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Incidence of Disability for U.S. Government Employees: 1988–1993

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The purpose of this article is to call attention to a table of rates of disability based on recent experience under the Civil Service Retirement System (CSRS) that covers federal government employees hired prior to January 1, 1984, and the Federal Employees Retirement System (FERS) that covers such employees hired on or after January 1, 1984. Reference also is made to other resources that actuaries may find helpful when selecting an incidence of disability assumption.

Consistent with *Actuarial Standard of Practice No. 4 (ASOP 4)*, "Measuring Pension Obligations," issued by the Actuarial Standards Board, "the actuarial assumptions individually and in combination should reflect the actuary's best judgment." Also, under *Actuarial Standard of Practice No. 27 (ASOP 27)*, "Selection of Economic Assumptions for Measuring Pension Obligations," an actuary is required to select each assumption within the best-estimate range for that particular economic assumption. Although the combination of these Standards of Practice applies to all assumptions, there are certain assumptions that typically do not get as much "attention" as others. One of the "neglected" assumptions often is the incidence of disability.

Actuaries may not evaluate the disability assumption as closely as they might for other assumptions, for a variety of reasons. First, it may be expected that the use of a more refined

assumption would not produce materially different results from the current assumption. Second, it may be inappropriate to use a non-zero disability assumption for small plans when, in the actuary's judgment, the probability that any active participant will become disabled before retirement is small. Third, it is more difficult to compare plan experience to actuarial "norms," because disability experience is highly sensitive to the type of employment, definition of disability under the plan, general economic conditions, and the disability benefit provided under the plan.

Recent Study

The study was performed by Michael Virga, Senior Actuary for Pension Programs at the U.S. Office of Personnel Management in Washington D.C. The study was based on experience during the plan years 1988–1993.

The 1988–1993 incidence of disability for the CSRS and FERS can be summarized as shown in Table 1.

The combined CSRS and FERS disability experience was used to generate disability rates by age and gender. The disability rates were based on salary. The rates reflect the incidence of disability only; they do not consider recovery. The rates were graduated from ages 22 to 61 to produce the disability incidence data shown in Table 2 on page 10.

Exposure Base

The exposure base for this study is the entire disability experience under the CSRS and FERS for the years 1988 through 1993, inclusive. The CSRS and FERS cover a combined 2.9 million active workers, including approximately 750,000 postal workers. Therefore, the exposure base for this study includes both white-collar and blue-collar components.

Definition of Disabled under the Plans

Under the CSRS, an employee is eligible for disability retirement if he completes five years of service and has become disabled. An employee is considered disabled "if the employee is found to be unable to render useful and efficient service in the employee's position and is not qualified for reassignment to a vacant position which is in the agency at the same grade or level and in which the employee would be able to render useful and efficient service."

Under the FERS, eligibility for disability is effectively the same as under the CSRS, except that the employee is only required to have completed at least 18 months of service.

Based on the above, the definition of "disabled" does not appear to be as strict as under Title II of the Social

continued on page 10, column 2

TABLE 1
1988–1993 Incidence of Disability for the CSRS and FERS

Year	Active Lives			Incidence of Disability		
	CSRS	FERS	Total	CSRS	FERS	Total
1988	2,011,000	919,000	2,930,000	6,800	700	7,500
1989	1,918,000	1,052,000	2,970,000	6,300	1,100	7,400
1990	1,826,000	1,136,000	2,962,000	5,800	1,200	7,000
1991	1,726,000	1,260,000	2,986,000	4,900	1,500	6,400
1992	1,654,000	1,279,000	2,933,000	5,000	1,900	6,900
1993	1,525,000	1,318,000	2,843,000	4,800	2,400	7,200

Incidence of Disability
continued from page 9

TABLE 2
Rate of Disablement by Salary

Age	Male	Female
22	0.0001	0.0002
23	0.0001	0.0003
24	0.0001	0.0003
25	0.0002	0.0003
26	0.0004	0.0004
27	0.0005	0.0005
28	0.0006	0.0005
29	0.0007	0.0006
30	0.0008	0.0007
31	0.0009	0.0008
32	0.0010	0.0009
33	0.0010	0.0010
34	0.0011	0.0011
35	0.0012	0.0012
36	0.0013	0.0013
37	0.0014	0.0014
38	0.0015	0.0015
39	0.0016	0.0016
40	0.0017	0.0017
41	0.0018	0.0018
42	0.0019	0.0019
43	0.0019	0.0021
44	0.0020	0.0022
45	0.0021	0.0024
46	0.0022	0.0026
47	0.0024	0.0029
48	0.0026	0.0032
49	0.0028	0.0036
50	0.0030	0.0040
51	0.0032	0.0045
52	0.0034	0.0050
53	0.0038	0.0056
54	0.0044	0.0063
55	0.0052	0.0071
56	0.0063	0.0078
57	0.0072	0.0083
58	0.0081	0.0088
59	0.0088	0.0091
60	0.0092	0.0093
61	0.0095	0.0094

Security Act and the regulations thereunder. That definition requires that “the worker must have a medically determinable physical or mental condition that (1) prevents him or her from engaging in any substantial gainful work, and (2) is expected to last (or has lasted) at least 12 months or is expected to result in death.”

Disability Benefit under the Plans

The disability retirement benefit under the CSRS is equal to the participant’s accrued benefit at the date of disability, subject to a minimum benefit of the lesser of (1) 40% of average pay, or (2) X% of average pay, where X% is the percentage obtained under the plan’s benefit formula using total service projected to age 60.

Under the CSRS, the plan’s accrued benefit is defined as follows:

- $1.50\% \times \text{Service} \times \text{Average Pay}$ (up to five years of service)
plus
- $1.75\% \times \text{Service} \times \text{Average Pay}$ (for service greater than five years, but less than 10 years)
plus
- $2.00\% \times \text{Service} \times \text{Average Pay}$ (for service in excess of 10 years).

Under the FERS, the disability retirement benefit is equal to the participant’s accrued benefit at the date of disability, subject to a minimum benefit of 40% of average pay minus 60% of the annual Social Security benefit being received.

Under the FERS, the plan’s accrued benefit is defined as follows:

$$1.00\% \times \text{Service} \times \text{Average Pay}.$$

“Average pay” under both the CSRS and FERS is defined as three-year final average compensation.

The study did not address how any potential subsidized disability retirement benefits may have an impact on the plans’ disability experience.

Additional Resources

Information on the selection of assumptions for both the incidence and continuance of disability can be found in several SOA Study Notes.

- Study Note 461–24–98, “Pension Topics,” by Stuart G. Schoenly, FSA, and Kathryn Garrity, FSA. As its title suggests, this study note provides guidance on a wide variety of issues to consider when performing an actuarial valuation.
- Study Note 461–66–98, “Selection of Actuarial Assumptions,” by William M. Mercer, Inc. This study note deals solely with considerations when selecting actuarial assumptions. It also addresses how one might select economic assumptions consistent with *Actuarial Standard of Practice No. 27*.
- Study Note 461–64–98, “Valuation of Pension Benefits for Disabled Participants,” by Edward Sypher, ASA. This study note discusses valuation of benefits to persons who are currently disabled. It contains several selected disability tables that may be helpful when evaluating a plan’s disabled mortality assumption (see “Study Note Corner” on page 8).

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