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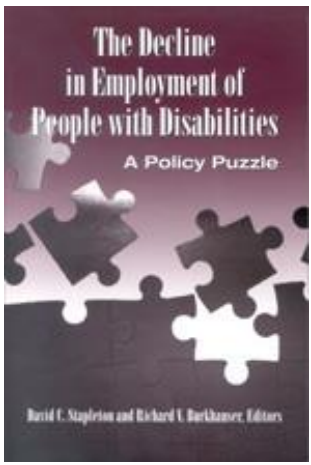

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Rising Health Care Expenditures and the Employment of People with High-Cost Chronic Conditions

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The cost of health care substantially increased during the 1990s, and this, coupled with how health care is financed in this country, may have decreased employment among people with disabilities. Nonelderly Americans finance health care primarily through private health insurance, and employment-related health insurance is the most important source of private insurance. Many people with disabilities have another option for financing health care, however; they can obtain Medicare or Medicaid coverage via the Social Security Disability Insurance (SSDI) or Supplemental Security Income (SSI) program, although to do so they must have severely limited earnings. Access to private and public insurance may be especially important for people with disabilities because many have special health care needs, such as ongoing needs for specialized care, and, as a group, they have substantially greater health care costs than those without disabilities (Alecxih, Corea, and Kennell 1995; DeJong et al. 2002; Rice and LaPlante 1992).

Rapid growth in the costs of health care, and concomitant changes in health care financing, may have decreased employment among people with disabilities by:

- increasing employee contributions to employment-related health insurance and thus decreasing the appeal of seeking insurance through employment;
- prompting commercial insurers to adopt managed care strategies to constrain costs, possibly reducing the adequacy of employer-sponsored coverage for people with disabilities, and making such insurance less attractive than public health insurance, where managed care is growing at a slower pace (Regenstein and Schroer 1998); and
- increasing the cost of employing people with disabilities relative to others, and thus reducing job opportunities when employers who provide insurance have a growing incentive to encourage people with disabilities to leave their jobs, or not hire them in the first place.

Our analyses focus on working-aged persons with high-cost chronic health conditions. We focus on these individuals primarily because, although people with disabilities as a group have higher than average health care needs and expenditures, not all persons with disabilities experience a large and sustained demand for health care. For example, a person who loses a limb because of an accident may experience high demand for health care and high expenditures in the short-term, but once the condition has stabilized, no longer has an exceptional need for services, assuming no secondary conditions. In contrast, end-stage renal disease, multiple sclerosis, severe mental disorders, and muscular dystrophy require intensive, ongoing care. Our hypothesis about the effect of changes in health care financing on employment is most pertinent to persons with ongoing, high expenditures.

We use data from three surveys to study people with high-cost chronic conditions. Using the 1987 National Medical Expenditure Survey (NMES) and the 1996 and 1997 Medical Expenditure Panel Survey (MEPS), we chart the rising prevalence of (treated) chronic conditions[1] and compare expenditures and health insurance coverage of people with chronic health conditions in 1987 and 1996–1997. These data, while rich in expenditure information, have a limited number of observations of people with both disabilities and high-cost chronic conditions. In addition, the disability measures differ between the NMES and MEPS, which affects our ability to make inferences about

the effect of changes in health insurance on employment over time. For these reasons, we also use data from the 1984–1996 National Health Interview Survey (NHIS). The NHIS data were collected in a consistent fashion over a long period, annually. We pool data from multiple years to increase sample sizes for more precise estimates. With the NHIS data, we measure the rising prevalence of high-cost chronic conditions and compare trends in employment between people with work limitations and high-cost chronic conditions, and other people with work limitations. If changes in health care finance are a factor, then we expect a more negative employment trend among those with high-cost chronic conditions.

In the next section, we provide background on the relationship between health insurance and the employment of people with disabilities, rising health expenditures and employee contributions, and managed care. We follow with a description of our empirical strategy, which focuses on people with work limitations and high-cost chronic conditions; the data; and define high-cost chronic conditions.

In the "Findings" section, we present descriptive information about the rising prevalence of high-cost chronic conditions, rising health expenditures, changes in health insurance coverage, and changes in employment of people with high-cost chronic conditions relative to those without such conditions. We also present findings that suggest that the rising prevalence of high-cost chronic conditions, and the decline in the employment rate of people with disabilities who have such conditions, had a small, but nontrivial depressing effect on the overall employment rate for people with work limitations.

BACKGROUND

Sources of Health Insurance for People with Disabilities

Private insurance

Private health insurance is the primary source of health insurance for nonelderly Americans, and employment-related health insurance is the most important source of private insurance. People with disabilities who obtain private insurance may face substantial restrictions in cover-

age (Friedland and Evans 1996). A 1998 survey that included 1,000 Americans with disabilities aged 16 and older found that although 90 percent of those with disabilities reported being covered by health insurance, 32 percent of those said that a special need related to their disability (for example, therapies, equipment, or medicine) was not covered by their insurance. Moreover, 20 percent reported being unable to obtain needed medical care on at least one occasion during the previous year, compared with 11 percent of those surveyed without disabilities (Louis Harris and Associates 1998).

People with chronic health conditions and disabilities may be unable to purchase private insurance outside of work because of high premiums and underwriting restrictions. Premiums for individual insurance policies are generally higher than those for employment-related policies and also vary depending on how tightly a state regulates its insurance market. A recent study of the accessibility of individual insurance policies to people with health problems reports that the average premium offered to hypothetical single individuals with a variety of health conditions in eight less-regulated markets was $333 per month (Pollitz, Sorian, and Thomas 2001). The highest *monthly* premium quoted among the policies studied was $2,504, for an overweight smoker with high blood pressure. Individuals with chronic health conditions may be unable to purchase a private individual health insurance policy at any price. According to Pollitz, Sorian, and Thomas, conditions commonly considered "uninsurable" by insurers in the individual insurance market include AIDS/HIV, brain or spinal cord injury, cystic fibrosis, diabetes, epilepsy, hemophilia, hepatitis C, kidney disease, lupus, multiple sclerosis, muscular dystrophy, organ transplant, osteoporosis, paraplegia or quadriplegia, Parkinson's disease, and stroke.

Public insurance

People with disabilities are much more likely than those without disabilities to rely on public health insurance, namely, Medicare and Medicaid. Working-aged people with disabilities are eligible for these programs when they qualify for SSDI or SSI, which means they must initially leave the labor force to qualify for Medicare and Medicaid.[2] Data from the 1994 NHIS show that nearly 60 percent of people with disabilities who are unemployed rely on public health insurance com-

pared with 17 percent of unemployed individuals without disabilities. Among employed persons, roughly 9 percent of those with disabilities rely on public health insurance compared with less than 2 percent of those without disabilities (Stapleton et al. 1998).

