

**THE LONG-RANGE DISABILITY ASSUMPTIONS  
FOR THE 2018 TRUSTEES REPORT**

OFFICE OF THE CHIEF ACTUARY  
SOCIAL SECURITY ADMINISTRATION

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# DISABILITY

ASSUMPTIONS FOR THE 2018 TRUSTEES REPORT  
OFFICE OF THE CHIEF ACTUARY, SSA

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## 1 Overview

Each year the Board of Trustees of the Federal Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI) Trust Funds provides an annual report to the Congress on the financial and actuarial status of the OASDI program. The Office of the Chief Actuary (OCACT) produces projections of future cost and income based on three separate sets of long-range (75-year) assumptions for three key disability variables. The intermediate (alternative II) set of assumptions represents the Trustees’ best estimate for future experience, while the low cost (alternative I) and high cost (alternative III) sets of assumptions are more and less favorable, respectively, from the perspective of program cost as a percent of taxable payroll. In addition, the intermediate assumptions serve as the central tendency for the stochastic projections presented in the OASDI Trustees Report. This memorandum presents the disability assumptions used in the 2018 annual report of the Board of Trustees (the “Trustees Report”).

The disability assumptions are:

- The ultimate disability incidence rates by age group and sex,
- The ultimate disability death rates by age group and sex, and
- The ultimate disability recovery rates by age group and sex.

For the 2018 Trustees Report, there are no changes to these ultimate assumptions from those used for the 2017 Trustees Report. There are also no significant method changes in the disability model for the 2018 Trustees Report. Therefore, there is no significant change to the OASDI actuarial balance due to disability ultimate assumptions and methods. The following table shows the ultimate summary measures for the assumptions.<sup>1</sup>

<b>Key Disability Summary Measures for the Long-Range (75-year) Projection Period 2017 Trustees Report and 2018 Trustees Report</b>									
	<b>2017 Trustees Report Alternative</b>			<b>2018 Trustees Report Alternative</b>			<b>2017 Trustees Report Less 2018 Trustees Report</b>		
	<b>I</b>	<b>II</b>	<b>III</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>I</b>	<b>II</b>	<b>III</b>
Age-sex-adjusted Disability Incidence Rate per 1,000 in the last year of the 75-year projection	4.3	5.4	6.4	4.3	5.4	6.4	0.0	0.0	0.0
Age-sex-adjusted Disability Death Rate per 1,000 in the last year of the 75-year projection	18.1	11.4	6.7	18.4	11.6	6.9	-0.3	-0.2	-0.2
Age-sex-adjusted Disability Recovery Rate per 1,000 in the last year of the 75-year projection	12.5	10.4	8.3	12.5	10.3	8.2	0.0	0.1	0.1

For the 2018 Trustees Report, the ultimate disability incidence, death, and recovery rate assumptions are the same as those used for the 2017 Trustees Report. The assumed ultimate assumptions are applied for the twentieth projection year and thereafter. During the first ten years of the projection period, the long-range model reconciles with projections from the short-range model. There is a transition between the rates at the end of the short-range period and the

<sup>1</sup> The ultimate disability assumptions by age group and sex are the same in the 2017 Trustees Report and 2018 Trustees Report. The ultimate summary measures changed slightly due to data and methodology updates.

implementation of the ultimate rates as of the twentieth projection year. Recent award-rate data indicate a continued decline since the peak in 2010. Reflecting these new data and transitioning to the ultimate disability award rates result in an increase (improvement) in the long-range OASDI actuarial balance, under the intermediate alternative, of 0.01 percent of taxable payroll.

The remainder of this paper provides details regarding the historical values and future values for each of the disability assumptions, and the basis for the assumptions.

