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An Analysis of Military Disability Compensation

Richard Buddin, Kanika Kapur

Prepared for the Office of the Secretary of Defense

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Preface

The Departments of Defense and Veterans Affairs offer disability compensation to servicemembers who are injured while serving on active military duty. This research analyzes features of the military disability compensation system and compares the system with benefits available to civilian programs designed to help employees injured in the workplace. The study also compares the civilian labor market outcomes of disabled retirees with those of similar other retirees who are not disabled. It should interest those concerned with military disability compensation issues as well as with the implications of those issues for recruiting and retention.

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Summary

Background

Both the Department of Defense (DoD) and the Department of Veterans Affairs (VA) pay disability compensation to military members who have been injured or whose injuries were aggravated while serving on active military duty. VA disability compensation depends on the individual's degree of disability as a result of his or her injury. Implicit in this approach is the idea that the performance of physical tasks directly affects civilian earnings. The level of earnings before the injury does not affect the VA disability compensation that a servicemember receives as a result of a disability.[1] This is in direct contrast to civilian disability compensation, which is tied to an employee's pre-injury earnings.

Disability compensation for military personnel has received much attention recently, in part because of concern over those injured in the conflicts in Afghanistan and Iraq and whether they are receiving adequate compensation for their injuries. Another influence is the fact that the law affecting disability compensation recently changed to eliminate the offset between retired pay and disability compensation for those with a disability of over 50 percent and more

[1] Civilian earnings do not affect VA disability compensation, but member disability compensation offsets military retired pay for many retirees with a disability. Military retired pay does reflect the member's rank and earnings.

than 20 years of service. More general influences pertain to advances in medical technology and changes in the workplace. The former results in far more effective rehabilitation efforts than in previous years. The latter affects the nature of the work done. Injuries that would make it much more difficult to carry out the agricultural or manufacturing tasks that were common years ago may not have much effect on being able to do the jobs associated with the service- and knowledge-based economy. It is unclear whether the military disability system has adjusted adequately to the opportunities available today to disabled veterans.

The population of veterans with a service-connected disability comprises four groups:

1. **Nonmedical military retirees.** Most retirees earn military retirement benefits by completing 20 or more years of active-duty service. Some of these retirees leave the military with some service-connected disability, or a disability may develop after leaving the military that is related to an injury or health problem during their active-duty service.
2. **Medical military retirees.** Some members are injured and are determined by a physical evaluation board to be unfit for military service. These members are discharged from the military and draw military retired pay that is a function of the severity of their disability, their years of service, and military retired pay.[2]
3. **Veterans who receive disability severance.** These members are injured and unfit to continue on active duty. They are given a lump sum payment as compensation for their disability and are discharged from the service. In general, members draw a disability

[2] Active-duty personnel retire from the military with either a nondisability or disability retirement. Nondisability retirement is based on length of service—usually 20 or more years. A portion of nondisability retired veterans have a service-connected disability and are eligible for military disability compensation. Although, technically speaking, these retirees are "nondisability retired veterans with a disability," for expositional purposes of this research, we label this group "nonmedical military retirees." DoD may also grant a disability retirement to servicemembers who are unfit to perform their duties for medical reasons. Disability retirees are labeled "medical military retirees."

severance instead of a medical retirement if their injuries are less severe and their time in the military is short.

4. **Other disabled veterans.** Some individuals are injured in the military, but the injury is not severe enough to preclude their continued service or the completion of their term of service. After leaving the military, they are eligible for military disability compensation for these injuries. This group will have less time in the service than the retirees (nonmedical military retirees with disabilities and medical retirees).

A portion of this analysis focuses on the civilian labor market opportunities of military retirees. The analysis compares the civilian labor force participation and earnings of retirees with and without service-connected disabilities. In principle, a parallel analysis could examine the nonretiree, veteran population and compare the earnings of disabled and nondisabled veterans. No systematic data were available on the population of nonretiree veterans, however, so this analysis is restricted to the population of military retirees.

Military disability compensation is based on the Veteran's Affairs Schedule for Rating Disabilities (VASRD). Military members are given medical evaluations and assigned disability ratings in 10-percentage-point intervals based on their medical conditions or limitations. By federal regulation, the ratings are designed to "represent as far as can practicably be determined the average impairment in earning capacity resulting from such diseases and injuries and their residual conditions in civil occupations."[3]

The earnings capacity criterion means that compensation should be based on a comparison of what an individual could have earned in the absence of a disability and what he or she could earn with the disability. For the expositional purposes of this research, we label this loss in earnings capacity an *earnings loss.*

An alternative possible criterion for computing disability compensation would be to compare what an individual could have earned

[3] 38 CFR 4.1 (2003).

in the absence of a disability with what he or she actually earns after the injury. The distinction between this absolute earnings loss and a loss of earnings capacity is subtle—the absolute earnings loss may exceed the loss of earnings capacity if an individual reduced his or her labor market work after an injury by more than would be "necessary." For example, if an injury severely impairs civilian wage opportunities, then the individual may leave the labor force or reduce the amount of work, especially if military retirement and disability income along with savings and spousal income provide sufficient funds for living. The *absolute* earnings loss for a nonworking disabled retiree would then be the average individual earnings of similar nondisabled retirees (some working and some not). In contrast, the loss in the earnings capacity associated with the disability would be the difference between the earnings of a nondisabled retiree and the potential earnings of a similar disabled retiree who had actually worked—or at least had worked as much as his or her physical disability allowed.

The VASRD does not explicitly make allowances for pain and suffering associated with a service-connected disability unless these factors in some way affect civilian earnings. Disabled individuals may have more frequent or extended unpaid absences from work for health reasons. If so, these absences would reduce earnings and be reflected in the rating schedule.

Purpose

This research reviews the goals and effectiveness of current policies for compensating veterans with service-connected disabilities. It identifies trends in veterans' disabilities, compares the military disability system with that used by civilian firms, and describes the effect of military disability on civilian labor market outcomes.

Civilian Labor Market Opportunities for Disabled Retirees

Service-connected disabilities may affect how much a military retiree is able to work, how much work is available in the workplace, and a retiree's earnings in the workplace. The analysis of civilian labor market opportunities focused on retirees under age 62, since many military retirees begin to retire from the civilian labor force at that age.

The analysis focuses on four labor market outcome measures:

1. **Labor force participation.** Disabilities may affect whether retirees work in the civilian labor force as well as how much they work. About 84 percent of nondisabled retirees work, compared with 74 percent of disabled retirees. A statistical model shows how retirees' disability ratings affect the extent of work in the civilian sector.
2. **Earnings of full-time workers.** About 55 percent of disabled retirees under age 62 work full time in the civilian labor market (i.e., they work at least 50 weeks per year and 35 hours per week). A model compares earnings for disabled retirees with those of similar nondisabled retirees, conditional on full-time work.
3. **Earnings of full- and part-time workers.** The model for full-time workers is expanded to include retirees who work only a portion of the year. About 74 percent of disabled retirees work either full- or part-time in the civilian labor market. The results are conditional on labor force participation and the number of weeks worked by the retiree.
4. **Earnings of workers and nonworkers.** About 16 and 26 percent of nondisabled and disabled retirees, respectively, are out of the civilian labor force for the entire year and have no civilian wage earnings. Nonparticipation rates are higher for retirees with disabilities, but there is no evidence on what nonparticipants might have earned if they had worked. This model assigned nonearners a value of zero for annual wage earnings and combines these "earnings" with those of full- and part-time workers. The model is complete in that all retirees are included, but the assumption of zero earnings for nonearners is likely to provide us with a lower bound on earnings for individuals who choose not to work.

The results show that labor market involvement varies considerably with the level of a retiree's disability rating. Labor force participation rates are much lower for severely disabled retirees than for nondisabled retirees—about 85 percent of nondisabled retirees work, but the participation rates are 10 and 66 percentage points lower for retirees with 50 and 100 percent disability ratings, respectively. Disabilities have a much smaller effect on how much work is performed by labor force participants. The reduction in weeks worked is only two weeks and five weeks for retirees with ratings of 50 and 100 percent, respectively. Hours worked per week vary little with the disability rating.

Retirees with less-severe disabilities have labor market involvement much more similar to nondisabled retirees. The median disability rating is 30 percent. At the median, the reduction in labor force participation is only four percentage points. Among participants, the weeks and usual hours for retirees with a 30 percent disability are not statistically different from those of nondisabled retirees.

The reasons for not working or reduced work are not clear, but the evidence shows that many retirees are reducing their work for reasons other than their disability. The results show that 43 percent of disabled retirees claim that they have no limit on the type or amount of civilian work that they can perform. Even among nonworkers with a disability, 20 percent claim that they have no work limitations. Most severely disabled retirees do report limitations on their work, however.

The first earnings model shows that earnings losses for disabilities are small for full-time workers. It indicates that many disabled retirees, especially those with relatively low levels of disability, are doing well in the civilian labor market. The other two models add first part-time workers and then nonworking retirees. These models show larger earnings losses for disabled retirees. A serious analytic problem for the models is the lack of information on what part-time workers or nonworkers may have earned in the labor force. The models for all workers and all retirees implicitly assume that all retirees work as much as possible in the labor market.

The results from all three earnings models show that the VA disability compensation for each disability rating is higher than the corresponding earnings loss. A more complete assessment of the disability compensation examines the extra value of the payment to the individual after adjusting for the combination of the offset, concurrent receipt, and tax exemption of disability compensation. On net, these adjustments scale down the payments to retirees with ratings less than 50 percent (disability compensation is mostly offset by retired payments) and scale up the payments to retirees with ratings of 50 percent or greater.

The results show that the adjusted payments for nonmedical retirees are insufficient to compensate retirees with small injuries for their earnings loss. The gap for full-time retirees ranges from $172 to $432 per year for ratings at the 10 and 40 percent levels, respectively. The gap grows to $476–$3,886 per year if we use the model for all retirees and account for reduced participation of disabled retirees.

More seriously disabled nonmedical retirees receive substantially more adjusted disability compensation than their estimated earnings loss.[4] Among full-time workers, the net gain is $8,273 per year for a 50 percent disability rating; it rises to $36,123 for a 100 percent disability rating. The magnitude of the gains falls considerably when we consider the results from the model for all retirees including nonparticipants. Then, the net gain is $2,966 per year for a 50 percent disability and $14,153 per year for a 100 percent disability.

Consistent with section 1414(b) of title 10, United States Code, severely disabled medical retirees do not fare nearly as well as other disabled retirees because they are not eligible for concurrent receipt. The disability compensation for medical retirees is linked more directly to member pay and military experience at the time of the injury. Medical retirees comprise about 19 percent of all disabled retirees. Although medical retirees are not eligible for concurrent receipt, they have lower retired pay than nonmedical retirees because

[4] More specifically, as full concurrent receipt becomes effective over the next few years for nonmedical retirees, severely disabled retirees will be overcompensated relative to their earnings loss.

they leave the military at lower ranks and with fewer years of military service. As a result, the disability compensation of medical retirees with disability ratings of 50 and above is not fully offset by their retired pay.

For full-time workers, the results show that the adjusted payments to medical retirees with disability ratings of less than 50 percent are slightly lower than their earnings losses. Among more severely disabled medical retirees, the earnings gains for full-time workers range from $5,736 per year at a 50 percent rating to $25,352 per year at a 100 percent rating.

As with nonmedical retirees, the magnitude of the earnings losses for medical retirees rises considerably when we look at the results from the model for all retirees including nonworkers. Medical retirees are undercompensated for their earnings losses in nine of ten ratings categories, with the magnitude of the losses ranging from about 1 to 11 percent of earnings per year.

Conclusions

Military and Civilian Philosophies of Disability Compensation Differ

Military and civilian disability programs differ in fundamental ways. Civilian programs focus on replacing a portion of workers' earnings because they cannot work while recovering from an injury. The military, on the other hand, continues a member's full pay and benefits if he or she is unable to work. If unable to return to duty, a military member is discharged with a military retirement or a disability severance. Civilian programs replace earnings; military programs supplement earnings on the assumption that those earnings are depressed as result of the disability. The military system is notably more generous than the civilian system in paying for short-term work loss.

Both Military and Civilian Systems Face Substantial Program Growth

Disability rates are rising rapidly, so programs in both sectors can expect substantial growth. The increase for military retirees was 22 percent points between the 1971 cohort and the 2001 cohort (35

percent to 57 percent). Because military disability compensation continues for life, the higher rates in recent cohorts will translate into higher future expenditures.

Disability Compensation Is Adequate to Offset Most Labor Market Losses from Service-Connected Disabilities

The comparisons of earnings for military retirees show that disabled retirees are less likely to work, work fewer weeks per year, and earn less than their counterparts without disabilities. The magnitude of these differences depends critically on two factors. First, the gaps are large for severe disabilities, but they are not large for the disabilities with ratings less than 50 percent. About 71 percent of disabled retirees have disability ratings in the latter range. Second, the earnings losses from disability are sensitive to what assumptions are made about why retirees work either less or not at all. We cannot fully ascertain the full reasons for reduced participation, but the losses are certainly higher if we attribute all the reduced participation to disability-related causes.

The comparison of earnings loss under a variety of assumptions shows that disability compensation is adequate. The VA disability compensation schedule is designed to reflect the loss of civilian earnings capacity associated with a disability. The results from the earnings models show that this schedule payment is systematically higher than the earnings loss for each rating. The story becomes more complicated if the focus is on how much extra income the retiree receives. The value of the VA payment is affected by the offset with retired pay, the tax-exempt status of the receipt, and the phasing-in of concurrent receipt for retirees with disabilities of 50 percent or greater. With these adjustments, the results show that retirees with disability ratings of less than 50 percent receive slightly less than their earnings losses, whereas retirees with larger disabilities will be substantially overcompensated as the concurrent-receipt provisions are phased in.

Our labor market analysis has three limitations. First, the analysis is limited to military retirees. Similar data are not currently available for nonretiree veteran groups (the disability severance and other disabled veteran groups), but this type of analysis would be useful to

further clarify the adequacy of military disability compensation programs. Second, this analysis looks at labor market outcomes of retirees several years after they have left the military and have adjusted to civilian labor markets. Service-connected disabilities may have consequence for how quickly retirees and other veterans find civilian work and what their earnings are at these initial civilian jobs. Finally, labor market results show only one dimension of disability effects of retirees. Injuries and disabilities diminish quality of life through pain and suffering as well as through limitations on household and leisure-time activities.

The Military Disability System Is Complex

The military disability is complex—unduly so, in our judgment. DoD and the VA evaluate injuries by somewhat different criteria. In addition, the compensation associated with a service-connected disability is based on a combination of military retired pay, the VA disability compensation schedule, and the offset of military retired pay. These complexities mean that it is difficult to assess why a member has received a given disability rating and harder still to assess how this disability rating translates into some incremental monthly income. In our view, these complexities are likely to confuse and frustrate veterans and policymakers alike.

Measuring Disabilities

An important issue for all disability systems is how to assess the validity of the current method of determining disability. Both systems are rooted in the history of medical decisions about performing in a workplace that differs greatly from the one that retirees find today. In addition, many retirees who are assigned VA disability ratings report that they have no health- or disability-related limitations on their civilian sector work.

Recommendations

We recommend that DoD consider the following actions:

- *DoD should determine why military disability rates for retirees are rising.* If the rising rates reflect rising injuries, then the higher cost may be necessary. But if the rising rates indicate an increasing laxness in applying the standards, the increased costs will provide little benefit to the military.
- *DoD should develop a more coherent system for measuring the economic loss from an injury.* Should it be measured in terms of civilian earnings, quality of life, or some other criteria? Disability compensation should be clearly defined as a specific payment that compensates for the effect of the injury. The current system confounds retired pay and disability compensation in formulas that make it difficult to determine how much of the payment is associated with the disability.
- *DoD and the VA should determine how well the current system assesses the effect of a disability on a member's earning potential in the civilian sector.* This study shows small differences in labor market outcomes (participation and earnings) between disabled and nondisabled retirees. This finding suggests that the physical limitations measured in the VA disability schedule are weak indicators of labor market success.
- *DoD and the VA should collect better information on the civilian earnings of the nonretiree veteran population (veterans with disability severance and other disabled veterans).* Nonretiree veterans have less severe injuries than the retiree population, but the earnings losses for retirees may be a poor indication of the opportunities for the population of nonretiree veterans. Nonretiree veterans are younger and have less military experience than military retirees, so their civilian labor force outcome may differ somewhat from that of military retirees.

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Abbreviations

AIC	Akaike Information Criterion
BLS	Bureau of Labor Statistics
CFR	Code of Federal Regulations
DMDC	Defense Manpower Data Center
DoD	Department of Defense
GAO	General Accountability Office
GED	General Education Development (an alternative school-leaving credential obtained by passing an examination)
LTD	long-term disability
MEB	Medical Evaluation Board
MTF	Military Treatment Facility
NBER	National Bureau of Economic Research
PEB	Physical Evaluation Board
SHRM	Society for Human Resource Management
SRM	Survey of Retired Military
SSDI	Social Security Disability Insurance

SSI	Supplementary Security Income
STD	short-term disability
VA	Department of Veterans Affairs
VASRD	Veterans Affairs Schedule for Rating Disabilities

CHAPTER ONE

Introduction

The disability programs of the Department of Defense (DoD) and Department of Veterans Affairs (VA) are designed to compensate former servicemembers for injuries and conditions that were incurred during, or aggravated by, military service. The compensation schedule is tied to judgments of physicians and lawyers on how physical impairments affect the ability of an individual to perform physical labor. Implicit in this approach is the idea that the performance of physical tasks would invariably map into labor force productivity and civilian earnings. Payments vary with the degree of disability and the number of dependents.

The military disability system has been a source of concern in recent years.

- Combat injuries in Iraq and Afghanistan have drawn attention to the sacrifices of young servicemembers, and there is concern about whether disability compensation adequately reimburses members for the financial implications of their injuries.
- The National Defense Authorization Act of Fiscal Year (FY) 2004 changed the historical relationship between disability benefits and retired pay. Historically, retired pay was used to "offset" disability compensation, so a disabled member would receive the maximum of his or her disability or retirement entitlement. The new law provided that members with a disability rating of 50 percent or more and 20 or more years of service will receive disability compensation over and above their retired

payments. This increased disability compensation is phased in over a ten-year period. The law reduces the offset by 10 percent in the first year and the remaining offset by 10 percent for each of the next ten years. This formula means that the percentage of offset reduced grows at an escalating rate per year. For example, 50 percent of the offset will be gone in three years (effective January 1, 2007), and 85 percent will be gone in five years (effective January 1, 2009).

- A more general issue for all disability systems has been medical and technological innovations in treating injuries as well as dramatic changes in the nature of the workplace. New rehabilitation efforts have been very effective—for example, a young Army captain who lost a foot in Iraq has recently been approved for return to combat duty in the field (O'Driscoll, 2004). Injuries that would greatly impede productivity and earnings in a marketplace that was dominated by agricultural or manufacturing jobs may be less detrimental in a service- and knowledge-based economy. It is unclear whether the military disability system has adequately adjusted to the opportunities available to disabled veterans.

Economic Rationale for Disability Insurance

The provision of disability benefits for workers is standard, whether in the form of workers' compensation benefits or employer-provided disability pensions, short-term disability insurance, or long-term disability insurance. Consider a simplified world where labor markets are competitive, workers have perfect information about job risks, and workers are risk neutral. Under these conditions, the provision of disability benefits is unnecessary. In these circumstances, firms would offer a combination package of wages and job safety in which the marginal cost of job safety would equal the marginal benefit from providing an extra unit of worker injury reduction. Wages would fully adjust to compensate for the degree of injury risk on the job,

and workers would be free to pick their optimal package of wages and job safety (Ehrenberg, 1988).

The fact that disability benefits are commonly provided reflects the reality that the assumptions of perfect information, competitive markets, and risk neutrality are not upheld in the real world. In fact, workers have imperfect knowledge of job safety that prevents them from making fully informed choices about employment. In addition, wages tend not to adjust perfectly to job risks for several reasons. First, the labor market is riddled with rigidities such as minimum wage laws, union contracts, and others. Second, workers may need to bear considerable search costs to locate their optimal job package; therefore, they may be unable to make fully informed decisions because it is too costly to search indefinitely. Third, workers may have human capital that is specific to their job and therefore may not have the necessary bargaining power to ensure that their wages fully adjust to the degree of job risk. Aside from the wage adjustment issue, worker morale and fairness may dictate that employers institute a system to compensate workers at the time of a disability. Fourth, if workers are risk averse, insurance for job risks becomes necessary.

The situation is further complicated in the case of the military. Job mobility is limited by fixed-term contracts impeding the ability of servicemembers to choose different job risk and wage packages at any specific point in time. Compensation in the military is determined by fixed schedules and does not respond flexibly to changes in the level of job risk.[1] Furthermore, the risk associated with a servicemember's job varies unpredictably in times of conflict, making it impossible for wages to adjust flexibly and adequately. Issues of fairness and morale also play a large role in the military, and public sentiment demands that servicemembers be compensated well if they are disabled in the line of duty. Therefore, in the context of the military, a disability insurance system plays an important role.

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[1] Although the military has extra pay for servicemembers in designated danger areas, this pay increment is fixed and does not vary by the level of risk.