Policies to improve access to public insurance were implemented early in our study period, and then again after the study period. Beginning in 1986, former SSDI beneficiaries can keep Medicare benefits for up to four years after returning to work. Former SSI beneficiaries can keep Medicaid benefits if their employment income is insufficient to pay for the equivalent of the Medicaid and SSI benefits they formerly received. The 1999 Ticket to Work and Work Incentives Improvement Act (TWWIIA) extended the period of Medicare coverage for SSDI beneficiaries who leave the rolls because of work, and expanded options for states to provide Medicaid coverage to people with disabilities. The goal of these policies is to enable people with disabilities to return to work without fear of being unable to pay for health care.

Rising expenditures and employee contributions

From 1987 to 1996, per capita health care expenditures rose 14 percent above the inflation rate for noninstitutionalized persons (Zuvekas and Cohen 2002). Rising health care costs and improved medical technologies may have increased the importance of health insurance for people with disabilities, but it also may have increased the importance of health insurance for employers. Evidence suggests that employers who offer insurance avoid hiring people with poor health (Buchmueller 1995). As expenditures rise, employers may be even less likely to hire people with disabilities.

Employee contributions for employment-related insurance rose considerably between 1988 and 1996; in large firms, they tripled for single coverage and quadrupled for family coverage. Employee contributions in small firms rose by even larger factors (Gabel, Ginsburg, and Hunt 1997). Increasing employee contributions are the primary reason for the decline in private insurance coverage (Cutler 2002). They also decrease the attractiveness of employment-related insurance for people with disabilities.[3]

Managed care and private insurance benefits

Differences in the prevalence of managed care in private and public health insurance may affect employment because some people with disabilities have poor experiences with managed care. Enrollment in managed care has grown most significantly in employment-related insurance. By 1996, 73 percent of those enrolled in employer-sponsored plans participated in a managed care plan (Levitt, Lundy, and Srinivasan 1998). Managed care is less pervasive in public insurance, and people with disabilities were less likely to be enrolled in Medicaid managed care than other Medicaid enrollees. In 1998, a quarter of nonelderly Medicaid enrollees with disabilities were in managed care, and two-thirds of those in managed care were in capitated arrangements (Regenstein and Schroer 1998). The greater prevalence of managed care in the private sector may have made private insurance less attractive. Several studies of people with disabilities and those with chronic conditions in managed care plans have generally found good access to primary care; problems accessing more specialized care; less satisfaction, relative to fee-for-service; and no differences in quality of care, health status, or functioning (Abt Associates 2000; Clement et al. 1992; Gold et al. 1997; Hawkinson and Frates 2000; Hill and Wooldridge 2003; McCall 1989; Miller and Luft 1997; Retchin et al. 1992; Safran, Tarlow, and Rogers 1994).

On the other hand, employment-related insurance became more generous because more people were enrolled in HMOs, which have less cost-sharing, and because other plans added benefits. Employees in medium and large firms were increasingly enrolled in plans that were much more likely to cover hospice, hearing exams, physical exams, and preventive care, such as immunizations (U.S. Department of Labor 1989, 1999a). Employees were also able to lower their out-of-pocket expenditures because HMOs tend to have fixed copayments rather than coinsurance and deductibles. In addition, the proportion of employees in non-HMO plans that did not have deductibles increased.

The Link Between Health Insurance and Employment

Because of the importance of health insurance, access to insurance coverage is likely to figure heavily in the employment decisions of people with disabilities. Employment-related health insurance has the

potential to serve as an incentive to enter the labor market, as it may induce people with disabilities to seek employment to access employment-based health insurance. Public health insurance, however, may be a disincentive to employment. Because SSI and SSDI eligibility requires a participant's earnings to be below a certain threshold, employment can mean the potential loss of health benefits for many working-aged people with disabilities covered by Medicare or Medicaid.

Much anecdotal evidence from surveys and other sources suggests that health insurance is important in the employment decisions of people with disabilities. A survey of 1,200 leaders of major disability constituencies conducted by the President's Committee on Employment of People with Disabilities (1994) identified the fear of losing Medicaid or Medicare as the greatest barrier to the employment of people on SSI and SSDI. A survey of Alaska residents with disabilities found that 51 percent of respondents reported not having affordable health insurance as a major barrier to work. Similar surveys conducted in Oregon, Vermont, and Wisconsin found that a large proportion of respondents with psychiatric disabilities and those with multiple impairments report that, unless a job offered prescription drug coverage, they could not afford to work (Hanes 2000).

Economic studies of the effects of health insurance on employment or program participation have attempted to assess the effects of insurance, controlling for other factors. Using the Health and Retirement Survey, Kreider and Riphahn (2000) found that adults aged 50–61 who had health insurance through their most recent employer were less likely to apply for SSDI, presumably because those with employment-related health insurance would be less likely to quit their jobs and become uninsured. Their results may, however, overstate the effects of employment-related health insurance because this benefit may be correlated with other unmeasured job characteristics that would encourage continued employment (Gruber and Madrian 2002).

Stapleton et al. (1998) examined whether some SSI recipients constrain their earnings to stay below the eligibility threshold for receipt of Medicaid. Section 1619 of the Social Security Act allows SSI recipients who work and whose monthly earnings exceed the substantial gainful activity (SGA) level to receive Medicaid benefits if their income, after certain deductions, remains below the 1619(b) eligibility

threshold.[4] Controlling for other factors, these authors find strong evidence that some employed SSI recipients substantially increase their earnings as the eligibility threshold increases. This suggests that they, in fact, keep earnings at or below the Medicaid eligibility level. This group, however, is a small proportion of SSI beneficiaries.

Two other studies focused on Medicaid benefit generosity. Yelowitz (1998) examined the effect of Medicaid benefit generosity on SSI participation among those most likely eligible for Medicaid because of a disability, that is, men aged 40–64 and women aged 44–64, who are high school dropouts and who are not single parents with children under 18. Using instrumental variable analysis to account for potential spurious correlation between employment and expenditures, Yelowitz estimated that the effect of increases in Medicaid expenditures on this subpopulation explains 20 percent of the growth in SSI rolls over time. Stapleton et al. (1995) studied the number of applicants for SSI, which should be more sensitive than the SSI participation rates used by Yelowitz. Yet Stapleton found that Medicaid had no effect. Both studies had difficulty in detecting effects, perhaps because studies using mean expenditures as a measure of benefit generosity are biased toward finding no effect (Gruber and Madrian 2002). A factor that may explain the difference in significant levels between these two studies is that Stapleton controlled for changes in general assistance programs, and these changes are associated with changes in SSI participation rates, while Yelowitz did not control for changes in such programs.

