

# WORK-RELATED OUTCOMES AMONG EMPLOYEES WITH CANCER

Implications For Employers, Providers and Data Scientists



THE CENTER FOR WORKFORCE  
HEALTH AND PERFORMANCE

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## About the Center for Workforce Health and Performance

The Center for Workforce Health and Performance is a hub of information for research reports, educational resources, technical assistance, and a variety of evidence-based information sources on a healthy and high-performing workforce. CWHP fosters the use of evidence to promote the value of healthy, engaged and high-performing workers to employers, communities and society at large. By developing knowledge about workforce health and performance improvement, and disseminating it widely through scientific and educational forums, CWHP contributes to the adoption of evidence-based policies and practices that support a healthier, happier and higher-performing workforce, a healthier economy and, in turn, healthier and more productive communities.

## Acknowledgements

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# Introduction

## **AT THE CENTER FOR WORKFORCE HEALTH AND PERFORMANCE (CWHP)**

we have a particular interest in the health and wellbeing of workers and how employers, health care providers and others can support longer, healthier and more fulfilling working lives. This report focuses on employees with cancer and their

associated work-related outcomes including periods of disability away from work. We provide implications for employers, health care providers and data scientists in improving health and work-related outcomes for employees with cancer who would like to stay at work or return to work during or after treatment.

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# What do we know about cancer and work?

**ACCORDING TO THE AMERICAN CANCER SOCIETY<sup>1</sup>** there will be approximately 1,762,450 new cancer cases and 606,880 cancer deaths in the U.S. in 2019. The National Cancer Institute (NCI) estimates that 38.4% of men and women will be diagnosed with cancer at some point during their lifetimes (based on 2013–2015 data).<sup>2</sup> NCI has a series of efforts aimed at including

employment outcomes in studies of cancer survivors.<sup>3</sup> NCI finds that approximately 46% of people diagnosed with cancer are working age (between the ages of 20 and 64), however older adults are continuing to work well into their late 70s.

A recent systematic review of studies on cancer survivors and return to work (RTW) results found

a list of common factors that were related to RTW.<sup>4</sup> In Table 1 we provide an excerpt of selected factors (others not included here are education, income and the

value of paid employment to individual worker — refer to the original article for additional metrics around study quality).

**TABLE 1: FACTORS RELATED TO RETURN TO WORK**

Source: from table 3 from Kiasuwa Mbegi et al, Systematic Reviews (2016)5:35.

FACTOR	RESULTS
DISEASE AND TREATMENT-RELATED	
Cancer site	Head and neck, lung and breast cancers and leukemia impeded RTW
Stage	Advanced cancer stages substantially lengthen sickness leave
Treatment	Chemotherapy and combination of therapies are negatively associated with RTW
Symptoms	Fatigue, pain and depression are the main impeding symptoms
WORK-RELATED	
Type, sector and job demands	Lower occupational class, private sector and demanding jobs impeded the (time to) RTW
Employers’ and colleagues’ support	Support of colleagues and employers predict quicker and easier RTW



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Collectively, recent research findings suggest that raising the awareness of health professionals and employers about barriers to RTW may improve earlier identification and prevent long-term disability or undesired departure from the workforce. Specifically, research has suggested implications for oncology nurses and care case managers to better support patients' understanding around continued work or return to work, especially around potential cognitive changes related

to the treatment that may affect the employee's ability to perform tasks requiring focused concentration.<sup>5</sup> Research also finds a need to target employers around supportive interventions and policies that support employee stay at work and return to work outcomes.<sup>6</sup> A 2015 study in the journal *Cancer* found that adults with cancer saw a decline in both employment and earnings after their cancer diagnosis.<sup>7</sup>



# Short and long-term disability from work

**IF A WORKER IS LUCKY ENOUGH**

to have short or long-term disability insurance coverage, they will most often receive a percentage of their usual wage while they are out on disability. In this way disability insurance coverage can buffer the negative effects of severe income loss through its wage replacement

mechanism. However, the longer a person remains on work disability the less likely they are to return to work even if they want to. A recent IBI report shows the estimated wage replacement costs for different types of cancer across STD and LTD programs, as displayed in Table 2.

