

# **Canada Pension Plan Experience Study of Disability Beneficiaries**

ACTUARIAL STUDY NO. 1

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## **Foreword**

The dynamics of the Canada Pension Plan (CPP) disability program over the years have been shaped by economic activity, legislative and administrative changes, demographic shifts and variation in causes of morbidity. This paper examines historical data with regard to the CPP disability beneficiary population. Trends in disability incidence by causes of morbidity are discussed, as are the trends in termination of disability benefits.

This paper also identifies the principal factors that have influenced the costs of the CPP disability program during the 1990's. The principal factors have been the implementation of new medical adjudication guidelines in 1995 determining medical eligibility and the new eligibility rules that were part of the amendments to the CPP in 1998.

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## I. Background

The CPP, which began in 1966, provides benefits to contributors and their families. The CPP covers employed and self-employed persons between the ages of 18 and 70 who have more than a minimum level of earnings in a calendar year. The Plan operates in every Canadian province and territory, except Quebec, which operates a similar pension plan, the Quebec Pension Plan (QPP). The benefits and provisions under the CPP include retirement, disability, survivor and death benefits, as well as services under the CPP national vocational rehabilitation program. Benefits are increased each year in January to reflect increases in the average cost of living, as measured by the Consumer Price Index.

CPP disability pensions first became payable in February 1970 provided that someone had met the minimum contributory requirements for eligibility of this benefit and met the definition for being disabled. At the inception of the plan, the minimum contributory requirements for entitlement to the disability benefit depended on the number of years of contributions. Contributions were required for five of the last ten calendar years preceding disablement, provided that contributions had been made for one-third of the years in the contributory period.

Today, disability pensions are available to most members of the labour force provided that they have made contributions in four of the last six years with earnings greater than or equal to 10% of the Year's Maximum Pensionable Earnings (YMPE).

The CPP disability program is the largest such program in Canada. It is generally the first payor of disability benefits in relation to other entities such as provincial workers' compensation boards and private insurance companies. In December 2001, about 279,000 persons received CPP disability benefits. The number of disability beneficiaries is expected to decrease slightly over the next few years mainly due to the fact that there has been a steady decrease in new beneficiaries being put in pay and a continuing high level of beneficiaries leaving the disability program.

For calendar year 2001, the CPP expenditures related to disability benefits were of \$2.6 billion. In comparison to the other benefits paid by the CPP, the disability expenditures have leveled-off in recent years. From 1994 to 2001, the percentage of total benefits paid for disability decreased from 17% to 13%. This trend confirms the effectiveness of the comprehensive measures that have been implemented since 1995. These measures have taken place at all points in the system – initial applications; appeals; reassessments; vocational rehabilitation; adoption of new guidelines in 1995 for determining medical eligibility which removed consideration for socio-economic factors as part of the adjudication process; changes in the eligibility rules; communications with clients and various pilot projects on return to work initiatives.

**A. Level of Benefit**

In 2002 the prevailing maximum monthly disability benefit is \$956.05 while the maximum monthly retirement benefit is \$788.75. While the retirement benefit is set at 25 percent of average adjusted earnings, the disability benefit is made of two components, a flat-rate component of \$364.49 and 75 percent of the retirement benefit. Children of disabled beneficiaries also receive a monthly benefit of \$183.77. The disability benefit automatically converts to a retirement pension at age 65.

**B. Eligibility Criteria**

After the onset of a severe and prolonged physical or mental impairment, a worker between the age of 18 and 64 may become entitled to a monthly disability benefit under the CPP provided he or she:

- Meets the definition of disability set forth in the CPP Act;
- Has filed an application for CPP disability benefit;
- Satisfies the minimum contributory requirements of the Act;
- Has completed a 4-month waiting period; and
- Is not receiving a CPP retirement benefit.

**C. Definition of Disability**

As defined under CPP legislation, the disability must be severe and be a prolonged mental or physical disability. A disability is severe if due to the disability the disabled applicant is incapable regularly of pursuing any substantially gainful occupation. A disability is prolonged only if it is likely to be of long continued and of indefinite duration or is likely to result in death.

**D. Minimum Contributory Requirements**

Since January 1, 1998, stricter contributory requirements are now applicable. The current minimum requirements are that a disabled applicant must have contributed in four of the last six years. In addition, earnings for each of those four years must be at least 10 per cent of the YMPE. In 2002, the YMPE is \$39,100.

## II. Experience of Disability Cases in Payment

The number of disability cases in payment at the end of any given year is a function of the number of disability cases in payment at the end of the previous year, increased by the number of new disability entitlements during the year and decreased by the number of terminations, which have occurred during that year.

### A. Analysis by Age

Disability beneficiaries are on average younger now than they were in the past. Table 1 shows that for the years 1980, 1990 and 2000, there has been an increase in the proportion of disability recipients for the age-group of 40-54 and a corresponding decrease in recipients in the age-group of 55 and older. Table 7 in Appendix A provides more detailed information on beneficiaries by age-group for the period from 1980 to 2000.

**Table 1 Distribution of Beneficiaries by Age-Group - Both Sexes**

Year	Age-group		
	Under 40	40-54	55 or Older
1980	5%	24%	72%
1990	8%	27%	65%
2000	8%	39%	53%

### B. Analysis by Cause of Morbidity

An important fact related to disablement is that the various causes of morbidity affect males and females in different ways. The disability program has experienced, especially in recent years, important sex distinct differences in the distribution of disability beneficiaries by cause of morbidity as classified under the International Classification of Disease (ICD).

Table 2 presents the distribution by cause of morbidity for disability beneficiaries in payment at the end of 1980, 1990 and 2000. Table 8 and Table 9 in Appendix A provide more information by cause of morbidity for the period from 1980 to 2000.

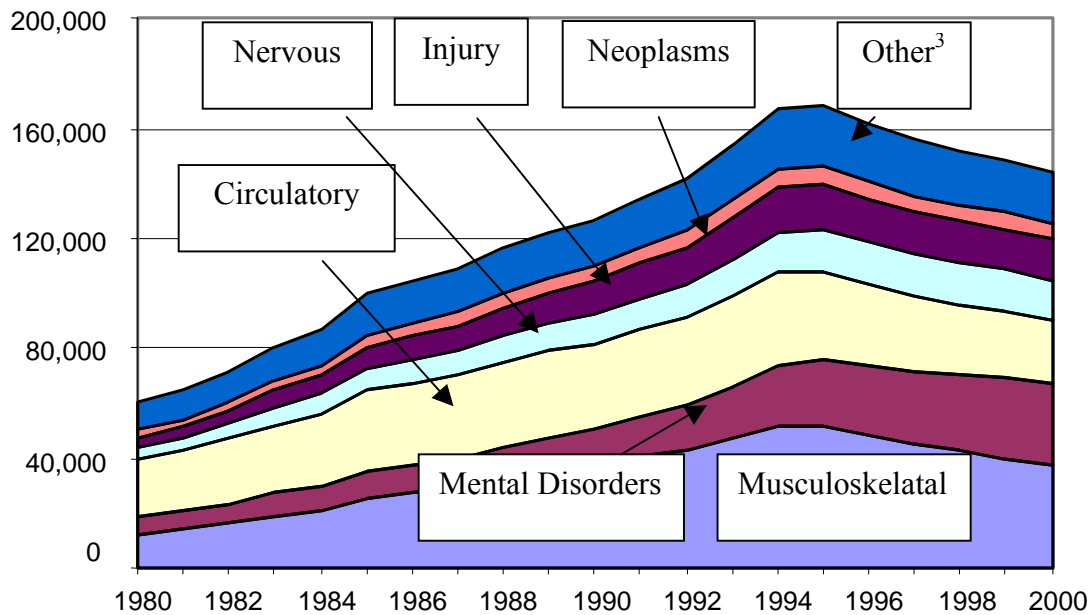


**Table 2 Distribution of Beneficiaries by Causes of Morbidity - Both Sexes<sup>1</sup>**

Causes of Morbidity	1980	1990	2000
<b>Musculoskeletal system</b>	24%	32%	29%
<b>Mental disorders</b>	11%	12%	23%
<b>Circulatory system</b>	31%	21%	12%
<b>Nervous system and sense organs</b>	8%	9%	11%
<b>Injury and poisoning</b>	5%	8%	8%
<b>Neoplasms</b>	5%	5%	5%
<b>Other</b>	16%	13%	12%

Graphs 1 and 2 present the evolution of the number of disability beneficiaries from 1980 to 2000 for males and females respectively. Each of these graphs shows the proportion of the main causes of morbidity for the disabled cases in payment at the end of each year.

**Graph 1 Evolution of Disability Beneficiaries by Causes of Morbidity-Males<sup>2</sup>**

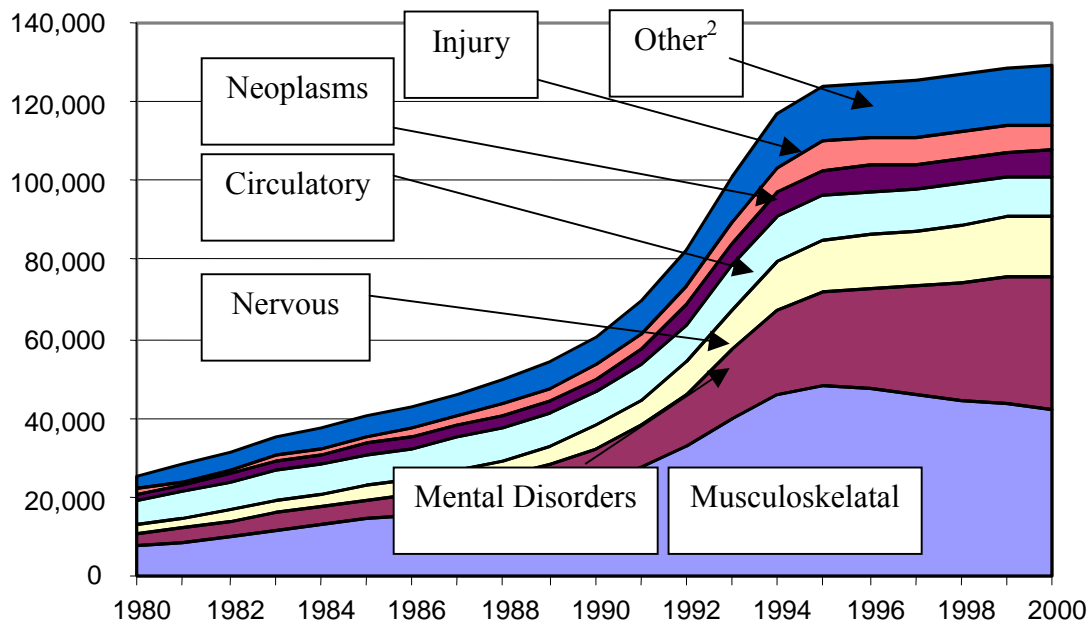


<sup>1</sup> Data was derived from the corresponding December Master Benefit File maintained by the plan administrator Human Resources and Development Canada (HRDC).

<sup>2</sup> Does not include benefits paid by the supplementary cheques system nor under international agreements on social security.

<sup>3</sup> The other category includes also the Respiratory, Endocrine and Digestive ICD categories.

**Graph 2 Evolution of Disability Beneficiaries by Causes of Morbidity-Females<sup>1</sup>**



### **Musculoskeletal system and connective tissue**

As shown in Table 2, the main cause of morbidity in 2000 amongst disability beneficiaries is the musculoskeletal system and connective tissue category. It represented 29% of disability beneficiaries at the end of year 2000. This category is more prominent at the older ages. It encompasses back related problems and cases afflicted by fibromyalgia. On a sex-distinct basis, there is a higher proportion of females (33%) with this impairment than males (26%). If a secondary medical condition is identified, the proportions are even higher (females 36% and males 28%). Even though it is still the most important cause of morbidity, it has slightly decreased in importance as it represented 32% of benefits in payment in 1990.

### **Mental disorders**

In recent years there has been a sharp increase in this cause of morbidity. Mental disorders ranked second as it affected 23% of disability beneficiaries in 2000 as opposed to 12% in 1990. Among younger beneficiaries, mental disorders represent the most prominent cause of morbidity. On a sex-distinct basis, there is

<sup>1</sup> Does not include benefits paid by the supplementary cheques system nor under international agreements on social security.

<sup>2</sup> The other category includes also the Respiratory, Endocrine and Digestive ICD categories.

a higher proportion of females (25%) with this impairment than males (20%). The existence of a secondary medical condition does not seem to affect the prominence of this condition.

### **Circulatory system**

Circulatory system disorders represent 12% of disability beneficiaries in 2000 as opposed to 31% in 1980 when it was the main cause of morbidity amongst disability beneficiaries. This condition becomes more important amongst older disabled cases. On a sex-distinct basis, there is a significantly higher proportion of males (16%) than females (8%) with this impairment. The presence of a secondary medical condition shows a slight increase in the proportion of males only.

### **Neoplasms**

Neoplasms (i.e. cancer related cause of morbidity) affected 5% of all disability beneficiaries in 2000. As expected, older disabled tend to be more afflicted. An interesting point related to this condition is the fact that the average duration of payment for neoplasms cases is much lower than for the other causes of morbidity. This would explain the low proportion of cases in payment in relation to the proportion of new emerging cases. The shorter average duration of payment is attributed to the fact that neoplasms is the leading cause of death among CPP disability beneficiaries. For those who survive this disablement, the level of recovery is superior as compared to other causes of morbidity.

### **III. Experience of Disability Incidence**

Many factors affect the number of disability claims filed as well as the subsequent decisions to either allow or deny benefits. However, the impact of any one factor is difficult to evaluate. Below is a list of some of the leading determinants which may have an impact on both the number of claims filed and the rate of favorable determinations:

- legislative changes to the program;
- changes in the impairment listings;
- changes in medical evidentiary requirements and diagnostic trends;
- actions to increase program awareness and encouragement of enrollment;
- strength of national and regional economies;
- employment shifts – historically, the level of female labour force participation has affected programme growth and volatility;
- changes in the nature of work – the level of part-time or temporary work can impact disability insured status; and
- demographic shifts – the aging of the baby-boom is expected to have a significant impact on program growth.

