The U.S. Study of Work Incapacity and Reintegration

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The International Social Security Association recently completed a six-nation comparative study of work incapacity and reintegration that focused on workers with back disorders. This article discusses the findings of the U.S. national study and discusses their policy implications.

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Summary

In many countries, including the United States, the number of persons being awarded long-term or permanent disability benefits has risen dramatically in recent years. Government agencies, advocates for the disabled, and others are looking for ways to help persons with disabilities return to the labor force. The Work Incapacity and Reintegration (WIR) Study was developed to address that issue.

The United States and five other countries—Germany, Denmark, Sweden, Israel, and the Netherlands—have participated in a cross-national study of work incapacity under the auspices of the International Social Security Association. The study had two objectives: to examine the factors that influence the pattern of work resumption among persons disabled by a back condition and to identify the medical and nonmedical interventions that are most effective in helping such persons reenter the labor force.

Samples for the U.S. national study were drawn from four cohorts: Social Security Disability Insurance (DI) beneficiaries, Supplemental Security Income (SSI) beneficiaries, and recipients of temporary disability insurance (TDI) benefits from the states of California and New Jersey. Only the TDI recipients were included in the comparative study. This article discusses the study design and methodology and summarizes the findings of the U.S. national study.

Findings from the U.S. study show significant differences between the two cohorts in terms of work resumption and other characteristics. The proportions of respondents from the TDI cohorts who were working at the third and final study contact ranged from 53 percent to 65 percent, compared with less than 5 percent of the DI and SSI respondents. Respondents from the DI and SSI cohorts were on average about 10 years older than the TDI respondents, were less well educated, and reported more physical demands in their usual work. They also reported lower levels of functional capacity, higher levels of pain, and a much greater tendency to have other chronic illnesses.

The types of medical treatments provided were remarkably uniform across cohorts and, within cohorts, between those who did and did not resume working. Thus, no medical intervention was identified that showed a significantly higher success rate in terms of facilitating a return to work. However, changes made in the work environment by the employer were an important factor in work reintegration; about 80 percent of respondents who resumed

working did so with the help of workplace accommodations. In addition, since respondents with fewer physical demands in their job were more likely to return to work, there appears to be some potential for job retraining as a means of promoting a return to work. The Social Security Administration should consider these findings in developing strategies to help disabled workers reenter the labor force.

Introduction

In the United States, as in many other countries, the number of individuals applying for and being awarded long-term or permanent disability benefits grew substantially during the 1990s. Most nations are attempting to understand the reasons for the trend and to determine what the near- and long-term trend might be so that financial impacts can be assessed. Government agencies, advocates, and others—together with individuals who have severe impairments—are seeking ways to help disabled persons to remain in the labor force or, once having left, to return to work. Simply stated, work is central to one's ability to achieve self-sufficiency, and effective efforts to return people with disabilities to work are being made throughout the world.

The United States, Germany, Denmark, Sweden, Israel, and the Netherlands participated in a cross-national study of work incapacity and reintegration (WIR) under the auspices of the International Social Security Association (ISSA). The ISSA Research Board began the study in 1994 on the advice of the six-nation steering committee of which the United States was a major participant and proponent. It was the most ambitious research study undertaken by ISSA within the past decade.

The international designers of the comparative study decided to focus on a specific group of disabled workers, recognizing that individuals with different impairments may successfully recover or return to work through different interventions. Workers with back disorders were selected because they constitute a large proportion of disability beneficiaries in all countries, and existing information suggests that there is a greater potential for successful intervention among persons in that group.

Although the study drew on various elements of the problem of work incapacity and reintegration in constructing its theoretical model and research design, it concentrated on interventions, incentives, and disincentives aimed at returning beneficiaries to work. That focus carried over to all aspects of the project's development and implementation.

At the conclusion of the study, a cross-national analysis was performed. An international data management center was established to process data from each country, including the results of all of the cohorts from the six countries.[1] A technical expert panel met and provided input and suggestions to improve the analysis. The results of the study were published in 2001.[2]

In addition to the cross-national report, each country produced a report of its national findings. This article:

- Reviews the core design and methodology of the international study,
- Discusses how the core design was adapted for the U.S. study to account for differences between U.S. disability programs and those in other countries, and
- Presents the findings of the U.S. study and their policy implications.

Design and Methodology of the International Study

As discussed above, the objectives of the study were to examine the factors that affect work resumption by persons disabled by a back condition and to identify the medical and nonmedical interventions that are most successful in helping those persons return to work. The study involved an initial survey and two follow-up surveys over a period of approximately 2 years.

Differences in benefit structures and language present difficulties for any cross-national social security research project. To standardize the description of benefit programs across the six countries, benefits available immediately upon onset of work incapacity, regardless of how long they could be paid, were referred to as sickness benefits; long-term benefits paid only some time after onset, whether or not preceded by sickness benefits, were referred to as disability benefits.

Core Design. To produce sound results that would be comparable across countries, each of the six countries agreed to follow a core design. The design developed by the ISSA steering committee and research experts from participating countries incorporated the following critical elements that were common to all of the national studies:

- The sample size contained a minimum of 300 cases that were monitored throughout the entire observation period.
- Persons selected for the sample selection had to:
  - —be unemployed because of disability for at least 3 months;
  - —have a back disorder with a diagnosis (International Classification of Disease) code of 720, 722, or 724; and
  - —be age 59 or younger.

