



Adibah Abdulhadi  
University of  
Wisconsin–Madison

## Filling in the Gap: The Role of Employer-provided DI

The research reported herein was performed pursuant to a grant from the U.S. Social Security Administration (SSA) funded as part of the Retirement and Disability Consortium. The opinions and conclusions expressed are solely those of the author(s) and do not represent the opinions or policy of SSA or any agency of the Federal Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of the contents of this report. Reference herein to any specific commercial product, process or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply endorsement, recommendation or favoring by the United States Government or any agency thereof.

I am grateful to the Wisconsin Department of Employee Trust Funds (ETF) for preparing the administrative dataset that is extensively used in this paper, especially the help of Erin Esser. I also thank J. Michael Collins, Justin Sydnor, Mary Hamman, Jeffrey Smith and the participants at the Midwest Economics Association conference and the American Society of Health Economists conference for helpful comments.

**Center for Financial Security**

University of  
Wisconsin-Madison

1300 Linden Drive  
Madison, WI 53706

608-890-0229  
cfs@mailplus.wisc.edu  
cfs.wisc.edu

## Abstract

The risk of disability for workers is not trivial. While many workers rely on public disability programs such as the Social Security Disability Insurance (SSDI) to protect them against disability risk, these programs do not provide complete insurance. For example, SSDI does not cover short-term disabilities. This paper explores the use of employer-provided disability insurance (DI) among Wisconsin state public employees. The paper describes these disability benefits and how they provide a safety net for workers who have a debilitating medical condition. Generally, low income workers are less likely to be covered by employer-provided DI although they tend to need and claim DI at a higher rate. Next, the paper examines the use of short-term DI and worker's trajectories before and after claiming short-term DI. A large majority (64 percent) of claimants return to work. Another 24 percent transition to long-term DI while the rest quit their jobs (7 percent) or retire (5 percent). Short-term DI claimants are able to maintain their earnings and hours worked up to the year of claim. Afterwards, their earnings and hours worked drop even for those who return to work. Moreover, workers who eventually claim short-term DI use a lot of sick leave even in the years prior to claiming.

Keywords: public sector workers, disability insurance, labor supply, non-wage benefits  
JEL Codes: H83, I38, J14, J22, J32

# 1 Introduction

Every adult faces the risk of disability. In 2014, 23.7 percent of adults age 18-64 had some form of a disability (Taylor, 2018). This figure is even higher from a life-cycle perspective. Using panel data, Meyer and Mok (2019) found that 36 percent of men age 50 had a disability at some point in their working years. During a disability episode, a person's ability to work may be compromised. Many papers have documented the drop in the well-being of individuals around disability onset, for example in terms of their earnings and consumption (Stephens, 2001; Mok et al., 2008). Meyer and Mok (2019) found that ten years after the onset of a chronic and severe disability, a household's food and housing consumption drop by 25 percent on average, and one-sixth of these households had their income drop below the poverty line.

A disability insurance (DI) lessens the harm by providing a replacement income. One of the most well studied disability programs in the US is the Social Security Disability Insurance (SSDI). It is a large social insurance program. In 2019, the Social Security Administration (SSA) paid \$10.5 billions of monthly SSDI benefits to disabled workers (SSA, 2020). During the same year, 3.8 percent of the working-age population received SSDI worker benefits (SSA, 2020).

While many workers rely on SSDI to protect them against the risk of income loss due to a disability, the program does not provide full protection. There are a few ways that SSDI fall short in protecting workers against disability risk. First, SSDI pays only for severe and permanent disabilities, and does not cover short-term disabilities. A worker with a disabling medical condition who does not have sufficient financial support or healthcare may risk becoming permanently disabled or unable to return to work. Autor and Duggan (2010) proposed that a short-term DI, supplemented with vocational rehabilitation and workplace accommodation, can help an individual with a work-limiting disability to return to work.

Second, SSDI has a long waiting period during which an applicant cannot work. A long period out of the labor force may reduce a worker's attachment to the labor market and make it harder for a worker with a disability to return to work later on. This may be particularly harmful for an applicant who is unsuccessful in claiming SSDI. Autor et al. (2017) found that a longer SSDI waiting period decreases the employment and earnings of applicants, even years after the application. A short-term DI or a DI with a quicker determination process can potentially serve as a bridge for disabled workers while they wait for SSA's decision. Third, SSDI benefit may not be sufficient. SSDI's wage replacement rate ranges between 24 and 64 percent, depending on a worker's pre-disability earnings (Autor and Duggan, 2006). Thus, workers may have to rely on other sources to supplement their SSDI benefits. For example, in 2019, 14 percent of SSDI worker beneficiaries concurrently receive Supplemental Security Income (SSI) (SSA, 2020).

This paper studies how employer-provided DI provides additional protection against the risk of income loss due to a disability, beyond the coverage provided by SSDI. I use administrative data on Wisconsin state public employees who have access to three types of employer-provided DI. The first is the Income Continuation Insurance (ICI) that pays ben-

efits in the event of a work-limiting disability which can be either short-term or long-term. This program is optional. Workers who are interested in ICI must pay a monthly premium. The other disability programs are the Long-term Disability Insurance (LTDI) and the 40.63 Disability Retirement benefit. These two are more similar to SSDI. They cover only permanent and severe disabilities. Moreover, coverage is not optional. All workers who participate in the Wisconsin Retirement System (WRS) were covered by either LTDI or 40.63 Disability Retirement.<sup>1</sup>

There are two main parts to the paper. The first part describes in more detail the disability programs that are available to Wisconsin state public employees. I also briefly discuss how sick leave, ICI, LTDI, and 40.63 Disability Retirement collectively provide an extensive safety net for workers who have a medical condition that can potentially turn into a long-term disability. To help contextualize the DI programs, I contrast them with SSDI. Compared to SSDI, short-term ICI has a much higher award rate (i.e. the number of new claims per 1,000 workers) while the other long-term disability benefits (long-term ICI, LTDI, and 40.63 Disability Retirement) have a lower rate. The average age of short-term ICI claimants is lower compared to claimants of long-term DI. Moreover, the top two most prevalent medical conditions are the same across all DI programs. They are musculoskeletal conditions and mental illness. Furthermore, the award rates of the Wisconsin DI programs dropped between 2011 and 2018. This mirrors a similar pattern in the SSDI award rate that had also declined during the same period.

I also compare the DI programs that are available to Wisconsin state public employees to DI provided by other employers. There are a couple of ways that ICI is different from other employer-provided DI. First, ICI requires workers who are interested in the program to enroll and pay a monthly premium. Workers with higher earnings are more likely to take up ICI compared to those with lower earnings. In contrast, most employer-provided DI are sponsored in full by the employer. However, they are more commonly available for workers with higher earnings and in white collar occupations. Thus, regardless of the requirement on employee contribution, workers with high earnings are more likely to be covered by employer-provided DI. Second, ICI offers a more generous benefit compared to other employer-provided DI. In the event of a disability, the former replaces a worker's earnings at a higher rate.

The second part focuses on the use of short-term ICI among Wisconsin state public employees. Using administrative data from the Wisconsin Department of Employee Trust Funds (ETF), I explore a few aspects of the use of short-term ICI. First, I examine the types of workers who are likely to claim short-term ICI and their medical conditions. While workers with lower earnings are less likely to take-up ICI coverage, they claim short-term ICI at a higher rate. Second, I study the outcomes of workers after they claim short-term ICI and the characteristics that are correlated with different outcomes. The majority of short-term ICI claimants return to work. Almost a quarter transition to long-term DI, while the remaining either quit their jobs or retire. Moreover, workers with musculoskeletal condition or injury, and those in protective service occupation such as law enforcement, are more likely to return

---

<sup>1</sup>Up to the end of 2017, all workers who participate in the WRS were covered by either LTDI or 40.63 Disability Retirement. In 2018, LTDI was discontinued. A worker may only file new claims of 40.63 Disability Retirement beginning in January 2018.

to work.

Lastly, I examine the trajectories of workers in terms of their earnings, hours worked, and use of sick leave before and after they claim short-term ICI. I find that earnings and hours worked declined after claiming short-term ICI, even for workers who return to work. This can be explained by those who later on claim DI again after returning to work. There is no gradual drop in earnings or hours worked in the years prior to claiming. Claimants may have been able to sustain their employment up to the period immediately before the claim by using sick leave. Workers who eventually claim short-term DI substantially use more sick leave compared to workers who do not claim, even years prior to the claim.

There are two main areas that this paper can contribute to. First, this paper provides insights on how workers use employer-provided DI to supplement public programs such as SSDI and fill in the gap in coverage. While 40 percent of workers have access to employer-provided short-term DI and 35 percent have access to long-term DI (BLS, 2020), these benefits are much less studied compared to public DI programs such as SSDI and SSI. This paper also explores how paid sick leave and DI of varying features complement each other and provide a safety net in the event of a negative health shock. One of the strengths of the administrative data used in this paper is that it contains observations on workers' sick leave use and DI claims which allows me to examine how workers jointly use these benefits.

Second, this paper contributes to the literature by studying workers during the period before they become permanently disabled and apply for long-term DI. There is a large literature on the labor response to SSDI and return-to-work programs. However, less is known about the period prior to DI application. The pre-application period is interesting to study because during that period, workers are still attached to their jobs and have more potential to return to work. In this paper, I study how the likelihood of returning to work vary by a worker's characteristics and how workers fare in terms of their earnings and hours worked after they went back to their jobs. Relatedly, this paper also explores the correlation between worker's characteristics and the likelihood of transitioning to long-term DI. For example, short-term ICI claimants with mental illness are less likely to return to work compared to claimants with musculoskeletal conditions. This has implications on the size of public long-term DI programs such as SSDI.

The remainder of the paper proceeds as follows: Section 2 briefly describes the administrative data on Wisconsin state public employees. Section 3 provides institutional context of the Wisconsin DI programs and compares them to SSDI and other employer-provided DI. Section 4 examines the use of short-term ICI and workers' outcomes before and after claiming. Finally, Section 5 concludes.

## 2 Data

The data was provided by the Wisconsin Department of Employee Trust Funds (ETF) and consists of a few datasets from different administrative databases. I cleaned and merged them to create a dataset at the worker-year level. Table 1 summarizes the datasets that were

provided by ETF, while Table 2 shows summary statistics of the data. The ICI enrollment dataset contains all employees who worked for Wisconsin state agencies between 2009 and 2018, and were eligible to enroll in ICI.<sup>2</sup> Moreover, in the DI claims dataset, I do not observe receipts of DI benefits that are not administered by ETF. For example, I do not observe whether a worker has applied for or is receiving SSDI.

In the dataset on employment history, I observe a worker’s annual earnings and service with Wisconsin public employers. The latter is a measure of hours worked during a calendar year. One unit of service is equivalent to working full-time for a year. Moreover, I also observe the start and end date of each employment episode with any Wisconsin public employers.<sup>3</sup> For each individual who either worked for a Wisconsin state agency in 2009–2018 or received any DI benefit (which can be ICI, LTDI, or 40.63 Disability Retirement) in 2011–2018, I observe their full employment history, although this is limited to employment with Wisconsin public employers. I do not observe employment with other employers such as private companies or other non-Wisconsin government entities.

Table 1: Available Data

Datasets	Variables	Years
ICI enrollment	Indicator for enrollment	2009-2018
	Premium category	
	Sick leave	
	Age, gender	
	County of residence	
	Occupation category	
ICI claims	Benefit amount	2011-2017
LTDI claims	Diagnosis	
Retirement Disability claims	Duration of claim	
	Age, gender	
Employment with WI public employers	Earnings	full history of each worker
	Service	
	WI public employer/agency	

### 3 Institutional context

#### 3.1 DI Benefits Available to Wisconsin State Workers

The Wisconsin Department of Employee Trust Funds (ETF) is the state agency that is responsible for administering employee benefits for Wisconsin state public workers. DI benefits

<sup>2</sup>The analysis sample excludes student employees who are generally not eligible for ICI.