Purpose of This Research

This research reviews the goals and effectiveness of current policies for compensating veterans with service-connected disabilities. The analysis will investigate the philosophical underpinnings of a disability compensation system, recognizing that the military may present unique issues that could call for differences in military versus other compensation systems. The research also examines the labor market outcomes for military retirees with and without service-connected disabilities to assess how these disabilities affect retirees after they leave the military.

Data

Military retirees were surveyed in the *2003 Survey of Retired Military* (SRM), conducted by the Defense Manpower Data Center (DMDC, 2004). The SRM focused on military retirees who left active duty between 1971 and 2001. Special emphasis was given to military disabilities, so the population of retirees with disabilities was oversampled. The survey represented 1.27 million eligible retirees over the past 30 years. About 45 percent of these eligible retirees had some level of service-connected disability.

The survey collected information on military retirement, employment situation during 2002, family and household information, use of commissary and exchange, use and cost of medical services, and questions about the individual. This information is augmented with personnel information from military records and disability information from the VA.

The SRM contains information on 32,804 retirees. We used the survey responses to compare the postservice civilian labor market outcomes of disabled retirees with those of similar retirees having no service-connected disabilities.

Structure of the Report

The remainder of the study is divided into four chapters. Chapter Two provides background on how the military disability system works and describes trends in veteran disabilities. Chapter Three reviews civilian disability systems and compares the features of those programs with the military disability system. It also provides case studies of the types of disability plans that are available to civilians through their employers. Chapter Four focuses on the effects of service-connected disabilities on labor market outcomes for military retirees. The chapter develops and estimates several statistical models that show the effects of a disability on labor force participation, weeks worked per year, usual hours per week, and market earnings for various groups of retirees. The final chapter summarizes our key findings and offers conclusions.

CHAPTER TWO

Background and Trends in Military Disability Compensation

Military disability compensation for U.S. servicemembers is composed of two separate programs that are administered by the DoD and the VA. These large and complex programs depend on evaluations by the DoD and the VA as well as interactions among detailed compensation schemes in each department. This chapter provides background on each program and explains how the programs interact with one another.

VA Disability Compensation

Most disabled veterans receive compensation benefits from the VA, although a few receive payments directly from DoD (see discussion later in this chapter). The Code of Federal Regulations (CFR, 2003) focuses the VA disability compensation on the earnings loss of disabled veterans and asserts that "The percentage rankings represent as far as can practicably be determined the average impairment in earning capacity resulting from such diseases and injuries and their residual conditions in civil occupations."[1]

The ratings are based on a medical evaluation of each member. Initial medical evaluations are done at the time of separation from active duty as part of the discharge process. The servicemember can request a reevaluation by the VA after separation. The evaluations are

[1] 38 CFR 4.1 (2003).

based on the Veterans' Affairs Schedule for Rating Disabilities (VASRD). The VASRD translates specific medical conditions into disability percentages in 10-percentage-point intervals (CFR, 2003; Department of Defense, 1996).[2]

The earnings capacity criterion means that compensation should be based on a comparison of what an individual could have earned in the absence of a disability and what he or she could earn with the disability. For the expositional purposes of this research, we call this loss in earnings capacity an *earnings loss.*

An alternative possible criterion for computing disability payments would be to compare what an individual could have earned in the absence of a disability with what that individual actually earns after an injury. The distinction between this absolute earnings loss and a loss of earnings capacity is subtle—the absolute earnings loss may exceed the loss of earnings capacity if an individual reduced his or her labor market work after an injury by more than would be "necessary." For example, if an injury severely impairs civilian wage opportunities, the individual may leave the labor force or reduce the amount of work, especially if military retirement and disability income along with savings and spousal income provide sufficient funds for living. The *absolute* earnings loss for a nonworking disabled retiree would then be the average individual earnings of similar nondisabled retirees (some working and some not). In contrast, the loss in the earnings capacity associated with the disability would be the difference between the earnings of a nondisabled retiree and the potential earnings of a similar disabled retiree who had actually worked—or at least had worked as much as his or her physical disability allowed.

The VASRD does not explicitly make allowances for pain and suffering associated with a service-connected disability unless these factors in some way affect civilian earnings. Disabled individuals may have more frequent or extended unpaid absences from work for

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[2] In addition to disability compensation, disabled veterans are eligible for a variety of health benefits and rehabilitation services. This study examined only disability compensation and not the full range of programs for disabled veterans.

health reasons. If so, these absences would reduce earnings and be reflected in the rating schedule.

Table 2.1 shows that nearly 2.5 million veterans receive benefits from the VA, and the annual budget outlay is almost $20 billion. Monthly payments depend on the extent of physical impairment as measured in 10-percentage-point increments.

The disability compensation schedule is based on the extent of the injury, with small adjustments for the veteran's marital status and number of dependents (see Table 2.2). A potential limitation of this averaging approach is that the mix of earnings potential of members with a common injury is quite broad. For example, a private who loses a foot is entitled to the same benefits as a colonel with the same injury, irrespective of how the injury affects their earnings potential in the civilian sector. The payments are intended to reflect the average earnings loss for all veterans with a similar injury, but the formula neglects such factors as training, experience, and pre-injury earnings, which are likely to have substantial effects on an individual's

Table 2.1
All Veterans Receiving Disability Compensation in FY2003

Disability Rating (%)	Number	Total Annual Amount	Average Annual Amount
10	791,473	$993,307,944	$1,255
20	396,640	$962,505,408	$2,427
30	318,239	$1,320,501,516	$4,149
40	227,918	$1,364,045,556	$5,985
50	136,535	$1,147,501,380	$8,404
60	151,443	$2,179,412,484	$14,391
70	123,951	$2,553,941,232	$20,604
80	80,545	$1,854,759,900	$23,028
90	40,339	$1,011,297,900	$25,070
100	202,221	$6,134,997,096	$30,338
Total	2,485,229	$19,535,925,552	$7,861

SOURCE: Reprinted from Veterans Benefits Administration: *Annual Benefits Report, Fiscal Year 2003,* p. 21.

Table 2.2
Monthly Compensation Table for Military Disabilities

Disability Rating (%)	Veteran Alone ($)	Veteran with Spouse ($)	Veteran with Spouse and Child ($)
10	108	108	108
20	210	210	210
30	320	363	391
40	466	518	555
50	663	728	775
60	839	917	973
70	1,056	1,147	1,212
80	1,227	1,331	1,406
90	1,380	1,497	1,581
100	2,299	2,429	2,523

SOURCE: VA Compensation Rate Tables, 12-1-04, http://www.vba.va.gov/bin/21/Rates/comp01.htm, accessed on March 3, 2005.

earnings in the workplace. Experienced, well-educated veterans with managerial experience may have much better labor market alternatives than young, low-wage servicemembers, but the formula awards do not reflect these differences in civilian earnings.

The disability rating cannot be fully calibrated to each individual situation and each injury, but the schedule is not flexible in weighing the effect of an injury on the earnings history or potential of a military member. In contrast with the VA schedule, disability compensation for civilian employees injured in the workplace is tied to the employee's pre-injury earnings (see further discussion of civilian disability programs in Chapter Three). Earnings are not fully replaced while the employee is recovering from an injury, but high-earning employees do generally receive higher disability compensation than low-earning employees do.

A second issue affecting the efficacy of the VA schedule is that the schedule was developed in 1945 and is based on how an injury affects the ability of a veteran to perform manual labor (GAO, 2002).

Changes in the workplace have reduced the physical demands of most jobs, and the mix of labor market activities has changed considerably in the past 60 years. In 1945, 44 percent of the nation's economy was employed in mining, construction, and manufacturing industries, compared with only 18 percent in 2000 (GAO, 2002). Physical disabilities that would limit a veteran's productivity in the physically demanding manufacturing jobs of the 1950s may be less restrictive in the current workplace, which is dominated by service- and information-sector jobs. Table 2.3 shows that about 158,000 new veterans began receiving disability compensation in FY2003. Most injuries are for small impairments—65 percent of awards are for disabilities with ratings of 30 percent or less. Compensation is much greater for more-severe injuries than for small injuries, however, so only 22 percent of disability compensation is awarded to members with disabilities of 30 percent or less.

Table 2.3
Veterans Who Began Receiving Disability Compensation in FY2003

Disability Rating (%)	Number	Total Annual Amount ($)	Average Annual Amount ($)
10	44,304	55,599,748	1,255
20	36,035	87,443,972	2,427
30	22,039	91,447,745	4,149
40	16,377	98,012,415	5,985
50	10,869	91,347,858	8,404
60	8,573	123,373,014	14,391
70	6,459	133,083,561	20,604
80	3,184	73,319,624	23,028
90	1,456	36,501,804	25,070
100	8,004	242,825,672	30,338
Total	157,935	1,033,499,862	6,544

SOURCE: Reprinted from Veterans Benefits Administration, *Annual Benefits Report, Fiscal Year 2003,* p. 9.

Groups of Military Retirees

The military disability population consists of four groups.

1. **Nonmedical military retirees.** The largest group consists of military retirees who leave the military after 20 or more years of service and who have some service-connected disability. These members have some cumulative injuries or impairments that are related to their time in the military. Since military members are considered to be on duty 24 hours per day and seven days per week, many of these injuries reflect general problems that accumulate with aging and are not tied directly to a specific service-connected incident or injury.[3] In contrast, civilian employees are eligible for workers' compensation only if they can demonstrate that an injury is specifically caused by their job.
2. **Medical military retirees.** These members are injured and unfit to perform the duties of their office, grade, rank, or rating because of a physical disability as determined by a Physical Evaluation Board (PEB).[4] A member is in this category if the

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[3] Disability compensation is available for most injuries incurred during active duty military service. "To be eligible for disability compensation, the veteran must have been discharged under conditions other than dishonorable and the disability must not have resulted from the veteran's willful misconduct." (Department of Veterans Affairs, 2003)

[4] The process of medical retirement from the military is protracted. In most cases, a member initially reports to a Medical Treatment Facility (MTF) for treatment. In some cases, a commander may refer a member to the MTF for a mandatory medical evaluation if he or she believes that the member is unable to perform his/her duties because of a medical condition. As a result of a medical examination, the MTF may initiate a Medical Evaluation Board (MEB) to assess the whether the member is unable to perform his/her military duties due to a medical condition. The MEB is composed of active-duty physicians who are not involved in the treatment of the member. The MEB records a full physical examination of the member and documents the member's current medical condition. The PEB reviews each file from the MEB, assesses the fitness of the member to perform his or her military duties, and assigns a VASRD disability rating for members who are unfit because of service-connected impairments. The PEB initially reviews the case in an informal board and makes initial recommendations. The PEB report is then forwarded to the member. At this point, the member may request a formal PEB hearing to contest the board's findings and recommendation. During this review process, the member continues to draw full military pay and benefits, in contrast to civilian employees who receive only a portion of their pay while recovering from job-

member's disability rating is 30 percent or higher and either the member has eight or more years of service, the injury is "proximate" to active duty, the injury was incurred in time of war or national emergency, or during certain other time periods (Department of Defense, 2004).[5] The retired payment is based on the higher of the disability rating percentage multiplied by retired monthly base pay, or years of service multiplied by 2.5 percent of retired monthly base pay.[6] The maximum allowable percentage of retired base pay for medical retirement is 75 percent. For example, suppose that an injured member had a 30 percent disability rating and had served for 10 years. Then, the first payment scheme would provide for a monthly retired pay of 30 percent of retired monthly base pay, whereas the second scheme would provide for 25 percent of retired monthly base pay (10 years × 2.5 percent). The member is entitled to the maximum of the two payment schemes, which is 30 percent of retired monthly base pay in this instance. About 2,000 military members are given medical retirement per year; the average medical retiree receives $13,000 per year (GAO, 2001).

3. **Veterans who received disability severance.** These members are unfit to continue on active duty, but their disability ratings are less than 30 percent. Severance pay is a lump sum

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related injuries. Injured military members do not enter the medical evaluation process until they have completed a course of treatment for their injury. The review itself may then result in further delays as the board assesses and perhaps waits until the long-term effects of the injury are clear, so the board can assess the members' fitness for service.

[5] Active-duty personnel retire from the military with either a nondisability or disability retirement. Nondisability retirement is based on length of service—usually 20 or more years. A portion of nondisability retired veterans have a service-connected disability and are eligible for military disability compensation. Although, technically speaking, these retirees are "nondisability retired veterans with a disability," for expositional purposes of this research, we label this group "nonmedical military retirees." DoD may also grant a disability retirement to servicemembers who are unfit to perform their duties for medical reasons. Disability retirees are labeled "medical military retirees."

[6] The retired monthly base pay for retirees who entered before September 8, 1980, is based on their highest monthly pay. The retired monthly pay for retirees who entered after September 8, 1980, is based on the high-three average of their monthly basic pay.

that equals their monthly base pay multiplied by two times the number of years of service (up to a maximum of 12 years). About 8,500 military members per year receive disability severance; the average lump-sum payment is $18,725 (GAO, 2001).

4. **Other disabled veterans.** Some individuals are injured in the military, but the injury is not severe enough to preclude their continued service or the completion of their term of service. After leaving the military, they are eligible for military disability compensation for their injuries. This group will have less time in the service than the retirees (nonmedical military retirees with disabilities and medical retirees).

There is no systematic tracking of "veterans who receive disability severance" or the "other disabled veterans" groups. The GAO (2001) has expressed concern that veterans with disability severance may not use the severance payment wisely, but it reports no evidence on how the money is spent by these veterans. If the injury or condition worsens after separation from the military, then the veteran is eligible to apply to the VA for additional disability compensation. We were unable to locate any record of how common this reapplication is. Similarly, there has been no analysis of the group of other disabled veterans.

The SRM includes records for both medical and nonmedical retirees with disabilities. A portion of our analysis focuses on the civilian labor market outcomes of military retirees. The analysis compares the civilian labor force participation and earnings of retirees with and without service-connected disabilities. In principle, a parallel analysis could examine the nonretiree veteran population and compare the earnings of disabled and nondisabled veterans. No systematic data were available on nonretiree veterans, however, so our analysis is restricted to military retirees.

DoD and VA Roles in Disability Ratings

The DoD and VA both make evaluations of military disabilities based on the VASRD. The DoD or service-specific evaluations differ in some respects from the evaluations by the VA, however (U.S. Army, 2005). First, DoD evaluations for medical disability and disability severance are based only on conditions that make members physically unfit to continue their military duties, and compensation is intended to offset the interruption of their career. In contrast, the VA evaluation is based on any service-connected impairment irrespective of whether it impedes a member's military career; it is meant to compensate for potential losses in civilian earnings. Second, DoD and service ratings are permanent on final disposition. The VA ratings change from time to time as a veteran's medical condition improves or worsens. Third, the DoD disability compensation is affected by years of service and base pay, but VA disability compensation is based on the extent of the injury, with small adjustments for dependents. Military retirement or severance pay due to physical disability is paid through the Defense Finance and Accounting System (DFAS) like normal DoD retired pay, but disability compensation for nonmedical retirees (the vast majority of service-connected disabilities) is paid through the VA.

The DoD and the VA often cross paths on disability assessments. The DoD and the specific service branches conduct medical assessments of military members as part of military separation. These assessments are subject to reevaluations by the VA at the request of veterans. Medical retirees and severance disability recipients may have their disability rating adjusted by the VA if their condition worsens or other service-connected disabilities develop after leaving active duty. Nonmedical retirees are given an initial medical evaluation when they retire from the military, but the VA may change the disability rating if new or changed conditions develop. As a result, some medical retirees and severance disability recipients may eventually gravitate from the DoD disability rolls to the VA disability rolls.

Although the disability schedule for nonmedical retirees is not affected directly by military retired pay, disability compensation may

offset retired pay. Until 2004, nonmedical retirees received the maximum of disability compensation from the VA schedule or retired military pay. Even if disability compensation did not exceed military retired pay, however, disability compensation was preferable to retired pay because it was not taxable. The new law enacted in 2004 ended this retired pay offset of disability benefits for members with at least a 50 percent disability. The offset is rolled back by 10 percent per year for ten years.

Trends in Service-Connected Disability

The evidence from the SRM suggests that the share of successive cohorts leaving the military with a disability is growing. Only 35 percent of retirees from the 1971 cohort receive military disability compared with 57 percent for the 2001 cohort.[7] Some injuries are not evident at retirement, so it seems likely that the disability level for the 2001 cohort will rise further as these members' age and lingering disabilities become more acute.

The main increase in disability rates has come from low- and moderate-level disabilities. Figure 2.1 shows that the share of severe disabilities fell considerably for members retiring in the late 1980s and early 1990s. The share of retirees with disability ratings greater than 50 percent is 11 percent for the most recent cohort, which is about the same level of disability as occurred for cohorts in the early 1970s. The big shift in disability rates has come for lower-level disabilities. The share of retirees with 10–20 percent disabilities has risen from the 11 percent mark in 1971 to 22 percent of retirees in 2001. Similarly, about 10 percent of the 1971 cohort has a disability rating of 30–50 percent, compared with 25 percent of the 2001 cohort.

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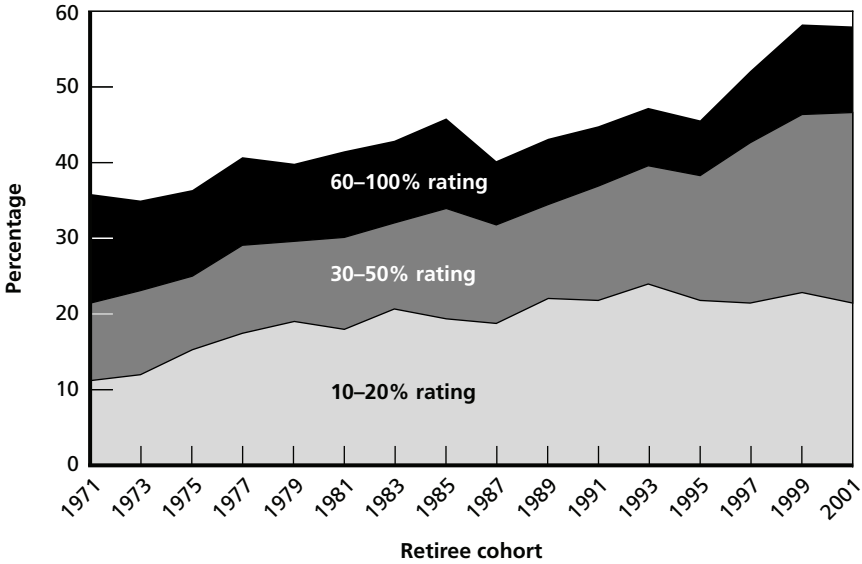
[7] The SRM shows the VA disability rating for a retiree at the time of the survey in 2003. It does not include information on what disability rating DoD initially assigned an individual on leaving active duty or whether the VA has revised the rating. Presumably, the disability ratings rise for a retiree cohort as the cohort ages, but we did not have direct evidence on the extent of this increase from the SRM. A useful task for future analysis would be to track the disability ratings of individuals longitudinally.

Figure 2.1
Trends in Disability for Recent Retiree Cohorts



SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).
RAND *MG369-2.1*

The evidence shows substantial increases in disability ratings less than 60 percent. The reasons for the upward trend are unclear. It seems unlikely that injury rates have truly increased over time. There was no substantial military operation in the 1990s to increase injury rates beyond that of earlier cohorts—the casualty rates from the first Gulf War are too low to explain the trend. More likely, we can surmise that the application of disability rules and regulations has become more generous over time.[8] Perhaps this reflects that injuries

[8] The increase in service-connected disabilities largely mirrors an increase in civilian-related disabilities over the past several decades (Burkhauser and Daly, 2002). There is no consensus for why the rates are rising. Some authors find evidence of more health-based impairments (Kaye, 2001) and others attribute the rise in disability claims to more generous benefits that replace a greater share of earnings (Autor and Duggan, 2003). Some have also suggested that the Americans for Disabilities Act has had the unintended effect of discouraging employers from hiring disabled applicants, so more disabled workers are left on the disability roles (DeLeire, 2000; Acemoglu and Angrist, 2001).

were overlooked in earlier cohorts that are now given small awards. Alternatively, medical officials may be growing more generous in making awards for the same conditions that were not allowed awards in the early 1970s.

Ironically, the increase in retiree disability rates is coming at a time when medical care has substantially improved and reduced the consequences of many service-connected disabilities. For example, the prospects of complete recovery from many orthopedic injuries has improved substantially since the 1970s, so the employment prospects of retirees with these types of injuries are much better than they would have been for earlier cohorts.

Disabilities may affect individuals in a number of ways, including pain and suffering, reduced quality of life, inability to perform leisure or household tasks, and reduced labor market proficiency. Many of these outcomes are inherently difficult to measure and must be measured on a subjective basis. For example, a permanent shoulder injury may involve chronic pain, limitation on athletic participation, and reduced earnings. Although each of these outcomes reflects the complete cost of a workplace injury, much of the emphasis of military disability compensation, and its civilian counterparts in workers' compensation and disability insurance, focuses on the economic losses associated with an injury as measured by earnings losses.

The next chapter reviews how civilian disability programs work. In Chapter Four, we will examine how military disability affects the civilian labor market opportunities and earnings of military retirees.