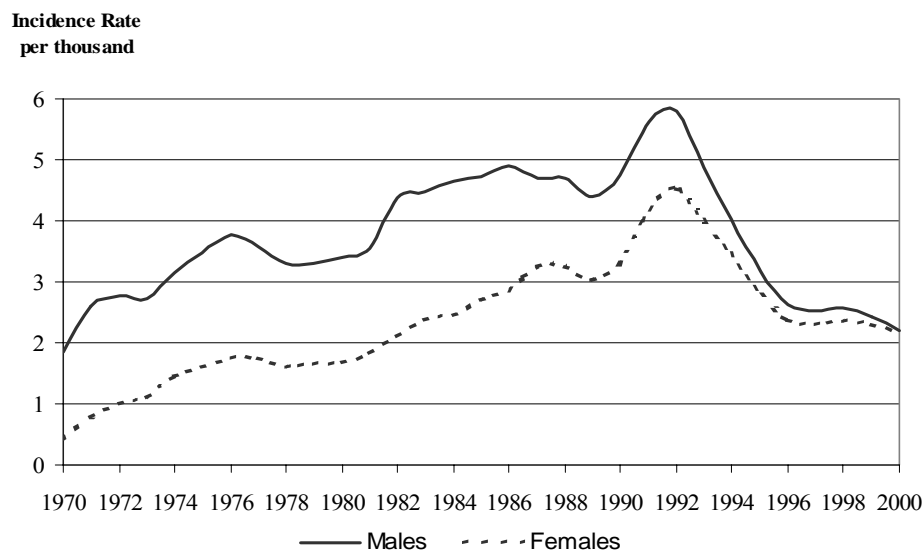
#### **A. Trend in Disability Incidence Rates**

Since the commencement of the payout of disability benefits in February 1970, the disability program has been subject to many factors. The amendments made in 1998 and the implementation of new guidelines in 1995 for determining medical eligibility have been very influential on disability incidence rates. Until 1990, the number of new emerging disability benefits had grown moderately. Throughout the early 1990s, the disability program experienced substantial increases in cost, mainly the result of significant growth in incidence.

Coinciding with the economic recession of the early 1990s, the number of new disability benefits grew sharply attaining a peak of close to 60,000 in that period. This number of new benefits corresponds to an overall combined gender incidence rate of over 5 per thousand (approximately 5.8 for males and 4.5 for females). The gross disability incidence rates are obtained by taking the ratio of the number of new cases to the population meeting the eligibility criteria less those already in receipt of a CPP retirement benefit.

Graph 3 shows a sharp downward trend in disability incidence in recent years. Many factors have contributed in reducing incidence, among them, strong economic growth associated with low levels of unemployment; leveling off of female labour force participation; a decline in HIV-related impairments and the use of more current medical guidelines and higher minimum contributory eligibility requirements. In addition, advancements in medical treatments, pursuits of financial goals for retirement may have provided incentive to remain in the labour force. These factors have contributed to the significant decline in new emerging cases over the last several years.

**Graph 3 Disability Incidence Rates**



One of the main peculiarity that was noted is the important narrowing of the gap between male and female incidence rates. For the period of 1996 to 1998 this gap was on average at about 0.25 per thousand as compared to an average gap of 1.75 from 1970 to 1992.

As shown previously for disability cases in payment, new emerging disability cases are also younger now than they were in the past. Table 3 shows that for the years 1970, 1980, 1990 and 2000, there has been an increase in the proportion of new emerging CPP disability recipients for the ages under 54 and a corresponding decrease in recipients in the age-group of 55 and older. This change is partly attributed to the increasing participation of women in the labour force. Table 10 in Appendix A provides more detailed information for the period from 1970 to 2000.

**Table 3 Distribution of New Disability Beneficiaries by Age-Group - Both Sexes**

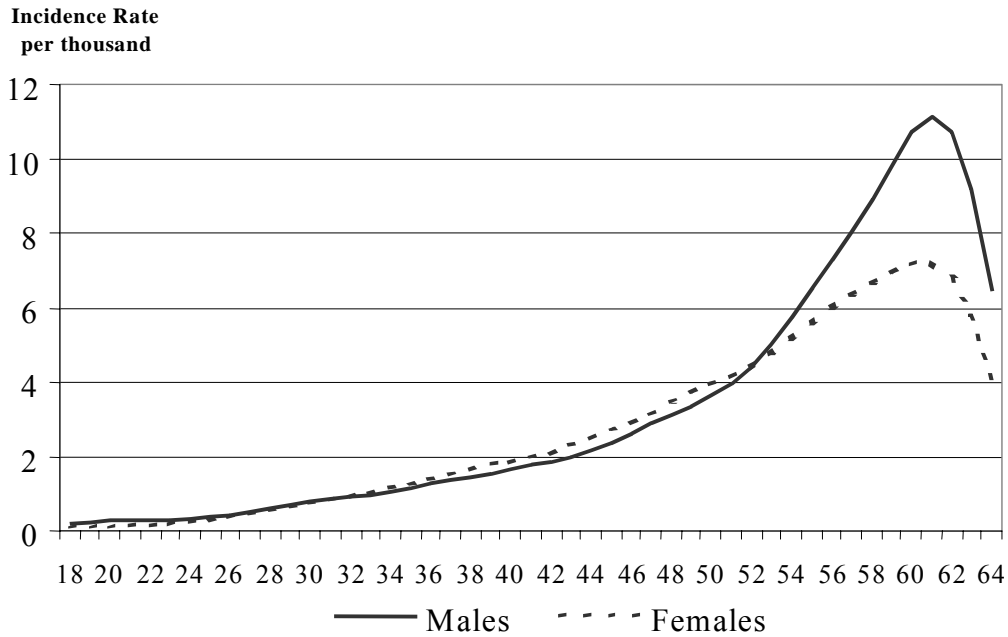
Year	Age-group		
	Under 40	40-54	55 or Older
1970	5%	29%	66%
1980	9%	28%	63%
1990	14%	37%	49%
2000	13%	45%	42%

**B. Age-Specific Disability Incidence Rates**

It can be seen from Graph 4 that the highest incidence rates occur from ages 50 to 64. The probability of being disabled increases naturally with advancing age. This may be due to the general level of health of the disabled as well as to considerations given to vocational factors such as age, education, and job skills. The decrease in incidence rates for those in the group aged 60 and over can be attributed to early retirement.

The fact that disability incidence rates increase with age is expected to have a significant impact on future program cost as the baby-boom generation progresses toward ages of higher incidence.

**Graph 4 Age-Specific Disability Incidence Rates in 1998**



Female disability incidence is usually lower than males particularly after age 50. Trends that might influence female incidence include a varying degree of labour force participation and the effect of insured status; and greater potential for part-time work. However, as mentioned earlier the gap between male and female incidence has been narrowing down in recent years.

### C. Causes of Morbidity for New Emerging Disabled Cases

Table 4 presents the percentage distribution by causes of morbidity for new emerging disability cases of 1980, 1990 and 1998. Table 11 in Appendix A provides detailed information for the period from 1970 to 1998.

**Table 4 Distribution of New Emerging Disability Beneficiaries by Causes of Morbidity - Both Sexes**

Causes of morbidity	1980	1990	1998
<b>Mental disorders</b>	8%	11%	21%
<b>Neoplasms</b>	14%	12%	21%
<b>Musculoskeletal system</b>	23%	33%	18%
<b>Circulatory system</b>	29%	17%	13%
<b>Nervous system and sense organs</b>	6%	7%	10%
<b>Injury and poisoning</b>	5%	7%	4%
<b>Other</b>	15%	12%	13%

#### **Mental disorders**

In recent years, the mental disorders category has been the leading cause of morbidity amongst new disability cases. At the younger ages it is the predominant cause of disablement. The 1998 incidence rates for this disablement are almost two times the incidence rates of 1990.

#### **Neoplasms**

Neoplasms in recent years have gained significantly in importance as a cause of disability.

#### **Musculoskeletal system and connective tissue**

This cause of disablement was the leading cause of morbidity amongst new disability cases in 1990. In 1998, it was still an important cause of disablement, representing 18% of new CPP disability cases.

#### **Circulatory system**

This cause of disablement was the leading cause of morbidity amongst new disability cases in 1980. In 1998, it represented 13% of new disability cases. Older disabled males are more prone to be afflicted.

## **IV. Experience of Disability Benefit Termination**

Many variables can affect the rate at which disability beneficiaries are terminated, including:

- the nature of the disabling condition;
- the changes in regulations that affect the eligibility requirements;
- the vocational rehabilitation support;
- the reassessment activity; and
- the denial rate in the appeal process.

The reasons for termination of disability benefits are:

- death;
- recovery – beneficiary no longer meets the standards defining disability; and
- attainment of age 65 – the disability benefit is converted to a retirement benefit upon attainment of the normal retirement age (currently 65).

Most terminations occur as a result of deaths or attainment of age 65. Recovery is the most volatile termination category, being subject to many factors. Disability recovery may occur when the beneficiary notifies the CPP of improved health, demonstrates the ability to return to work, or is judged to no longer meet the definition of disability.

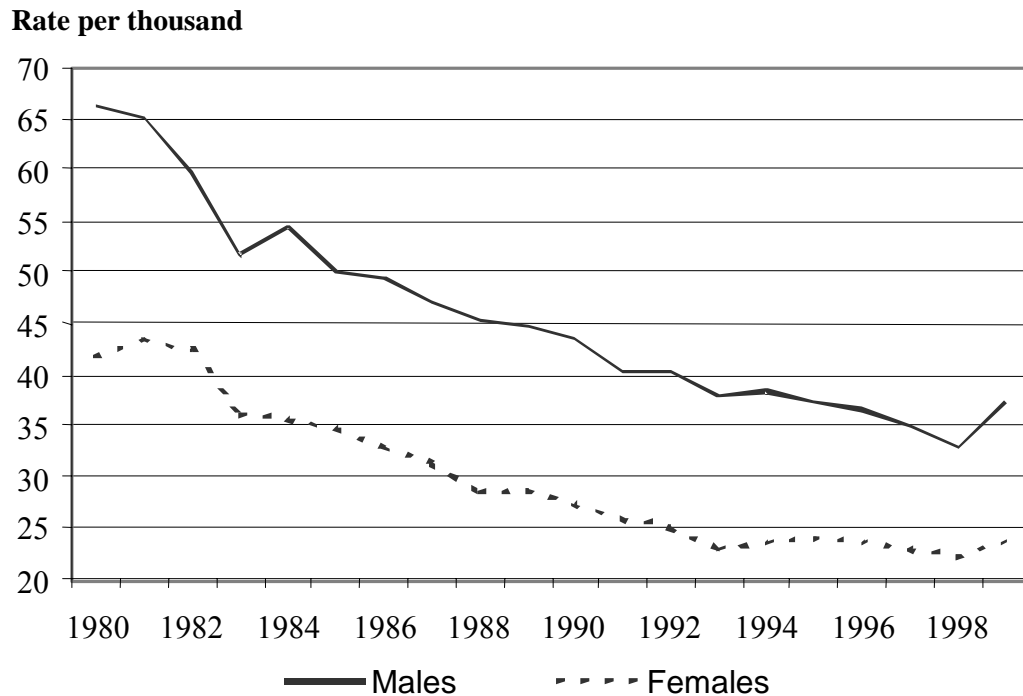
The termination rates that were derived in the disability termination study which will be discussed later, indicate for a given age, the probability that a disabled person would cease to be disabled during the coming year from either death or recovery.

### **A. Mortality Amongst Disability Beneficiaries**

Since the inception of the CPP disability program there has been a general increase in the life expectancy of disability beneficiaries as on average, (combining all years after onset of disability) the overall mortality has continuously improved as shown in Graph 5. The increase in life expectancy is associated with the mortality improvement that has been observed in the general population and also by the increasing proportion of new cases due to mental impairments in recent years which are on average younger.



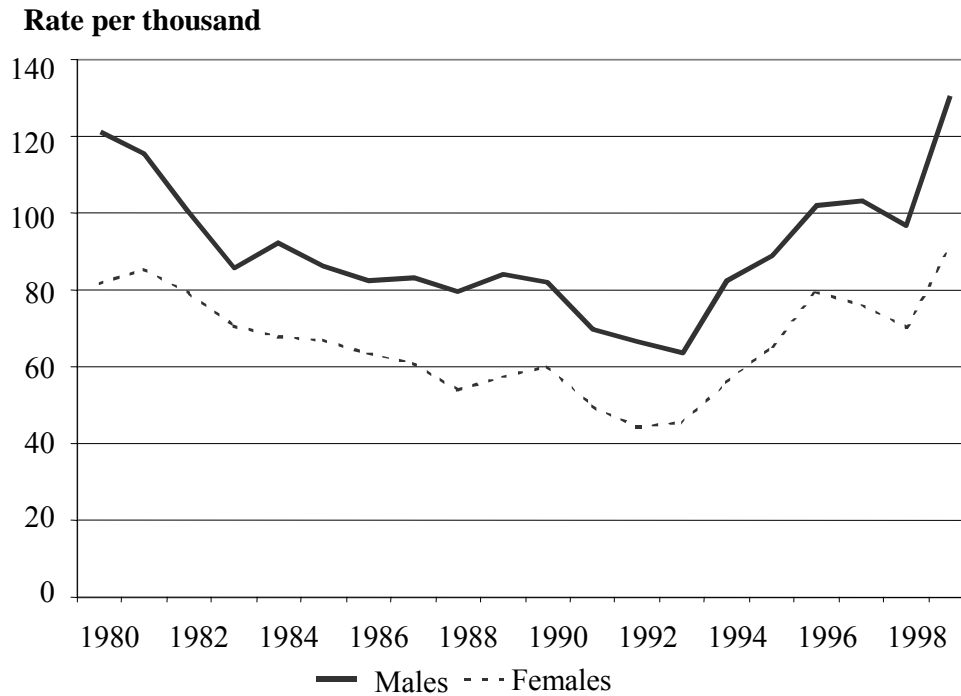
**Graph 5 Annual Mortality Rates of Disability Beneficiaries**



In terms of disabled mortality differential by sex, disabled males still experience a higher level of mortality than disabled females but the gap has somewhat narrowed recently.

