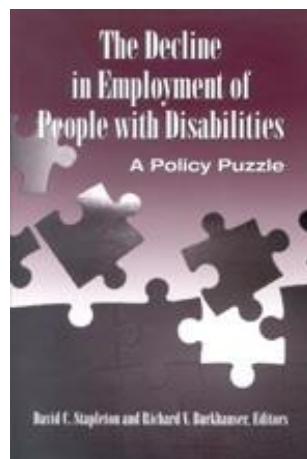

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Employment and the Changing Disability Population

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6

Employment and the Changing Disability Population

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Although the overall employment rate of working-age adults with disabilities has not improved since the passage of the Americans with Disabilities Act (ADA), a closer look at employment data from two national surveys hints that there may still be room for some measure of optimism. Perhaps the ADA has, after all, expanded employment opportunities for people with disabilities, or at least for a segment of the disability population. And perhaps confounding factors, such as the changing size and composition of the disability population, have hidden those improvements from view.

An examination of employment measures, as presented in this chapter, does suggest that the overall rate of employment may not be the best measure of job opportunities because it includes many people unlikely to acquire jobs regardless of any improvement in employer attitudes or workplace accessibility. Many working-age adults with disabilities are not oriented toward participation in the labor force, either because they consider themselves unable to work or because they are engaged in other activities. When we leave this group out of our statistics, that is, when we consider only those with disabilities who are able and available to work, we obtain what we believe to be a truer indication of changes in employer practices with regard to workers and job applicants with disabilities. Among the segment of the disability population most likely to take advantage of job opportunities, there was a significant increase in employment levels during the 1990s.

Is it reasonable to measure employment exclusive of people who say they cannot work? Work limitation measures are highly subjective and controversial; perceptions of inability to work may be heavily influenced by factors unrelated to functional ability and health. This chapter examines the validity of these measures and considers whether

the disadvantages of relying on self-reports of inability to work (for example, in excluding from the analysis some people who truly could work if offered appropriate supports) are outweighed by the advantage of focusing on the segment of the disability population most likely to respond to employment opportunities when they are offered.

The proportion of people with disabilities who consider themselves able to work has declined over the years. The overall disability rate among working-age adults rose dramatically during the early 1990s, with a disproportionate share of that increase occurring among people reporting inability to work. This disturbing and unanticipated change in the composition of the disability population accounts for the difference between the bleak employment picture evident when everyone is included and the far brighter outlook when the analysis is limited to those oriented toward working. In other words, the stagnation in overall employment rates among people with disabilities is due, in part, to a broadening of the population classified as limited in activity, accompanied by a shift toward the most severe level of limitation—inability to work.

What caused the sudden rise in both the overall disability rate and the rate of inability to work, as reported in surveys? It would be plausible to attribute the increase to changes in societal attitudes toward disability brought about by the gains achieved by the independent living movement, in particular the passage of the ADA in 1990. With disability much more prominent as a political and social issue, and with the stigma associated with having a disability consequently lessened, people with disabilities would presumably become more candid in mentioning their limitations to survey takers.

Another explanation attributes the increases to economic factors. Perhaps people with chronic health conditions or impairments who lost their jobs during the 1990–1991 recession chose to emphasize their limitations and label themselves as unable to work in order to obtain benefits. The Social Security disability benefit rolls expanded quite rapidly during the same period (Social Security Administration 2001), and this increase has been blamed on a liberalization in the eligibility criteria for disability benefits, coupled with high unemployment rates during the first few years of the decade (Autor and Duggan 2003).

In this chapter, I propose a third hypothesis, one more straightforward than either of the above: that the rise in disability rates was

brought about not primarily by economic or social causes, but instead most directly by epidemiologic factors. More people are reported in surveys as having disabilities, this hypothesis holds, because the underlying health conditions and impairments that cause disability have increased in prevalence, in particular those more severe conditions associated with inability to work.

I explore this hypothesis using nine years of nationally representative survey data on health conditions and impairments affecting working-age adults overall and on those conditions that cause limitations in activity. The results point to widespread increases in the prevalence of chronic conditions among the working-age population, as well as striking similarities between trends in disability rates—both limitations in any activity and inability to work—and trends in the underlying causes of disability. I then examine two of the risk factors that might be responsible for these broadly based increases: rising rates of obesity among the working-age population and the impact of recession on mental and physical health.

EMPLOYMENT MEASURES FOR THE DISABILITY POPULATION

Employment Rates from the National Health Interview Survey

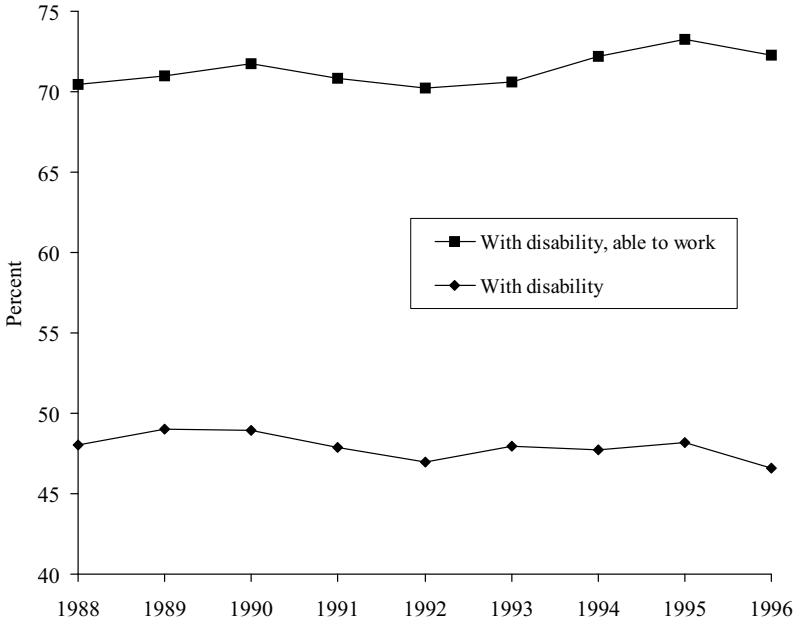
When analyzing data from the National Health Interview Survey (NHIS), we use a relatively broad definition of disability that includes limitations in work and any other activities the person might engage in. In the questionnaire used before a major revision in 1997, working-age adults were asked about their ability to work: “Does any impairment or health problem [NOW] keep ___ from working at a job or business?” If the answer was no, they were next asked whether they are otherwise limited in work: “Is ___ limited in the kind OR amount of work ___ can do because of any impairment or health problem?” If the answer was still no, then they were asked about limitations in other activities: “Is ___ limited in ANY WAY in any activities because of an impairment or health problem?” Respondents who identified their “major activity” as housework were also asked about that activity: “Does any

impairment or health problem NOW keep ____ from doing any housework at all?” and, for those answering no, “Is ____ limited in the kind OR amount of housework ____ can do because of any impairment or health problem?”

A person answering yes to any of the activity limitation questions is classified as having a disability. Because of substantial changes to the survey, data prior to 1997 are not directly comparable to data from later years; I have, therefore, limited the analysis to the nine-year period between 1988 (two years prior to the enactment of the ADA) and 1996.

The employment rate for the working-age (18–64) population with disabilities is shown in Figure 6.1. The proportion of working-age adults with disabilities who had jobs declined from a high of 49.0 per-

Figure 6.1 NHIS Employment Rates among Working-Age Adults with Disabilities, 1988–1996



SOURCE: National Health Interview Survey.

cent in 1989 and 1990 to a low of 47.0 percent in 1992, immediately following the 1990–1991 recession. Although there appears to have been an increase in subsequent years, there is no statistically significant trend, and, even at its highest post-recession value (48.2 percent in 1995), the employment rate had not managed to regain its pre-recession level.

The figure also shows a second employment rate, for working-age adults with disabilities answering no to the first question about work limitation, that is, for people with disabilities who say they are able to work. Among this population, there is evidence of substantial improvement following the recession. From a 1992 low of 70.2 percent employed, the rate climbed to a high of 73.3 percent by 1995 (dropping slightly, but not significantly, to 72.3 percent in 1996). The upward trend is statistically significant and is comparable to the gains experienced by people without disabilities during the same period (not shown in the figure).

Employment Rates from the CPS

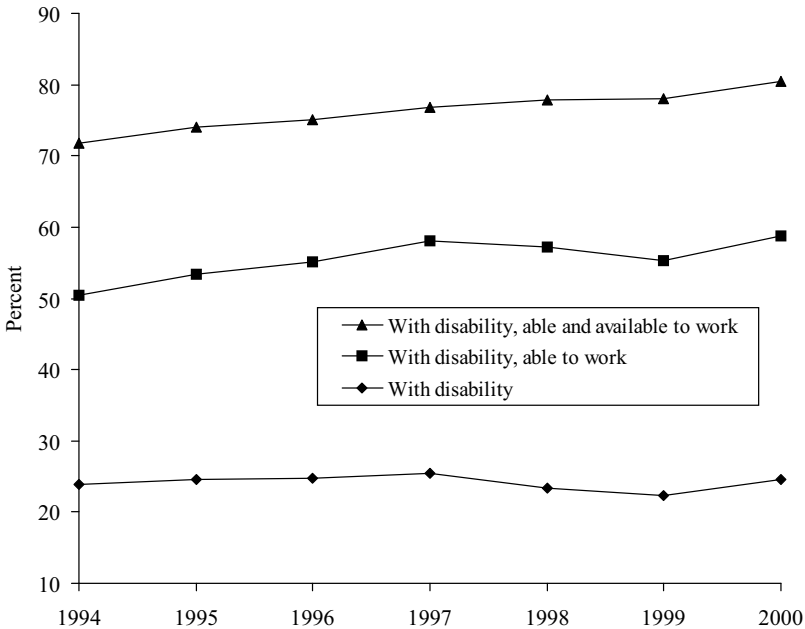
In contrast to the somewhat elaborate set of questions in the NHIS, the Annual Demographic Supplement to the Current Population Survey (CPS) provides only a single question that we can use to identify respondents as having disabilities: “Does anyone in this household have a health problem or disability which prevents them from working or which limits the kind or amount of work they can do?” Thus, rather than defining disability broadly in terms of limitations in any activities, as in the NHIS data, we are forced to narrow the definition to work limitation.