## **2 Disability Incidence**

### **2.1 Effects of Economic Cycles and Policy Changes on DI Incidence Rates**

Disability incidence rates are the proportion of workers in a given year, insured for but not receiving disability benefits (exposed population), who file for and are awarded disabled worker benefits. The age-sex-adjusted historical and short-range projected alternative II incidence rates are shown in Chart 1. A number of specific economic and policy drivers have influenced disability program cost historically and will continue to have an effect on disability incidence. Periodic economic recessions, as indicated by the civilian unemployment rate in red in Chart 1, have been associated with temporary increases in disability incidence. Incidence rates tend to increase temporarily in bad economic times. Some individuals who gradually develop conditions that would qualify for DI benefits based on the severity of their medically-determinable impairment are able to continue work at a level in excess of substantial gainful activity (SGA) given the opportunity and needed assistance during a period of strong economic activity and demand for workers. But with elevated unemployment rates like those seen in the last recession, many of these individuals will lose employment and will seek DI benefits.

The recent recession which began in December 2007 resulted in an increase in disability applications and incidence to a peak level in 2010 that was exceeded only by the peak in 1975. One apparent exception to the relationship between disability incidence and economic recessions is the strong recession of 1981-1982. The effect of that recession appears to have been offset by the net effects of the 1980 Amendments, which: (1) sharply increased the levels of pre-effectuation review of disability allowances and continuing disability reviews of current beneficiaries; (2) introduced the extended period of eligibility to encourage work; and (3) lowered the maximum family benefit for DI beneficiaries.

Additional policy changes over the years had significant effects on disability incidence. Double-digit ad-hoc benefit increases in 1970 through 1974 made disability benefits more attractive. The 1984 Amendments may have offset the effects of a strong economic recovery with increased emphasis on multiple impairments and mental listings, and the requirement to show medical improvement for benefit cessation. The SSI outreach to disabled adults likely added to the effects of the 1990-1991 recession. Also, the effects of a strong economic recovery from 1995 to 2000 on lowering incidence rates may have been enhanced by the 1996 Amendments which eliminated drug addiction and alcoholism as disabling conditions.

Incidence rates have fallen steeply since 2010 with the recovery from the recent recession. Incidence rates have recently dropped to levels well below those expected over the long-term.

Future policy changes and economic cycles will undoubtedly continue to cause fluctuations in disability incidence rates.

## 2.2 Assumed Future Disability Incidence Rates

As previously mentioned, the disability incidence rate (the percent of the exposed population, i.e. the disability insured population not already receiving benefits, that is newly awarded benefits in the year) rose sharply in the recent recession, and has declined since the peak in 2010 to an extraordinarily low level by 2016. Some small portion of this decline has resulted from an increase in the disability case backlog, especially at the hearings level. In 2013 and later Trustees Reports, consistent with agency Budget assumptions, the backlog is assumed to be eliminated, producing the temporarily elevated levels of incidence most recently assumed to be for years 2018 through 2022, as seen in the blue line in Chart 1. After 2022, new disabled worker determinations are projected to be completed on a timely basis.

The Trustees assume that under alternative II, the ultimate age-sex-adjusted disabled worker incidence rate will return to about 5.4 new awards per thousand by about 2027, the same ultimate level assumed for the 2012 through 2017 Trustees Reports. This ultimate assumed incidence rate is slightly above the 5.2 average level experienced from 1990 through 2017. Based on recent low incidence rates, the 5.4 ultimate assumption is conservative and prudent, given the uncertainty associated with disability assumptions. The Office of the Chief Actuary will continue to monitor experience closely.

The 2011 Technical Panel suggested raising the 2011 Trustees Report ultimate alternative II incidence rate assumption of 5.2 to 5.8. The 2015 Technical Panel agreed with the ultimate alternative II incidence rate assumption of 5.4 and suggested that OCACT closely monitor experience. The Congressional Budget Office raised their ultimate disability incidence rate to 5.6 for their 2013 through 2015 Long-Term Budget Outlooks, and reduced the assumption to 5.4 for their 2016 and 2017 reports, matching the Trustees.

Chart 2 shows age-adjusted historical and projected alternative II incidence rates for males and females. For males, this age-adjusted incidence rate has averaged 5.4 from 1990 through 2017 for new disability awards per thousand exposed workers. The female age-adjusted incidence rate has averaged 5.0 from 1990 through 2017. Since 1980, the age-adjusted incidence rate for females has increased to a level much closer to the rate for men. The Trustees assume that under alternative II, the male and female age-adjusted disability incidence rates will be fairly stable in the future at 5.5 and 5.3, respectively.