There is a distinct pattern of mortality by duration since onset of disability. Recent experience in the first year after onset of disability reveals that higher mortality levels have been experienced at that duration together with a widening of the gap between both sexes as shown in Graph 6. This would indicate that in general, new emerging disabled cases are on average currently more seriously impaired at onset of disability than they were in the past.

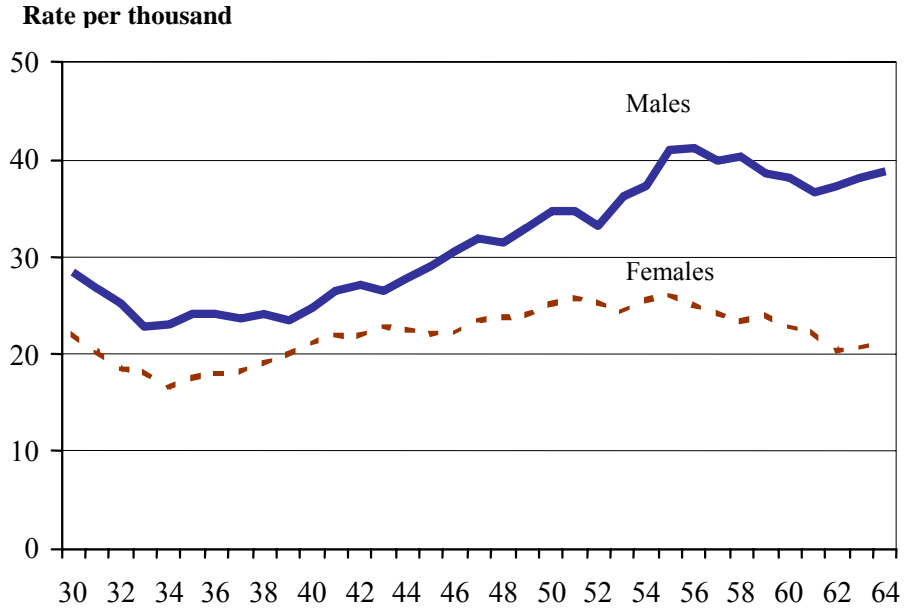
**Graph 6 Annual Mortality Rates During the First Year After Onset of Disability**



In contrast to the volatility of mortality experienced exhibited during the first year after the onset of disability, the mortality experienced in the ultimate durations is lower for both sexes and there has been a general decrease in mortality in recent years.

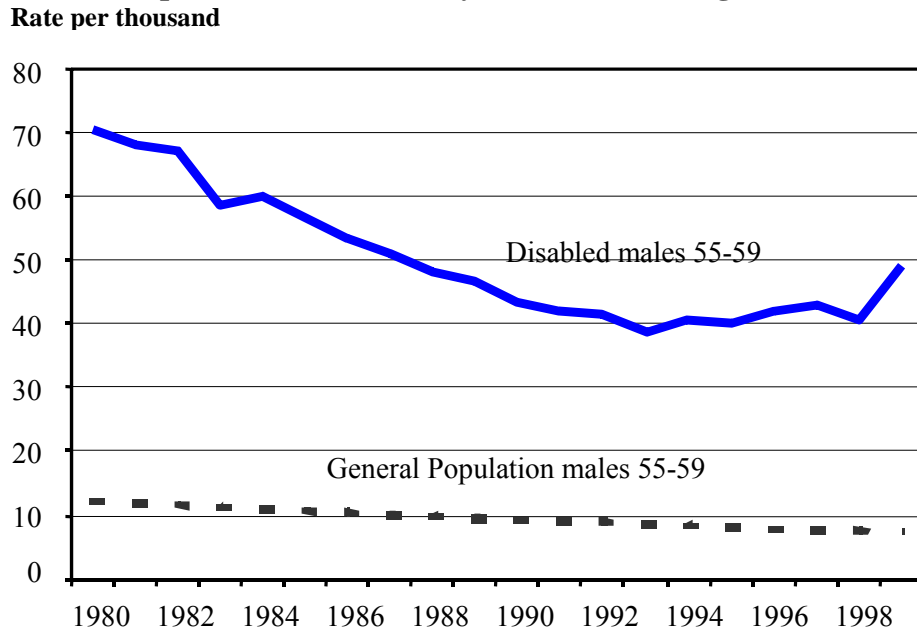
Graph 7 shows that the mortality rates for both male and female by attained age that were experienced on average during the period from 1997 to 1999.

**Graph 7 Attained-Age Disability Mortality Rates (1997-1999)**



Graph 8 shows that mortality rates of male disability beneficiaries aged 55 to 59 are approximately five times the mortality rates of the male general population of that age-group. Similar relationships prevail for other age-groups and females.

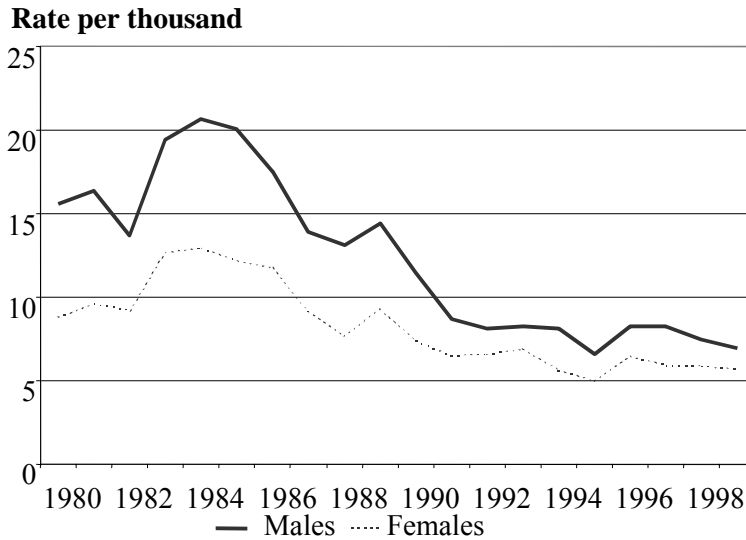
**Graph 8 Annual Mortality Rates of Males Aged 55-59**



## B. Recovery

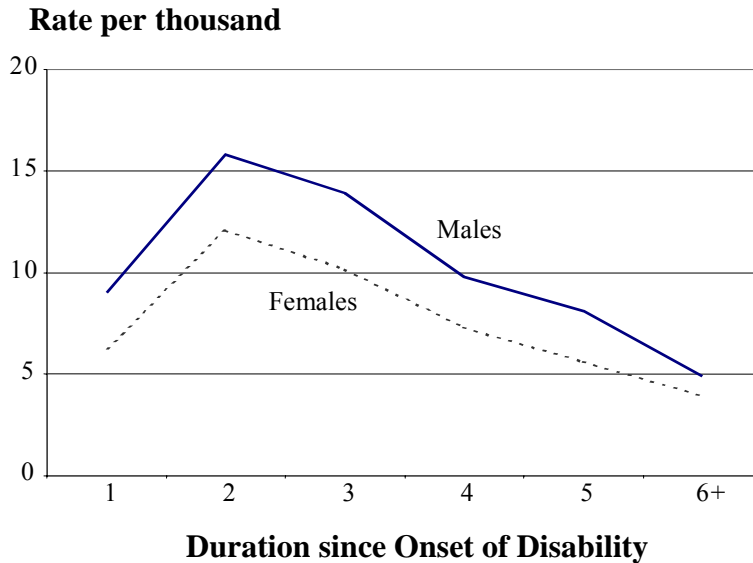
In terms of recovery differential by sex, males still have an overall higher level of recovery than females but the gap between the two sexes has narrowed. On an aggregate basis (encompassing all durations after the onset of disability), there has been an overall decrease in recovery rates in recent years, with males experiencing a more significant decrease in magnitude than females as shown in Graph 9. The decrease in recoveries in recent years can be explained mostly to the fact that the decrease of the disability incidence rates is associated with the more stringent disability eligibility requirements that were implemented in 1998. This has the effect that on average the disabilities may be more severe, as discussed in the preceding section, thus lowering the probability of recovery from disability.

**Graph 9 Annual Recovery Rates**



Graph 10 shows that both sexes have experienced a similar pattern in recovery rates by duration. The peak at duration 2 can be attributed to the reassessment activities.

**Graph 10 Recovery Rates by Duration (1997-1999)**



### C. Overview of the Reassessment Process

The plan administration regularly reassesses many disabled cases to ensure that only those who remain eligible will continue to receive benefits. Reassessments are a vital component of the CPP disability program. While some medical conditions are progressive and terminal, others may improve over time, or beneficiaries may find suitable work. If at any time there are indications of potential future improvements in the beneficiary's medical condition, a date called Pre-Scheduled Reassessment (PSRA) is set for a re-evaluation of the disabled medical condition. Reassessments are also initiated if information received indicates that the disabled has already returned to work or has regained the capacity to work.

Recently, a study was done to evaluate the reassessment process. The objective of that study was to better target those beneficiaries more likely to have their disability benefits ceased. That study showed that the following variables have an impact on the likelihood of recovery of disabled cases.

- gender;
- age at onset of disability;
- cause of morbidity (type of disease);
- secondary medical condition indicator; and
- length of the reassessment period.

## **1. Gender**

The reassessment study revealed that males were more likely to recover than females; this is consistent with recent recovery experience.

## **2. Age at onset of disability**

Intuitively, it would seem that a younger disability beneficiary would have a higher likelihood of being able to return to some form of working activity, thus resulting in a higher probability of cancellation of disability benefits. The reassessment study confirmed a higher proneness for recovery for younger beneficiaries; this is also consistent with recent recovery experience.

## **3. Cause of morbidity (type of disease)**

The reassessment study confirmed that the cause of morbidity is very important in determining the likelihood of cessation of benefits. It proved to be a more important determinant for females' recovery than males' recovery.

Neoplasms cases that survived their condition were associated with a high proneness for recovery.

## **4. Secondary medical condition indicator**

As discussed earlier in Section II.B, the secondary medical condition indicator shows whether a secondary medical condition exists in addition to the primary medical condition. Intuitively, the presence of a secondary medical condition would tend to be indicative of complex and serious health problems and to justify thereby the continuation of disability payments. The results of our reassessment study confirmed that the secondary medical indicator variable had a significant proneness for continuation of benefits regardless of gender.

## **5. Length of the reassessment period**

The length of the reassessment period is only relevant for the disabled cases for which a reassessment process had already started. This factor turned out to be an excellent predictor in identifying cases that recover as the length of the reassessment is closely related to the lag of time it takes a disabled to furnish evidentiary requirements that are required to justify the disabled status. The length of time it takes to furnish evidentiary requirements is definitely associated with a higher probability of recovery.

## 6. Other predictors of recoverability

Even though, the number of years in payment was not an excellent predictor to identify cases that recover, this factor proved to be a better predictor than the type of occupation or the level of education attained.

### D. Analysis of Disability Termination by Cause of Morbidity

Table 5 presents the distribution of disability benefits terminated in 1998 for a given reason of termination followed by a distribution by cause of morbidity at onset.

**Table 5 Distribution of Disability Benefits Terminated in 1998**

Causes of morbidity	Attainment			
	Death	Recovery	of Age 65	Combined
All causes	29%	6%	65%	100%
Neoplasms	44%	13%	4%	16%
Mental disorders	8%	21%	9%	10%
Nervous system	6%	8%	6%	6%
Circulatory system	15%	10%	22%	19%
Musculoskeletal system	9%	22%	42%	31%
Injury and poisoning	3%	11%	6%	5%
Other causes	15%	15%	11%	13%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Table 6 presents the average duration in years and the proportion of terminations for disabilities with an onset of disability in 1980 and 1990, which have terminated in 1988 and 1998 respectively.

**Table 6 Average Duration and Percentage of Terminated Disability Benefits by Cause of Morbidity and Gender**

Males	Onset of disability in 1980		Onset of disability in 1990	
	Average Duration	% of terminated disabled benefit by 1988	Average Duration	% of terminated disabled benefits by 1998
Neoplasms	1.3	95%	1.7	93%
Mental disorders	4.0	56%	4.4	38%
Nervous system	3.9	57%	4.2	45%
Circulatory system	3.4	81%	4.1	72%
Musculoskeletal	3.8	68%	4.7	58%
Injury	3.4	59%	4.4	44%
All causes	3.2	76%	3.8	63%

Females	Onset of disability in 1980		Onset of disability in 1990	
	Average Duration	% of terminated disabled benefits by 1988	Average Duration	% of terminated disabled benefits by 1998
Causes of Morbidity				
<b>Neoplasms</b>	1.7	93%	1.7	88%
<b>Mental disorders</b>	4.1	57%	4.7	29%
<b>Nervous system</b>	4.3	56%	4.6	31%
<b>Circulatory system</b>	3.8	80%	4.5	60%
<b>Musculoskeletal</b>	4.1	72%	4.9	45%
<b>Injury</b>	4.0	64%	4.8	35%
<b>All causes</b>	3.6	74%	4.0	48%

### 1. Neoplasms

Neoplasms (cancer cases) have been historically the leading cause of mortality among disabled cases. As seen in Table 5 it represented 44% of all disabled deaths in 1998. Historically, on a sex-distinct basis, there have been a significantly higher proportion of females (56% for females versus 37% for males in 1998) that have died from neoplasms. The lowest average duration among the terminated cases (see Table 6) reflect the high mortality associated to this cause of morbidity and the high level of recoverability for those who survive their cancer.

### 2. Circulatory system

Even though those afflicted by circulatory system disabilities have historically ranked second in importance as a cause of mortality, in recent years this relative importance has diminished. In 1998, it represents 15% of all deaths. On a sex-distinct basis, there have been a significantly higher proportion of males (19% for males versus 9% for females) than females that have died from circulatory system disabilities.