- Cases were followed for approximately 2 years to monitor interventions and their outcomes. Initial baseline data were collected 3 months after work stoppage; follow-up interviews were conducted 1 year after the initial work stoppage and again after 2 years.
- Each country collected data using a common core instrument and approach to collecting data.

Variations in the core design were acceptable, however, to account for differences in the countries' programs.

Measurement of Outcomes. Because the project was intended to examine return-to-work initiatives for persons receiving some form of disability benefits, the subjects' benefit status was identified as a relevant outcome in addition to the obvious measure of full or partial work resumption. Therefore, the outcomes covered during and at the end of the observation period included doing paid work (timing, type, duration, and so on), receipt of benefit (type of program, duration), participation in a rehabilitation program (timing), and others (for example, death). To assess the impact of medical interventions, changes in health conditions and functional limitations were measured as well.

Implementation

National research teams started the preparations for selecting cohorts in October 1994. That process took 6 months to complete because of the complexities in planning and data collection in some countries. Construction of the cohort and first measurement (T1, as soon as possible after 3 months of work incapacity) occurred in the six countries from May 1995 until September 1996. The second measurement (T2, about 1 year after the onset of work incapacity) was completed in August 1997. The final measurement (T3, 2 years after onset) was completed in September 1998. Information on cohort characteristics, interventions, and outcomes was measured by a variety of techniques, including interviews with the disabled person, collection of data from social security program administrators, and interviews with attending physicians.

The WIR project and the six-nation comparative study provided a unique opportunity to assess the application and outcome of interventions used to stimulate resumption of work for persons receiving sickness or disability benefits. The separate national studies have already contributed to a better understanding of the conditions that affect successful reintegration for persons receiving sickness or disability benefits. The project's multinational framework, in which largely independent national research teams carried out national studies with a shared core research design, allowed the sponsors to gain greater insight into the problems of work incapacity and reintegration than they would have from a series of fully independent national studies. The experience of the project's steering committee in implementing its unique research design will also assist others interested in cross-national social security research and, hopefully, will stimulate future collaborative studies of this type.

Differences Between U.S. Disability Programs and Those in Other Countries

The United States is the only participating country that does not have a disability program that is administered by the national government and provides both temporary and permanent disability benefits. For example, in Sweden, the employer is required to provide sickness benefits for the first 14 days of incapacity, and the National Social Insurance Board pays 80 percent of lost income from day 15 up to 1 year and 70 percent thereafter.

By contrast, the U.S. disability system is composed of many programs, both public and private. The two largest programs are SSA's Disability Insurance (DI) and Supplemental Security Income (SSI) programs. Those programs provide benefits to individuals who are severely disabled, are unable to perform substantial gainful activity, and have a disability that is expected either to last for at least 12 months or to result in death. The DI program is a social insurance program based on work contributions, and benefits are not payable until the sixth month following the onset of disability. The SSI disability program uses the same definition of severe disability, and payouts are based on need subject to income and resource limits.

Temporary or partial disability programs in the United States are privately rather than publicly operated, with two exceptions. First, workers who are injured in connection with their job may receive benefits through state-administered workers' compensation (WC) programs, starting with the date of injury. WC programs vary from state to state in requirements for coverage and in the types and amounts of benefits provided. Currently, 55 WC programs are operating throughout the United States, covering 88 percent of the employed wage and salary labor force. Second, social insurance programs that partially compensate for the loss of wages stemming from a temporary, nonoccupational disability are available in five states (California, Hawaii, New Jersey, New York, and Rhode Island). The maximum duration of benefits varies between 26 and 52 weeks.

Despite significant differences between disability programs in the United States and those in the other countries, however, the individuals studied were very similar in terms of impairment and work stoppage due to the impairment.

Design and Methodology of the U.S. Study

For several reasons, SSA was unable to select sample cases from its administrative databases that met all of the above core design requirements for the comparative survey. Since the DI program has a 5-month waiting period, potential respondents could not be selected for an initial contact approximately 3 months after work stoppage. Also, the SSI program does not have a waiting period, but many applicants do not file for benefits immediately upon becoming disabled, and the disability determination process for both programs often takes months to complete. Finally, the SSI program is means-tested, and beneficiaries do not represent a cross-section of the disabled population but only those with extreme financial needs.

To obtain a sample of recently disabled individuals representative of all segments of the population, SSA requested samples from state agencies that administer WC and temporary disability insurance (TDI) programs. Two state agencies—the New Jersey Department of Labor (DOL) and the California Employment Development Department (EDD)—agreed to identify potential respondents and forward a letter inviting them to participate in the study. The New Jersey DOL administers the state's TDI program, and the California EDD administers the largest TDI program in the United States. Both state agencies identified samples of TDI beneficiaries who met the criteria for selection, and subsamples of volunteers who could be reached by telephone were selected from those groups. Since the state samples did not include WC recipients, there may have been a limited number of respondents from the state cohorts whose impairments were work related. The California and New Jersey TDI cohorts were used in the international study.

The U.S. study also included two other cohorts—recently entitled SSI and DI beneficiaries who were selected from SSA's administrative files. The initial contact with most of those beneficiaries could not be made at 3 months following work stoppage. Furthermore, only limited information about the influence of various interventions on work resumption could be secured, since a small number of beneficiaries from those programs ever return to work. Thus, for the DI and SSI disability cohorts, the core design contact after 3 months of nonwork could not be followed. Members of those cohorts were contacted at the earliest feasible time, which ranged from 4 to 10 months after onset of disability. Nonetheless, the samples provide a broad perspective with regard to the characteristics of individuals who became disabled because of a back disorder.