<sup>3</sup>Exception: I do not observe employment with the City of Milwaukee and Milwaukee county because they do not participate in the Wisconsin Retirement System (WRS).

Table 2: Summary Statistics, 2009–2018

	Mean	SD	N
Age	44.51	11.42	1,347,318
Female	0.55	0.50	1,350,872
Percent general	0.59	0.49	738,464
Percent UW academic	0.28	0.45	738,464
Percent protective	0.12	0.32	738,464
Percent others	0.01	0.09	738,464
Annual earnings (thousands)	49.27	30.15	1,320,021
Service (years)	12.56	9.43	1,339,495
Sick leave use (days)	5.63	8.57	722,508
Sick leave balance (days)	82.52	95.63	720,824
Percent enrolled in ICI	0.71	0.45	737,827
Annual ICI premium for regular employees	223.45	256.90	455,124
Annual ICI premium for UW academics, 180 days EP	0.12	2.17	188,633
Annual ICI premium for UW academics, 125 days EP	65.37	29.91	188,630
Annual ICI premium for UW academics, 90 days EP	86.56	39.60	188,630
Annual ICI premium for UW academics, 30 days EP	329.52	151.57	188,630
Short-term ICI monthly benefit amount, dollars	2,505.61	1146.81	11,718
Long-term ICI monthly benefit amount, dollars	1,009.23	906.97	8,776
LTDI monthly benefit amount, dollars	1,120.06	618.05	6,370
40.63 Disability Retirement benefit amount, dollars	2,071.01	1029.95	3,249

UW academics refers to faculty members and academic employees of the University of Wisconsin System.

EP is short for elimination period which is the minimum number of days between disability onset and the first benefit payment.

ICI is short for Income Continuation Insurance.

LTDI is short for Long-Term Disability Insurance.

Source: ETF administrative data

are among the many programs that the agency administers. There are three DI programs for Wisconsin state employees that are covered in this paper: the Income Continuation Insurance (ICI), the Long-Term Disability Insurance (LTDI), and the 40.63 Disability Retirement. All three programs pay for disabilities that are not necessarily work related.<sup>4</sup>

### **3.2 40.63 Disability Retirement**

This is a disability program that pays benefits in the case of a permanent and severe disability. The benefit amount depends on a claimant's pre-disability earnings, her years of service, and the number of years to retirement. All workers who participate in the Wisconsin Retirement System (WRS) are covered by this program.

### **3.3 Long-term Disability Insurance (LTDI)**

This DI is similar to 40.63 Disability Retirement. It provides income replacement in the case of a permanent and severe disability. The replacement rate ranges from 40 to 50 percent of pre-disability earnings. LTDI was introduced in 1992 to replace 40.63 Disability Retirement. There was a concern that the latter may violate the Older Workers Benefit Protection Act (OWBPA) of 1990 by discriminating against older workers.<sup>5</sup> In 2008, the US Supreme Court ruled that a disability program similar to 40.63 Disability Retirement does not violate federal age discrimination laws. Consequently, LTDI was closed to new claimants and 40.63 Disability Retirement was re-opened in 2018. In the remainder of the paper, I will refer to both programs jointly as LTDI/40.63.

In many respects, LTDI/40.63 are similar to SSDI. For example, they cover disabilities that are permanent and severe. Moreover, participation in these DI programs is not optional. All Wisconsin state workers who contribute to the WRS are automatically covered by either LTDI or 40.63 Disability Retirement.<sup>6</sup>

### **3.4 Income Continuation Insurance (ICI)**

This is an optional DI program that is available to all Wisconsin state public employees who participate in the WRS. Workers who are interested in ICI have to enroll and pay

---

<sup>4</sup>ETF also administers another program called Duty Disability which covers permanent, work-related disabilities for workers in the protective service category. Protective service category includes occupations such as law enforcement and firefighting. This disability program is outside the scope of this paper.

<sup>5</sup>For example, one of the factors that enter the calculation of 40.63 Disability Retirement benefit amount is the number of years that a claimant has before retirement which depends on the claimant's age at application and the normal retirement age. This is called "assumed service". An implication of this is that a younger claimant would be paid a higher benefit amount compared to an older claimant, even after conditioning for their earning and service histories. ETF was concerned that this may constitute as an age discrimination under the OWBPA.

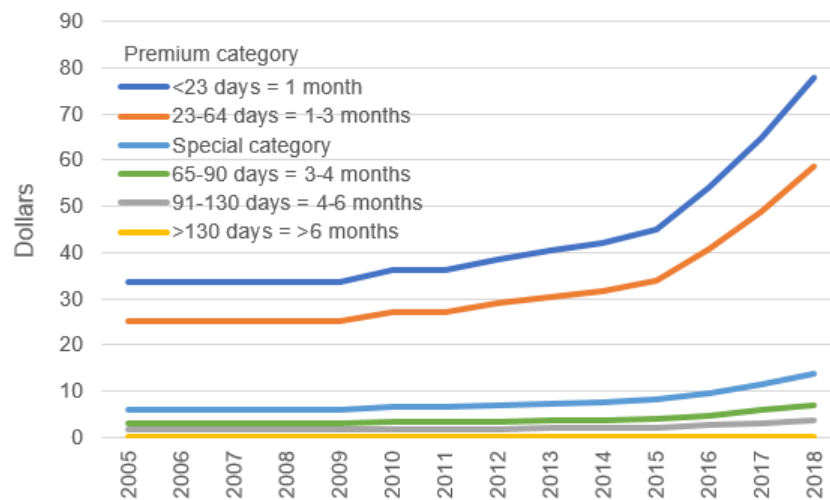
<sup>6</sup>Up to the end of 2017, all workers who participated in the WRS were covered by either LTDI or 40.63 Retirement Disability Benefit. Depending on some criteria, a worker may claim either LTDI or 40.63 Disability Retirement, but not both. Starting in January 2018, when LTDI was discontinued, a worker may only file new claims of 40.63 Disability Retirement.



a monthly premium.<sup>7</sup> There are separate premium structures for University of Wisconsin System (UW) faculty and academic staff (“UW academic”) and for all other Wisconsin state public employees (“regular employees”).

**Premium for regular employees.** Premium for regular workers is determined by their earnings and their sick leave balance at the end of the previous calendar year. In general, the premium increases with earnings and decreases with sick leave balance. There are six premium categories that workers can fall under depending on the amount of sick leave days they have accumulated: less than 23 days, 23-64 days, special category, 65-90 days, 91-129 days, and 130 days or more. To qualify for the special category, workers must accumulate 10 days of sick leave or more in the prior calendar year. The premium is tied to the accumulated sick leave because claimants are required to exhaust all their sick leave, up to a maximum of six months, before they can receive the first ICI benefit payment. Figure 1 shows the premium for a regular state employee with monthly earnings of \$4,052 (the median). The premium for the category of 130 days of sick leave or more is always \$0. Between 2009 and 2018, the period for which data is available, ETF steadily increased ICI premium. Before then, the premium had been, for the most part, constant.

Figure 1: Monthly premium for regular employees with monthly earnings of \$4,052



Notes: This chart shows the ICI monthly premium for a regular Wisconsin state public employee who has monthly earnings of \$4,052, which is the median. The premium depends on a worker’s premium category of which there are six. In turn, the premium category depends on a worker’s sick leave balance and accumulation. A worker can qualify for the special category if she accumulates 10 days or more of sick leave in the prior year. The premium for the category with 130 days or more of sick leave is always zero. Between 2009 and 2018, the premium was increased at the same rate for all categories.

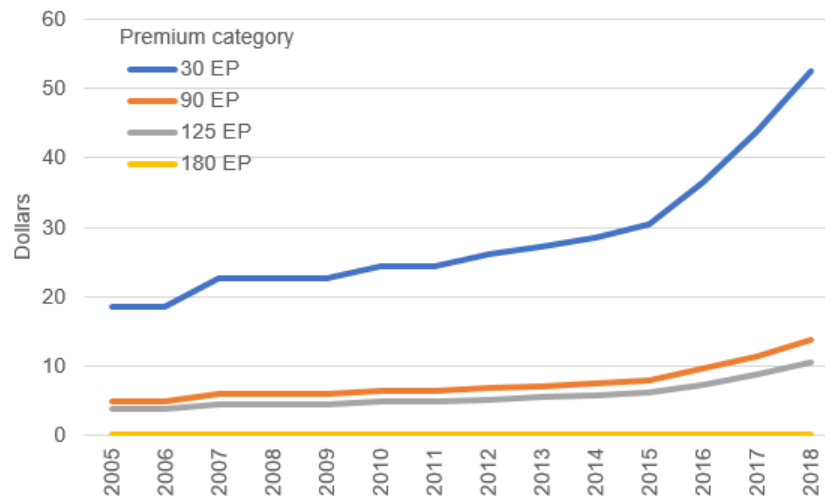
Source: ETF (2018)

**Premium for UW academic employees.** The premium structure for UW academic employees is simpler. Workers who are interested in ICI have to choose an elimination period which is similar to a waiting period between the disability onset and the first benefit

<sup>7</sup>All new employees are required to turn in a form indicating whether or not they want to take up ICI. After the initial enrollment period, workers who took up ICI are continuously enrolled in ICI until they change their decision by turning in a form to terminate their ICI coverage.

payment. There are four elimination period to choose from: 30 days, 90 days, 125 days, and 180 days. Premium for UW academic employees depends on their earnings and the elimination period that they choose. Conditional on earnings, a longer elimination period means cheaper premium. Moreover, after one year of state service, UW academic employees become eligible for an employer subsidy which reduces their premium. In particular, the premium for the 180 days of elimination period drops to \$0. Similar to regular state workers, UW academic employees are also required to exhaust all their sick leave up to a maximum of six months or serve their elimination period, whichever is longer, before they can receive the first benefit payment. Figure 2 shows the premium for a UW academic employee with monthly earnings of \$4,937 (the median). The premiums were increased for both regular and UW academic employees, and for all premium categories at the same rate between 2009 and 2018.

Figure 2: Monthly premium for UW academic employees with monthly earnings of \$4,937



Notes: This chart shows the ICI monthly premium for a UW academic employee who has monthly earnings of \$4,937, which is the median. The premium depends on the elimination period that a worker selects. The premium for the 180 days elimination period is always zero. Between 2009 and 2018, the premium was increased at the same rate for all categories.

Source: ETF (2018)

**Calculation of ICI benefits.** ICI pays benefits in the event of a disability that impairs one's ability to work. The disability can be either short-term or long-term. A short-term disability is defined as one that lasts 12 months or less. The disability must prevent a claimant from performing the duties of her job.<sup>8</sup> A short-term ICI recipient with a disability that turns out to be prolonged can transition to long-term ICI benefits. The disability requirement for long-term ICI is stricter: a claimant must have a disability that prevents her from engaging in any substantial gainful activity (SGA) for which she is reasonably qualified considering her education, training and experience. The standard ICI coverage replaces 75 percent of a claimant's pre-disability earnings up to \$64,000 of annual earnings.

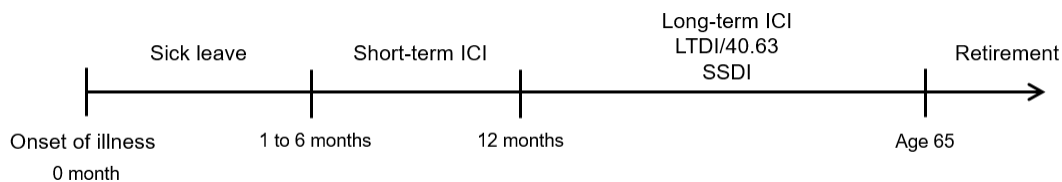
<sup>8</sup>Short-term ICI can also be used as maternity leave. However, this paper focuses on disabilities that are not perinatal-related. Hence, all figures and statistics shown in this paper exclude DI claims that are perinatal-related.