Chart 3 and Chart 4 show the historical and projected alternative II incidence rates by age group for males and females, respectively. The table below shows the 2018 Trustees Report alternative II ultimate incidence rates by age group for 2040.

<b>Disability Award Rates per 1,000 Exposed for 2040, 2018 Trustees Report Alternative II</b>										
	<b>Age Group</b>									
	<b>15-19</b>	<b>20-24</b>	<b>25-29</b>	<b>30-34</b>	<b>35-39</b>	<b>40-44</b>	<b>45-49</b>	<b>50-54</b>	<b>55-59</b>	<b>60-64</b>
<b>Male</b>	0.3	1.6	1.9	2.2	3.1	4.3	5.8	9.4	15.3	20.3
<b>Female</b>	0.3	1.2	1.6	2.4	3.3	4.5	6.1	9.5	14.0	16.1

Because the low-cost and high-cost alternative ultimate disability incidence rates are determined by adjusting the incidence rates from the intermediate alternative down and up by roughly 20 percent, respectively, rates for these alternatives are not included in the charts.

### **3 Disability Death Rate**

Death rates are much higher for the disabled population than the general population, as seen in Chart 5. Base probabilities of death (from [Actuarial Study No. 123](#)) by duration, age, and sex are applied to the disabled worker population. In the first year of the projection period, the death rate is determined by fitting an exponential curve to historical death rates for disabled workers by age group and sex. For the rest of the projection period, death rate improvement factors are applied to the base probabilities of death to reflect the same rate of improvement as the general population for that age group and sex. The incorporation of higher than expected 2017 disabled worker death experience results in higher projected disability death rates for the 2018 Trustees Report. From the age-sex-adjusted death rate of 25.4 per thousand beneficiaries in 2017, this rate decreases to 11.6 per thousand for 2092 under the intermediate assumptions. The low-cost and high-cost alternative disability death rates are determined by increasing and decreasing by 7.5 percent, respectively, the death rate in the first year of the projection period. Then the general population mortality improvement for that alternative is applied to project death rates for the remainder of the 75-year period.

The 2011 Technical Panel recommended a more rapid decline in disability mortality rates for both men and women from 2020 through 2030. The 2015 Technical Panel stated that they were comfortable with the Trustees' assumption.

### **4 Disability Recovery Rate**

Beneficiaries stop receiving disability benefits when they (1) die, (2) covert to a retired-worker benefit at normal retirement age, (3) recover from their medically-determinable disabling condition, or (4) return to work for an extended period. Disabled worker beneficiaries who return to substantial work for an extended period are deemed to have recovered, and their benefits are then terminated. The recovery rate is the ratio of the number of recoveries for reasons (3) and (4) to the average number of disabled worker beneficiaries during the year. Base probabilities of recovery (from [Actuarial Study No. 123](#)) by duration, age, and sex are applied to the disabled worker population.

