

In 2006 IBI presented its first Health and Productivity Research Fellowship to an academic prominent in the field of workforce health and productivity. As the recipient of IBI's inaugural fellowship, Dr. Donna Gilleskie, Associate Professor and a health economist at University of North Carolina at Chapel Hill, assessed the publicly-available nationally-representative datasets for measurement of costs and causes of health-related lost work time. She also summarized the data sources, measures and possibilities for using these datasets for health and productivity research. To do so, Dr. Gilleskie also outlined the essential components of determining workforce health-related lost productivity.

Evaluation of the Content of Publicly-available, Nationally-representative Datasets for Use in Measuring the Costs and Causes of Health-related Lost Work Time

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Donna B. Gilleskie, Ph.D.

Donna Gilleskie is an Associate Professor in the Department of Economics at the University of North Carolina at Chapel Hill and research associate with the National Bureau of Economic Research. Her email address is donna_gilleskie@unc.edu

Section I – Introduction

Employers have long recognized that the hiring, retention, and productivity of their employees are largely a function of the business's wage and benefit offerings. In this paper we use the term "business" to refer to any company or firm, small or large, that may provide benefits to its employees. Recently, in an effort to enhance productivity, many businesses are making deliberate investments in the physical and mental health of their workers. Business inputs, or non-wage compensation, that may affect employee health include measurable benefits like health insurance coverage, as well as sick and medical leave policies, absenteeism policy, and vacation policy. The business also may offer other, increasingly popular, workplace amenities to improve health such as health education seminars, exercise facilities, smoking cessation and exercise programs, employee assistance programs, family leave policies, and on-site day care. Examples of less tangible workplace conditions that affect health are morale, senior-management leadership, corporate culture, and employee empowerment.

Citing the interplay between employer-provided benefits and employee short- and long-term health, some businesses are reevaluating their objective of minimizing the total wage bill (i.e., the dollar value of wages plus benefits plus employer contribution to taxes) in favor of maximizing employee productivity. That is, rather than reducing the generosity of, quality of, and/or contribution to non-wage compensation, such businesses recognize the value of providing a compensation package that improves or maintains workforce health and, in turn, productivity.

The appropriateness of these business-level efforts depends on the relationship between health, health behaviors, and productivity, as well as the relationship between health, health behaviors, and the business's total compensation package. Anecdotal evidence and analyses of single-business experience suggest that a shift in business strategy from reduction of health care costs to investment in employee health has successfully increased productivity and improved the financial bottom line. Additional evidence obtained from a random sample of employees from many different and nationally-representative businesses/occupations would generalize these results. Unfortunately, these data are not available. In particular, accurate measurement of lost productivity associated with employee health-related absenteeism (being absent from work) and presenteeism (being present at work but working at a reduced capacity) is compromised by the limited questions and the wording of questions in publicly-available large datasets.

The objective of this review paper was to identify, assess and summarize the publicly-available nationally-representative datasets for measurement of costs and causes of health-related lost work time. This review suggests that appropriate measures of health-related lost productivity among employees are not available for evaluating alternative (business or firm-level) options for optimal investment in employee health. We provide background, in Section II, that demonstrates why measurement of absence, presenteeism, and lost productivity is important to employers. We also review efforts by businesses to evaluate the costs of such lost work time. In Section III we discuss ideal measures from individual-level survey data that would allow for the most comprehensive evaluation of lost productivity costs and its causes. We briefly discuss in Section IV the extent to which current data sources provide, or do not provide, the necessary data to analyze questions of interest. Finally, in Section V, we suggest what it would take to move analysis of these issues forward.

This survey paper provides an assessment of the currently available nationally-representative datasets for measurement of the costs and causes of health-related lost work time. We do not review the literature on the effect of work on health, or discuss the limitations of the different measures of health on wages and work productivity. Also we do not explore the extent to which health affects occupational choice or retirement decisions.¹ Measurements of necessary variables, such as instruments for measuring lost productivity or physical and mental health, have been surveyed elsewhere (Mattke, et al., 2007; Prasad, et al., 2004; Lofland, et al., 2004; and McHorney, et al., 1993).