A substantial percentage of those who apply for and are awarded DI benefits and SSI disability benefits allege that they are unable to work because of back problems. Recent information about back impairments in work injury situations indicates that there is a significant link between lower back pain and absence from work. In 1997, there were 1.8 million instances of nonfatal occupational injuries and illnesses within U.S. private industry that led to absences from work beyond the day of the incident. More than 40 percent of the injuries and illnesses resulting in time away from work were sprains or strains, most often involving the back. Lost workdays for back-related injuries and illnesses totaled more than 10.8 million in 1997 alone, with nearly 20 percent of back pain sufferers missing more than 30 workdays per year.[3]

Findings of the U.S. Study

The WIR study was designed to measure characteristics that may affect both work incapacity and the potential to return to work. Researchers therefore recorded demographic and household characteristics, information related to work and employment, and information pertaining to medical condition. Most important, they gathered information on medical and nonmedical interventions. Those findings are presented below.[4]

Work Resumption

The pattern of work resumption among DI beneficiaries was similar to that of SSI beneficiaries. Although the percentages of resumers increased slightly between T1 and T3, they remained below 5 percent for both programs (see Table 1). By contrast, more than half of the respondents from the California TDI (CATDI) sample and over 65 percent of those from the New Jersey TDI (NJTDI) sample were working at T3.

The proportion of respondents from the NJTDI sample who had returned to work at T1 (70.5 percent) was almost twice that from the CATDI sample. The T1 interview for both cohorts was conducted between 4

Table 1.
Timing of respondents' return to work after onset of work incapacity

Timing	DI	SSI	CATDI	NJTDI
Four to 10 months after onset (T1)	3.3	1.3	36.9	70.5
About 1 year after onset (T2)	3.3	3.2	55.4	74.5
Two years after onset (T3)	4.7	4.5	53.1	65.8

months and 10 months following the onset of disability. TDI benefits are payable for up to 6 months in New Jersey and up to 12 months in California. Thus, respondents from the CATDI sample were much more likely than those from the NJTDI sample to have been in benefit status at the time of the T1 interview. That may have influenced the percentages of respondents who had returned to work at that point. The difference in outcomes had narrowed considerably by the time the T3 interview was conducted.

The percentages of respondents from both TDI samples who were working at T2 were slightly higher than at T3. Although that finding indicates that all resumers could not sustain the work effort, the vast majority were still working 2 years after the initial onset of disability. A similar trend was observed in two other countries—Germany and the Netherlands.[5]

Tables displayed in this article that compare variables for work resumers and nonresumers do so only for the TDI cohorts. No meaningful comparisons could be made for the DI and SSI cohorts because only a small number of them returned to work.

Demographic and Household Characteristics

To obtain a clearer demographic profile of the respondents in each of the four cohorts, we examined six characteristics: age, sex, education, nationality, native language, and household composition. Table 2 shows the

Table 2.
Demographic and household characteristics of respondents

	All respondents (percentage distribution)				Resumers [a] (percentage reporting)	
Characteristic	DI	SSI	CATDI	NJTDI	CATDI	NJDI
Age						
50-59	84.4	66.2	29.2	27.0	42.1	67.5
40-49	10.4	20.9	35.8	32.4	55.9	66.7
30-39	5.2	10.1	25.4	36.5	63.6	66.7
20-29	0	2.9	9.6	4.1	48.0	50.0
Mean	54.0	51.0	43.0	43.0	42.0	43.0
Sex						
Men	64.6	48.1	47.3	38.3	52.9	66.7
Women	35.4	51.9	52.7	61.7	53.3	65.2
Education (highest grade completed)						
Grade school	7.2	14.2	6.2	4.8	56.3	28.6
Middle school	18.6	33.8	4.7	6.2	50.0	33.3
High school	52.1	39.9	41.2	46.6	49.1	69.1
2-year college	13.9	8.1	30.0	24.0	50.7	65.7
4-year college	4.1	3.4	14.4	13.0	64.9	73.7
Graduate school	4.1	0.7	3.5	5.5	66.7	75.0
Nationality						
Native born	94.3	83.2	81.9	83.9	52.1	69.6
Foreign born	5.7	16.8	18.1	16.1	57.5	45.8
Native language						
English	92.9	77.3	83.4	84.6	52.3	69.1
Other	7.1	22.7	16.6	15.4	58.1	47.8
Household composition						
Lives alone	61.5	24.8	23.3	18.7	55.8	76.0
Lives with partner only	22.3	20.2	48.9	46.3	60.6	59.7
Lives with partner and children	3.4	21.1	5.4	11.2	58.3	73.3
Lives with children only	12.8	33.9	22.4	23.9	48.0	56.3

a. TDI respondents who were working 2 years after onset of disability (T3).

distribution of respondents among those demographic characteristics and the percentages from the two TDI cohorts who were working at T3.