Both sexes experienced similar historical patterns in terms of recoveries. In the same fashion that mortality is of lesser importance as a reason for termination, we see the same trend for recovery as a reason for termination. In 1998, it represents 10% of all recoveries. Circulatory system disabilities recover in a very small proportion as recoveries accounted for 3% of the terminated disabled cases related to circulatory system disabilities in 1998. On a sex-combined basis, the proportion of those who recover (3%) in relation to the proportion of those who attain age 65 (74%) indicates that there is a very low potential for recovery for disabled cases if a disability reassessment was undertaken.

### 3. Musculoskeletal system and connective tissue

This cause of morbidity, which was identified earlier in this paper, as the leading cause of morbidity is not as prominent proportionately in relation to



disability, terminated cases. It represents 9% of all deaths amongst the disabled.

Similar to circulatory system condition, the musculoskeletal condition there is a marked difference between the proportion of those who recover (4%) and the proportion of those who attain age 65 (87%) indicating again that there is a low potential for recovery for these cases.

#### **4. Mental disorders**

Mental disorders are one of the leading causes of recovery at 21%. There are significant sex distinct differences as recoveries from this cause of disablement represent 29% of all female recoveries while representing 17% of all male recoveries.

#### **E. Termination Rates by Select Age and Duration**

The data available to be used in our disability termination study was the mortality and recovery experience of the CPP disabled beneficiaries for the period between 1970 and 1999.

From 1995 and particularly for the years that followed Bill C-2, there has been a general decline in the number of disability terminations. The peak for both the number of deaths and conversions occurred in 1995 while the peak in recoveries occurred in 1996. This could be attributed partly as the consequence (or a lag) to the peak in disability incidence in the early 90s and to the major reform of the CPP in 1998.

The purpose of the study of disability termination rates was to obtain disability continuance rates for current and future emerging disabilities. Disability termination rates (in the form of a 5 year select & ultimate table) are obtained separately for death and recovery, by age, sex and duration, as the ratio of the number of cases dying of, and recovering from, disability, respectively, at a particular duration after the onset of disability to the corresponding number of original emergences. In respect of any individual case exposed to risk (death and recovery) only partially during any year of disability due to occurrence of the risk or to the starting or termination of the study period, the denominator (number of original emergences) was adjusted in accordance with the Balducci formula.

Data is tabulated by age at onset and duration, based on actual termination experience of the CPP beneficiaries from January 1, 1997 to December 31, 1999, which included about 27,000 deaths and 6,000 recoveries. Tables 11, 13 and 15 illustrate select-and-ultimate death, recovery and total termination probabilities, respectively, for male CPP disabled. Tables 12, 14 and 16 illustrate similar probabilities for females.

## Appendix A - Supplemental Disability Program Historical Tables

**Table 7 Distribution of Disability Beneficiaries by Age-Group and Gender**  
**Males**

Year	Age-Groups								Total
	18-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	
1980	1%	2%	2%	4%	7%	13%	26%	46%	100%
1985	1%	2%	4%	5%	7%	13%	24%	44%	100%
1990	1%	2%	4%	6%	8%	13%	25%	42%	100%
1991	1%	2%	4%	6%	8%	13%	24%	41%	100%
1992	1%	2%	4%	6%	9%	13%	24%	40%	100%
1993	1%	3%	5%	7%	9%	14%	24%	38%	100%
1994	1%	3%	5%	7%	10%	14%	23%	37%	100%
1995	1%	3%	5%	7%	11%	14%	23%	36%	100%
1996	1%	3%	5%	8%	11%	15%	22%	36%	100%
1997	1%	2%	5%	8%	11%	15%	22%	35%	100%
1998	1%	2%	5%	8%	11%	16%	22%	34%	100%
1999	1%	2%	5%	8%	12%	17%	22%	33%	100%
2000	1%	2%	5%	8%	12%	17%	23%	32%	100%

### Females

Year	Age-Groups								Total
	18-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	
1980	1%	2%	2%	3%	6%	13%	26%	46%	100%
1985	1%	2%	3%	4%	6%	12%	25%	46%	100%
1990	1%	3%	5%	6%	8%	14%	25%	38%	100%
1991	1%	3%	5%	7%	9%	14%	24%	36%	100%
1992	1%	3%	6%	8%	10%	15%	24%	34%	100%
1993	1%	3%	6%	8%	11%	15%	24%	32%	100%
1994	1%	3%	6%	9%	12%	16%	23%	30%	100%
1995	1%	3%	6%	9%	12%	16%	23%	30%	100%
1996	1%	3%	6%	9%	13%	16%	22%	30%	100%
1997	1%	3%	6%	10%	13%	17%	22%	29%	100%
1998	1%	2%	6%	10%	13%	17%	22%	29%	100%
1999	1%	2%	6%	10%	13%	18%	22%	28%	100%
2000	0%	2%	6%	10%	14%	19%	22%	28%	100%

### Males and Females

Year	Age-Groups								Total
	18-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	
1980	1%	2%	2%	4%	7%	13%	26%	46%	100%
1985	1%	2%	4%	5%	7%	12%	24%	45%	100%
1990	1%	3%	4%	6%	8%	13%	25%	40%	100%
1991	1%	3%	5%	7%	9%	13%	24%	39%	100%
1992	1%	3%	5%	7%	9%	14%	24%	38%	100%
1993	1%	3%	5%	7%	10%	14%	24%	36%	100%
1994	1%	3%	5%	8%	11%	15%	23%	34%	100%
1995	1%	3%	5%	8%	11%	15%	23%	33%	100%
1996	1%	3%	5%	8%	12%	15%	22%	33%	100%
1997	1%	3%	6%	8%	12%	16%	22%	32%	100%
1998	1%	2%	6%	8%	12%	17%	22%	32%	100%
1999	1%	2%	5%	8%	13%	17%	22%	31%	100%
2000	1%	2%	5%	8%	13%	18%	23%	30%	100%

**Table 8 Distribution of Disability Beneficiaries by Causes of Morbidity**

**Males**

<b>Causes of Morbidity</b>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Musculoskeletal	21%	26%	29%	30%	31%	31%	31%	31%	30%	29%	28%	27%	26%
Mental Disorders	10%	10%	10%	11%	11%	12%	13%	15%	16%	17%	18%	20%	21%
Circulatory	34%	29%	25%	24%	23%	21%	20%	19%	18%	18%	17%	16%	16%
Nervous System	8%	8%	8%	8%	8%	8%	8%	9%	9%	9%	10%	10%	10%
Injuries	6%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Neoplasms	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Respiratory	8%	6%	5%	5%	4%	4%	4%	4%	3%	3%	3%	3%	3%
Endocrine	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Digestive	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Other	4%	3%	5%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%
All causes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Females**

<b>Causes of Morbidity</b>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Musculoskeletal	31%	35%	39%	40%	40%	40%	39%	39%	38%	37%	35%	34%	33%
Mental Disorders	12%	13%	14%	15%	16%	17%	18%	19%	20%	22%	23%	25%	26%
Circulatory	24%	19%	14%	13%	12%	11%	10%	9%	9%	9%	8%	8%	7%
Nervous System	8%	8%	9%	10%	10%	10%	10%	10%	11%	11%	12%	12%	12%
Injuries	3%	5%	5%	6%	6%	6%	6%	6%	6%	5%	5%	5%	5%
Neoplasms	6%	6%	6%	6%	6%	5%	5%	5%	5%	5%	5%	5%	5%
Respiratory	4%	4%	3%	3%	3%	3%	3%	3%	3%	3%	3%	2%	2%
Endocrine	3%	3%	3%	3%	3%	3%	2%	2%	2%	2%	2%	2%	2%
Digestive	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Other	5%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%
All causes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Males and Females**

<b>Causes of Morbidity<sup>1</sup></b>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Musculoskeletal <sup>2</sup>	24%	29%	32%	33%	34%	34%	34%	34%	33%	33%	31%	30%	29%
Mental Disorders <sup>3</sup>	11%	10%	12%	12%	13%	14%	15%	17%	18%	19%	21%	22%	23%
Circulatory <sup>4</sup>	31%	27%	21%	20%	19%	17%	16%	15%	14%	14%	13%	12%	12%
Nervous System <sup>5</sup>	8%	8%	9%	9%	9%	9%	9%	9%	10%	10%	11%	11%	11%
Injuries	5%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%	8%
Neoplasms <sup>6</sup>	5%	5%	5%	5%	5%	5%	4%	4%	4%	4%	4%	4%	5%
Respiratory <sup>7</sup>	7%	5%	5%	4%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Endocrine <sup>8</sup>	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Digestive	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Other <sup>9</sup>	4%	4%	4%	4%	4%	4%	4%	4%	5%	5%	5%	5%	5%
All causes	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

<sup>1</sup> Ranked by average percentage over the 5-year period 1996-2000.

<sup>2</sup> Includes listings for arthritis, back-disorder, amputation, bone disorder.

<sup>3</sup> Includes listings for schizophrenia, paranoia, mental retardation, personality disorder.

<sup>4</sup> Includes listings for heart disease, hypertension, aneurysm.

<sup>5</sup> Includes listings for epilepsy, Parkinson's disease, cerebral palsy, multiple sclerosis.

<sup>6</sup> Includes listings for malignant growth.

<sup>7</sup> Includes listings for asthma, tuberculosis, cystic fibrosis.

<sup>8</sup> Includes listings for diabetes, disorders of the thyroid, pituitary, and adrenal glands, obesity.

<sup>9</sup> Includes listings for congenital anomalies, and blood, digestive, genitourinary, and skin disorders.

**Table 9 Distribution of Emerging Disability Beneficiaries by Age-Group**

<b>Year</b>	<b>Age-Groups</b>					<b>Total</b>
	<b>Less than 40</b>	<b>40-49</b>	<b>50-54</b>	<b>55-59</b>	<b>60-64</b>	
1970	5%	13%	16%	30%	35%	100%
1971	5%	13%	14%	28%	39%	100%
1972	6%	13%	15%	27%	39%	100%
1973	5%	12%	15%	27%	41%	100%
1974	6%	13%	15%	26%	40%	100%
1975	7%	13%	16%	26%	39%	100%
1976	7%	12%	15%	26%	40%	100%
1977	7%	13%	15%	26%	39%	100%
1978	8%	13%	15%	27%	37%	100%
1979	8%	13%	15%	27%	37%	100%
1980	9%	13%	15%	27%	35%	100%
1981	10%	14%	15%	27%	34%	100%
1982	12%	15%	15%	26%	31%	100%
1983	11%	15%	15%	27%	32%	100%
1984	10%	15%	15%	27%	34%	100%
1985	10%	15%	15%	27%	34%	100%
1986	11%	15%	15%	27%	31%	100%
1987	12%	18%	18%	27%	24%	100%
1988	12%	17%	17%	30%	24%	100%
1989	14%	19%	17%	28%	23%	100%
1990	14%	20%	17%	28%	21%	100%
1991	15%	22%	18%	27%	18%	100%
1992	17%	23%	17%	26%	17%	100%
1993	16%	23%	17%	26%	17%	100%
1994	16%	24%	18%	25%	17%	100%
1995	17%	26%	18%	23%	16%	100%
1996	18%	28%	19%	22%	13%	100%
1997	18%	28%	20%	22%	12%	100%
1998	15%	27%	21%	24%	13%	100%
1999	14%	24%	20%	26%	16%	100%
2000	13%	25%	20%	24%	18%	100%

**Table 10 Distribution of Emerging Disability Beneficiaries by Causes of Morbidity**

<b>Causes of Morbidity</b>	<b>1970</b>	<b>1980</b>	<b>1985</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>
<b>Mental Disorders</b>	8%	8%	8%	11%	14%	16%	17%	18%	19%	21%	26%	21%
<b>Neoplasms</b>	12%	14%	13%	12%	11%	11%	12%	13%	16%	18%	17%	21%
<b>Musculoskeletal</b>	13%	23%	29%	33%	33%	31%	30%	28%	23%	20%	18%	18%
<b>Circulatory</b>	39%	29%	25%	17%	15%	14%	14%	14%	15%	13%	12%	13%
<b>Nervous System</b>	8%	6%	6%	7%	7%	7%	8%	8%	9%	9%	10%	10%
<b>Injuries</b>	4%	5%	7%	7%	7%	6%	6%	5%	4%	4%	4%	4%
<b>Others</b>	16%	15%	13%	12%	13%	14%	14%	14%	14%	13%	13%	13%
<b>All causes</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

**Appendix B - Termination Study Tables By Select Age and Duration**  
**Table 11 Male Disabled Probability of Death - Rates per Thousand**  
**(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	68.8	51.4	45.0	23.2	16.8	18.0	23
19	67.8	50.6	42.8	23.1	16.8	17.8	24
20	66.9	49.9	40.6	23.0	16.9	17.5	25
21	65.9	49.2	38.5	22.9	16.9	17.3	26
22	64.9	48.5	36.3	22.8	16.9	17.0	27
23	64.0	47.8	34.1	22.7	16.9	16.8	28
24	63.0	47.1	32.0	22.6	17.0	16.6	29
25	62.0	46.3	29.8	22.5	17.0	16.3	30
26	61.1	45.6	27.7	22.4	17.0	16.1	31
27	60.1	44.9	25.5	22.3	17.0	15.8	32
28	59.1	42.6	24.0	19.1	17.1	11.7	33
29	58.2	40.5	22.5	15.7	17.1	11.9	34
30	57.2	38.7	21.5	15.0	17.1	12.7	35
31	56.2	37.8	20.2	17.3	17.1	11.3	36
32	55.3	37.6	21.3	18.6	17.2	11.1	37
33	54.0	38.4	26.3	19.1	18.8	12.5	38
34	55.1	40.1	30.7	22.4	19.4	11.9	39
35	57.4	40.5	28.2	24.4	18.9	13.0	40
36	59.7	39.8	23.1	23.4	16.3	15.1	41
37	61.7	40.5	20.5	23.7	16.7	14.7	42
38	64.5	43.3	21.5	24.2	16.7	13.3	43
39	69.2	46.3	24.5	24.2	16.3	13.4	44
40	75.9	46.0	26.5	23.7	19.7	14.0	45
41	83.3	45.5	27.2	21.0	18.2	15.3	46
42	89.9	47.8	26.5	23.3	19.9	16.1	47
43	95.4	53.9	25.1	27.6	21.7	15.2	48
44	99.6	59.6	28.2	30.3	21.4	16.6	49
45	103.9	60.3	31.9	30.9	20.7	18.2	50
46	108.6	58.7	32.1	30.2	23.2	18.2	51
47	112.2	58.7	37.4	28.8	25.2	16.4	52
48	113.7	61.1	38.1	27.0	20.7	20.0	53
49	114.6	63.4	34.3	27.3	23.3	20.3	54
50	116.3	63.2	31.2	28.7	30.2	25.3	55
51	119.6	64.0	31.6	29.3	28.5	26.3	56
52	124.1	65.8	35.0	30.1	27.8	26.6	57
53	127.7	69.0	40.2	30.5	28.8	29.0	58
54	127.6	72.1	42.2	30.1	27.6	27.0	59
55	124.9	73.8	36.3	31.3	30.5	28.2	60
56	120.6	74.0	38.6	33.1	29.9	29.5	61
57	115.0	69.3	41.4	34.7	30.5	31.8	62
58	110.9	67.0	44.3	33.4	31.7	34.1	63
59	109.6	65.8	38.1	34.8	32.9	36.4	64
60	108.4	64.9	40.3	36.2	34.1	—	65
61	112.4	66.0	42.6	37.6	—	—	66
62	116.3	67.0	44.8	—	—	—	67
63	120.3	68.1	—	—	—	—	68
64	124.2	—	—	—	—	—	69