Section II – Background

Employer-provided health insurance represents the largest component of non-wage compensation in most U.S. businesses. And these health insurance costs are rising. According to Gabel, et al. (2004), employer-sponsored health insurance premiums increased by 11.2% from 2003 to 2004. During four consecutive years of double-digit increases, and increases nearly nine percentage points above that of inflation and wages, employers have responded by reducing the employer contribution and increasing employee cost sharing on the offered plans (e.g., deductibles, copayments, and co-insurance). Although most large businesses continue to offer medical coverage, the proportion of small businesses (less than 200

¹ See Currie and Madrian (1999) for a summary of related literature.

employees) who offer health insurance has fallen from 68% to 63% from 2001 to 2004.

While health insurance costs are expensive, as are other health-related benefits such as sick and disability leave, the additional costs of health-related lost productivity are too big to ignore. Even if the costs of health coverage could be fully shifted away from employers to employees or if the U.S. government offered universal health insurance, businesses would still have to deal with the fact that employees get ill. Rather than view the benefit provisions as costs to be minimized, employers should view the health of their workforce as an asset to be maintained. Maintenance, or improvement, of this asset may require investment. While investment may be costly, investments that provide incentives for employees to maintain or improve their health may have a long-run net gain.

There is a growing interest in assessing the benefits to employers of programs that reduce the number of hours of lost work time due to physical and mental health conditions. In order to make a correct assessment of the value of investments in workforce health, evaluation of the costs and causes of lost work time are crucial. Although the focus in this review is on health-related reductions in productivity, it may be important at some level to understand all reasons for lost work time in order to assess the extent to which businesses can incentivize behavior that will have a positive impact on productivity. A categorization of the work-loss terminology used throughout this text is provided in the first two columns of Table 1.

Costs of Lost Work Time: Absenteeism

Lost work time may be the result of an employee absence in which the individual does not show up for all or part of his scheduled work time on a scheduled work day. Depending on the business's absence, medical, sick leave and disability policies, the employee may or may not be compensated. Eligibility for wage compensation depends on the allotment of hours or days that an employer grants the employee and the employee's year-to-date consumption of that allotted time. Some employers monitor reasons for absence by requiring employees to show proof of sickness or medical intervention. Other employers offer compensated medical leave only to seek treatment, but not to recuperate.²

Assuming an employee is eligible for compensation during a health-related absence, one of the direct costs to the employer is wage replacement. This calculation requires knowledge of the employee's wage rate, characteristics of his absence and sick leave benefits, a record of his remaining stock of benefits, and the amount of work time he missed. If the employer contributes non-wage compensation to this employee, then an additional direct cost of an absence should reflect the employer's per-unit (hour or day) dollar-valued contribution to other benefits such as health insurance, retirement savings, workers' compensation, unemployment insurance, Medicare, OASDI, and FICA.

² A relatively new benefit concept, called Paid Time Off, encompasses many traditional paid benefits such as sick and medical leave, vacation, and personal days. The employee is allotted a specified number of days in which he may miss work regardless of the reason.

The lost productivity of the absent worker is often calculated based on the human capital approach, where the loss of production equals the money wage that would have been paid during the absence in competitive labor markets.³

Nicholson et al. (2006) found that costs associated with missed work vary across jobs according to the ease with which a manager can find a perfect replacement for the absent worker, the extent to which the worker functions as part of a team, and the time sensitivity of the worker's output. Thus, wages may not be a sufficient measure of lost productivity. They estimated wage "multipliers" for 35 different jobs where the multiplier is defined as the cost to the business of an absence as a proportion of the absent worker's daily wage.⁴

