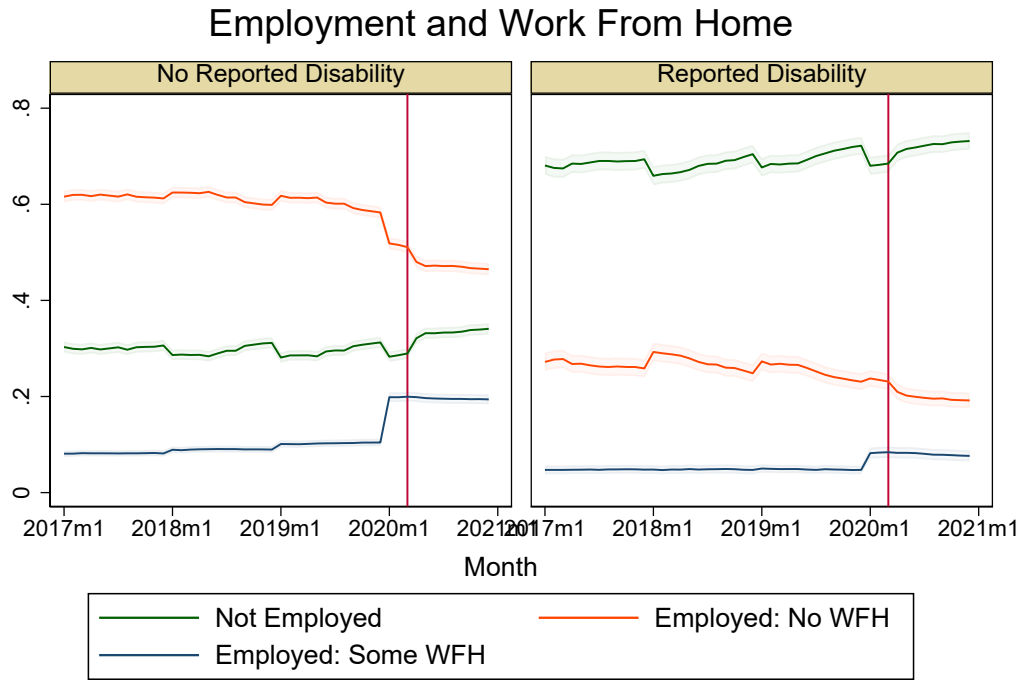
For those reporting a disability, the shifts in the three employment categories are smaller. Interestingly, we do not see the sudden drop in employment with no remote work reported in January 2020 that is measured for the group not reporting a disability. The increase in employment with some work from home is again focused at the beginning of the year, reflecting within job shifts to remote work over the year rather than movement to new jobs that offer remote work. The change in employment with some remote work, relative to December 2019 (Figure 5.4b), was larger for those who do not report a disability than those who do, signaling that non-PWD respondents were more likely to hold jobs for which work from home accommodations were provided during 2020. In that respect, it is possible that the shift to WFH arrangements in that period was more likely to support non-PWD workers than the PWD population.

Figure D.2 presents the changes in the type of employment relative to December 2019 for each of the six core disabilities. The general pattern shows relatively stable shares of people not working, with a slight decline in those working not from home. That is coupled with increases in the share working from home at least one day of the week, which is sensible given the described shift toward WFH as an accommodation measure during the pandemic. For those reporting cognitive impairments, the increase in WFH is not matched by a reduction in those working not from home, which is likely due to the large influx of people into PWD reporting these conditions in the fourth wave of the 2018 SIPP panel (Section 4). As shown in Section 5, those reporting cognitive disabilities who joined the PWD population in 2020 were more likely to be employed than their PWD peers.

5.3 Employment in Teleworkable Occupations

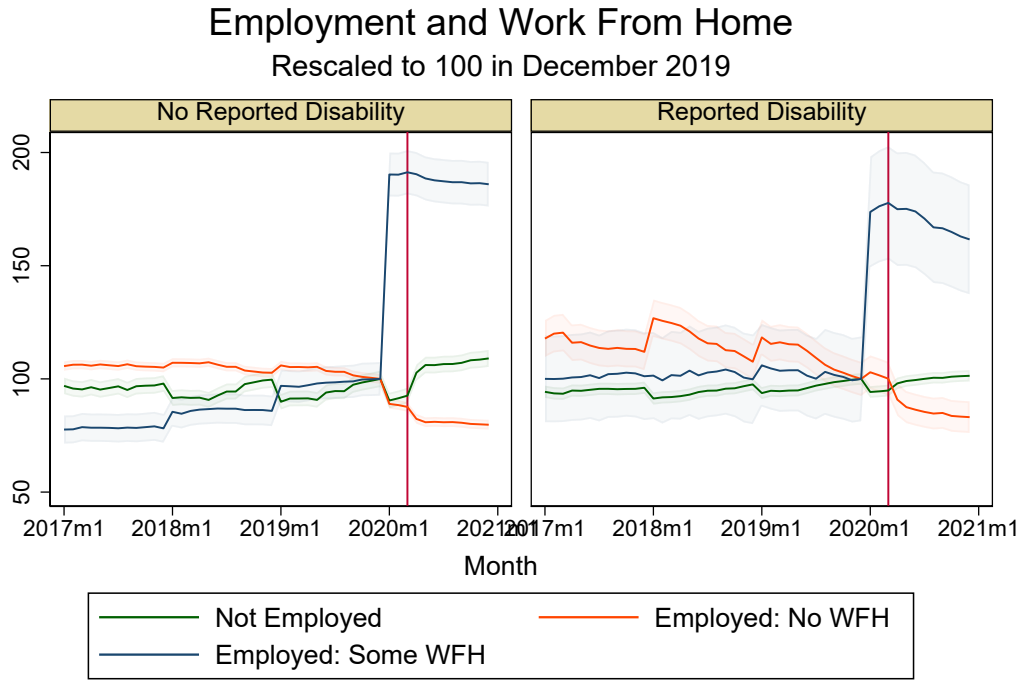
To better understand the employment and work-from-home patterns observed in Section 5.2, we now consider the selection of PWD into "teleworkable" occupations. Ne'eman and Maestas (2022) find evidence that employment growth for PWD outpaced that of their non-PWD counterparts as early as the third quarter of 2021, mainly due to higher labor force

[22] Appendix Figure D.3 depicts the trends in the number of days working from home, the proportion with any days working from home for those in employment, and the proportion whose primary commute mode is work from home. Across all three measures, we see a higher incidence of work from home for those reporting a disability before COVID appeared in 2020, with similar levels of work from home for those in employment who report a disability compared with those who do not.



Source: SIPP; Four year longitudinal weights

(a)



Source: SIPP; Four year longitudinal weights

(b)

Figure 5.4

participation. The increase they estimate is concentrated in essential, teleworkable, and non-frontline jobs. In particular, their study concludes that PWD saw faster growth in jobs amenable to telework with PWD employment outpacing non-PWD employment by 18.6% by the second quarter of 2022. With the caveat that the available time frame on the SIPP does not allow for direct comparisons of estimates, we compare the employment patterns and composition of the PWD population working on telework amenable jobs, following the definitions in Dingel and Neiman (2020) also used by Ne'eman and Maestas (2022).

Once more, define three mutually exclusive employment groups at each surveyed month:

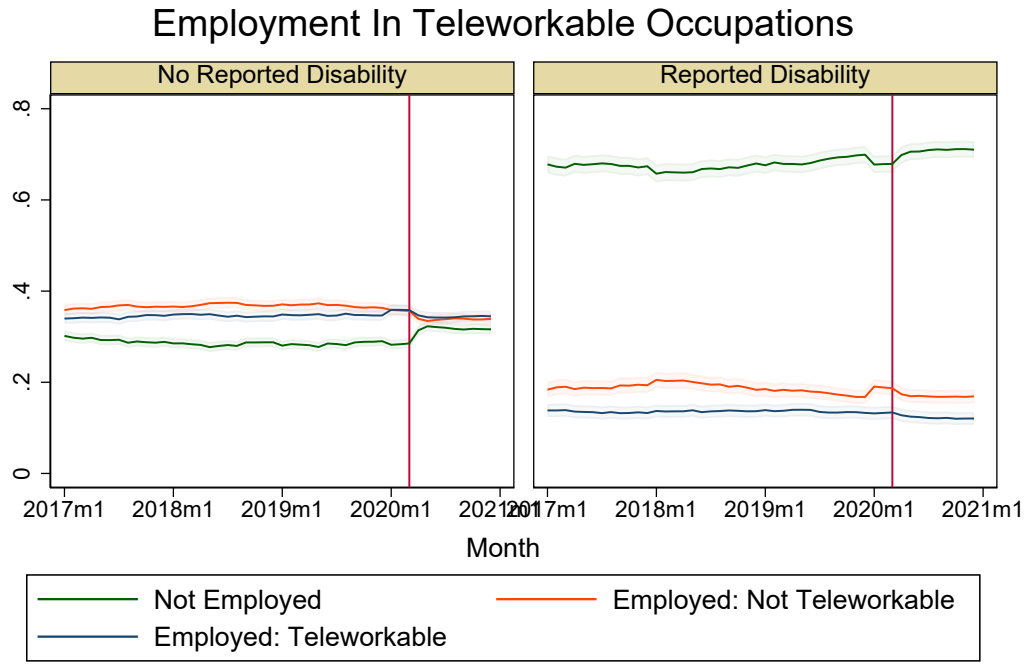
1. Not Employed
2. Employed: Not in a Teleworkable Occupation
3. Employed: Teleworkable Occupation

Figure 5.5a illustrates the trend in the proportion of each of these groups separately for those who report a disability and those who do not. We see that before COVID, a higher share of people are employed in teleworkable jobs among those who do not report a disability – though this likely captures generally higher employment for this group. Figure 5.5b presents the proportion of employed individuals in teleworkable occupations by disability reporting status. Before and during the pandemic, non-teleworkable occupations are more prevalent among employed PWDs. Meanwhile, the proportions are much more similar for those not reporting a disability, becoming more than 50% after March 2020.

Note that in Figure 5.5a the discernible increase in the share of PWD employed in non-telework occupations and decrease in non-PWD employed in telework jobs in January 2020 matches the noticeable decline in Figure 5.5b for the proportion of disabled workers in teleworkable occupations in 2020 (with a concomitant slight increase in the share of teleworkable occupations among employed people without disabilities). The 3.3 percentage point drop from December 2019 to January 2020 for those reporting a disability is statistically different from the 1.2 percentage point increase for those without a disability at the 10% level (p-value=0.071), suggesting that the two groups experienced different trends in occupational composition with COVID. This sheds light on the observed increase in disability reporting by people with higher likelihoods of employment established in Section 5, pointing out that those holding non-teleworkable jobs disproportionately joined the ranks of PWD during 2020. This is suggestive evidence that some respondents holding non-teleworkable jobs might have experienced worsening employment conditions during 2020.

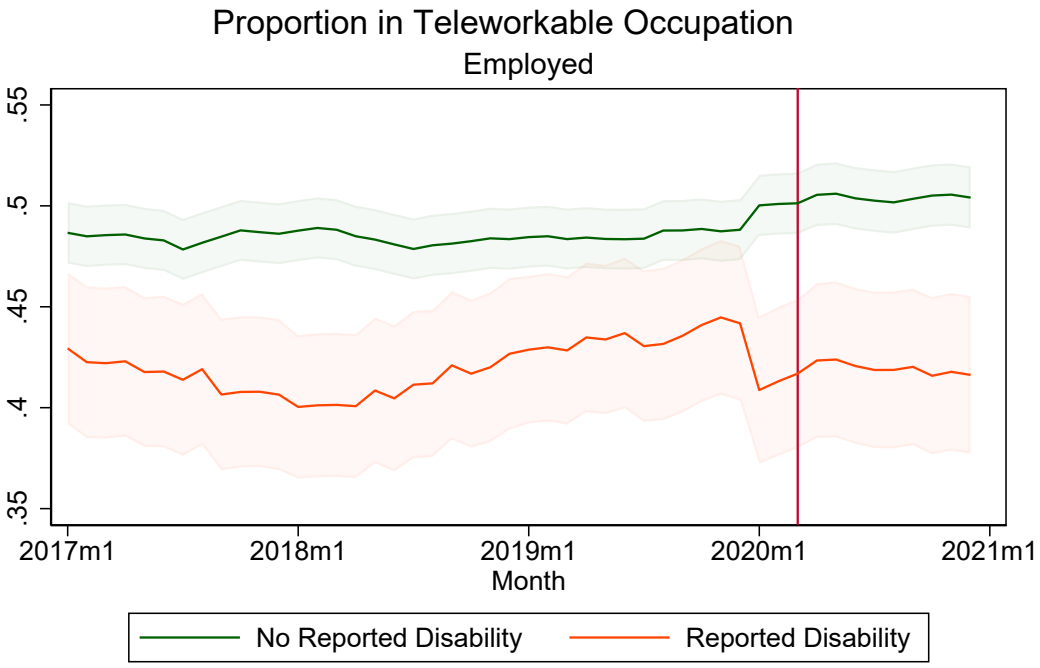
Both the lower relative employment in teleworkable occupations and this decline in 2020 among employed PWD may explain the smaller relative increases in work-from-home found above – and are suggestive of changes with COVID that may not have been advantageous for promoting employment for PWD.