**TABLE 2: COMBINED CLAIMS COSTS FOR SHORT AND LONG-TERM WORK DISABILITY**

Source: Selected conditions from Figure 4, Disability Leaves for Five Common Types of Cancer, IBI Benchmarking Analytics Report, March 2018.

CANCER TYPE	AVERAGE STD COSTS	ADJUSTED LTD COSTS
Liver	\$9,700	\$6,500
Lung	\$9,200	\$6,400
Colorectal	\$9,000	\$5,200
Breast	\$7,400	\$3,600
Prostate	\$6,200	\$2,100

NOTE: Total costs can be estimated by adding the *average* STD costs to the *adjusted* LTD costs. The adjusted LTD costs are the product of the average LTD claim costs and the average proportion of STD claims that convert to LTD. These estimates are produced from IBI’s disability benchmarking database, data year 2016. Refer to IBI source report for further estimates.

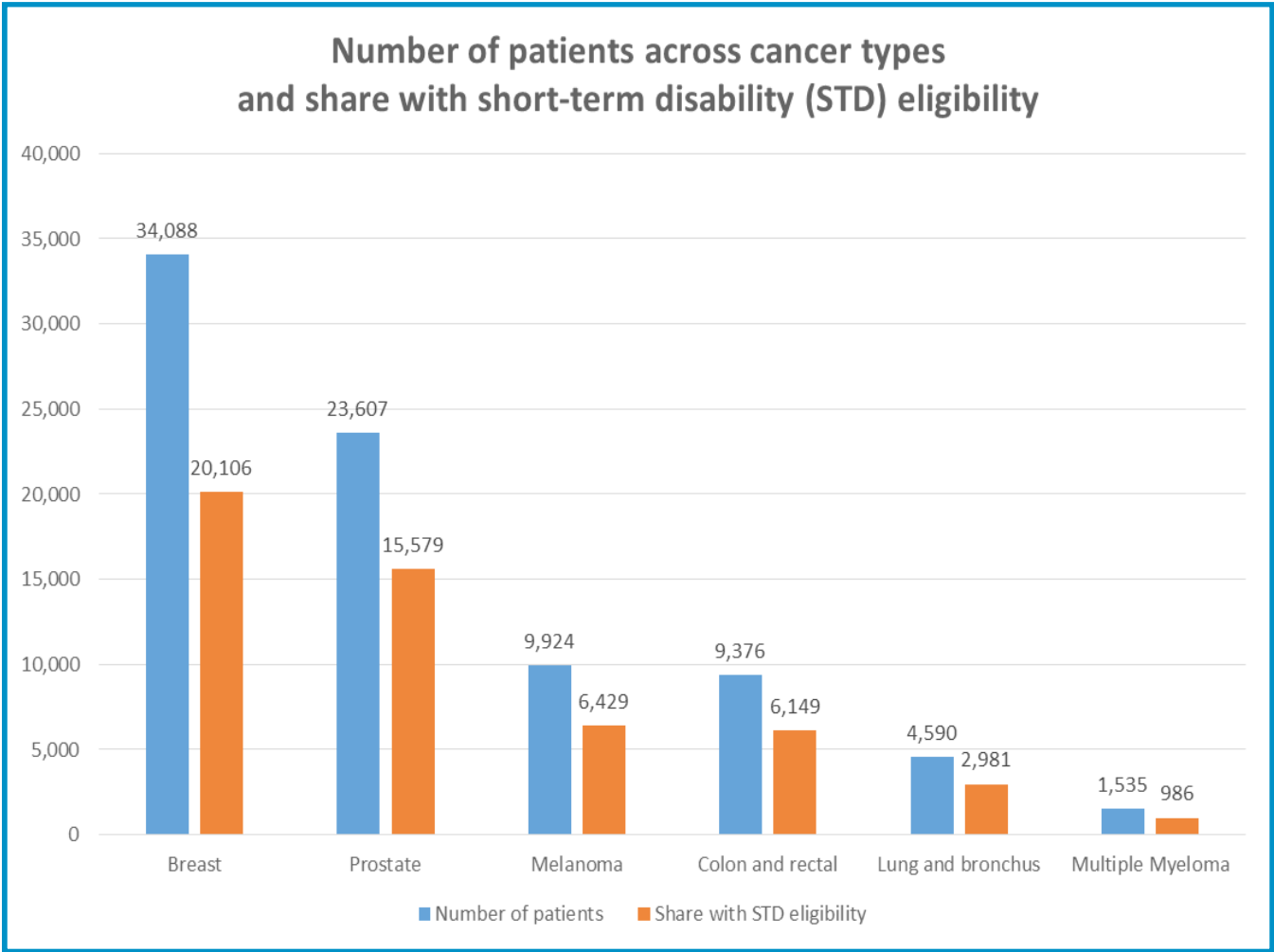
When STD and LTD data are available, we can know a little bit more about the measured costs associated with a work disability claim. But, not everyone has work disability insurance and, unfortunately, what gets measured gets managed. That means that a sizeable proportion of employees may be experiencing periods of work disability without any compensation at all, or delaying diagnosis and treatment that might otherwise have prevented worse outcomes. To provide a tangible example, for a recent analysis we had access to an eligibility database across multiple employers and employees along with a wide variety of diagnostic, treatment and outcome data. This