A recent survey of employers suggests that these indirect costs of absence are quite large (IBI, 2006). In fact, over 60% of the companies surveyed reported that they were somewhat likely or very likely to respond to employee absences by increasing the use of overtime or hiring temporary workers. Almost 40% said that it was very or somewhat likely for work to be left undone or for deadlines to be missed. Although employers were more likely to continue the production process (with overtime or temporary workers) than to sacrifice revenue by halting or slowing production when scheduled employees were absent, these strategies impose indirect costs on the employer. The indirect costs depend on the managerial response, which depends on the extent to which employees are replaceable and the time-sensitive nature of production. Factors correlated with the production response to absent workers include employer size, industry and occupation, employee age and gender composition, and unionization. A complete assessment of the costs of absence requires quantification of these indirect costs.

Costs of Lost Work Time: Presenteeism

Besides absenteeism, an employee's presenteeism should be evaluated in order to completely and accurately assess health-related lost productivity costs. Presenteeism, or on-the-job productivity, can be compromised by poor health.⁵ Peer-reviewed research on the effect of chronic illness on absence and presenteeism demonstrates a range of from 2 to 3 times as much lost time from presenteeism as from absence (Loeppke, et al., 2007). Typically, evaluation of presenteeism is

³ The friction cost method is another way of measuring lost productivity that includes the reduced productivity during the friction (or transition) period when the employee is ill as well as the costs of recruitment and training of replacement workers (Koopmanschap, 1995). The US Panel method attempts to incorporate all costs and health consequences from a societal perspective and hence, includes costs associated with the affected individual (e.g., quality of life costs), the employer (e.g., friction costs), and other members of society that may be affected (Gold, et al., 1996; Russell, et al., 1996; Weinstein, et al., 1996).

⁴ Nicholson, et al. (2006) specify a wage multiplier but do not include benefits in the replacement cost. To the extent to which benefits are fixed costs, their exclusion may be justified. Many benefits may attract workers to a firm, but may have little impact on daily working behavior. Alternatively, benefits may be instrumental to employees in evaluating daily work options such as: to attend work when under the weather or to stay home, to seek medical treatment when ill or to forego treatment, to take a rest when burnt out or to push oneself beyond capacity.

⁵ Admittedly, presenteeism may also be affected by non-health factors such as distractions in the workplace (e.g., celebrations, gossip), attentiveness to non-work activities (e.g., last night's football game, planning a child's birthday party), and computer-related time sinks (e.g., email, internet).

calculated from self-reported ability to complete required tasks. Burton et al. (2006) investigate presenteeism based on employees' responses to a health risk appraisal (HRA), which included a modified version of the Work Limitation Questionnaire (WLQ). The validity and usefulness of such questionnaires has been evaluated by Lofland, et al. (2004).

Most often, these questions are asked in single business settings and evaluate lost productivity associated with particular illnesses or health conditions.

Measurement of costs associated with presenteeism requires valuation of an employee's per-unit (hour) productivity which is typically measured by his wage. While wage-replacement is not a direct cost because the worker is in attendance, the loss of output experienced by a worker who is not producing to his expected capacity (or hiring excess workers to make up for the detriment in productivity) represents a cost to the business. Measurement of this cost requires information on the worker's wage, his non-wage compensation, the amount of time his productivity was diminished, the extent to which his productivity was diminished and the strategy an employer chooses for making up the lost productivity. Similar to the indirect costs of absence, presenteeism has impacts on additional work units if they depend on the output of the "less present" worker. Admittedly, much of this information is difficult to quantify.