This means that the maximum monthly standard ICI benefit is  $75\% \times 64,000/12 = 4,000$  dollars. This replacement rate is much higher compared to other DI such as LTDI/40.63 and SSDI. However, other benefits such as LTDI and retirement incomes reduce ICI benefit amount on a dollar-for-dollar basis. Thus, ICI can be thought of as a guarantee of a specified consumption floor. Moreover, ICI only pays benefits until age 65 in most cases.

### 3.5 Complementarity of sick leave, ICI and LTDI/40.63

The sick leave policies for Wisconsin state employees, ICI and LTDI/40.63 collectively provide an extensive safety net for workers who have a medical condition that can potentially turn into a long-term disability. This is summarized in Figure 3. A worker who is unable to work due to a medical condition can rely on sick leave for the first one to six months. If the condition lasts longer than the amount of sick leave that a worker has, she can next turn to short-term ICI which pays disability benefits after the worker has exhausted all her sick leave. If the medical condition is severe and persists for one year or more, the worker can have her short-term ICI benefit be converted into its long-term version and continue receiving the same benefit. The worker can also apply for other DI that cover permanent and severe disability such as LTDI/40.63 and SSDI. Long-term disability programs generally pay benefits until a disabled worker reach the retirement age of 65.

Figure 3: Coverage of sick leave, ICI, and LTDI/40.63



Source: adapted from BLS (2011)

### 3.6 Comparison between Wisconsin DI programs and SSDI

In this section, I compare the DI programs that are administered by ETF with SSDI. The latter is arguably one of the most well studied DI programs in the US. This comparison helps to contextualize the DI programs that are available to Wisconsin state employees. Table 3 compares claimants of ETF's DI programs with SSDI claimants.

On average, there are 10.6 short-term ICI awards per 1,000 workers, a much higher number compared to SSDI at 4.8. It is reasonable to expect that short-term disabilities occurs more frequently than permanent and severe disabilities. In contrast, the award rates of long-term ICI and LTDI/40.63 are much lower compared to SSDI at 2.1 and 1.9, respectively. 65 percent of ICI claimants and 59 percent of LTDI/40.63 claimants are women. These numbers are higher compared to SSDI (48 percent) and they mainly reflect the higher proportion of public sector workers being women.

The average age of short-term ICI claimants are lower compared to that of SSDI claimants, while the average age of long-term ICI claimants are more similar. Moreover, the average

benefit amount of short-term ICI is higher compared to that of SSDI, while the average benefit amount of ETF's long-term DI is more similar. The benefit amount of long-term ICI is lower compared to short-term ICI likely due to offsets from other benefits such as LTDI/40.63 and SSDI. Lastly, a worker receives short-term ICI benefits for an average of 4 months.

Table 3: Descriptive Statistics on DI Claimants

	ICI-ST	ICI-LT	LTDI/40.63	SSDI
Award rate per 1,000 workers	10.6	2.1	1.9	4.8
Percent female	0.65	0.65	0.59	0.48
Mean age	47.9	51.0	53.8	51.3
Mean age, male	48.7	52.2	54.5	51.6
Mean age, female	47.5	50.3	53.4	51.0
Monthly benefit (dollars)	2,438	1,287	1,487	1,386
Monthly benefit (dollars), male	2,429	1,265	1,495	1,537
Monthly benefit (dollars), female	2,442	1,298	1,481	1,223
Receipt duration (months)	4.3			
Receipt duration, male (months)	4.3			
Receipt duration, female (months)	4.2			

ICI-ST is short for short-term ICI benefit. The figures exclude perinatal claims.

ICI-LT is short for long-term ICI benefit.

LTDI/40.63 is short for Long-Term Disability Insurance (LTDI) or 40.63 Disability Retirement.

SSDI figures refer to beneficiaries in the US who are disabled workers.

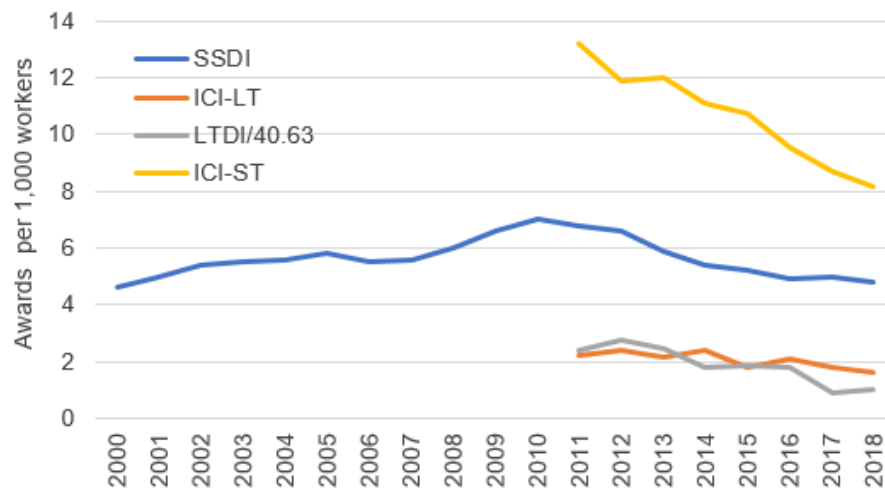
Source: SSA (2019a), SSA (2019b), ETF administrative data

Figure 4 shows the award rates of SSDI and ETF's DI programs over time. Between 2000 and 2010, SSDI award rate rose from 4.6 awards per 1,000 workers to 7.0 before dropping to 4.8 in 2018. Because the ETF claims data begins in 2011, I cannot compare the award rates of ETF's DI programs with SSDI in the years prior to 2011. However, the pattern in the award rates post 2011 is similar to that of SSDI. Between 2011 and 2018, the award rates decreased. The drop is particularly pronounced for short-term ICI. The award rate for this program dropped from 13.2 awards per 1,000 workers in 2011 to 8.2 awards in 2018. The decrease in the ICI award rate may be explained by two things. First, the ICI take-up rate had dropped during the same period in response to the increase in premium which may have led to fewer claims. Second, the average age of the Wisconsin public state workers had dropped as older workers retire and younger ones are hired. Since DI claim is highly correlated with age, this may explain the drop in ICI award rate between 2011 and 2018.

On the other hand, the drop in the award rates for ETF's long-term DI programs is more subtle. For long-term ICI, the award rate decreased from 2.2 claims per 1,000 workers in 2011 to 1.6 claims, while for LTDI/40.63 the rate dropped from 2.4 to 1.0 during the same period.

Figure 5 shows the medical diagnosis of SSDI claimants and claimants of ETF's DI programs. The top two most common medical conditions are the same across all programs, which are musculoskeletal conditions followed by mental illness. However, mental illness is substantially more prevalent among claimants of ETF's long-term DI programs compared

Figure 4: Award Rates of DI Programs



ICI-ST is short for short-term ICI benefit. The figure excludes perinatal claims.

ICI-LT is short for long-term ICI benefit.

LTDI/40.63 is short for Long-Term Disability Insurance (LTDI) or 40.63 Disability Retirement.

SSDI is short for Social Security Disability Insurance.

Notes: This chart shows the number of awards per 1,000 workers for SSDI and Wisconsin disability programs. SSDI award rate rose between 2000 and 2010, and afterwards consistently declined until 2018. Similarly, the award rates of Wisconsin disability programs dropped between 2011 and 2018. The graphs for Wisconsin disability programs begin in 2011 because the ETF claims data covers only 2011 through 2018.

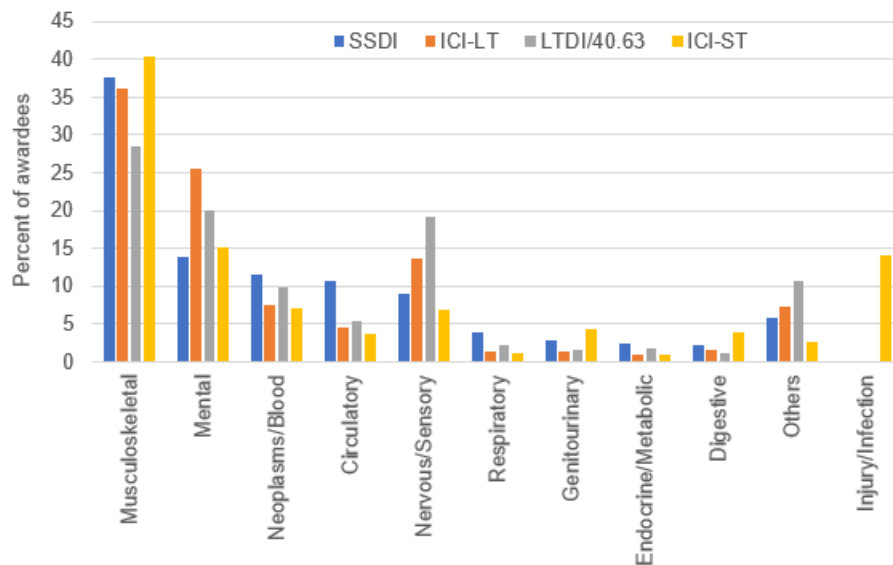
Source: SSA (2019b), ETF administrative data

to SSDI claimants. Another type of illness that is more common among ETF's long-term DI claimants than it is among SSDI claimants is nervous/sensory conditions. On the other hand, illnesses related to the circulatory system is more prevalent among SSDI claimants compared to claimants of long-term ICI or LTDI/40.63. Injury/infection is a medical diagnosis that is applicable only to short-term ICI claimants. It constitutes 14.2 percent of all short-term ICI claims and is the third-most common diagnosis.

### 3.7 Comparison between Wisconsin DI programs and other employer-provided DI

To provide more context on how the DI programs available to Wisconsin state public employees fit into the DI landscape in the US more generally, this section compares them to other employer-provided DI. On average, 42 percent of workers in the private sector have access to employer-provided short-term DI. The access is much lower for state and local public employees at 26 percent. These are shown in Table 4. Conditional on having access to short-term DI, the take-up rate is almost universal for both types of employees at 96 percent or more. In contrast, the take-up rate for ICI is lower at 71 percent. The high take-up rate of employer-provided DI can perhaps be explained by the fact that they are typically sponsored in full by employers. Only 15 percent of private sector workers who have access to employer-provided DI are required to contribute to the DI. The corresponding number for public sector workers are similar at 12 percent. Workers with access to noncontributory DI

Figure 5: Medical Conditions of DI Claimants



ICI-ST is short for short-term ICI benefit. The figure excludes perinatal claims.

ICI-LT is short for long-term ICI benefit.

LTDI/40.63 is short for Long-Term Disability Insurance (LTDI) or 40.63 Disability Retirement.

SSDI is short for Social Security Disability Insurance.

Notes: This chart shows the medical conditions of SSDI claimants and claimants of Wisconsin disability programs. The top five medical conditions are the same across all long-term disability programs. They are musculoskeletal conditions, mental illness, neoplasms/blood-related conditions, circulatory conditions, and nervous/sensory-related conditions. These medical diagnoses are also common among claimants of short-term ICI. A medical condition that is unique to short-term ICI is injury/infection, which constitutes 14.2 percent of all short-term ICI claims.

Source: SSA (2019a), ETF administrative data

are considered as participating in the program if they fulfill any eligibility requirements set forth by the employer, without having to actively take up the DI coverage. Consequently, conditional on having access to employer-provided DI, take-up rate is very high.