CHAPTER THREE

Review of Civilian Disability Programs

Worker disabilities in the civilian world are covered by a patchwork of public and private programs. These are workers' compensation, short-term disability insurance (STD), long-term disability insurance (LTD), Social Security Disability Insurance (SSDI), Supplementary Security Income (SSI), and liability insurance. Workers' compensation is a series of state programs that provides income replacement to individuals injured on the job. Often, employers also offer STD policies to provide salary replacement for disabilities that extend beyond the standard employee sick-leave provisions. After STD benefits are exhausted, LTD benefits commence if available. Some employer-provided pension plans also have disability provisions. SSDI and SSI are governmental programs that are also designed to provide income to the disabled or the indigent. Eligibility for SSDI is based on firm and employee contributions to Social Security taxes; SSI is a means-tested program for low-income individuals with disabilities. Aside from workplace programs for disabilities, disability payments may also be made by auto liability insurance, medical malpractice insurance, and other liability policies, but these types of payments are not directly comparable with the work-related payments in military disability compensation.

This chapter is divided into four sections. The first section describes several types of civilian disability programs. The second section examines disability management programs that civilian firms are using to control disability costs. The third summarizes studies on how civilian disability programs affect labor market outcomes, such as

civilian labor force participation, disability receipt, and the duration of disability receipt. The final section provides several case studies illustrating the types of plans that are available through employers.

Types of Civilian Disability Programs

Workers' Compensation

Workers' compensation is an important source of support for disabled workers. The workers' compensation program paid $53.4 billion in compensation benefits in 2002. Of this total, $24.3 billion was for medical care and $29.2 billion was for cash benefits. Workers' compensation was enacted in 1908 to cover certain federal civilian workers. By 1920, all but seven states had enacted workers' compensation laws. Today, each of the fifty states and the District of Columbia has its own program (Williams et al., 2004).

Workers' compensation pays for medical care for work-related injuries beginning with the date of injury, and it also pays cash benefits. Workers are compensated regardless of fault or blame, with the exceptions of willful misconduct, intoxication, and gross negligence. The program covers almost all (87 percent) wage and salary workers. The program pays temporary disability benefits after a waiting period of three to seven days; and it pays permanent partial and permanent total disability benefits to workers who have lasting disabilities caused on the job. Temporary total disability cases comprise 85 percent of indemnity claims. Workers who are classified with permanent partial disability constitute most of the indemnity costs. Workers who are classified as permanently partially disabled receive temporary total disability payments until they reach the point of maximum medical improvement (that is, they are not expected to recover any further from their disability). Permanent partial disabilities are classified as scheduled or nonscheduled. Scheduled injuries include injuries to limbs or organs. Nonscheduled injuries cover disabilities such as head, back, and nervous system injuries (Williams et al., 2004).

Workers' compensation benefit provisions vary among states. Usually, benefits cover two-thirds of previous earnings, although earnings levels are generally capped at a rather low level. In addition, some states have benefit maximums that include weekly maximums and/or time limits on benefit receipt. States differ in their methods for determining whether a worker is entitled to permanent partial benefits and if so, the degree of partial disability and the amount of benefits to be paid (Barth and Niss, 1999). The extent of partial disability can range from less than 5 percent to 99.75 percent of total disability. Permanent partial disabilities account for 33 percent of cases that involve any cash payments and for 62 percent of spending (Williams et al., 2004). In most states, benefits for scheduled injuries are enumerated on a predetermined chart. Benefits for nonscheduled injuries are calculated as a percentage of previous earnings.

Table 3.1 shows a comparison of workers' compensation and military disability compensation across several key dimensions. The military system is notably more generous in compensating for the immediate aftermath of an injury. Military members continue to receive full military pay and benefits while recovering from an injury, whereas civilian employees receive only about two-thirds of their earnings under workers' compensation (subject to some maximum earnings). In addition, military members who retire with a service-connected injury or are medical retirees continue to draw disability benefits even if they are fully employed by the civilian sector. In contrast, civilian workers' compensation is conditioned on the inability of the individual to work, and compensation ends when the individual returns to work.

Short-Term Disability Benefits

STD benefits provide for salary replacement, most often partial pay, for a 6- to 12-month period. Benefits are paid either as a percentage of employee earnings, such as 50 percent of pre-disability earnings, or as a flat dollar amount. STD benefits can vary by the amount of pre-disability earnings, length of service with the establishment, or length of disability.

Table 3.1
A Comparison of Military Disability and Civilian Workers' Compensation

Criterion	Military Disability	Workers' Compensation
Benefit calculation	Member receives full military pay and benefits while recovering from an injury. If member retires from the military with an injury, the benefit is based on disability rating assigned using the VA's schedule	Benefit based on wage loss (usually 2/3 of actual wages lost (earnings are capped)
Eligibility	Not contingent on where injury occurred or ability to work	Contingent on work-related injury and inability to work
Rehabilitation	Vocational rehabilitation available, but not mandatory for eligibility	Eligibility often contingent on participation in rehabilitation
Benefit limit	No limit on total dollar amount or time period of benefit eligibility	Limits on maximum weekly benefits and length of eligibility
Program goal	Active-duty members receive full pay while recovering from injury	Workers' compensation is reimbursement for lost earnings during rehabilitation

Information on firm disability plans is drawn primarily from three recent surveys.

- *National Compensation Survey: Employee Benefits in Private Industry in the United States, 2002-2003.* This Bureau of Labor Statistics survey (BLS, 2005) collected data from nearly 3,000 firms that employ nearly 103 million workers.
- *Employer's Time-Off and Disability Programs.* This survey is based on responses from 472 employers (private and government) with 100 or more employees (Mercer, 2004).
- *Survey for Human Resource Management (SHRM) 2004 Benefits Survey Report*. This survey is based on data collected from 453 human resource managers in private firms (Burke, 2004).

The BLS survey is much more comprehensive in coverage than the other two surveys, but its information about details of disability plans is much more limited than in the other surveys.

BLS data show that 39 percent of workers had access to STD plans (BLS, 2005). STD plans were available to 53 percent of workers earning $15 per hour or more but only to 29 percent of low-wage workers. Access to STD plans was much more common in unionized, goods-producing firms and firms with at least 100 employees than in nonunionized, service-sector jobs in small firms. Nearly all workers with access to STD plans participate in those plans (BLS, 2005).

About 80 percent of the firms in the Mercer Survey (2004) provide employees with a STD plan to cover disabilities and illnesses that are longer than approximately one week.[1] More than half of employers (56 percent) impose a waiting period before providing benefits—the average length of time is 4.5 months. For the majority of employers (62 percent), STD benefits cover non–work-related disabilities only. For 31 percent, the plan supplements workers' compensation so that the wage replacement between occupational and nonoccupational disabilities is the same. About 40 percent of employers provide employees with full pay up to the maximum duration of disability absence specified in the plan. However, it is more common for employers to pay a fixed percentage of salary as STD benefits. The majority of employers (63 percent) also did not pay STD benefits for the first seven working days of the disability. The average maximum paid benefit duration is six months. Detailed tabulations of several STD plan features are shown in Table 3.2.

The SHRM survey found that 81 percent of employers offered STD policies. Larger firms were more likely to offer short-term disability policies: Seventy-five percent of firms with fewer than 100 employees, 82 percent of medium sized firms (100–499 employees),

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[1] The STD access rates in the BLS (2005) and Mercer Survey (2004) are quite different—the BLS shows that 39 percent of employees have access to STD plans as compared with the Mercer finding that 80 percent of their surveyed firms offer STD plans. In large part, the gap reflects the fact that Mercer only surveyed employers with 100 or more employees. These larger firms are much more likely to offer STD plans than small firms. In the BLS survey, over half of all employees work in firms that employ less than 100 workers.

Table 3.2
Features of Disability Benefits

Feature	Full Sample	Industry							Firm Size	
		Manu-facturing	Trade	Services	Trans-port	Health Care	Financial Services	Govern-ment	100–499	500 or more
Disability Management										
Consistent return to work policy	62	65	46	63	61	61	70	—	73	54
Clinical case management	41	47	53	36	35	43	41	—	25	60
Central intake for all absences	42	43	41	40	39	41	45	—	49	39
Link disability and claims data	9	11	9	9	12	9	8	—	9	10
Link occupa-tional and nonoccupa-tional data	12	17	9	10	18	8	11		5	21
Short-Term Disability										
Plan offered to salaried workers	80	81	74	78	88	80	81	—	80	79
Employer pays coverage cost	79	74	89	81	71	79	81	—	75	77

Table 3.2—continued

Feature	Full Sample	Industry							Firm Size	
		Manu-facturing	Trade	Services	Trans-port	Health Care	Financial Services	Govern-ment	100–499	500 or more
Benefits begin at first day of absence	19	25	13	14	20	11	10	46	19	17
Benefits begin after fixed number of days	63	56	69	70	60	75	66	38	71	64
Full pay up to max. duration	17	11	28	18	23	14	19	10	15	16
Uniform percentage (<100%) of pay	40	48	28	33	32	45	39	50	41	37
Amount varies by length of disability	9	9		7	5	16	8	20	9	11
Amount varies by length of service	23	22	26	26	25	21	21	20	26	24
Average percentage of pay	66	63	65	88	60	61	61	—	63	61

Table 3.2—continued

Feature	Full Sample	Industry							Firm Size	
		Manu-facturing	Trade	Services	Trans-port	Health Care	Financial Services	Govern-ment	100–499	500 or more
Long-Term Disability										
Average percentage of salary paid	58	59	59	59	58	56	59	—	61	57
Average max. monthly benefit	$9,706	$9,573	$9,176	$9,536	$9,829	$8,643	$12,048	—	$9,441	$10,122

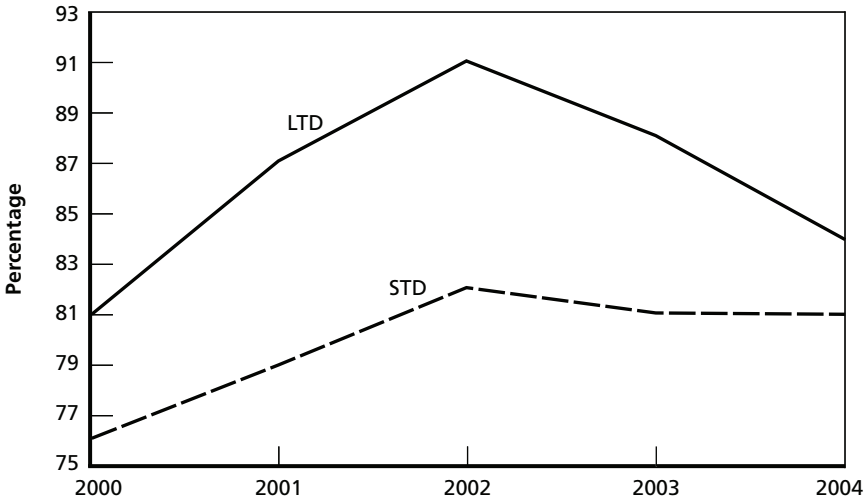
SOURCE: Mercer Human Resource Consulting, 2004.

NOTE: Cells are blank for some government entries because of small sample size. Unless otherwise noted, all numbers are percentages. "Average percentage of pay" is computed for plans that pay a uniform fraction of pay.

and 91 percent of large firms (500 or more employees) offered STD policies. STD rates differed by industry, with high-tech industries having the highest rate at 95 percent and nonprofit services and government having the lowest rates at 68 percent. However, none of the differences by industry was statistically significant. The offering of short-term disability policies has been somewhat stable over the years (Burke, 2004) (Figure 3.1).

In addition, an older study (Houff and Wiatrowski, 1989) comparing short-term disability offerings of state and government employers to those of the private sector showed that government employees tended to have fewer days of STD leave available than in the civilian sector. However, the earnings replacement under the STD plans was more generous for government employees than for private-firm employees. At five years of service, state and local government employers offered an average of 46 days of STD leave with 61 percent earnings replacement. Teachers had somewhat less generous benefits—25 days with 76 percent earnings replacement. Police

Figure 3.1
Percentage of Civilian Employers Offering STD and LTD Benefits



SOURCES: Burke (2004).
RAND *MG369-3.1*

and firefighters had 46 days of STD leave with 67 percent earnings replacement. In comparison, civilian employers had 120 days of STD leave with 58 percent earnings replacement.

Long-Term Disability Benefits

LTD benefits provide a monthly cash amount to eligible employees who, because of illness or injury, are unable to work for an extended period. Benefits are usually a fixed percentage of pre-disability earnings up to a set limit. Most participants have a waiting period of three or six months, or until sick leave and STD benefits end, before benefit payments begin. LTD payments generally continue until retirement, until a specified age, or for a period that varies by the employee's age at the time of disability.

LTD policies arose as a result of growing concern about the adequacy of state workers' compensation systems. Nearly 70 percent of participants were in plans that specified a minimum length of service before an employee was eligible. Another common eligibility requirement stems from a plan's definition of total disability. Employees must be determined as totally disabled to be eligible for long-term disability. During the first year or two years of the disability, total disability is defined by the inability of the employee to do his or her job. After this period, the definition becomes more restrictive, and requires that the employee be unable to perform any type of job. Hence, the provisions of long-term disability encourage return to the workforce if at all possible.

Not all private plans require total disability as a precondition for receipt of LTD benefits. Some plans provide for partial disability if an employee can perform some duties of his or her regular occupation on a part-time basis, or if the individual can perform duties for another occupation for which he or she is qualified. If an employee is partially disabled, the benefit is commonly reduced by 50 percent. The employee's plan benefits typically continue as long as the new earnings are less than the pre-disability salary by a percentage specified in the policy.

LTD benefits are generally based on previous earnings. Since disabled individuals may receive payments from various sources

(workers' compensation, Social Security, state disability insurance, and employers' pension plans, for instance), benefits are offset so that payments are no higher than the previously determined replacement rate. Plans also often have explicit ceilings on total benefits (Hill, 1987).

The BLS (2005) survey found that 30 percent of workers had access to LTD plans. Earnings were strongly correlated with access to LTD benefits. While only 17 percent of those with earning less than $15 per hour had access to LTD benefits, half of those in higher earnings groups had access to these benefits. LTD plans were much less likely to be available for part-time workers or those in service occupations than for full-time workers or those in blue- and white-collar occupations.

In the Mercer Survey (2004) nearly all employers (98 percent) offered LTD benefits to their employees.[2] In just over half the surveyed employers (54 percent), the employer pays the full cost of LTD coverage. Some 30 percent of the employers pay the full cost of basic coverage, and employees have the option of buying more extensive coverage. Most plans (63 percent) provide 60 percent income replacement. Almost all LTD policies have a maximum monthly benefit that is based on the profile of current employees. Over half of the employers have a maximum between $5,000 and $10,000. In an effort to control costs, employers are also implementing rigorous guidelines to evaluate disabilities. The vast majority of employers (83 percent) require that the employee be under the care of a physician for the treatment of the disability in order to receive benefits.

The SHRM survey (Burke, 2004) found that 84 percent of companies offered LTD policies. Larger firms were more likely to offer such policies: Seventy-eight percent of firms with fewer than 100 employees, 85 percent of medium sized firms (100–499 employees), and 92 percent of large firms (500 or more employees) offered LTD policies. There were also some differences in the rate of offering dis-

[2] As with STD access, the much higher access rates for firms in the Mercer Survey than for individual workers in the BLS Survey reflects the focus of Mercer on much larger firms than in the BLS.

ability policies by industry. Finance-based companies were the most likely to offer LTD benefits (97 percent), and nonprofit service-based companies were the least likely (64 percent). Other industries had intermediate rates—high tech, 85 percent; government, 79 percent; health, 85 percent; manufacturing (durable goods), 85 percent; manufacturing (nondurable goods), 70 percent; services (for profit), 85 percent; wholesale/retail trade, 75 percent. However, the only statistically significant difference was between finance and nonprofit services. The rate of offering long-term disability peaked at 91 percent in 2002, but since then has fallen to 84 percent (see Figure 3.1).

Despite the appearance of a trend in short-term and long-term disability coverage in the raw data, Levy (2004) conducted a multivariate analysis and found little evidence of a systematic trend from 1980 to 2000 in the fraction of workers with either short or long-term disability insurance coverage. Consistent with the descriptive data, she found that low-skill, low-wage, short-tenure, and part-time workers are all much less likely to have these benefits, as are workers in small establishments (Levy, 2004).

Disability Retirement

Private pension plans commonly provide for disability retirement benefits that cover retirement resulting from a totally disabling injury or illness prior to eligibility for early or normal retirement (Bell and Wiatrowski, 1982). Plans providing disability retirement benefits may have a service requirement of ten years or more. Benefits may be immediate or deferred. Under plans with immediate disability benefits, payments start at the time of illness or injury. Under plans with deferred benefits, payments are made at the retirement age specified in the plan, and employees who qualify for long-term disability usually continue to accrue benefits until their formal retirement date is reached. When the formal retirement age is reached, their disability payments cease and pension payments begin. Long-term disability plans are generally coordinated with disability retirement payments (Hill, 1987).

The BLS survey (2005) showed that disability retirement benefits were available to 76 percent of all workers. Interestingly, avail-

ability was lower for white-collar workers (72 percent) than for blue-collar workers (80 percent) or service workers (89 percent). The payment of disability benefits was immediate for 40 percent of workers and deferred for 33 percent of workers.

Social Security Disability Insurance

SSDI provides wage replacement income for a wage earner who becomes disabled. It is financed with Social Security taxes paid by workers, employers, and self-employed persons. SSDI benefits are payable to disabled workers, widows, widowers, and children or adults disabled since childhood. SSDI was initially established in 1956 to cover "involuntary retirement" due to disabilities.

To be considered medically disabled according to Social Security rules, an individual must be unable to engage in any "Substantial Gainful Activity" due to a disability that has lasted or can be expected to last for a continuous period of not less than 12 months. An individual should not be able to perform his or her job.

The monthly disability benefit amount is based on the Social Security earnings record of the worker. The monthly benefit is a function of the worker's average indexed monthly earnings over his or her work history. In addition, eligibility is conditional on having worked a minimum number of quarters immediately prior to the disability. Eligibility for monthly SSDI benefits begins five months after the onset of the disability. An SSDI recipient becomes eligible for Medicare after two years.

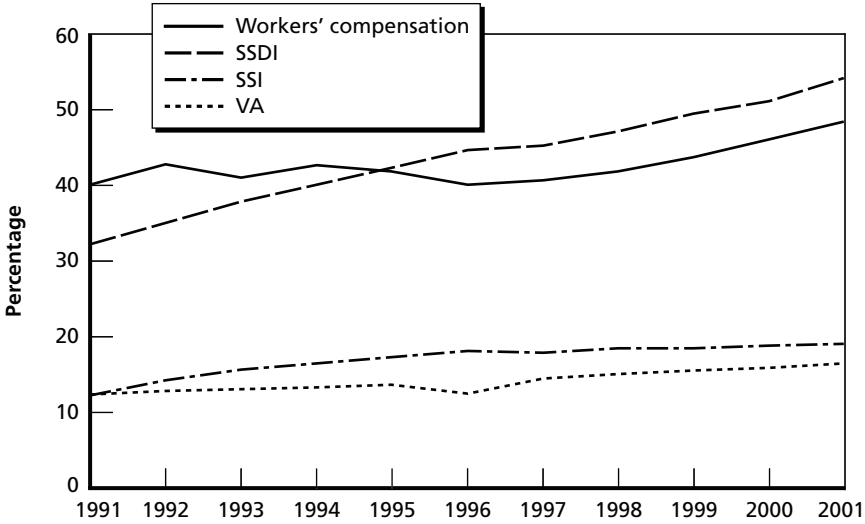
An SSDI beneficiary is periodically reviewed to determine if there has been any medical improvement in the individual's condition and to determine whether he or she continues to be eligible for benefits (World Institute on Disability, 2005).

Supplementary Security Income

SSI was established in 1974 to provide income support for low-income blind and disabled people under 65. SSI benefits are not predicated on work history; however, SSI benefits are coordinated with SSDI benefits with a dollar-for-dollar offset of SSDI benefits. Eligibility for SSI is means-tested.

Figure 3.2 shows the trends in program expenditures for SSI, SSDI, workers' compensation and the VA. The growth in SSDI and workers' compensation has far exceeded the growth in VA expenditures.

Figure 3.2
Trends in Disability Compensation



SOURCES: GAO (2002), Williams et al. (2004).
RAND *MG369-3.2*

Disability Management by Civilian Employers

Many private companies are instituting "disability management programs" to maintain disability costs and preserve employee health and job satisfaction. Faced with rising short-term disability incidence rates (reported by 32 percent of employers) and rising long-term disability rates (22 percent of employers), employers are increasingly turning to programs that can control costs. The basic tenets of this program, as reported by Mercer Human Resources Consulting, are (1) identifying and influencing outlier claims; (2) maximizing the productivity of recuperating employees; and (3) minimizing the effect of health conditions and health risks (Mercer, 2004).

Surveyed employers reported that five health conditions were most responsible for disability costs: stress/depression, musculoskeletal problems (other than lower back pain and repetitive stress syndrome), cancer, lower back pain, and cardiovascular diseases. The influence of these conditions on costs reflects the aging workforce, an increase in obesity, and an increase in stressful working conditions (Mercer, 2004).