Causes of Lost Work Time

Related to the measurement of costs of lost work time are the causes of lost work time. If an employee is sluggish at work due to a late-night basketball game that went into overtime or an inconsolable child who had a bad dream, an employer has little ability to moderate those causes. But if health affects absenteeism and presenteeism, then the long-term options available to an employer for incentivizing behaviors that improve health or reduce health risks increase. Hence, information on the causes of lost work time and, in particular, detail about health-related causes is important. Such an account can include general measures of health (e.g., self-reported health status, body mass index, and activities of daily living) and specific measures of illness or health condition (e.g., back pain, fatigue, migraine, insomnia, flu, allergy, depression, broken leg). Mental health disorders are increasingly cited as factors leading to work absences and reduced work productivity. The extent to which these conditions are manageable by business-level benefits determines the role that businesses play in influencing employee absenteeism and presenteeism.

Section III - Ideal Variables for Analyses of Lost Work Time

One aim of this paper is to evaluate the usefulness of publicly-available, nationally-representative data sets to understand lost work time. In particular, we report on the availability of data to measure the costs (i.e., wage replacement, non-wage compensation, and reduced productivity) of lost work time (i.e., absenteeism and presenteeism) and the health-related causes of lost work time. Observations at the employee level provide specific information regarding an individual's work behavior and health. Observations at the business (or firm) level provide detailed information about benefit characteristics and aggregate production characteristics. Expressed differently, individual-level data are likely to lack information about the person's work establishment or cost information, and business-level (or firm-level) data do not allow for details related to individual-specific absences or illnesses. The

accuracy of calculations of costs and benefits to the business of particular programs aimed at managing health-related lost work time depends on an accurate understanding of individual employee behavior. Hence, we pay particular attention in this review to the information provided by nationally-representative individual-level datasets for making these calculations.

Lofland, et al. (2002) summarize the productivity measures in datasets similar to those we analyze. They focus on measurement of lost productivity, but do not discuss the ability of these data sets to evaluate causes nor do they discuss the datasets ability to approximate indirect costs. Additionally, we focus on data sets where survey work is ongoing or expected to continue. The extent to which the survey questionnaires might be amended to allow for better measurement is discussed in section V.

Prior to providing our assessment of available data sources, we specify the variables necessary to adequately measure the costs and causes of lost work time in an effort to evaluate the influence of business-specific incentives (e.g., benefits and amenities) on absence and presenteeism. Column three of Table 1 lists the variables we consider ideal for such analyses. First, we need to know specifically how much of his scheduled work time an employee was absent or not fully present. Many instruments for measuring health-related workplace productivity loss exist, but these scales or questionnaires tend to be applied in small, single-business (or single firm) settings. Dates of particular absences or presenteeism, in addition to the number of such events (i.e, days or hours of work loss) allow analysis of the dynamic incentives associated with fixed stocks of leave. Dates also provide additional information as they relate to weather, seasons, holidays, and proximity to weekends.

Secondly, the cost to the employer of lost work time involves both direct and indirect costs. We specify the direct costs as those paid directly to the employee if he is compensated for the lost time as well as any employer contributions to benefits or taxes during the missed work time. An absent employee who does not have coverage of the absence experiences a pay reduction; he is not paid for the scheduled work time that is missed and the business's direct wage costs are zero. A worker who attends work, but who reduces his productivity on the job due to illness or injury, receives his full pay. The business, however, is paying for work time that is not productive. Hence, it is necessary to value the amount of time that the individual was unproductive. While the direct costs capture the value of lost productivity of the individual worker, the indirect costs of lost work time capture the aggregate consequences (or spillovers) of this individual's unproductive scheduled time. That is, the indirect costs include the costs of overtime, excess and temporary workers, the costs of missed deadlines, and the costs of reduced production to the extent that this individual's reduced productivity influences the productivity of other workers. While these costs are quite impossible to quantify in individual-level surveys, some general business-level data may help approximate these indirect outcomes of a particular employee's absence.

Finally, we need to know the reason for the absence or presenteeism. These data allow the business to determine the prevalence of health-related work loss. They also allow the business to assess the extent to which non-wage benefits may influence work loss behavior.