The most common method of calculating the amount of employer-provided short-term DI benefits is by using a fixed percentage of pre-disability earnings. This is also how short-term ICI benefit amount is calculated, although other benefits such as SSDI and worker's compensation reduce ICI amount. Conditional on having fixed percentage of earnings as the method of calculating the benefit amount, the median replacement rate of employer-provided short-term DI is 60 percent of earnings. In contrast, ICI's replacement rate is much higher at 75 percent.

Access to employer-provided long-term DI among private sector employees is lower (34 percent) compared to their access to short-term DI (42 percent). In contrast, public sector employees have greater access to employer-provided long-term DI (38 percent) compared to short-term DI (26 percent). Conditional on having access to employer-provided long-term DI, the take-up rate is almost universal, likely due to the same reason that the take-up rate for short-term DI is also high; in most cases, employee contribution is not required. These are shown in Table 5. Similar to employer-provided short-term DI, the most common method of calculating the benefit amount is by using a fixed percentage of earnings with a median replacement rate of 60 percent. This is higher compared to the replacement rate for LTDI which is between 40 and 50 percent.

Table 4: Comparison of Employer-Provided Short-term DI

Short-term DIs	Employer-provided DIs		ETF's DI programs
	Private	Public	ICI
<b>Access and take-up</b>			
Percent with access	42%	26%	100%
Percent participated	41%	25%	71%
Take-up rate	98%	96%	71%
Employee contribution required	15%	12%	Yes
<b>Calculation of benefit</b>			
Fixed percent of earnings	73%	89%	Yes
Percent varies by earnings	21%	8%	
Others	6%	2%	
<b>Replacement rate</b>			
Median (fixed) percent of earnings	60%	60%	75%

Notes: This table compares Wisconsin ICI program to short-term DI provided by other employers which are divided into private and public employers. The latter covers state and local public employers, and exclude federal governments.

Source: BLS (2020), ETF administrative data

Employer-provided DI is more commonly available for workers with higher earnings. This holds for both short-term and long-term DI. Among private sector employees, 63 percent of those in the fourth earnings quartile participate in short-term DI compared to only 17 percent of those in the first quartile. The inequality in access is greater when it comes to long-term DI. 61 percent of private sector employees in the fourth quartile participate in

Table 5: Comparison of Employer-Provided Long-term DI

Long-term DIs	Employer-provided DIs		ETF's DI programs	
	Private	Public	ICI	LTDI/40.63
<b>Access and take-up</b>				
Percent with access	34%	38%	100%	100%
Percent participated	33%	37%	71%	100%
Take-up rate	96%	97%	71%	100%
Employee contribution required	4%	17%	Yes	Yes
<b>Calculation of benefit</b>				
Fixed percent of earnings	96%	97%	Yes	LTDI - Yes
Percent varies by earnings	2%	1%		
Others	3%	-		40.63 - Yes
<b>Replacement rate</b>				
Median (fixed) percent of earnings	60%	60%	75%	LTDI - 40% - 50%

Notes: This table compares Wisconsin disability programs to long-term DI provided by other employers which are divided into private and public employers. The latter covers state and local public employers, and exclude federal governments. Source: BLS (2020), ETF administrative data

long-term DI while only 7 percent of those in the first quartile do so. These are shown in Tables 6 and 7. Given that the take-up rates of employer-provided DI is very high, the variation in the participation across earning quartiles can be explained by unequal *access* to the benefit, instead of unequal *take-up*. That is, workers with lower earnings have a lower participation rate because they have less access to employer-provided DI, not because they do not take up the benefit when they have access to it.

Access to DI among public sector employees is more equitable. Even though workers in the first quartile are less likely to participate compared to workers in higher quartiles, the difference in the participation rate is smaller. For example, 28 percent of workers in the first quartile participate in long-term DI while 42 percent of those in the fourth quartile do. Moreover, the participation rates of workers in the second, third, and fourth quartiles are similar.

The participation rate of ICI also varies by earnings. The participation rate increases the most between the first and second quartiles from 55 percent to 70 percent. Among those in the highest quartile, participation rate is 84 percent. In contrast to other employer-provided DI which tend to be noncontributory, ICI's participation rate reflects take-up instead of access.

In the private sector, workers in white collar occupations have greater access to employer-provided DI compared to workers in other types of jobs. This is true for both short-term and long-term DI. For example, 57 percent of workers in the managerial and professional occupations have access to long-term DI while only 12 percent of those in the service-related occupations do. On the other hand, access among public sector employees are more equal. The participation rates of workers across different occupations are more similar.

In the ETF administrative dataset I do not observe the same categories of occupation. In-



Table 6: Participation in Employer-Provided Short-term DI

Short-term DIs	Employer-provided DIs		ETF's DI programs	
	Private	Public	ICI	
<b>Participation by earnings</b>				
First quartile	17%	19%	55%	
Second quartile	41%	29%	70%	
Third quartile	51%	26%	78%	
Fourth quartile	63%	28%	84%	
<b>Participation by occupation</b>				
Management & professionals	57%	24%	General	72%
Service	21%	25%	UW academic	66%
Sales and office	40%	28%	Protective	79%
Natural res. & construction	35%	33%	Others	66%
Production & transportation	47%	26%		

Notes: This table compares Wisconsin ICI program to short-term DI provided by other employers which are divided into private and public employers. The latter covers state and local public employers, and exclude federal governments.  
Source: BLS (2020), ETF administrative data

Table 7: Participation in Employer-Provided Long-term DI

Long-term DIs	Employer-provided DIs		ETF's DI programs	
	Private	State & local	ICI	
<b>Participation by earnings</b>				
First quartile	7%	28%	55%	
Second quartile	28%	40%	70%	
Third quartile	43%	41%	78%	
Fourth quartile	61%	42%	84%	
<b>Participation by occupation</b>				
Management & professionals	57%	40%	General	72%
Service	12%	31%	UW academic	66%
Sales and office	31%	37%	Protective	79%
Natural res. & construction	25%	39%	Others	66%
Production & transportation	30%	32%		

Notes: This table compares Wisconsin ICI program to long-term DI provided by other employers which are divided into private and public employers. The latter covers state and local public employers, and exclude federal governments.  
Source: BLS (2020), ETF administrative data

stead, I grouped Wisconsin state public employees into four categories. The first is the general category which is the largest. It is a very heterogeneous group. The occupations included in this category range from custodial staff to payroll specialist. The second category is UW academic employees. The third category is protective service which includes occupations such as law enforcement. The last category is ‘others’ which is a very small group that includes occupations such as elected officials and judges. ICI take-up is highest among those in the protective service category and lowest among those in the UW academic and ‘others’ categories. These likely reflect differences in the on-the-job disability risk across categories.

## 4 Use of short-term DI

### 4.1 Claims and the medical conditions of short-term ICI claimants

To examine the types of workers who claim short-term ICI benefits, I ran the following regression:

$$\begin{aligned} \text{Claim } ST_{it} = & \alpha_0 + \alpha_1 \text{Female}_{it} + \alpha_2 \text{Age}_{it} + \alpha_3 \text{Employment Cat}_{it} \\ & + \alpha_4 \text{Earnings Quartile}_{it} + \varepsilon_{it} \end{aligned} \quad (1)$$

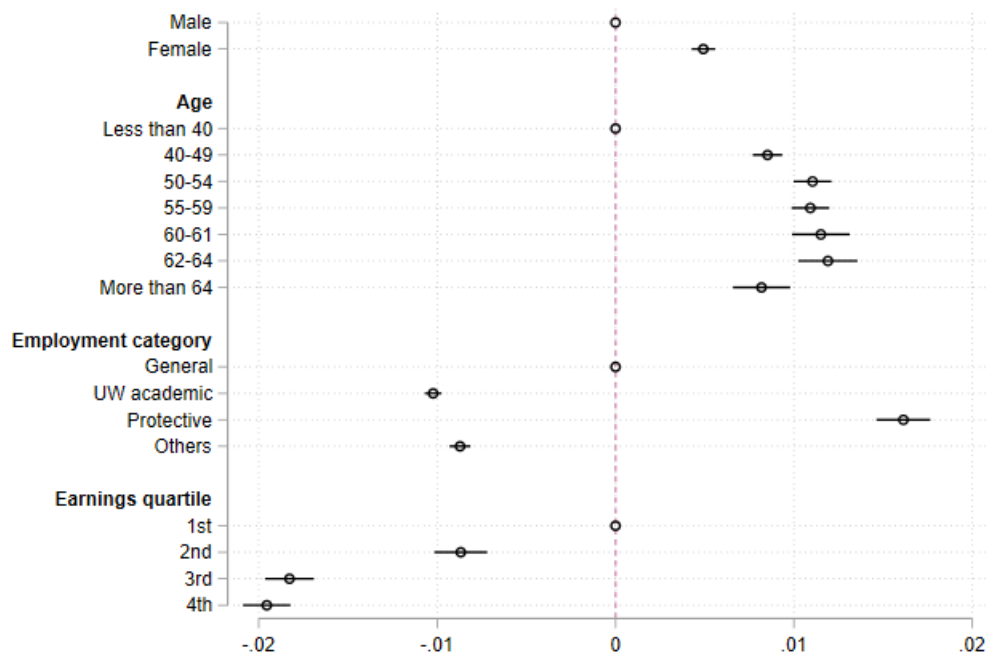
$\text{Claim } ST_{it}$  is an indicator for receiving short-term ICI payments.  $\text{Female}_{it}$  is an indicator for being female.  $\text{Age}_{it}$  is a set of indicators for age categories.  $\text{Employment Cat}_{it}$  is a set of indicators for a worker’s employment category.  $\text{Earnings Quartile}_{it}$  is a set of indicators for a worker’s quartile of pre-disability earnings. Figure 6 shows estimates from the regression.

The probability of claiming short-term ICI benefit varies by a worker’s gender and age. Women are 0.5 percentage points more likely to claim short-term ICI benefits compared to men. Given that the average claim rate is 1.2 percent, the difference between men and women is substantial. Short-term ICI claims also tend to increase with age. The risk of claiming short-term ICI tend to increase most rapidly between the age category less than 40 and age category 40-49. While the likelihood of claiming short-term ICI still increases after age 49, it does so at a slower rate.

The tendency to claim short-term ICI benefits also varies by a worker’s employment category. Those in the general category and the protective service category are more likely to claim short-term ICI benefits compared to those in the UW academic category and others category. These differences may reflect the nature of the jobs within each employment category. For example, occupations in the protective service category tend to be more physical, which may increase the likelihood of a disability. Moreover, workers in this category also need to be physically fit in order to perform their jobs. Thus, a worker in protective service category is more likely to claim DI compared to another worker in a different employment category even though they have the same medical condition.