Disability management is used to proactively coordinate disability programs by integrating health management, risk management, and benefit programs. In 2001, approximately 50 percent of very large employers (10,000 or more employees) were using disability management programs to reduce their costs. Smaller organizations have also begun to experiment with disability management (Ahrens, 2001). Controlling short-term disability costs, in particular, has been identified as key to controlling disability costs in general. The 10 percent of the population submitting short-term disability claims drives 50 percent of all health care costs. Medical costs for an employee with no short-term disability claims average $3,700; for an employee with a claim, the average is $16,000. Employers have been instituting novel methods to identify current causes of disabilities and prevent future disabilities. For instance, a chain of four hotels in Las Vegas noticed an abnormally large number of female employees over 45 suffering bone fractures. The employer brought health care equipment to each location to screen female workers' bone density and offered counseling to workers found to have problems (McConnell, 2004).

Disability management relies on transmitting easy-to-understand information about health and disability programs to employees. Furthermore, in the event of a disability, these programs should provide good financial protection that is delivered in a timely and appropriate manner. However, instituting disability management programs is challenging. Many employers do not have accurate data about their programs. Comprehensive information about the demographic profile and the reason for disability is necessary to design an effective disability system. Furthermore, an ideal disability program would preserve workers' incentives to return to work. Although encouraging return to work is important, the treating physician deter-

mines the length of the employee's absence and is often unaware of actual job requirements (Ahrens, 2001).

Effects of Disability Insurance on Labor Market Outcomes

A considerable amount of research has focused on the effect of various civilian disability benefits on labor force participation, disability receipt, and the duration of disability receipt. The literature on civilian disability insurance systems has relevance to the military disability system. The civilian literature has explored the effect of several key policy levers, such as the level of benefits, the ease of the application process, and the difficulty in being certified as disabled. These disability policy tools may have an effect on workers' propensity to apply for disability benefits, the duration of their disability, and their propensity to return to work. Lessons from the effectiveness of each of these policy levers can inform reforms to the military disability system.

Theoretically, the provision of disability benefits should affect worker behavior. We would expect workers to expend lower effort on injury prevention and safety if they have good disability benefits. This phenomenon is called "moral hazard." Furthermore, we would expect workers to be more likely to file a disability claim as benefits rise and as filing costs fall. We would also expect the duration of the disability to increase and the propensity to return to work to fall as disability benefits increase.

The empirical evidence on the effect of disability benefit size has shown that benefit generosity increases the probability of benefit receipt. Krueger (1992) found that workers' compensation receipt is very responsive to the size of the benefit for men but not for women. In other research, a 20 percent reduction in SSDI benefits was found to lead to a 9 percent drop in applications for SSDI (Kreider and Riphahn, 2000).

Benefit generosity has also been found to reduce labor force participation. The literature has found a wide range of estimates for the responsiveness of working to the availability of SSDI benefits. Labor

force participation elasticities have varied from 0.06 to 0.81. One study found that the increase in SSDI benefits from 1968 to 1978 accounted for one-third of the decline in labor force participation (Kreider, 1999b). Another study exploited the natural variation in disability benefits in different provinces in Canada and found that raising the disability benefits led to a sizable labor force response, implying an elasticity of about 0.3 (Gruber, 2000).

There is also some evidence that benefit generosity increases the duration of disability benefit receipt. Butler and Worrall (1985) found longer workers' compensation claim durations for lower-back injuries in Illinois when benefits increased. Another study found that a 10 percent increase in workers' compensation benefits was associated with a 3 percent increase in the duration of the disability (Meyer, Viscusi, and Durbin, 1985).

A lengthy and cumbersome disability application process has also been found to reduce applications for disability benefits. In particular, a change in the waiting period from three days to seven days was found to reduce workers' compensation receipt by 39 percent (Meyer, Viscusi, and Durbin, 1985). Furthermore, eliminating SSDI waiting periods were found to have the same effect on SSDI applications as a 10 percent rise in benefits (Kreider, 1999b; Parsons, 1980). A lower probability that an SSDI application is approved also reduces incentives to apply for benefits—in particular, a 20 percent decline in the probability of SSDI acceptance leads to a decline in the application rate of 12 percent. In fact, the reduced screening stringency for disability benefits, the declining demand for less-skilled workers, and the increase in SSDI benefits have led to a doubling of the labor force exit rate for displaced high school graduates (Autor and Duggan, 2003).

The methods and variation in the setting of payments for disability programs has received some attention. Payments for permanent partial workers' compensation disabilities vary widely for the same injury. Variations in the benefits for seemingly similar injuries can occur for several reasons. First, different states have different benefit schedules and therefore different payments. Second, payments have been found to vary because of demographics and other socio-

economic factors (Durbin and Kish, 1998). Third, payments are often based on physician ratings of economic losses. But physician ratings are often poor estimates of economic losses. In one study, the ratings were found to explain only 1 percent of subsequent wage loss (Park and Butler, 2000). In general, physicians are unaware of the specific demands of the injured worker's job and lack the necessary information required to estimate the degree of earnings loss. Another study of California's workers' compensation system concluded that the system works on average; however, there are large differences in payments due to inter-physician rating variation (Seabury, Reville, and Neuhauser, 2004).

The literature on civilian disability insurance systems provides an important lesson for the military experience. Benefit level, ease of application process, and screening stringency have a considerable effect on the propensity to apply for benefits and the propensity to return to the workforce. Therefore, the benefit parameters for military disability should be chosen carefully to preserve incentives to return to work and yet provide adequate insurance in the case of disabling injuries. Furthermore, disability payments should be set in a consistent and transparent way so that there is little random variation in payments for similar injuries. The military may also want to examine applying to its own system principles of civilian disability management programs that aim to control disability costs and streamline disability programs.

Prototypes of Employer Disability Plans

In this section, we provide several case studies of typical employer disability plans. In some cases, these plans describe those of actual employers; in others, they are based on a synthesis of survey evidence, discussions with human resources managers, and Internet searches. The information reflects publicly available descriptions of plans that were not independently verified for this study.

The case studies are a sampling of plans that are available through employers. The examples are illustrative and are not neces-

sarily representative of the mix of plans available. In general, the plans conform to the offerings described more generally in Chapter Three. Most private civilian plans differ in scope and approach from that of the military. Disability coverage for public employees, especially police and fire personnel, is similar in many respects to the military coverage.

A Nonwork Disability in a Private, Nonprofit Firm

A worker who is disabled due to a non–work-related condition at the RAND Corporation in California can use a patchwork of government and employer-provided benefits to maintain his income. His employer offers sick pay, short-term disability insurance, long-term disability insurance, and vacation pay. In this prototypical employer plan, the worker will claim 10 sick days (his maximum sick leave allowance) at full pay. Next, he can use vacation days (at full pay) if desired. Once vacation pay and sick pay are exhausted, the worker will apply to receive short-term disability leave. The worker will receive 50 percent salary replacement through his short-term disability policy until he has been disabled for six months. At this time, he is eligible to have his short-term disability payments supplemented with long-term disability payments, and will have 80 percent of his salary replaced. One year after the onset of his disability, the worker will continue to receive long-term disability only, and have 75 percent of his salary replaced until age 65, when Social Security benefits commence. These benefit payments, of course, assume that the worker remains disabled throughout this entire period.

A Nonwork Disability in a Private, Government-Contracting Firm

Newport News Shipbuilding has no provision for sick leave for employees, but the firm does allow some reimbursement for absences under its STD coverage (Hattiangadi, 2001). STD is available to workers after they complete three months of employment. The benefits range from 50 to 100 percent of earnings, depending on length of service. STD coverage lasts for up to 26 weeks. LTD coverage is available after six months of disability. LTD pays up to 60 percent of

monthly base pay. These payments may be offset by income from other sources during the period of disability.

A Disability at a Private, Technology-Based Firm

Lucent Technologies provides disability coverage for both short- and long-term injuries and illness (Hattiangadi, 2001). Coverage for work-related injuries begins immediately at employment, but coverage for other injuries begins after six months of employment. STD payments depend on pay and time at the firm. STD benefits can last for up to 52 weeks. LTD payments take effect if the injury precludes a return to work after a year. LTD payments are offset by other sources of disability income and can replace up to 60 percent of an employee's pre-injury pay. All disability payments end when the employee returns to work or reaches a lifetime limit on benefits.

A Work-Related Injury in a Private Firm

In Wisconsin, a worker is entitled to workers' compensation if an injury occurs during her job. The loss of a finger on the dominant hand, for example, is classified as a permanent partial injury. The schedule of benefits in the state lists this injury as having a maximum payment of $242 per month. We assume that this injury is entitled to the maximum payment. Therefore, the individual receives the full workers' compensation payment for ten weeks, amounting to a payment of $2,420. After this time, we assume the worker returns to work and receives no further payments.[3]

A Disability in a Large, Service-Sector Firm

United Parcel Service provides nine annual discretionary days that can be used for any purpose as well as coverage under STD and LTD plans (Hattiangadi, 2001). Nonmanagement employees receive full pay for the first 13 weeks of a disability, but they receive only 60 percent of regular pay for the 13 weeks of STD coverage. In contrast, management employees receive full pay for a disability of up to 26

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[3] For further details, see http://www.dwd.state.wi.us/wc/medical/simple_dom_hand_calc.htm.

weeks. After six months, disability payments are covered by a long-term disability plan that reimburses about 60 percent of pre-injury earnings.

A Non–Work-Related Injury in the Military

A servicemember with a 40 percent disability (for example, the loss of a foot) would be paid full pay and allowances until the time of "maximum medical improvement," an assessment of whether the servicemember has reached a stable health status.[4] At this time, if the servicemember leaves the military and applies for disability benefits from the VA, and he has no dependents, he will receive $454 per month for the rest of his life. If he has a spouse and a child, he will receive $493 per month for the rest of his life. These benefits are not conditional on his future work history and are not taxed by either state or the federal government. Furthermore, the servicemember may still be entitled to retired pay (GAO, 1997).

A Work-Related Injury in the Police and Firefighters' System

In the police and firefighters' system in Oregon, disabilities are defined as service-connected when they directly stem from injuries or illnesses arising due to employment. Benefits are also available for "occupational disabilities" that apply to a number of health conditions, such as heart disease, tuberculosis, etc., that may have occurred because of service in the police or fire system. [5] During the first year from the date of disability, individuals are paid 75 percent of their base pay, reduced by 50 percent of any wages earned in other employment during the period the benefit is payable. Individuals will be paid this benefit until they are deemed to have reached the point of medical stability or have gained alternative employment that pays one-third or more of the predisability salary. After this time, the individual is paid 50 percent of his or her base pay, reduced by 25 percent for alternative wages. The minimum benefit is 25 percent of the base

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[4] Injured or sick military members earn vacation days while they convalesce.

[5] See http://www.portlandonline.com/auditor/index.cfm?&c=28295 for further details.

pay, regardless of the amount of wages earned in other employment. Benefits may be suspended or reduced if individuals do not cooperate in treatment of the disability or in vocational rehabilitation or do not pursue other employment.

A Non–Work-Related Injury in the Police and Firefighters' System

A member of the police force or fire department in Oregon is eligible for non–service-connected disability benefits if he or she has ten or more years of service and is unable to perform job requirements. The benefit is 50 percent of the individual's base pay at disability, reduced by 50 percent of any wages the individual earns in other employment during the period the benefit is payable. Benefits may be suspended or reduced if individuals do not cooperate in treatment of the disability or in vocational rehabilitation or do not pursue other employment.

A Work-Related Injury for a Federal Employee

The Federal Employees' Compensation Act (FECA) governs disability payments for federal employees. Under FECA, an employee may receive two-thirds of his or her salary if there are no dependents (75 percent if there are dependents). The maximum benefit payment for the loss of a foot, for example, is $266,373 for a maximum of 205 weeks. Since the loss of a foot classifies as a permanent partial disability, the worker would continue to receive compensation until reaching the maximum amount or time period, even if he or she had resumed working. If the worker is unable to return to work, he may then apply for alternative wage-loss benefits (GAO, 1997).

CHAPTER FOUR

Labor Force Outcomes for Military Retirees

Disabilities may affect a retiree's civilian labor market work in a variety of ways.

- **Wage Effect.** The disability may affect individual productivity, so disabled workers may face lower labor market wages and earn less per hour.
- **Employment Effect.** Employers may be reluctant to hire disabled workers, perhaps because of real or imagined concern about their productivity. In addition, disabled workers may be ill suited for more jobs than other workers, so they may experience greater spells of unemployment between jobs. Therefore, disabled retires may have fewer work opportunities and may work fewer weeks per year or fewer hours per week.
- **Work-Limitation Effect.** Some severely disabled individuals may be unable to work (or to work full time), even if work were available. In this case, an employer may be willing to pay the worker's marginal productivity, but the reduced quality of life associated with work may lead the disabled individual to limit his or her employment.
- **Supply Effect.** Disability compensation itself may create a disincentive for disabled individuals to fully participate in the labor market. This is especially true for civilian disability payments that may be reduced or eliminated as an individual returns to work following an injury. Military disability compensation enhances retiree wealth, so some retirees may increase their leisure

activities and work less than they would have in the absence of this extra wealth.

These effects are difficult to separate empirically, because datasets generally do not provide sufficient information to differentiate the alternative explanations (Stern, 1989; Bound et al., 1999; Kreider, 1999a). For example, if disabled workers face lower wage rates than similar nondisabled workers, they are likely to work less and perhaps to leave the labor force altogether. This wage effect is nearly indistinguishable from a work limitation or supply effect, however, because reduced labor force participation may itself reduce wages and because part-time employment often comes with lower wages. Also, if disabled individuals work less, they may accumulate work experience and human capital at a slower rate than other workers, and this has the cumulative effect of reducing their wages further.

The SRM provides a variety of information on how disabled and nondisabled retirees are doing in the civilian workforce. The data include information on labor force participation (whether the individual worked in the previous year), weeks worked per year, usual hours worked per week, and annual earnings, as well as detailed information on an individual's background, demographics, and employment conditions. In this section, we use this information to compare the labor market outcomes of disabled and nondisabled retirees. This information provides a rich picture of how service-connected disabilities affect outcomes.[1] A limitation of this analysis, like its civilian counterparts, is that it does not fully distinguish the underlying reasons for different labor market outcomes of disabled and nondisabled individuals.

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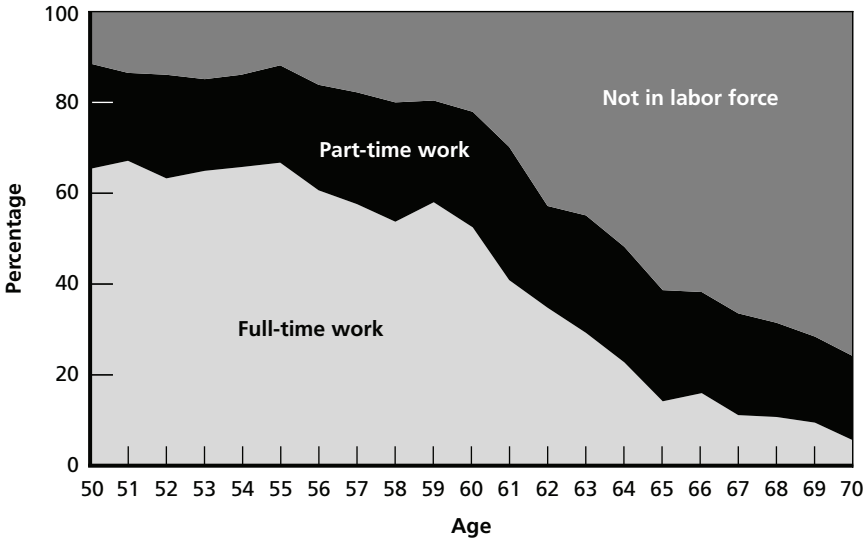
[1] The SRM shows retiree labor market outcomes several years after military retirement. The data do not provide information on a retiree's initial transition to the civilian labor market. Disabled retirees may have more difficulty finding work or may experience more spells of unemployment than do similar nondisabled retirees. If the initial transition is difficult, disabled retirees may draw down savings or accumulate wealth at a slower rate than other retirees. These potentially adverse outcomes could be costly to disabled retirees, but the data provide insufficient information to track labor market outcomes and wealth over time.

An important feature of the SRM population is that many of the retirees are not only retired from the military but are also retired from the civilian labor force. The median age of SRM respondents is 56, and 25 percent are age 64 or older. Many of these older retirees have left the labor force, so it is not possible to compare the civilian labor market opportunities of these disabled and nondisabled retirees.[2] Figure 4.1 shows that the labor force participation of retirees falls off rapidly when retirees reach the Social Security early retirement age of 62. Full-time work is defined as working at least 50 weeks in the prior year with at least 35 usual hours per week, and part-time work is defined as working some weeks and usual hours in the prior year.

Figure 4.1
Percentage Differences in Civilian Labor Force Participation of Military Retirees by Age



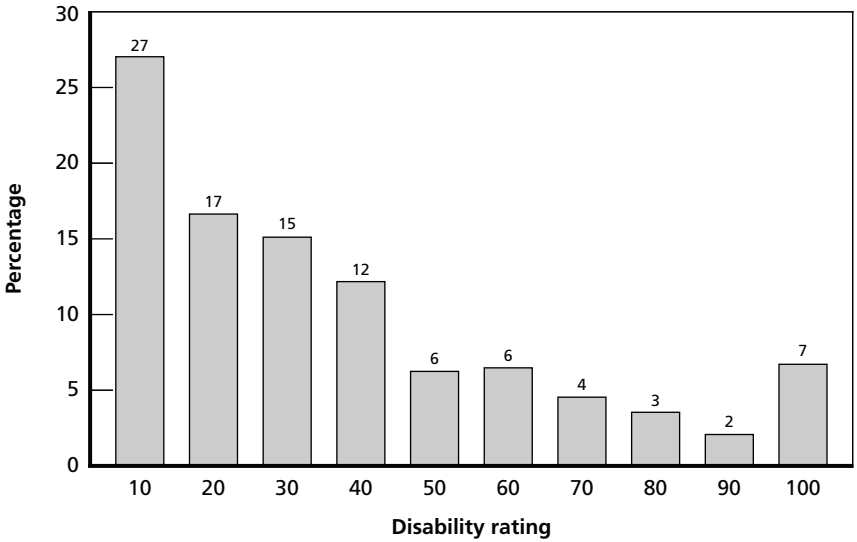
SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).
RAND *MG369-4.1*

[2] Retired pay and disability compensation for military retirees continue from the time they leave the military until their death.

About 41 percent of retirees work full time in the civilian labor force at age 61, but this number falls quickly to only 6 percent by age 70. Given these patterns in civilian retirement rates, we focused our attention on labor market outcomes of the group of retirees who were under age 62.

About 47 percent of retirees under age 62 have a service-connected disability, but the disabilities are concentrated in the lower range of the VA disability ranking. Figure 4.2 shows that the four most frequent rankings are at 10, 20, 30, and 40 percent, respectively. These four categories comprise 71 percent of disabled retirees. The median rating is 30 percent, and the interquartile range runs from a 10 percent rating at the 25th percentile to a 50 percent rating at the 75th percentile. These measures indicate that the great bulk of disabled veterans have low- to moderate-level disabilities.

Figure 4.2
Percentage Distribution of Ratings for Disabled Military Retirees Under Age 62

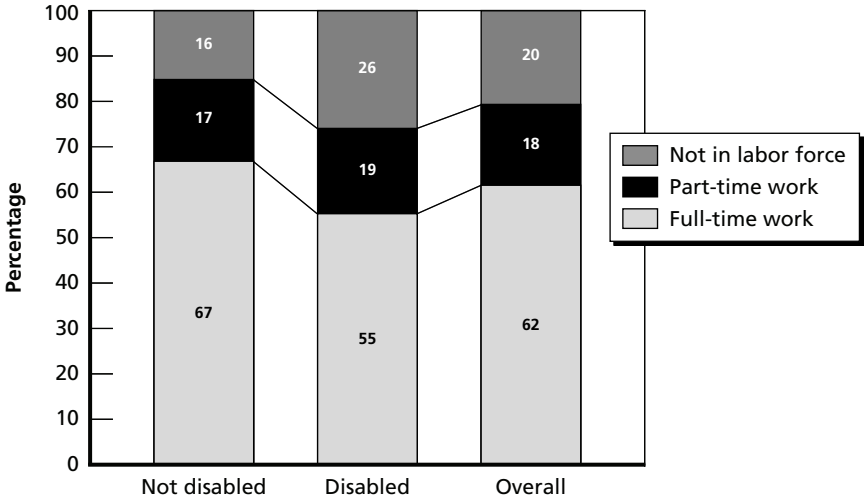


SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).
RAND *MG369-4.2*

The remainder of this chapter examines how service-connected disabilities affect various labor market outcomes. The material is divided into four sections based on alternative measures of labor market outcomes.

1. **Labor force participation.** Disabilities may affect both whether retirees work in the civilian labor force and how much they work. Figure 4.3 shows that 84 percent of nondisabled retirees work, compared with 74 percent of disabled retirees. We develop a statistical model that compares how the disability rating affects the extent of work in the civilian sector.
2. **Earnings of full-time workers.** About 55 percent of disabled retirees under age 62 work full time in the civilian labor market (i.e., they work at least 50 weeks per year and 35 hours

Figure 4.3
Labor Force Participation of Military Retirees Under Age 62, by Disability Status



SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).
RAND *MG369-4.3*

per week). We model the earnings of disabled retirees compared with those of similar nondisabled retirees, conditional on full-time work.