Table 1: Ideal Variables for Evaluation of Lost Work Time

Measure	Terminology		Ideal Variables
Lost Time	Absenteeism	Presenteeism	date of each absence number of days/hours of time absent usual hours of work per day assessment of usual work productivity amount of lost productivity ^a
Direct Costs	Wage replacement	Individual value of worker's lost productivity	hourly wage hours worked per week full/part time status sick/medical leave, vacation, PTO indicator characteristics of such coverage year-to-date use of such coverage
	Non-wage compensation		employer-contribution to health, life, and disability insurance employer-contribution to retirement employer-contribution to federal/state taxes state of residence
Indirect Costs	Aggregate impact of absence or reduced productivity		value of lost time ^b occupation, industry task-specific characteristics fungibility of tasks cost of overtime and replacement workers size of firm, unionized
Causes	General health		self-reported health status risk indicators/behaviors weight and height ADLs, IADLs chronic conditions assessment of physical and mental health ^c
	Specific health		specific medical/health condition (illness or injury) causing lost work time ^d
	Other reasons		vacation family illness or emergency scheduled event (school- or home-related)

Notes: *a* measured using a reliable work productivity instrument (e.g., WLQ, HPQ)

b calculated using variables in the first three boxes of column 4

c measured using a reliable health instrument (e.g., SF-36)

d measured using a reliable work-loss instrument that measures medical condition (e.g., HPQ)

Section IV - Review of datasets and surveys

We used several methods to identify publicly-available, nationally-representative data that may allow for measurement of the costs and causes of lost work time. We began our exploration using the data search engine on the website of the Inter-University Consortium for Political and Social Research (ICPSR). ICPSR is one of the largest archives of social science data for research in the world. We also searched the U.S. Centers for Disease Control and Prevention (CDC) and the Robert Wood Johnson Foundation websites for additional dataset information. We concluded our investigation by determining the datasets used in published papers and working papers identified by Google Scholar and the Social Science Research Network as having the key words: work absence, absenteeism, presenteeism, lost productivity, work loss, health or disability.

From all of these sources, we identified ten datasets with the potential to calculate lost productivity costs and causes. Table 2 provides a general description of the datasets we evaluate. (Appendix A provides the full survey name and website address of each dataset listed in Table 2.) The column labeled Years of Coverage specifies the years in which the survey was fielded. Continued funding of each of these surveys is expected. In most cases, however, release of the data for public use lags two to three years behind data collection. Additionally, the survey questions change from year to year making consistency in measures across years difficult in some cases.

Lofland and Frick (2002) examined nine US national databases, some of which are evaluated in the current survey, to assess the availability of work productivity measures. Using six of the nine identified surveys, they suggested formulas for translation of lost productivity (e.g., workplace and non-workplace absenteeism or presenteeism) into a monetary figure if measurable using the survey questions. These formulas required many assumptions that extended survey responses into quantifiable measures. For example, the questionnaire's assessment of reported lost time may only allow for a dichotomous response to whether the individual missed a ½ day or more from usual activities. Translation to a particular amount of time may require the assumption that the individual was absent for an entire work day consisting of 8 hours. Lofland and Frick also assumed that full-time employees received non-wage benefits, and inflated the reported per hour wage (if available) by 29.1% to reflect the benefit share of total compensation reported by the U.S. Department of Labor. Their formulas do not account for the indirect costs associated with aggregate impacts of lost work time. Most of the questions do refer to health-related work loss, but Lofland and Frick do not report the availability of health measures in these datasets.

Rather than provide a list of assumptions that may be applied erroneously to survey responses in order to generate a monetary impact of lost work time, we focus on the data collection areas where more detailed responses would be beneficial. In particular, we detail the types of questions and responses that are available and make suggestions on wording and content that would expand the use of these data collections. We discuss the ability of available questions and responses to measure the costs and causes of lost work time using the categorizations in column one of Table 1 as our guide.