Notes:

- (1) *Probability of death  $q^{(d)}$*  in a multiple decrement environment. Select age denotes age last birthday at entitlement.
- (2) The quantity at duration  $t$  represents the probability of **death** during the  $(t+1)$  year of entitlement for those lives originally entitled to disability benefits at select age  $[x]$  and who are currently attained age  $[x]+t$ .
- (3) Probabilities are read across the row for durations 0-4, and down the ultimate column (5+) for durations greater than 5.
- (4) The probabilities shown have been graduated using the Whittaker-Henderson Type B two-dimensional graduation methodology.

**Table 12 Female Disabled Probability of Death - Rates per Thousand  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	61.2	44.5	31.1	18.7	16.3	13.1	23
19	59.8	43.5	29.8	18.1	15.6	12.6	24
20	58.5	42.4	28.6	17.4	14.8	12.1	25
21	57.2	41.4	27.3	16.8	14.1	11.6	26
22	55.9	40.4	26.1	16.2	13.4	11.1	27
23	54.6	39.3	24.8	15.5	12.7	10.6	28
24	53.3	38.3	23.6	14.9	11.9	10.1	29
25	52.0	37.3	22.4	14.3	11.2	9.6	30
26	50.7	36.2	21.1	13.6	10.5	9.1	31
27	49.4	35.2	19.9	13.0	9.8	8.6	32
28	48.0	34.2	18.6	12.3	9.0	8.1	33
29	46.7	33.1	17.4	11.7	8.3	7.6	34
30	45.4	32.1	16.1	11.1	7.6	7.1	35
31	44.1	31.1	14.9	10.4	6.9	6.6	36
32	42.8	30.0	13.7	9.8	6.1	6.1	37
33	42.4	29.4	22.7	12.3	4.2	6.8	38
34	43.9	29.5	20.4	11.9	6.6	6.1	39
35	48.3	32.4	17.6	7.8	8.1	7.0	40
36	54.2	38.3	18.3	6.8	9.8	8.0	41
37	59.5	43.8	18.9	8.6	8.9	8.5	42
38	63.3	48.7	21.0	13.0	11.8	8.5	43
39	66.0	50.8	20.5	14.4	12.9	7.4	44
40	69.0	49.7	20.4	13.4	12.0	8.1	45
41	73.0	48.5	23.7	12.8	10.5	8.6	46
42	77.7	49.5	25.0	12.4	11.1	10.0	47
43	82.2	51.3	23.2	12.9	11.6	10.4	48
44	84.5	51.8	22.0	14.8	10.9	9.4	49
45	83.8	53.6	23.9	13.6	12.6	10.6	50
46	81.7	55.5	25.8	15.7	14.8	11.5	51
47	79.8	54.3	27.4	19.1	16.2	11.5	52
48	80.0	52.5	25.8	18.6	12.5	11.1	53
49	82.1	53.8	24.8	18.0	11.7	12.3	54
50	84.4	57.3	26.6	17.1	12.3	13.8	55
51	85.4	58.6	26.5	17.5	13.9	13.0	56
52	86.0	59.0	32.6	19.2	13.6	12.8	57
53	86.8	59.0	32.2	19.4	15.2	12.3	58
54	88.4	59.5	30.1	18.3	15.1	15.9	59
55	88.8	61.1	33.0	19.8	15.3	15.9	60
56	86.9	62.4	34.5	16.3	16.0	16.9	61
57	82.4	61.4	31.5	16.5	16.7	15.7	62
58	78.4	59.8	30.0	19.3	17.5	17.3	63
59	77.2	58.3	28.1	22.2	18.2	18.9	64
60	80.5	55.9	26.2	25.0	18.9	—	65
61	83.9	53.5	21.6	27.8	—	—	66
62	87.3	51.4	25.1	—	—	—	67
63	90.6	55.1	—	—	—	—	68
64	94.0	—	—	—	—	—	69

Notes:

- (1) *Probability of death*  $q^{(d)}$  in a multiple decrement environment. Select age denotes age last birthday at entitlement.
- (2) The quantity at duration  $t$  represents the probability of **death** during the  $(t+1)$  year of entitlement for those lives originally entitled to disability benefits at select age  $[x]$  and who are currently attained age  $[x]+t$ .
- (3) Probabilities are read across the row for durations 0-4, and down the ultimate column (5+) for durations greater than 5.
- (4) The probabilities shown have been graduated using the Whittaker-Henderson Type B two-dimensional graduation methodology.

**Table 13 Male Disabled Probability of Recovery - Rates per Thousand  
(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	54.2	76.3	84.1	89.5	65.9	54.8	23
19	52.8	71.1	78.2	82.1	62.2	51.3	24
20	51.4	65.8	72.4	74.7	58.6	47.8	25
21	50.0	60.6	66.5	67.2	55.0	44.4	26
22	48.7	55.4	60.7	59.8	51.4	40.9	27
23	47.3	52.3	56.8	55.1	47.8	37.5	28
24	45.9	50.2	52.8	50.6	44.1	34.0	29
25	44.5	48.9	49.2	46.4	40.5	30.5	30
26	42.8	47.4	45.8	42.5	36.9	27.1	31
27	39.1	44.5	42.5	38.8	34.7	27.1	32
28	34.4	39.9	38.8	35.2	32.5	27.1	33
29	29.4	34.2	35.3	31.9	30.1	26.3	34
30	25.0	29.1	32.1	28.8	27.4	24.0	35
31	21.4	25.8	29.7	26.1	24.5	21.7	36
32	18.8	24.3	27.8	24.5	21.6	19.7	37
33	17.2	24.0	26.1	23.6	19.6	18.1	38
34	16.2	24.3	24.8	22.7	18.0	16.3	39
35	15.8	24.5	24.3	21.8	16.5	15.3	40
36	15.7	24.0	24.3	21.3	15.4	14.6	41
37	15.8	23.5	24.2	21.3	15.3	13.7	42
38	16.0	23.3	24.0	21.0	16.0	13.2	43
39	16.0	23.7	24.0	20.3	16.5	12.3	44
40	16.0	24.1	23.6	18.9	16.3	11.2	45
41	16.0	23.7	22.9	17.6	15.5	9.5	46
42	15.6	23.0	22.2	17.1	14.3	8.1	47
43	15.0	22.2	22.1	17.2	12.8	7.1	48
44	14.2	20.9	22.2	16.7	11.4	6.3	49
45	13.9	20.0	21.0	15.1	9.9	5.4	50
46	13.8	20.0	18.5	12.8	8.2	4.2	51
47	13.1	20.0	15.6	10.1	6.6	3.6	52
48	11.4	18.9	13.5	8.1	5.3	3.8	53
49	9.4	16.6	12.4	7.1	4.7	3.4	54
50	8.0	14.0	12.0	6.9	4.6	2.5	55
51	7.5	12.0	11.6	6.8	4.7	1.9	56
52	7.6	10.9	11.0	6.4	4.5	1.5	57
53	7.6	10.5	10.3	5.9	3.9	1.6	58
54	7.1	10.1	9.3	5.5	3.7	1.7	59
55	6.1	8.7	7.8	5.3	3.6	1.4	60
56	5.1	6.7	6.0	5.1	3.4	1.1	61
57	4.4	5.4	4.7	4.6	2.8	0.9	62
58	4.3	5.3	4.4	3.6	1.9	0.7	63
59	5.1	5.5	4.2	2.9	1.1	0.5	64
60	5.9	5.4	4.0	2.2	0.6	—	65
61	5.9	4.8	3.9	1.9	—	—	66
62	5.7	4.1	3.7	—	—	—	67
63	5.5	3.6	—	—	—	—	68
64	5.3	—	—	—	—	—	69

Notes:

- (1) *Probability of recovery*  $q^{(r)}$  in a multiple decrement environment. Select age denotes age last birthday at entitlement.
- (2) The quantity at duration  $t$  represents the probability of **recovery** during the  $(t+1)$  year of entitlement for those lives originally entitled to disability benefits at select age  $[x]$  and who are currently attained age  $[x]+t$ .
- (3) Probabilities are read across the row for durations 0-4, and down the ultimate column (5+) for durations greater than 5.
- (4) The probabilities shown have been graduated using the Whittaker-Henderson Type B two-dimensional graduation methodology.

**Table 14 Female Disabled Probability of Recovery - Rates per Thousand  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	38.8	48.2	59.0	81.2	56.0	44.7	23
19	36.7	46.1	56.0	73.7	52.3	41.9	24
20	34.7	44.0	52.9	66.2	48.6	39.1	25
21	32.7	41.9	49.9	58.8	44.9	36.2	26
22	30.6	39.8	46.9	51.3	41.1	33.4	27
23	28.6	37.7	43.9	43.8	37.4	30.6	28
24	26.6	35.6	40.9	39.3	33.7	27.8	29
25	24.6	33.5	37.8	34.8	30.0	24.9	30
26	22.5	31.4	34.8	30.7	26.3	22.1	31
27	20.5	29.3	31.8	27.3	22.6	19.3	32
28	18.5	27.2	28.8	25.0	21.5	18.6	33
29	16.5	25.1	25.8	23.7	20.4	18.0	34
30	14.4	23.0	25.1	22.9	20.0	16.4	35
31	13.4	20.9	24.5	22.2	19.3	15.1	36
32	12.4	20.4	23.5	21.5	18.5	14.6	37
33	12.2	19.9	21.8	20.4	17.5	14.7	38
34	12.1	18.8	20.2	18.7	16.3	14.4	39
35	12.1	17.6	18.9	16.8	14.5	13.2	40
36	12.0	16.4	17.4	14.5	12.7	11.7	41
37	11.7	15.2	15.4	12.3	11.5	10.7	42
38	11.6	14.5	13.6	11.3	11.1	10.3	43
39	11.8	14.4	13.0	11.5	11.1	10.0	44
40	11.9	14.4	13.4	12.3	10.5	9.3	45
41	11.6	13.9	13.8	12.5	9.5	8.0	46
42	11.0	13.5	13.5	11.8	8.4	6.6	47
43	10.1	13.2	13.1	10.3	7.5	5.4	48
44	9.3	13.0	12.3	8.6	6.9	4.4	49
45	9.0	12.5	11.5	7.3	6.0	3.5	50
46	8.8	12.1	10.7	6.7	5.0	3.1	51
47	8.6	11.6	10.2	6.8	4.3	2.8	52
48	8.1	10.7	9.8	7.1	3.9	2.2	53
49	7.2	9.7	9.5	7.3	3.6	1.9	54
50	6.3	8.9	9.0	6.6	3.4	1.7	55
51	5.3	8.4	8.3	5.5	3.1	1.5	56
52	4.6	7.8	7.4	4.4	2.6	1.4	57
53	4.4	7.0	6.1	3.3	2.0	1.2	58
54	4.6	6.5	5.0	2.4	1.3	0.9	59
55	4.8	6.6	4.2	1.8	1.1	0.7	60
56	4.8	6.7	3.7	1.6	1.0	0.5	61
57	4.4	6.3	3.4	1.5	0.9	0.5	62
58	4.0	5.0	3.0	1.3	0.7	0.4	63
59	3.9	4.6	2.9	1.2	0.6	0.3	64
60	3.8	4.1	2.9	1.0	0.4	—	65
61	3.7	3.7	2.8	0.8	—	—	66
62	3.7	3.2	2.7	—	—	—	67
63	3.6	2.8	—	—	—	—	68
64	3.5	—	—	—	—	—	69

Notes:

- (1) *Probability of recovery*  $q^{(r)}$  in a multiple decrement environment. Select age denotes age last birthday at entitlement.
- (2) The quantity at duration  $t$  represents the probability of **recovery** during the  $(t+1)$  year of entitlement for those lives originally entitled to disability benefits at select age  $[x]$  and who are currently attained age  $[x]+t$ .
- (3) Probabilities are read across the row for durations 0-4, and down the ultimate column (5+) for durations greater than 5.
- (4) The probabilities shown have been graduated using the Whittaker-Henderson Type B two-dimensional graduation methodology.