The CPS also provides a way of separating the disability population into two groups based on the ability to work, but again, the approach is different from that available in the NHIS data. When asked in the basic monthly survey whether they worked during the prior week, respondents often volunteer that they are retired, “disabled,” or “unable to work.” When they specify either of the last two, they are asked whether they have a disability that prevents them “from accepting any kind of work during the next six months.” Presumably, only people with quite severe limitations in their ability to work would answer affirmatively to such a question. Because an extensively

revised basic questionnaire was introduced in 1994, I limit the analysis to that and subsequent years.

Employment rates for the total working-age population with disabilities, and for the subset who consider themselves able to work, are shown in Figure 6.2. Because of the much narrower definition of disability, rates from the CPS are much lower than those from the NHIS. Nevertheless, the same pattern emerges. There is no statistically significant trend in the overall employment rate, with the 2000 value of 24.5 percent about the same as the 1994 value of 24.0 percent. Among people with disabilities who are able to work, however, there is an 8.3 percentage point increase between 1994, when the employment rate was 50.4 percent, and 2000, when it had risen to 58.7 percent. Again, the upward trend is highly statistically significant.

Figure 6.2 CPS Employment Rates among Working-Age Adults with Disabilities, 1994–2000



SOURCE: Current Population Survey.

A third employment rate is also shown in the figure, that for people with disabilities who are able and available to work. This group includes people who are either labor force participants (working, on layoff, or actively looking for work) or are nonparticipants who consider themselves able to work and answer yes or maybe when asked whether they would like to have a job. The increasing trend in employment is even more striking for this group: from a 71.9 percent rate in 1994 to a 80.5 percent—fully four-fifths of this population—in 2000. This 8.6 percentage point increase is more than twice that for working-age adults without disabilities who are available to work (not shown in the figure), which was 3.6 percentage points.

Which Employment Measure Is More Appropriate?

In both surveys, employment rates that include the entire working-age population with disabilities present a bleak picture of stagnation, while employment rates that include only those people with disabilities who consider themselves able to work (and, in particular, those who are available to work) indicate that substantial progress has been made. Further analysis of these data (Kaye 2003a) hints that some share of these gains might be attributed specifically to the ADA, and not merely to rapid economic growth during the latter part of the decade.

Which measure more accurately reflects the labor market experiences of people with disabilities? By including in its denominator people who see themselves as unable to work or who prefer not to work, the overall employment rate may be too broad. The ADA talks about “equality of opportunity,” not about coercing people to take jobs when they do not feel they are able; no one suggests that “full participation” is about forcing people to participate when they do not so choose. When low employment rates for people with disabilities are reported in the media, the implication is that there is a vast pool—even a majority—of working-age adults with disabilities who would take jobs if only employers would hire them. This sets up unrealistic expectations that, once employer attitudes change and accommodations become available, the employment rate will climb steadily from 25 or 45 percent to nearly 100 percent. Although there is certainly room for improvement, it is unreasonable to hope for anything like the two- to fourfold increase that a naive observer might have expected.

Furthermore, the inclusion of so many labor force nonparticipants in the employment rate's denominator makes that measure very sensitive to the size of that population. As discussed in the next section, any increase in the proportion of the disability population who are unavailable to work could easily mask any gains made in employment opportunities for those who are available to work.

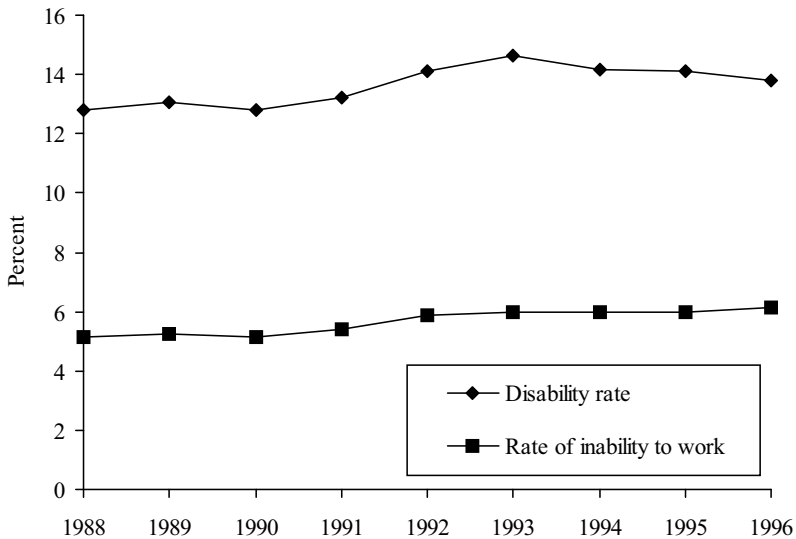
If the goal is to measure improvements in the level of *employment opportunity* for people with disabilities, as the ADA's goal statement suggests, one should use a measure that includes those people who are likely to take advantage of such opportunities and leaves out everyone else. Thus, a more limited employment measure—one including only those able and available to work—might better serve as a barometer of improvements in employer practices in hiring and retaining workers with disabilities. It has the disadvantage, however, of excluding some people who truly could work—if offered good jobs with appropriate accommodations and training—but who do not consider themselves able to do so.

THE CHANGING SIZE AND COMPOSITION OF THE DISABILITY POPULATION

As Figure 6.3 shows, there was a large and rapid increase in the size of the population with disabilities during the early 1990s. According to data from the NHIS, the overall disability rate (any limitation in activity) rose from 12.8 percent of working-age adults in 1990 to 14.6 percent in 1993. The rate fell somewhat during subsequent years, declining to just under 14 percent by 1996. Much of that increase is among people with disabilities reporting inability to work; that rate increased from 5.2 percent of working-age adults in 1990 to 6.0 percent in 1993 and then remained steady at about that level.

According to the CPS, there was a further decline in the disability rate (defined in this case as any degree of work limitation) during the late 1990s, from a fairly steady 7.8 percent between 1994 and 1997 to 7.5 percent in 2000 (Figure 6.4). However, there was no corresponding decline in the rate of inability to work, which actually increased from a 1994 value of 3.3 percent of working-age adults to 3.6 percent in 2000.

Figure 6.3 NHIS Disability Rate and Rate of Inability to Work among Working-Age Adults, 1988–1996



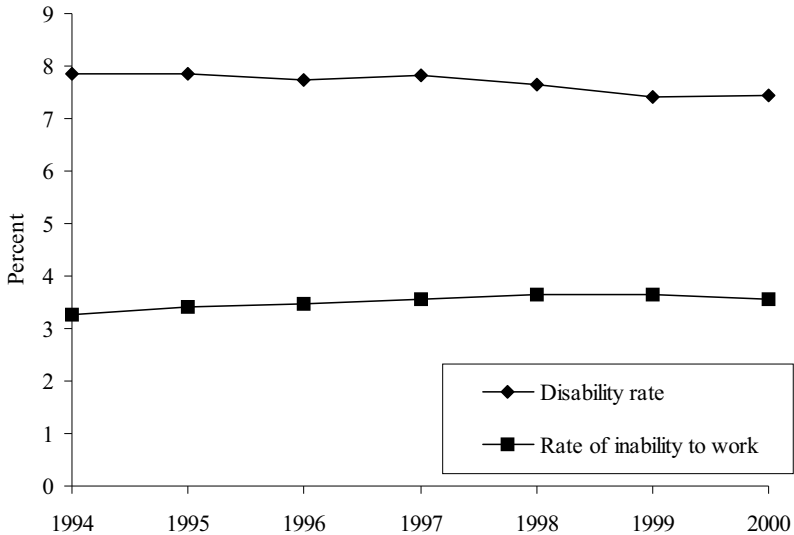
SOURCE: National Health Interview Survey.

As mentioned above, these rates are all considerably lower than those from the NHIS because of the different measures used.

Because the rate of inability to work continued to increase even after the overall disability rate had begun to decline, the proportion of people with disabilities reported as unable to work rose steadily during the latter part of the decade (Figure 6.5). After hovering around 41 percent up until 1993, the NHIS proportion unable to work climbed to 44.6 percent in 1996. In the CPS, the proportion rose steadily from 41.5 percent in 1994 to 49.0 percent in 1999 (and then declined slightly to 47.8 percent in 2000).

The different trends in overall disability and inability to work are responsible for the different behaviors of the two employment measures discussed above—the overall employment rate and the employment rate for those able to work. The former includes an increasing proportion of people who consider themselves unable to work; the stagnation in this measure can be seen as a consequence of this change

Figure 6.4 Disability Rate and Rate of Inability to Work among Working-Age Adults, 1994–2000



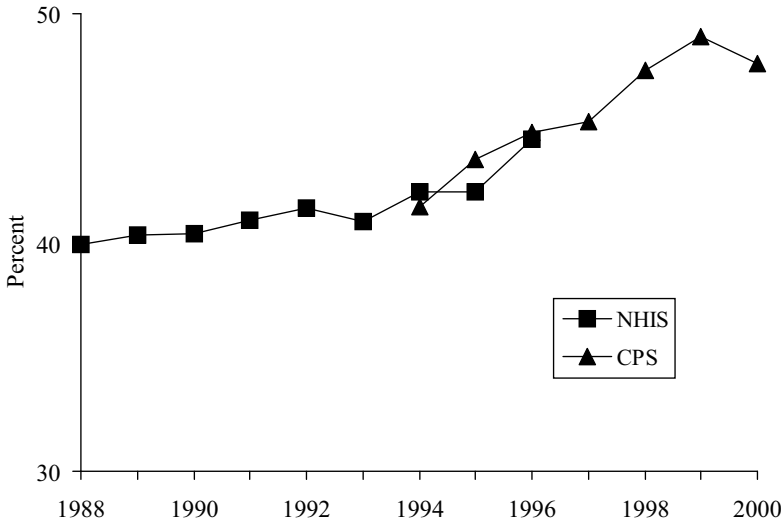
SOURCE: Current Population Survey.

in the composition of the disability population. The latter measure, which excludes those reporting inability to work, shows an increasing likelihood of employment, but only for the shrinking proportion of the overall disability population included in the denominator.