Table 2: Summary of Nationally-Representative Data Sets
Evaluated for Measurement of Costs and Causes of Lost Work Time

Dataset Acronym	Data Structure	Year Coverage	Sample Size	Accessibility
BFRSS	repeated cross section; annual survey	1984 - present	150,000 individuals annually	public use via internet
CPS	repeated cross section; annual or monthly survey	1940 - present	50,000 households monthly	public use via internet
HRS	longitudinal panel; biennial survey	1992 - present	22,000 individuals initially	public use via internet; application for restricted use
MEPS	overlapping two-year panels; quarterly survey	1996 - present	21,500 - 37,500 individuals annually	public use via internet; application for restricted use
MIDUS I, II	two-year panel with follow-up	1995 - 1996; 2004 - 2006	7,000 individuals; 5,900 individuals	public use via internet
NHIS	repeated cross section; annual survey	1957 - present	30,000 households annually	public use via internet; application for restricted use
NLSY79	longitudinal panel; annual survey through 1994, then biennial	1979 - present	12,700 individuals initially	public use via internet; application for restricted use
NLSY97	longitudinal panel; biennial survey	1997 - present	9,000 individuals initially	public use via internet; application for restricted use
PSID	longitudinal panel; annual survey	1968 - present	4,800 families initially; 7,000 families recently	public use via internet

Measures of Lost Time

In order to assess the impact on employers of lost work time, assessments of individual-level absence and presenteeism are crucial. Each of the datasets in Table 2 includes responses to questions about work absence. Examples of the work loss questions from one year of each survey questionnaire are provided in Appendix B. Despite the variability in phrasing, the questions direct the respondent to report days missed from work over a stated period of time due to health or illness. Unfortunately, some of the questions lump absences from work and other non-work activities into the same question. Some questions specify days as the unit of time absent (which may be reasonable for work absences), but others specify a ½ day or more and allow only a 0/1 response (rather than the number of hours missed). It is then left to the researcher to determine from other survey responses the amount of work time a day constitutes.

In only one of the ten evaluated surveys are respondents asked about their presenteeism. The NLSY79 asks if the worker accomplished less than he would have liked, if he was limited in the kind of work he could do, or if he didn't do that work as carefully as usual. However, this question does not allow for quantifying the lost time.

Interestingly, work productivity instruments consisting of relatively few questions (ranging from 3 to 27 items) have been used and their validity tested in smaller single-business settings and often for specific disease states (such as depression or migraines). The introduction of these components to nationally-representative individual-level data would greatly enhance health and productivity research.

Measures of Direct Costs

In most of these surveys some measure of compensation for paid work is available. However, the unit of measure (e.g., per hour, per day, per year) varies, and the length of the workweek or the number of weeks worked per year may be unavailable for translation of more aggregate measures to finer units. Indicators of paid sick or medical leave are often provided, but characteristics of these benefits, including stock of paid leave, were not available in any of the identified surveys. This information may be more difficult to obtain due to the variation in paid leave schemes. For example, some businesses provide a fixed number of sick days, some businesses reimburse a fixed number of absence episodes, and some businesses provide a fixed amount of paid time off that covers multiple reasons for lost work time. Not only are the different structures of paid leave difficult to categorize, but also the employee's eligibility for reimbursement depends on his history of absence during the coverage period.⁶

Other non-wage compensation is used to measure the employer's total direct cost of lost work time. Information on these benefits is uncommon, but has made its way into survey questionnaires in recent years. Availability of and/or coverage by employer-provided health insurance and, in some cases, whether the employer

⁶ Interestingly, such detailed information is available in the 1987 National Medical Expenditure Survey (NMES) that was a precursor to MEPS. Although this data set is often considered a one time cross section of individuals providing annual information, the survey structure was such that the respondents were asked to keep logs of their medical care use, illness, and disability days. From this dated information, a researcher is able to determine the first day of an absence and the length of the absence. Unfortunately, the stock of sick leave was not obtained.

contributes to the cost of health insurance can be determined in most of the datasets. Less common are indicators of whether the worker has vacation, retirement, pension, and disability benefits. Employer contribution to such benefits is even less rare, but the HRS does provide quite a bit of detail in this area. Employer responsibility for federal and state taxes requires information on the worker's state of residence (and perhaps his state of employment). Many of the datasets do not provide this level of individual detail due to confidentiality concerns. A researcher often has to request a restricted version of the data to obtain this information.