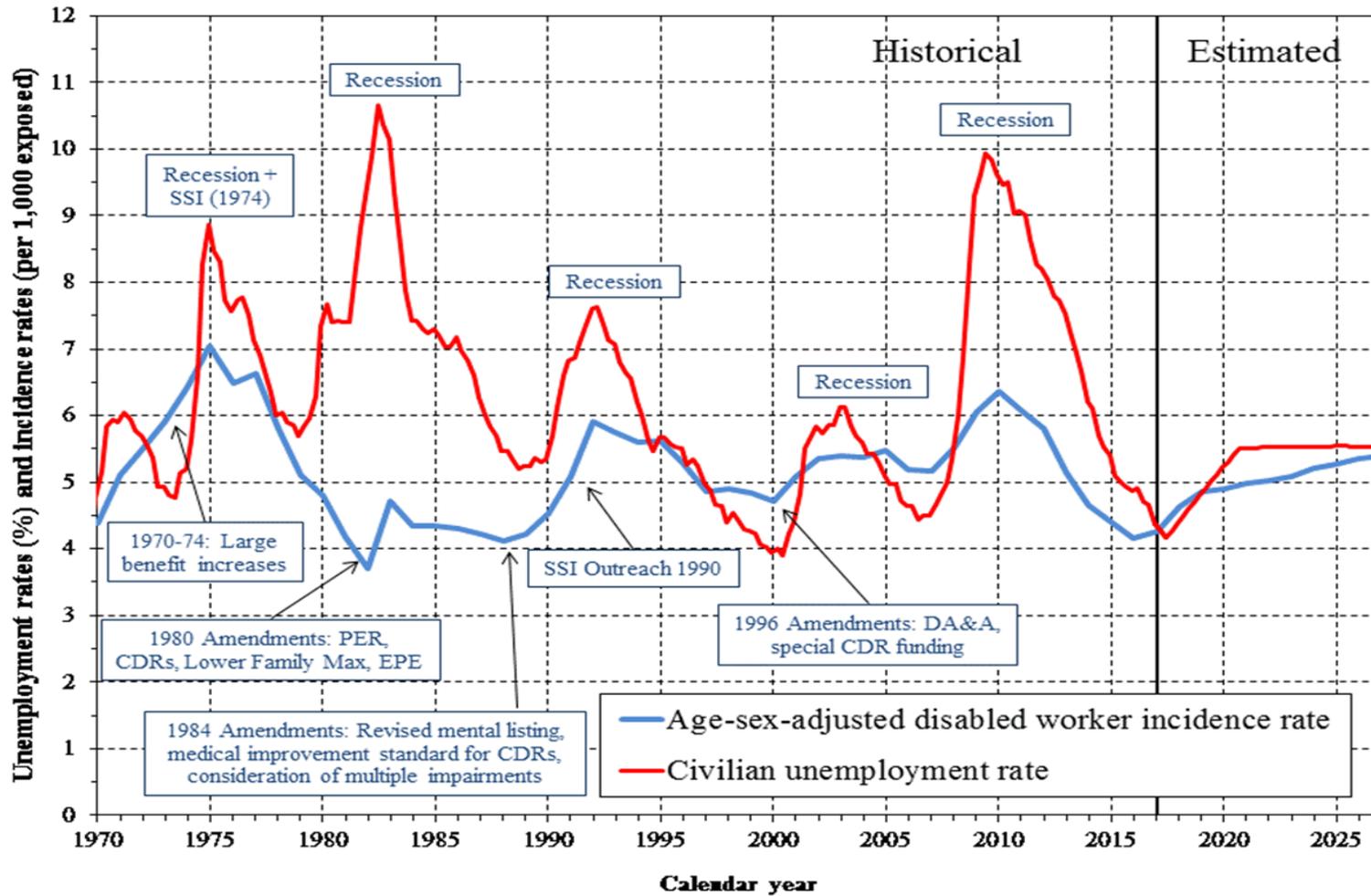
Chart 6 shows age-sex-adjusted historical and projected alternative II recovery rates. The rate of recovery is, at times, affected by budget appropriations for continuing disability reviews, with no general upward or downward trend since 1985. The ultimate disability recovery rate under the intermediate alternative is equal to the average recovery rate by age group and sex for the years 1985-2005, excluding 1997. The averaging period begins in 1985, after the Social Security Disability Benefits Reform Act of 1984 created medical improvement standards for continuing disability reviews. The spike in recoveries in 1997 when drug and alcohol addictions were eliminated as bases for disability entitlement is excluded from the calculation.

The resulting ultimate age-sex-adjusted recovery rate for disabled workers is 10.3 per thousand beneficiaries for alternative II. Recovery rates by age, sex, and duration reach ultimate levels in

the twentieth year of the projection period. Because the low-cost and high-cost alternative ultimate disability recovery rates are determined by adjusting the recovery rates from the intermediate alternative up and down by roughly 20 percent, respectively, rates for these alternatives are not included in the chart.