Can We Accept Self-Reports of Inability to Work?

A person's self-assessment of his or her ability to work may be influenced by many considerations besides health and impairment, including environmental factors such as negative employer attitudes and workplace barriers. When influenced by motivational factors, when unaware of the progress that has been made in workplace accessibility, or when defeated by past rejection, someone who might perform well in a sufficiently accommodating work environment might instead report being unable to work. Another person with a greater impairment or in worse health, but perhaps with an unrealistic attitude about his or her own capabilities, might report no work limitation at all.

Figure 6.5 Proportion of Working-Age Adults with Disabilities Reported as Unable to Work, 1988–2000

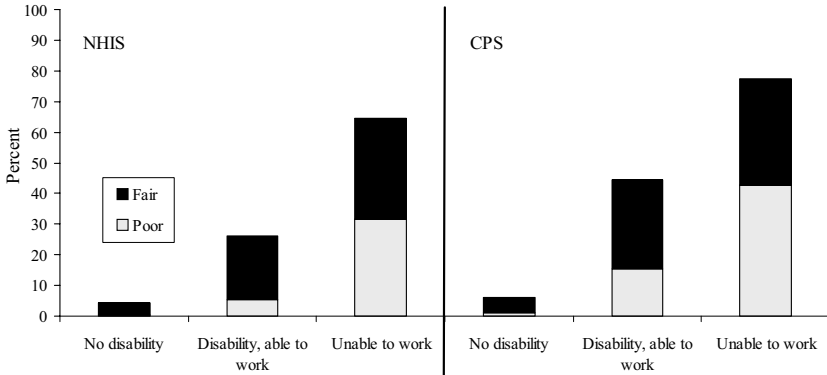


SOURCE: National Health Interview Survey and Current Population Survey.

As a result, perceived ability or inability to work may not be a perfectly accurate reflection of a person's true potential. Nevertheless, based on various measures contained in the surveys, it is apparent that people reporting inability to work are in much worse health and have much more severe functional limitations than people with disabilities who consider themselves able to work.

As shown in Figure 6.6, people who report inability to work are much more likely than other people with disabilities to say that they are in poor or fair health. In the NHIS data, nearly two-thirds (64.4 percent) of people unable to work are in either fair or poor health compared with only about one-quarter (26.3 percent) of people with disabilities who are able to work and only 4.5 percent of people without disabilities. The proportion of people unable to work who are in poor health, 31.4 percent, is about six times that of those with disabilities who can work, 5.4 percent. In the CPS data, we find an even higher proportion, 77.4 percent, of those unable to work in either fair or poor health compared with 44.5 percent of those with disabilities who are

Figure 6.6 Proportion of Working-Age Adults Reporting Poor or Fair Health, by Disability Status, 1988–1996 (NHIS) and 1996–2000 (CPS)



SOURCE: National Health Interview Survey and Current Population Survey.

able to work. Once again, the poor health statistics show an even more striking difference between the groups: 42.7 percent of the unable-to-work group versus 15.4 percent of the others with disabilities.

The NHIS also includes quantitative measures that reflect a mixture of health status and functional limitation. In a measure of restricted activity, respondents are asked whether they missed work or school, or cut down on their other usual activities, during the prior two weeks due to illness or injury; if so, they are asked the number of days during which more than half the day's activities were missed. Working-age adults who report inability to work have 4.0 mean restricted activity days during the prior two weeks compared with 1.2 for people with disabilities who are able to work and only 0.3 for people with no disabilities.

In a second measure of restrictions in activity, respondents are asked whether they stayed in bed during the prior two weeks because of illness or injury, and, if so, how many days they spent more than half the day in bed. People without disabilities have an average of only 0.1 bed days; people with disabilities who are able to work have four times as many, 0.4; people with disabilities reporting inability to work have a further 4 times as many bed days, 1.7 per two-week period.

Another measure from the NHIS core also shows a dramatic difference according to ability to work: the need for personal assistance in the activities of daily living (ADLs, such as “eating, bathing, dressing, or getting around the house”) and instrumental activities of daily living (IADLs, such as “everyday household chores, doing necessary business, shopping, or getting around for other purposes”). As Figure 6.7 shows, people unable to work are almost 10 times as likely as the rest of the disability population to need assistance in ADLs—10.1 percent versus 1.1 percent. And they are 5 times as likely to need help in either ADLs or IADLs—32.0 percent versus 6.5 percent.

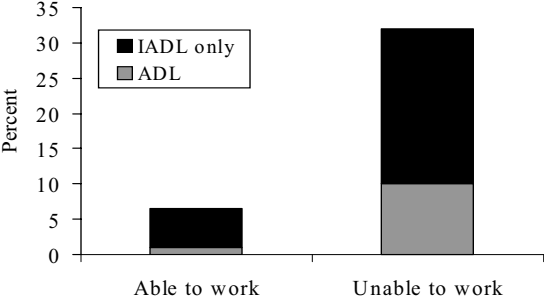
Also useful is a comparison of functional ability between those who say they can and cannot work. Using measures from the National Health Interview Survey on Disability, we can construct a functional limitation severity scale, combining information on limitations in mobility, vision, hearing, communication, cognition, and mental health.¹ As shown in Figure 6.8, more than two-thirds (68.2 percent) of working-age adults reported as unable to work are identified as having either moderate or severe limitations in physical, cognitive, or emotional functioning compared with only 29.6 percent of those who are limited in activity but able to work. The unable-to-work group is more than four times as likely to have severe functional limitations: 34.7 percent versus 8.0 percent.

Health Has Worsened and Disability Severity Has Increased Over Time

During the same period that the proportion reporting inability to work increased, other measures also revealed a worsening of health status or disability severity. For example, the proportion of working-age adults reporting either poor or fair health increased from about 41 percent in 1988–1990 to about 43 percent by 1995–1996.

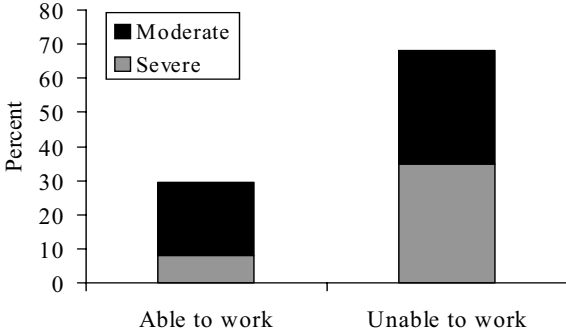
Levels of what might be termed severe disability—measured apart from any reference to ability to work—increased markedly during the period. As shown in Figure 6.9, there were large increases in the proportion of the population needing personal assistance, both with self-care (ADL) and home-management (IADL) activities. Only 4.0 percent of working-age adults needed help with ADLs in 1988, but that proportion had risen to 5.2 percent by 1996. An additional 11.4 percent

Figure 6.7 Need for Personal Assistance among Working-Age Adults with Disabilities, by Ability to Work, 1988–1996



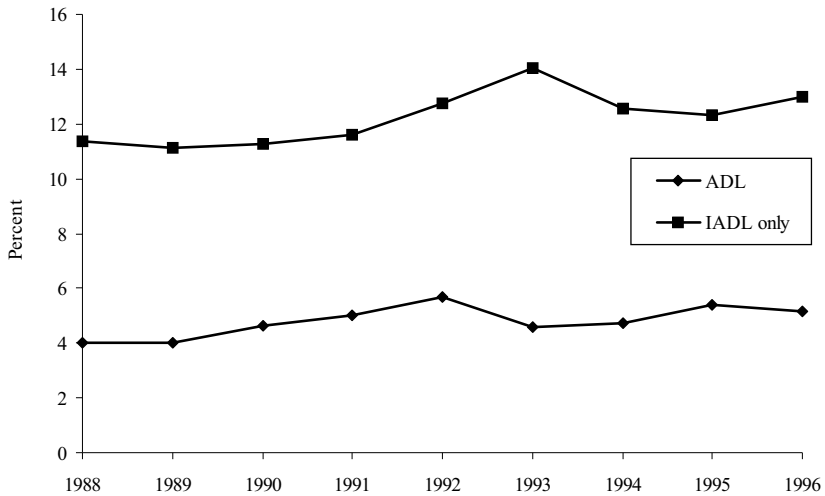
SOURCE: National Health Interview Survey.

Figure 6.8 Functional Limitations among Working-Age Adults with Disabilities, by Ability to Work, 1994–1995



SOURCE: National Health Interview Survey on Disability.

Figure 6.9 Proportion of Working-Age Adults Needing Personal Assistance in Self-Care and Home-Management Activities, 1988–1996



SOURCE: National Health Interview Survey.