Lastly, workers who earn more are less likely to claim short-term DI. For example, workers in

Figure 6: Short-term ICI Claims and Worker's Characteristics

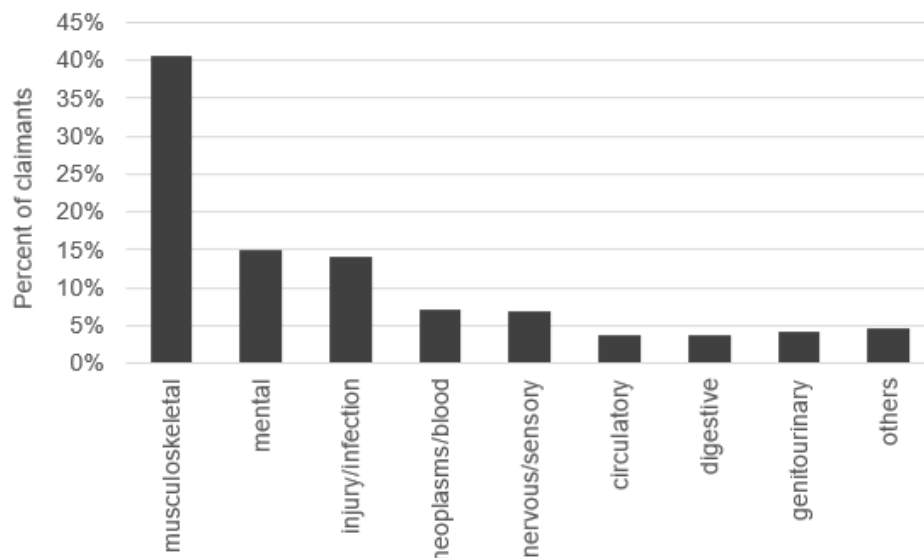


Notes: This chart shows the coefficient estimates of equation (1) which examines the correlation between claiming short-term ICI and worker's characteristics. The following characteristics are associated with a higher likelihood of claiming short-term ICI: female, older ages, in the general category or the protective service category, and having lower earnings.  
 Source: ETF administrative data

the fourth quartile is 1.9 percentage points less likely to claim short-term ICI than workers in the first quartile. This is larger than the average claim rate of 1.2 percent. Even though workers with lower earnings tend to claim DI more, the previous section showed that they are also less likely to enroll in ICI. Thus, in a DI program with optional take-up, workers who need the program the most such as those with lower earnings, may be the ones that are the least likely to take up coverage, and therefore would lack the income support that they need when they become disabled.

Figure 7 shows the primary medical conditions of short-term ICI claimants that qualified them for the benefit.<sup>9</sup> The most common illnesses are conditions related to the musculoskeletal system such as back pain and arthritis. 41 percent of claimants suffer from musculoskeletal conditions. This is followed by mental illness (15 percent), injury or infection (14 percent), neoplasms and blood-related conditions (7 percent), and nervous and sensory conditions (7 percent).

Figure 7: Medical Diagnosis of Short-term ICI Claimants



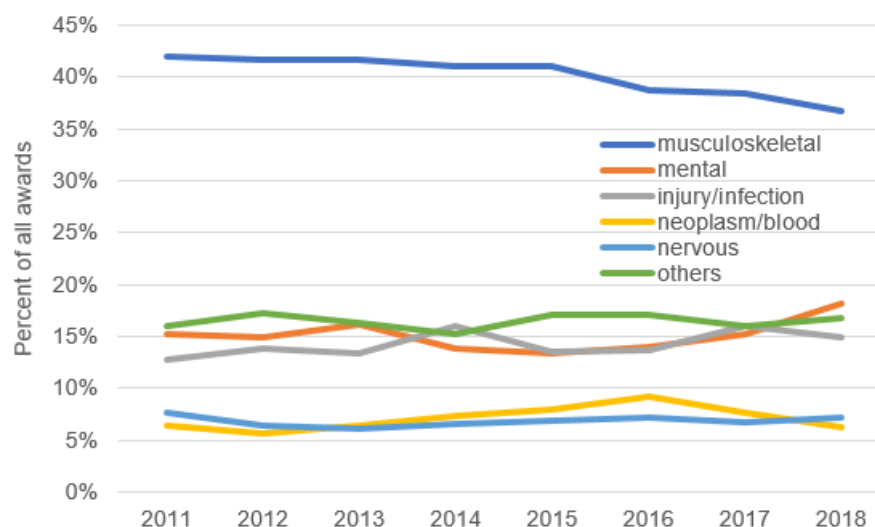
Notes: This chart shows the medical conditions of short-term ICI claimants. The five most common ailments in descending order are: musculoskeletal conditions, mental illness, injury/infection, neoplasm/blood-related conditions, and nervous/sensory-related conditions.

Source: ETF administrative data

Figure 8 shows the medical conditions of workers who are claiming short-term ICI benefit between 2011 and 2018. The pattern has been generally stable over time, with the exception of musculoskeletal condition. The proportion of short-term ICI claimants with this condition dropped from 42 percent of all claimants in 2011 to 37 percent in 2018.

<sup>9</sup>Claimants may have comorbidity, but the data has only records on the primary medical condition that qualified a worker to receive ICI.

Figure 8: Medical Diagnosis of Short-term ICI Claimants, 2011–2018



Notes: This chart shows the medical conditions of short-term ICI claimants between 2011 and 2018. The pattern has been generally stable over time, with the exception of musculoskeletal condition. The proportion of short-term ICI claimants with this condition dropped from 42 percent of all claimants to 37 percent between 2011 and 2018.

Source: ETF administrative data

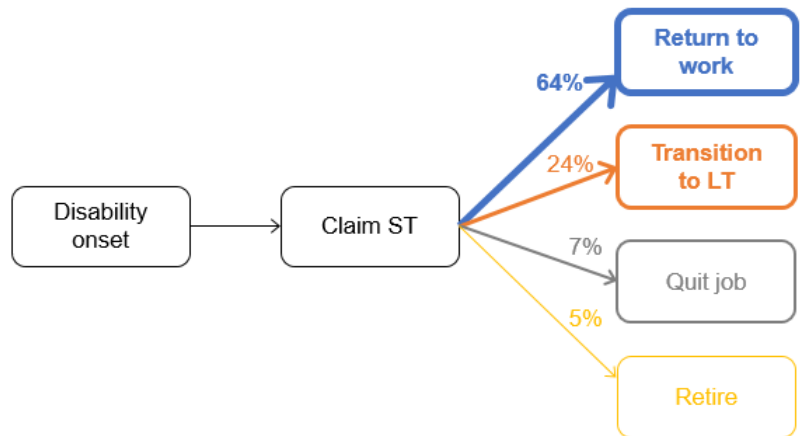
## 4.2 Outcomes of workers after claiming short-term ICI

In this subsection, I examine the outcomes of workers after they claim short-term ICI benefits. In the data, 64 percent of short-term claimants return to work. Almost a quarter transition to long-term benefits, which can be long-term ICI, LTDI, or 40.63 Retirement Disability. The remaining claimants either quit their jobs (7 percent) or potentially retire (5 percent).<sup>10</sup> See Figure 9. Thus, the major use of employer-provided short-term disability program among Wisconsin state employees is to provide income support while recovering from a temporary disability before returning to work. Another role that short-term ICI plays is in providing income support while workers wait for the award of long-term DI benefits. These are coverage that SSDI is unable to provide and they point at how employer-provided DI fills in the gaps in SSDI benefits. Next, I examine how worker's characteristics correlate with their outcomes after claiming short-term ICI.

The outcomes of short-term ICI claimants vary by their medical diagnosis. 68 percent of claimants with musculoskeletal conditions and 82 percent of those with injury/infection return to work after claiming short-term ICI. The corresponding numbers for other medical conditions are much lower at 44 percent (mental illness), 55 percent (neoplasms/blood conditions), and 44 percent (nervous/sensory conditions). These are shown in Figure 10.

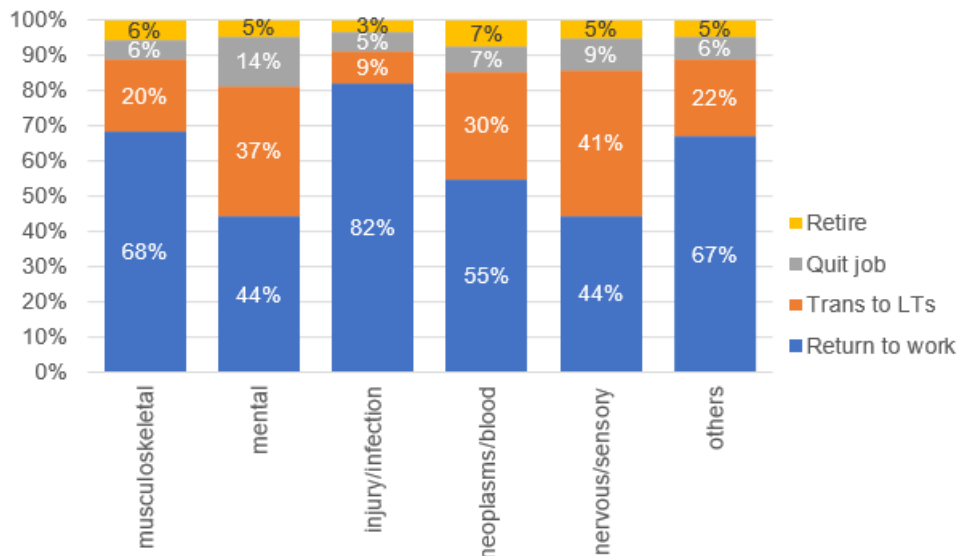
<sup>10</sup>Those who quit their jobs or retire do not have records of employment with Wisconsin public agencies after claiming short-term ICI. They could potentially go on to work for other employers that are not Wisconsin public agencies and not covered by the WRS. Moreover, these workers likely did not claim DI later on because if they do, the claim would appear in the data and they would have been classified as transitioning to a long-term disability program.

Figure 9: Outcomes of Short-Term ICI Claimants



Notes: This chart shows the outcomes of workers after they claim short-term ICI. The majority (64 percent) of claimants return to work, almost a quarter (24 percent) transition to long-term DI, and the rest either quit their jobs (7 percent) or retire (5 percent).  
 Source: ETF administrative data

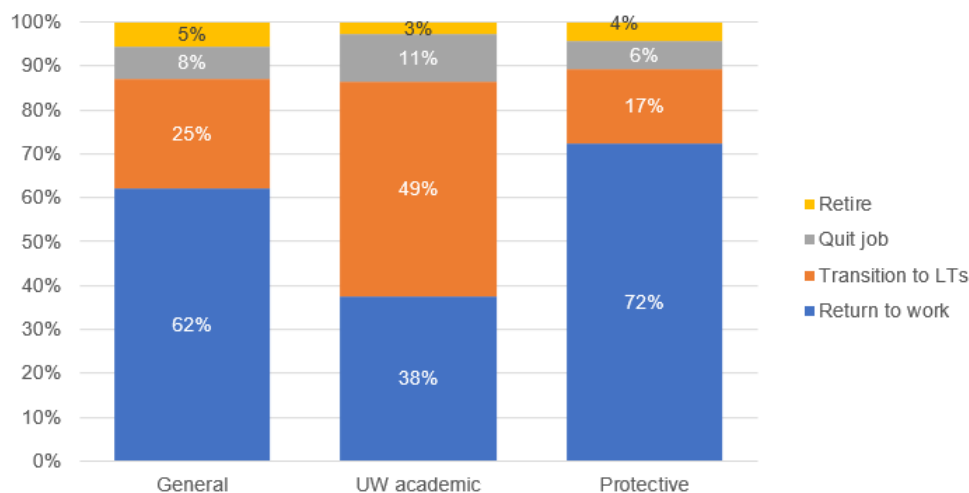
Figure 10: Outcomes of Short-Term ICI Claimants, by Medical Diagnosis



Notes: This chart shows the outcomes of workers who claim short-term ICI by their medical condition. Claimants with musculoskeletal condition or injury/infection are more likely to return to work. In contrast, workers with mental illness, neoplasm/blood-related conditions, or nervous/sensory-related conditions are less likely to return to work, and more likely to transition to long-term DI.  
 Source: ETF administrative data

The outcomes of short-term claimants also vary by their employment categories. Claimants in the protective service category are the most likely to return to work. 72 percent of these claimants do so. In contrast, claimants who are UW academic employees are the least likely to return to work. Only 38 percent do so, while the other 49 percent transition to long-term DI. Claimants who are in the general category fall somewhere in between. 62 of them return to work while another 25 percent transition to long-term DIs. These are shown in Figure 11. The variation in post-claiming outcomes across employment categories partly reflects the variation in types of medical condition that workers in different employment categories are afflicted with. For example, musculoskeletal disorders, injury, and infection – medical conditions that are associated with a higher rate of return to work – are more prevalent among workers in the general and protective service categories. In contrast, mental illness, neoplasm/blood conditions, and nervous/sensory disorders are more common among UW academic employees. These medical conditions are associated with a higher rate of transitioning to long-term DI.