Figure 5.6 considers the changes in employment by teleworkable occupations for different reported impairment types. The proportions in the three employment groups are set to 100 in December 2019 to focus attention on the relative changes for each impairment type. Several interesting patterns emerge. First, except for hearing disabilities, there seems to be (statistically insignificant) increases in the share of workers in non-teleworkable occupations in January 2020, in line with the increases in PWD status reporting by individuals with stronger labor market histories described in sections 4 and 5. After March 2020, there is a decline in



Source: SIPP 2018 panel with four year longitudinal weights;
Teleworkable data from Dingel and Neiman (2020)

(a)



Source: SIPP 2018 panel with four year longitudinal weights;
Teleworkable data from Dingel and Neiman (2020)

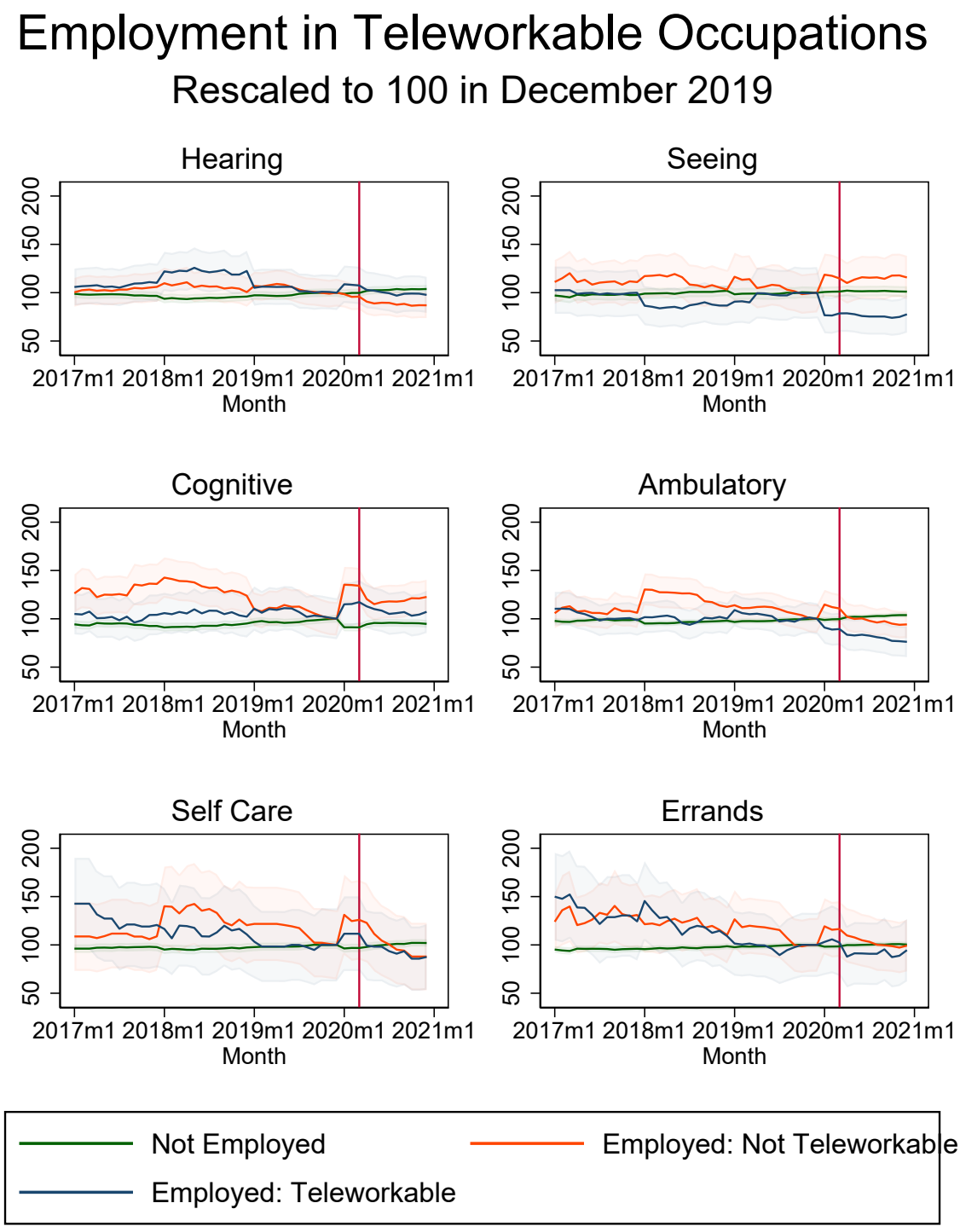
(b)

Figure 5.5

employment for all types of jobs and across disability types, with a general pattern of lower relative employment losses at teleworkable occupations over 2020, as might be expected given the nature of lockdowns and measures to contain the spread of COVID-19.

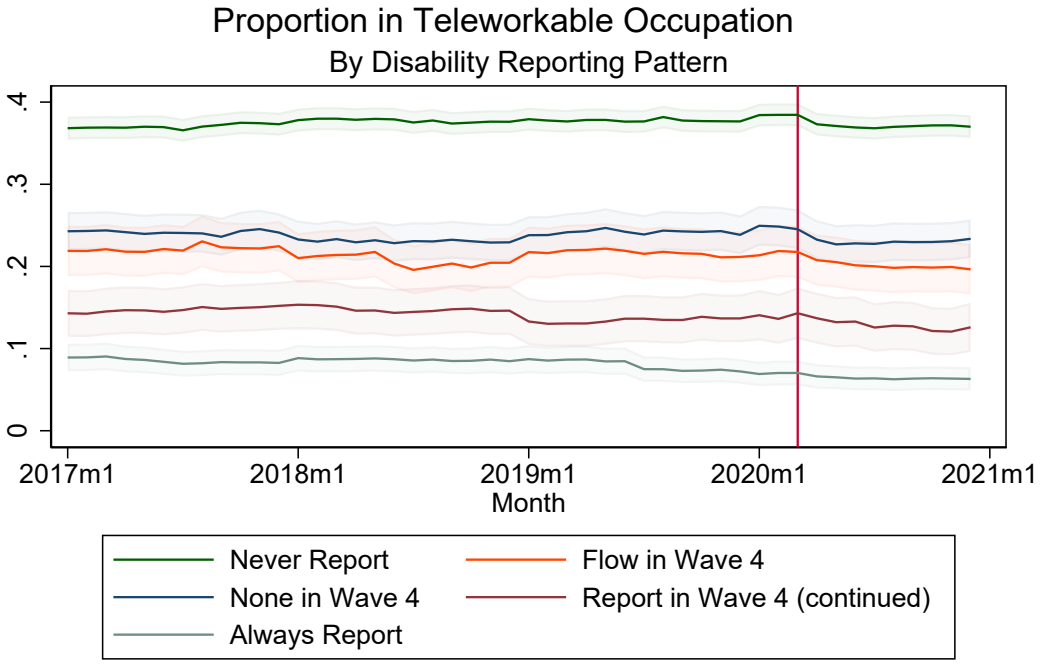
Consistent with previous evidence on the inflow of individuals with higher employment rates reporting cognitive difficulties in Wave 4 of the 2018 SIPP panel, we see increases in the proportion employed in both types of occupations in January 2020. That trend is followed by strong relative declines in employment in non-teleworkable occupations for the same group after March 2020. Indeed, the decline from March 2020 to April 2020 is 9.3 points smaller for the teleworkable occupations than the non-teleworkable ones (p-value=0.066). Interestingly, after the initial drop in employment, job losses for the cognitively impaired are subdued in teleworkable occupations, and employment rose in non-teleworkable positions later in the year, a phenomenon that seems unique to this disability group. Finally, while those reporting self-care difficulties show an increase in both types of occupations at the start of 2020, both proportions decline during 2020 – matching the relative declines over the year for the other impairment types.

The previous figures combine changes in occupation types for respondents with changes in the composition of who is reporting a disability in the SIPP. To disentangle changes in PWD composition from occupation mix, we once again divide the sample based on the disability reporting patterns found in Table 5.1. Figure 5.7a shows the proportion of each reporting pattern group employed in a teleworkable occupation over time. Two facts stand out. First, among those who report a disability in Wave 4 (Always Report, Report in Wave 4 - continued, and Flow in Wave 4), those who flow into reporting a disability in Wave 4 have the highest propensity to be employed in teleworkable occupations throughout the panel – typically around 8 and 13 percentage points higher than the Always Report and Continued Reporting groups before COVID. Second, while there are slight declines in the proportion in 2020 for each group, these are small relative to the level differences across groups, suggesting that selection into reporting may be more important for the previous trends than changes in occupation within reporting groups.



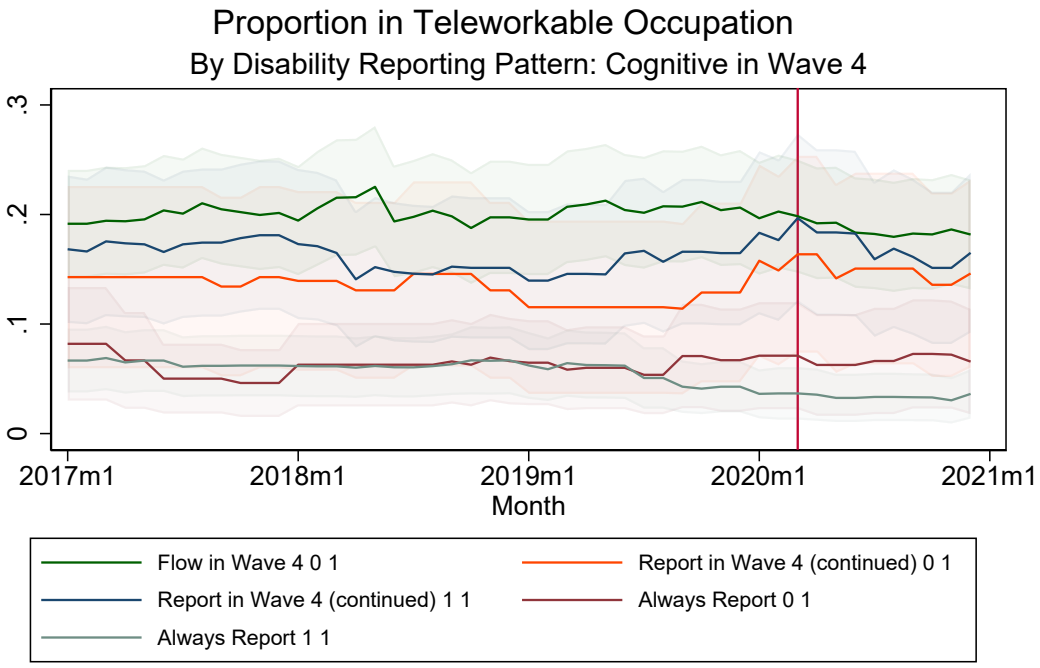
Source: SIPP 2018 panel with four year longitudinal weights;
Teleworkable data from Dingel and Neiman (2020)

Figure 5.6



Source: SIPP 2018 panel with four year longitudinal weights;
Teleworkable data from Dingel and Neiman (2020)

(a)



Source: SIPP 2018 panel with four year longitudinal weights;
Teleworkable data from Dingel and Neiman (2020)

(b)

Figure 5.7

6 SSDI

This section examines the general patterns in SSDI claiming, composition, and mortality and how they changed during 2020 and 2021 as the pandemic and its consequences unfolded by exploring both the SIPP and DAF-PUF datasets.

The population of SSDI claimants naturally has more volatile participation in employment given the general health difficulties associated with being awarded SSDI, the work requirements associated with its receipt, and the income guarantee provided by participation in the program. During the onset of the pandemic the more precarious connection with the labor force by SSDI claimants, potentially exacerbated by higher perceived health risk posed associated with COVID by SSDI recipients, led to stronger relative declines in employment levels among SSDI claimants than observed among non-claimants as shown in Figure 6.1, reversing an upward trend in employment rates among SSDI recipients since the start of the SIPP panel in 2017.[23]

6.1 SSDI in SIPP

As described in previous sections, the composition of those reporting disabilities has changed substantially during the first year of the pandemic. In this section, we examine if these changes in disability reporting filter into compositional changes in SSDI claimants. Table 6.1 presents the share of SSDI claimants for the population aged 16 and older (column 1), for those in each core disability group (columns 2-7), and for those who do not report disabilities (column 8) across the reference years covered by the 2018 SIPP panel.