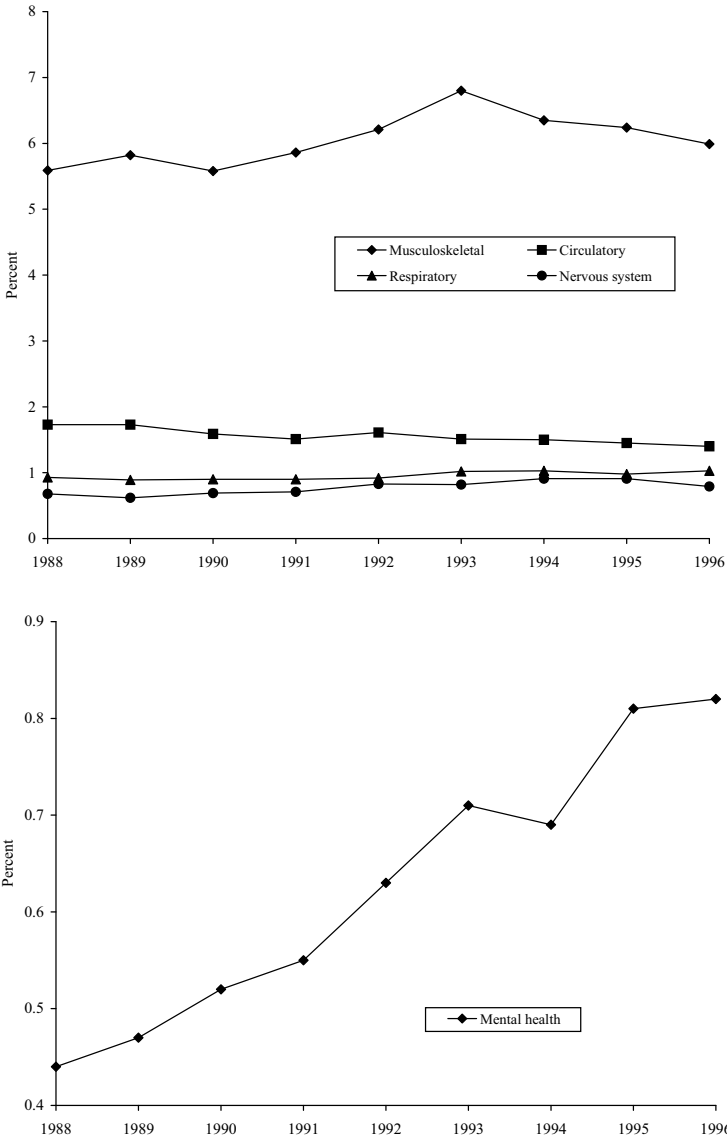
needed help with IADLs in 1988; this figure increased to 13.0 percent in 1996.

These indications of worsening health and greater levels of need for personal assistance suggest that the increases in reported levels of inability to work might reflect real increases in disability severity. What caused these changes? Some of the primary health conditions and impairments that cause disability are examined in the next section.

Contributions to the Rising Disability Rates

Using data from the NHIS on the health condition or impairment identified as the main cause of disability, we can classify the population with disabilities according to the body system that is primarily affected. Shown in Figure 6.10 are prevalence rates for the five leading body system causes of disability. Musculoskeletal conditions are by far the leading source of disability among working-age adults, affecting 5.6 percent of working-age adults in 1988 and rising rapidly beginning

Figure 6.10 Leading Body System Sources of Disability among Working-Age Adults, 1988–1996



SOURCE: National Health Interview Survey.

in 1990 to a high of 6.8 percent in 1993. By 1996, the prevalence had dropped somewhat, down to 6.0 percent.

Back problems (mostly coded either as orthopedic impairments of the back or neck or as intervertebral disk disorders) dominate this category of disabling conditions, along with various forms of arthritis and orthopedic impairments of the lower extremity (leg, foot, knee, etc.). Note that the 1.2 percentage point increase in musculoskeletal system conditions between 1990 and 1993 accounts for about two-thirds of the 1.8 percentage point increase in overall disability during the same three-year period. As for the longer-term rise of 1 percentage point in the disability rate between 1988 and 1996, musculoskeletal conditions account for less than half of that increase.

Circulatory system conditions fall a distant second in their contribution to the disability rate, causing disability among 1.7 percent of working-age adults in 1988. That figure began to decline in 1990, and had fallen more or less steadily to 1.4 percent by 1996. This decline mirrors long-observed reductions in mortality rates due to cardiovascular conditions, which have dropped by 60 percent since 1950, when adjusted for age (National Center for Disease Prevention and Health Promotion 1999). Reductions in risk factors, such as smoking and high blood pressure, along with improved diagnosis and treatment, are credited with this dramatic improvement.

Respiratory conditions are next in prevalence as a main cause of disability. Respiratory disability affected 0.9 percent of working-age adults in 1988, remaining at about that level before rising slightly to 1.0 percent in 1993 and holding steady through 1996. The increase is statistically significant, and is largely attributable to a rise in asthma, which dominates this category.

Nervous system conditions, the largest components of which are epilepsy, carpal tunnel, multiple sclerosis, and migraine, follow. The prevalence of nervous system disability rose substantially during the period, from 0.7 percent of working-age adults in 1989–1991 to as high as 0.9 percent in 1994–95 (and then dropping to 0.8 percent in 1996, but the decline is not statistically significant). The prevalence of disability due to carpal tunnel syndrome tripled during the period, and an increase in epilepsy is also apparent.

Finally, we see the most dramatic increase of any body system in the prevalence of mental health disability, which nearly doubled during

the period, climbing steadily from just over 0.4 percent of working-age adults in 1988 to 0.8 percent in 1996. The most common conditions in this category are schizophrenia, depression, and bipolar disorder. Depression, bipolar disorder, and anxiety disorder all roughly tripled in prevalence as causes of disability during the period; a substantial increase in schizophrenia is also apparent.

There are no trends worth noting among the remaining body systems, which are not shown in the figure. The few observable changes in the prevalence of disability due to these systems are, at best, of marginal statistical significance.

INCREASED PREVALENCE OF CHRONIC CONDITIONS AND IMPAIRMENTS

Did rates of disability due to musculoskeletal, respiratory, nervous system, and mental health causes increase because of increases in the underlying prevalence of these conditions? In other words, is the increase in back problems as a cause of disability simply the result of a broad increase in back problems overall?

Two distinct sources of data from the NHIS core can be used to shed light on the prevalence of the health conditions and impairments that are potential causes of disability: conditions reported in response to a checklist and conditions reported as the reason for a physician contact. In contrast to the subjectivity inherent in measuring the prevalence of conditions causing activity limitation, these sources of condition data are likely to be far more objective.

Each household is randomly assigned one of six condition checklists: musculoskeletal and skin conditions; impairments; digestive system conditions; glandular, blood, nervous system, and genitourinary conditions; circulatory system conditions; and respiratory conditions. Respondents are asked whether they have each of the conditions on the assigned checklist at the time of the interview (or ever had the condition, or had it within the past year, depending on the condition). Subjectivity would presumably enter into the answer when conditions are asked about that are not currently causing bothersome symptoms, especially when the respondent is uncertain whether the condition persists

or has been cured or gone into remission. For highly stigmatized conditions, additional subjectivity arises when the respondent must decide whether to reveal the condition to the interviewer.

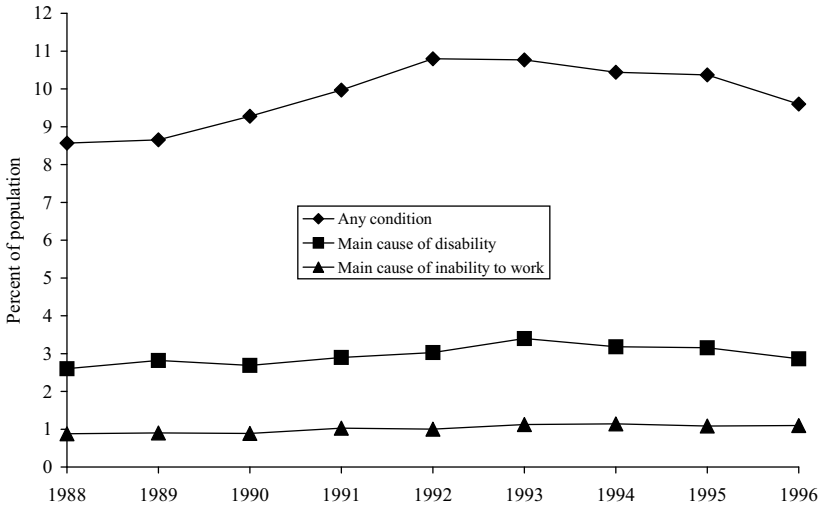
Even more objectivity is likely in the reporting of conditions discussed with a physician during a two-week reference period prior to the interview. Respondents would presumably have little trouble recalling so recent a doctor visit or naming the condition or conditions that motivated it. Despite the subjectivity inherent in a person's decision to see or not see a doctor for a particular severity of a particular condition, the reporting of the actual visit would seem quite straightforward. Again, a subjective element enters into the picture when the respondent must decide whether to name a highly stigmatized condition.

Back Problems

As mentioned above, back problems dominate the category of musculoskeletal conditions; they are also the largest single cause of disability among working-age adults. When comparing the prevalence of disabling back problems (by which we mean back problems identified as the primary cause of a person's limitation in activity) with overall back problems (any back problem reported on the checklist of musculoskeletal conditions), the trends are quite similar. As shown in Figure 6.11, the overall reported prevalence of back problems rose sharply, from 8.6 percent of working-age adults in 1988 to as high as 10.8 percent in 1992 and 1993, before declining gradually to 9.6 percent in 1996. Over the same period, the prevalence of back problems reported as the main cause of disability increased from 2.6 percent of working-age adults in 1988 to a high of 3.4 percent in 1993, before falling back to 2.9 percent by 1996. Similarly, as the main cause of inability to work, back problems increased from 0.9 percent of working-age adults in 1988–1990 to as high as 1.1 percent beginning in 1993.