allowed us to compute the STD eligibility for employees in a worksite population because we were not limited to only claims activity, that is, we knew how many employees were eligible for a wide variety of benefits over time. We created a five-year study dataset containing medical and pharmacy claims for employees with six types of cancer and several work-related outcomes including short and long-term disability claims, self-reported work performance and absence. Refer to additional information in the appendix regarding the “cancer pool” (the sample of employees with cancer). Figure 1 depicts the share of patients with STD coverage.



# FIGURE 1: SHARE OF EMPLOYEES WITH SHORT-TERM DISABILITY INSURANCE ELIGIBILITY

Source: Analyses of Integrated Dataset (2008-2012) produced via data provided by Truven Health Analytics, Inc.<sup>8</sup>



The blue bars represent the number of patients in this study dataset with the particular type of cancer noted. Breast cancer has the largest number of patients across the five-year study period with 34,088 employees. The orange bars represent the share of patients who are eligible for short-term disability insurance (STD) with computed rates ranging between 59% and 66%.



What do these data represent?

That's always an important question for any data scientist or researcher to answer, especially when they are using administrative datasets, that is, data collected for administrative purposes. In this case, short-term disability claims are recorded to keep track of who files a claim, for how long, for what illness or injury and how much the claim costs.

Figure 2 shows the rate of STD claim filing across cancer types.

Among the STD-eligible employees, the highest rate of claim filing was among those with lung and bronchus cancer — almost half (49%) filed an STD claim. The lowest STD filing rate, at 20%, was for melanoma.

Comparing these two figures to each other should provoke additional questions. Data scientists and analysts might ponder why there are differences in eligibility