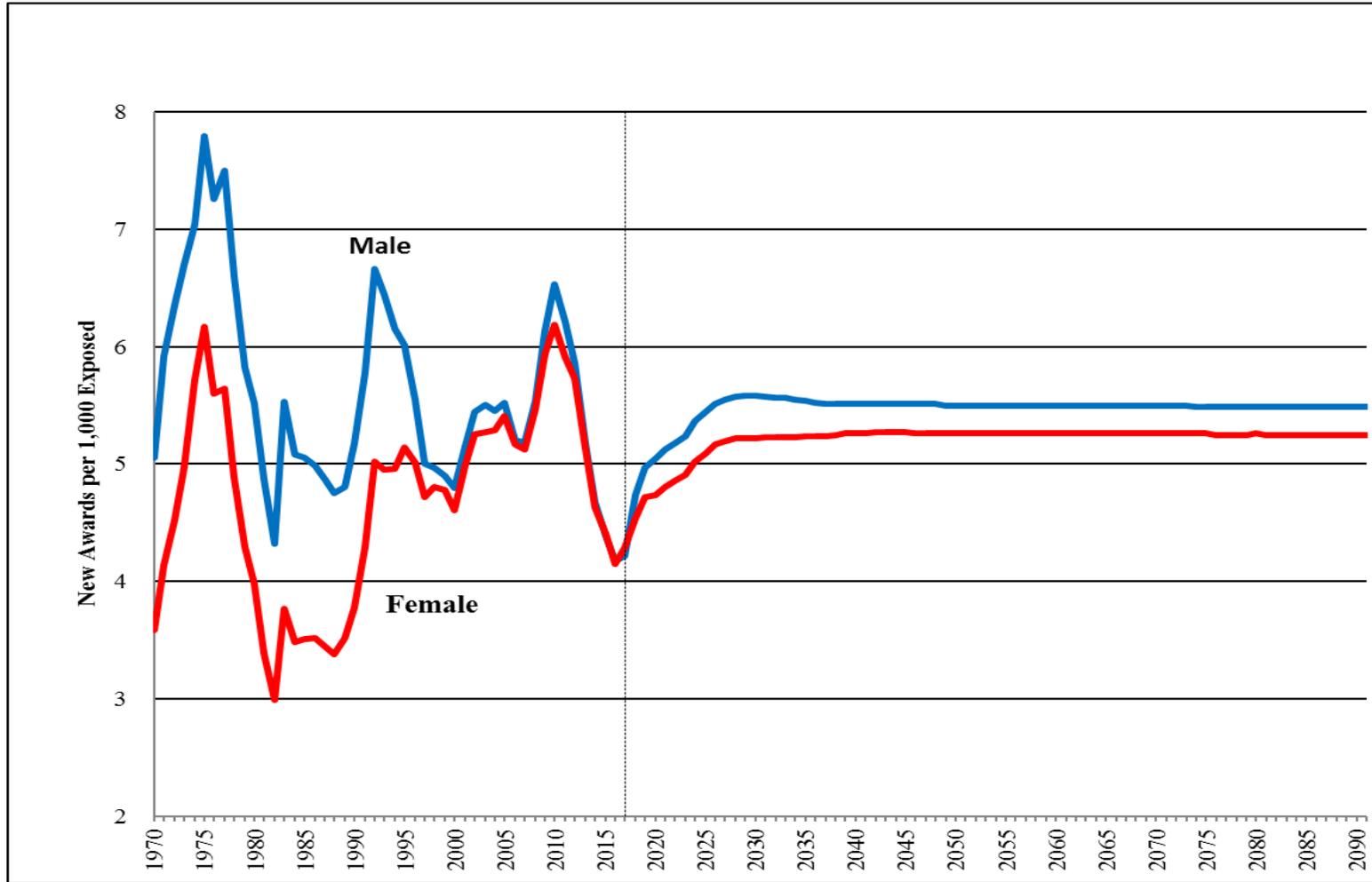
The 2011 Technical Panel suggested reducing the ultimate alternative II recovery rate assumption to 8.7. The 2015 Technical Panel recommended reducing the ultimate alternative II recovery rate assumption from 10.4 to 10.1.