In summary, although three of the four economic studies suggest that health insurance affects the employment or program participation of people with disabilities, questions remain because of methodological limitations that bias estimates, similar studies yield conflicting results, and the subpopulation found to be affected is quite small.

DATA AND METHODS

Empirical Strategy

We take a different approach from prior studies on health insurance and employment among people with disabilities by focusing on

the considerable variation in health care needs among people with disabilities. For example, some people with disabilities have cancer, and, hence, considerable health care needs, while others have visual impairments, which generally have fewer associated health care needs. Thus, people with disabilities are heterogeneous in the value they place on insurance. Our approach is especially advantageous when studying all sources of insurance (Medicaid, Medicare, and private insurance) because variation in individuals' valuation of Medicare is the only source of variation for that program, as eligibility has not changed and benefits have changed minimally over time.

Measures of health status have been used in many studies of health insurance and employment. We attempt to overcome the two primary limitations of prior studies using health status (Gruber and Madrian 2002). First, most population survey data have small samples of people with poor health, so even large effects can be difficult to detect. We pool multiple years of NHIS data to improve the precision of our estimates. Second, in prior studies, it was difficult to completely separate the effects of insurance from other factors related to health. Specifically, poor health and chronic conditions can affect employment directly, through disability, as well as indirectly, through health insurance. In our analysis of the NHIS, we attempt to control for the direct effects of disability by focusing on people with work limitations and comparing changes over time in the employment between those with and without high-cost chronic conditions.

NMES, MEPS, and NHIS

We used data from three national surveys of the civilian noninstitutionalized population to study people with high-cost chronic conditions because each survey provides additional information. We used the NMES and the MEPS to estimate the prevalence of chronic conditions, health care expenditures for people with those conditions, their health insurance status, and their employment status during a year. The NMES is a stand-alone survey that was conducted in 1987. The MEPS is a panel survey, conducted by the Agency for Healthcare Research and Quality every year beginning in 1996. We used data from the first year of the first panel (1996) and the first year of the second panel (1997), which oversampled people with activity limitations. Estimates

from the MEPS are weighted to represent the population in 1996 and 1997. The NMES Household Component was conducted in four rounds over the course of 1987. The MEPS Household Component interviewed respondents twice per year over two and one-half years. Both surveys also have a Medical Provider Component, in which a sample of the medical providers identified in the Household Component surveys was interviewed to supplement household-reported health care expenditure and source of payment information. These data, while rich in expenditures and service use information, have a limited number of observations of working-age (aged 25–61) people with both disabilities and high-cost chronic conditions. In addition, the disability measures differ between the NMES and MEPS, which affects our ability to make inferences about the effect of changes in health insurance on employment over time.

We also used the 1984–1996 NHIS, an ongoing household survey, to estimate the prevalence of high-cost chronic conditions among people with work limitations and changes in their employment over time. The NHIS has larger sample sizes, and we pool data from two, four-year periods of economic expansion to increase sample sizes and improve the precision of our estimates of working-aged people with reported work limitations. Both periods start a year after an economic trough and end in the middle of a business cycle expansion. From 1984 to 1987, the sample consists of 18,503 adults with work limitations, and from 1993 through 1996, the sample consists of 21,417 such observations. The NHIS collects information on illness, disability, chronic impairments, and employment during the two weeks prior to the survey interview, but it does not collect health expenditure data. All statistical tests take into account the complex sample designs of the three surveys. Below, we describe how we created the key variables used in our analysis.

Chronic Health Conditions

We created indicators for the presence of high-cost chronic health conditions based on disease classification schemes developed by Hwang et al. (2001) and Kronick et al. (2000). From all three surveys, we used conditions reported by the household respondents, which professional coders classified into the three-digit *International Classifica-*

tion of Disease, ninth edition (ICD-9) codes. The surveys differ in the context and frequency with which conditions were collected.

NMES and MEPS condition data

In the NMES and MEPS, the household respondent reported health conditions associated with service use and disability days during the year.[5] To remove differences in how the surveys collected data on conditions and allow comparisons between the MEPS and NMES, we used data on conditions associated with service use only and excluded conditions reported elsewhere in either survey (Table 5.1). NMES asks about the conditions associated with each disability day, but MEPS asks about the conditions associated with all disability days, which may reduce the number of conditions collected. Using only conditions associated with health care service use may cause the number of people with conditions to increase over time, as more people visit doctors and receive diagnoses for their health problems.

NHIS condition data

The NHIS collects condition data in a consistent manner from 1984 to 1996, but there are differences between the NHIS and the NMES and MEPS (Table 5.1). The NHIS collects condition information related to current limitations in major activities, all hospital stays in the prior 12 months, and all physician visits and disability days in the last two weeks.[6] Because of the generally shorter time frame used in asking about conditions, fewer conditions are reported in the NHIS than in the NMES and MEPS. With the NHIS, however, we focused on people with work limitations who report conditions associated with their limitations and use more services—a population with more complete condition data. Also, unlike the analysis using the MEPS and NMES data, we used conditions reported for any reason in the NHIS, including diagnoses associated with disability and disability days.

Classifying conditions by chronicity and costliness

Hwang et al. (2001) developed a system to differentiate between individuals with and without chronic conditions using data from the MEPS. Five internists reviewed the ICD-9 codes of all conditions reported by adults in the MEPS, and used a consistent definition to judge whether the conditions were chronic.[7] The internists identified

Table 5.1 Condition Data Collection in Three Surveys

	NHIS	NMES	MEPS
Services	Inpatient Hospital outpatient and emergency room Office-based	Inpatient Hospital outpatient and emergency room Office-based Home health Prescription drug	Inpatient Hospital outpatient and emergency room Office-based Home health Prescription drug Alternative care [a]
Time period	The two full weeks prior to the interview date	Calendar year	Calendar year [b]
Disability days			
Types of disability days	Lost work days Lost days of usual activity Bed days	Lost work days [a] Lost days of usual activity [a] Bed days [a]	Lost work days [a] Bed days [a]
Asks about conditions associated with	Total disability days in the last two weeks	Each period of disability days since last interview	Total disability days since last interview
Time period	The two full weeks prior to the interview date	Calendar year	More than one year, varies with date of third interview
Activity limitations			
Activities	Work Housework Any activities	—	—
Time period	Now	—	—

NOTE: All three surveys also asked about lost school days, but only for persons younger than are in our sample. During the time period of our study, NHIS also asked questions about four lists of specific conditions, but each respondent was asked about only one list. NMES and MEPS also ask about conditions associated with dental visits, but our analysis focuses on medical conditions. MEPS also asks about conditions that may not be associated with service use or disability days, including conditions associated with a variety of disability measures, but these are excluded from the analysis to increase comparability with the NMES. NHIS = National Health Interview Survey. NMES = National Medical Expenditure Survey. MEPS = Medical Expenditure Panel Survey.