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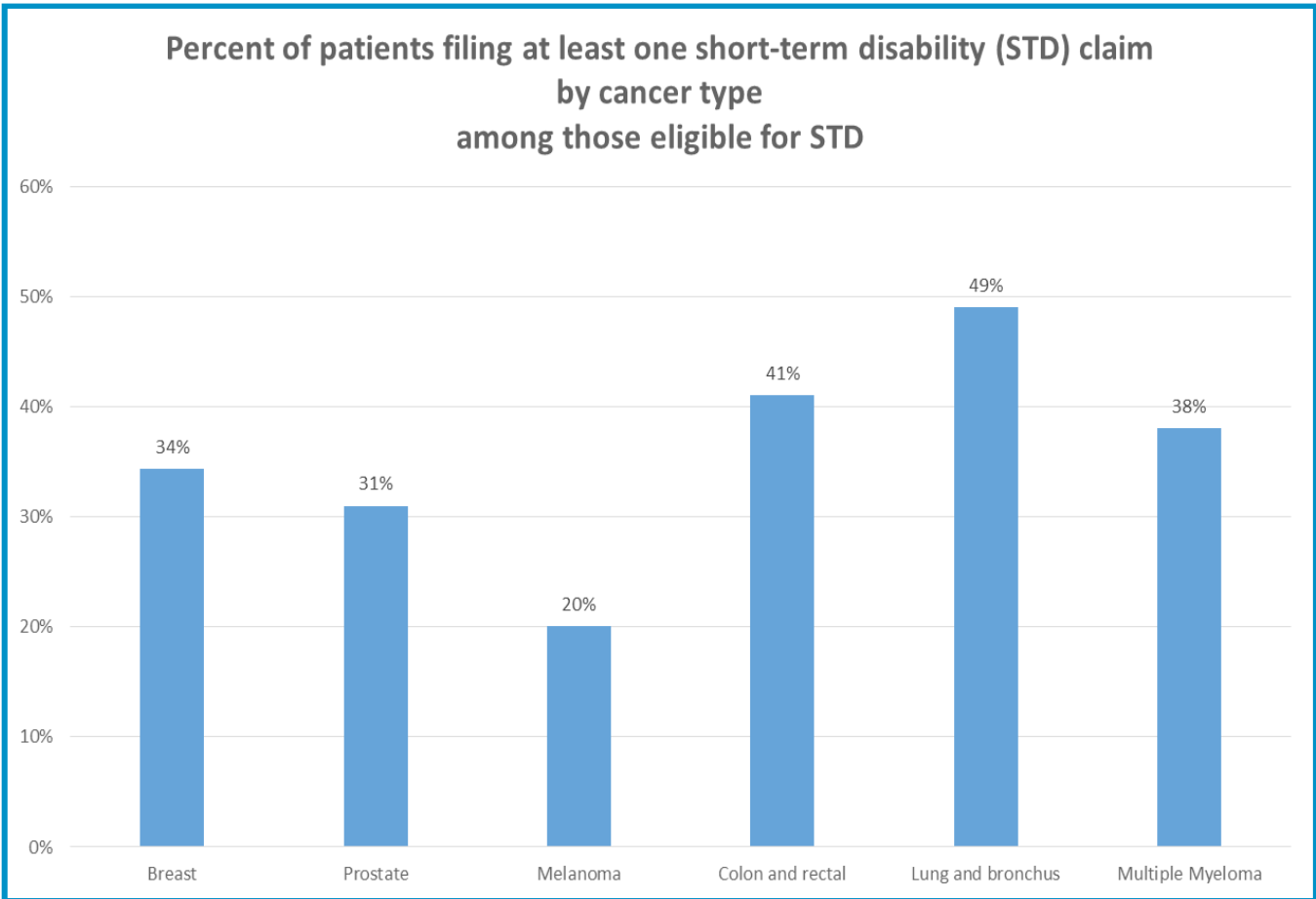
DATA SCIENTISTS AND  
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rates across cancer types and what might account for different filing rates. Perhaps the part-time nature of employment might affect the availability of STD benefits and therefore the likelihood of filing a claim. For example, we know that women are more likely than men to be employed part-time, and we would expect, therefore, that rates of eligibility for STD coverage would reflect this pattern in the case of breast cancer.

## FIGURE 2: PERCENT OF PATIENTS FILING A SHORT-TERM DISABILITY CLAIM

Source: Analyses of Integrated Dataset (2008-2012) produced via data provided by Truven Health Analytics, Inc.<sup>8</sup>



For employers and insurers, quite often the primary reason why claims are tracked is to understand and better predict financial liability. The more sophisticated disability management firms and consultants also assess ways to reduce incidence and shorten durations through

prevention and intervention activities. But, very little of this activity, if any, is focused on individuals who do not have STD insurance coverage. To understand the unbenefited we have to look to other secondary data sources beyond only those employees with STD insurance coverage.

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# Self-reported performance at work

**IN THIS SAME FIVE-YEAR DATASET**

we appended self-reported work performance for the sample of employees with cancer, the “cancer pool”. We know that employers in particular have an interest in understanding the impact of different chronic conditions and treatment approaches on a variety of work outcomes such as absence, job performance and periods of work disability.