Recall that due to SIPP's longitudinal setting, we expect a steady increase in the share of individuals claiming SSDI as the panel ages and claims get processed, which is indeed the case looking at the overall share of SSDI claimants in column 1. Interestingly, the share of SSDI claimants among those reporting each type of core disability and the changes over 2017-2020 follow different paths. Some of the decreases in the share of SSDI claimants among PWD (and increase among those with no disability) align with the increase in reported disability by individuals with higher labor force attachment and (likely) better health. In particular, the share of SSDI claimants among those with cognitive disabilities dropped in 2020 to its

[23] Employment for SSDI claimants faced a steeper relative decline compared with PWD in general as well, see Figure 5.1a.

Table 6.1

SSDI Claims by Reference Year

	SSDI	Hearing	Seeing	Cognitive	Ambulatory	Self Care	Errands	No Disability
2017	0.0374	0.1722	0.1931	0.4491	0.6174	0.2663	0.4243	0.1648
	(0.0017)	(0.0156)	(0.0175)	(0.0227)	(0.0225)	(0.0201)	(0.0225)	(0.0163)
2018	0.0430	0.1700	0.1845	0.4230	0.5452	0.2483	0.4271	0.2157
	(0.0018)	(0.0160)	(0.0158)	(0.0216)	(0.0216)	(0.0185)	(0.0215)	(0.0177)
2019	0.0447	0.1707	0.1869	0.4233	0.5920	0.2529	0.4508	0.1867
	(0.0019)	(0.0146)	(0.0161)	(0.0213)	(0.0213)	(0.0183)	(0.0213)	(0.0156)
2020	0.0462	0.1724	0.1847	0.3946	0.5529	0.2743	0.4350	0.2156
	(0.0019)	(0.0152)	(0.0163)	(0.0206)	(0.0212)	(0.0182)	(0.0207)	(0.0177)

Source: 2018 SIPP panel with four-year longitudinal weights
Standard Errors in parentheses

lowest level since the start of the panel. However, part of the decrease could also be due to reduced access to SSA offices and delays in processing and disability claims assessment. For other types of disabilities, the declines in 2020 bring the share to values previously observed in the 2017-18 reference years.

Figure 6.2 depicts the employment by month for SSDI beneficiaries separately by reported core disability type – as well as for SSDI beneficiaries with no reported disability type and those who do not receive SSDI. A few patterns emerge. First, as is expected given the aforementioned work and health requirements for receiving SSDI, the employment rates across disability types for those receiving SSDI are more homogeneous before COVID – and lower than many of the corresponding groups that do not receive SSDI. Those who report receiving SSDI and experiencing cognitive difficulties show an increase in employment at the start of 2020 that falls after the outset of COVID. This pattern is similar to the wider group reporting cognitive difficulties regardless of SSDI receipt we considered previously. Finally, we note the large increase in employment for those reporting SSDI receipt and self-care difficulties at the start of 2020. Interestingly, even after the outset of COVID, employment stays higher throughout 2020 than pre-COVID levels for this group. However, the relatively wide confidence intervals suggest caution in drawing strong inferences.

6.2 SSDI in DAF-PUF

6.2.1 Mortality for SSDI Claimants

Vulnerable populations, such as those reporting disabilities, were at increased risk during the pandemic, both by the nature of COVID itself – many health conditions related to disability reporting would also increase the risk of severe COVID and mortality – and by the reduced access to medical care facilities and routine visits to manage chronic conditions during the public health crisis. We use the Disability Analysis File Public Use File (DAF PUF) data released by the U.S. Social Security Administration. This dataset allows us to investigate mortality statistics for those in SSDI rolls. The most recent release of the DAF PUF covers 2021, allowing analysis to cover a longer period than the SIPP. We focus on the monthly survival rate for active claimants in January each year (allowing their claimant status to change throughout the calendar year). Figure 6.3 depicts the monthly survival curves by year from 2012 until 2021. Importantly, we see that the eight pre-COVID years exhibit very similar survival curves, while the two COVID years, 2020 and 2021, show much steeper curves indicating higher mortality rates for SSDI claimants during the pandemic. The annual mortality rates in 2020 and 2021 are 0.40 and 0.55 percentage points higher, respectively, than in 2019.

We can further divide the sample by the SSA's primary diagnosis code to look at differential impacts on survival across impairment types. Specifically, the DAF PUF categorizes four-digit diagnosis codes into eight reported groups:[24]

1. Autistic disorders; developmental disorders; or childhood and adolescent disorders not elsewhere classified;

2. Intellectual disability;

[24]Source: U.S. Social Security Administration, Office of Retirement and Disability and Policy, Office of Research, Demonstration, and Employment Support. (2021)

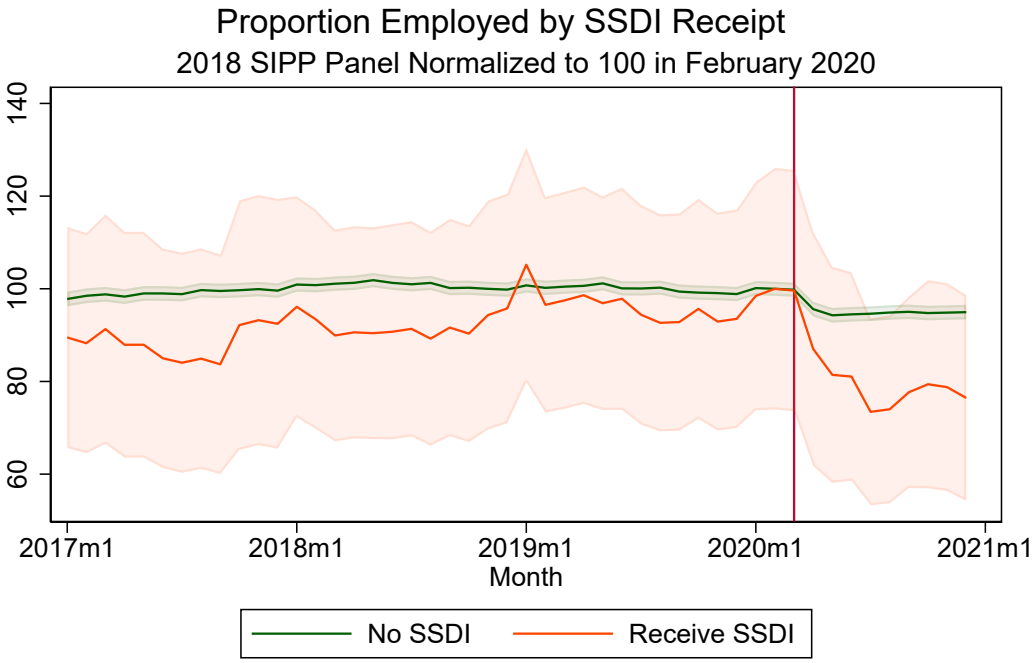
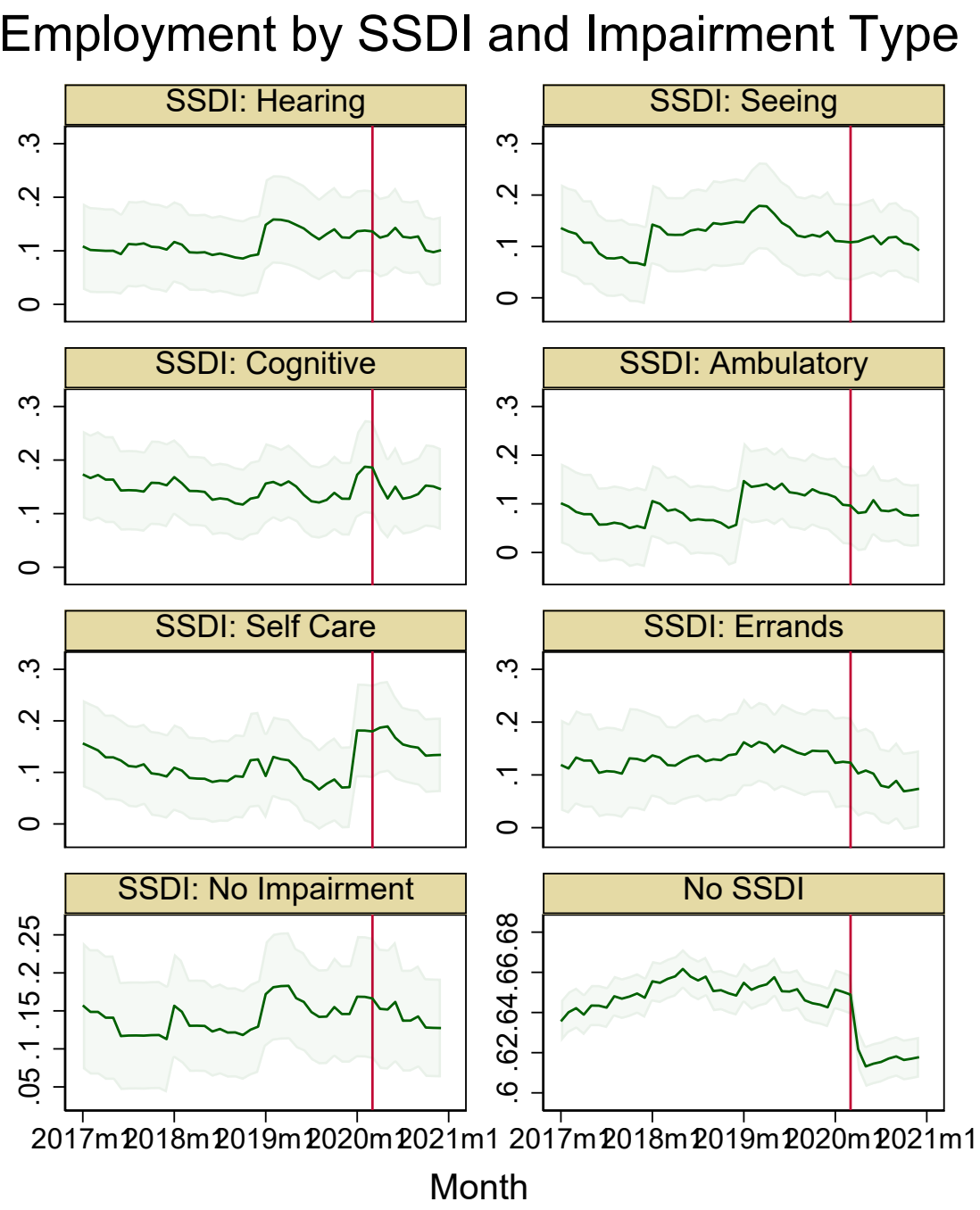

Proportion Employed by SSDI Receipt
2018 SIPP Panel Normalized to 100 in February 2020
140
120
100
80
60
2017m1
2018m1
2019m1
2020m1
2021m1
Month
No SSDI
Receive SSDI
Source: SIPP; Four year longitudinal weights; Disability reported at time of interview;
Age 16+ at reference period

Figure 6.1



Source: SIPP; Four year longitudinal weights;
Disability reported at time of interview;
Age 16+ at reference period

Figure 6.2

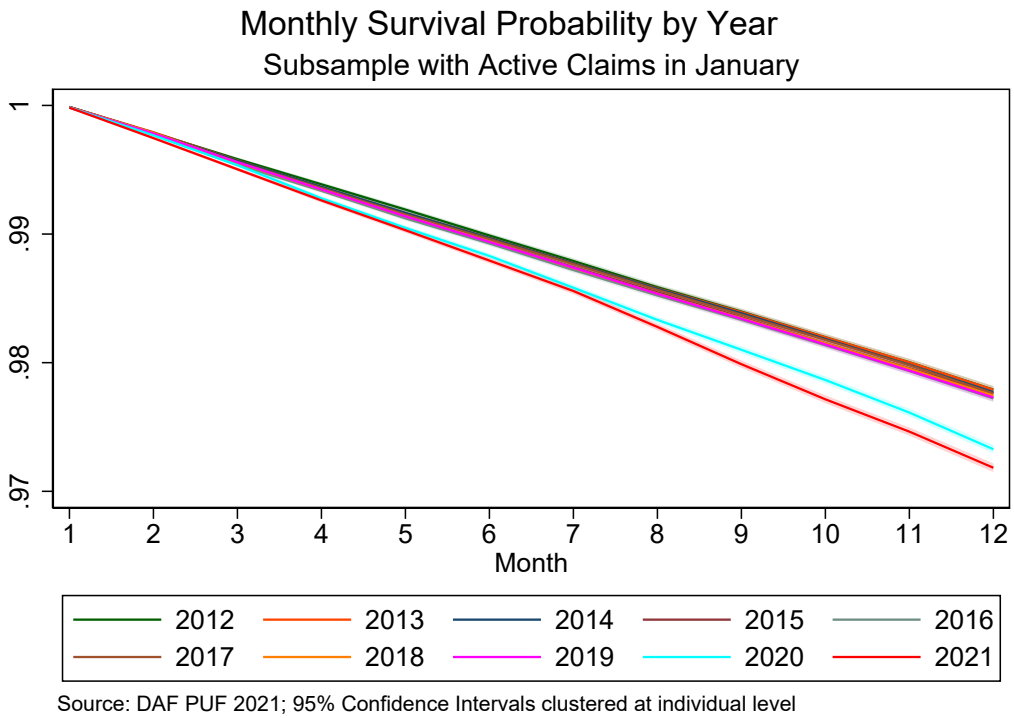

Monthly Survival Probability by Year
Subsample with Active Claims in January
1
.99
.98
.97
1
2
3
4
5
6
7
8
9
10
11
12
Month
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Source: DAF PUF 2021; 95% Confidence Intervals clustered at individual level