3. **Earnings of full- and part-time workers.** We expand the model for full-time workers to include retirees who work only a portion of the year. About 74 percent of disabled retirees work either full- or part-time in the civilian labor market. The results are conditional on labor force participation and the number of weeks worked by the retiree.
4. **Earnings of workers and nonworkers.** About 16 and 26 percent of nondisabled and disabled retirees, respectively, are out of the civilian labor force for the entire year and have no civilian wage earnings. Nonparticipation rates are higher for retirees with disabilities, but there is no evidence on what nonparticipants may have earned if they had worked. This model assigns nonearners a value of zero for annual wage earnings and combines these "earnings" with those of full- and part-time workers. The model is complete in that all retirees are included, but the assumption of zero earnings for nonearners is likely to provide us with a lower bound on earnings for individuals who choose not to work.

As explained in Chapter Two, the VASRD is intended to provide sufficient funds to replace the average loss of earnings capacity at each rating level. Severe disabilities may seriously impede the potential for some retirees to work, but we believe that most retirees could earn some amount if they chose to work. First, nonmedical retirees held full-time military employment up until retirement, so they are likely to be employable unless their medical situation has seriously eroded since military retirement. Second, as we will show below, many disabled retirees claim that their disability does limit their civilian employment. These factors suggest that some disabled retirees may be working less than they are able, so their post-injury earnings (or lack thereof) do not represent their true earnings capacity.

A focus on *absolute* earnings loss would simply compare earnings before and after a disability without concern for the labor supply ef-

fects of the disability. In this case, any earnings reductions in either Models 3 or 4 would be attributable to the disability.

Each of the following four sections corresponds to a labor market outcome measure. In each section, a statistical model is used to compare the labor market outcomes of disabled and nondisabled retirees, adjusting for other factors (i.e., individual background, demographics, and employment characteristics) that are likely to affect the outcome. For example, better-educated workers have higher earnings than do less-educated workers, so they may be more likely to work and to work more weeks and hours than other workers. These education effects may be offset, however, by the fact that education is positively associated with wealth accumulation, and this may discourage civilian work at the margin. These complex relationships among various demographic factors and labor market outcomes suggest that models should control for these other factors to isolate how disability itself affects labor market participation and earnings. In addition, the covariate controls allow us to estimate earnings for different levels of the covariates.

A final section draws together the results of the four models. Separately, each of the models has some weakness, but in combination they provide a broad indication of how well disabled retirees are doing in the civilian labor market.

Labor Force Participation

The regression results in Table 4.1 show how differences in disability ratings affect labor market participation, weeks worked per year, and usual hours worked per week.[3] In each column, the regression controls for retiree background and demographic factors that affect whether a retiree works and the full extent of their labor market work.

[3] The means and standard deviations of variables for labor force participation are in Appendix Table A.3. The statistics for the weeks worked and usual hours per week are in Appendix Table A.2.

Table 4.1
Effects of Service-Connected Disability on Labor Force Participation, Weeks Worked per Year and Usual Hours per Week

	All Retirees	Labor Force Participants	
Variable	Labor Force Participation	Weeks Worked	Usual Hours
10% disability rating	0.0061	–0.0307	–0.3809
	(0.0091)	(0.2262)	(0.2441)
20% disability rating	–0.0022	–0.0041	–0.4724
	(0.0115)	(0.2783)	(0.3003)
30% disability rating	–0.0416**	–0.2637	–0.0059
	(0.0128)	(0.2948)	(0.3182)
40% disability rating	–0.0283*	–1.1303**	–1.0752**
	(0.0138)	(0.3249)	(0.3506)
50%disability rating	–0.0955**	–1.8744**	–0.9100
	(0.0204)	(0.4583)	(0.4945)
60% disability rating	–0.1703**	–2.0921**	–1.0734*
	(0.0211)	(0.4714)	(0.5088)
70% disability rating	–0.3352**	–2.8170**	–1.5153*
	(0.0261)	(0.6480)	(0.6993)
80% disability rating	–0.4449**	–3.1512**	–1.4696
	(0.0280)	(0.8108)	(0.8750)
90% disability rating	–0.5434**	–3.7542**	–2.1864
	(0.0350)	(1.2788)	(1.3801)
100% disability rating	–0.6645**	–5.1956**	–5.7230**
	(0.0161)	(0.8895)	(0.9599)
Black	–0.0528**	–0.3901	–0.9419**
	(0.0085)	(0.2106)	(0.2273)
Hispanic	–0.0147	–0.7804*	–0.8317*
	(0.0145)	(0.3602)	(0.3888)
Native American	–0.0169	–0.1013	–0.6665
	(0.0203)	(0.5411)	(0.5840)
Asian	–0.0820**	–2.0324**	–2.2955**
	(0.0192)	(0.4479)	(0.4833)
Hawaiian	–0.0247	1.4006	–1.5509
	(0.0753)	(2.0810)	(2.2458)
Female	–0.0182	–0.8658	–1.9759**
	(0.0177)	(0.5083)	(0.5485)
Married	0.0927**	2.0027**	1.3067**
	(0.0085)	(0.2076)	(0.2240)
Married and female	–0.1611**	–1.2969	–2.5884**
	(0.0309)	(0.6857)	(0.7400)
Number of dependents	0.0141**	0.0713	0.2643**
	(0.0024)	(0.0601)	(0.0649)
Age	0.0359**	1.1301**	0.8230**
	(0.0037)	(0.1125)	(0.1214)
Age squared	–0.0005**	–0.0119**	–0.0092**
	(0.0000)	(0.0012)	(0.0013)
Non–high school graduate	–0.0387	0.8226	1.4345*
	(0.0229)	(0.6631)	(0.7156)
Certificate, GED	–0.0051	–1.4423**	–0.6846
	(0.0173)	(0.5167)	(0.5576)

Table 4.1—continued

Variable	All Retirees	Labor Force Participants	
	Labor Force Participation	Weeks Worked	Usual Hours
Completed two years of college	0.0489**	0.1614	0.1334
	(0.0084)	(0.2639)	(0.2848)
Associate's degree	0.0420**	0.6172	0.0933
	(0.0106)	(0.3360)	(0.3627)
Completed four years of college	0.0619**	0.2349	–0.0489
	(0.0085)	(0.2822)	(0.3046)
Bachelor's degree	0.0730**	0.3191	–0.0658
	(0.0086)	(0.2994)	(0.3231)
Completed six years of college	0.0795**	–0.8636*	0.0286
	(0.0102)	(0.3727)	(0.4022)
Professional degree	0.1060**	–0.0007	0.4869
	(0.0076)	(0.2778)	(0.2998)
Constant		47.7162**	42.7041**
		(0.2834)	(0.3058)
Observations	19,251	13,992	13,992
R–squared		0.03	0.03

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

* Statistically significant at the 5% level; ** statistically significant at the 1% level.

NOTE: Robust standard errors are in parentheses. The labor force participation equation is a probit regression and the coefficients reflect changes in the probability of participation with respect to a unit change in each continuous variable and with respect to the omitted group for indicator variables. The omitted reference categories for indicator variables are Not disabled, White non-Hispanic, Male, High school diploma graduate, and Not currently married.

Table 4.1 shows that small disability ratings have little effect on the decision to work (labor market participation), but retirees with severe disabilities are much less likely to work than are comparable other retirees without disabilities. The labor force participation rates of retirees with disability ratings of 10 or 20 percent are not statistically different from those of comparable retirees with no disability. About 85 percent of nondisabled retirees work either full- or part-time, and the model predicts labor force participation rates of about 81 and 82 percent for retirees with 40 and 30 percent disability ratings, respectively. As disability ratings move from moderate to severe,

the labor force participation rates of disabled retirees fall sharply—from to 75 percent for a 50 rating to about 19 percent for a 100 percent rating.

Disability rating has a small effect on weeks worked per year for labor market participants. The results show no significant difference between the weeks worked by retirees with disability ratings of 10–30 percent and those with no disability rating. Ratings of 40 and 50 percent reduce the average weeks worked by only one and two weeks, from 49 to 48 and 47 weeks, respectively. The biggest gap is for those with 100 percent disability, but the results show that even these retirees are likely to work about 44 weeks per year.

The regression for usual hours worked shows that disability rating has little effect on weekly hours for labor market participants. Six of the ten disability coefficients in the "Usual Hours" regression show no statistically significant differences in hours worked by retirees with those ratings on nondisabled retirees. Three significant disability coefficients show reductions of only one or two hours per week from the typical hours of retirees with no disability. The usual weekly hours of retirees with a 100 percent disability is 38 hours, compared with 43 percent for nondisabled retirees.

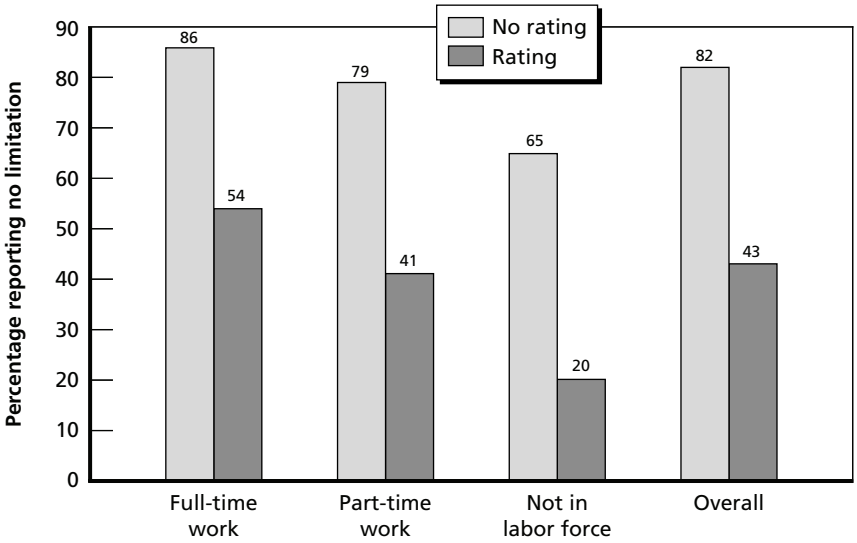
The effects of background and demographic factors in Table 4.1 are consistent with patterns of labor force participation reported in civilian studies (Stern, 1989; Bound et al., 1999; Kreider, 1999a). Black and Asian retirees have significantly lower participation rates than those of white non-Hispanics. Married men have higher labor force participation, weeks, and hours than do single men. In contrast, married women are more weakly attached to the labor market than are single women. Each supply measure is positively associated with the retiree's number of dependents. Older retirees are less likely to work and have fewer weeks and hours than do younger retirees. Finally, better-educated retirees are more likely to work than are less educated retirees, but education level has little effect on how many weeks or hours a retiree works.

The broad picture from Table 4.1 is that disability has a strong effect on labor force participation; however, among individuals who work, disability has a relatively smaller effect on weeks worked, and

little effect on hours worked. These results should be interpreted carefully because they reflect both labor demand and supply issues. The evidence for declining participation with rating may reflect less demand for more severely disabled retirees, but this evidence may also reflect lower supply by these retirees in response either to their inability to work due to their disability or to higher disability compensation. Unfortunately, there is no clear way to fully disentangle these demand and supply effects.

Other evidence from the survey does provide evidence on whether disabilities are limiting the type or amount of work that is available to disabled retirees. Survey respondents were asked whether they had a disability that affects the type or amount of civilian work that they could perform. Figure 4.4 shows that, overall, about 43 percent of retirees with a disability rating report no limitations on their civilian work. About 54 and 41 percent, respectively, of full- and

Figure 4.4
Self-Reported Effects of Disabilities on Type or Amount of Civilian Work for Military Retirees Under Age 62, by Employment Status



SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

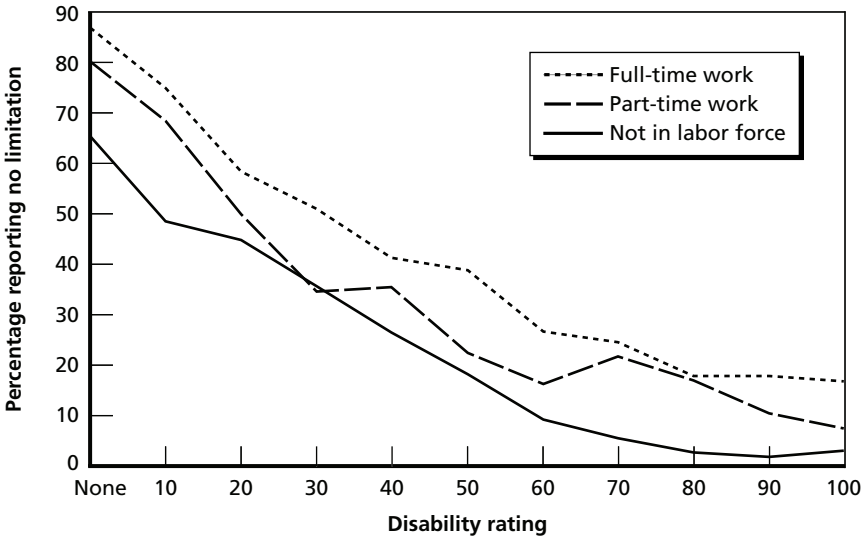
RAND *MG369-4.4*

part-time workers with disability ratings claim that they have no limitation. This is in sharp contrast to the 20 percent of nonworkers with ratings who report no work limitations.

The extent of limitations is much smaller among retirees with no disability rating, but the pattern of limitations by employment status is similar. An interesting result for retirees is that nearly two-thirds of retirees without a disability rating claim that a service-connected disability *does* affect their civilian work situation. This finding is consistent with an underreporting of service-connected disabilities, perhaps because retirees are reluctant to pursue a VA rating when their retirement earnings will offset the disability compensation.

Figure 4.5 shows how the absence of work limitations varies by employment status and disability rating. Many retirees with low rat-

Figure 4.5
Self-Reported Effects of Disability on Type or Amount of Civilian Work for Military Retirees Under Age 62, by Rating and Employment Status



SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).
RAND *MG369-4.5*

ings report no limitations, but severely disabled retirees are likely to report that their disability affects work status.

An important limitation of self-reported disability measures such as the work limitation variable in the SRM is that individuals are prone to overstate their disability to rationalize their labor market outcome (i.e., limited labor force participation or low earnings). Several civilian disability studies (Bound, 1991; Bound et al., 1999; Kreider, 1999a; Bound and Burkhauser, 2001) have used collateral health information in other civilian surveys to show that respondents tend to overstate their work limitations.

Given this likely bias in self-reports, it is particularly surprising that so many disabled retirees report that they have no workplace limitations. An important implication of the evidence is that many disabled retirees have reduced their labor force participation for reasons other than the limitations of their service-connected disability.

Earnings of Full-Time Workers

Methods

The earnings model for full-time workers examines how individual background, demographics, and firm size and type affect civilian earnings. The focus is on whether retiree disabilities depress civilian earnings below the level for comparable other retirees without disabilities. The statistical model is

$$\text{Ln (Earnings}_i) = \beta_1 X_i + \delta R_i + \varepsilon_i, \qquad (1)$$

where the natural logarithm of earnings for the *i*th retiree is modeled as a function of a column vector of observed variables X_i, a row vector of unobserved parameters β_1, a row vector of unobserved disability effects δ, a column vector of disability measures R_i, and an unobserved random error ε_i. The model is estimated in semi-log form as in most standard earnings specifications, because the error in reported earnings is more likely to be proportional to earnings than set at some

absolute level irrespective of earnings (as a simple linear specification would imply).

The X-vector includes measures of the individual's race/ethnicity, gender, age (in quadratic form), and education level. In addition, the vector includes measures of the type of civilian firm where the individual is employed (e.g., nonprofit, federal government, or private), the size of the firm, and the employee's tenure in the firm (in quadratic form). In addition, the models included indicator variables for location-specific fixed effects that may affect earnings differentials across geographic places. The location variables were based on three-digit zip codes of the retiree's home for relatively large places (i.e., a sample size of 50 or more) and the remainder of the state for retirees who did not live in a large three-digit zip code area.[4]

We estimated three different regression specifications of the disability ratings to assess the effects of disabilities on civilian earnings:

1. **Linear model.** This specification used a linear version of the disability rating where zero corresponded to no disability rating and disability rating was expressed in 10 percent increments for retirees who were classified as disabled by either the DoD or the VA.
2. **Linear model with interaction for medical retirees.** The premise of this specification is that medical retirees' disabilities may have a different effect on civilian earnings than those of other retirees. An important difference between the two types of retirees is that medical retirees are specifically discharged because they are judged unfit to perform their military duties whereas nonmedical retirees fulfill their military duties until reaching normal retirement. This difference suggests that perhaps a 30 percent disability for a medical retiree may be more restrictive on civilian labor market productivity than a similar disability for a nonmedical retiree. The model tests whether the average effect of a disability on earnings is different for medical and nonmedical retirees as well as whether

[4] These location effects are intended as control variables to isolate the effects of disability on earnings. The variables were statistically significant, but the specific location effects are not reported in Tables 4.2 and 4.3.

the differential earnings effect varies with the level of the disability.

3. **Grouped model.** This specification allowed for some nonlinearity in how disability ratings affect earnings. The model is more flexible than the linear model, and it may detect effects that are inappropriately constrained by the assumption of linearity.

An important limitation of this approach is that earnings are restricted to full-time workers (i.e., workers who work at least 50 weeks per year and 35 hours per week). This restriction on the sample was premised on the belief that earnings of part-time workers may not be representative of labor market opportunities. The SRM include records for 10,626 retirees who worked full time in the previous year and were less than 62 years old. About 43 percent of the sample have a service-connected disability, and about 7 percent of the retirees had a military medical retirement.

The problem with observing earnings for only a portion of retirees is that the earnings of disabled retirees in the workforce may not be indicative of opportunities available to all disabled workers. In particular, the labor force participation rates for disabled retirees with severe disabilities are much lower than for similar other retirees—only 19 percent of retirees with a 100 percent disability are working. This raises serious questions about whether the injuries of the few severely disabled retirees working full time are truly comparable with those of retirees with similar ratings who are not working. In addition, the few severely disabled retirees who are working may have unique and unmeasured skills that increase their earnings over the prospective earnings of others who are not in the labor force.

A more complex two-equation model could address the issue of labor force participation. The first equation would estimate determinants of labor force participation, and the second equation would look at the earnings of workers adjusting for the selection of workers into the labor force. A broader model still would look at full time, part-time, and nonworking alternatives. This broader model was not pursued in our analysis because there was no reliable variable to identify the model, i.e., there was no compelling case for a variable that

directly affected labor force participation and did not affect civilian earnings.

More-complex quantile regressions were also used to estimate the earnings specifications. Quantile regression is a semi-parametric technique that measures the effects of independent variables on a dependent variable at different points in the conditional distribution of the variable (Buchinsky, 1998). Traditional linear regression is constructed to fit the mean of the conditional distribution of the dependent variable. Buchinsky (1994) used quantile regression to examine the effects of education on earning over different portions of the earnings distribution. His results showed that returns to education showed sharp increases in the 1980s, but the returns were largely concentrated in the upper portion of the wage distribution. They also showed that estimates of returns to education from traditional regression models were oversimplified and perhaps misleading because they masked the fact that the parameter estimates varied considerably over the range of the earnings distribution.

We reestimated the effect of disabilities on earnings using quantile regression to determine whether the estimated effect varies over the range of earnings. The earnings of nonworkers are likely to be more similar to the earnings of workers in the low end of the wage distribution than those in the high end of the wage distribution. Therefore, quantile regression can be used to provide an estimate of the potential earnings of nonworkers if they were to join the labor force. Furthermore, since the ratings measure was based on the ability to perform physical labor, the effect of disability on ratings may be larger on the low end of the wage distribution where jobs are more physically demanding than in the high end of the wage distribution where jobs are likely to be less physically demanding.

Results

The linear regression results in Table 4.2 show that earnings vary little with the disability rating for full-time workers.[5] Specification 1

[5] The descriptive statistics for the regression variables (means and standard deviations) are reported in Appendix Table A.1.