**Table 15 Male Disabled Probability of Termination - Rates per Thousand  
(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	119.3	123.7	125.3	110.7	81.6	71.8	23
19	117.1	118.1	117.7	103.3	78.0	68.2	24
20	114.9	112.5	110.1	96.0	74.5	64.5	25
21	112.6	106.8	102.4	88.6	71.0	60.9	26
22	110.4	101.2	94.8	81.2	67.4	57.3	27
23	108.2	97.6	89.0	76.6	63.9	53.6	28
24	106.0	94.9	83.1	72.1	60.3	50.0	29
25	103.8	93.0	77.5	67.9	56.8	46.4	30
26	101.2	90.8	72.2	64.0	53.3	42.7	31
27	96.9	87.4	66.9	60.2	51.1	42.5	32
28	91.5	80.8	61.8	53.7	49.0	38.4	33
29	85.9	73.3	57.1	47.1	46.7	37.9	34
30	80.7	66.7	52.8	43.3	44.1	36.4	35
31	76.5	62.6	49.3	42.9	41.2	32.8	36
32	73.0	61.0	48.5	42.6	38.4	30.7	37
33	70.3	61.5	51.8	42.2	38.0	30.4	38
34	70.5	63.4	54.7	44.5	37.1	28.0	39
35	72.3	64.1	51.8	45.6	35.0	28.1	40
36	74.5	62.9	46.8	44.3	31.4	29.5	41
37	76.5	63.0	44.2	44.5	31.8	28.2	42
38	79.4	65.6	45.0	44.6	32.4	26.3	43
39	84.2	69.0	47.8	43.9	32.5	25.5	44
40	90.6	69.0	49.4	42.2	35.6	25.1	45
41	98.0	68.2	49.4	38.2	33.4	24.7	46
42	104.2	69.8	48.2	40.0	33.9	24.1	47
43	108.9	74.9	46.6	44.3	34.2	22.3	48
44	112.4	79.3	49.8	46.5	32.5	22.8	49
45	116.4	79.1	52.2	45.5	30.4	23.5	50
46	120.9	77.5	50.0	42.6	31.2	22.3	51
47	123.8	77.5	52.4	38.6	31.6	20.0	52
48	123.9	78.8	51.1	34.9	25.9	23.7	53
49	122.9	79.0	46.3	34.2	27.9	23.6	54
50	123.3	76.4	42.8	35.5	34.7	27.8	55
51	126.2	75.2	42.8	35.8	33.0	28.1	56
52	130.8	76.0	45.5	36.4	32.2	28.0	57
53	134.3	78.7	50.1	36.2	32.6	30.6	58
54	133.8	81.5	51.2	35.4	31.2	28.7	59
55	130.2	81.8	43.8	36.5	34.0	29.6	60
56	125.1	80.2	44.4	38.1	33.2	30.5	61
57	118.9	74.4	45.9	39.1	33.2	32.6	62
58	114.7	72.0	48.4	36.8	33.5	34.7	63
59	114.2	70.9	42.1	37.5	33.9	36.8	64
60	113.7	70.0	44.2	38.4	34.6	—	65
61	117.6	70.4	46.3	39.5	—	—	66
62	121.4	70.8	48.3	—	—	—	67
63	125.1	71.4	—	—	—	—	68
64	128.9	—	—	—	—	—	69

Notes:

- (1) Probability of decrement  $q^{(T)}$  in a multiple decrement environment. Select age denotes age last birthday at entitlement.
- (2) The quantity at duration  $t$  represents the probability of **death or recovery** during the  $(t+1)$  year of entitlement for those lives originally entitled to disability benefits at select age  $[x]$  and who are currently attained age  $[x]+t$ .
- (3) Probabilities are read across the row for durations 0-4, and down the ultimate column (5+) for durations greater than 5.

**Table 16 Female Disabled Probability of Termination - Rates per Thousand  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	97.5	90.6	88.2	98.4	71.4	57.2	23
19	94.4	87.6	84.1	90.5	67.0	53.9	24
20	91.2	84.6	80.0	82.5	62.7	50.7	25
21	88.0	81.6	75.9	74.6	58.3	47.4	26
22	84.8	78.6	71.8	66.6	54.0	44.1	27
23	81.7	75.6	67.6	58.7	49.6	40.8	28
24	78.5	72.6	63.5	53.6	45.2	37.6	29
25	75.3	69.5	59.4	48.6	40.9	34.3	30
26	72.1	66.5	55.2	43.9	36.5	31.0	31
27	68.9	63.5	51.0	39.9	32.1	27.7	32
28	65.6	60.4	46.9	37.0	30.3	26.6	33
29	62.4	57.4	42.7	35.1	28.6	25.5	34
30	59.2	54.4	40.9	33.7	27.4	23.4	35
31	56.9	51.3	39.0	32.4	26.0	21.6	36
32	54.6	49.8	36.8	31.1	24.5	20.6	37
33	54.1	48.7	44.1	32.4	21.7	21.4	38
34	55.5	47.7	40.1	30.3	22.7	20.4	39
35	59.8	49.5	36.1	24.4	22.5	20.1	40
36	65.5	54.0	35.4	21.2	22.3	19.6	41
37	70.6	58.3	34.0	20.8	20.2	19.1	42
38	74.1	62.5	34.3	24.2	22.7	18.7	43
39	77.0	64.5	33.2	25.7	23.8	17.3	44
40	80.1	63.5	33.5	25.5	22.3	17.3	45
41	83.7	61.7	37.2	25.2	19.9	16.6	46
42	87.9	62.3	38.2	24.0	19.4	16.6	47
43	91.4	63.8	35.9	23.0	19.0	15.7	48
44	93.0	64.1	34.0	23.3	17.7	13.8	49
45	92.1	65.4	35.1	20.8	18.5	14.1	50
46	89.8	66.9	36.3	22.3	19.7	14.5	51
47	87.7	65.3	37.3	25.7	20.4	14.2	52
48	87.5	62.7	35.4	25.6	16.4	13.3	53
49	88.7	62.9	34.1	25.2	15.3	14.2	54
50	90.2	65.8	35.3	23.7	15.7	15.4	55
51	90.3	66.4	34.6	22.9	16.9	14.5	56
52	90.2	66.4	39.7	23.5	16.1	14.2	57
53	90.8	65.6	38.1	22.6	17.1	13.5	58
54	92.6	65.7	35.0	20.7	16.4	16.9	59
55	93.2	67.3	37.0	21.5	16.4	16.6	60
56	91.3	68.8	38.1	17.9	17.1	17.4	61
57	86.5	67.3	34.8	18.0	17.6	16.2	62
58	82.1	64.5	32.9	20.6	18.2	17.7	63
59	80.8	62.6	30.9	23.3	18.7	19.2	64
60	84.1	59.9	29.0	25.9	19.3	—	65
61	87.3	57.0	24.4	28.6	—	—	66
62	90.6	54.5	27.8	—	—	—	67
63	93.9	57.7	—	—	—	—	68
64	97.1	—	—	—	—	—	69

Notes:

- (1) Probability of decrement  $q^{(T)}$  in a multiple decrement environment. Select age denotes age last birthday at entitlement.
- (2) The quantity at duration  $t$  represents the probability of **death or recovery** during the  $(t+1)$  year of entitlement for those lives originally entitled to disability benefits at select age  $[x]$  and who are currently attained age  $[x]+t$ .
- (3) Probabilities are read across the row for durations 0-4, and down the ultimate column (5+) for durations greater than 5.

**Table 17 - Male Disabled Life Table, Survivorship Reflects Termination Due to Death Only  
(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	100,000	93,121	88,339	84,366	82,406	81,021	23
19	97,794	91,161	86,545	82,840	80,924	79,562	24
20	95,661	89,265	84,809	81,362	79,488	78,148	25
21	93,599	87,431	83,129	79,930	78,097	76,778	26
22	91,604	85,656	81,502	78,542	76,749	75,451	27
23	89,672	83,936	79,926	77,197	75,443	74,165	28
24	87,804	82,272	78,400	75,893	74,176	72,918	29
25	85,998	80,663	76,924	74,630	72,949	71,710	30
26	84,249	79,104	75,494	73,406	71,760	70,539	31
27	82,555	77,593	74,108	72,219	70,607	69,404	32
28	80,583	75,818	72,588	70,846	69,490	68,304	33
29	78,994	74,399	71,383	69,774	68,681	67,507	34
30	77,680	73,236	70,403	68,892	67,862	66,701	35
31	76,627	72,318	69,587	68,181	67,004	65,855	36
32	75,861	71,668	68,970	67,498	66,246	65,109	37
33	75,519	71,438	68,697	66,889	65,614	64,383	38
34	75,436	71,276	68,419	66,317	64,834	63,576	39
35	74,665	70,382	67,530	65,625	64,026	62,818	40
36	73,171	68,803	66,064	64,541	63,029	62,002	41
37	72,133	67,681	64,939	63,607	62,102	61,063	42
38	71,600	66,984	64,081	62,702	61,186	60,167	43
39	71,424	66,478	63,397	61,845	60,350	59,368	44
40	71,310	65,900	62,869	61,204	59,752	58,575	45
41	70,587	64,706	61,761	60,084	58,825	57,756	46
42	70,428	64,095	61,029	59,411	58,026	56,873	47
43	70,496	63,771	60,336	58,820	57,195	55,957	48
44	70,575	63,544	59,758	58,070	56,309	55,105	49
45	70,044	62,764	58,980	57,101	55,336	54,190	50
46	69,160	61,649	58,031	56,166	54,470	53,205	51
47	68,588	60,891	57,317	55,171	53,585	52,236	52
48	67,366	59,703	56,056	53,919	52,464	51,379	53
49	66,186	58,599	54,881	52,997	51,552	50,352	54
50	65,304	57,709	54,060	52,374	50,869	49,332	55
51	63,889	56,247	52,647	50,982	49,491	48,082	56
52	62,881	55,075	51,452	49,654	48,158	46,817	57
53	62,086	54,157	50,422	48,396	46,922	45,572	58
54	60,523	52,798	48,989	46,920	45,508	44,250	59
55	58,690	51,359	47,570	45,844	44,408	43,055	60
56	56,975	50,103	46,397	44,605	43,127	41,839	61
57	54,956	48,637	45,267	43,391	41,884	40,606	62
58	52,978	47,105	43,949	42,004	40,603	39,316	63
59	50,846	45,271	42,294	40,683	39,268	37,977	64
60	49,136	43,808	40,963	39,311	37,887	36,596	65
61	47,738	42,373	39,577	37,893	36,466	35,181	66
62	46,272	40,890	38,149	36,440	35,016	33,740	67
63	44,744	39,363	36,683	34,958	33,542	32,280	68
64	43,163	37,802	35,189	33,456	32,053	30,809	69

Notes:

- (1) Select-and-ultimate *life functions*  $l_x$  reflect termination due to death only. Select age denotes age last birthday at entitlement.
- (2) Values shown are based on extended probabilities found in table 25.

**Table 18 Female Disabled Life Table, Survivorship Reflects Termination Due to Death Only  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	100,000	93,884	89,707	86,921	85,294	83,906	23
19	98,186	92,310	88,298	85,666	84,117	82,809	24
20	96,455	90,809	86,956	84,472	82,999	81,768	25
21	94,802	89,377	85,677	83,336	81,936	80,780	26
22	93,226	88,013	84,460	82,257	80,927	79,844	27
23	91,720	86,712	83,301	81,232	79,971	78,959	28
24	90,286	85,475	82,201	80,261	79,066	78,123	29
25	88,921	84,299	81,157	79,343	78,212	77,335	30
26	87,619	83,180	80,166	78,474	77,405	76,593	31
27	86,380	82,117	79,226	77,652	76,644	75,896	32
28	85,202	81,109	78,337	76,878	75,929	75,243	33
29	84,082	80,153	77,497	76,150	75,259	74,633	34
30	83,020	79,249	76,704	75,466	74,631	74,065	35
31	82,011	78,394	75,958	74,826	74,046	73,538	36
32	81,059	77,590	75,259	74,231	73,504	73,052	37
33	81,272	77,826	75,540	73,822	72,915	72,605	38
34	80,819	77,269	74,988	73,460	72,589	72,113	39
35	80,502	76,615	74,130	72,827	72,260	71,672	40
36	81,031	76,642	73,710	72,363	71,873	71,171	41
37	81,441	76,592	73,235	71,852	71,237	70,603	42
38	82,275	77,071	73,318	71,777	70,841	70,005	43
39	82,144	76,725	72,829	71,337	70,312	69,408	44
40	81,549	75,926	72,149	70,680	69,731	68,897	45
41	81,242	75,313	71,662	69,961	69,068	68,341	46
42	81,160	74,850	71,145	69,369	68,511	67,751	47
43	80,819	74,176	70,371	68,742	67,858	67,071	48
44	80,236	73,454	69,650	68,117	67,110	66,376	49
45	79,774	73,085	69,166	67,512	66,594	65,754	50
46	79,397	72,910	68,866	67,090	66,034	65,056	51
47	78,738	72,457	68,520	66,643	65,371	64,310	52
48	77,253	71,071	67,337	65,598	64,378	63,570	53
49	76,475	70,196	66,420	64,773	63,607	62,863	54
50	76,130	69,707	65,710	63,962	62,865	62,089	55
51	75,402	68,963	64,924	63,202	62,094	61,233	56
52	75,070	68,617	64,566	62,463	61,266	60,435	57
53	74,282	67,834	63,832	61,776	60,580	59,659	58
54	73,300	66,819	62,840	60,947	59,830	58,928	59
55	72,621	66,171	62,127	60,079	58,891	57,989	60
56	71,328	65,129	61,063	58,956	57,995	57,065	61
57	69,546	63,814	59,898	58,012	57,056	56,101	62
58	68,183	62,835	59,079	57,308	56,201	55,220	63
59	66,916	61,753	58,153	56,521	55,269	54,265	64
60	65,843	60,541	57,154	55,654	54,263	53,239	65
61	64,490	59,080	55,920	54,712	53,189	52,147	66
62	63,613	58,062	55,078	53,697	52,050	50,993	67
63	63,029	57,317	54,161	52,615	50,852	49,783	68
64	62,352	56,491	53,174	51,471	49,600	48,522	69

Notes:

- (1) Select-and-ultimate *life functions*  $l_x$  reflect termination due to death only. Select age denotes age last birthday at entitlement.
- (2) Values shown are based on extended probabilities found in table 26.