Figure 6.3

3. Mood disorders; organic mental disorders; schizophrenic and other psychotic disorders; or other mental disorders;

4. Endocrine, nutritional, and metabolic diseases; circulatory system; digestive system; genitourinary system; nervous system and sense organs; or respiratory system;

5. Musculoskeletal system and connective tissue;

6. Infectious and parasitic diseases or injuries;

7. Congenital anomalies; blood and blood-forming organs; skin and subcutaneous tissue; or other;

8. Unknown value: typically cases with an unknown diagnosis or not enough medical evidence.

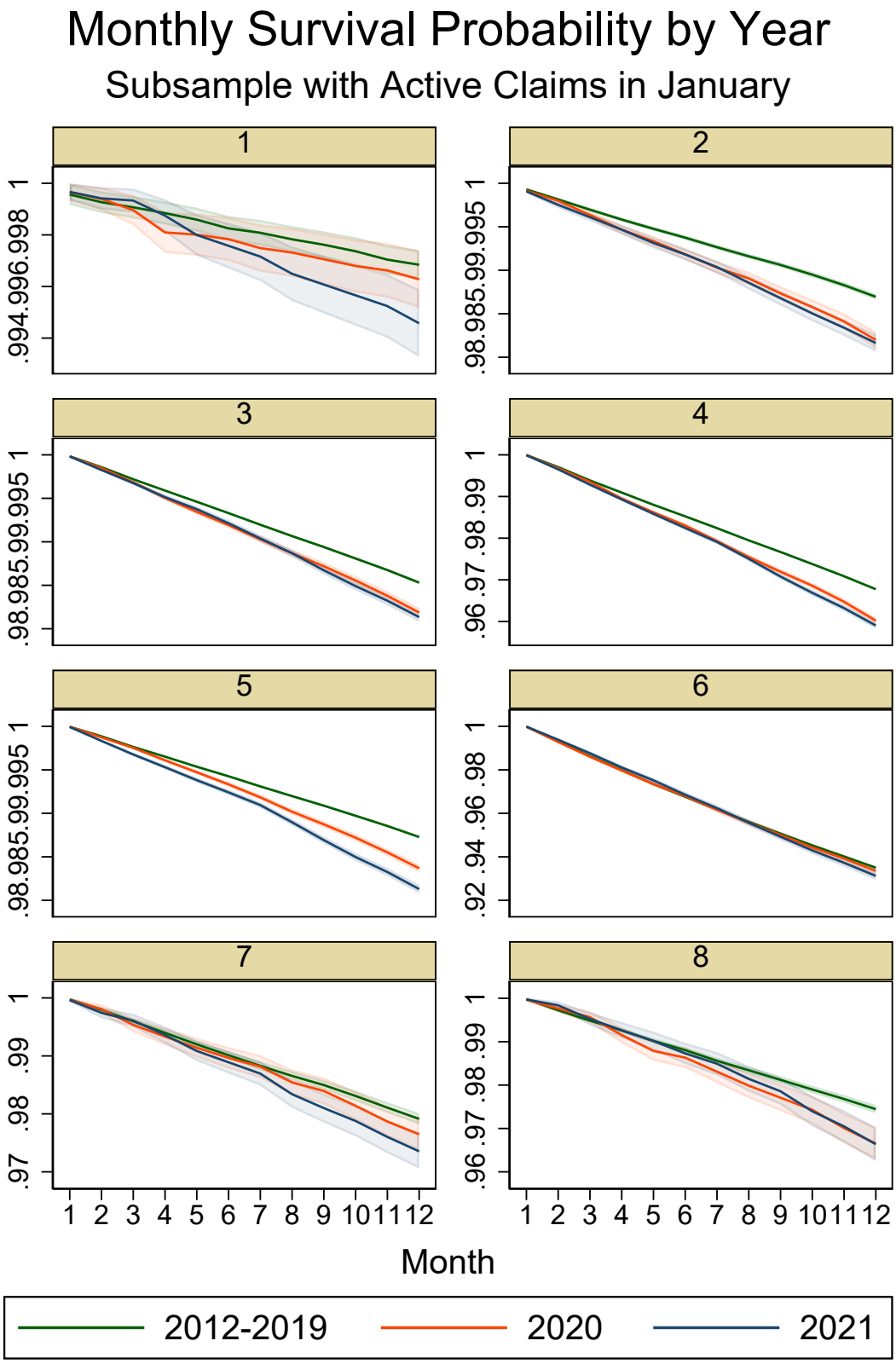
While these broad categories do not match exactly the core disability impairment categories used in the SIPP, they are informative for gauging how differential mortality may have impacted the composition of PWD receiving SSDI. We leave it to future work to fully explore the employment implications of the mortality patterns by diagnosis type. Given the similar aggregate survival probabilities in the eight pre-COVID years, in Figure 6.4 we pool the 2012-2019 period when calculating the diagnosis-specific curves. The graphs show the increased mortality throughout the categories, with sizable differences between pre- and post-COVID periods as reported in Table 6.2, even though the heterogeneity in pre-COVID survival rates across diagnosis types makes it hard to judge the relative importance of the increased mortality for each group in the broader context. That said, the most consistent and pronounced fall in survival rates occurs among those in diagnosis group 4 (Endocrine, nutritional, and metabolic diseases; circulatory system; digestive system; genitourinary system; nervous system and sense organs; or respiratory system) and those in group 8 with unknown diagnosis. An area for future work would be to consider similar patterns for more disaggregated diagnosis groups in the restricted use DAF and to predict the employment probabilities for different diagnoses to consider the employment implications of the mortality-driven compositional changes to SSDI beneficiaries.

6.2.2 Active Claims and Mortality for SSDI Claimants

In this section, we describe how the number of active SSDI claims and their evolution shifted during 2020-21 as the effects of the pandemic unfolded. Figure 6.5a shows the number of active SSDI claims by month of the year normalized to 100 in January of each year from 2017-21.[25] For the pre-pandemic years, there is a relatively stable relationship in the number of active claims throughout the year, as new SSDI claimants flow into receiving SSDI, some leave the DI program, and others die. The pandemic years are clearly distinctive, with fewer active claims in 2020 and a remarkable reduction in active claims for 2021.

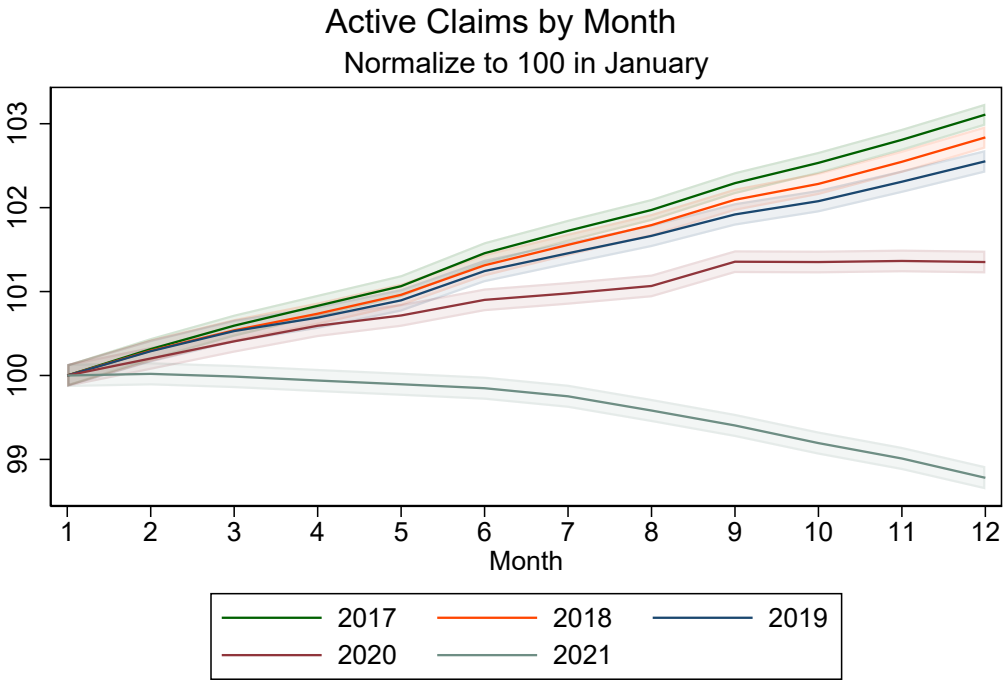
The reduction in SSDI active claims may have multiple sources. Three particular causes that could be related to the pandemic and the response to its effects are (i) increased mortality among SSDI recipients, (ii) reduced inflow of recipients due to lack of access to medical and

[25] Appendix Figure B.3 shows the unnormalized evolution of active claims in the DAF PUF 2021 over these years.

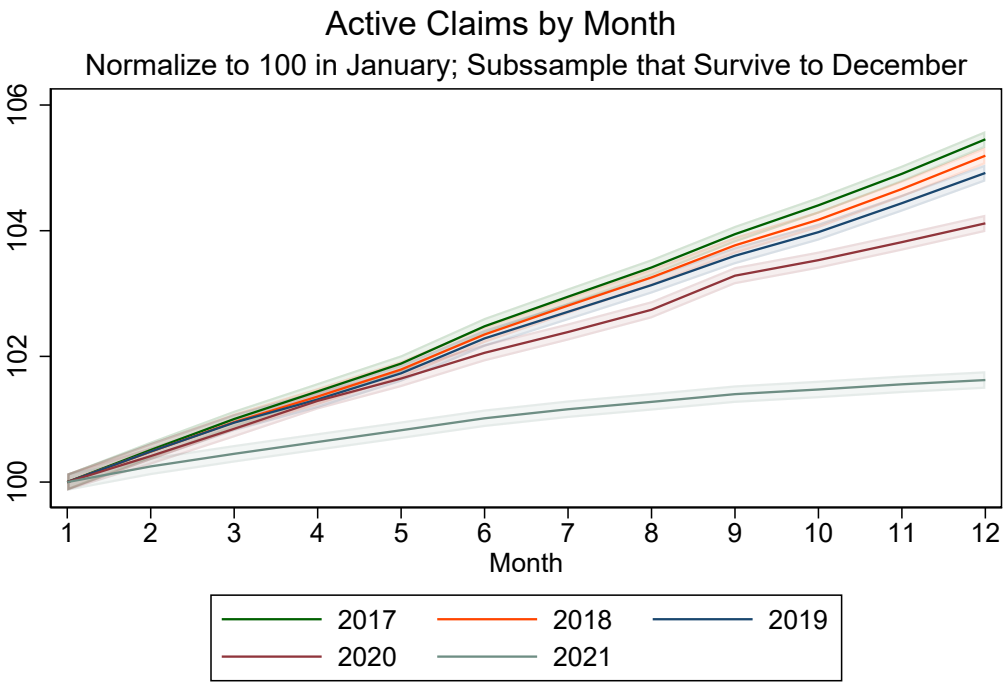


Source: DAF PUF 2021; 95% Confidence Intervals clustered at individual level

Figure 6.4


Active Claims by Month
Normalize to 100 in January
99
100
101
102
103
1
2
3
4
5
6
7
8
9
10
11
12
Month
2017
2018
2019
2020
2021
Source: DAF PUF 2021

(a)


Active Claims by Month
Normalize to 100 in January; Subssample that Survive to December
100
102
104
106
1
2
3
4
5
6
7
8
9
10
11
12
Month
2017
2018
2019
2020
2021
Source: DAF PUF 2021

(b)

Figure 6.5

Table 6.2

December Survival Rate for January Claimants

	Years 2012-2019	Years 2020	Years 2021	Years (2020 vs 2012-2019)	Years (2021 vs 2012-2019)
Primary Diagnosis Group					
1	0.9968	0.9963	0.9946	-0.0006	-0.0023***
2	0.9870	0.9820	0.9816	-0.0050***	-0.0053***
3	0.9853	0.9819	0.9813	-0.0034***	-0.0040***
4	0.9677	0.9602	0.9590	-0.0075***	-0.0087***
5	0.9873	0.9837	0.9813	-0.0036***	-0.0060***
6	0.9350	0.9336	0.9312	-0.0014	-0.0037***
7	0.9791	0.9765	0.9735	-0.0026*	-0.0056***
8	0.9745	0.9665	0.9664	-0.0079***	-0.0081***

*** p<.01, ** p<.05, * p<.1, p<1 for test of difference with 2012-2019
Source: 2021 DAF PUF

SSA services necessary to start, process, and finalize SSDI claims, and (iii) reduced reliance on SSDI insurance as a safety net for those who relied on pandemic relief funds disbursed by the government. While a full analysis of the drivers of the reduction of active SSDI claims during the COVID-19 pandemic is beyond the scope of this study, we provide an initial analysis that can clarify some interesting aspects. As described in Section 6.2.1, mortality rates for SSDI claimants increased substantially in 2020 and 2021. The relative importance of the increased mortality in the active SSDI claim rolls can be gauged by comparing the evolution of active claims by month of the year only among those claimants who survived until December, with any remaining difference between years due to other factors. Figure 6.5b replicates the previous graph for this subpopulation and suggests that higher mortality was an important factor in the differences between pre- and post-pandemic active SSDI claims, especially after September 2020, as seen by the increased slope of the curves afterward.