Measures of Indirect Costs

In order to account for the indirect costs of a worker's lost productivity, information about the business's work structure is important. Surprisingly, there are quite a few useful business-level characteristics provided by the individual respondents in many of these datasets. This information includes industry, occupation, number of employees, number of locations, and unionization. In only two of the surveys were individuals asked about their job requirements (HRS and MIDUS), which provide some indication of supervision and duties. These business-level components, however, may be useful in approximating the aggregate impact of lost work time.

Measures of Causes

Most of these surveys inquired about illness- or health-related work loss. Rarely was the specific health concern recorded (MEPS). In a few cases, the question allowed the respondent to distinguish between physical and mental health reasons (MEPS, MIDUS, NLSY79). In most cases, however, the survey was not attempting to capture specific incidents of lost work time but rather the aggregate amount of work loss (over a specified period such as two weeks, 30 days, or annually).

All of the evaluated surveys had some measure of the individual's general health. Many had measures of both physical and mental health, height and weight, limitations of activities of daily living, and chronic condition status. In datasets with less health focus, the only health information available is whether the respondent's health limits his ability to work (CPS, SIPP). These general measures of health, however, are potential indicators or correlates with work productivity.

Section V – Suggested Improvements

This review provides an assessment of the publicly-available nationally-representative datasets for measurement of costs and causes of health-related lost work time. Our evaluation suggests that the currently available survey questions are not sufficient for measuring these critical components of health and productivity analyses. While these datasets provide a wealth of information on employment behavior and health, the questionnaires lack the necessary detail to quantify lost productivity without requiring the researcher to make quite a few assumptions.

The first area where improvement is needed is the measurement of lost time. In particular, we were unable to quantify the hours missed from work due to absence despite inclusion of questions about absence behavior. The survey questions asked about number of absent days during a reference period, but the information on work

hours per day or per week (and number of days per week or weeks per year) were not sufficient to produce the number of units (days or hours) of lost work time. Additionally, there were no useful measures of presenteeism in the datasets we surveyed. Our suggestion is for these continuing surveys to incorporate one of the reliable work productivity questionnaires or scales that have been used in single-business (or single-firm) settings.

The evaluated surveys also lacked detail about the benefits provided to the employee. If indicators of various benefits were available, characteristics of those benefits were not obtained. In many cases the employer's name was recorded, suggesting that business-level (or firm-level) information could be acquired. In a few circumstances, an employer survey was conducted. Access to these data, linked to the individual-level data, is virtually impossible. Although in some cases (MEPS and HRS), researchers can apply for the restricted data, or may be able to access it by going on location.

Finally, while questions about lost work time typically referred to illness- or health-related absences, detail about the specific health conditions that caused the absence were not available. In most of the evaluated surveys, there was sufficient detail about the health of the individual in general. Hence, associations between general health and chronic conditions and work absence could be considered. Daily logs or diaries of health events, absence, and reduced productivity days, similar to those of the 1987 NMES, would be quite instrumental in advancing health and productivity research.