Note that during the entire period, about one-third of overall back problems cause disability and about one-tenth cause inability to work. Put another way, about nine times as many people report back problems that do not prevent them from working as report back problems that do prevent them from working, and twice as many people report back problems that do not limit activity as those that do limit activity;

Figure 6.11 Prevalence of Back Problems, Overall and as a Cause of Disability or Inability to Work, Ages 18–64, 1988–1996



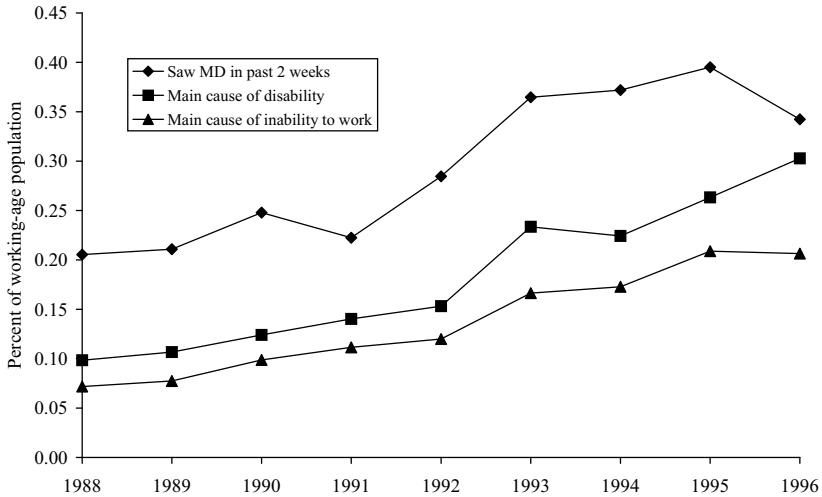
SOURCE: National Health Interview Survey.

across the board, there are similar prevalence increases of approximately 30 percent between 1988 and 1993. Thus, it would appear that back problems increased as a cause of both disability and inability to work because they became more widespread overall, rather than because of any worsening in the severity or impact of the impairment or any change in the motivation of people to report disability due to this condition.

Depression and Bipolar Disorder

As a second example, we turn to mental health disability, whose dramatic increase as a cause of disability was shown in Figure 6.10. Because mental health conditions are not included in the checklists, we cannot make comparisons to the overall prevalence of these conditions. Instead, in Figure 6.12, we present trends in physician contacts as a rough proxy. Because the doctor visit question contains a parenthetical specifying both psychiatrists and general practitioners as types of “medical doctors,” respondents would be expected to include psycho-

Figure 6.12 Rates of Disability, Inability to Work, and Physician Contact Due to Depression or Bipolar Disorder, ages 18–64, 1988–1996



SOURCE: National Health Interview Survey.

therapy visits, visits to general practitioners or specialists to obtain medication for a mental health condition, or phone calls or visits to renew such prescriptions. Those obtaining therapy (and, in some states, medication) from someone other than an M.D. would presumably not be counted, along with those using non-medical community supports or not currently receiving treatment at all.

Shown in Figure 6.12 are the rates of physician contacts, disability, and inability to work due to either depression or bipolar disorder. All three increased dramatically over the eight-year period. The proportion of working-age adults who saw a doctor for depression or bipolar disorder doubled, from 0.21 percent in 1988 to as high as 0.40 percent in 1995 (the subsequent decline to 0.34 percent in 1996 is not statistically significant). Disability due to these conditions tripled in prevalence, increasing from 0.10 percent of the working-age population in 1988 to 0.30 percent in 1996. Inability to work due to these conditions also tripled, from 0.07 percent to 0.21 percent.

It is unlikely that the true prevalence of these mental health conditions doubled or tripled over an eight-year period, but it is possible that the number of diagnosed conditions really did increase so markedly. One explanation for the upsurge both in physician contacts and disability relates to the availability of new, effective medications. Prozac became available for prescription in the United States right at the start of the period, in January 1988, and gained popularity soon thereafter. Once viable treatments become available for any condition, that condition gains visibility and legitimacy, especially a formerly dubious and highly stigmatized condition such as depression; people then become less reluctant to seek diagnosis and treatment and to acknowledge the condition, to themselves and others, as a source of activity limitation.

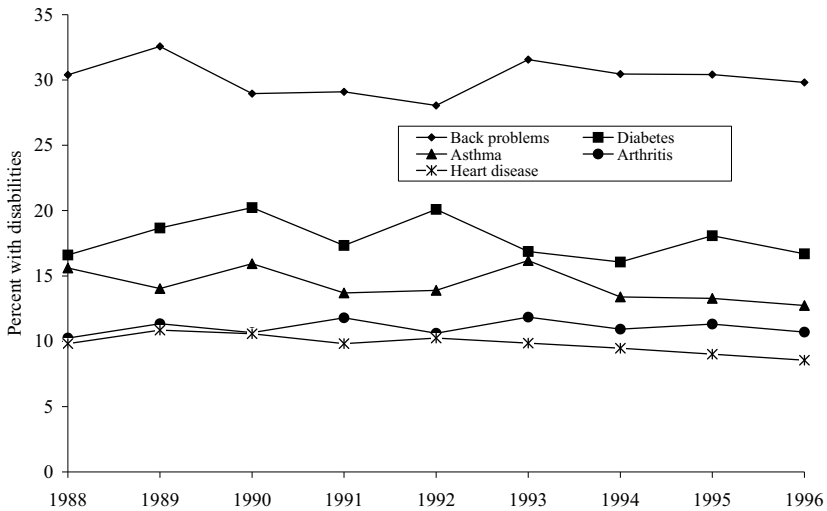
The Condition-Specific Disability Rate

For back problems and depression, changes in the prevalence of disability due to the condition appear to track changes in the overall reported prevalence of the condition. Is this true for other conditions? We can explore this hypothesis by calculating the condition-specific disability rate, namely, the ratio of the number of people with disability due to a particular condition divided by the total number of people affected by the condition.

Figure 6.13 shows the condition-specific disability rates for some of the leading causes of disability. Although there is substantial variation in the disability rate across conditions, all of the condition-specific rates remain basically flat during the nine years of interest. In other words, the disability rate due to the condition closely matches the overall prevalence of the condition. Of the conditions shown, back problems are the most disabling, with about 30 percent of working-age adults with back problems reporting limitations in activity. Next is diabetes, which causes disability in about 17 percent of those who have it. Asthma causes disability in about 15 percent of those reporting the condition overall, and arthritis and heart disease (including hypertension) are disabling for about 10 percent of those who have them.

It is important to emphasize that, for these and most other conditions that cause disability, the vast majority of people reporting the condition give no indication that they are limited in activity, and an even larger majority report that they are able to work. By and large,

Figure 6.13 Condition-Specific Disability Rates for Selected Conditions among Working-Age Adults, 1988–1996



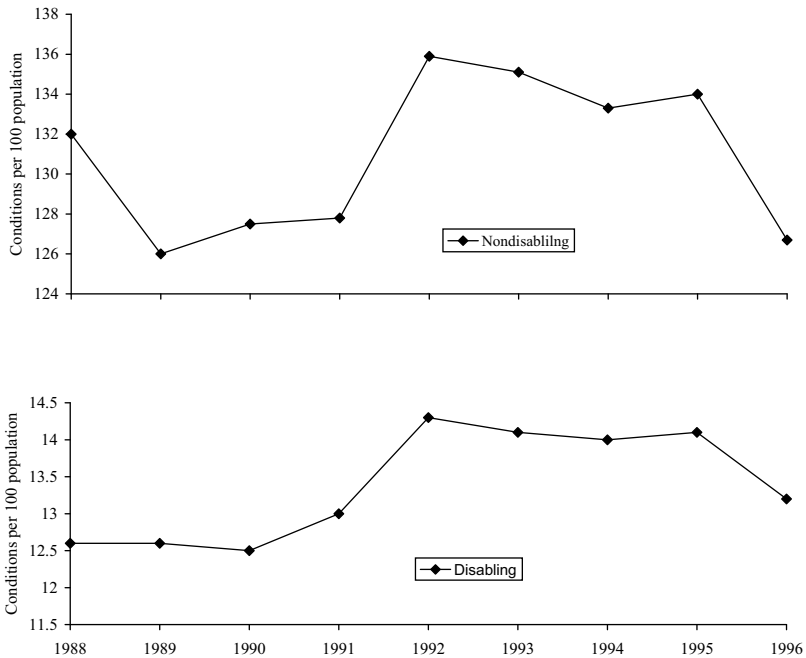
SOURCE: National Health Interview Survey.

whenever there is an increase in the prevalence of a condition, most of that increase occurred among people without disabilities.

Widespread Increases in Chronic Condition Prevalence

Adding up the prevalence estimates of the various conditions captured on the checklists produces an estimate of the total prevalence of chronic conditions among working-age adults. These are increases in chronic condition prevalence among people with and without disabilities, among both conditions that cause disability (either as a primary or secondary cause) and those that do not. As shown in Figure 6.14, prevalence rates for chronic conditions causing and not causing disability both increased sharply during the early 1990s. The former increased in prevalence by 1.8 conditions per hundred population, from 12.5 conditions in 1990 to a high of 14.3 in 1992. During the same period, the prevalence of conditions not identified as causing disability increased by 8.4 conditions per hundred population, from 127.5 in 1990 to 135.9 in 1992.

Figure 6.14 Prevalence of Disabling and Nondisabling Chronic Conditions among Working-Age Adults, 1988–1996



SOURCE: National Health Interview Survey.

Thus, more than 80 percent of the total increase in chronic condition prevalence occurred among conditions that do not cause disability. Only a tiny fraction (7.6 percent) of the 1990–1992 increase is attributable to conditions that cause inability to work (not shown in the figure). This widespread increase in chronic condition prevalence, occurring mainly among conditions causing neither inability to work nor any other activity limitation, cannot be attributed to causes related to a person's self-attribution of disability status, such as a desire for disability benefits or legal protections or an increased awareness of disability.

Do Increases in Chronic Conditions Predict Rising Disability?