Nevertheless, even after considering only claimants who survived the whole year, there are still large differences in the evolution of active claims in 2020 and 2021 compared with the years before the crisis. Future work can further investigate the sources of these differences, including possible delays in new beneficiary processing times associated with COVID lockdown closures of SSA offices.

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A 2021 SIPP SSA Supplement: Relationship between six core disabilities and detailed ailments

In this Appendix, we provide some initial exploration of the relationship between the six core disabilities we have relied upon to define individuals reporting disabilities and more detailed ailments contributing to their status as PWD.

In the 2021 SIPP panel, the SSA sponsored an extra set of questions about disability – including whether the respondent had difficulty sitting, lifting, grasping, learning/developmental, mental/emotional conditions, and long-term (≥12 months) health conditions. Furthermore, those who responded in the affirmative to any of the main core questions or the additional SSA disability questions were asked to report up to three conditions that cause that difficulty.[26] Here, we use the more detailed disability information in the 2021 survey to better understand what might be captured by the six core disability type questions we observe in each wave, helping establish how we should interpret changes in the core disability types. For instance, how much does the difficulty with errands relate to physical or emotional impairments?

To start, we estimate a system of Seemingly Unrelated Linear Probability Models (LPM) for reporting each core disability measure as a function of the following additional impairment types found in the 2021 SSA supplement: difficulty sitting, lifting, grasping, learning/developmental, mental/emotional conditions.[27] Standard errors are calculated to allow for correlations across core-type equations for an individual (i.e., the error term in the ambulatory LPM for person i is allowed to be correlated with the error term in the cognitive equation for person i).

Table A.1

LPM Estimates of Predictors of Core Disability Reporting

	Hearing	Seeing	Cognitive	Ambulatory	Self Care	Errands
Sitting 1hr	-0.0281	-0.0069	0.1088***	0.1731***	0.0920***	0.0743***
	(0.0209)	(0.0191)	(0.0218)	(0.0209)	(0.0209)	(0.0239)
Lift/carry 10lb	-0.0683***	0.0159	-0.0274	0.3642***	0.1681***	0.3007***
	(0.0192)	(0.0164)	(0.0190)	(0.0189)	(0.0186)	(0.0206)
Grasping	0.0414*	0.0985***	0.0463**	0.1675***	0.1799***	0.1125***
	(0.0216)	(0.0199)	(0.0227)	(0.0215)	(0.0222)	(0.0230)
Learning	-0.1375***	-0.0299	0.3400***	-0.1943***	0.0308	0.1208***
	(0.0233)	(0.0219)	(0.0255)	(0.0229)	(0.0220)	(0.0297)
Mental/Emotional	-0.0946***	0.0059	0.3452***	-0.0427**	0.0636***	0.1086***
	(0.0195)	(0.0179)	(0.0217)	(0.0192)	(0.0173)	(0.0215)
Intercept	0.3935***	0.1757***	0.2311***	0.3889***	0.0462***	0.1369***
	(0.0127)	(0.0106)	(0.0116)	(0.0123)	(0.0075)	(0.0096)

*** p<.01, ** p<.05, * p<.1, p<1

Source: 2018 SIPP panel with four-year longitudinal weights

Seemingly Unrelated Estimate standard errors in parenthesis

[26] Our analysis in this section is limited by the data since the detailed ailment descriptions are available only for people who reported a disability in the 2021 survey, ruling out comparative analysis across inflow/outflow cohorts.

[27] The average marginal effects from analogous Probit estimates are very similar. A more advanced analysis of which ailments are more likely to induce core disability reporting or SSDI application is an interesting question that we leave to future work.

For the hearing core disability, we see negative coefficients for all of the impairment types except difficulty grasping, which is a relatively small 4.1 percentage point increase in the probability of reporting hearing difficulties when also reporting trouble grasping. In contrast, we see large positive coefficients of over 34 percentage points in the probability of reporting Cognitive difficulties for those who report Learning or Mental/Emotional difficulties and a smaller positive coefficient of 10.9 percentage points for Sitting one hour. For ambulatory, the biggest predictors are sitting, carrying 10 lbs, and grasping. Similarly, Self Care reported disabilities are predominately predicted by difficulty in sitting, difficulty in lifting/carrying 10lbs, and grasping. Reporting difficulties with errands is predicted by a mix of both mental/emotional and physical impairments.

Next, we conduct a similar analysis using the more detailed reported conditions. For each individual, the SIPP reports up to three conditions. We create an indicator variable for reporting a particular condition across any of the three reported conditions. Table A.2 displays the LPM estimates. Interestingly, respondents who list COVID among the three detailed impairments are statistically significantly more likely to report cognitive, ambulatory, and self-care. In addition to COVID, we see that respondents are (statistically significantly) more likely to report cognitive impairments if they report dementia, epilepsy, other neurological, anxiety, depression, trauma, bipolar, other mental/emotional, ADD/ADHD, autism, intellectual, other neurodevelopmental, cancer, immune, or pain.

Table A.2: LPM Estimates of Predictors of Core Disability Reporting: Detailed Impairment Types

	Hearing	Seeing	Cognitive	Ambulatory	Selfcare	Errands
Back or spine problems	0.0219	-0.0557***	-0.0012	0.1933***	0.0665**	0.0525*
	(0.0281)	(0.0215)	(0.0283)	(0.0257)	(0.0263)	(0.0297)
Arthritis	-0.0228	-0.0113	-0.0985***	0.1956***	0.0312	0.0267
	(0.0240)	(0.0222)	(0.0259)	(0.0257)	(0.0233)	(0.0274)
Rheumatoid Arthritis	0.0074	-0.0152	0.0236	0.2222***	0.2020***	0.1370*
	(0.0652)	(0.0607)	(0.0697)	(0.0464)	(0.0646)	(0.0733)
Musculoskeletal: Other	-0.0709***	-0.0251	-0.0678***	0.2662***	0.0722***	0.1070***
	(0.0247)	(0.0198)	(0.0256)	(0.0245)	(0.0246)	(0.0282)
Vision	-0.1280***	0.5902***	-0.0894*	-0.0442	0.0402	0.1412***
	(0.0381)	(0.0464)	(0.0494)	(0.0564)	(0.0394)	(0.0497)
Hearing	0.5364***	-0.1225***	-0.0322	-0.1762***	0.0446	-0.0266
	(0.0439)	(0.0341)	(0.0497)	(0.0426)	(0.0394)	(0.0390)
Sensory: other	-0.1345**	-0.0055	0.0468	0.2879***	0.1435*	0.1262*
	(0.0547)	(0.0674)	(0.0647)	(0.0595)	(0.0767)	(0.0710)
COPD	-0.0220	-0.0354	-0.0062	0.2305***	0.1439***	0.1897***
	(0.0434)	(0.0360)	(0.0489)	(0.0334)	(0.0473)	(0.0477)
Asthma	-0.1998***	0.0838	0.1242	0.0777	-0.0698	-0.0194
	(0.0392)	(0.0729)	(0.0767)	(0.0749)	(0.0558)	(0.0703)
Respiratory: Other	0.0523	0.0282	-0.0120	0.2036***	-0.0428	0.0834
	(0.0550)	(0.0489)	(0.0539)	(0.0502)	(0.0439)	(0.0559)
Blood pressure	-0.0636	0.0388	-0.0255	0.0580	-0.0670*	0.0049
	(0.0392)	(0.0412)	(0.0439)	(0.0407)	(0.0384)	(0.0505)
Cardiovascular: Other	0.0646**	0.0280	-0.0586*	0.1632***	0.0389	0.0247
	(0.0324)	(0.0280)	(0.0303)	(0.0291)	(0.0291)	(0.0319)
Digestive	-0.0112	-0.0314	0.1320*	-0.0970	0.0242	0.0566

Table A.2: LPM Estimates of Predictors of Core Disability Reporting: Detailed Impairment Types

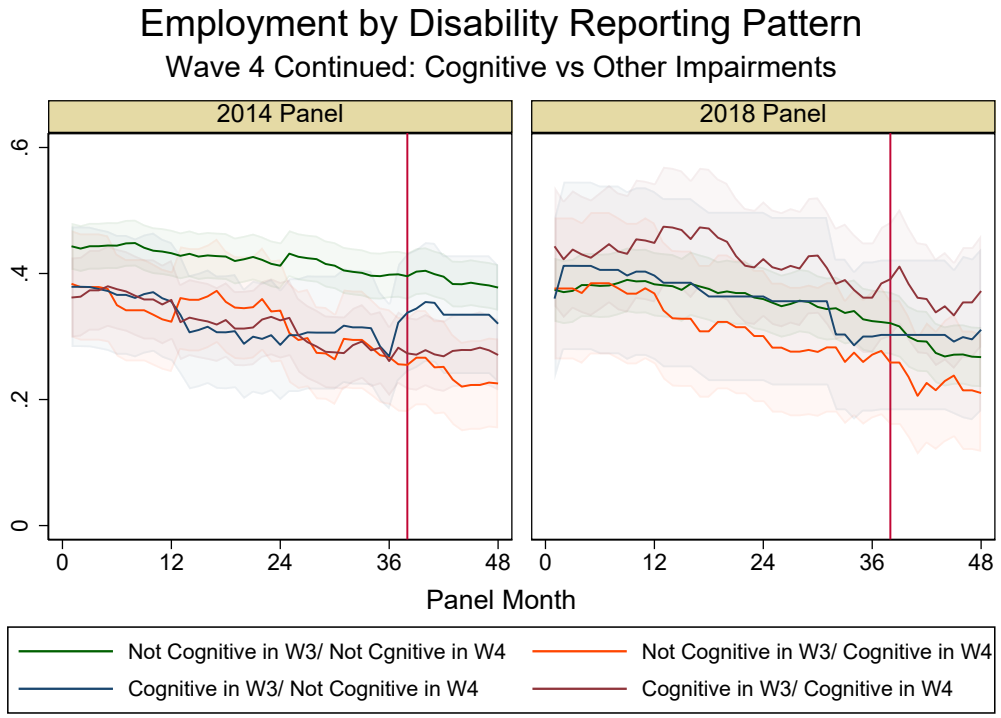
	Hearing	Seeing	Cognitive	Ambulatory	Selfcare	Errands
	(0.0675)	(0.0528)	(0.0775)	(0.0741)	(0.0681)	(0.0798)
Genitourinary	-0.0218	0.0733	0.0126	0.1211**	0.0494	0.1851**
	(0.0573)	(0.0597)	(0.0714)	(0.0616)	(0.0589)	(0.0731)
Diabetes	-0.0350	0.0072	-0.0497	0.1084***	0.0849**	0.1390***
	(0.0379)	(0.0358)	(0.0405)	(0.0390)	(0.0427)	(0.0459)
Endocrine: Other	-0.1647**	-0.0656	0.1219	-0.0124	0.0978	0.1219
	(0.0724)	(0.0805)	(0.1110)	(0.1126)	(0.1146)	(0.1152)
Stroke/Aneurysm	-0.0998**	0.0949*	0.1195**	0.2406***	0.2541***	0.2590***
	(0.0491)	(0.0550)	(0.0601)	(0.0556)	(0.0603)	(0.0634)
Dementia/Alzheimer's	0.2569***	0.0154	0.6309***	0.2148***	0.3875***	0.5946***
	(0.0580)	(0.0452)	(0.0217)	(0.0515)	(0.0574)	(0.0437)
Epilepsy/seizures	-0.0741	0.0523	0.3453***	-0.0368	0.1528*	0.3623***
	(0.0675)	(0.0765)	(0.0670)	(0.0716)	(0.0890)	(0.0790)
Neurological: Other	-0.0782***	0.0232	0.1184***	0.1911***	0.1151***	0.1829***
	(0.0279)	(0.0271)	(0.0307)	(0.0292)	(0.0293)	(0.0314)
Anxiety/OCD	-0.1022***	-0.0883***	0.2113***	-0.1491***	0.0170	0.0748
	(0.0395)	(0.0242)	(0.0397)	(0.0367)	(0.0326)	(0.0458)
Depression	-0.0519*	0.0185	0.2189***	0.0234	0.0323	0.0939**
	(0.0314)	(0.0273)	(0.0348)	(0.0341)	(0.0320)	(0.0409)
Trauma/stressors	-0.0802	0.0201	0.2775***	-0.1671***	0.0098	0.0259
	(0.0655)	(0.0599)	(0.0592)	(0.0497)	(0.0547)	(0.0672)
Bipolar	-0.0554	0.1363*	0.1917**	-0.0324	-0.0515	0.1213*
	(0.0776)	(0.0788)	(0.0810)	(0.0749)	(0.0429)	(0.0704)
Mental/emotional: Other	-0.0423	-0.0329	0.3616***	-0.1644***	0.0826	0.3056***
	(0.0711)	(0.0511)	(0.0464)	(0.0565)	(0.0572)	(0.0800)
ADD/ADHD	-0.0927**	-0.1071***	0.2338***	-0.2133***	-0.0649	-0.0938
	(0.0387)	(0.0343)	(0.0636)	(0.0467)	(0.0469)	(0.0576)
Autism/Asperger	-0.2802***	-0.0158	0.3708***	-0.2395***	0.2354**	0.4433***
	(0.0217)	(0.0725)	(0.0838)	(0.0535)	(0.0930)	(0.0931)
Learning	-0.0516	-0.0937	0.1161	-0.1052	-0.1275**	0.1138
	(0.0898)	(0.0802)	(0.1077)	(0.1101)	(0.0512)	(0.1310)
Intellectual	-0.1461**	0.0000	0.2773***	-0.1478*	0.1490*	0.4315***
	(0.0578)	(0.0686)	(0.0978)	(0.0831)	(0.0812)	(0.0894)
Neurodevelopmental: Other	-0.2100***	0.1212	0.3950***	0.1449	0.3419***	0.3611***
	(0.0748)	(0.1091)	(0.0986)	(0.1233)	(0.1214)	(0.1180)
Cancer/growth	-0.0976**	0.0247	0.1658***	0.1519***	0.1552***	0.2748***
	(0.0440)	(0.0487)	(0.0543)	(0.0481)	(0.0525)	(0.0579)
Immune	-0.0636	-0.1697***	0.1459*	0.0401	0.0148	-0.0703
	(0.0590)	(0.0578)	(0.0829)	(0.0894)	(0.0689)	(0.0697)
Pain	-0.0403	-0.0251	0.1397**	0.2027***	0.1973***	0.1446**
	(0.0490)	(0.0417)	(0.0673)	(0.0620)	(0.0617)	(0.0600)
Aging	0.1363**	-0.0266	-0.0058	0.3069***	0.1038	0.2419***
	(0.0621)	(0.0469)	(0.0603)	(0.0523)	(0.0658)	(0.0707)
COVID	-0.0118	-0.2130***	0.3393*	0.2609**	0.4344**	0.0036
	(0.2346)	(0.0682)	(0.2024)	(0.1144)	(0.1840)	(0.1307)
Other	0.0007	-0.0314	0.1094***	0.1683***	0.1123***	0.1155***
	(0.0384)	(0.0287)	(0.0398)	(0.0412)	(0.0370)	(0.0390)