**Table 19 Male Disabled Life Table, Survivorship Reflects Termination Due to  
Death or Recovery  
(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	100,000	88,072	77,174	67,505	60,034	55,138	23
19	90,110	79,561	70,164	61,906	55,510	51,179	24
20	81,529	72,165	64,048	56,998	51,528	47,690	25
21	74,064	65,721	58,700	52,687	48,019	44,612	26
22	67,556	60,096	54,016	48,897	44,924	41,895	27
23	62,324	55,580	50,156	45,692	42,191	39,496	28
24	57,786	51,662	46,758	42,871	39,779	37,378	29
25	53,866	48,277	43,786	40,391	37,648	35,509	30
26	50,408	45,305	41,189	38,214	35,769	33,863	31
27	47,272	42,692	38,959	36,354	34,164	32,417	32
28	44,023	39,994	36,764	34,491	32,640	31,040	33
29	41,135	37,602	34,845	32,856	31,309	29,848	34
30	38,638	35,519	33,151	31,399	30,040	28,716	35
31	36,633	33,832	31,715	30,152	28,858	27,670	36
32	35,099	32,537	30,552	29,069	27,831	26,763	37
33	34,028	31,637	29,692	28,155	26,967	25,943	38
34	33,223	30,881	28,922	27,339	26,121	25,153	39
35	32,245	29,914	27,998	26,548	25,336	24,449	40
36	31,048	28,736	26,928	25,669	24,533	23,762	41
37	30,140	27,834	26,080	24,927	23,818	23,061	42
38	29,512	27,169	25,386	24,243	23,161	22,410	43
39	29,057	26,611	24,776	23,591	22,554	21,821	44
40	28,605	26,013	24,219	23,022	22,051	21,265	45
41	27,908	25,174	23,458	22,298	21,447	20,732	46
42	27,487	24,624	22,906	21,803	20,931	20,221	47
43	27,206	24,243	22,427	21,381	20,433	19,734	48
44	26,937	23,908	22,013	20,917	19,944	19,295	49
45	26,418	23,342	21,495	20,374	19,446	18,855	50
46	25,765	22,650	20,895	19,850	19,005	18,412	51
47	25,245	22,119	20,404	19,334	18,588	18,001	52
48	24,503	21,468	19,776	18,765	18,110	17,641	53
49	23,814	20,886	19,235	18,344	17,717	17,223	54
50	23,305	20,431	18,870	18,063	17,422	16,817	55
51	22,672	19,810	18,320	17,535	16,907	16,349	56
52	22,225	19,318	17,850	17,037	16,417	15,889	57
53	21,863	18,927	17,437	16,564	15,964	15,444	58
54	21,223	18,383	16,885	16,021	15,454	14,972	59
55	20,463	17,798	16,341	15,625	15,055	14,543	60
56	19,733	17,264	15,880	15,175	14,597	14,112	61
57	18,925	16,676	15,436	14,727	14,151	13,681	62
58	18,186	16,100	14,941	14,218	13,694	13,235	63
59	17,431	15,440	14,345	13,741	13,225	12,776	64
60	16,825	14,912	13,869	13,256	12,747	12,306	65
61	16,318	14,399	13,385	12,766	12,262	11,830	66
62	15,770	13,856	12,875	12,253	11,774	11,345	67
63	15,183	13,283	12,334	11,754	11,278	10,854	68
64	14,592	12,711	11,832	11,249	10,777	10,359	69

Notes:

- (1) Select-and-ultimate *life functions*  $l_x$  reflect termination due to death or recovery. Select age denotes age last birthday at entitlement.
- (2) Values shown are based on extended probabilities found in table 25.

**Table 20 Female Disabled Life Table, Survivorship Reflects Termination Due to Death or Recovery  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	100,000	90,245	82,070	74,831	67,469	62,654	23
19	91,978	83,297	76,001	69,609	63,312	59,069	24
20	84,905	77,161	70,634	64,983	59,620	55,883	25
21	78,653	71,729	65,877	60,878	56,337	53,051	26
22	73,121	66,917	61,658	57,233	53,419	50,536	27
23	68,219	62,648	57,914	53,997	50,828	48,306	28
24	64,066	59,039	54,755	51,278	48,529	46,333	29
25	60,378	55,833	51,951	48,867	46,493	44,593	30
26	57,117	53,001	49,476	46,745	44,695	43,064	31
27	54,263	50,527	47,320	44,904	43,113	41,729	32
28	51,930	48,521	45,588	43,451	41,842	40,573	33
29	49,806	46,697	44,016	42,136	40,655	39,494	34
30	47,993	45,152	42,697	40,952	39,573	38,488	35
31	46,389	43,748	41,503	39,884	38,591	37,587	36
32	44,973	42,515	40,397	38,909	37,699	36,776	37
33	44,230	41,839	39,803	38,049	36,816	36,019	38
34	43,087	40,696	38,753	37,197	36,069	35,249	39
35	42,038	39,523	37,566	36,209	35,324	34,529	40
36	41,462	38,745	36,652	35,354	34,606	33,834	41
37	40,893	38,008	35,791	34,576	33,858	33,172	42
38	40,706	37,689	35,335	34,122	33,297	32,540	43
39	40,221	37,123	34,729	33,576	32,711	31,932	44
40	39,553	36,387	34,078	32,937	32,096	31,379	45
41	38,993	35,728	33,522	32,275	31,463	30,837	46
42	38,516	35,131	32,941	31,684	30,924	30,325	47
43	37,945	34,475	32,275	31,116	30,400	29,822	48
44	37,312	33,841	31,673	30,595	29,883	29,353	49
45	36,792	33,405	31,220	30,124	29,496	28,949	50
46	36,382	33,116	30,900	29,780	29,115	28,541	51
47	35,899	32,752	30,613	29,471	28,713	28,126	52
48	35,061	31,994	29,989	28,929	28,189	27,726	53
49	34,551	31,485	29,503	28,498	27,781	27,356	54
50	34,221	31,135	29,087	28,060	27,396	26,967	55
51	33,714	30,670	28,632	27,641	27,008	26,551	56
52	33,386	30,376	28,360	27,235	26,595	26,166	57
53	32,859	29,876	27,916	26,852	26,244	25,795	58
54	32,288	29,299	27,374	26,417	25,871	25,447	59
55	31,916	28,941	26,993	25,994	25,434	25,018	60
56	31,310	28,451	26,495	25,485	25,030	24,603	61
57	30,468	27,833	25,961	25,057	24,607	24,174	62
58	29,784	27,337	25,573	24,732	24,222	23,782	63
59	29,190	26,832	25,152	24,374	23,807	23,361	64
60	28,686	26,275	24,702	23,985	23,363	22,912	65
61	28,060	25,610	24,151	23,563	22,890	22,442	66
62	27,643	25,139	23,770	23,110	22,401	21,946	67
63	27,300	24,737	23,310	22,644	21,885	21,425	68
64	26,928	24,312	22,884	22,151	21,346	20,882	69

Notes:

- (1) Select-and-ultimate *life functions*  $l_x$  reflect termination due to death or recovery. Select age denotes age last birthday at entitlement.
- (2) Values shown are based on extended probabilities found in table 26.

**Table 21 Male Disabled Expected Number of Years on Disability, Survivorship  
Reflects Termination Due to Death or Recovery  
(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	14.3	15.1	16.2	17.4	18.6	19.2	23
19	14.9	15.8	16.8	18.0	19.0	19.6	24
20	15.4	16.4	17.4	18.4	19.3	19.8	25
21	16.0	17.0	17.9	18.9	19.7	20.2	26
22	16.6	17.6	18.5	19.4	20.0	20.5	27
23	17.0	18.0	18.9	19.7	20.3	20.7	28
24	17.4	18.4	19.3	20.0	20.5	20.8	29
25	17.8	18.8	19.6	20.2	20.7	20.9	30
26	18.0	19.0	19.9	20.4	20.7	20.9	31
27	18.3	19.2	20.0	20.4	20.7	20.8	32
28	18.7	19.5	20.2	20.5	20.6	20.7	33
29	19.0	19.8	20.3	20.5	20.5	20.5	34
30	19.3	19.9	20.3	20.4	20.3	20.2	35
31	19.4	19.9	20.2	20.3	20.1	20.0	36
32	19.3	19.8	20.0	20.0	19.9	19.7	37
33	19.0	19.4	19.6	19.7	19.5	19.3	38
34	18.6	18.9	19.2	19.3	19.1	18.8	39
35	18.2	18.6	18.8	18.8	18.7	18.4	40
36	18.0	18.4	18.6	18.5	18.3	17.9	41
37	17.6	18.0	18.2	18.0	17.8	17.4	42
38	17.1	17.5	17.7	17.5	17.3	16.9	43
39	16.5	17.0	17.2	17.0	16.8	16.3	44
40	15.9	16.5	16.6	16.5	16.2	15.8	45
41	15.4	16.1	16.2	16.0	15.6	15.1	46
42	14.8	15.5	15.6	15.4	15.0	14.5	47
43	14.2	14.8	15.0	14.7	14.4	13.9	48
44	13.5	14.2	14.3	14.1	13.7	13.2	49
45	13.0	13.6	13.7	13.5	13.1	12.5	50
46	12.5	13.1	13.2	12.8	12.4	11.7	51
47	11.9	12.5	12.5	12.2	11.6	11.0	52
48	11.4	12.0	11.9	11.5	10.9	10.2	53
49	10.9	11.4	11.3	10.8	10.2	9.5	54
50	10.3	10.7	10.6	10.0	9.3	8.7	55
51	9.8	10.1	9.9	9.3	8.6	7.9	56
52	9.1	9.4	9.2	8.6	7.9	7.1	57
53	8.5	8.7	8.4	7.8	7.1	6.3	58
54	7.9	8.0	7.7	7.1	6.3	5.5	59
55	7.3	7.3	6.9	6.2	5.5	4.6	60
56	6.7	6.6	6.2	5.4	4.6	3.8	61
57	6.2	5.9	5.3	4.6	3.7	2.9	62
58	5.5	5.2	4.5	3.7	2.9	1.9	63
59	4.9	4.4	3.7	2.8	1.9	1.0	64
60	4.1	3.6	2.8	1.9	1.0	-	65
61	3.4	2.7	1.9	1.0	-	-	66
62	2.6	1.9	1.0	-	-	-	67
63	1.8	1.0	-	-	-	-	68
64	0.9	-	-	-	-	-	69

Notes:

- (1) Average duration of disability entitlement prior to termination due to death, recovery, or attainment of age 65. Survivorship experience is based in table 19 (through attained age 65).
- (2) Values are read across the row for durations 0 to 4, and down the ultimate column ("5") for durations greater than 5.

**Table 22 Female Disabled Expected Number of Years on Disability, Survivorship  
 Reflects Termination Due to Death or Recovery  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	18.6	19.5	20.4	21.4	22.6	23.3	23
19	19.2	20.2	21.1	22.0	23.1	23.7	24
20	19.9	20.8	21.7	22.5	23.5	24.0	25
21	20.5	21.4	22.2	23.0	23.8	24.3	26
22	21.0	21.9	22.8	23.5	24.1	24.5	27
23	21.6	22.4	23.2	23.9	24.3	24.6	28
24	22.0	22.8	23.6	24.1	24.5	24.6	29
25	22.4	23.1	23.8	24.3	24.5	24.5	30
26	22.7	23.4	24.0	24.4	24.5	24.4	31
27	22.9	23.5	24.1	24.4	24.4	24.1	32
28	23.0	23.5	24.0	24.2	24.1	23.8	33
29	23.0	23.5	23.9	23.9	23.8	23.5	34
30	22.9	23.3	23.6	23.6	23.4	23.1	35
31	22.7	23.1	23.3	23.2	23.0	22.6	36
32	22.5	22.8	23.0	22.8	22.5	22.1	37
33	22.0	22.2	22.3	22.3	22.1	21.5	38
34	21.6	21.9	21.9	21.8	21.5	21.0	39
35	21.2	21.5	21.6	21.4	20.9	20.4	40
36	20.6	21.0	21.2	20.9	20.4	19.8	41
37	20.0	20.4	20.7	20.4	19.8	19.2	42
38	19.2	19.7	20.0	19.7	19.1	18.6	43
39	18.6	19.1	19.3	19.0	18.5	17.9	44
40	18.0	18.5	18.7	18.4	17.8	17.2	45
41	17.4	17.9	18.1	17.7	17.2	16.5	46
42	16.7	17.3	17.4	17.1	16.5	15.8	47
43	16.1	16.7	16.8	16.4	15.7	15.0	48
44	15.5	16.0	16.1	15.7	15.0	14.3	49
45	14.9	15.3	15.4	14.9	14.2	13.5	50
46	14.2	14.6	14.6	14.1	13.4	12.6	51
47	13.6	13.8	13.7	13.2	12.6	11.8	52
48	13.0	13.2	13.0	12.5	11.8	11.0	53
49	12.3	12.5	12.3	11.7	11.0	10.1	54
50	11.6	11.7	11.5	10.9	10.1	9.3	55
51	10.9	10.9	10.7	10.0	9.3	8.4	56
52	10.2	10.1	9.8	9.2	8.4	7.5	57
53	9.5	9.4	9.0	8.3	7.5	6.6	58
54	8.8	8.6	8.2	7.5	6.6	5.7	59
55	8.0	7.8	7.3	6.6	5.7	4.8	60
56	7.3	7.0	6.5	5.7	4.8	3.9	61
57	6.6	6.2	5.6	4.8	3.9	2.9	62
58	5.9	5.4	4.7	3.9	2.9	2.0	63
59	5.1	4.5	3.8	2.9	2.0	1.0	64
60	4.3	3.7	2.9	2.0	1.0	-	65
61	3.5	2.8	2.0	1.0	-	-	66
62	2.7	1.9	1.0	-	-	-	67
63	1.8	1.0	-	-	-	-	68
64	1.0	-	-	-	-	-	69

Notes:

- (1) Average duration of disability entitlement prior to termination due to death, recovery, or attainment of age 65. Survivorship experience is based in table 19 (through attained age 65).
- (2) Values are read across the row for durations 0 to 4, and down the ultimate column ("5") for durations greater than 5.