[a]Conditions collected solely because they were associated with disability days were not used in analysis of NMES and MEPS to increase comparability between NMES and MEPS.

[b]MEPS collects conditions associated with service use over a two-year period, and our analysis is limited to conditions associated with service use in the first calendar year.

177 chronic conditions for adults. To distinguish between separate chronic conditions and a single condition associated with multiple ICD-9 codes, Hwang used the Clinical Classification Software (CCS) developed by Elixhauser et al. (1998). The CCS aggregates ICD-9 codes into distinct and mutually exclusive categories.

Kronick et al. (2000) developed the Chronic Illness and Disability Payment System (CDPS) to provide state Medicaid programs a system for adjusting capitation rates based on the health status of the population enrolled. The authors used regression analysis to identify three- to five-digit ICD-9 codes reported in claims data that were associated with elevated Medicaid expenditures in the following year. Within each of 19 major body systems, they ranked conditions as very high cost, high cost, medium cost, low cost, very low cost, and extra low cost, as well as another group of conditions that are very prevalent with even lower costs. In addition, they identified conditions that are not well defined or that they otherwise excluded from the CDPS.

Table 5.2 summarizes the four chronic condition cost categories we use in our analyses. The categories are based on the ICD-9 codes associated with chronic conditions as identified by Hwang et al. (2001), classified using the Kronick et al. (2000) expenditure groups, with four modifications:[8]

1) We aggregated the 56 expenditure groups in the CDPS into four groups (high, medium, low, and very low), because the size of the NMES and MEPS samples are relatively small compared with the population of an entire Medicaid program, and because the most expensive conditions are very rare. We aggregated the groups based on mean Medicaid expenditures for the 56 groups reported in Kronick.[9]

2) The three-digit ICD-9 codes for chronic conditions in Table 5.2 do not exactly match Hwang. Because the NHIS did not code ICD-9 codes for family history of illness, aftercare, and other factors that are not illness or injury specific ("V codes"), we excluded these codes from the NMES and MEPS analysis as well.[10] In addition, some codes not found in the 1996 MEPS were in the 1997 MEPS; hence, Hwang did not assess their chronicity.[11] Most of these "new" ICD-9 codes were clearly acute condi-

Table 5.2 Summary of Chronic Condition Categories

Type of chronic condition	Three-digit ICD-9 codes	Sample diagnoses	Kronick et al.'s categories
High cost	038, 042, 155, 156, 157, 183, 203, 204, 205, 208, 252, 253, 255, 263, 268, 277, 279, 282, 284, 295, 335, 337, 340, 359, 425, 428, 494, 507, 512, 555, 556, 567, 571, 572, 579, 582, 584, 585, 586	Human immonodeficiency virus, malignant neoplasm of the liver, multiple myeloma, leukemia, parathyroid disorders, schizophrenia, multiple sclerosis, muscular dystrophy, cardiomyopathy, heart failure, chronic liver disorder, chronic nephritis, renal failure	Very high, high, medium (except medium cancer)
Medium cost	140–154, 159–161, 164–170, 172–175, 179, 182, 184–187, 189, 191–196, 199–202, 234, 250, 286, 288, 290, 296–299, 304, 305, 310, 314, 315, 317, 319, 331–334, 336, 343–347, 353, 355–358, 363, 394, 397, 398, 410, 411, 413, 414, 416, 423, 424, 426, 427, 430–434, 436, 437, 441, 443, 444, 446, 453, 491, 492, 493, 496, 515, 534, 552, 562, 581, 583, 596, 707, 710, 712, 714, 730, 741, 742, 745–747, 751, 758, 797, 952	Most other cancers, diabetes, affective psychoses, mental retardation, ischemic heart disease, emphysema, asthma	Low, medium cancers
Low cost	270, 274, 291, 303, 365, 366, 370, 401, 600, 617, 618, 628, 715, 717, 720, 721, 722, 731, 743	Hypertension, osteoarthritis, spondylosis, intervertebral disc disorder	Very low, extra low

(continued)

Table 5.2 (continued)

Type of chronic condition	Three-digit ICD-9 codes	Sample diagnoses	Kronick et al.'s categories
Very low cost	135, 138, 235–239, 242–245, 251, 256, 257, 259, 271–273, 275, 278, 294, 300–302, 306, 307, 311–313, 348, 354, 360, 362, 369, 377, 379, 389, 412, 429, 435, 438, 440, 447, 455, 457, 473, 474, 477, 500, 501, 505, 557, 573, 576, 587, 588, 607, 626, 627, 691, 696, 716, 725, 732, 750, 984, 985	Hypothyroidism, neurotic disorders, atherosclerosis, impaired renal function, allergic rhinitis, menopausal disorders, atopic dermatitis	Prevalent and even less costly

NOTE: For our study, we aggregated the Kronick very high, high, and medium conditions into one "high-cost" group. However, we grouped their medium cancer group, which had lower mean Medicaid expenditures than the other medium-cost groups, with their low-cost groups (which we call "medium cost"), because the average costs of the medium cancer and the Kronick et al. low-cost groups were similar.
SOURCE: Categories are based on Hwang et al. (2001) and Kronick et al. (2000).

tions. We classified 79 of them as chronic, consulting a nurse when the chronicity of the condition was not apparent.

3) Some of the conditions classified as chronic by Hwang were classified as not well defined or otherwise excluded by Kronick. We put these in the lowest cost group because no other information was available, and the lowest cost group is the largest.

4) Although Kronick generally relied on three-digit ICD-9 codes, in some cases he used more detailed ICD-9 codes. Generally, we classified these conditions using an unweighted average of the costliness of the conditions within the three-digit category.[12]

Focus on people with work limitations and high-cost chronic conditions in the NHIS

We applied the chronic condition classification to all three surveys. In all three surveys, we found that somewhat similar proportions of the population had high-cost chronic conditions and similar trends: in the

NMES, 1.1 percent; in the MEPS, 1.6 percent; in the NHIS, 0.8 percent in 1984–1987 and 1.1 percent in 1993–1997. In the NHIS, however, we found that the reported prevalence of medium-, low-, and very low-cost chronic conditions to be considerably lower than in the NMES and MEPS. This is likely because the NHIS uses fewer measures of service use over shorter time frames to collect conditions. For this reason, our analysis of the NHIS focuses on people with high-cost chronic conditions relative to people without those conditions. Even the prevalence of high-cost chronic conditions is lower in the NHIS; therefore, we further focus on people with work limitations who had an opportunity to report a condition associated with their limitation, and hence are likely to have more complete condition data. In any case, the data are collected in a consistent manner over time in the NHIS.