Age. The mean age of respondents who became entitled to DI and SSI benefits (54 and 51, respectively) was about 10 years older than that of respondents who became entitled to TDI benefits (age 43 for each cohort). About two-thirds of those from the SSI cohort and more than 80 percent from the DI cohort were 50-59; less than 30 percent from each of the TDI cohorts were in that age group. The dramatic difference in outcome may result in part from the age at onset. However, age did not appear to be an important factor among respondents from the TDI cohorts who were working at T3. The mean age of resumers was approximately the same as that of nonresumers.

Sex. The majority of respondents from the SSI sample and both TDI samples were women, but the respondents from the DI sample were predominantly men (64.6 percent). That finding is not surprising, since 58.3 percent of all DI beneficiaries are men. The percentages of men and women from both TDI samples who were working at T3 were almost identical.

Education. Respondents from both TDI samples had much higher levels of educational achievement than those from the DI and SSI samples. Almost half of the SSI respondents did not complete high school, and only 4.1 percent were college graduates. Although most of the DI respondents had completed high school, only 8.2 percent had graduated from college. By contrast, almost half of the respondents from both TDI samples had some postsecondary education, and close to 20 percent from each cohort had completed college.

At least 49 percent of the respondents from each level of educational achievement in the CATDI sample were working at T3. Those with at least 4 years of college were more likely to return to work, but the difference between that group and those with less education was not statistically significant. That pattern was similar to the one for respondents from the NJTDI sample. However, the proportion of NJTDI respondents with less than a high school education who were working at T3 was less than half that of those who had a high school diploma. That difference is significant. It suggests that unskilled workers with back impairments may have greater difficulty returning to work, but that finding is not conclusive since it applies only to the New Jersey sample.

Nationality and Native Language. The percentages of respondents who were born outside the United States and of those whose native language was other than English were similar for all cohorts except DI beneficiaries. Respondents from that cohort were more likely to have been born in the United States and have English as their native language. That trend is to be expected, since the requirements for entitlement to DI benefits are more difficult to meet.

Respondents from the NJTDI sample who were native born or whose native language was English were more likely to be working at T3 than those who were foreign born or whose native language was other than English. However, no such pattern was evident for respondents from the CATDI sample.

Household Composition. Household composition varied considerably among the four cohorts. Over 60 percent of respondents from the DI sample were living alone, compared with one-quarter or less from the other cohorts. Respondents from the SSI sample were more likely to be living with their children only, and almost half of the respondents from each of the TDI cohorts were living with a partner (spouse, friend, and so on) only.

The patterns of work resumption by household composition are entirely different for the two TDI samples. There does not appear to be any correlation between household composition and the tendency to return to work.

Work and Employment

Income. An important motivating factor in the decision to return to work or apply for long-term disability benefits is the amount of income lost because of work stoppage. Thus, study respondents were asked to provide information about their income before they stopped working (T0) and at the final contact 2 years later (T3). Over 90 percent of DI beneficiaries and TDI recipients were receiving earned income when they became disabled, compared with only 68.8 percent for SSI beneficiaries (see Table 3). In addition, between 18.9 percent and 29.3 percent of respondents from all cohorts had other income, primarily sick pay, workers' compensation, veterans' benefits, and miscellaneous sources such as housing subsidies, rental income, and alimony.

Income dropped substantially for DI beneficiaries (36.1 percent), SSI beneficiaries (45.6 percent), and TDI recipients (44.7 percent for those from California and 41.6 percent for those from New Jersey) who were not working at T3. The income of CATDI respondents who were working at T3 also fell, by about 10 percent, perhaps because of changes in occupation or reduced work hours. Earnings for NJTDI recipients who were working at T3 increased by more than 15 percent. Since these figures were not adjusted for inflation, the actual changes were greater than what is reflected in Table 3.

Occupation. To determine whether any correlation could be established between occupation and work status at T3, respondents were asked to state their occupation at the onset of disability. The most common occupational categories for respondents from the DI and SSI samples were craft or trade work and factory work or truck driving (see Table 4). Craft or trade work was also a common occupation for respondents from both TDI samples. However, the proportion of respondents from each of those cohorts who reported that they were professional, technical, or clerical workers was considerably higher than the proportion from either the DI or SSI cohort.

Almost one-third of the SSI respondents stated that they had no work history. Unlike the DI and TDI programs, which base entitlement on work, eligibility for the SSI program is based on need, and no work history is necessary.

The proportions of managers, professionals, clerical workers, and craft or trade workers from the NJTDI sample who were working at T3 all exceeded 80 percent. By contrast, the proportions of service or sales workers and of factory workers or truck drivers who were working at T3 were less than 40 percent. The trends from the CATDI sample appeared to be similar, but the differences were not statistically significant.

Work-Related Demands. The types of work-related demands reported by respondents from the SSI sample differed from the other cohorts in that those respondents were much less frequently required to display a high level of skill, creativity, the ability to make independent decisions, or the ability to decide independently how to work (see Table 5). Respondents from both TDI samples reported much less frequently than those from the DI and SSI samples that they were required to do strenuous physical work, work in twisted positions, or move heavy objects.

Respondents from the CATDI sample who were working at T3 generally reported fewer work-related demands than did those who were not working. However, the only difference that was statistically significant was that work resumers were less frequently required to work in twisted positions.

There were several statistically significant differences in responses to questions about work demands on the part of respondents from the NJTDI sample who were working at T3. A significant portion of work resumers reported that they were allowed to decide independently how to work and that they were free from conflicting demands. On the other hand, they were less likely to be asked to do strenuous physical work, do an excessive amount of work, work in twisted positions, or move heavy objects.