Table 4.2
Log Earnings Regression Specifications for Military Retirees Who Work Full Time

	Specification		
Variable	**(1)**	**(2)**	**(3)**
Disability rating	–0.0010**	–0.0011**	
	(0.0003)	(0.0003)	
Medical retiree		0.0666	
		(0.0607)	
Disability rating and medical retiree		–0.0006	
		(0.0010)	
10–20% disability rating			–0.0275
			(0.0196)
30–50% disability rating			–0.0464**
			(0.0159)
60–90% disability rating			–0.0450*
			(0.0223)
100% disability rating			–0.0861
			(0.0784)
Black	–0.1374**	–0.1368**	–0.1367**
	(0.0238)	(0.0238)	(0.0237)
Hispanic	–0.0576	–0.0573	–0.0577
	(0.0331)	(0.0330)	(0.0331)
Native American	–0.0056	–0.0062	–0.0059
	(0.0416)	(0.0417)	(0.0416)
Asian	–0.0149	–0.0135	–0.0139
	(0.0322)	(0.0322)	(0.0324)
Female	–0.1114**	–0.1116**	–0.1138**
	(0.0428)	(0.0428)	(0.0429)
Married	0.0926**	0.0930**	0.0924**
	(0.0207)	(0.0207)	(0.0207)
Married and female	–0.0879	–0.0881	–0.0884
	(0.0548)	(0.0548)	(0.0548)
Number of dependents	0.0083	0.0085	0.0082
	(0.0059)	(0.0059)	(0.0059)
Age	0.0092	0.0125	0.0092
	(0.0180)	(0.0185)	(0.0180)
Age squared	–0.0002	–0.0002	–0.0002
	(0.0002)	(0.0002)	(0.0002)
Non–high school graduate	0.0281	0.0298	0.0271
	(0.0650)	(0.0645)	(0.0652)
Certificate, GED	–0.0046	–0.0027	–0.0046
	(0.0529)	(0.0529)	(0.0529)
Completed two years of college	0.0908*	0.0920*	0.0913*
	(0.0374)	(0.0375)	(0.0373)
Associate's degree	0.1187**	0.1204**	0.1196**
	(0.0449)	(0.0451)	(0.0448)

Table 4.2—continued

	Specification		
Variable	**(1)**	**(2)**	**(3)**
Completed four years of college	0.2124**	0.2131**	0.2127**
	(0.0372)	(0.0373)	(0.0372)
Bachelor's degree	0.2942**	0.2939**	0.2943**
	(0.0380)	(0.0379)	(0.0380)
Completed six years of college	0.3444**	0.3454**	0.3449**
	(0.0397)	(0.0397)	(0.0397)
Professional degree	0.4653**	0.4662**	0.4660**
	(0.0393)	(0.0393)	(0.0393)
Nonprofit	–0.1782**	–0.1781**	–0.1783**
	(0.0323)	(0.0323)	(0.0323)
Federal	–0.0178	–0.0179	–0.0172
	(0.0199)	(0.0199)	(0.0200)
State	–0.2420**	–0.2416**	–0.2417**
	(0.0190)	(0.0190)	(0.0191)
Local	–0.1471**	–0.1461**	–0.1471**
	(0.0191)	(0.0191)	(0.0191)
Firm, 1–9 employees	–0.4438**	–0.4448**	–0.4444**
	(0.0486)	(0.0487)	(0.0487)
Firm, 10–24 employees	–0.2591**	–0.2607**	–0.2597**
	(0.0368)	(0.0369)	(0.0367)
Firm, 25–99 employees	–0.1904**	–0.1911**	–0.1905**
	(0.0271)	(0.0270)	(0.0271)
Firm, 100–499 employees	–0.0598**	–0.0607**	–0.0601**
	(0.0187)	(0.0186)	(0.0188)
Firm, 500–999 employees	–0.0515*	–0.0525*	–0.0516*
	(0.0262)	(0.0259)	(0.0262)
Tenure at firm	0.0308**	0.0308**	0.0309**
	(0.0049)	(0.0049)	(0.0049)
Tenure squared	–0.0004*	–0.0004*	–0.0004*
	(0.0002)	(0.0002)	(0.0002)
Retired officer	0.2881**	0.2874**	0.2879**
	(0.0213)	(0.0213)	(0.0213)
Working in military-related job	0.1772**	0.1793**	0.1772**
	(0.0152)	(0.0153)	(0.0153)
Constant	10.1297**	10.0382**	10.1344**
	(0.4466)	(0.4639)	(0.4475)
Observations	10,626	10,626	10,626
R–squared	0.28	0.28	0.28

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

* Statistically significant at the 5% level; ** statistically significant at the 1% level.

NOTE: The omitted reference categories for indicator variables are Nonmedical retiree (Specification 2), No disability (Specification 3), White non-Hispanic, Male, High school diploma graduate, For-profit private firm, Firm size at least 1,000, Retired enlisted, and Not working in military-related job.

presents the simple linear model of disability rating. The results show that earnings fall about 1 percent for each 10-percentage-point increase in the disability rating. Retirees with disability ratings of 30, 60, and 100 percent are predicted to earn $50,125, $48,644, and $46,738 per year, respectively, as compared with annual earnings of $51,650 for retirees with no disabilities. These results are conditional on the other factors in the model, so the disability effects reflect a comparison of retirees that are similar in other measured dimensions except for their service-connected disability.

Specification 2 in Table 4.2 shows that medical retirees do not have different labor market earnings than do nonmedical retirees with comparable disabilities, given full-time labor force participation. The main effect of the disability rating is similar to that in Specification 1, and the coefficients on both the medical disability and the interaction term between the disability rating and medical disability are both insignificantly different from zero.

The disability effects in the grouped model (Specification 3 in Table 4.2) also show small declines in earnings for disabled retirees. Earnings loss declines with earnings, but only two of the grouped ratings indicators are significantly different from zero.

We used the Akaike information criterion (AIC) to examine whether the more flexible specifications of the disability ratings improved the fit of the statistical model over the simpler linear specification of disability ratings. The results confirmed the inference from Table 4.2 that neither the linear specification with interaction terms for medical retirees nor the grouped specification was a significant improvement in the explanatory power of the model over the linear specification.

The regression variables other than disability ratings in Table 4.2 are control variables that are intended to adjust for other individual factors that are likely to affect earnings. The effects of these other factors are largely consistent with the results of previous analysis of earnings. Black retirees earn about 14 percent less than white non-Hispanics, but other race/ethnic groups have comparable wages to white non-Hispanics. Single females earn about 11 percent less than single males. Married males earn about 10 percent more than single

men, but the marriage premium vanishes for women. Age has no significant effect on earnings. In many cases, earnings do rise with age because more-experienced workers are more productive. The results show no significant effect of age on earnings, which probably reflects the fact that most of our retirees are mature workers (the average age of full-time workers is 50). It was expected, however, that older workers may earn more (other things equal). As expected, earnings rise rapidly with college training. Earnings differ substantially across types of firms. Other things equal, workers in nonprofit corporations or state and local government earn substantially less than their counterparts working in the private sector or for the federal government. In addition, individual earnings tend to rise with the number of employees working in the firm. Increases in tenure at a firm are associated with higher earnings. Service-connected factors also have a bearing on the civilian earnings of retirees. Officers earn a substantial premium in the civilian workplace compared with retirees who were members of the enlisted force. Finally, retirees who find employment in their military skills tend to earn more than retirees who work in an unrelated area.

How do the earnings losses from disability compare with the disability compensation that disabled retirees receive? The answer is somewhat complex because of the manner in which disability compensation and retired pay interact with one another.[6] Disability compensation is adjusted by three factors.

- **Offset.** Until recently, retirees received the maximum of retired pay or disability compensation, subject to the offset prescribed by sections 5304 and 5305 of Title 38, United States Code. Most retirees were eligible for more retired pay than disability compensation, so the disability compensation did not increase their monthly income from the government at all. Only for large disability ratings did disabled retirees receive "extra" money from disability compensation and then only the difference be-

[6] This discussion is focused on military retirees without a medical retirement. Medical retirees receive different payments, and these are discussed below.

tween retired pay and disability compensation. The premise of the offset was that retired pay fully compensated retirees for their military service (Dye and Macken, 2002).

- **Tax exemption.** When disability compensation is completely offset by retired pay, the retiree still benefits from the tax advantage of disability compensation (which is untaxed by state or the federal government) compared with retired pay (which is taxed). The average marginal state and federal tax rate for the United States in 2003 was 23 percent, so the tax savings from disability compensation are substantial (National Bureau of Economic Research, 2005).[7]
- **Concurrent receipt.** In 2004, Congress revised the treatment of disability compensation and retired pay. The new law phased out the offset provision and allowed nonmedical military retirees with disabilities of 50 percent or more to receive disability compensation over and above their retired pay. This so-called "concurrent receipt" is phased in over 10 years. However, the change is implemented at an accelerated rate, so on average 85 percent of the offset will be gone by January 1, 2009. These concurrent-receipt provisions apply only to nonmedical military retirees with at least 20 years of military service.

Table 4.3 compares the earnings of nondisabled retirees with the earnings and disability compensation of disabled nonmedical retirees who worked full time.[8] It shows that the VA disability compensation

[7] The marginal tax rate depends on the retiree's taxable income, which includes income from wages and salaries for a member and a spouse, as well as income from dividends, interest, and pensions. In the tables below, we computed the marginal tax rate for each retiree and averaged this rate across disability ratings categories. Marginal tax rates are inversely related to disability ratings because earnings, weeks worked, and labor force participation decline with increases in ratings. In addition to the rates reported on the tables, we also used the overall average rate of 23 percent (NBER, 2005). The results were similar to those reported here.

[8] Table 4.3 applies to nonmedical retirees only. Medical retirees are discussed in Table 4.4. The larger earnings losses in the models for all workers (part- and full-time workers) and all retirees (workers and nonworkers combined) reflect the fact that severely disabled retirees are more likely to work fewer weeks or not to participate in the labor market at all.

Table 4.3
Comparison of Nonmedical Retiree Earnings and Disability Compensation for Full-Time Workers, by Disability Rating

Disability Rating (%)	VA Disability Compensation ($)	Marginal Tax Rate (%)	Adjusted Payment ($)	Expected Earnings ($)	Earnings + Adjusted Payment Compared with Nondisabled Retiree ($)
None	0	27.20	0	51,650	NA
10	1,254	27.21	341	51,137	–172 (–0.3)
20	2,405	26.34	634	50,628	–389 (–0.8)
30	4,225	26.59	1,123	50,125	–402 (–0.8)
40	6,133	25.96	1,592	49,626	–432 (–0.8)
50	8,550	26.20	10,790	49,133	8,273 (16.0)
60	12,325	26.12	15,544	48,644	12,539 (24.3)
70	17,340	25.97	21,843	48,161	18,354 (35.5)
80	21,431	25.76	26,952	47,682	22,984 (44.5)
90	23,833	25.38	29,883	47,208	25,440 (49.3)
100	32,627	25.77	41,035	46,738	36,123 (69.9)

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

NOTES: VA disability compensation is based on the average compensation of a retiree in each rating group. The marginal tax rate is based on marginal state and federal income taxes and is averaged across full-time working retirees in each rating group. Adjusted payment is the marginal tax rate, a full offset of disability compensation for ratings less than 50 percent, and concurrent receipt of disability compensation and retired pay for ratings of 50 percent or more. The expected earnings are based on predictions for the average retiree with different levels of disability using the linear regression Specification 1 in Table 4.2. The earnings difference compares the sum of adjusted payments and expected earnings at each rating level with the expected earnings of a nondisabled retiree. Earnings differences are negative for economic losses and positive for economic gains. The numbers in parentheses in Column 6 represent the percentage differences relative to a nondisabled retiree.

in Column 2 is always greater than the reduction in earnings associated with each level of disability in Column 4. For example, at a 30 percent disability rating, the VA payment is $4,225 per year and the earnings gap is only $1,525 per year ($51,650 – $50,125). The story is more complicated than this, however, because the retiree does not receive $4,225 *extra* per year because of the offset and tax exemption provisions of the law. Column 4 in Table 4.3 adjusts for the offset, tax exemption, and concurrent-receipt provisions that govern disabil-

ity compensation. After these adjustments, the earnings and disability compensation of disabled retirees and nondisabled retirees are compared in Column 6. The results show small economic losses for retirees with disabilities in the 10 to 40 percent range. When the concurrent-receipt provisions become effective at a 50 percent rating, the disabled retirees receive substantial economic benefits relative to nondisabled retirees. For example, retirees with ratings of 50 and 100 percent have "extra" benefits of $8,273 and $36,123 per year, respectively. The differences in annual earnings represent earnings losses of about 1 percent for ratings from 10 to 40 percent and earnings gains of 16 to 70 percent for ratings from 50 to 100 percent.

The results in Table 4.3 suggest that disability compensation for retirees who work full time is rather generous. Recall from Chapter Two that the VASRD is designed to provide payments to replace the average earnings loss from a service-connected disability. For all ratings, VA compensation is much greater than the loss, and adjusted payments are also much greater than the earnings losses for retirees with ratings of 50 percent or greater. Two caveats are important to mention. First, these findings are limited to the group of disabled retirees who are full-time workers, and many severely disabled retirees are out of the labor force. The average forgone earnings for all disabled retirees are presumably greater than that for full-time workers. Second, Table 4.3 and the VASRD are focused on earnings loss alone and do not reflect reductions in quality of life, loss of home productivity, or limitations on leisure activities. Payments for these costs may also be warranted, but these costs are not built into the VASRD.

The status of medical retirees (see Table 4.4) is somewhat different from that of other retirees. Earnings losses do not differ significantly between medical and nonmedical retirees, so the expected earnings are the same at each ratings level. As discussed in Chapter Two, medical retirees are given early retired pay. Their monthly retired pay is based on the maximum of their disability rating multiplied by their retired monthly base pay (disability-adjusted pay), or their years of service multiplied by 2.5 times their retired monthly base pay (length-of-service adjusted pay). If their retired pay

Table 4.4
Comparison of Medical Retiree Earnings and Disability Compensation for Full-Time Workers, by Disability Rating

Disability Rating (%)	VA Disability Compensation ($)	Marginal Tax Rate (%)	Payment Not Offset ($)	Adjusted Payment ($)	Expected Earnings ($)	Earnings + Adjusted Payment Compared with Nondisabled Retiree ($)
None	0	27.20		0	51,650	NA
10	1,254	27.21		341	51,137	–172 (–0.3)
20	2,405	26.34		634	50,628	–389 (–0.8)
30	4,225	26.59		1,123	50,125	–402 (–0.8)
40	6,133	25.96		1,592	49,626	–432 (–0.8)
50	8,550	26.20	1,172	3,412	49,133	895 (1.7)
60	12,325	26.12	5,523	8,742	48,644	5,736 (11.1)
70	17,340	25.97	8,182	12,686	48,161	9,196 (17.8)
80	21,431	25.76	11,344	16,865	47,682	12,897 (25)
90	23,833	25.38	12,919	18,969	47,208	14,526 (28.1)
100	32,627	25.77	21,856	30,264	46,738	25,352 (49.1)

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

NOTES: VA disability compensation is based on the average compensation of a retiree in each rating group. Medical retirees receive their compensation from the DoD, but the implicit disability compensation for tax purposes is based on the VASRD. The marginal tax rate is based on marginal state and federal income taxes and is averaged across full-time working retirees in each rating group. The payment not offset is the excess amount of disability compensation over and above the amount of retired pay. Adjusted payment is based the marginal tax rate and the payment not offset. Medical retirees are not eligible for concurrent receipt. The expected earnings are based on predictions for the average retiree with different levels of disability using Specification 1 in Table 4.2. The earnings difference compares the sum of adjusted payments and expected earnings at each rating level with the expected earnings of a nondisabled retiree. Earnings differences are negative for economic losses and positive for economic gains. The numbers in parentheses in Column 7 represent the percentage differences relative to a nondisabled retiree.

is based on the disability adjustment, then it is entirely tax exempt. If their retired pay is based on the length-of-service adjustment, then

only that amount of pay based on the disability adjustment is tax exempt.

Medical retirees differ from nonmedical retirees in two key ways. First, they are not eligible for concurrent receipt. Second, many medical retirees have disability entitlement in excess of their retirement entitlement, so only a portion of their disability compensation is offset. This second factor reflects the fact that medical retirees have served less than 20 years and have considerably lower retired pay than nonmedical retirees. The combination of the tax exemption and non-offset disability compensation is used to adjust the VA payments of medical retirees.

How well are medical retirees doing compared to similar nondisabled retirees? The disability compensation for medical retirees is very similar to that for nonmedical retirees in Table 4.3. The adjustment factor is the offset and tax-exempt status for retirees with less than 50 percent disabilities. At higher ratings, the adjustment factor reflects non-offset disability compensation. A retiree with a 50 percent rating has $895 more per year than a similar nondisabled retiree, and a retiree with a 100 percent rating has $25,352 more per year than a similar nondisabled retiree. In percentage terms, medical retirees with ratings of 10 to 40 percent lose about 1 percent per year, while medical retirees with more-severe disabilities receive earnings differences of up to 49 percent for ratings of 100.

Table 4.5 shows the results of quantile regressions for the linear specification of disability rating, shown in Table 4.2 as Specification 1. We made three estimations, corresponding to the 25th, 50th, and 75th percentiles of the earnings distribution. The results show that the estimated effect of disability rating is not sensitive to the range of the earnings distribution. The coefficient for the disability rating variable ranges from –0.0007 at the 25th percentile of earnings to –0.0008 at the 75th percentile. These effects are not statistically different than one another, and both effects are small.

Table 4.5
Log Earnings Quantile Regression Specifications for Full-Time Workers

	Percentile		
Variable	**25th**	**50th**	**75th**
Disability rating	–0.0007**	–0.0008**	–0.0008**
	(0.0001)	(0.0000)	(0.0001)
Black	–0.1008**	–0.0947**	–0.0956**
	(0.0075)	(0.0037)	(0.0039)
Hispanic	–0.0501**	–0.0507**	–0.0636**
	(0.0121)	(0.0059)	(0.0063)
Native American	–0.0569**	0.0085	0.0083
	(0.0171)	(0.0084)	(0.0090)
Asian	–0.0225	–0.0413**	–0.0580**
	(0.0165)	(0.0083)	(0.0085)
Female	–0.1010**	–0.1204**	–0.1466**
	(0.0160)	(0.0080)	(0.0081)
Married	0.0845**	0.0880**	0.0587**
	(0.0069)	(0.0035)	(0.0036)
Married and female	–0.1181**	–0.0964**	–0.0692**
	(0.0212)	(0.0107)	(0.0109)
Number of dependents	0.0131**	0.0079**	0.0077**
	(0.0020)	(0.0009)	(0.0009)
Age	0.0321**	0.0044	–0.0070**
	(0.0053)	(0.0024)	(0.0023)
Age squared	–0.0004**	–0.0001**	0.0000
	(0.0001)	(0.0000)	(0.0000)
Non–high school graduate	0.0124	–0.0711**	0.0674**
	(0.0219)	(0.0116)	(0.0124)
Certificate, GED	–0.0431*	–0.0519**	0.0012
	(0.0182)	(0.0092)	(0.0094)
Completed two years of college	0.0599**	0.0737**	0.0568**
	(0.0091)	(0.0045)	(0.0047)
Associate's degree	0.1229**	0.1107**	0.1250**
	(0.0113)	(0.0055)	(0.0058)
Completed four years of college	0.1624**	0.1720**	0.1642**
	(0.0096)	(0.0047)	(0.0050)
Bachelor's degree	0.2379**	0.2508**	0.2506**
	(0.0101)	(0.0050)	(0.0054)
Completed six years of college	0.2970**	0.2992**	0.2953**
	(0.0128)	(0.0063)	(0.0066)
Professional degree	0.4087**	0.4114**	0.4061**
	(0.0114)	(0.0056)	(0.0059)
Nonprofit	–0.1851**	–0.1630**	–0.1676**
	(0.0116)	(0.0060)	(0.0063)
Federal	0.0629**	0.0020	–0.0676**
	(0.0068)	(0.0034)	(0.0035)

Table 4.5—continued

Variable	Percentile 25th	50th	75th
State	–0.2122**	–0.2825**	–0.3266**
	(0.0089)	(0.0045)	(0.0047)
Local	–0.1241**	–0.1803**	–0.2257**
	(0.0100)	(0.0049)	(0.0051)
Firm, 1–9 employees	–0.4714**	–0.3687**	–0.3062**
	(0.0131)	(0.0063)	(0.0065)
Firm, 10–24 employees	–0.2697**	–0.2406**	–0.2158**
	(0.0118)	(0.0057)	(0.0059)
Firm, 25–99 employees	–0.1622**	–0.1866**	–0.1985**
	(0.0084)	(0.0042)	(0.0043)
Firm, 100–499 employees	–0.0425**	–0.0774**	–0.0770**
	(0.0069)	(0.0035)	(0.0036)
Firm, 500–999 employees	–0.0060	–0.0599**	–0.0645**
	(0.0092)	(0.0047)	(0.0049)
Tenure at firm	0.0299**	0.0241**	0.0159**
	(0.0015)	(0.0008)	(0.0007)
Tenure squared	–0.0003**	–0.0003**	–0.0001**
	(0.0001)	(0.0000)	(0.0000)
Retired officer	0.2780**	0.2798**	0.2845**
	(0.0090)	(0.0044)	(0.0046)
Working in military-related job	0.1980**	0.1826**	0.1576**
	(0.0052)	(0.0026)	(0.0027)
Constant	9.8681**	10.5214**	11.2259**
	(0.1446)	(0.0669)	(0.0674)
Observations	10,626	10,626	10,626

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

* Statistically significant at the 5% level; ** statistically significant at the 1% level.

NOTES: Robust standard errors are in parentheses. The omitted reference categories for indicator variables are Nonmedical retiree (for the 50th percentile), No disability (for the 75th percentile), White non-Hispanic, Male, High school diploma graduate, For-profit private firm, Firm size at least 1000, Retired enlisted, and Not working in military-related job.