Other Variables

Health expenditures

Both the NMES and the MEPS combined data were collected from health care providers and from households to create measures of health care costs.[13] The two surveys differ somewhat in the measure of costs publicly released, with the NMES releasing charges and the MEPS releasing payments. To compare expenditures across the two surveys, we use the adjustment method described in Zuvekas and Cohen (2002) to convert charge amounts from the NMES to payment amounts. We also adjusted all expenditure variables from the 1987 NMES and from the first panel of the MEPS (1996) to 1997 dollars using the Consumer Price Index for all items. To compare expenditures over time, we conducted one-tailed tests because the overwhelming trend in health expenditures is upward. We used two-tailed tests to compare rates of increase among groups. We bootstrapped standard errors to compare medians and to compare rates of increase.

Health insurance coverage

We examined insurance coverage over the year of the NMES and the first year of the MEPS using overlapping categories.[14] Insurance coverage was divided into four major categories: private (which includes CHAMPUS and CHAMPVA coverage), Medicare, Medicaid, and other sources of public insurance. If participants had coverage

from any of these types of insurance during any month of the year, they were considered to be covered by that type of insurance. The insurance categories are not mutually exclusive; individuals could be covered by more than one type of insurance, either simultaneously or during different periods of the year. We also examined whether the sample member was uninsured for any month of the year.

Employment

The measures of employment differ between the surveys. The NMES and MEPS have information on employment throughout the year, and we use this richer information to measure whether a sample member was employed at any time during the year of the NMES or the first year of the MEPS. In contrast, the NHIS asks whether the person was employed in the two weeks before the interview.

Work limitation

For the NHIS sample, we defined people with work limitations as those answering yes to either: "Does any impairment or health problem NOW keep [person] from working at a job or business?" or "Is [person] limited in the kind or amount of work [person] can do because of any impairment?" This is identical to the definition used in Burkhauser, Houtenville, and Wittenburg (Chapter 2). The NMES, however, does not ask the same questions about work limitations as the MEPS; thus, we cannot compare people with work limitations using those two data sets.

FINDINGS

Rising Prevalence of Chronic Conditions

Table 5.3 shows the change in the percent of the population aged 25–61 in each of the chronic condition categories, based on analysis of the NMES and MEPS. The percent with high-cost chronic conditions rose by nearly half, from 1.1 percent in 1987 to 1.6 percent in 1996–1997. The percent of people in the medium and very low-cost chronic

condition categories also increased, and the percent with low-cost chronic conditions and no chronic conditions declined.

Analysis of the NHIS shows that, among people with work limitations, the percentage with high-cost chronic conditions increased from 5.4 percent in the 1984–1987 period to 7.0 percent in the 1993–1996 period (Table 5.4). The increase is apparent for both men and women and is statistically significant for both groups.

Table 5.3 Reported Prevalence of Chronic Conditions, by Costliness, Persons Aged 25–61

Type of chronic condition	1987 NMES		1996–1997 MEPS		Pct. pt. change
	N	%	*N*	%	
All	16,441	100.0	16,153	100.0	
High cost	167	1.1	288	1.6	0.5***
Medium cost	1,729	11.5	2,432	14.0	2.5***
Low cost	1,560	10.3	1,347	8.2	–2.1*
Very low cost	1,797	12.8	2,581	17.0	4.2***
None	11,188	64.3	9,505	59.3	–5.0***

NOTE: The chronic condition categories are based on all conditions associated with service use and are mutually exclusive and hierarchical, so that a person is in the highest cost category found among his or her diagnoses. For example, the category medium-cost chronic conditions excludes persons who also have high-cost chronic conditions. Categories are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2).

*** $p \leq 0.01$ level, two-tailed test; * $p \leq 0.10$ level, two-tailed test.

SOURCE: Authors' calculations from the National Medical Expenditures Survey (NMES) and the Medical Expenditures Panel Survey (MEPS), first years of panel 1 (1996) and panel 2 (1997); noninstitutionalized civilians.

Table 5.4 Reported Prevalence of High-Cost Chronic Conditions among People with Work Limitations, Aged 25–61

	1984–87		1993–96		Percentage point change
	N	Percent	*N*	Percent	
All	18,503	5.4	21,417	7.0	1.6***
Men	8,602	5.5	10,068	7.1	1.5***
Women	9,901	5.2	11.349	7.0	1.7***

NOTE: High-cost chronic conditions associated with service use or disability are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2). ***1993–1996 statistically different from 1984–1987 at the 0.01 level, two-tailed test.

SOURCE: Authors' calculations from the National Health Interview Survey (NHIS). Noninstitutionalized civilians.

Thus, using both the NHIS and the NMES/MEPS data we find an increase in the percentage of persons reporting high-cost chronic conditions. This suggests that the prevalence of high-cost chronic conditions has increased over time.

Rising Health Care Expenditures

The data from the NMES and MEPS show that the chronic condition cost categories are, in fact, highly correlated with expenditures in the general working-aged population (Table 5.5). We present both medians and means because health care expenditures are highly skewed. People in all the high-, medium-, low-, and very low-cost chronic condition groups experienced increases in mean or median expenditures. Those with no chronic conditions experienced no increase in expenditures. The mean expenditure increase for people with high-cost chronic conditions is large (37 percent), statistically significant, and larger than the corresponding increases for any other group. Median expenditures for people with high-cost chronic conditions did not increase by a statistically significant amount, perhaps owing to sample size or other factors.

The findings suggest that cost increases were greatest for those who have the highest costs within the high-cost group. A limitation of the findings is that the trends are based on conditions associated with service use. For persons with the more severe conditions, however, it is unlikely that many went without care in either time period. In addition, expenditures might have risen more rapidly for people with high-cost chronic conditions if this population had not experienced a large decline in private coverage and an increase in Medicaid coverage, described in the next section. Medicaid generally pays less for care than private insurance (Norton and Zuckerman 2000).