We found 4,224 individuals from this cancer pool who completed at least one health risk appraisal containing self-reported performance/productivity outcomes. There are a wide variety of performance, productivity and presenteeism measures available in the market and CWHP has continuing studies utilizing many of these measures<sup>9</sup>. For this cancer pool study we had access to the following productivity measure.

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**PRODUCTIVITY MEASURE**

In the past 4 weeks, number of days your health problems affected productivity at work?

- |                      |  |
|----------------------|--|
| <b>1</b> = 0 days    | <b>5</b> = 11-15 days                  |
| <b>2</b> = 1-2 days  | <b>6</b> = 16 or more days             |
| <b>3</b> = 3-5 days  | <b>9</b> = NA (excluded from Figure 3) |
| <b>4</b> = 6-10 days |  |

Figure 3 (next page) provides the overall average levels of productivity, along with sample sizes and standard deviations.

### FIGURE 3: AVERAGE SELF-REPORTED PRODUCTIVITY ACROSS SIX CANCER TYPES AND FOUR YEARS OF DATA

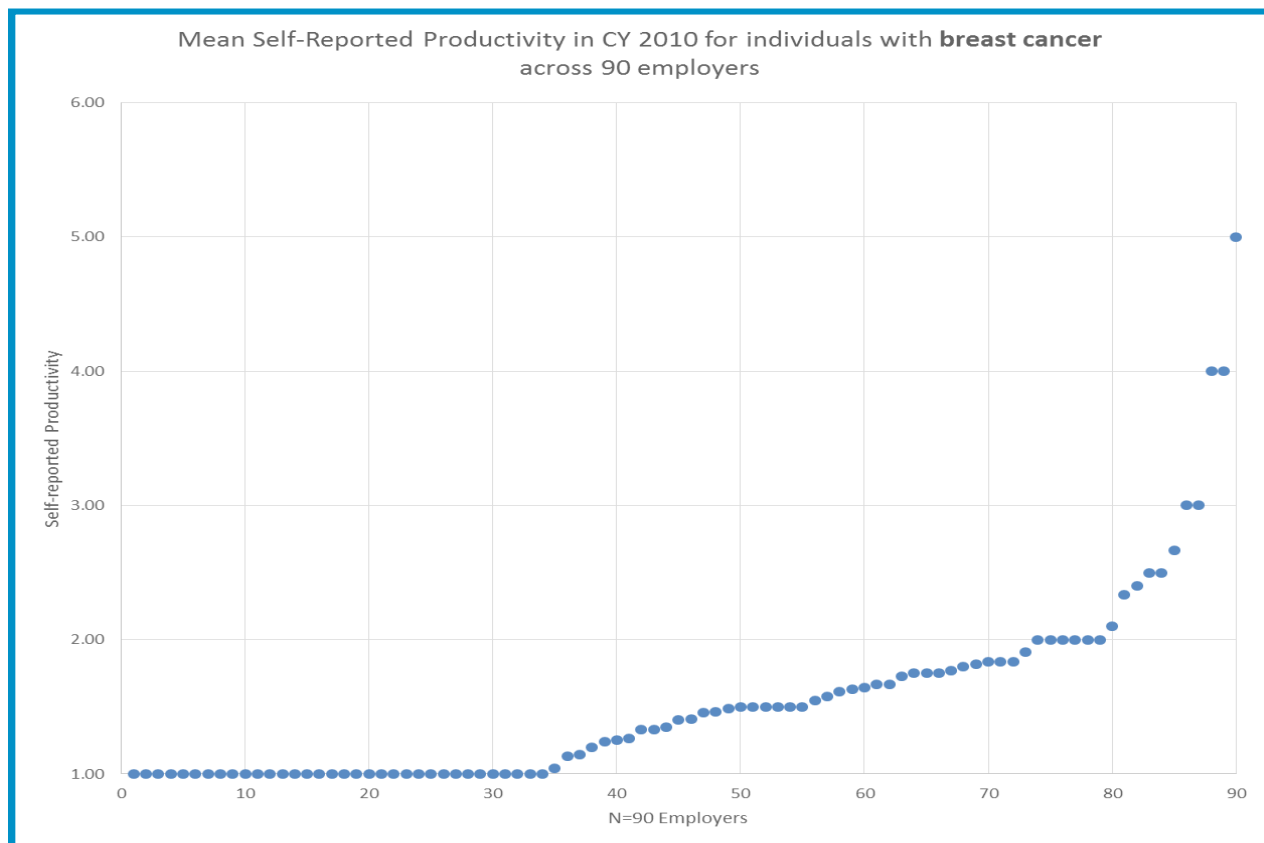
Source: Analyses of Integrated Dataset (2008-2012) produced via data provided by Truven Health Analytics, Inc.<sup>8</sup>