Earnings of Full- and Part-Time Workers

Methods

The earnings model for full-time workers can be expanded to include part-time workers and an adjustment for the number of weeks

worked per year. The revised statistical model is

$$\begin{aligned}\text{Ln(Earnings}_i) = \beta_1 X_i + \delta R_i + \gamma\,\text{Ln(Weeks}_i) \\ + \tau(R_i \times \text{Ln(Weeks}_i)) + \varepsilon_i\end{aligned}, \qquad (2)$$

where β_1, X_i, δ, R_i, and ε_i are defined as before and Ln (Weeks$_i$) is the natural logarithm of the ith retiree's weeks worked last year, γ is a parameter showing how Ln(Weeks$_i$) affects earning, and τ is a parameter showing how the interaction of R_i and Ln(Weeks$_i$) affects Ln(Earnings$_i$). If τ were constrained to be 0, then a value of 1 for γ would indicate that annual earnings were exactly proportional to weeks worked, i.e., the weekly wage rate did not vary with weeks worked. The estimation of the γ parameter without restricting it to 1 allows for the possibility that workers may be penalized for working less than full time by receiving lower weekly wages. The additional parameter τ allows for the possibility that the weekly wage penalty may vary with the extent of a worker's disability, i.e., disabled workers may face a larger penalty for working fewer weeks than do nondisabled workers.

The implicit assumption in this model is that weeks worked per year are exogenous and determined by market opportunities. If so, then the disability effect includes a reduction in the weekly wage rate as well as a reduction in the opportunity to work a full 52 weeks per year. Under this assumption, the model includes part-time workers and adjusts for weeks worked per year. The "Weeks Worked" regressions in Table 4.1 showed that disabled retirees worked fewer weeks per year than nondisabled retirees. Those fewer weeks worked translate into smaller annual earnings for disabled retirees as compared with similar other retirees.

This approach has two key limitations. First, weeks worked may reflect retiree and not just differences in market opportunities. Retirees have substantial income from retired pay, and many may choose a less-demanding work schedule to spend more time with their families or to enjoy leisure activities. Second, a reduction in weeks worked may reflect a variety of other factors rather than a reduction in labor

market opportunities associated with a military disability. As we saw in Figure 4.3, about 41 percent of disabled part-time workers claim that they have no limitation on the type or amount of work they do. This implies that a large portion of these disabled retirees are limiting their labor market activities for reasons other than their disabilities.

Results

Regression Specification 1 in Table 4.6 shows the estimates for Equation 2, where τ (the coefficient on the interaction between the disability rating) and Ln(Weeks) are constrained to 0. The disability rating has a slightly larger effect on Ln(Earnings) for full- and part-time workers combined than Table 4.2 reported for full-time workers separately. The coefficient on Ln(Weeks) is not statistically different from 1, an indication that earnings tend to rise proportionally with weeks worked.

Specification 2 is the more complete specification of Equation 2 that includes the interaction term between the rating and Ln(Weeks). Neither the rating itself nor the interaction is statistically significant in this specification, but a likelihood ratio test comparing the two specifications shows that Specification 2 adds significantly to the explanatory power of the model.

Specification 3 allows the earnings effect of a disability to differ between medical and other retirees. A likelihood ratio test comparing Specifications 2 and 3 indicated that the additional flexibility in Specification 3 did not significantly improve the fit of the statistical model.

The results from Specification 2 show that the effects of rating and weeks depend on the interaction, and this makes the interpretation of the results more complex. The partial rating effect is –0.0012 for the average full-time worker who works 51.87 weeks; –0.0013 for the average full- and part-time worker who works 48.13 weeks; and –0.0017 for a part-time worker with 40 median weeks worked. Thus, the disability effect is larger for individuals who work a smaller number of weeks. The Ln(Weeks) effect also varies with the disability rating. The Ln(Weeks) effect is 0.9905 for no disability, 1.0536 for

Table 4.6
Log Earnings Regression Specifications for Military Retirees Who Work Full or Part Time

	Specification		
Variable	**(1)**	**(2)**	**(3)**
Disability rating	–0.0015**	–0.0095	–0.0076
	(0.0003)	(0.0050)	(0.0062)
Disability rating × Ln (Weeks)		0.0021	0.0016
		(0.0013)	(0.0016)
Medical retiree			–0.3598
			(0.6104)
Medical retiree × Ln (Weeks)			0.0920
			(0.1575)
Ln(Weeks)	1.0307**	0.9905**	0.9884**
	(0.0461)	(0.0614)	(0.0612)
Black	–0.1496**	–0.1499**	–0.1500**
	(0.0258)	(0.0258)	(0.0258)
Hispanic	–0.0489	–0.0491	–0.0495
	(0.0390)	(0.0390)	(0.0389)
Native American	–0.0206	–0.0194	–0.0194
	(0.0415)	(0.0416)	(0.0417)
Asian	–0.0122	–0.0137	–0.0120
	(0.0399)	(0.0395)	(0.0394)
Female	–0.2082**	–0.2073**	–0.2074**
	(0.0588)	(0.0587)	(0.0586)
Married	0.1054**	0.1057**	0.1052**
	(0.0216)	(0.0216)	(0.0217)
Married and female	–0.0834	–0.0832	–0.0821
	(0.0720)	(0.0720)	(0.0719)
Number of dependents	0.0148*	0.0148*	0.0148*
	(0.0061)	(0.0061)	(0.0061)
Age	0.0356*	0.0351*	0.0333*
	(0.0140)	(0.0140)	(0.0147)
Age squared	–0.0005**	–0.0005**	–0.0005**
	(0.0001)	(0.0001)	(0.0002)
Non–high school graduate	0.0668	0.0683	0.0675
	(0.0742)	(0.0739)	(0.0739)
Certificate, GED	0.0214	0.0223	0.0227
	(0.0530)	(0.0530)	(0.0531)
Completed two years of college	0.1211**	0.1220**	0.1219**
	(0.0344)	(0.0343)	(0.0345)
Associate's degree	0.1276**	0.1280**	0.1279**
	(0.0415)	(0.0415)	(0.0416)
Completed four years of college	0.1868**	0.1881**	0.1883**
	(0.0370)	(0.0371)	(0.0371)
Bachelor's degree	0.3021**	0.3029**	0.3033**
	(0.0359)	(0.0359)	(0.0359)
Completed six years of college	0.3602**	0.3601**	0.3598**
	(0.0384)	(0.0384)	(0.0384)
Professional degree	0.4952**	0.4948**	0.4953**
	(0.0395)	(0.0394)	(0.0394)

Table 4.6—continued

	Specification		
Variable	**(1)**	**(2)**	**(3)**
Nonprofit	–0.2221**	–0.2213**	–0.2211**
	(0.0380)	(0.0381)	(0.0381)
Federal	–0.0040	–0.0047	–0.0047
	(0.0220)	(0.0220)	(0.0220)
State	–0.2091**	–0.2092**	–0.2095**
	(0.0239)	(0.0239)	(0.0239)
Local	–0.1981**	–0.1983**	–0.1985**
	(0.0243)	(0.0243)	(0.0243)
Firm, 1–9 employees	–0.5142**	–0.5135**	–0.5137**
	(0.0452)	(0.0453)	(0.0453)
Firm, 10–24 employees	–0.3073**	–0.3068**	-0.3065**
	(0.0362)	(0.0362)	(0.0362)
Firm, 25–99 employees	–0.1713**	–0.1711**	–0.1716**
	(0.0265)	(0.0265)	(0.0265)
Firm, 100–499 employees	–0.1049**	–0.1051**	–0.1051**
	(0.0239)	(0.0240)	(0.0239)
Firm, 500–999 employees	–0.0610*	–0.0608*	–0.0614*
	(0.0264)	(0.0264)	(0.0263)
Tenure at firm	0.0553**	0.0554**	0.0554**
	(0.0050)	(0.0050)	(0.0050)
Tenure squared	–0.0012**	–0.0012**	–0.0012**
	(0.0002)	(0.0002)	(0.0002)
Retired officer	0.2199**	0.2207**	0.2206**
	(0.0247)	(0.0247)	(0.0247)
Working in military-related job	0.2502**	0.2504**	0.2501**
	(0.0161)	(0.0161)	(0.0162)
Constant	5.3147**	5.4803**	5.5378**
	(0.3743)	(0.4008)	(0.4139)
Observations	13,924	13,924	13,924
R-squared	0.39	0.39	0.39

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

* Statistically significant at the 5% level; ** statistically significant at the 1% level.

NOTES: Robust standard errors are in parentheses. The omitted reference categories for indicator variables are Nonmedical retiree (Specification 3), White non-Hispanic, Male, High school diploma graduate, For-profit private firm, Firm size at least 1,000, retired enlisted, and Not working in military-related job.

30 percent disability, 1.1377 for 70 percent disability, and 1.2008 for 100 percent disability. The implication is that earnings rise proportionally with weeks worked for nondisabled and slightly disabled retirees, but earnings of severely disabled retirees rise disproportionally when they work more weeks.

The effects of disability rating on the annual earnings of full- and part-time workers are summarized in Table 4.7.[9] The earnings predictions are based on retirees at each rating working the typical number of weeks for that rating group as derived from the "Weeks Worked" regressions in Table 4.1. By construction, the VA disability payment and the adjusted payment are identical to those in Table 4.3.

The expected earnings are lower than for the full-time workers, because part-time workers work fewer weeks per year than full-time workers. The range of expected earnings across disability ratings is about $11,000 after controlling for the reduced weeks associated with a disability, compared with about $5,000 in Table 4.3 where all workers were working at least 50 weeks. The gap between the earnings of nondisabled and disabled retirees grows considerably for severely disabled retirees, because these individuals are likely to work fewer weeks.

The final column in Table 4.7 shows that adjusted disability compensation does not cover earnings losses for nonmedical retirees with ratings less than 50 percent but the compensation is much greater than earnings losses for disability ratings of 50 percent or more. The results largely mirror those for full-time workers where workers with small disability ratings have small earnings losses. The disability compensation is entirely offset by retirement earnings, however, so the only benefit is the tax-exempt status of disability compensation. This combination leaves retirees with small disabilities with an economic loss relative to their nondisabled counterparts. At the 50 percent rating level and above, retirees receive concurrent retired pay and disability compensation. This "extra" disability compensation is inflated by the tax-exempt status of disability benefits and more than offsets the earnings losses of more severely disabled retirees.

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[9] Table 4.7 is based on nonmedical retirees and does not apply to medical retirees. Medical retirees are discussed separately below (Table 4.8). In the next section we present an earnings model for both working and nonworking retirees. Our results show that severely disabled retirees have higher earnings losses than do either full-time workers or full- and part-time workers combined.

Table 4.7
Comparison of Nonmedical Retiree Earnings and Disability Compensation for Full- and Part-Time Workers, by Disability Rating

Disability Rating (%)	VA Disability Compensation ($)	Marginal Tax Rate (%)	Adjusted Payment ($)	Expected Earnings ($)	Earnings + Adjusted Payment Compared with Nondisabled Retiree ($)
None	0	26.58	0	47,746	NA
10	1,254	26.75	335	47,105	–306 (–0.6)
20	2,405	25.75	619	46,528	–599 (–1.3)
30	4,225	26.05	1,100	45,675	–971 (–2.0)
40	6,133	24.96	1,531	44,219	–1,996 (–4.2)
50	8,550	24.80	10,670	42,885	5,809 (12.2)
60	12,325	24.75	15,375	42,082	9,711 (20.3)
70	17,340	24.07	21,513	40,772	14,539 (30.5)
80	21,431	24.42	26,665	39,861	18,780 (39.3)
90	23,833	23.53	29,440	38,683	20,377 (42.7)
100	32,627	23.67	40,349	36,682	29,285 (61.3)

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

NOTES: VA disability compensation is based on the average compensation of a retiree in each rating group. The marginal tax rate is based on marginal state and federal income taxes and is averaged across full- and part-time working retirees in each rating group. Adjusted payment is based on the marginal tax rate, a full offset of disability compensation for ratings less than 50 percent, and concurrent receipt of disability compensation and retired pay for ratings of 50 percent or more. The expected earnings are based on predictions for the average retiree with different levels of disability using Specification 1 in Table 4.6. The earnings difference compares the sum of adjusted payments and expected earnings at each rating level with the expected earnings of a nondisabled retiree. Earnings differences are negative for economic losses and positive for economic gains.

Two key limitations of the expected earnings estimates in Table 4.7 are important. First, the estimates are conditional on labor force participation. Severely disabled retirees are less likely to be in the labor force, and these retirees may face considerably worse labor market opportunities than do those workers that do participate. There is little evidence in the SRM on what nonworking retirees could have earned if they had joined the labor force. Second, the earnings losses in Table

4.7 assume that a reduction in weeks associated with a disability rating are all attributable to the disability and not to other supply characteristics. Since 40 percent of disabled retirees who work part time report no limits on their civilian work, these week reductions (and the corresponding earnings reductions) overstate the effect of disabilities on market opportunities.

Table 4.8 shows the earnings losses for medical retirees who are full- or part-time workers. Medical retirees receive about the same adjusted disability compensation as nonmedical retirees for ratings less than 50 percent, but non-offset disability compensation for medical retirees is always less than concurrent-receipt compensation for other retirees. The results show that adjusted payments are insufficient to replace earnings loss for smaller disabilities but the payments are substantially larger than earnings loss for severely disabled medical retirees. For working medical retirees, the results show that the adjusted payment begins to exceed the earnings loss at the 60 percent rating, and the earnings gain grows to $18,514 for a medical retiree with a 100 percent disability. Earnings losses are about 1 percent for a 10 percent rating, rising to about 4 percent for a rating of 40 percent. At 50 percent the loss seems to be less because some payment is not offset. At higher ratings, the earnings gains are substantial—ranging from 6 to 38 percent for ratings of 60 and 100, respectively.

Earnings of Workers and Nonworkers

Methods

About 16 and 26 percent of nondisabled and disabled retirees, respectively, are out of the labor force. These nonworkers have no earnings and spend no time working. Higher nonparticipation is potentially an important cost of a service-connected disability. The underlying reasons for nonparticipation are unclear, however, so it is difficult to assess how much of disabled retirees' higher nonparticipation is attributable to their disability. Two factors suggest that nonparticipation does not indicate that an individual has no market opportunities to work.

Table 4.8
Comparison of Medical Retiree Earnings and Disability Compensation for Full- and Part-Time Workers, by Disability Rating

Disability Rating (%)	VA Disability Compensation ($)	Marginal Tax Rate (%)	Payment Not Offset ($)	Adjusted Payment ($)	Expected Earnings ($)	Earnings + Adjusted Payment Compared with Nondisabled Retiree ($)
None	0	26.58		0	47,746	NA
10	1,254	26.75		335	47,105	–306 (–0.6)
20	2,405	25.75		619	46,528	–599 (–1.3)
30	4,225	26.05		1,100	45,675	–971 (–2)
40	6,133	24.96		1,531	44,219	–1,996 (–4.2)
50	8,550	24.80	1,172	3,292	42,885	–1,568 (–3.3)
60	12,325	24.75	5,523	8,573	42,082	2,909 (6.1)
70	17,340	24.07	8,182	12,355	40,772	5,381 (11.3)
80	21,431	24.42	11,344	16,578	39,861	8,693 (18.2)
90	23,833	23.53	12,919	18,526	38,683	9,463 (19.8)
100	32,627	23.67	21,856	29,579	36,682	18,514 (38.8)

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

NOTES: VA disability compensation is based on the average compensation of a retiree in each rating group. Medical retirees receive their compensation from the DoD, but the implicit disability compensation for tax purposes is based on the VASRD. The marginal tax rate is based on marginal state and federal income taxes and is averaged across full- and part-time working retirees in each rating group. The payment not offset is the excess amount of disability compensation over and above the amount of retired pay. Adjusted payment is based the marginal tax rate and the payment not offset. Medical retirees are not eligible for concurrent receipt. The expected earnings are based on predictions for the average retiree with different levels of disability using Specification 1 in Table 4.6. The earnings difference compares the sum of adjusted payments and expected earnings at each rating level with the expected earnings of a nondisabled retiree. Earnings differences are negative for economic losses and positive for economic gains. The numbers in parentheses in Column 7 represent the percentage differences relative to a nondisabled retiree.

- **Value of nonmarket activities.** Individuals divide their time between labor market work and nonmarket activities, such as household activities, leisure, and recreation. These nonmarket activities have some value, and individuals will not work at low wage rates, because the value of these nonmarket activities may

exceed the value of a market activity. We know that nonworkers are often unwilling to work for their market wage, but we don't know how much these workers may have earned had they worked. The value of nonmarket activities may be particularly high for some disabled individuals who have to undergo time-consuming medical treatment.

- **Costs of employment.** Market work involves time and money costs to individuals, and these costs deter involvement in the labor market. Time costs include commuting time for work and transportation time for daycare. Money costs include transportation, the purchase of work clothing, buying extra meals away from home, and child care expenses. For some disabled individuals, these costs may include making special transportation arrangements. These costs suggest that some individuals will reject low-wage offers in the civilian labor market. In addition, some of these costs are fixed and deter individuals from working a few weeks per year.

The value of nonmarket activities and the costs of employment are difficult to measure, and we were unable to incorporate these factors in our analysis of disability compensation.

As a rough indication of how nonparticipation affects disabled retirees, we estimated an earnings model for all retirees, including those who are not participating in the labor market and have no labor market earnings. Earnings for nonworkers are imputed as zero earnings per year. This imputation is a lower bound on what these individuals may have earned if they had worked—presumably, all but the most severely disabled could have earned something in the civilian labor market.

The statistical model for all retirees is

$$\text{Earnings}_i = \beta_2 X_i + \delta R_i + \varepsilon_i \ , \tag{3}$$

where earnings for the ith retiree are modeled as a function of a column vector of observed variables X_i, a row vector of unobserved pa-

rameters β_2, a row vector of unobserved disability effects δ, a column vector of disability measures R_i, and an unobserved random error ε_i. In this model, the disability effects are estimated across all retirees and are not conditional on whether or not the individual participates (or fully participates) in the work force.[10]

Findings

Table 4.9 reports the regression results for a quadratic specification of the rating variable (Specification 1) as well as a more general specification (Specification 2) that allows the disability effect to differ for medical retirees as compared with other retirees. The AIC shows that this more general specification is not a statistically significant improvement over the basic quadratic specification.

Table 4.10 shows the expected earnings loss for nonmedical retirees using Specification 1 in Table 4.9. As expected, the range of earnings across disability ratings in Table 4.10 is much greater than in the results for workers in earlier tables. This reflects the fact that this earnings model incorporates nonparticipation and averages zero earnings for nonworkers with positive earnings for workers. Since labor force participation declines as disability rating increases, the gap between the earnings of nondisabled and disabled workers becomes large for severely disabled.

Table 4.10 also examines how disability compensation compares with the earnings losses for other retirees by disability rating. As before, the VA disability compensation is greater than the earnings loss. For a 30 percent disability, the expected earnings loss is $3,485 as compared with a VA payment of $4,225. For a 100 percent disability, the expected earnings loss is $24,125, and the VA payment is $32,627. The offset, tax-exempt status, and concurrent receipt

[10] As in most statistical models, we are unable to control for all characteristics of individuals, and unobservable factors may distort our results. Various measures of worker quality are included in the regression models. If nondisabled retirees with high ability are in the labor force but disabled retirees with low ability are not, we can adjust for those differences using such factors as education level or officer experience. However, some noncomparability in the two samples may exist because of unmeasured differences between working and nonworking disabled retirees.

Table 4.9
Earnings Regression Specification for All Military Retirees (Zero Earnings Assigned to Nonworkers)

	Specification	
Variable	**(1)**	**(2)**
Disability rating	–62.9980*	–62.1632*
	(25.2835)	(27.6601)
Disability rating squared	–2.0545**	–1.7998**
	(0.2998)	(0.3759)
Medical retiree		–2,185.3262
		(2,043.5565)
Disability rating and medical retiree		–17.7974
		(34.1556)
Black	–6,098.4521**	–6,148.2113**
	(643.6727)	(643.7315)
Hispanic	–2,967.3722**	–2,986.2967**
	(1,093.5517)	(1,093.3832)
Native American	–2,422.7708	–2,412.7370
	(1,542.1682)	(1,541.8495)
Asian	–4,741.8040**	–4,805.1500**
	(1,372.8840)	(1,372.9069)
Female	–7,822.4271**	–7,800.4976**
	(1,424.2186)	(1,424.1340)
Married	8,315.9633**	8,209.8023**
	(603.2952)	(604.1207)
Married and female	–9,164.0573**	–9,202.3033**
	(1,914.7795)	(1,914.5004)
Number of dependents	936.4816**	928.6234**
	(180.8257)	(180.8328)
Age	2,329.4105**	2,130.0317**
	(312.6608)	(321.9913)
Age squared	–26.5248**	–24.6864**
	(3.2291)	(3.3099)
Non–high school graduate	905.2655	885.0802
	(1,787.6072)	(1,787.3477)
Certificate, GED	–3,607.1139*	–3,628.9712*
	(1,453.1119)	(1,452.8285)
Completed two years of college	2,731.6878**	2,638.0085**
	(770.3783)	(770.7918)
Associate's degree	3,960.1726**	3,859.5068**
	(991.7287)	(992.1326)
Completed four years of college	6,290.0691**	6,182.6217**
	(832.9196)	(833.4496)
Bachelor's degree	12,252.8353**	12,206.3465**
	(889.9396)	(889.9031)
Completed six years of college	14,739.1889**	14,616.8005**
	(1,119.7647)	(1,120.2251)

Table 4.9—continued

	Specification	
Variable	**(1)**	**(2)**
Professional degree	30,407.6956**	30,298.6766**
	(844.3188)	(844.8797)
Constant	–22,824.7744**	–17,326.0545*
	(7,529.1031)	(7,805.0816)
Observations	19,093	19,093

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

* Statistically significant at the 5% level; ** statistically significant at the 1% level.