Changes in Health Insurance Coverage

Data from the NMES and MEPS show that, between 1987 and 1996/97, private coverage decreased, while Medicare and Medicaid coverage increased, but on net the likelihood of not being covered by any type of insurance increased among persons aged 25–61 (Table 5.6). For people with high-cost chronic conditions, the changes were

Table 5.5 Annual Expenditures per Person, Aged 25–61, by Costliness of Chronic Conditions

Type of chronic condition	1987 NMES			1996–1997 MEPS			Pct. change	
	N	Median ($)	Mean ($)	N	Median ($)	Mean ($)	Median	Mean
All	16,441	280	1,519	16,153	337	1,670	20***	10**
High cost	167	3,307	8,665	288	3,692	11,879	12	37**
Medium cost	1,729	1,271	4,720	2,432	1,720	4,287	35***	–9
Low cost	1,560	747	2,220	1,347	1,025	2,334	37***	5
Very low cost	1,797	616	1,748	2m581	671	1,783	9*	2
None	11,188	103	668	9,505	102	660	–1	–1
Difference-in-difference (pct. pt change from cost category below)								
High cost							–23	46+
Medium cost							2	–14
Low cost							28+++	3
Very low cost							10	3
None							na	na

NOTE: The chronic condition categories are based on all conditions associated with service use and are mutually exclusive and hierarchical so that a person is in the highest cost category found among his or her diagnoses. For example, the category medium-cost chronic conditions excludes persons who also have high-cost chronic conditions. Categories are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2). All expenditures are in 1997 dollars.

***$p \leq 0.01$, one-tailed test; **$p \leq 0.05$, one-tailed test; *$p \leq 0.10$, one-tailed test.

+++ change from category below significant at 0.01 level, two-tailed test; + change from category below significant at 0.10 level, two-tailed test.

SOURCE: Authors' calculations from the National Medical Expenditures Survey (NMES) and the Medical Expenditures Panel Survey (MEPS), first years of panel 1 (1996) and panel 2 (1997); noninstitutionalized civilians.

Table 5.6 Health Insurance by Costliness of Chronic Conditions for Persons Aged 25–61

Type of chronic condition	Insurance coverage at any time during the year (%)				Ever uninsured (%)
	Private	Medicare	Medicaid	Other public	
1987 NMES					
All	84.0	1.9	5.7	1.8	20.3
High cost	73.2	19.0	15.9	3.9	13.1
Medium cost	82.2	6.5	11.5	4.1	14.4
Low cosst	85.9	2.6	5.7	2.4	15.6
Very low cost	87.9	2.0	5.8	1.6	15.1
None	83.5	0.7	4.5	1.4	23.3
1996–1997 MEPS					
All	78.6	2.3	7.3	1.1	25.3
High cost	63.1	22.6	25.6	1.8	17.3
Medium cost	74.6	6.9	14.9	1.6	21.1
Low cost	84.7	3.2	6.0	1.8	16.9
Very low cost	87.6	1.9	5.6	0.8	15.2
None	76.6	0.7	5.8	0.9	30.6
Pct. pt. change					
All	–5.4***	0.4**	1.7***	–0.8***	5.0***
High cost	10.1**	3.6	9.8**	–2.1	4.2
Medium cost	–7.7***	0.4	3.4***	–2.5***	6.6***
Low cost	–1.2	0.6	0.3	–0.6	1.4
Very low cost	–0.3	–0.1	–0.1	–0.8**	0.1
None	–6.8***	0.0	1.3***	–0.5**	7.3***

NOTE: The chronic condition categories are based on all conditions associated with service use and are mutually exclusive and hierarchical so that a person is in the highest-cost category found among his or her diagnoses. For example, the category medium-cost chronic conditions excludes persons who also have high-cost chronic conditions. Categories are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2). Insurance coverage is at any time during the calendar year; thus the categories are not mutually exclusive.

***$p \leq 0.01$, two-tailed test; **$p \leq 0.05$, two tailed test.

SOURCE: Authors' calculations from the National Medical Expenditures Survey (NMES) and the Medical Expenditures Panel Survey (MEOS), first years of panel 1 (1996) and panel 2 (1997); noninstitutionalized civilians.

larger: the 10.1 percentage point decline in private coverage (from 73 percent to 63 percent) and 9.8 percentage point increase in Medicaid coverage (from 16 percent to 26 percent) were statistically significant, but other changes were not. Among people with medium-cost chronic conditions and no chronic conditions, private insurance also fell, but the likelihood of being uninsured rose much more than Medicaid coverage.

The switch from private to public insurance among people with high-cost chronic conditions parallels the growth in the SSDI and SSI programs, reported elsewhere in this volume, because eligibility for Medicare and Medicaid are tied to eligibility for SSDI and SSI. This change in type of health insurance coverage by itself, however, does not imply that changes in health care costs caused the decline in employment among people with high-cost chronic conditions.

Changes in employment

Employment rates. Data from the NMES and MEPS show that the chronic condition cost categories are correlated with employment (Table 5.7). Within each year, the percent employed was lowest among those with high-cost chronic conditions, and greatest among those without chronic conditions. These comparisons do not control for the direct effects of disability on employment; they are for the population as a whole, not just those who have a work limitation. Comparisons of changes in employment from 1987 to 1996–1997 are of greater interest. The overall percent employed at any time during the calendar year increased by 4 percentage points (from 82 percent to 86 percent). Employment increased for people in three of the four chronic condition cost groups. Employment declined by 3.4 percentage points among those with high-cost chronic conditions, but the decline is not statistically significant, nor is it statistically significantly different from the increase among those without high-cost chronic conditions, owing to the small sample size.

To control for the direct effects of disability, we turn to the NHIS data, which have larger sample sizes and a consistent definition of work limitation across time. Among people with work limitations in the NHIS, those with high-cost chronic conditions were less likely to be employed than others with work limitations (Table 5.8). The

Table 5.7 Percent of Persons Aged 25–61 Employed Any Time During the Year, by Costliness of Chronic Conditions

Type of chronic condition	1987 NMES		1996–1997 MEPS		Pct. pt. change
	N	%	*N*	%	
All	16,441	82.4	16,153	86.4	4.0**
High cost	167	59.8	288	56.4	–3.4
Medium cost	1,729	67.6	2,432	74.2	6.6***
Low cost	1,560	76.5	1,347	83.1	6.6***
Very low cost	1,797	80.0	2,581	87.2	7.2***
None	11,188	86.9	9,505	90.3	3.4***

NOTE: The chronic condition categories are based on all conditions associated with service use and are mutually exclusive and hierarchical such that a person is in the highest-cost category found among his or her diagnoses. For example, the category medium-cost chronic conditions excludes persons who also have high-cost chronic conditions. Categories are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2).

***$p \leq 0.01$, two-tailed test; **$p \leq 0.05$, two tailed test.

SOURCE: Authors' calculations from the National Medical Expenditures Survey (NMES) and the Medical Expenditures Panel Survey (MEPS), first years of panel 1 (1996) and panel 2 (1997); noninstitutionalized civilians.

employment rate was only somewhat higher for men with high-cost chronic conditions than women with these conditions. On the other hand, the employment rate was consistently higher for men without these conditions than for women without these conditions, although the gap narrowed between the two periods. Thus, it is important to control for gender in the analysis.