Changes in Hours Worked, Wages, and Occupation. Disabled workers often find it necessary to make considerable adjustments in their work patterns in order to reenter the labor force. Those adjustments include their occupation, the number of hours they work, and the amount of pay they receive. Many respondents from both the CATDI and NJTDI cohorts changed the number

Table 3.
Income of respondents before and 2 years after they stopped working

Characteristic	DI	SSI	CATDI	NJTDI
Before work stopped (T0)				
Percentage with earned income	93.4	68.8	97.3	97.3
Percentage with other income [a]	18.9	29.3	23.1	20.8
Mean income (dollars)	2,152	1,197	2,041	1,793
Two years after work stopped (T3)				
Mean income (dollars)				
Resumers [b]	n.a.	n.a.	1,831	2,071
Nonresumers [c]	1,375	651	1,129	1,048
Percentage change in mean income, T0 to T3				
Resumers [b]	n.a.	n.a.	-10.3	15.5
Nonresumers [c]	-36.1	-45.6	-44.7	-41.6

NOTE: n.a. = not applicable.

a. Other income includes sick pay, workers' compensation, veterans' benefits, and miscellaneous sources such as housing subsidies, rental income, and alimony.

b. TDI respondents who were working 2 years after onset of disability.

c. Respondents who were not working 2 years after onset of disability.

of hours that they worked, but the pattern of change was not consistent (see Table 6). Although most of those from the CATDI sample who changed worked fewer hours, respondents from the NJTDI sample reported the opposite. Over 27 percent increased their hours of work, and only 11 percent worked fewer hours.

Half of the respondents from the NJTDI sample were receiving higher wages. That finding clearly represents not only pay increases over the study period for those who did not change their hours but also increased hours of work. The same pattern is apparent among respondents from the CATDI sample: only 14.5 percent worked more hours, but 37 percent reported higher pay.

Large proportions of respondents from both samples changed their occupation. However, the majority of respondents returned to work at the same occupation.

Table 4.
Occupation of respondents

	All respondents (percentage distribution)				Resumers [a] (percentage reporting)	
Occupation	DI	SSI	CATDI	NJTDI	CATDI	NJTDI
No work history	0	32.5	0	0	0	0
Manager	5.5	1.9	7.5	6.0	36.8	88.9
Professional	9.5	2.5	11.0	15.4	71.4	82.6
Technical	9.0	7.0	13.4	10.7	55.9	56.3
Clerical	4.0	2.5	10.2	14.8	50.0	86.4
Service or sales	7.5	3.8	7.5	4.0	52.6	33.3
Agricultural or fishing	2.0	1.3	2.4	0	16.7	n.a.
Crafts or trades	20.6	10.2	11.4	12.8	58.6	84.2
Factory worker or truck driver	16.6	11.5	6.7	12.8	35.3	36.8
Unskilled	9.5	6.4	5.5	5.4	50.0	50.0
Other	15.6	20.4	24.4	18.1	58.1	51.9

a. TDI respondents who were working 2 years after onset of disability (T3).

Table 5.
Percentage of respondents reporting various work-related demands

	All respondents				Resumers [a]	
Work-related demand	DI	SSI	CATDI	NJTDI	CATDI	NJTDI
Learn new things	78.0	69.2	79.2	79.2	53.0	66.1
High level of skill	81.3	59.2	82.4	79.9	51.4	68.9
Creativity	72.0	55.8	77.6	75.8	53.0	69.9
Repetitive work	90.5	88.6	94.1	85.2	54.2	65.4
Make independent decisions	84.5	61.5	84.3	78.5	55.4	69.2
Independently decide how to work	81.4	64.8	79.6	74.5	55.7	70.3
Work quickly	89.4	87.6	93.7	87.9	54.0	67.9
Strenuous physical work	90.5	92.3	77.6	61.7	51.5	57.6
Excessive amount of work	76.9	73.1	67.8	61.7	50.9	57.6
Have enough time to complete work	73.6	83.7	79.6	81.2	54.2	66.9
Free from conflicting demands	54.5	55.2	52.9	56.4	59.3	72.6
Work in twisted positions	92.0	83.7	74.9	63.1	49.2	58.5
Work in same positions for long periods	82.0	87.6	78.8	81.9	51.2	64.8
Move heavy objects	84.5	82.9	64.3	57.7	53.1	54.7

a. TDI respondents who were working 2 years after onset of disability (T3).

Medical Condition

Pain Intensity. Study respondents were asked to rate the intensity of their pain on a scale of 1 to 10. Their responses were then categorized as none (1), mild (2-4), moderate (5-7), or severe (8-10). Table 7 shows the responses from all four study cohorts and for work resumers from the CATDI and NJTDI cohorts.

Over 90 percent of the respondents from both the DI and SSI samples reported pain that was either moderate or severe. The percentage of respondents from the SSI sample who reported severe pain was particularly high (over 63 percent). By contrast, most respondents from the TDI samples reported pain that was either mild or moderate. About 20 percent of respondents from both groups reported severe pain.

Close to 90 percent of respondents from both TDI samples who reported they had no pain had returned to work at T3, and close to 80 percent of those who reported mild pain had done so. Smaller, yet considerable, percentages of those who reported greater levels of pain had returned to work. Those percentages were larger for the NJTDI cohort than for their California counterparts: over 70 percent of resumers from New Jersey who reported moderate pain and about 45 percent who reported severe pain had returned to work, compared with about 50 percent and 24 percent for resumers from California.