**Table 23 Male Disabled Monthly Life Annuity Due to Age 65, Survivorship Reflects Termination Due to Death or Recovery (experience period 1997-1999)**

Select age	Present value of annuity at given interest rate (in months) <sup>1</sup>					
	3%	4%	5%	6%	7%	8%
18	108.69	95.83	85.39	76.79	69.61	63.53
19	112.97	99.44	88.45	79.40	71.84	65.46
20	116.92	102.85	91.41	81.96	74.07	67.40
21	121.23	106.53	94.55	84.66	76.39	69.41
22	125.53	110.21	97.71	87.38	78.75	71.45
23	129.02	113.22	100.30	89.62	80.69	73.14
24	132.25	116.03	102.75	91.74	82.53	74.75
25	135.13	118.56	104.97	93.69	84.23	76.23
26	137.78	120.93	107.07	95.54	85.86	77.67
27	140.43	123.33	109.21	97.46	87.57	79.19
28	144.02	126.55	112.10	100.03	89.86	81.22
29	147.40	129.63	114.87	102.52	92.10	83.23
30	150.21	132.23	117.26	104.70	94.07	85.01
31	151.90	133.89	118.85	106.19	95.45	86.27
32	152.26	134.42	119.47	106.85	96.11	86.91
33	151.12	133.68	119.00	106.56	95.95	86.85
34	148.98	132.06	117.77	105.62	95.22	86.26
35	147.50	131.02	117.04	105.11	94.87	86.03
36	146.83	130.68	116.94	105.16	95.02	86.24
37	145.11	129.45	116.05	104.53	94.58	85.94
38	142.27	127.22	114.30	103.15	93.48	85.05
39	138.69	124.35	111.98	101.26	91.92	83.76
40	135.12	121.48	109.65	99.37	90.38	82.48
41	132.32	119.27	107.91	97.98	89.27	81.60
42	128.50	116.16	105.37	95.90	87.56	80.18
43	124.14	112.56	102.39	93.42	85.48	78.44
44	119.70	108.87	99.32	90.85	83.33	76.63
45	116.04	105.87	96.85	88.82	81.66	75.24
46	112.73	103.17	94.65	87.03	80.20	74.05
47	108.88	99.96	91.98	84.81	78.35	72.52
48	105.59	97.25	89.75	82.98	76.85	71.30
49	102.06	94.31	87.30	80.95	75.18	69.92
50	97.85	90.74	84.28	78.39	73.01	68.09
51	93.56	87.06	81.12	75.68	70.69	66.10
52	88.50	82.64	77.26	72.31	67.75	63.53
53	83.07	77.85	73.04	68.59	64.47	60.65
54	78.21	73.57	69.26	65.26	61.53	58.06
55	73.60	69.49	65.65	62.07	58.71	55.57
56	68.57	64.99	61.62	58.47	55.50	52.70
57	63.42	60.33	57.42	54.67	52.07	49.61
58	57.57	54.98	52.52	50.19	47.97	45.86
59	51.21	49.09	47.07	45.14	43.30	41.55
60	44.14	42.48	40.89	39.36	37.90	36.49
61	36.44	35.21	34.02	32.87	31.76	30.69
62	28.35	27.49	26.65	25.84	25.05	24.29
63	19.74	19.19	18.66	18.14	17.63	17.13
64	10.38	10.09	9.80	9.52	9.24	8.97

<sup>1</sup> The present value of the annuity-due corresponds to a disability benefit of 1 per month from the age at onset of disability to age 65.

**Table 24 Female Disabled Monthly Life Annuity Due to Age 65, Survivorship  
 Reflects Termination Due to Death or Recovery  
 (experience period 1997-1999)**

Select age	Present value of annuity at given interest rate (in months) <sup>1</sup>					
	3%	4%	5%	6%	7%	8%
18	131.79	113.87	99.61	88.08	78.63	70.76
19	136.25	117.57	102.68	90.64	80.76	72.55
20	140.68	121.26	105.76	93.22	82.93	74.37
21	145.06	124.94	108.85	95.81	85.11	76.20
22	149.35	128.57	111.92	98.40	87.29	78.05
23	153.50	132.11	114.93	100.95	89.45	79.88
24	157.10	135.22	117.60	103.23	91.40	81.54
25	160.44	138.15	120.14	105.42	93.28	83.15
26	163.45	140.83	122.49	107.47	95.06	84.68
27	166.02	143.17	124.58	109.32	96.66	86.08
28	167.71	144.79	126.09	110.69	97.90	87.17
29	169.09	146.19	127.43	111.93	99.02	88.17
30	169.81	147.04	128.32	112.80	99.84	88.92
31	170.04	147.50	128.89	113.41	100.44	89.49
32	169.77	147.55	129.12	113.74	100.82	89.87
33	167.35	145.77	127.80	112.75	100.05	89.27
34	166.17	145.05	127.38	112.53	99.95	89.25
35	164.52	143.91	126.61	112.00	99.59	88.98
36	161.26	141.41	124.65	110.45	98.34	87.96
37	157.95	138.85	122.66	108.88	97.08	86.94
38	153.54	135.36	119.87	106.63	95.25	85.43
39	150.02	132.63	117.74	104.95	93.92	84.36
40	146.98	130.30	115.96	103.58	92.85	83.53
41	143.49	127.58	113.83	101.90	91.53	82.47
42	139.66	124.55	111.43	99.99	89.99	81.22
43	136.01	121.67	109.14	98.18	88.55	80.07
44	132.48	118.89	106.95	96.45	87.18	78.99
45	128.58	115.77	104.47	94.46	85.60	77.72
46	124.29	112.30	101.66	92.19	83.76	76.23
47	120.07	108.87	98.88	89.94	81.94	74.76
48	116.47	105.96	96.53	88.06	80.43	73.55
49	111.81	102.09	93.31	85.38	78.21	71.71
50	106.49	97.59	89.52	82.18	75.50	69.42
51	101.46	93.33	85.91	79.13	72.93	67.25
52	95.84	88.51	81.77	75.58	69.89	64.64
53	90.45	83.86	77.76	72.12	66.91	62.08
54	84.84	78.95	73.49	68.40	63.67	59.26
55	78.59	73.43	68.61	64.10	59.88	55.93
56	72.51	68.02	63.80	59.83	56.09	52.57
57	66.54	62.67	59.01	55.54	52.26	49.15
58	60.02	56.76	53.66	50.70	47.88	45.19
59	52.91	50.24	47.69	45.23	42.88	40.62
60	45.25	43.14	41.10	39.14	37.24	35.41
61	37.26	35.66	34.10	32.59	31.12	29.69
62	28.74	27.60	26.48	25.38	24.31	23.26
63	19.76	19.02	18.28	17.55	16.84	16.13
64	10.17	9.75	9.33	8.91	8.49	8.08

<sup>1</sup> The present value of the annuity-due corresponds to a disability benefit of 1 per month from the age at onset of disability to age 65.

**Table 25 Male Disabled Probability of Death (Extended) - Rates per Thousand  
(experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	68.8	51.4	45.0	23.2	16.8	18.0	23
19	67.8	50.6	42.8	23.1	16.8	17.8	24
20	66.9	49.9	40.6	23.0	16.9	17.5	25
21	65.9	49.2	38.5	22.9	16.9	17.3	26
22	64.9	48.5	36.3	22.8	16.9	17.0	27
23	64.0	47.8	34.1	22.7	16.9	16.8	28
24	63.0	47.1	32.0	22.6	17.0	16.6	29
25	62.0	46.3	29.8	22.5	17.0	16.3	30
26	61.1	45.6	27.7	22.4	17.0	16.1	31
27	60.1	44.9	25.5	22.3	17.0	15.8	32
28	59.1	42.6	24.0	19.1	17.1	11.7	33
29	58.2	40.5	22.5	15.7	17.1	11.9	34
30	57.2	38.7	21.5	15.0	17.1	12.7	35
31	56.2	37.8	20.2	17.3	17.1	11.3	36
32	55.3	37.6	21.3	18.6	17.2	11.1	37
33	54.0	38.4	26.3	19.1	18.8	12.5	38
34	55.1	40.1	30.7	22.4	19.4	11.9	39
35	57.4	40.5	28.2	24.4	18.9	13.0	40
36	59.7	39.8	23.1	23.4	16.3	15.1	41
37	61.7	40.5	20.5	23.7	16.7	14.7	42
38	64.5	43.3	21.5	24.2	16.7	13.3	43
39	69.2	46.3	24.5	24.2	16.3	13.4	44
40	75.9	46.0	26.5	23.7	19.7	14.0	45
41	83.3	45.5	27.2	21.0	18.2	15.3	46
42	89.9	47.8	26.5	23.3	19.9	16.1	47
43	95.4	53.9	25.1	27.6	21.7	15.2	48
44	99.6	59.6	28.2	30.3	21.4	16.6	49
45	103.9	60.3	31.9	30.9	20.7	18.2	50
46	108.6	58.7	32.1	30.2	23.2	18.2	51
47	112.2	58.7	37.4	28.8	25.2	16.4	52
48	113.7	61.1	38.1	27.0	20.7	20.0	53
49	114.6	63.4	34.3	27.3	23.3	20.3	54
50	116.3	63.2	31.2	28.7	30.2	25.3	55
51	119.6	64.0	31.6	29.3	28.5	26.3	56
52	124.1	65.8	35.0	30.1	27.8	26.6	57
53	127.7	69.0	40.2	30.5	28.8	29.0	58
54	127.6	72.1	42.2	30.1	27.6	27.0	59
55	124.9	73.8	36.3	31.3	30.5	28.2	60
56	120.6	74.0	38.6	33.1	29.9	29.5	61
57	115.0	69.3	41.4	34.7	30.5	31.8	62
58	110.9	67.0	44.3	33.4	31.7	34.1	63
59	109.6	65.8	38.1	34.8	32.9	36.4	64
60	108.4	64.9	40.3	36.2	34.1	38.7	65
61	112.4	66.0	42.6	37.6	35.2	41.0	66
62	116.3	67.0	44.8	39.1	36.4	43.3	67
63	120.3	68.1	47.0	40.5	37.6	45.6	68
64	124.2	69.1	49.3	41.9	38.8	47.9	69

Notes:

- (1) *Select and ultimate probabilities from table 11 and extended beyond attained age 65.*
- (2) *The probabilities shown have been graduated using the Whittaker-Henderson Type B two-dimensional graduation methodology.*

**Table 26 Female Disabled Probability of Death (Extended) - Rates per Thousand  
 (experience period 1997-1999)**

Select age	Duration of disability						Attained age
	0	1	2	3	4	5+	
18	61.2	44.5	31.1	18.7	16.3	13.1	23
19	59.8	43.5	29.8	18.1	15.6	12.6	24
20	58.5	42.4	28.6	17.4	14.8	12.1	25
21	57.2	41.4	27.3	16.8	14.1	11.6	26
22	55.9	40.4	26.1	16.2	13.4	11.1	27
23	54.6	39.3	24.8	15.5	12.7	10.6	28
24	53.3	38.3	23.6	14.9	11.9	10.1	29
25	52.0	37.3	22.4	14.3	11.2	9.6	30
26	50.7	36.2	21.1	13.6	10.5	9.1	31
27	49.4	35.2	19.9	13.0	9.8	8.6	32
28	48.0	34.2	18.6	12.3	9.0	8.1	33
29	46.7	33.1	17.4	11.7	8.3	7.6	34
30	45.4	32.1	16.1	11.1	7.6	7.1	35
31	44.1	31.1	14.9	10.4	6.9	6.6	36
32	42.8	30.0	13.7	9.8	6.1	6.1	37
33	42.4	29.4	22.7	12.3	4.2	6.8	38
34	43.9	29.5	20.4	11.9	6.6	6.1	39
35	48.3	32.4	17.6	7.8	8.1	7.0	40
36	54.2	38.3	18.3	6.8	9.8	8.0	41
37	59.5	43.8	18.9	8.6	8.9	8.5	42
38	63.3	48.7	21.0	13.0	11.8	8.5	43
39	66.0	50.8	20.5	14.4	12.9	7.4	44
40	69.0	49.7	20.4	13.4	12.0	8.1	45
41	73.0	48.5	23.7	12.8	10.5	8.6	46
42	77.7	49.5	25.0	12.4	11.1	10.0	47
43	82.2	51.3	23.2	12.9	11.6	10.4	48
44	84.5	51.8	22.0	14.8	10.9	9.4	49
45	83.8	53.6	23.9	13.6	12.6	10.6	50
46	81.7	55.5	25.8	15.7	14.8	11.5	51
47	79.8	54.3	27.4	19.1	16.2	11.5	52
48	80.0	52.5	25.8	18.6	12.5	11.1	53
49	82.1	53.8	24.8	18.0	11.7	12.3	54
50	84.4	57.3	26.6	17.1	12.3	13.8	55
51	85.4	58.6	26.5	17.5	13.9	13.0	56
52	86.0	59.0	32.6	19.2	13.6	12.8	57
53	86.8	59.0	32.2	19.4	15.2	12.3	58
54	88.4	59.5	30.1	18.3	15.1	15.9	59
55	88.8	61.1	33.0	19.8	15.3	15.9	60
56	86.9	62.4	34.5	16.3	16.0	16.9	61
57	82.4	61.4	31.5	16.5	16.7	15.7	62
58	78.4	59.8	30.0	19.3	17.5	17.3	63
59	77.2	58.3	28.1	22.2	18.2	18.9	64
60	80.5	55.9	26.2	25.0	18.9	20.5	65
61	83.9	53.5	21.6	27.8	19.6	22.1	66
62	87.3	51.4	25.1	30.7	20.3	23.7	67
63	90.6	55.1	28.6	33.5	21.0	25.3	68
64	94.0	58.7	32.0	36.3	21.7	26.9	69

Notes:

- (1) Select and ultimate probabilities from table 11 and extended beyond attained age 65.
- (2) The probabilities shown have been graduated using the Whittaker-Henderson Type B two-dimensional graduation methodology.