Figure 11: Outcomes of Short-Term ICI Claimants, by Employment Category



Notes: This chart shows the outcomes of workers who claim short-term ICI by their employment category. Workers in the general category or the protective service category are more likely to return to work. In contrast, workers who are UW academic employees are more likely to transition to long-term DI.  
Source: ETF administrative data

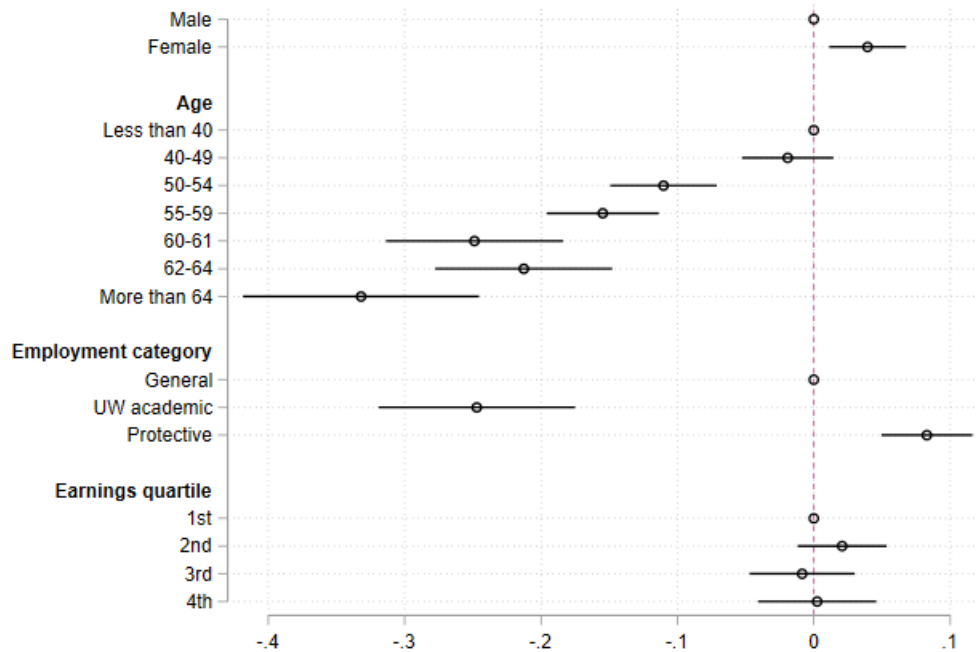
To examine the types of workers who return to work after claiming short-term ICI benefit, I ran the following regression:

$$\begin{aligned} \text{Return to Work}_{it} = & \beta_0 + \beta_1 \text{Female}_{it} + \beta_2 \text{Age}_{it} + \beta_3 \text{Employment Cat}_{it} \\ & + \beta_4 \text{Earnings Quartile}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

$\text{Return to Work}_{it}$  is an indicator that equals one if a worker returns to work after claiming short-term ICI. Figure 12 shows estimates from the regression. The likelihood of returning to work vary by age and gender. Even though women are more likely to claim short-term ICI compared to men as shown previously, they are also more likely to return to work. Moreover, the probability of returning to work after claiming short-term ICI decreases with age,

particularly after age 50. Older workers may experience more severe disabilities compared to younger workers, or find it harder to recover and return to work. Lastly, while workers who earn less tend to claim short-term ICI at a higher rate (as shown in Figure 6), there is little variation in the likelihood of returning to work across earnings quartile.

Figure 12: Return to Work and Worker's Characteristics



Notes: This chart shows the coefficient estimates of equation (2) which examines the correlation between returning to work and claimant's characteristics. The following characteristics are associated with a higher likelihood of returning to work after claiming short-term ICI: female, younger ages, and being in the general category or the protective service category. The likelihood of returning to work does not vary by claimants's pre-disability earnings.  
Source: ETF administrative data

Examining concurrently how the characteristics of workers correlate with their likelihood of claiming short-term ICI and their outcomes post claiming may provide some insights on how workers use employer-provided DI, and in particular how they decide whether to claim DI and when. For example, workers who are UW academic employees are the least likely to claim short-term ICI compared to workers in other employment categories. However, conditional on claiming, they are also the least likely the return to work after receiving ICI benefit. In contrast, workers in the protective service category are the most likely to claim short-term ICI, but they also return to work at a very high rate. Thus, UW academic employees tend to use short-term DI as a 'bridge' coverage between disability onset and the award of long-term DI, while workers in the protective service occupation tend to use short-term DI for income support while recovering from a temporary disability before returning to work. These differences may point to variation in the types of medical conditions that affect workers in different jobs, or differences in the threshold that workers use in deciding when to claim DI. The factors that go into a worker's DI claiming decision is an area that can be further explored in future research.



### 4.3 Trajectories of workers before and after claiming short-term ICI

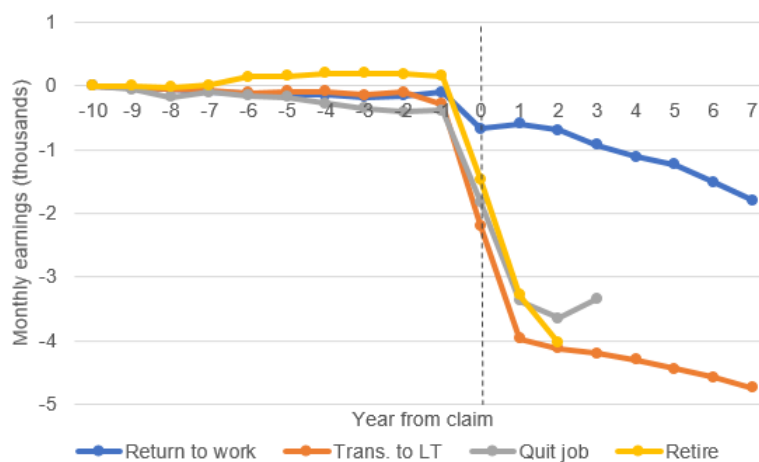
To examine the trajectories of workers before and after claiming ICI, I ran the following standard event study regression:

$$Y_{it} = \alpha_i + \gamma_t + \beta \mathbf{X}_{it} + \sum_g \sum_k \delta_k^g A_{kit}^g + \varepsilon_{it} \quad (3)$$

I examine three outcome variables  $Y_{it}$ : earnings, service (which is similar to hours worked), and the use of sick leave.  $\mathbf{X}_{it}$  is a vector of worker's characteristics that vary over time such as age. I also include individual-level fixed effects  $\alpha_i$  and year fixed effects  $\gamma_t$ . The parameter of interest is  $\delta_k^g$ .  $g$  is an index for a worker's outcome after claiming short-term ICI. There are four potential outcomes: return to work, transition to long-term DI, quit job, and retire.  $k$  is an index for the number of years from claiming short-term ICI.  $A_{kit}^g$  is an indicator that equals to one if a worker has  $g$  outcome and is  $k$  years away from claiming short-term ICI. In this regression, I focus on the first observed short-term ICI claim in the data.

Figure 13 shows the earning trajectories of short-term ICI claimants. Unsurprisingly, earnings drop for claimants who transition to long-term DIs, quit their jobs, or retire after claiming short-term ICI. What is less expected is that earnings also drop for workers who return to work, although at a much slower pace. Moreover, there is no gradual fall in earnings or a pre-trend in the years prior to claiming. This is interesting because other papers such as Meyer and Mok (2019) found that earnings tend to drop in the years prior to disability onset.

Figure 13: Trajectory of Earnings



Notes: This chart shows the coefficient estimates  $\delta_k^g$  in the event study equation (3) when the outcome variable is monthly earnings. It examines the trajectories of earnings of short-term ICI claimants. Each claimant is grouped into four categories: those who return to work, those who transition to long-term DI, those who quit their jobs, and those who retire. After claiming short-term ICI, all claimants experience a drop in their earnings, even those who return to work. Prior to claiming, there is no gradual drop in earnings or a pre-trend.

Source: ETF administrative data

Figure 14 shows the service trajectories of workers who claimed short-term ICI. One unit of

service is equivalent to working full-time for a year. The service trajectories of short-term ICI claimants largely reflect those of earnings. Hours worked decrease after claiming ICI, even for those who return to work. Moreover, there is no gradual fall in service in the years prior to claiming.

Figure 14: Trajectory of Service/Hours Worked



Notes: One unit of service is equivalent to working full-time for a year. This chart shows the coefficient estimates  $\delta_k^g$  in the event study equation (3) when the outcome variable is service. It examines the trajectories of service of short-term ICI claimants. Each claimant is grouped into four categories: those who return to work, those who transition to long-term DI, those who quit their jobs, and those who retire. After claiming short-term ICI, all claimants experience a drop in their service, even those who return to work. Prior to claiming, there is no gradual drop in service or a pre-trend.

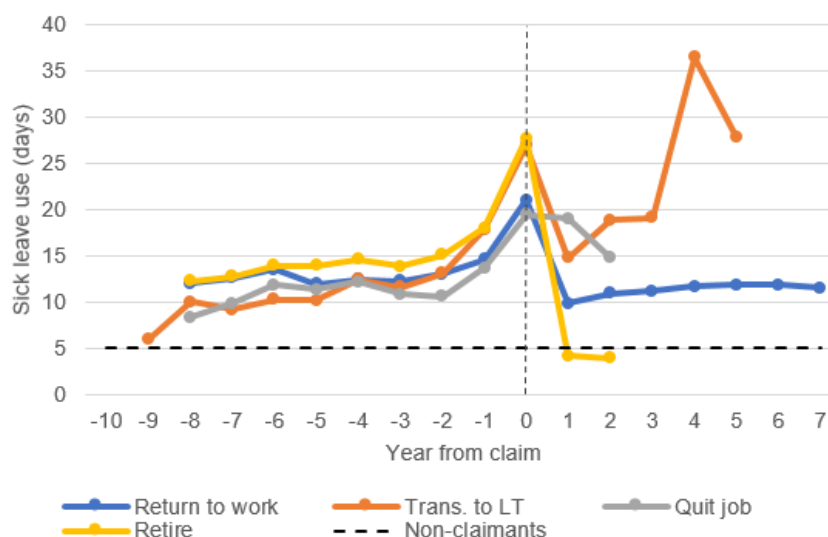
Source: ETF administrative data

Figure 15 shows the trajectories of sick leave use for short-term ICI claimants. This graph is a little different from the previous two because it shows the raw means of sick leave use in days instead of the coefficient  $\delta_k^g$  in the event study specification. The raw means may be more informative than the coefficient estimates because the former show features of the sick leave use that would have been absorbed by the fixed effects otherwise. A graph with the coefficient estimates is included in the appendix.

Generally, short-term ICI claimants use a lot of sick leave even in the years prior to claiming at 13 days per year, and the trend is stable up to two years before claiming. In contrast, workers who never claim DI use five days of sick leave per year on average. This is shown by the dotted black line in the graph. The use of sick leave among short-term ICI claimants increase one year prior to claiming and then peaked during the year of claim. This likely reflects the requirement of the ICI program that a claimant must exhaust all sick leave up to 6 months before receiving the first benefit payment. The sample size of workers who did not return to work is very small post-claiming, so their post-claim trends are not very informative and should be ignored. Among workers who went back to work, their sick leave use after claiming short-term ICI returns to the pre-claim levels, suggesting that they did not fully recover from their medical condition.