Table A.2: LPM Estimates of Predictors of Core Disability Reporting: Detailed Impairment Types

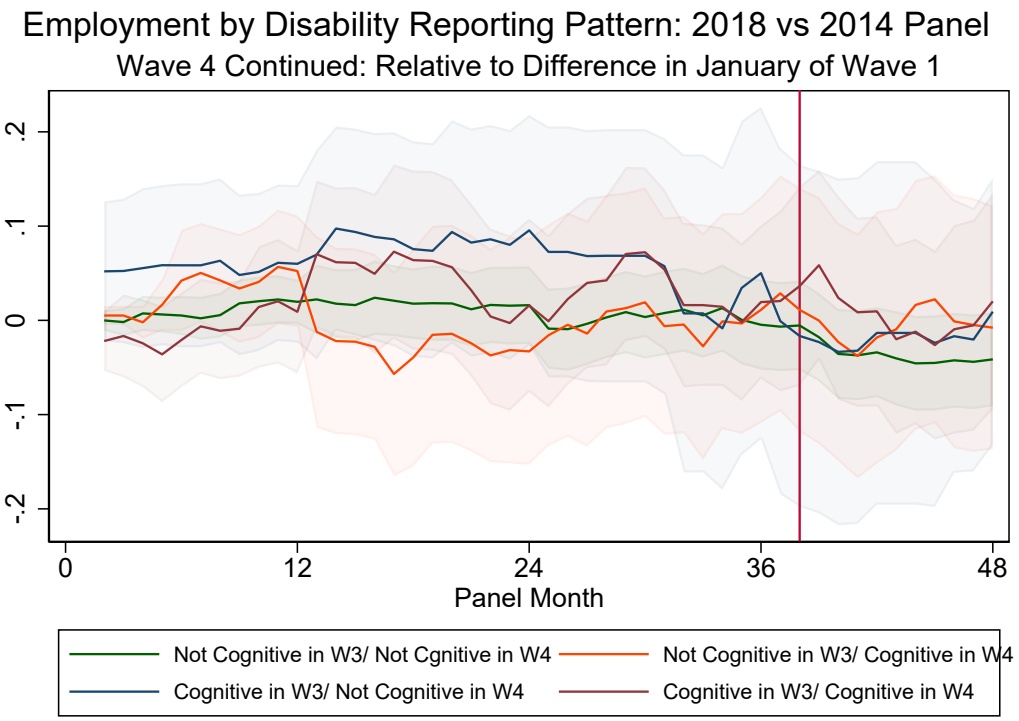
	Hearing	Seeing	Cognitive	Ambulatory	Selfcare	Errands
None	0.0387***	-0.0092	-0.0874***	-0.1172***	-0.0794***	-0.1276***
	(0.0104)	(0.0095)	(0.0114)	(0.0110)	(0.0088)	(0.0101)
Intercept	0.3158***	0.1997***	0.4019***	0.5202***	0.1609***	0.2992***
	(0.0071)	(0.0057)	(0.0078)	(0.0078)	(0.0056)	(0.0070)

*** p<.01, ** p<.05, * p<.1, p<1
Source: 2018 SIPP panel with four-year longitudinal weights
Seemingly Unrelated Estimate standard errors in parenthesis

B Additional Figures

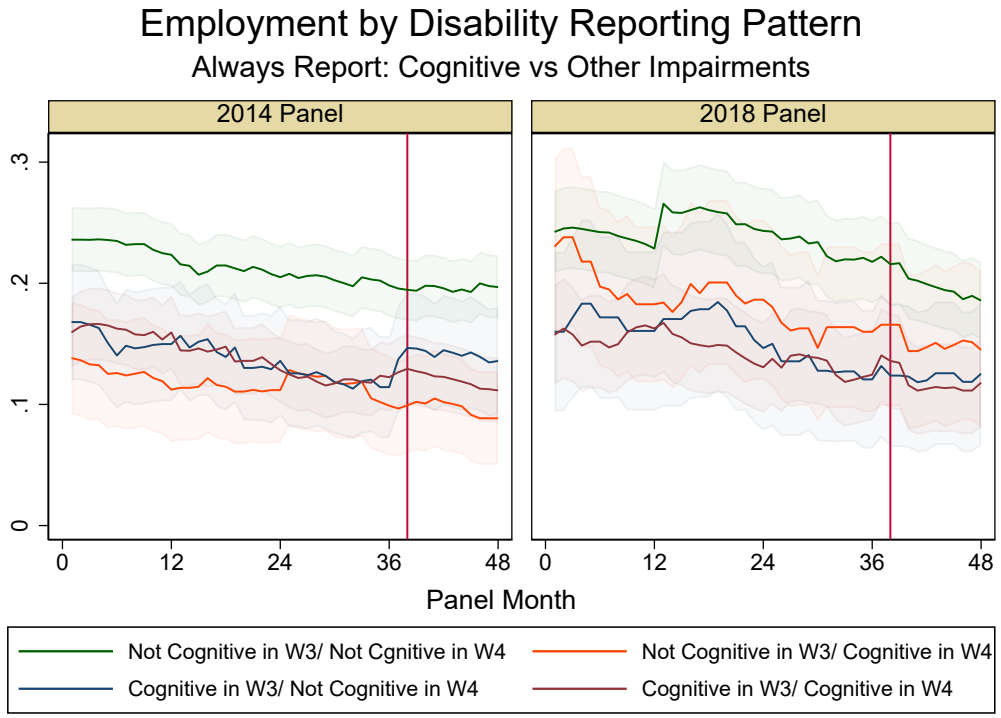

Employment by Disability Reporting Pattern
Wave 4 Continued: Cognitive vs Other Impairments
2014 Panel
2018 Panel
0
.2
.4
.6
0
12
24
36
48
Panel Month
Not Cognitive in W3/ Not Cgnitive in W4
Not Cognitive in W3/ Cognitive in W4
Cognitive in W3/ Not Cognitive in W4
Cognitive in W3/ Cognitive in W4

(a)

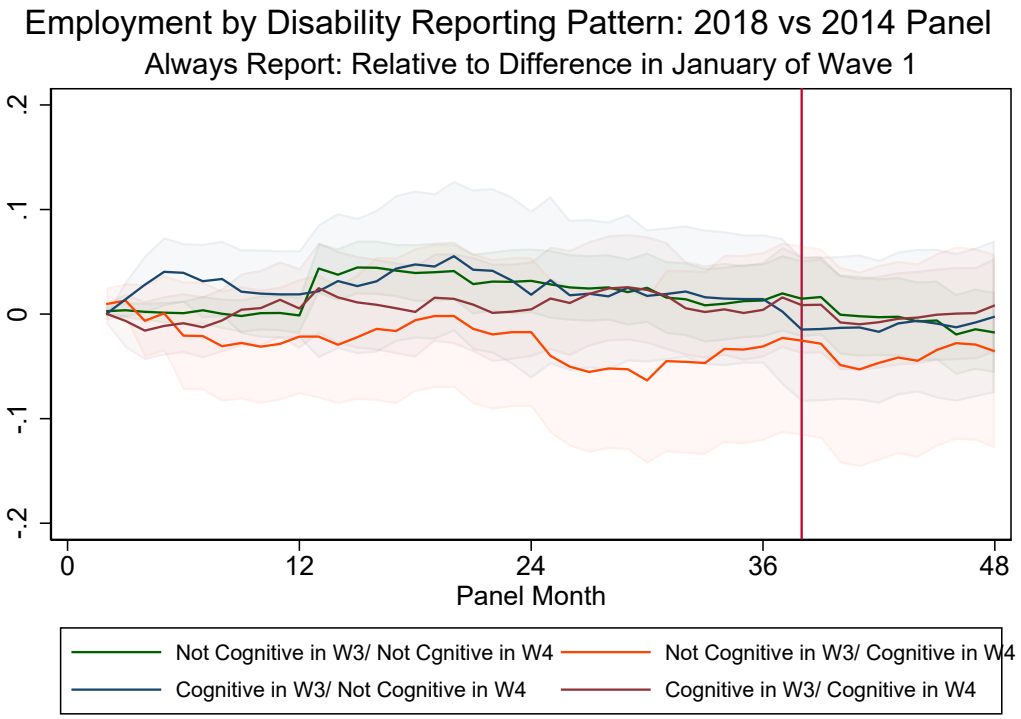

Employment by Disability Reporting Pattern: 2018 vs 2014 Panel
Wave 4 Continued: Relative to Difference in January of Wave 1
-.2
-.1
0
.1
.2
0
12
24
36
48
Panel Month
Not Cognitive in W3/ Not Cgnitive in W4
Not Cognitive in W3/ Cognitive in W4
Cognitive in W3/ Not Cognitive in W4
Cognitive in W3/ Cognitive in W4

(b)

Figure B.1


Employment by Disability Reporting Pattern
Always Report: Cognitive vs Other Impairments
2014 Panel
2018 Panel
0
.1
.2
.3
0
12
24
36
48
Panel Month
Not Cognitive in W3/ Not Cgnitive in W4
Not Cognitive in W3/ Cognitive in W4
Cognitive in W3/ Not Cognitive in W4
Cognitive in W3/ Cognitive in W4

(a)


Employment by Disability Reporting Pattern: 2018 vs 2014 Panel
Always Report: Relative to Difference in January of Wave 1
-.2
-.1
0
.1
.2
0
12
24
36
48
Panel Month
Not Cognitive in W3/ Not Cgnitive in W4
Not Cognitive in W3/ Cognitive in W4
Cognitive in W3/ Not Cognitive in W4
Cognitive in W3/ Cognitive in W4

(b)