These responses show that the intensity of pain differed considerably between recipients of DI and SSI benefits on the one hand and TDI recipients on the other. Respondents from the TDI samples as a group were in much less pain. In addition, a clearly defined correlation was seen between the intensity of pain and the tendency to return to work.

Functional Capacity. The Hanover ADL Scale measures limitations on functions due to back pain using 12 activities of daily living. The range of values on the scale is from 0 (the greatest possible limitation) to 100 (no limitations). The WIR study categorized scores of 0 to 40 as low, 41 to 70 as moderate, and 71 to 100 as good. Table 8 shows values from the scale for all TDI respondents and for those who were working at T3.

The scores of the respondents from the entire sample were about evenly distributed among the three categories. Only about one-third of respondents with low scores were working, but 74 percent of those with moderate scores and 80 percent of those with good

Table 6.
Percentage of resumers reporting changes in hours worked, wages, and occupation between when they stopped working and 2 years later

Characteristic	CATDI	NJTDI
Resumers as a percentage of all respondents	53.1	65.8
Hours worked		
Fewer	39.1	11.2
More	14.5	27.6
No change	46.4	61.2
Wages		
Higher	37.0	50.0
Lower	30.4	16.3
Same	32.6	33.7
Occupation		
Same	52.2	67.3
Different	47.8	32.7

NOTE: Resumers are TDI respondents who were working 2 years after onset of disability (T3).

Table 7.
Pain intensity of respondents 2 years after they stopped working

Pain intensity	All respondents (percentage distribution)				Resumers [a] (percentage reporting)	
	DI	SSI	CATDI	NJTDI	CATDI	NJTDI
None	0.5	0.8	13.0	20.1	87.1	88.9
Mild	6.7	7.6	27.2	24.6	76.9	81.8
Moderate	46.2	28.0	38.9	33.6	50.5	71.1
Severe	46.7	63.6	20.9	21.6	24.0	44.8

a. TDI respondents who were working 2 years after onset of disability (T3).

Table 8.
Functional capacity of TDI respondents 2 years after they stopped working

Functional capacity	All TDI respondents (percentage distribution)	TDI resumers [a] (percentage reporting)
Low	33.0	33.1
Moderate	31.6	74.0
Good	35.4	80.5

a. TDI respondents who were working 2 years after onset of disability (T3).

scores had returned to work. That finding establishes a clear correlation between functional capacity and work resumption.

Prevalence and Effect of Other Chronic Diseases. To form a basis for evaluating the effect of other impairments on work reintegration, we asked study respondents whether they had other chronic diseases. Table 9 shows the percentages of respondents from each cohort and of work resumers from the TDI cohorts who reported other chronic conditions and the types of conditions they reported.

About 80 percent of respondents from the DI and SSI samples had other chronic diseases, compared with only about half of those from the TDI samples. Rheumatism was the most frequently reported condition for DI and SSI respondents. Heart or vascular disease, chronic headaches, and respiratory problems were also commonly reported. Among the TDI respondents, the most commonly reported ailments were chronic headaches, rheumatism, and heart or vascular disease, but in each case the incidence was much lower.

Overall, the prevalence of other chronic diseases had a negligible effect on the tendency of TDI recipients with back disorders to return to work. Only the presence of heart or vascular disease had a significant effect for both TDI cohorts.

Medical and Nonmedical Interventions

Types of Medical Providers and Treatments Received. The vast majority of respondents from all four study cohorts were treated by a family doctor, specialist, and physical therapist (see Table 10). Only about a quarter or less of the respondents were treated by a company doctor, perhaps because most were not injured on the job.

Respondents from all study cohorts received a wide range of treatments, and there was a great deal of consistency among cohorts in the treatments applied. The most common treatments for all four cohorts were X-rays, pain-relieving injections or medications, heat or cold, and muscle training or range-of-motion exercises. Acupuncture, mud packing, and medicinal baths were the least common. Acupuncture was commonly used in Sweden, but it was no more successful than other treatments in promoting work resumption. One noticeable difference in the application of treatments was that walking aids or crutches were used much more frequently by DI and SSI beneficiaries than by TDI recipients.

The proportions of respondents from both TDI samples who were working at T3 and who had had back surgery were higher than for any other treatment (68.8 percent of NJTDI respondents and 57.6 percent of CATDI respondents). However, the differences were not statistically significant. Thus, we cannot conclude that back surgery, or any other treatment, was more successful than other treatments in helping TDI recipients return to work. Also, it is noteworthy that comparable proportions of DI and SSI beneficiaries generally had the same treatments, but few of them reentered the workforce.

Vocational and Other Nonmedical Interventions. Respondents were asked to provide information about a range of vocational and other nonmedical interventions that were used to assist them in returning to work.