Because the conditions-specific disability rates are stable over time, the checklist data can be used to model trends in the disability

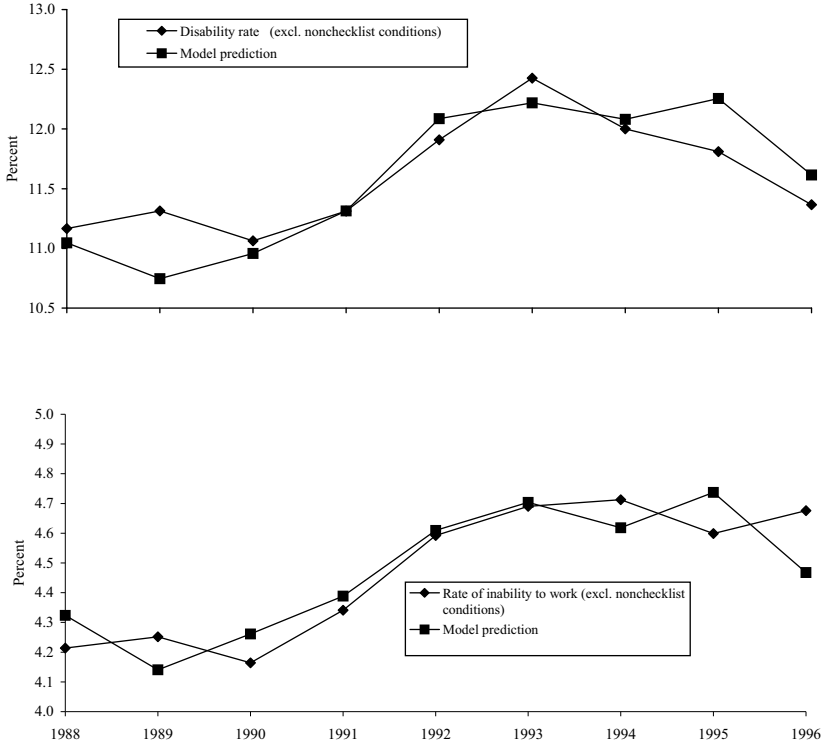
rate based on changes in the prevalence of the conditions that can lead to disability. Do increases in the overall prevalence of health conditions and impairments account for the rising disability rates?

To answer that question, I gather condition data across the six checklists and classify the conditions into 52 categories according to the body system affected. For each category, I average the condition-specific disability rate over the nine years to obtain a measure of the likelihood that a person having that condition in any year will have a disability (or, analogously, be unable to work) due to that condition. I use this factor to rescale the overall prevalence of each of the 52 condition categories in each year to estimate the expected contribution of that condition to the disability rate. Adding up those expected contributions results in a prediction for the overall disability rate (or the rate of inability to work) in a given year, due to conditions that are included on the checklists.

Figure 6.15 shows the actual rates of disability and inability to work, excluding conditions not on the checklists, as well as the rates expected from this model. For both rates, there is remarkable agreement between the expected and actual trends. Most notably, the expected trends mirror the actual in showing sharp increases between 1990 and 1993 and then leveling off.

The presumably more straightforward and objective condition data gathered with the checklists has proved entirely consistent with the more complex and subjective self-assessments of limitations in activity and ability or inability to work. For the conditions that are included on the checklists (all of the principal causes of disability except mental health conditions and learning disabilities), changes in the overall prevalence of the underlying health conditions and impairments that result in disability appear to fully explain the large and rapid increases in the disability and inability-to-work rates that occurred during the early 1990s.

Figure 6.15 Actual and Predicted Rates of Disability and Inability to Work from Chronic Condition Prevalence, Ages 18–64, 1988–1996



SOURCE: National Health Interview Survey.

WHAT RISK FACTORS MIGHT HAVE LED TO THESE INCREASES?

If the rising rates of disability are truly attributable to epidemiologic factors—affecting a much broader spectrum of the working-age population than the approximately 14 percent reporting limitations in activity—then the next step is to explore some of the risk factors that

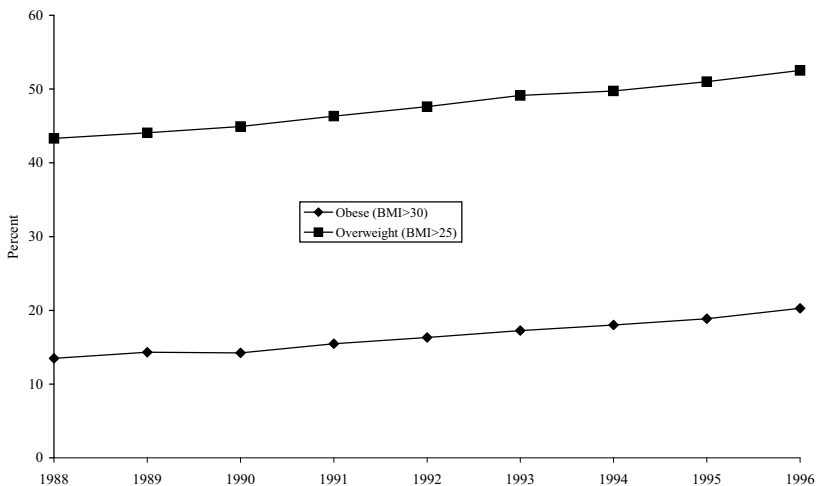
might have led to increases in the prevalence of chronic conditions. In this section, I examine two such risk factors, both of which can be analyzed to some extent using the NHIS data: increasing prevalence of obesity among the working-age population and the physical and psychological effects of economic recession. See Kaye (2003b) for a discussion of a third risk factor, the loss of health insurance coverage and a consequent reduction in access to health care.

Based as it is on a series of cross-sections of the population rather than a panel interviewed over time, these analyses lack the longitudinal perspective that would help to distinguish cause and effect and rule out simultaneous, coincidental changes. Although I can only make plausibility arguments for the risk factors examined, the speculative nature of this discussion should not detract from the validity of the conclusions drawn in the previous sections.

Rising Levels of Overweight and Obesity

As shown in Figure 6.16, the proportion of the working-age population classified as either overweight or obese has grown considerably.

Figure 6.16 Proportion of Working-Age Adults Considered Overweight or Obese, 1988–1996



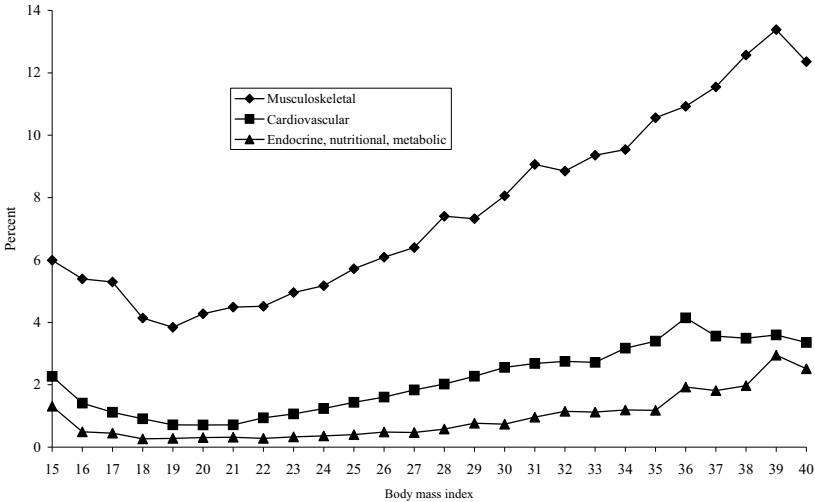
SOURCE: National Health Interview Survey.

Self-reported height and weight data from the NHIS core show a 50 percent increase in obesity among working-age adults during the period, from 13.5 percent of that population in 1988 to 20.3 percent in 1996. The proportion classified as overweight, a broader category including everyone above the normal range, grew steadily from 43.3 percent in 1988 to 52.5 percent—a majority—in 1996.

These estimates are based on government guidelines published in 1998 (National Institutes of Health 1998), which rely on body mass index (BMI), calculated by dividing the weight (in kilograms) by the square of the height (in meters). A BMI between about 18 and 25 is considered normal, while those with a BMI above 25 are classified as overweight, and those with BMI above 30 are considered obese.

Obesity is a risk factor for a variety of health conditions, and even people considered merely overweight have higher rates of some conditions than those in the normal range. As shown in Figure 6.17, the rate of musculoskeletal disability more than triples with increasing BMI, steadily increasing from a minimum of 3.8 percent at the low end of the

Figure 6.17 Prevalence of Disability among Working-Age Adults, by Body System and Body Mass Index, 1988–1996



SOURCE: National Health Interview Survey.

normal range (BMI of 19) to a high above 12 percent for those with BMI of 38 or higher. Cardiovascular disability increases from a low of 0.7 percent (at BMI around 20) to more than three times that level for those in the obese range (2.6 percent) and to about five times that level (about 3.5) for those with the highest values of BMI. The risk of endocrine, nutritional, and metabolic disability is quite small for those in the normal range (0.3 percent), but it increases almost an order of magnitude at the high end of the spectrum (to 2.9 at BMI of 39); diabetes is the principal contributor to this category.

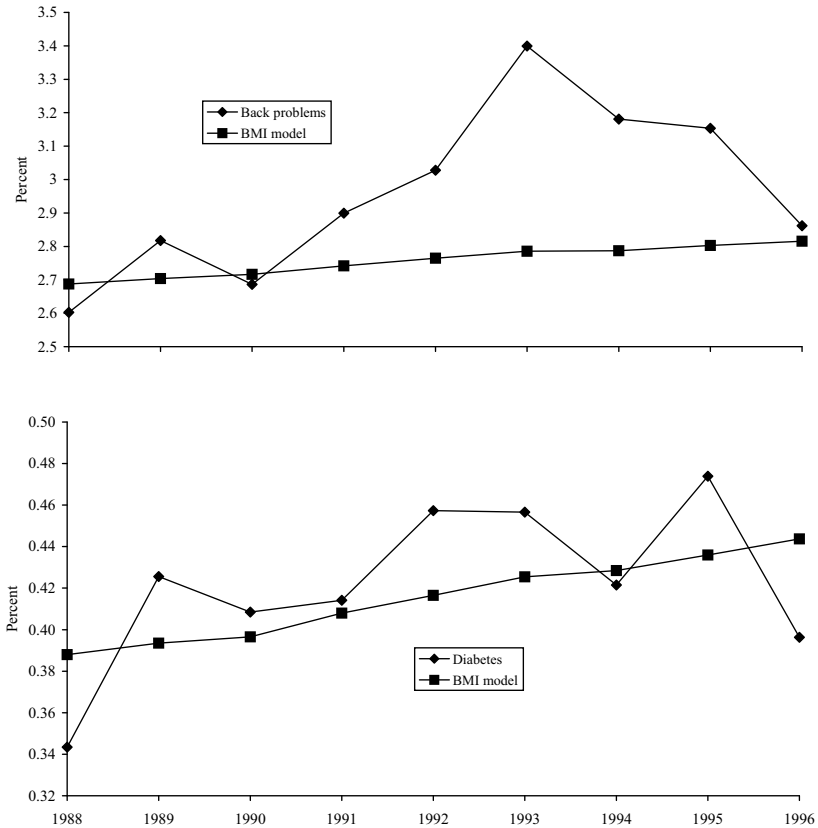
It seems reasonable to suggest that rising rates of overweight and obesity have resulted in increases in the prevalence of certain chronic conditions and impairments, thus contributing to the increases in disability rates. A simple model of the effect of increases in BMI on disability risk² can explain the observed increases in disability due to some conditions but not others (Figure 6.18); the rising trend in observed disability due to diabetes is well matched by the prediction from the model. For back problems, however, the model predicts only a steady, modest increase, while the actual data show a sharp rise in back problems as a cause of disability between 1991 and 1993. By 1996, however, the rate drops to about the level predicted by the model; perhaps BMI considerations can explain only the long-term growth but not the short-term.