Figure B.2

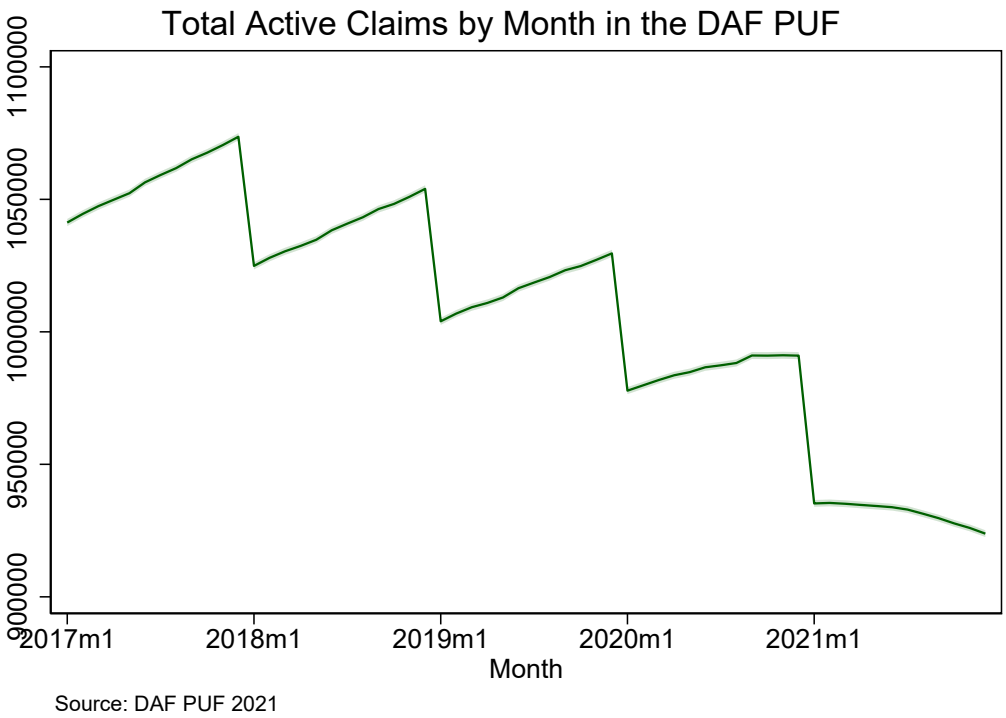
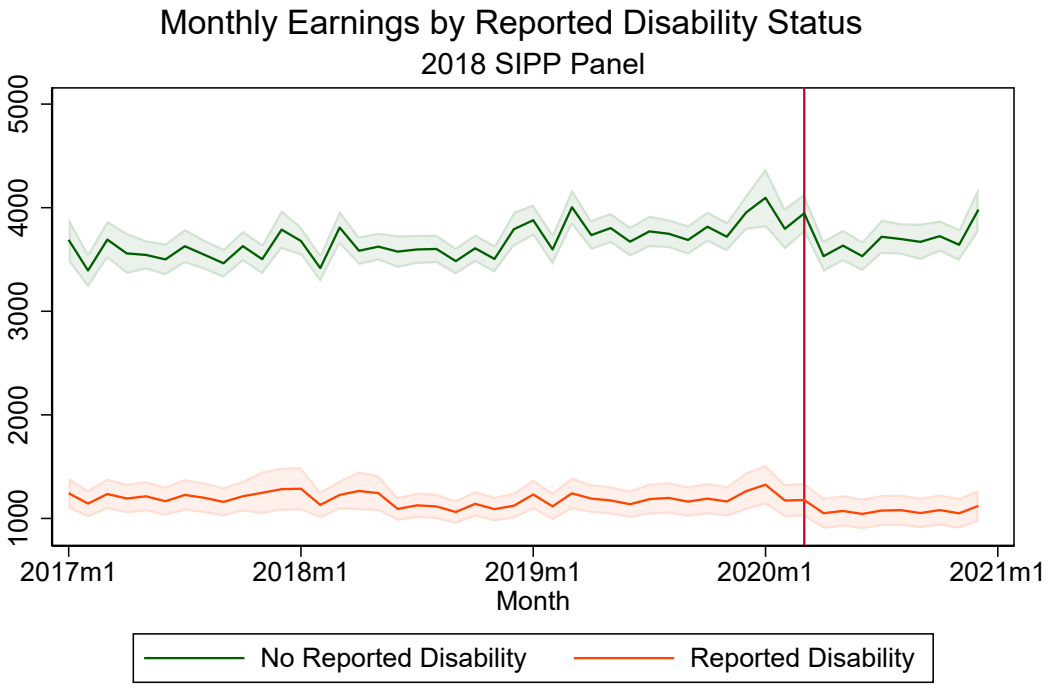
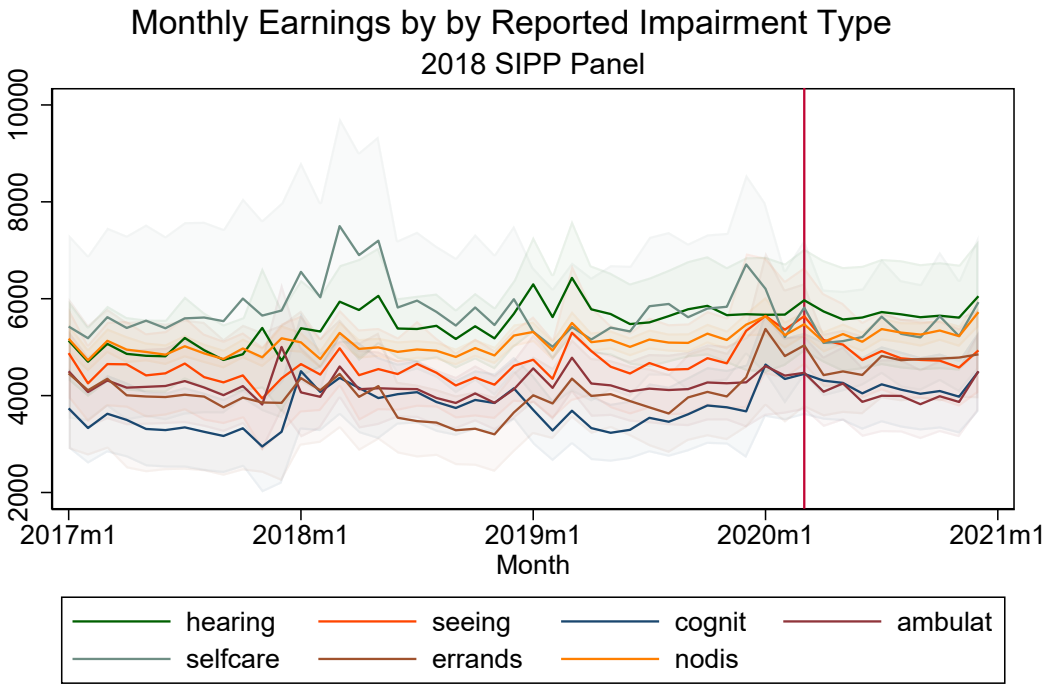

Total Active Claims by Month in the DAF PUF
900000
950000
1000000
1050000
1100000
2017m1
2018m1
2019m1
2020m1
2021m1
Month
Source: DAF PUF 2021

Figure B.3

C Earnings Figures

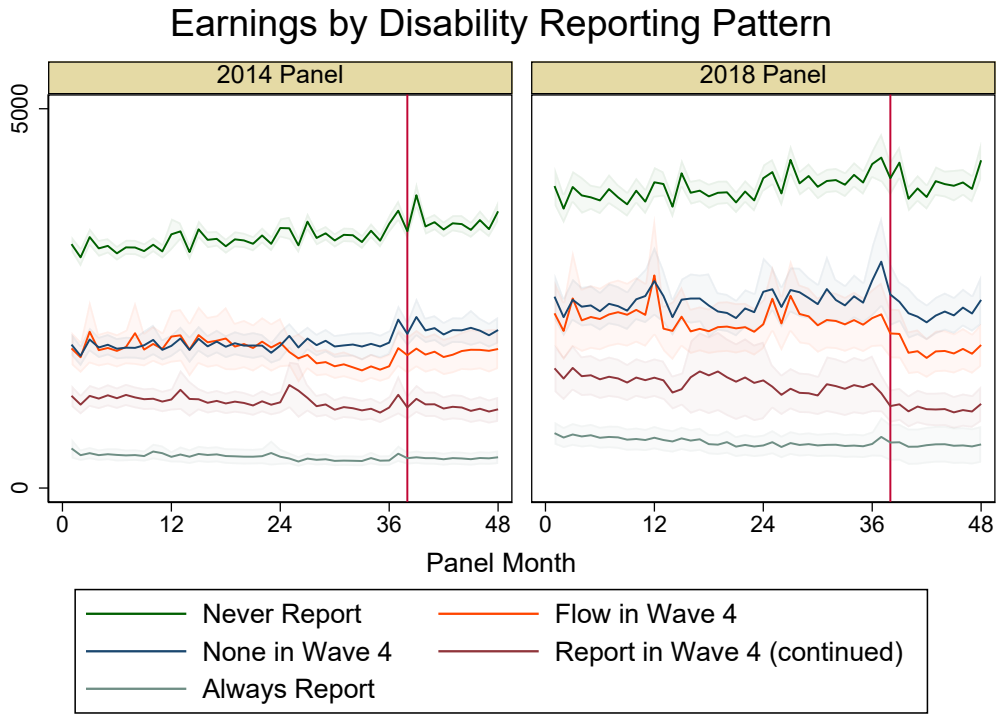

Monthly Earnings by Reported Disability Status
2018 SIPP Panel
1000
2000
3000
4000
5000
2017m1
2018m1
2019m1
2020m1
2021m1
Month
No Reported Disability
Reported Disability
Source: SIPP; Four year longitudinal weights; Disability reported at time of interview; Age 16+ at referen

(a)

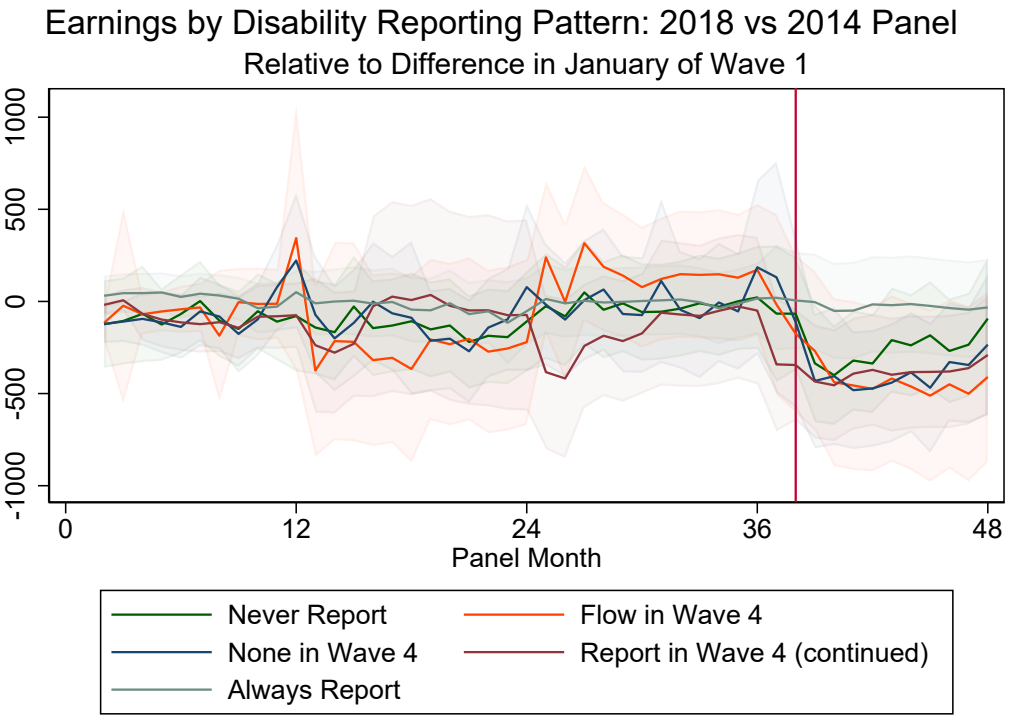

Monthly Earnings by by Reported Impairment Type
2018 SIPP Panel
2000
4000
6000
8000
10000
2017m1
2018m1
2019m1
2020m1
2021m1
Month
hearing
seeing
cognit
ambulat
selfcare
errands
nodis
Source: SIPP; Four year longitudinal weights; Disability reported at time of interview; Age 16+ at referen

(b)

Figure C.1


Earnings by Disability Reporting Pattern
2014 Panel
2018 Panel
5000
0
0
12
24
36
48
Panel Month
Never Report
None in Wave 4
Always Report
Flow in Wave 4
Report in Wave 4 (continued)

(a)