Between the 1984–1987 and the 1993–1996 periods, employment among people with work limitations and high-cost chronic conditions was persistently low. About 24 percent of women were employed in both periods. Among men, employment fell 3.2 percentage points (from 28.7 percent to 25.5 percent), but the change is not statistically significant. At the same time, employment among men with work limitations but no high-cost chronic conditions fell 4.9 percentage points (from 52.7 percent to 47.9 percent), and this change is statistically significant. Thus, employment fell 1.7 percentage points more among men without high-cost chronic conditions than for those with high-cost conditions, suggesting that changes in health care financing were not a factor in the changing employment among men with work limitations.

Table 5.8 People with Work Limitations, Aged 25–61, Employed in the Past Two Weeks

Type of chronic condition	1984–1987		1993–1996		Pct. pt. change
	N	%	*N*	%	
All	18,503	42.9	21,417	42.6	–0.4
Men	8,602	51.4	10,068	46.3	–5.1***
Women	9,901	35.2	11,349	39.1	3.9***
High-cost chronic conditions	992	26.7	1,478	24.6	–2.0
Men	476	28.7	7.4	25.5	–3.2
Women	516	24.7	774	23.8	–0.8
No high-cost chronic conditions	17,500	43.9	19,939	43.9	0.1
Men	8,126	52.7	9,364	47.9	–4.9***
Women	9,385	35.7	10,575	40.2	4.5***
Difference-in-difference: Change in high cost minus change in not high cost					
All					–2.1
Men					4.6
Women					–5.3++

***1993–1996 statistically different from 1984–1987 at the 0.01 level, two-tailed test.
++Significant at the 0.05 level, one-tailed test.
SOURCE: Authors' calculations from the National Health Interview Survey (NHIS); noninstitutionalized civilians. High-cost chronic conditions associated with service use or disability are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2).

Among women with work limitations and no high-cost chronic conditions, employment rose 4.5 percentage points (from 35.7 percent to 40.2 percent).[15] Employment for women with limitations and high-cost conditions remained fairly constant. The difference in the change in employment between the two groups of women (5.3 percentage points) is statistically significant. The pattern of stagnant employment among women with limitations and high-cost conditions, and rising employment for others, suggests that changes in health care financing might have had a negative effect on the employment of women with high-cost chronic conditions. The different patterns for men and women suggest, however, that the effects of changes in health care financing are not robust across gender.

Decomposing the changes in employment. We decomposed the changes in employment rates for those with work limitations into the relative roles of the rising prevalence of more expensive chronic conditions and the changes in employment rates among people within chronic condition categories. The decomposition method used is the same as that described in Houtenville and Daly (Chapter 3). This technique breaks down the change in the employment rate for the group as a whole to changes owing to: change in the share of the group in each subgroup (high-cost condition versus other), and change in the employment rate within each subgroup. The share components can be added across subgroups to find the total change from changes in shares and the total change from within-group changes in the employment rate. We perform the decomposition by sex because of the differences in the changes of male and female employment rates over this period.

Our results (Table 5.9) indicate that only 11 percent of the 5.1 percentage point decline in the employment rate for men with work limitations between the two pooled sample periods is because of either the growth in the prevalence of high-cost chronic conditions (–0.3 percentage points) or the decline in their employment rate (–0.2 percentage points). The growth in the prevalence of high-cost chronic conditions among women also made a small negative contribution to the change in the employment rate for women with work limitations (–0.2 percentage points), as did the change in the employment rate for women with work limitations who also have high-cost chronic conditions (–0.1 percentage points). Put differently, had the share of women with work limitations who have high-cost conditions and their employment rate remained constant, the 3.9 percentage point growth in the employment rate for women with work limitations would have been just 6 percent higher.

In sum, the growth in the share of workers with limitations who have high-cost chronic conditions and the decline in their employment rate both had a depressing effect on the employment rates for men and women, but the decomposition analysis shows that the contribution of these two factors to the changes in the employment rates for men and women with work limitations over this period is small relative to the size of those changes.

Table 5.9 Decomposition of Change in Employment Rate for People with Work Limitations, Aged 25–61

	Sample size		Population share (%)			Employment rate (%)			Contrib. to chng. in overall employ. rate		
	1984–87	1993–96	1984–87	1993–96	Change	1984–87	1993–96	Change	Pop. share	Employ. rate	Sum
All people with work limitations	18,503	21,417	100.0	100.0	0.0	42.9	42.6	–0.4	–0.3	–0.1	–0.4
With high-cost chronic conds.	992	1,478	5.4	7.0	1.6	26.7	24.6	–2.0	–0.3	–0.1	–0.4
Without high-cost chronic conds.	17,511	19,939	94.6	93.0	–1.6	43.9	43.9	0.1	–0.1	0.1	0.0
Men with work limitation	8,602	10,068	100.0	100.0	0.0	51.4	46.3	–5.1	–0.4	–4.7	–5.1
With high-cost chronic conds.	476	704	5.5	7.1	1.5	28.7	25.5	–3.2	–0.3	–0.2	–0.6
Without high-cost chronic conds.	8,126	9,364	94.5	92.9	–1.5	52.7	47.9	–4.9	0.0	–4.5	–4.5
Women with work limitations	9,901	11,349	100.0	100.0	0.0	35.2	39.1	3.9	–0.1	4.0	3.9
With high-cost chronic conds.	5.4	77.4	5.2	7.0	1.7	24.7	43.8	–0.8	–0.2	–0.1	–0.2
Without high-cost chronic conds.	9,385	10,575	94.8	93.0	–1.7	35.7	40.2	4.5	0.1	4.1	4.1

NOTE: High-cost chronic conditions associated with service use or disability are based on Hwang et al. (2001) and Kronick et al. (2000) (see Table 5.2).

SOURCE: Authors' calculations from the National Health Interview Survey (NHIS); noninstitutionalized civilians.

DISCUSSION

Limitations

There are several limitations to the findings that should be noted. First, the sample sizes of people with high-cost chronic conditions are small, making it difficult to measure changes with precision. Second, our hypothesis is quite general—that growth in health care costs had an adverse impact on employment of those with work limitations—and competing factors may have counteracted each other. Third, our analysis of employment includes all people with reported work limitations. This population may vary in the extent of work limitations, and our measure of high-cost chronic conditions may reflect unmeasured severity of work limitation as well as sensitivity to health care costs. Greater severity of work limitations may explain the consistently low employment among people with high-cost chronic conditions.[16]

In addition, our measure of high-cost chronic conditions has limitations. There is considerable heterogeneity in chronic conditions among those with and without high-cost chronic conditions. Our measure relies on a point-in-time classification of the costliness of treating specific conditions relative to other conditions, but new technologies likely changed the costliness of treating specific conditions over time. The measure from the NHIS includes only those conditions associated with a disability, a hospital stay in the past year, or a physician visit in the past two weeks.