Table 9.
Percentage of respondents reporting other chronic diseases

	All respondents				Resumers [a]	
Chronic disease	DI	SSI	CATDI	NJTDI	CATDI	NJTDI
Respondents with at least one other disease	79.2	82.6	52.7	55.7	46.7	59.0
Respiratory	18.4	28.4	7.7	3.4	35.0	60.0
Heart or vascular	31.6	26.8	12.3	10.8	37.5	25.0
Rheumatism	50.0	55.2	17.4	15.5	53.3	47.8
Diabetes	15.6	14.8	4.6	7.4	50.0	63.6
Cancer	3.3	5.9	1.2	1.3	0	50.0
Neurological	13.3	15.0	4.7	4.1	33.3	50.0
Chronic headaches	22.2	33.5	17.7	20.8	34.8	58.1
Musculoskeletal disorders other than a back disorder	28.8	30.7	17.8	20.1	47.8	46.7
Other chronic diseases	26.5	22.4	11.5	24.2	46.7	61.1

a. TDI respondents who were working 2 years after onset of disbility (T3).

Table 11 shows the proportions of respondents and of work resumers from the TDI samples who were afforded such assistance.

An adapted workplace is one in which the employer has agreed to make changes in the work environment that enable a worker to overcome his or her incapacity. Significant proportions of resumers from both the CATDI cohort (73 percent) and the NJTDI cohort (89 percent) reported that their workplaces had been adapted. (Workplace accommodations are shown in Table 11 only for work resumers, since they do not apply to those who have not returned to work.)

Vocational capacity testing is ordinarily conducted for purposes of developing a rehabilitation plan. However, the data in Table 11 indicate that rehabilitation plans were often made without such testing. The data do not indicate that rehabilitation plans had a positive impact on returning to work, since the proportions of resumers who had such plans were lower than for those who did not have them. The reason is that respondents who had a rehabilitation plan were more severely disabled than those who did not. Over 50 percent of respondents who had a rehabilitation plan had a low level of functional capacity, compared with about 25 percent of those who

Table 10.
Percentage of respondents reporting medical interventions, by type of provider and treatment received

	All respondents				Resumers [a]	
Provider and treatment	DI	SSI	CATDI	NJTDI	CATDI	NJTDI
Type of provider						
Family doctor	92.9	94.9	87.6	77.9	51.1	62.1
Company doctor	26.4	13.4	23.6	17.4	39.3	42.3
Specialist	92.9	82.8	84.6	87.2	51.1	63.1
Physical therapist	81.6	68.8	73.7	71.8	51.8	59.8
Treatment received						
X-ray	97.6	97.5	94.2	98.0	52.2	65.1
Hospitalization	59.4	46.5	43.1	55.0	57.1	65.9
Back surgery	49.5	38.9	38.1	51.7	57.6	68.8
Heat or cold	83.5	78.3	83.5	91.3	53.9	64.7
Electric therapy	73.6	57.3	71.2	74.5	50.8	61.3
Acupuncture	13.7	14.6	17.3	8.7	48.9	38.5
Pain-relieving injection or medicine	96.7	94.9	88.1	89.9	52.0	64.2
Massage	63.2	59.9	70.4	62.4	52.5	59.1
Manipulation, traction, or zone	59.0	54.1	72.7	61.7	50.8	64.1
Mud packing or medicinal baths	14.2	16.6	11.9	13.4	35.5	40.0
Muscle training or range-of-motion	81.6	70.7	82.7	85.2	53.0	64.6
Walking aids or crutches	68.4	70.7	42.7	32.9	43.2	46.9
Corset or external support	75.5	78.3	71.9	61.7	50.8	60.9

a. TDI respondents who were working 2 years after onset of disability (T3).

Table 11.
Percentage of respondents reporting nonmedical interventions

	All respondents				Resumers [a]	
Intervention received	DI	SSI	CATDI	NJTDI	CATDI	NJTDI
Adapted workplace	0	0	0	0	72.7	89.3
Vocational capacity tested	21.3	14.0	15.8	20.1	51.2	80.0
Rehabilitation plan	33.6	26.8	24.8	12.8	21.9	47.4
Job training or vocational education	6.1	5.3	16.7	12.8	55.8	73.7
General education	7.1	4.6	18.5	15.4	56.3	73.9

a. TDI respondents who were working 2 years after onset of disability (T3).

did not. In addition, over 75 percent of respondents with a rehabilitation plan reported severe pain, compared with only half of those without a plan.

The TDI respondents were more likely than the DI and SSI respondents to have received job training, vocational education, or general education, but the proportion who did so did not exceed 20 percent for any cohort. The percentages of TDI respondents who received those services and returned to work were not statistically different from those of TDI respondents who returned to work and did not receive them.

Reasons for Not Returning to Work

Back problems were the primary factor preventing DI and SSI beneficiaries from returning to work (see Table 12). Some had developed other health problems that prevented them from working, but few were in nonwork status as the result of other circumstances such as pregnancy or school attendance. By contrast, about 75 percent of nonresumers who had been receiving TDI benefits were prevented from working by their back condition. Most of the remaining 25 percent could not work because of circumstances other than a disabling condition.

Award of DI or SSI Benefits to TDI Recipients

TDI benefits are paid for a maximum of 6 months in New Jersey and 12 months in California. Those benefits had been terminated for all respondents at T3. Respondents who were not working were asked about the receipt of DI or SSI benefits. Approximately 53 percent of nonresumers from the CATDI sample and 43 percent of those from the NJTDI sample reported that they were receiving such benefits (see Table 12).