Overall, the model suggests that rising overweight and obesity among working-age adults might have led to a steady 5 percent increase in the disability rate over eight years. Clearly, however, we must look to other factors to explain the more rapid increase in disability observed in the first few years of the 1990s.

“Economic Distress”

The recession that began in July 1990 technically ended when the economy began to recover in March 1991 (National Bureau of Economic Research 1992). But unemployment continued to rise, not reaching a peak until June 1992, when 7.8 percent of labor force participants were unemployed. Although the unemployment rate fell more or less steadily after that, it remained above 6 percent through the middle of 1994, finally returning to prerecession levels below 5.5 percent in mid 1996.

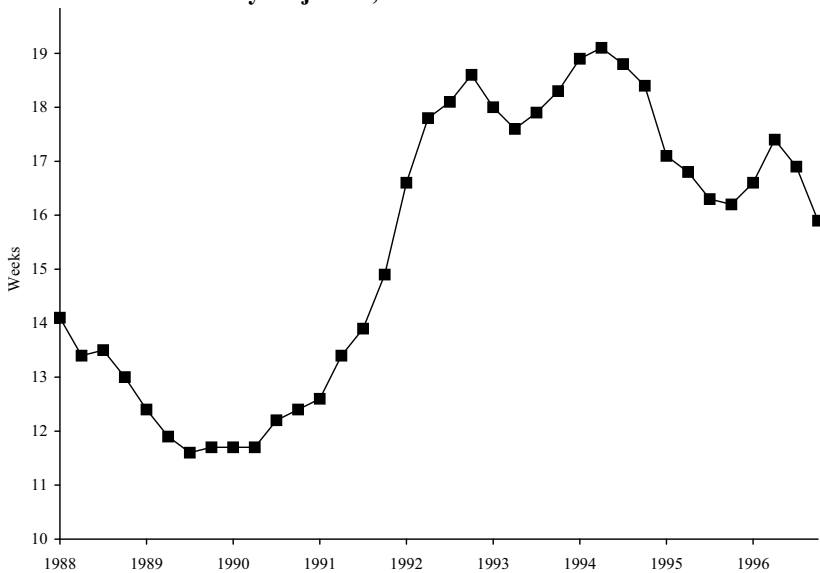
Figure 6.18 Rate of Disability Due to Back Problems or Diabetes, Actual and Expected from Body Mass Index Model, 1988–1996



SOURCE: National Health Interview Survey.

The degree of difficulty in finding a job is further illustrated by the duration of unemployment. Figure 6.19 shows the average amount of time an unemployed person had spent looking for work (or on layoff) at the time of the CPS interview. The average was 11.7 weeks just before the recession, increasing by just under a week to 12.6 weeks by the first quarter of 1991 (and the official end of the recession). The average began to increase more rapidly after that, growing most sharply during the last quarter of 1991 and the first two quarters of

Figure 6.19 Average Duration of Unemployment at Time of Interview, Seasonally Adjusted, 1988–1996



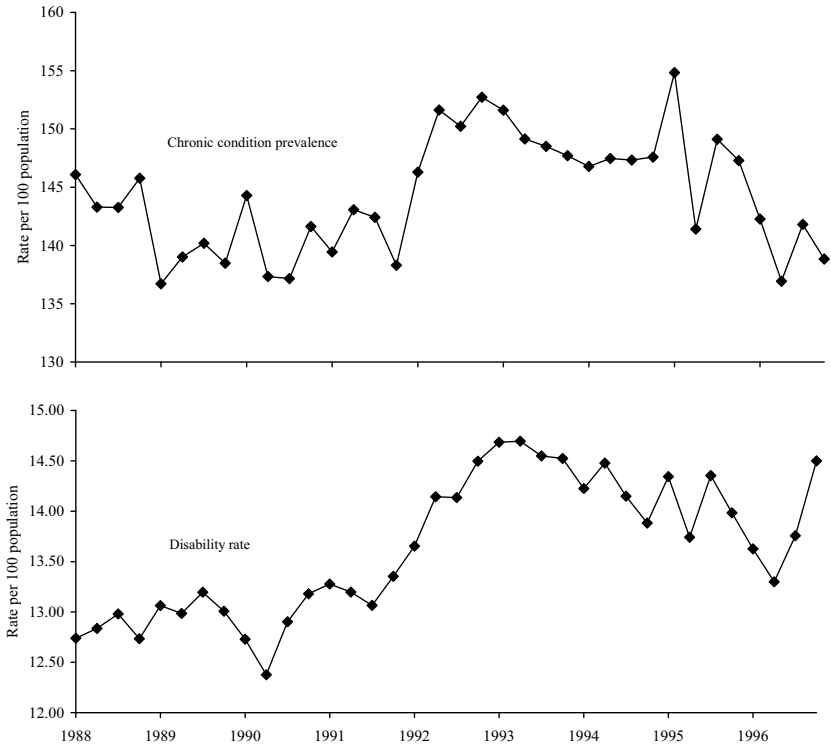
SOURCE: Current Population Survey.

1992, when it rose by 4 weeks, reaching a fairly steady level of about 18 weeks, until rising to its highest level of about 19 weeks in 1994. Even by the end of 1996, the average duration of unemployment had fallen back only to 16 weeks, much higher than the prerecession level.

In other words, from the second quarter of 1992 until the end of 1994, an unemployed person, when interviewed, had been unsuccessfully looking for work for an average of 4 to 5 months; the total duration of the job search would be perhaps twice as long, without any guarantee of eventual success.

The period of rapid increase in the duration of unemployment, when the unemployment rate was climbing to its peak level, corresponds precisely to the period when the prevalence rates of chronic conditions and disability both rose dramatically (Figure 6.20, which presents quarterly estimates, seasonally adjusted,³ from the NHIS). The disability rate increased by a full percentage point over the nine-month period, from 13.1 percent during the third quarter of 1991 to 14.1 percent during the second quarter of 1992. During the first two quarters of

Figure 6.20 Chronic Conditions and Disability among Working-Age Adults, Seasonally Adjusted, 1988–1996



NOTE: Quarterly estimates from NHIS.
 SOURCE: National Health Interview Survey.

1992, the prevalence of chronic conditions (as reported on the checklists) rose from 138.3 to 151.6 conditions per hundred working-age adults.

Following the rapid increase, all three measures—unemployment duration, chronic condition prevalence, and disability—continue to exhibit similar behavior. Each reaches and maintains its maximum level during the subsequent three years and then, by the end of the period, begins to decline.

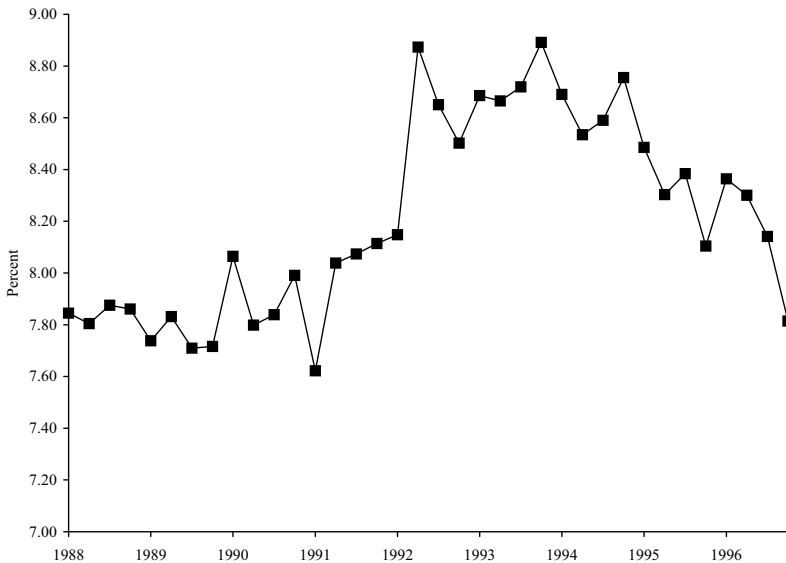
Rates of physician contact for chronic conditions (Figure 6.21) show a similar pattern, with an even more dramatic 9 percent increase

in just one quarter. Before 1990, about 7.8 percent of working-age adults reported seeing a doctor about a chronic condition in the prior two-week period. That rate had risen gradually to just under 8.2 percent by the first quarter of 1991, and then jumped to 8.9 percent during the next three months. Only in 1995 did the chronic condition physician contact rate drop back below 8.5 percent.

Does economic recession, along with its aftereffect of increasing long-term unemployment, really cause people’s health to worsen, and their degree of impairment and disability to increase? Plausible though it may be to blame the rapid increases in chronic conditions and disability on what might be called “economic distress,” this hypothesis cannot be adequately tested with a cross-sectional data set such as the NHIS. The simultaneous rise in unemployment duration and chronic condition rates could be coincidental.

Many studies have addressed the question of whether health is affected by recession or unemployment (for critical reviews of these

Figure 6.21 Proportion of Working-Age Adults Discussing a Chronic Condition with a Physician in Prior Two Weeks, Seasonally Adjusted, 1988–1996



SOURCE: National Health Interview Survey.