SAMPLE WITH SELF-REPORTED PRODUCTIVITY OVER FOUR YEARS BY CANCER TYPE				
	2009	2010	2011	2012
<b>Breast</b>	1.47	1.54	1.52	1.53
N	738	798	1657	405
Std.	1.071	1.165	1.141	1.098
<b>Colorectal</b>	1.46	1.49	1.44	1.32
N	207	186	294	78
Std.	1.091	1.111	1.003	.919
<b>Lung</b>	1.52	1.88	1.51	1.71
N	77	72	73	7
Std.	1.273	1.547	1.203	1.254
<b>Melanoma</b>	1.31	1.42	1.35	1.29
N	251	220	311	84
Std.	.844	1.015	.935	.844
<b>Multiple</b>	1.43	1.69	1.97	1.75
N	30	29	32	8
Std.	1.305	1.561	1.769	1.165
<b>Prostate</b>	1.24	1.32	1.26	1.15
N	445	357	488	137
Std.	.739	.8780	.776	.527

Across all types of cancer, individuals report non-zero work performance loss. Among the six cancer types, individuals with breast cancer reported the highest levels of performance loss while those with prostate cancer reported the lowest. Figures 4 and 5 show significant variation across employers in work performance. This suggests the need for further analyses to understand what could

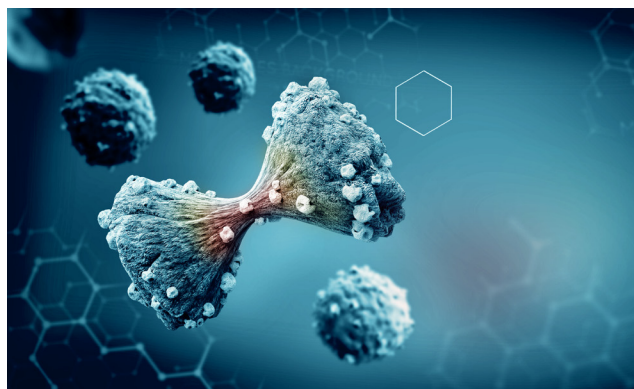
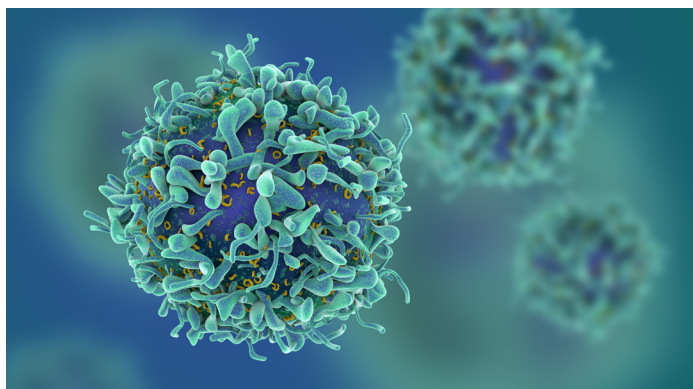
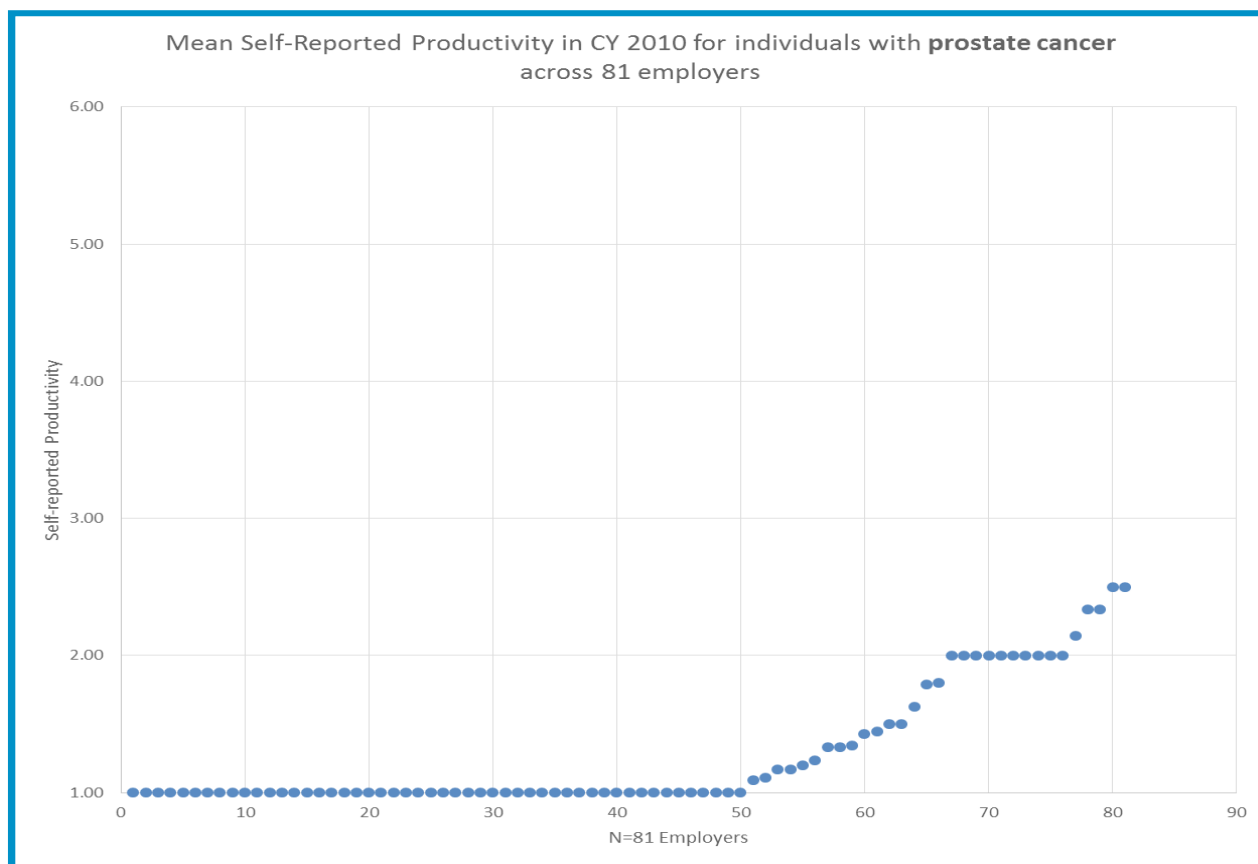
be associated with these between employer differences in cancer outcomes after controlling for employee level factors and other unmeasured factors associated with the employer and employee. The between-employer variation in self-reported productivity for the largest reporting year, CY 2010, is presented for people with breast cancer in Figure 4, followed by prostate cancer in Figure 5.

**FIGURE 4: VARIATION IN SELF-REPORTED PRODUCTIVITY ACROSS EMPLOYERS FOR BREAST CANCER SAMPLE**





**FIGURE 5: VARIATION IN SELF-REPORTED PRODUCTIVITY  
ACROSS EMPLOYERS FOR PROSTATE SAMPLE**



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# Conclusions

**FOR THIS SAMPLE OF EMPLOYEES,** between one fifth and one half experienced some type of work disability. Clearly, a large portion of individuals with cancer experience work disability and assessing ways to better identify and treat these patients may help reduce the incidence of work disability and costs associated with work-disruptive disability periods.

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VARIATION ACROSS EMPLOYERS AND  
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Additional work-disruptive performance loss was also demonstrated with variability across cancer types and employers. These types of work performance losses are usually not included in studies of medical costs, but they are important outcomes for employees, employers, families and society at large. Variation across employers and employees in

these types of outcomes, beyond health care costs, warrants further attention. Access to high quality and appropriate treatment may mitigate the effects of work performance loss and prevent longer term periods of work disability and income disruption.