Examining the trajectories of earnings, service, and sick leave use may provide some insights on how workers jointly use DI and sick leave use to support their work. For example, even

Figure 15: Trajectory of Sick Leave Use (Raw Means)



Notes: This chart shows the means of sick leave use, in days. It examines the trajectories of sick leave use of short-term ICI claimants. Each claimant is grouped into four categories: those who return to work, those who transition to long-term DI, those who quit their jobs, and those who retire. All claimants use a lot of sick leave, even years prior to claiming compared to workers who never claim DI. The use of sick leave increases one year prior to the claim and peaks during the year of claim. The sample size of workers who do not return to work is very small post-claiming, so their post-claim trends are not very informative and should be ignored. Among workers who went back to work, their sick leave use after claiming short-term ICI return to the pre-claim levels.

Source: ETF administrative data

though workers who eventually claim short-term ICI use a lot of sick leave, they were able to maintain their earnings and hours worked, at least in the years prior to claiming. This raises the question of whether a generous sick leave policy can help workers to continue in their jobs when they have chronic and work-limiting medical conditions and more generally, raises questions on the role of sick leave in supporting work and how it interacts with DI.

#### 4.4 Outcomes of short-term ICI claimants who returned to work

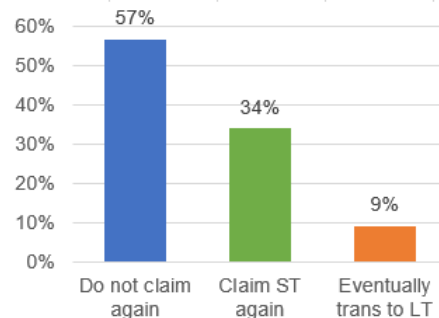
The previous section showed that even for short-term ICI claimants who returned to work, their earnings and hours worked declined after claiming. This implies that there is variation in claimants' success in returning to work. In this section, I further explore this finding by focusing on the outcomes and trajectories of the subset of short-term ICI claimants who returned to work. I restrict the sample to workers who claimed short-term ICI in 2011–2013 so that I can observe their outcomes five to seven years after claiming.<sup>11</sup> I divide these workers into three groups: those who never claim DI again, those who claim short-term ICI again (but did not claim other DI), and those who eventually transition to long-term disability benefit (after claiming short-term ICI again).

The drop in earnings and hours worked among claimants who returned to work may be explained by those who later on claim short-term ICI again (34 percent) or those who

<sup>11</sup>For those who claimed later, the time horizon may be too short to observe their outcomes. Recall that the claims data spans 2011–2018.

eventually transition to long-term DI (9 percent). These are shown in Figure 16. The remaining 57 percent of short-term ICI claimants who returned to work did not claim ICI again in the next five to seven years after the first observed claim. Next, I examine the characteristics of workers such as employment category and earnings, that are correlated with these three outcomes.

Figure 16: Outcomes of Short-Term ICI Claimants Who Returned to Work



Notes: This chart shows the outcomes of short-term ICI claimants who returned to work. 57 percent of these workers do not claim DI again. 34 percent later on claim short-term ICI again, but not other DI. The remaining 9 percent eventually transition to long-term DI after claiming short-term ICI again.  
Source: ETF administrative data

The outcomes of short-term ICI claimants who returned to work vary by their medical condition, as shown in Figure 17. Claimants with musculoskeletal condition or mental illness are more likely to claim short-term ICI again, compared to workers with injury/infection or neoplasm/blood conditions. Moreover, claimants with nervous/sensory condition are more likely to claim short-term ICI again or to transition to a long-term DI program.

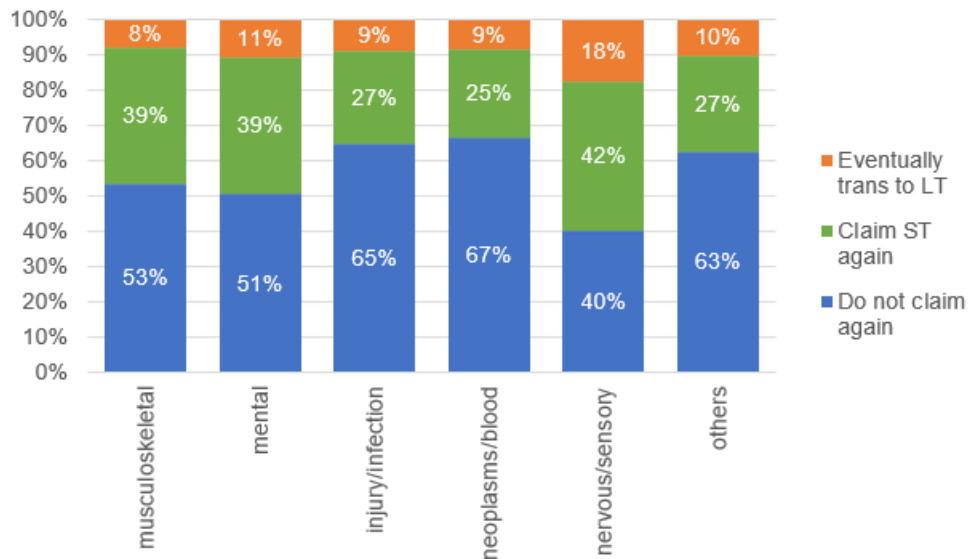
Section 4.2 showed that compared to workers in other employment categories, UW academic employees are the least likely to claim short-term ICI. However, conditional on claiming, they are have lowest probability of returning to work and the highest probability of transitioning to a long-term disability program. This suggests that UW academic employees generally apply for short-term ICI only when their disability is sufficiently severe to merit transitioning to a long-term DI program. Additionally, Figure 18 shows that conditional on returning to work after claiming short-term ICI, UW academic employees are the least likely to claim any DI again. That is, they have more success in retaining their employment after returning to work. Together these observations imply UW academic employees may have access to better workplace accommodations that allow them to maintain their employment.

To examine the correlation between worker's characteristics and their outcomes after claiming short-term ICI and returning to work, I ran the following regression:

$$\begin{aligned} Do\ not\ claim\ again_{it} = & \delta_0 + \delta_1 Female_{it} + \delta_2 Months\ Paid_{it} + \delta_3 Age_{it} \\ & + \delta_4 Employment\ Cat_{it} + \delta_5 Earnings\ Quartile_{it} + \varepsilon_{it} \end{aligned} \quad (4)$$

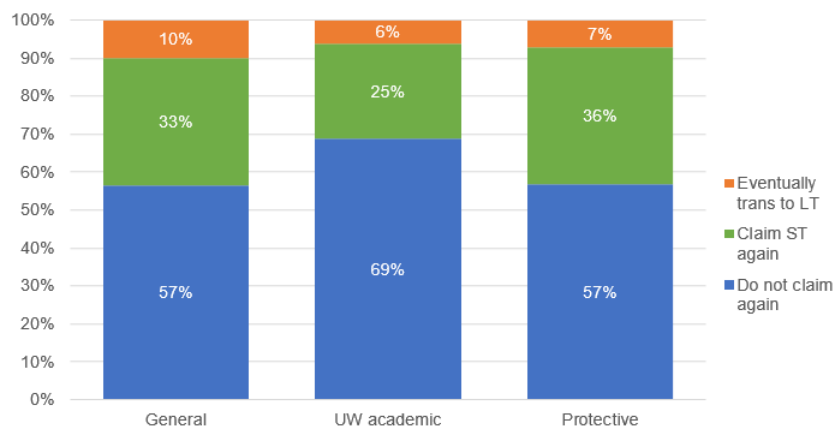
$Do\ not\ claim\ again_{it}$  is an indicator that equals one if the claimant did not claim any DI

Figure 17: Outcomes of Short-Term ICI Claimants Who Returned to Work, by Medical Diagnosis



Notes: This chart shows the outcomes of short-term ICI claimants who returned to work, by their medical condition. Claimants with injury/infection or neoplasm/blood-related condition are less likely to claim DI again, compared to workers with musculoskeletal condition, mental illness, or nervous/sensory-related condition.  
 Source: ETF administrative data

Figure 18: Outcomes of Short-Term ICI Claimants Who Returned to Work, by Employment Category

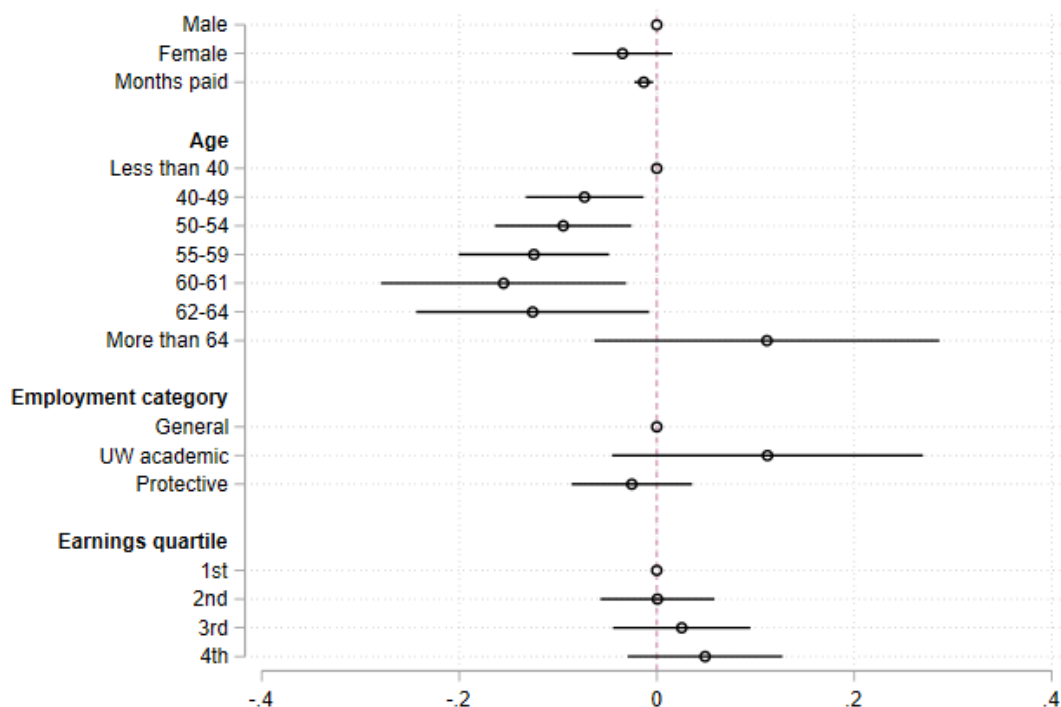


Notes: This chart shows the outcomes of short-term ICI claimants who returned to work, by their employment category. UW academic employees are less likely to claim DI again compared to workers in the general category or the protective service category.  
 Source: ETF administrative data

again after returning to work.  $Months\ Paid_{it}$  is the number of months that the worker had received short-term ICI. Figure 19 shows estimates from the regression which are consistent with the descriptive statistics previously discussed. The confidence intervals of the estimates are large because of the relatively small sample size.

Unsurprisingly, older ages are correlated with a higher probability of claiming DI again. This may imply that older workers have a recurring health issues, or have a harder time recovering from a disability. Similarly, receiving short-term ICI benefit for a longer period the first time is associated with claiming DI again in the future. A longer period of benefit receipt may imply that the disability was more severe and harder to fully recover from.

Figure 19: Not Claiming DI Again and Worker's Characteristics



Notes: This chart shows the coefficient estimates of equation (4) which examines the correlation between claimant's characteristics and the likelihood of not claiming DI again after returning to work. The following characteristics are associated with a higher likelihood of not claiming DI again: male, receiving short-term ICI benefits for fewer number of months, younger ages, being a UW academic employee, and having higher earnings.