Earnings by Disability Reporting Pattern: 2018 vs 2014 Panel
Relative to Difference in January of Wave 1
1000
500
0
-500
-1000
0
12
24
36
48
Panel Month
Never Report
None in Wave 4
Always Report
Flow in Wave 4
Report in Wave 4 (continued)

(b)

Figure C.2

D Work from Home Additional Figures

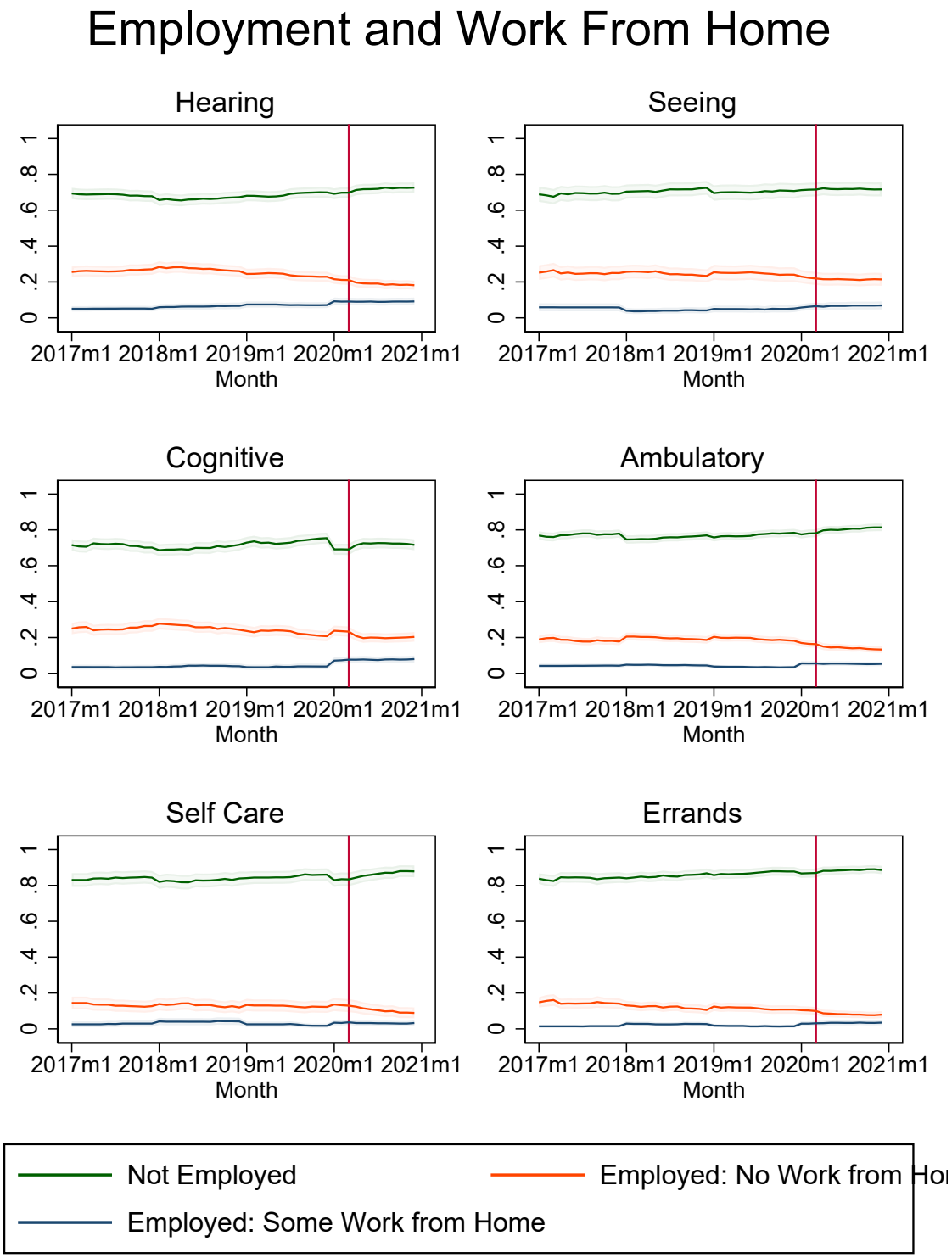
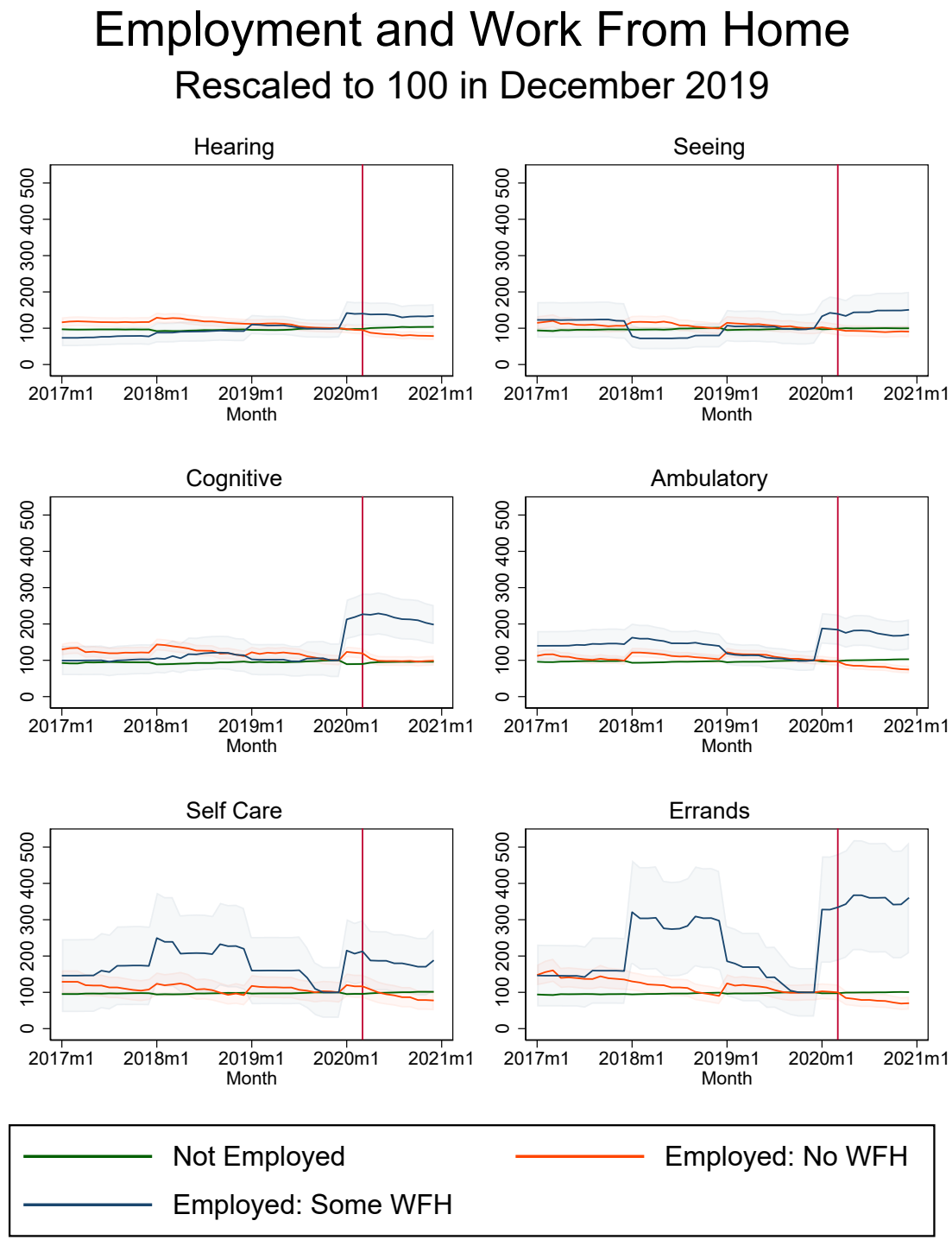
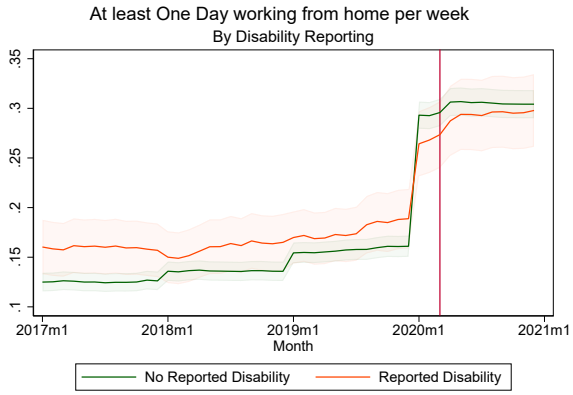

Employment and Work From Home
Hearing
Seeing
Cognitive
Ambulatory
Self Care
Errands
0 .2 .4 .6 .8 1
2017m1 2018m1 2019m1 2020m1 2021m1
Month
Not Employed
Employed: No Work from Hor
Employed: Some Work from Home

Figure D.1

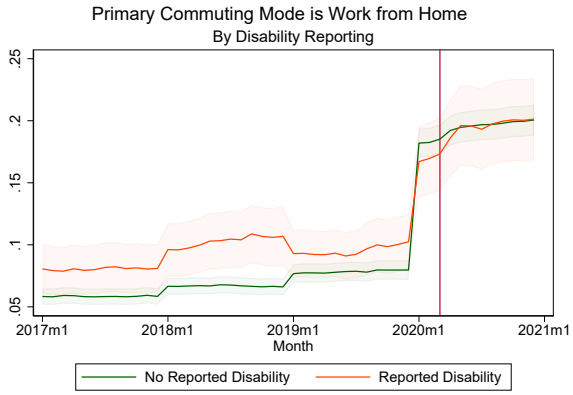


Source: SIPP 2018 panel; four year longitudinal weights

Figure D.2



(a)



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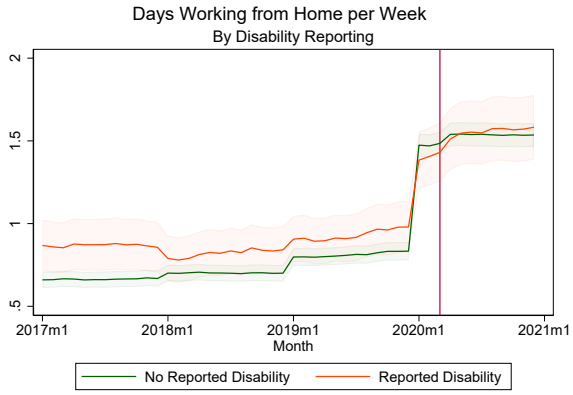
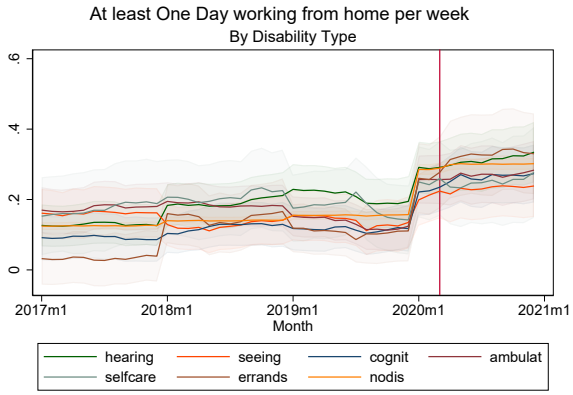


(c)

Figure D.3



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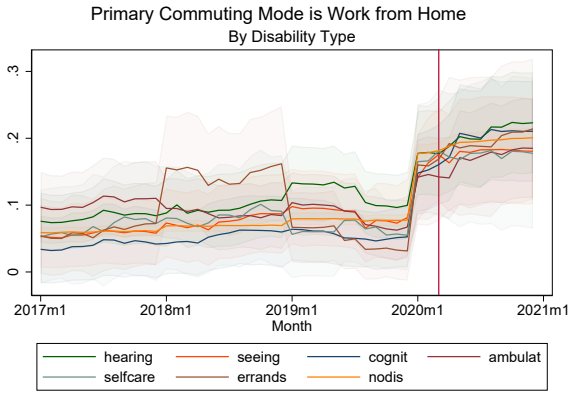

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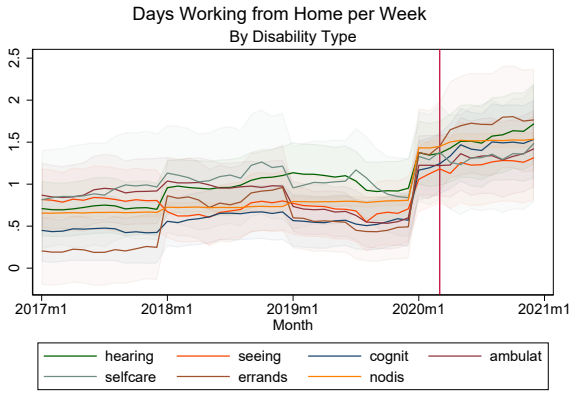

(c)

Figure D.4