Support can also be offered through employee assistance programs including guidance around caregiver support for employees with family members who have cancer. There is growing evidence that stress plays a role in cancer as well.<sup>10</sup> Innovative research is investigating the connections between biobehavioral, socioeconomic and cultural factors that will inform more holistic treatments and technologies aimed at individual patient's needs and backgrounds.<sup>11</sup>

Employers, providers and data scientists can all support the inclusion of the right data, resources and treatment to affect longer, healthier and more fulfilling working lives for employees with cancer.

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# Appendix:

## Description of cancer pool

### Data Source

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Data was provided by Truven Health Analytics, an IBM Company, with data purchase funds provided by PhRMA.

### Selection of the “Cancer Pool”

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Select individuals with one of six types of cancer. Selection criteria and sample sizes are outlined in the chart on the following page.

### For more information

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**Jinnett, K.** *Self-Reported Work Performance among Employees with Cancer: Implications for Employers*. Value in Health. 19(3):A161-A162. May 2016.

Patients in the  
Truven HPM data sets  
between 2008 and 2012  
14,637,195



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- <sup>1</sup> [https://cancerstatisticscenter.cancer.org/?\\_ga=2.185325481.129318290.1555103566-565362968.1555103566#!/](https://cancerstatisticscenter.cancer.org/?_ga=2.185325481.129318290.1555103566-565362968.1555103566#!/)
- <sup>2</sup> <https://www.cancer.gov/about-cancer/understanding/statistics>
- <sup>3</sup> <https://healthcaredelivery.cancer.gov/employment/>
- <sup>4</sup> Kiasuwa Mbengi R, Otter R, Mortelmans K, Arbyn M, Van Oyen H, Bouland C, de Brouwer C. Barriers and opportunities for return-to-work of cancer survivors: time for action--rapid review and expert consultation. *Syst Rev*. 2016 Feb 24;5:35.
- <sup>5</sup> Von Ah D, Storey S, Tallman E, Nielsen A, Johns SA, Pressler S. Cancer, Cognitive Impairment, and Work-Related Outcomes: An Integrative Review. *Oncol Nurs Forum*. 2016 Sep 1;43(5):602-616.
- <sup>6</sup> Greidanus MA, de Boer AGEM, de Rijk AE, Tiedtke CM, Dierckx de Castelle B, Frings-Dresen MHW, Tamminga SJ. Perceived employer-related barriers and facilitators for work participation of cancer survivors: A systematic review of employers' and survivors' perspectives. *Psychooncology*. 2018 Mar;27(3):725-733.
- <sup>7</sup> Zajacova, A. et. al, Employment and income losses among cancer survivors: Estimates from a national longitudinal survey of American families, *Cancer*, October, 2015.
- <sup>8</sup> This study uses data from the Truven Health Analytics Health and Productivity Management (HPM) and Commercial Claims and Encounters (CCAE) databases containing healthcare claims and self-reported performance. The study population consists of individuals over a 5-year period (2008-2012) with at least one inpatient claim or two cancer outpatient



claims more than 30 days apart with ICD-9 diagnosis codes for one of the following cancer types: breast cancer (female only), prostate cancer, colon and rectal cancer, melanoma, cancer of the lung and bronchus, or multiple myeloma. CWHP studies and presentations on cancer and work: <https://www.tcwhp.org/press/dr-jinnett-presents-self-reported-work-performance-among-employees-cancer> and <https://www.tcwhp.org/cancer-workplace-supporting-treatment-positive-employee-and-employer-results>

<sup>9</sup> <https://www.tcwhp.org/physical-and-psychosocial-stressors-job-quality-and-workforce-health-performance>

<sup>10</sup> <https://www.cancer.gov/about-cancer/coping/feelings/stress-fact-sheet>

<sup>11</sup> Moreno Smith M, Lutgendorf S, Sood, A. Impact of stress on cancer metastasis. *Future Oncol.* 2010. Dec; 6(12): 1863-1881.