Source: ETF administrative data

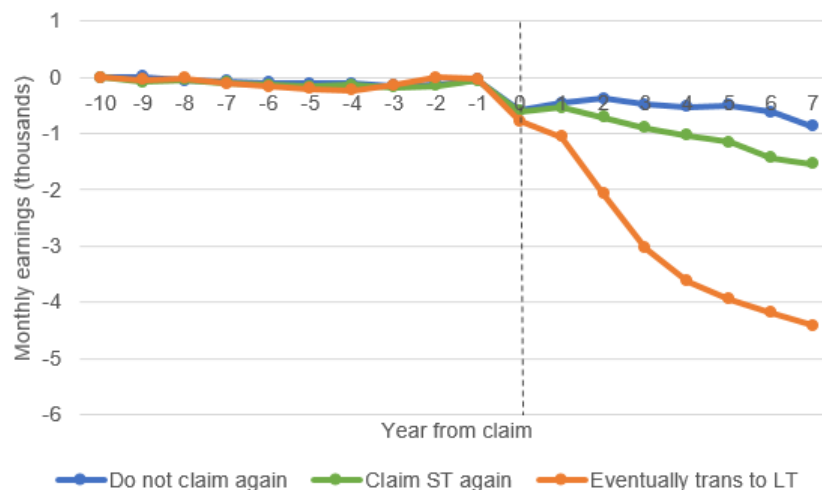
Lastly, I examine the trajectories of earnings and hours worked among short-term claimants who returned to work using a regression specification that is similar to the event study specification in Section 4.3. The only difference is that here,  $g$  is an index for a claimant's outcome after returning to work. There are three potential outcomes: do not claim DI again, claim short-term ICI again (but not other DI), and transition to long-term DI (after claiming short-term ICI again).

Figure 20 shows the earning trajectories of claimants who initially returned to work after claiming short-term ICI. As expected, those who eventually transitioned to long-term dis-

ability experience a sharp decline in their earnings after the first observed short-term ICI claim, implying that their effort to return to work were not very successful. The earnings of workers who did not claim DI again or claimed only short-term ICI also dropped after the first observed short-term ICI claim, but at a much more modest rate.

The trajectories of hours worked is shown in Figure 21. The finding is similar to that of earnings. Those who did not claim DI again managed to work as many hours as they did before they claimed short-term ICI. This shows that full recovery from a disability and success in returning to work are feasible for a subset of short-term ICI claimants. In contrast, the hours worked of workers who claimed DI again declined after the first observed short-term DI claim. The drop is more precipitous for those who eventually transition to a long-term disability program.

Figure 20: Trajectory of Earnings of Claimants Who Returned to Work



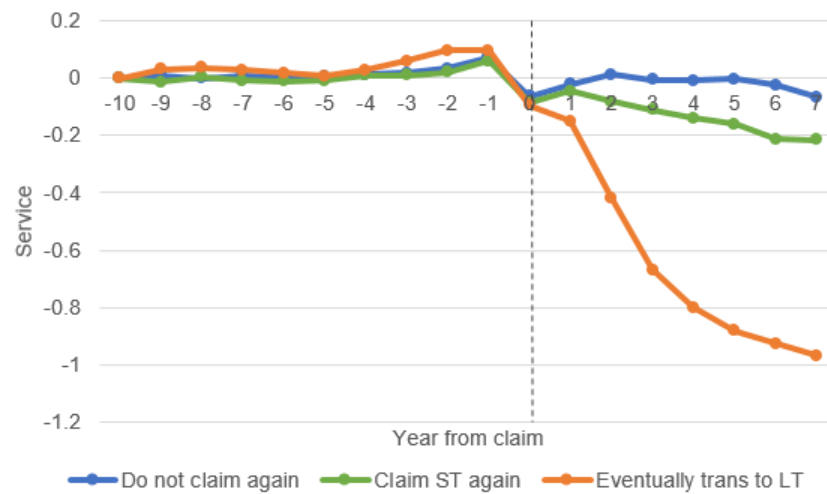
This chart shows the coefficient estimates  $\delta_k^g$  in the event study equation (3) when the outcome variable is monthly earnings. It examines the trajectories of earnings of short-term ICI claimants who returned to work. Each claimant is grouped into three categories: those who do not claim DI again, those who later on claim short-term ICI again (but not other DI), and those who eventually transition to long-term DI (after claiming short-term ICI again). Earnings of workers who claim DI again decline after they return to work. The drop is larger among those who eventually transition to long-term DI. The earnings of workers who do not claim DI again is more stable.

Source: ETF administrative data

## 5 Conclusions

The risk of disability is not trivial. While many workers rely on public DI programs such as SSDI to protect them against disability risk, these programs do not provide complete insurance. This paper studies how Wisconsin state public employees use employer-provided DI benefits and how they fare before and after claiming short-term DI. Wisconsin state public employees are likely different from the general US workforce in a few ways. First, as public employees, they have more job stability. The average number of years of service among Wisconsin state public employees is 12.6. Moreover, they may have access to better non-DI employer-provided benefits such as health insurance and retirement benefits. Third, while the

Figure 21: Trajectory of Service/Hours Worked of Claimants Who Returned to Work



Notes: One unit of service is equivalent to working full-time for a year. This chart shows the coefficient estimates  $\delta_k^g$  in the event study equation (3) when the outcome variable is service. It examines the trajectories of service of short-term ICI claimants who returned to work. Each claimant is grouped into three categories: those who do not claim DI again, those who later on claim short-term ICI again (but not other DI), and those who eventually transition to long-term DI (after claiming short-term ICI again). The service of workers who claim DI again decline after they return to work. The drop is larger among those who eventually transition to long-term DI. In contrast, workers who do not claim DI again manage to work as many hours post-claiming as they did before they claimed short-term ICI.

Source: ETF administrative data

data does not contain records of workers' education, Wisconsin state public employees may have more education and training. These facts combined indicate that the workers studied in this paper are more economically secured compared to the general US population. Thus, the findings of this paper should be consumed with this caveat in mind. For example, one motivation for claiming DI among workers with poor health may be the lack of economic opportunities in the local area. This may be less of a case with Wisconsin state public employees.

The first part of the paper describes how these disability programs collectively provide a safety net for workers who have a debilitating medical condition. I also compare the Wisconsin DI programs with SSDI and DI benefits provided by other employers. Similar to other employer-provided benefits, workers with higher earnings are more likely to be covered by employer-provided DI. Among Wisconsin state public employees, those with higher earnings take up ICI at a higher rate compared to workers with lower earnings. At the same time, workers with high earnings are also less likely to claim DI. This highlights the vulnerability of low-income workers who may not be able to afford the premium but are more likely to need DI benefits.

The second part of the paper focuses on the use of short-term ICI among Wisconsin state employees. I find that the following worker's characteristics are associated with a higher likelihood of claiming short-term ICI: women, older workers, those working in the protective service category, and workers with lower earnings. I also examine workers' outcomes after they claim short-term ICI. A large majority (64 percent) returned to work. Another 24



percent transitioned to long-term DI while the rest quit their jobs or retire. Short-term ICI claimants are able to maintain their earnings and hours worked up to the year of claim. Moreover, workers who eventually claim short-term ICI use a lot of sick leave even in the years prior to claiming. Thus, employer-provided short-term DI fills an important gap in protecting workers against disability risk that SSDI is unable to cover. The former provides income support for workers who have the potential to recover from their disabilities so that they can return to work. For workers with more severe disabilities, short-term DI serves as a bridge while they wait for the awards of long-term DI benefits that may have a long waiting period.

While there is a large literature on the labor response to SSDI and return-to-work programs, much less is known about the period prior to DI application. This paper suggests a few research questions that can be further explored in the future. First, what is the effect of having short-term DI coverage? For example, it can help workers to return to work because it provides financial support for workers during a period of disability. On the other hand, it can encourage transition to long-term DI because it makes the waiting period more bearable. This paper is unable to address this question because there is no plausibly random variation in the ICI coverage that can help to identify the effects of short-term DI on a worker's outcomes. Second, what is the role of sick leave in supporting work and how does it interact with DI? As previously mentioned, workers who eventually claim short-term DI are able to maintain their employment up to the period immediately before the claim possibly through the use of paid sick leave. One question that can be explored in the future is whether the generosity of a paid sick leave policy affect DI claiming.

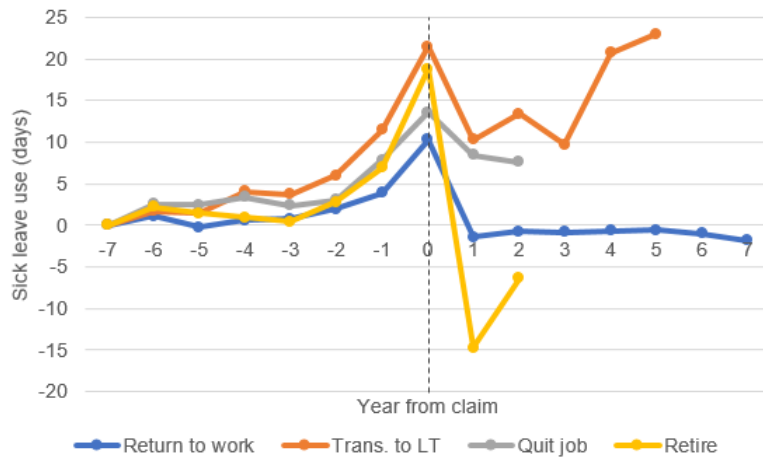
## References

- Autor, D. H. and M. G. Duggan (2006, September). The Growth in the Social Security Disability Rolls: A Fiscal Crisis Unfolding. *Journal of Economic Perspectives* 20(3), 71–96.
- Autor, D. H. and M. G. Duggan (2010, December). Supporting Work: A Proposal for Modernizing the U.S. Disability Insurance System. *Center for American Progress, The Hamilton Project*.
- Autor, D. H., N. Maestas, K. J. Mullen, and A. Strand (2017). Does Delay Cause Decay? The Effect of Administrative Decision Time on the Labor Force Participation and Earnings of Disability Applicants. *Working paper*.
- BLS (2011, February). Sick Leave and Disability Benefit Combinations. *U.S. Bureau of Labor Statistics, Program Perspectives* 3(2).
- BLS (2020, September). National Compensation Survey: Employee Benefits in the United States, March 2020. *U.S. Bureau of Labor Statistics*.
- ETF (2000–2018). State Income Continuation Insurance employee brochures. *Wisconsin Department of Employee Trust Funds*.
- Meyer, B. D. and W. K. Mok (2019). Disability, Earnings, Income and Consumption. *Journal of Public Economics* 171, 51–69. Trans-Atlantic Public Economics Seminar 2016.
- Mok, W. K. C., B. D. Meyer, K. K. Charles, and A. C. Achen (2008). A Note on “The Longitudinal Structure of Earnings Losses among Work-Limited Disabled Workers”. *The Journal of Human Resources* 43(3), 721–728.
- SSA (2019a). Annual Statistical Report on the Social Security Disability Insurance Program, 2018. *Social Security Administration Publication 13-11826*.
- SSA (2019b). Annual Statistical Supplement to the Social Security Bulletin, 2019. *Social Security Administration Publication 13-11700*.
- SSA (2020). Annual Statistical Report on the Social Security Disability Insurance Program, 2019. *Social Security Administration Publication 13-11826*.
- Stephens, Melvin, J. (2001). The Long-Run Consumption Effects of Earnings Shocks. *The Review of Economics and Statistics* 83(1), 28–36.
- Taylor, D. M. (2018). Americans with Disabilities: 2014. *United States Census Bureau P70-152*.

## Appendix

### Trajectory of Sick Leave Use with Controls and Fixed Effects

Figure 22: Trajectory of Sick Leave Use





**Center for Financial Security**

School of Human Ecology  
University of Wisconsin-Madison

1300 Linden Drive  
Madison, WI 53706

608-890-0229  
cfs@mailplus.wisc.edu  
cfs.wisc.edu