Finally, other subgroups of people with disabilities may be even more sensitive to health insurance than the population on which we focused. Specifically, people who use personal assistance services or assistive technology must rely on Medicaid or pay out-of-pocket for these services because they are not covered by private insurance. A study focusing on this population might find different results. For instance, a study could use variation across states in the implementation dates of Medicaid buy-in programs to evaluate the effects of Medicaid on employment by comparing employment among those using personal assistance or assistive technology with other people with disabilities.

SUMMARY OF FINDINGS

The rising costs of health care will affect all consumers of these services. Because their health care needs are likely to be much greater than those of other groups, it is possible that the rising costs of health care may have had a disproportional effect on working-aged people with disabilities and, given the way that health care is financed in this country, could explain part of the decline in their employment during the 1990s. We tested this hypothesis in this chapter.

We focused on those with high-cost chronic conditions because they are most likely to be affected by increases in health care costs. Significantly, we found that this was not only a small subpopulation of the working-aged population, but it was also a small part of the working-aged population with work limitations. Although people with work limitations have higher than average health care needs and expenditures, most do not experience exceptionally large and sustained health care costs. We found that fewer than 2 percent of those aged 25–61 had high-cost chronic conditions, and only 7 percent of those in this age group with work limitations had high-cost chronic conditions.

The proportion of people with high-cost chronic conditions has, however, increased over time in both the general working-aged population and among those with disabilities. Hence, this increase could explain some of the decline in the employment rate of working-aged people with disabilities, both because this population grew over time and because it experienced a decline in employment rates owing to increased health care costs. The mechanism that results in lower employment could be a declining willingness of these workers to seek employment because growing costs and restrictions on private coverage have reduced the attractiveness of financing health care services through work versus Medicare or Medicaid. It could also be that higher costs reduce employer willingness to hire them, or it could be because of both reasons.

Using data from the NMES and the MEPS, we showed that mean and median health care costs significantly increased between 1987 and 1996–1997 for all working-aged people, but did so disproportionately for those with high-cost chronic conditions. We also found that the share of this population who had private insurance coverage fell, while

their Medicare and Medicaid coverage increased over the period. These outcomes are consistent with the hypothesis that increases in health care costs weighed more heavily on those with high-cost chronic conditions, causing them to purchase less of it in the private market, and turn more to the public sector. Furthermore, we found that the employment rate of those with high-cost chronic conditions (including those without disabilities) fell by 3.4 percent over the period (although this decline was not significant at the 0.10 percent level), while the employment rate of all other health care cost groups significantly increased.

Given this information, we then focused on the population with disabilities who also had high-cost chronic health conditions to determine whether changes in the population size and employment rate over the period could explain the overall decline in the employment rate of the working-aged population with work limitations, as reported in the other chapters. When we used data from the NHIS and restricted our sample to those men with work limitations, we found that the employment rate of those with high-cost chronic conditions was below that of those with no high-cost chronic conditions in 1984–1987, and that employment rates for both groups were lower in 1993–1996 than in the earlier period. Somewhat surprisingly, however, the decline in the employment of men with work limitations and high-cost chronic conditions was actually smaller than for men with no high-cost chronic conditions. For women, we obtained a result that was more in line with our expectations: the employment rate for women with work limitations and high-cost chronic conditions fell slightly, while the employment rate for other women with work limitations increased substantially. If the results for women are because of growth in health care costs, it is hard to understand why we do not find similar results for men.

When we performed a formal decomposition of the changes in the employment rates for men and women with work limitations over the period examined, we found that increases in the shares with high-cost chronic conditions and declines in the employment rates of those with these conditions had a negative influence, but the size of this influence was small, although not trivial—on the order of 10 percent of the change in each group's employment rate for the period.

Notes

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1. For reasons to be discussed, throughout the chapter we focus on the prevalence of conditions for which survey respondents report receipt of treatment. Hence, unless otherwise indicated, prevalence estimates are for treated conditions only.
2. SSDI beneficiaries do not become eligible for Medicare coverage until 24 months after qualifying for SSDI.
3. For some workers, increasing contributions were partially offset by changes in tax treatment, because more workers pay their employee contributions from pre-tax dollars. In 1997, about a quarter of employees of medium and large private establishments paid their contributions with pre-tax dollars, but this is less prevalent in smaller establishments (about one in ten employees in 1996) (U.S. Department of Labor 1999a,b).
4. To be eligible for either SSI or SSDI, earnings must be below the SGA level. As of January 2003, the SGA level for non-blind individuals is equal to $800 monthly. The SGA level for people who are blind is $1,330 monthly. It is adjusted annually based on changes in the national average wage index.
5. MEPS respondents also reported conditions that bothered them, but to maximize comparability with the NMES, we did not use these.
6. In addition, subsamples of respondents are asked about subsets of specific conditions, regardless of whether they have indicated a limitation, but few of these conditions are high-cost chronic conditions, so these are not included in our analysis.
7. Hwang et al. (2001) define chronic as a "condition [that] had lasted or was expected to last twelve or more months and resulted in functional limitations and/or the need for ongoing medical care."
8. Although the MEPS data include the CCS codes for each expenditure record, the NMES data do not. The CCS scheme could not be retroactively applied to the NMES data because the NMES ICD-9 codes include only three digits, and the CCS is based on a five-digit ICD-9 coding system.
9. For our study, we aggregated the CDPS very high, high, and medium conditions into one "high-cost" group. However, we grouped the CDPS medium cancer group, which had lower mean Medicaid expenditures than the other medium cost groups, with the CDPS low-cost groups, which we call "medium cost" because the average costs of medium cancer and the CDPS low-cost groups were similar.

10. For high-cost chronic conditions, this mainly affected people with heart devices, including pacemakers, but at the three-digit level, the code also includes orthodontic devices, hearing aids, and contact lenses and glasses; therefore, this V-code would not necessarily reflect high-cost cases anyway.
11. New condition codes appeared because the 1997 sample was larger and because less collapsing was necessary to maintain respondent confidentiality in the publicly released data.
12. In a few cases, additional detail about the prevalence of the four- or five-digit ICD9 codes was available from the MEPS, and we used this information instead of the unweighted average.
13. Data on health care expenditures are not collected for the NHIS.
14. The NMES and MEPS have information on insurance status over the entire year, while the NHIS has insurance status only at a point in time.
15. Among women without work limitations, employment rose by a similar amount, 6.4 percentage points, from 68.6 to 75 percent.
16. On the other hand, changes over time in willingness to report work limitations are likely not a limitation in the analysis because as Burkhauser, Houtenville and Wittenburg (Chapter 2) found, trends in employment among people reporting work limitations are similar to trends found using other definitions of disability.

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