Appendix A

Table A1: Dataset or Survey Name and Web Address

Acronym	Full Name	Web Address
BFRSS	Behavioral Risk Factor Surveillance System	http://www.cde.gov/brfss/
CPS	Current Population Survey	http://www.census.gov/cps/
HRS	Health and Retirement Study	http://hrsonline.isr.umich.edu/
MEPS	Medical Expenditure Panel Survey	http://www.meps.ahrq.gov/mepsweb/
MIDUS I, II	Midlife in the United States	http://midus.wisc.edu/
NHIS	National Health Interview Survey	http://www.cdc.gov/nchs/nhis.htm/
NLSY79	National Longitudinal Survey of Youth 1979	http://www.bls.gov/nls/nlsy79.htm/
NLSY97	National Longitudinal Survey of Youth 1997	http://www.bls.gov/nls/nlsy97.htm/
PSID	Panel Study of Income Dynamics	http://psidonline.isr.umich.edu/
SIPP	Survey of Income and Program Participation	http://www.sipp.census.gov/sipp/

Appendix B

This appendix provides the exact wording of the question(s) that addresses lost time from each survey. Note differences in the referenced time frame of the lost work time, the isolation or aggregation of lost work time and lost time from other activities, and the stated cause of the lost time. Information to quantify the number of hours in a work day or work week is sometimes available but determination of the exact number of hours absent is rare.

Behavior Risk Factor Surveillance System (BRFSS)

"During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?"

(available beginning in 1993)

Current Population Survey (CPS)

"Why were you absent from work last week?"

- Own illness
- On vacation
- Bad weather
- Labor dispute
- Other

Health and Retirement Study (HRS)

"In the last 12 months, did you miss any days from work because of your health"

"About how many days did you miss?"

Medical Expenditure Panel Study (MEPS)

"Including the time in the hospital how many days did you miss a half day or more from work? Include any time when a half day or more was missed because of a physical illness or injury, or a mental or emotional problem."

Midlife Development in the United States (MIDUS I,II)

"In the past 30 days, was your work limited by your health?"

Were you unable to work due to physical or mental health? How many days each?

National Health Interview Survey (NHIS)

"During the past 12 months, about how many days did you miss work at a job or business because of illness or injury?"

(available 1997-2007)

"During that two week period, how many days did you miss more than half of the day from your job or business because of illness or injury?"

(available 1970-1996)

National Longitudinal Survey of Youth 1979 (NLSY79)

"During the past 4 weeks, have you had any of the following problems with your work or other daily activities as a result of your physical health?"

- Accomplished less than you would like?
- Were limited in the kind of work or other activities?"

"During the past 4 weeks, have you had any of the following problems with your work or other daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

- Accomplished less than you would like?
- Didn't do work or other activities as carefully as usual?"

National Longitudinal Survey of Youth 1997 (NLSY97)

"For some reason or another, people often do not work for a week, a month, or even longer. For example, strikes, layoffs, and extended illnesses can cause people to miss work for a week or longer. Between (these two dates), were there any periods of a full week or more during which you did not work for this employer, not counting paid vacations or paid sick leave?"

Panel Study of Income Dynamics (PSID)

"We are also interested in time spent away from work, during (calendar year). Did you miss any work because you were (someone else was) sick? When was that? How much work did you miss?"

Survey of Income Participation (SIPP)

"Please look at the calendar. Which weeks were you absent the whole week without pay?

What was the main reason you were absent without pay during those weeks?"

- On layoff (temporary or indefinite)
- Slack work or business conditions
- Own injury
- Own illness/medical problems
- Pregnancy/childbirth
- Taking care of children
- On vacation/personal days
- Bad weather
- Labor dispute
- New job to begin within 30 days
- Participated in a job-sharing arrangement
- Other

"Just counting the weeks that you worked between [reference month 1] 1st and the end of [reference month 4] were there any weeks when you worked less than 35 hours?

What was the main reason you worked less than 35 hours in those weeks?"

- Could not find full-time job
- Wanted to work part-time
- Temporarily unable to work full-time because of injury
- Temporarily unable to work full-time because of illness
- Unable to work full-time because of chronic health condition/disability
- Taking care of children/other persons
- Full time workweek is less than 35 hours
- Slack work or material shortage
- Participated in a job-sharing arrangement
- On vacation
- In school
- Other

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