NOTES: Robust standard errors are in parentheses. The omitted reference categories for indicator variables are Nonmedical retiree (Specification 2), White non-Hispanic, Male, and High school diploma graduate.

affect the value of the VA payment to the retiree, however, so the adjusted payment is a better indication of a retiree's economic welfare in each rating group. The earnings difference in Table 4.10 shows that disabled retirees with ratings less than 50 percent are economically worse off compared with nondisabled retirees. The gap ranges from $476 per year for a 10 percent disability to $3,886 for a 40 percent disability. At higher disability ratings, the concurrent-receipt provision of the law provides substantial additional compensation to disabled retirees, and this compensation more than makes up the earnings loss for this retiree group.

The earnings losses are much larger in this model than in the previous models for workers, so the earnings replacement for medical retirees is much lower. Table 4.11 shows that the adjusted disability compensation for a medical retiree with a 30 percent rating is $2,427 less than the earnings loss of a similar nondisabled retiree. At a 100 percent rating, the non-offset disability compensation is about $3,383 greater than the corresponding earnings loss. Medical retirees are undercompensated at all but the 100 percent rating. The earnings loss is about 1 percent for a rating of 10, rising to 11 percent for a rating of 50. At more-severe disabilities, the excess of disability compensation over retired pay tends to largely offset the earnings loss. At

Table 4.10
Comparison of Nonmedical Retiree Earnings and Disability Compensation, by Disability Rating

Disability Rating (%)	VA Disability Compensation ($)	Marginal Tax Rate (%)	Adjusted Payment ($)	Expected Earnings ($)	Earnings + Adjusted Payment Compared with Nondisabled Retiree ($)
None	0	25.83	0	40,612	NA
10	1,254	25.98	326	39,810	–476 (–1.2)
20	2,405	25.33	609	38,649	–1,354 (–3.3)
30	4,225	25.04	1,058	37,127	–2,427 (–6)
40	6,133	24.14	1,480	35,246	–3,886 (–9.6)
50	8,550	23.67	10,574	33,004	2,966 (7.3)
60	12,325	22.90	15,147	30,403	4,938 (12.2)
70	17,340	20.76	20,939	27,441	7,768 (19.1)
80	21,431	20.25	25,771	24,120	9,279 (22.8)
90	23,833	19.14	28,396	20,438	8,222 (20.2)
100	32,627	17.60	38,368	16,397	14,153 (34.9)

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

NOTES: VA disability compensation is based on the average compensation of a retiree in each rating group. The marginal tax rate is based on marginal state and federal income taxes and is averaged across all retirees (working and nonworking) in each rating group. Adjusted payment is based the marginal tax rate, a full offset of disability compensation for ratings less than 50 percent, and concurrent receipt of disability compensation and retired pay for ratings of 50 percent or more. The expected earnings are based on predictions for the average retiree with different levels of disability using Specification 1 in Table 4.2. The earnings difference shown in parentheses in Column 6 compares the sum of adjusted payments and expected earnings at each rating level with the expected earnings of a nondisabled retiree. Earnings differences are negative for economic losses and positive for economic gains.

an 80 percent disability rating, the earnings loss is only 2 percent per year. For this model, medical retirees with a rating of 100 have earnings gains of about 8 percent per year.

An important cautionary note for this model is that the results are sensitive to the assumption that nonworkers have annual earnings of zero. The opportunity cost of retiree time and the costs of employment suggest that many of these retirees would be unwilling to work even if they had civilian labor market opportunities. For example, a retiree may reject an offer of $5,000 per year for full-time em-

Table 4.11
Comparison of Medical Retiree Earnings and Disability Compensation for Participants and Nonparticipants, by Disability Rating

Disability Rating (%)	VA Disability Compensation ($)	Marginal Tax Rate (%)	Payment Not Offset ($)	Adjusted Payment ($)	Expected Earnings ($)	Earnings + Adjusted Payment Compared with Nondisabled Retiree ($)
None	0	25.83		0	40,612	NA
10	1,254	25.98		326	39,810	–476 (–1.2)
20	2,405	25.33		609	38,649	–1,354 (–3.3)
30	4,225	25.04		1,058	37,127	–2,427 (–6)
40	6,133	24.14		1,480	35,246	–3,886 (–9.6)
50	8,550	23.67	1,172	3,196	33,004	–4,412 (–10.9)
60	12,325	22.90	5,523	8,345	30,403	–1,864 (–4.6)
70	17,340	20.76	8,182	11,782	27,441	–1,389 (–3.4)
80	21,431	20.25	11,344	15,684	24,120	–808 (–2)
90	23,833	19.14	12,919	17,481	20,438	–2,693 (–6.6)
100	32,627	17.60	21,856	27,598	16,397	3,383 (8.3)

SOURCE: Computations from data in the 2003 SRM (DMDC, 2004).

NOTES: VA disability compensation is based on the average compensation of a retiree in each rating group. Medical retirees receive their compensation from the DoD, but the implicit disability compensation for tax purposes is based on the VASRD. The marginal tax rate is based on marginal state and federal income taxes and is averaged across all retirees (working and nonworking) in each rating group. The payment not offset is the excess amount of disability compensation over and above the amount of retired pay. Adjusted payment is based on the marginal tax rate and the payment not offset. Medical retirees are not eligible for concurrent receipt. The expected earnings are based on predictions for the average retiree with different levels of disability using the linear regression Specification 1 in Table 4.6. The earnings difference compares the sum of adjusted payments and expected earnings at each rating level with the expected earnings of a nondisabled retiree. Earnings differences are negative for economic losses and positive for economic gains. The numbers in parentheses in Column 7 represent the percentage differences relative to a nondisabled retiree.

ployment because the opportunity costs of their time and the costs of employment exceed this value. If so, and if these lower potential earnings were disability related, then the appropriate earnings loss would be the $40,612 that the retiree would earn without a disability minus the $5,000 that he or she may have earned in the labor market. In this example, the assumption of zero earnings for nonworkers inflates the earnings losses for this type of retiree. We have no measure

of what nonworkers may have earned in the labor market, so we have no evidence on what offers they rejected to stay out of the market.

Summary

Labor market involvement varies considerably with the level of a retiree's disability rating. Our results show that labor force participation rates are much lower for severely disabled retirees than for nondisabled retirees—about 85 percent of nondisabled retirees work, but the participation rates are 10 and 66 percentage points lower for retirees with 50 and 100 percent disability ratings, respectively. Disabilities have a much smaller effect on how much work is performed by labor force participants. The reduction in weeks worked is only two and five weeks for retirees with ratings of 50 and 100 percent, respectively.

The labor market participation of retirees with less-severe disabilities is more similar to that of nondisabled retirees. The median disability rating is 30 percent. At the median, the reduction in labor force participation is only 4 percentage points. Among participants, the weeks and usual hours for retirees with a 30 percent disability are not statistically different from those of nondisabled retirees.

The reasons for not working or reduced work are not clear, but the evidence shows that many retirees are reducing their work for reasons other than their disabilities. The results show that 43 percent of disabled retirees claim that they have no limit on the type or amount of civilian work that they can perform. Even among nonworkers with a disability, 20 percent claim that they have no work limitations. Most severely disabled retirees do report limitations on their work, however.

The earnings models show that earnings losses for disabilities are small for full-time workers and indicate that many disabled retirees, especially those with relatively low levels of disability, are doing well in the civilian labor market. The other two models add first part-time workers and then nonworking retirees. These models show larger earnings losses for disabled retirees. A serious analytic problem for the

models is the lack of information on what part-time or nonworkers may have earned in the labor force. The models for all workers and all retirees implicitly assume that all retirees work as much as possible in the labor market.

The results from all three models show that the VA disability compensation for each disability rating is higher than the corresponding earnings loss. A more complete assessment of the disability compensation examines the extra value of the payment to the individual after adjusting for the combination of the offset, concurrent receipt, and tax-exempt status of disability compensation. On net, these adjustments scale down the payments to retirees with ratings less than 50 percent (disability compensation is mostly offset by retired pay) and scale up the payments to retirees with ratings of 50 percent or greater.

The results show that the adjusted payments for nonmedical retirees are insufficient to compensate retirees with small injuries for their earnings loss. The gap for full-time retirees ranges from $172 to $432 per year for ratings at the 10 and 40 percent levels, respectively. The gap grows to $476 to $3,886 per year if we use the model for all retirees and account for reduced participation of disabled retirees.

More seriously disabled nonmedical retirees receive substantially higher adjusted disability compensation than their estimated earnings loss.[11] Among full-time workers, the net gains are $8,273 per year for a 50 percent disability rating, rising to $36,123 for a 100 percent rating. The magnitude of the gains falls considerably when we consider the results from the model for all retirees including nonparticipants. Then, the net gain is $2,966 per year for a 50 percent disability and $14,153 per year for a 100 percent disability.

Severely disabled medical retirees do not fare nearly as well as other disabled retirees because they are not eligible for concurrent receipt. The disability compensation for medical retirees is linked more directly to member pay and military experience at the time of the injury. Medical retirees make up about 19 percent of all disabled retir-

[11] More specifically, as concurrent receipt becomes effective in the next few years, severely disabled retirees will be overcompensated relative to their earnings loss.

ees. In addition to not being eligible for concurrent receipt, they have lower retired pay than nonmedical retirees because they leave the military at lower ranks and with fewer years of military service. As a result, the disability compensation of medical retirees with disability ratings of 50 and above receive is not fully offset by their retired pay.

For full-time workers, the results show that the adjusted payments to medical retirees with disability ratings of less than 50 percent are slightly lower than their earnings losses. Among more severely disabled medical retirees, the earnings gains for full-time workers range from $5,736 per year at a 50 percent rating to $25,352 per year at a 100 percent rating.

As for nonmedical retirees, the magnitude of the earnings losses for medical retirees rises considerably when we look at the results from the model for all retirees including nonworkers. Medical retirees are undercompensated for their earnings losses in nine of ten ratings categories, with the magnitude of the losses ranging from about 1 to 11 percent of earnings per year.

CHAPTER FIVE

Conclusions and Final Observations

This chapter offers some broad conclusions and analysis based on our findings. It does not attempt to summarize or restate all the key findings because this summary material is provided in the individual chapters. The chapter is divided into four sections: different philosophies of military and civilian disability insurance; labor market outcomes for disabled retirees; managing military disability compensation; and measuring disabilities.

Different Philosophies of Military and Civilian Disability Insurance

Military and civilian disability programs are fundamentally different in philosophy. Civilian programs focus on replacing worker earnings during a period of rehabilitation from an injury, when an individual is unable to work. The programs replace only a portion of earnings (generally about two-thirds of earnings up to a cap) and program benefits end when the individual returns to work.

In contrast, the military continues a member's full pay and benefits if the member is unable to work (indeed, military member continue to accrue vacation days during recovery). If an injured member's condition stabilizes and he or she is unfit to return to duty, then the member will be discharged with a military retirement or a disability severance. In both cases, the disability compensation is unaffected by a member's civilian earnings after leaving the military. In

addition, military disability compensation is paid to many other members who incur injuries during their service that do not cause their separation from the military. Unlike civilian disability payments, veterans' earnings in the civilian sector do not offset their military disability compensation, i.e., the monthly military payments supplement earnings in the marketplace. Whereas civilian disability programs replace earnings, the military program supplements earnings with the implicit assumption that those earnings are depressed as a result of a service-connected injury.

Civilian disability programs are plagued by inadequate incentives for injured workers to return to work. In contrast, military veterans do not face a reduction in military disability compensation if they return to work. The military system is notably more generous than the civilian in paying for short-term work loss.

Both military and civilian disability systems are facing substantial program growth, since the rates of disability are rising rapidly. The increase in disability rates for military retirees—from 37 percent of the 1971 cohort to 57 percent of the 2001 cohort—portends a higher disability compensation liability for years to come. Unlike civilian disability payments, military disability compensation continues for life, so the higher rates in recent cohorts will translate into higher expenditures well into the future.

A key issue is why military disability rates are rising across cohorts. If the higher disability rates reflect a rise in injury rates, then the higher cost may be necessary to recruit and maintain a high quality military force. Alternatively, if the injury standards are implicitly becoming more lax, then the higher disability rates will increase costs while providing little benefit to the military.

Labor Market Outcomes for Disabled Retirees

The comparisons of labor market outcomes for military retirees show that disabled retirees are less likely to work, work fewer weeks per year, and earn less than their counterparts without disabilities. The magnitudes of these differences depend critically on two factors. First,

the gaps are large for severe disabilities, but they are not large for disabilities with ratings less than 50 percent. About 71 percent of disabled retirees have disability ratings in this range. Second, the earnings losses from disability are sensitive to what assumptions are made about why retirees work less or not at all. We cannot fully ascertain the reasons for reduced participation, but the losses are certainly higher if all the reduced participation is attributed to disability-related causes.

The comparison of earnings loss under a variety of assumptions shows that disability compensation is adequate. The VA disability compensation schedule is designed to reflect civilian earnings losses. The results from the earnings models show that the schedule compensation is systematically higher than the earnings loss for each rating. The story becomes more complicated if the focus is on how much extra income the retiree receives. The value of the VA compensation is affected by the offset against retired pay, the tax-exempt status of the receipt, and the phasing-in of concurrent receipt for retirees with disabilities of 50 percent or greater. With these adjustments, the results show that retirees with disability ratings less than 50 receive slightly less than their earnings losses, and retirees with larger disabilities will be substantially overcompensated as the concurrent-receipt provisions are phased in. Disability compensation formulas work somewhat differently for medical retirees, but the overall pattern of earnings replacement is similar.

The labor market analysis has two limitations. First, the analysis is limited to military retirees. Similar data are not currently available for nonretiree veteran groups (the severance disability and other disabled veteran groups), but such an analysis would be useful to further clarify the adequacy of military disability compensation programs. Second, this analysis looks at labor market outcomes of retirees several years after they have left the military and have adjusted to civilian labor markets. Service-connected disabilities may have consequence for how quickly retirees and other veterans find civilian work and their earnings at these initial civilian jobs.

Managing Military Disability Compensation

In our view, the military disability system has become unduly complex. The DoD and the VA evaluate injuries by slightly different criteria. In addition, the compensation associated with a service-connected disability is based on a combination of retired military pay, the VA disability compensation schedule, and the offset against military retired pay. These complexities mean that it is difficult to assess why a member has received a given disability rating and harder still to assess how this disability rating translates into some incremental monthly income.

A more coherent system is needed that identifies the criterion for measuring the economic loss from an injury. Should it be civilian earnings, quality of life, or some other criterion? In addition, the disability compensation should be clearly specified as some specific payment (in lump sum or monthly) that compensates for the effects of the disability. The current system confounds retiree pay with disability compensation in formulas that make it difficult to separate what payment is associated with the disability.

Measuring Disabilities

An important issue for both military and civilian disability systems is whether the current criteria for assessing disabilities are valid. Both systems are tied to historical medical decisions about the ability to perform in a workplace that is much different than the modern workplace. The military disability rating system was developed in 1945 and is based on the ability to perform physical tasks. The demand for physical tasks is limited in today's service- and knowledge-based economy.

The DoD and the VA should investigate whether the current ratings system adequately reflects how disabilities affect a member's earning potential in the civilian sector. Among working-age retirees under age 62, we find that about 74 percent of disabled retirees work full or part time and have small earnings losses compared with non-

disabled retirees. This finding suggests that many disabilities may greatly limit an individual's ability to perform physical tasks without substantially affecting the individual's civilian earnings at all. The evidence that many retirees with a VA disability rating self-report that they have no health or disability problem that limits the type or amount of work they provide in the civilian labor market reinforces our concerns that the VASRD is not working appropriately. Designing a new rating system is certainly a challenging task, but the current system does not seem adequate to deal with the dramatic changes in the workplace that have occurred in the past 60 years.

APPENDIX

Descriptive Statistics for Regression Variables in Chapter Four

Table A.1
Means and Standard Deviations for Full-Time Workers

Variable	Mean	Standard Deviation
Ln (Earnings)	10.6575	0.7133
Disability rating	12.3295	19.3980
Medical retiree	0.0561	0.2301
Disability rating × medical retiree	2.1070	11.0165
10–20% disability rating	0.2222	0.4157
30–50% disability rating	0.1543	0.3613
60–90% disability rating	0.0454	0.2082
100% disability rating	0.0050	0.0703
Black	0.1488	0.3559
Hispanic	0.0418	0.2001
Native	0.0195	0.1383
Asian	0.0243	0.1541
Female	0.0437	0.2044
Married	0.8304	0.3753
Married and female	0.0232	0.1505
Number of dependents	0.9521	1.3404
Age	49.8869	6.4756
Age squared	2530.6360	636.8115
Non–high school graduate	0.0144	0.1190
Certificate, GED	0.0229	0.1494
Completed two years of college	0.2253	0.4178
Associate's degree	0.0849	0.2788

Table A.1—continued

Variable	Mean	Standard Deviation
Completed four years of college	0.1620	0.3684
Bachelor's degree	0.1266	0.3325
Completed six years of college	0.0575	0.2328
Professional degree	0.1860	0.3892
Nonprofit	0.0386	0.1926
Federal	0.1929	0.3946
State	0.0838	0.2771
Local	0.0663	0.2489
Firm, 1–9 employees	0.0407	0.1975
Firm, 10–24 employees	0.0501	0.2182
Firm, 25–99 employees	0.0988	0.2984
Firm, 100–499 employees	0.1581	0.3649
Firm, 500–999 employees	0.0756	0.2644
Tenure at firm	6.8804	5.2171
Tenure squared	74.5544	115.6137
Retired officer	0.1858	0.3890
Working in military-related job	0.6384	0.4805

Table A.2
Means and Standard Deviations for Full- and Part-Time Workers, All Labor Force Participants

Variable	Mean	Standard Deviation
Ln (Earnings)	10.4581	0.9426
Disability rating	13.3362	20.5093
Disability rating × Ln (Weeks)	50.7643	77.9054
Ln Weeks	3.8472	0.3079
Black	0.1580	0.3647
Hispanic	0.0457	0.2088
Native	0.0199	0.1398
Asian	0.0299	0.1703
Female	0.0524	0.2228
Married	0.8112	0.3913
Married and female	0.0269	0.1618

Table A.2—continued

Variable	Mean	Standard Deviation
Number of dependents	0.9416	1.3439
Age	49.8221	6.7384
Age squared	2527.6470	655.7858
Non–high school graduate	0.0143	0.1186
Certificate, GED	0.0254	0.1573
Completed two years of college	0.2215	0.4153
Associate's degree	0.0822	0.2746
Completed four years of college	0.1597	0.3664
Bachelor's degree	0.1251	0.3309
Completed six years of college	0.0598	0.2372
Professional degree	0.1849	0.3882
Nonprofit	0.0401	0.1961
Federal	0.1759	0.3807
State	0.0803	0.2718
Local	0.0716	0.2579
Firm, 1–9 employees	0.0521	0.2223
Firm, 10–24 employees	0.0597	0.2369
Firm, 25–99 employees	0.1055	0.3072
Firm, 100–499 employees	0.1617	0.3682
Firm, 500–999 employees	0.0766	0.2659
Tenure at firm	6.4322	5.2447
Tenure squared	68.8782	113.0408
Retired officer	0.1843	0.3877
Working in military-related job	0.6056	0.4887

Table A.3
Means and Standard Deviations for All Retirees

Variable	Mean	Standard Deviation
Earnings (zero for nonworkers)	37505.5800	35419.3300
Weeks per year (zero for nonworkers)	39.3269	20.4946
Usual weekly hours (zero for nonworkers)	34.6759	18.9466
10% disability rating	0.1283	0.3344
20% disability rating	0.0783	0.2686
30% disability rating	0.0715	0.2577
40% disability rating	0.0575	0.2327
50% disability rating	0.0292	0.1684
60% disability rating	0.0307	0.1725
70% disability rating	0.0211	0.1436
80% disability rating	0.0166	0.1277
90% disability rating	0.0088	0.0936
100% disability rating	0.0322	0.1764
Black	0.1692	0.3749
Hispanic	0.0464	0.2104
Native American	0.0217	0.1457
Asian	0.0320	0.1760
Female	0.0610	0.2393
Married	0.7877	0.4089
Married and female	0.0314	0.1743
Number of dependents	0.8871	1.3423
Age	50.0953	6.9926
Age squared	2558.4340	679.2230
Non–high school graduate	0.0181	0.1334
Certificate, GED	0.0293	0.1686
Completed two years of college	0.2217	0.4154
Associate's degree	0.0826	0.2753
Completed four years of college	0.1572	0.3640
Bachelors degree	0.1216	0.3269
Completed six years of college	0.0578	0.2333
Professional degree	0.1695	0.3752

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