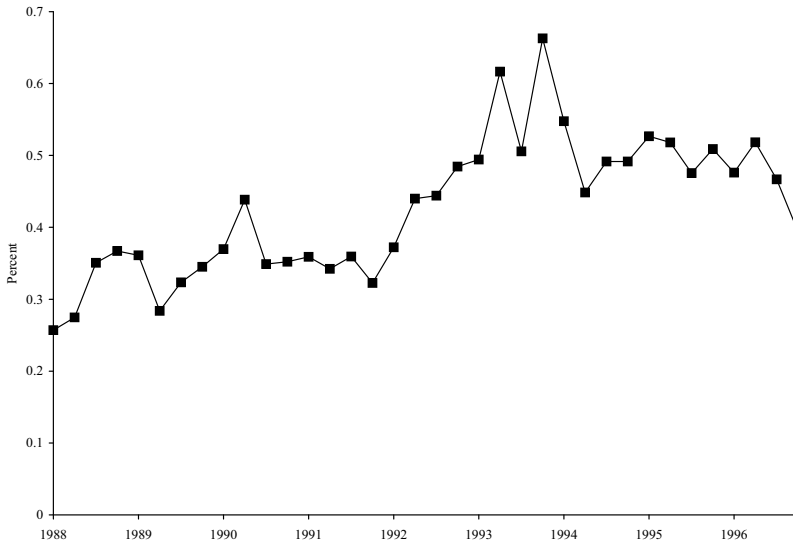
studies, see Mathers and Schofield 1998; Goldney 1997; Dooley, Fielding, and Levi 1996; and Jin, Shah, and Svoboda 1995). Most show an association between job loss or job insecurity and poor subsequent health status; however, because they rely on cross-sectional data, many of these cannot actually demonstrate that health worsened following economic distress, as opposed to a competing hypothesis that people already in poor health are at greater risk of losing their jobs during a recessionary period. A few longitudinal studies do follow individuals through periods of economic distress, and some of these show fairly convincing patterns of worsening health following threatened or actual loss of employment (Kraut et al. 2000; Ferrie et al. 1998).

Better established is a causal link between economic distress and worsening mental health (Claussen 1999; Theodossiou 1998; Hamilton, Merrigan, and Dufresne 1997; Hammarstrom and Janlert 1997; Dooley, Catalano, and Wilson 1994). There is a well demonstrated—and far from surprising—association between unemployment and greater levels of stress, anxiety, and depression (Comino et al. 2000; Gien 2000; Viinamaki et al. 1993; Graetz 1993; Linn, Sandifer, and Stein 1985), due to loss of income, status, social contact, and structured activity (Creed and Macintyre 2001).

As Figure 6.22 shows, there was an enormous increase between 1991 and 1993 in the proportion of working-age adults consulting a medical doctor for depression or stress. Until the end of 1991, a fairly steady rate of about 0.35 percent reported discussing one of these mental health conditions with a doctor during the prior two-week period; over the next four quarters, that rate increased to nearly 0.5 percent, continuing to rise to an average of 0.57 percent over the four quarters of 1993. The 1993 rate is a 63 percent increase over the 1991 level.

Could a pronounced increase in mental health conditions have led to greater prevalence of physical conditions? Clinical studies have implicated psychological stress in causing or worsening a variety of musculoskeletal conditions, such as rheumatoid arthritis and back, neck, and shoulder pain (Feyer et al. 2000; Walker et al. 1999; Lundberg et al. 1999); digestive system conditions, such as intestinal inflammation and dyspepsia (Collins 2001; Elenkov and Chrousos 1999; Tryba and Cook 1997; Koch and Stern 1990); respiratory system conditions, such as asthma and allergies (Marshall and Agarwal 2000; Elenkov and Chrousos 1999); nervous system symptoms, such as head-

Figure 6.22 Proportion of Working-Age Adults Seeing Doctor for Depression or Stress in Prior Two Weeks, Seasonally Adjusted, 1988–1996



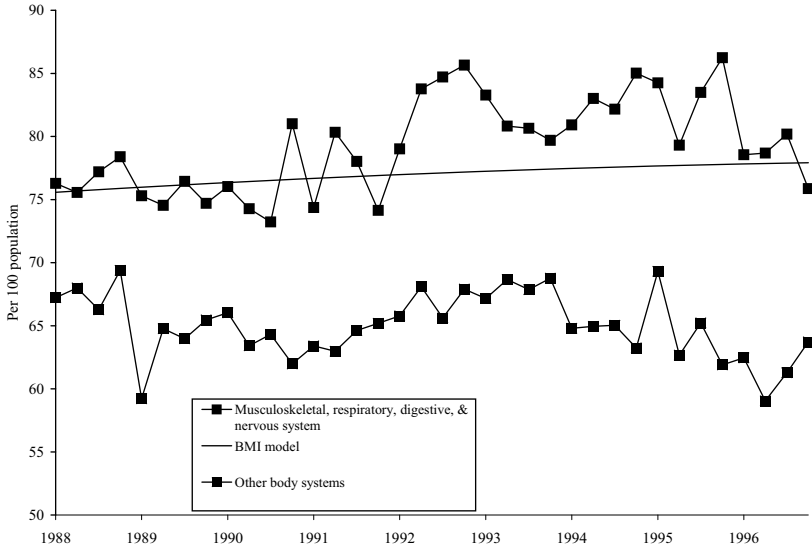
SOURCE: National Health Interview Survey.

ache, dizziness, and epileptic seizures (Andersson and Yardley 2000; Spector, Cull, and Goldstein 2000; Buzzi, Pellegrino, and Bellantonio 1995); and circulatory system conditions, such as hypertension and even heart disease and possibly stroke (Cerrato 2001; Everson et al. 2001; Yudkin et al. 1999; Barnes et al. 1997).

For its part, depression has been implicated in causing or worsening a similar list of conditions (Feyer et al. 2000; Spector, Cull, and Goldstein 2000; Galil 2000; Udell and Weiss 1998; Addolorato et al. 1998; Fifield et al. 1998). In particular, causal relationships have been observed or proposed between depression and coronary artery disease, stroke, hypertension, and other circulatory system conditions (Krishnan 2000; O'Connor, Gurbel, and Serebruany 2000; Lavoie and Fleet 2000; Ferketich et al. 2000; Jonas and Mussolino 2000).

Dividing the checklist chronic condition data by body system (Figure 6.23), most of the 1992 increase occurs among the musculoskeletal, respiratory, digestive, and nervous system conditions—four of the five

Figure 6.23 Chronic Condition Prevalence among Working-Age Adults, by Body System, Seasonally Adjusted, 1988–1996



SOURCE: National Health Interview Survey.

body systems most commonly linked to stress and depression in the literature. For these conditions, the prevalence rose sharply during the first half 1992, climbing from a 1991 average of 77 conditions per hundred population to 85 conditions during the second half of 1992, and remaining above 80 for most quarters through the end of 1995. In contrast, the prevalence of conditions involving all other body systems rose only modestly, from a 1991 average of 64 conditions per hundred working-age adults to 67 in 1992, returning to its former level by 1994.

Also shown in the figure is the expected trend for musculoskeletal, respiratory, digestive, and nervous system conditions, obtained using our BMI model. At best, rising rates of overweight and obesity could account for a general upward trend over the period, but do not explain the 1992–1995 increase.

All in all, sharp increases in physician contact rates for both mental and physical health conditions, in prevalence rates for certain types of conditions and impairments, and in disability rates appear to be quite

consistent with the hypothesis that the 1990–1991 recession, and in particular the aftereffect of increased long-term unemployment, might well have caused a worsening in the health and disability status of working-age adults.

CONCLUSION

The stagnation in the overall employment rate among people with disabilities can be seen as a consequence of the increasing proportion of the population who consider themselves unable to work. The analysis presented in this chapter suggests that this increase reflects an actual worsening in the extent of work limitation among a changing population with disabilities. Furthermore, employment measures that exclude those reporting inability to work reveal significant progress in employment opportunities for those with disabilities who are able and available to work.

I find that the sharp increases in the reported rates of both overall activity limitation and inability to work during the early 1990s can be fully accounted for by widespread increases in the prevalence of chronic conditions and impairments among working-age adults. The growth in chronic condition prevalence affects a broad spectrum of the working-age population, far broader than just the 14 percent or so reporting limitations in activity. Because most of the increase in chronic condition prevalence is unrelated to disability status, explanations focusing on disability status—involving a greater desire to obtain cash benefits or an increased willingness to be seen as having a disability—cannot account for this change.

What risk factors might have led to the large and widespread increases in both disability and the chronic conditions and impairments that cause disability? A rising trend in the proportion of the population classified as overweight or obese has increased the risk of certain chronic conditions and the ensuing disability; this change probably resulted in a gradual, steady increase in the disability rate over the period. A sharper increase, observed in the data for the early 1990s, is more plausibly explained as a result of the economic recession, which continued to affect the unemployment rate as late as 1994. The psycho-

logical distress resulting from job insecurity and job loss might have led to worsening physical health and, in turn, greater disability. A third hypothesis, not addressed here, refers to the increasing economic vulnerability of certain workers, whose access to health insurance and health care has eroded over the years.

Again, when I postulate economic causes as factors in the increasing disability rates, I differ from other authors in proposing that these factors have increased the actual prevalence of the underlying conditions causing disability, rather than simply increasing the likelihood that a person with a given severity of a given condition will regard himself or herself as having a disability.

Notes

1. For details on the functional limitation scale, see Kaye (2003a).
2. Using data from 1988–1990, I calculate a rate of disability caused by each of the conditions modelled in each of 12 BMI bins for each sex (24 BMI-sex cells). I then multiply that rate by the actual population each BMI-sex cell in each year and then sum to obtain the predicted prevalence of disability due to that condition in that year.
3. Adjusted using the Census Bureau's X-11 procedure as implemented in SAS. The NHIS sample is nationally representative in each quarter.

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A Policy Puzzle

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