We looked at a number of variables to determine whether there were any differences between nonresumers who were awarded DI or SSI benefits and those who were not, and we found two significant differences. About 52 percent of those awarded benefits were aged 50-59, compared with about 22 percent of those who were not awarded benefits. Also, 50 percent of awardees reported severe pain, compared with 34 percent of the latter group. Age and severity of impairment are among the factors considered in determining eligibility for DI and SSI benefits.

A person can receive DI benefits while working if the amount of the earnings does not exceed what is considered to be substantial gainful activity (currently $780 per month). Also, SSI benefits are payable to disabled recipients, provided that the recipient's total income does not exceed the allowable amount. About 5 percent of respondents from the TDI cohorts who were working at T3 reported that they were receiving DI or SSI benefits.

Table 12.
Percentage distribution of nonresumers, by reason for not working, and percentage of TDI nonresumers awarded benefits

	DI	SSI	CATDI	NJTDI
Nonresumers as a percentage of all respondents	95.3	95.5	46.9	34.2
Reason for not working				
Back problems	90.3	83.4	73.5	75.7
Other health problems	8.6	14.0	7.8	8.1
Other circumstances	1.1	2.6	18.6	16.2
Awarded benefits for DI, SSI, or both	n.a.	n.a.	53.2	42.9

NOTES: Nonresumers are respondents who were not working 2 years after onset of disability (T3).
n.a. = not applicable.

Conclusions and Policy Implications

One of the most noteworthy findings from this study is the dramatic difference in the rate of work resumption between TDI recipients (53 percent to 65 percent) and DI or SSI beneficiaries (less than 5 percent). The difference is largely due to the requirements for eligibility. TDI benefits are paid based on certification by the disabled person's physician, and benefits begin on the first day of disability. By contrast, eligibility for DI and SSI benefits is based on a severe disability determined through a comprehensive disability determination process that often takes several months. In addition, the DI program entails a 5-month waiting period. For both DI and SSI, a person must be unable to engage in substantial gainful activity for at least a year. Thus, as expected, those who become eligible for DI or SSI benefits are more severely disabled for a longer period of time than TDI recipients.

The study data show considerable differences between the two populations that support this assumption. DI and SSI beneficiaries are about 10 years older than TDI recipients at the onset of disability, and they have less education. They are more likely to have occupations with greater physical demands, and they report higher levels of pain combined with lower levels of functional capacity. Finally, they report a much higher incidence of serious chronic illness.

There is no type of medical treatment that is significantly more effective than others in helping persons with

back impairments return to work. The same treatments were applied uniformly to TDI work resumers and nonresumers and to DI and SSI recipients, few of whom resumed working. Medical science continues to work on developing effective treatments for back impairments, and SSA should continue efforts to help beneficiaries with such problems return to work.

Most of the TDI respondents who returned to work did so with some form of workplace accommodation. SSA should examine this issue further to determine the extent to which workplace accommodations can be instrumental in helping DI and SSI beneficiaries to resume working. Also, the potential effectiveness of vocational rehabilitation and job retraining cannot be fully evaluated from this study. Since TDI benefits are temporary, there appears to be little incentive for states to invest heavily in such programs. Study data indicate that disabled persons with sedentary occupations are more likely to return to work, and a large proportion of DI and SSI beneficiaries were engaged in occupations with many physical demands before becoming eligible for benefits. Further research is needed to explore the potential and cost effectiveness of job retraining.

The data collected during this study show that numerous interventions are initiated by medical practitioners, vocational rehabilitation providers, employers, and disabled persons themselves in an effort to promote work reintegration. That is true for the United States and for all the other countries that participated in this study. A large percentage of persons with back impairments do not return to work. Some have moderate and severe pain and work despite great difficulty. Careful study of the interaction of work demands, functional ability, back pain, and workplace accommodations is necessary to develop strategies that will provide others with the help they need to avoid long-term disability.

Appendix: Analytic Method

SAS (Statistical Analysis System) was used for all statistical calculations. The level of statistical significance was calculated through the chi square distribution. The P-values <0.05 were regarded as statistically significant. The chi square tests were used for equal proportion comparisons of all selected variables in the tables presented. The chi square test or the Fisher's exact test (Tables 2, 4, 5, 8, and 10 through 12) was also calculated to determine if the outcome variable (resumer/nonresumer) varied within the two TDI cohorts. In Table 7, the chi square test was performed to measure the relationship between the functional capacity groups and work resumption status. For that analysis, the CATDI and NJTDI cohorts were combined.

Notes

[1] Participants may request data from the center for any cross-national analyses they wish to undertake.

[2] Frank S. Bloch and Rienk Prins, eds., *Who Returns to Work and Why? A Six-Country Study on Work Incapacity and Reintegration* (New Brunswick (U.S.A.) and London: Transaction Publishers, 2001). Copies may be ordered from Transaction Publishers, Rutgers, the State University, 35 Berrue Circle, Piscataway, NJ 08854-8042.

[3] Bureau of Labor Statistics. 1999. "Lost-Worktime and Illnesses: Characteristics and Resulting Time Away from Work, 1997." USDL 99-102, April 22, 1999.

[4] A previous article reported on the preliminary findings from the baseline survey conducted in the United States and described the differences in characteristics that could affect the potential for returning to work. See John R. Kearney, "The Work Incapacity and Reintegration Study: Results of the Initial Survey Conducted in the United States," *Social Security Bulletin* 60(3): 21-32 (1998).

[5] Bloch and Prins, *Who Returns to Work and Why?* p. 86.