Chart 1: Effect of the Economy on DI Incidence



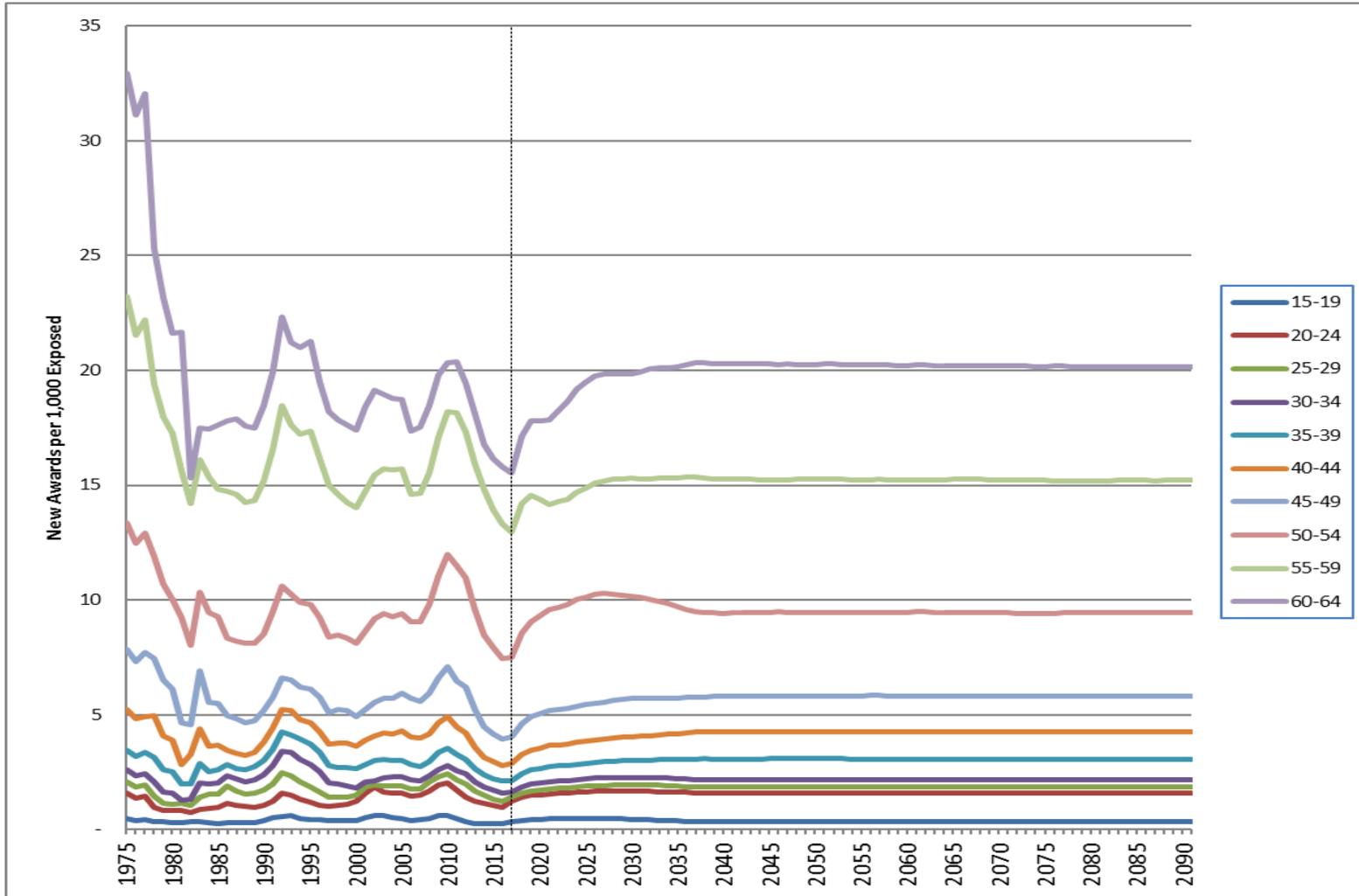
Note: The projections reflect the Trustees' assumptions for the 2018 Trustees Report.

**Chart 2: New Disabled Worker Awards per 1,000 Exposed (Incidence)  
Age-Adjusted (2000)**



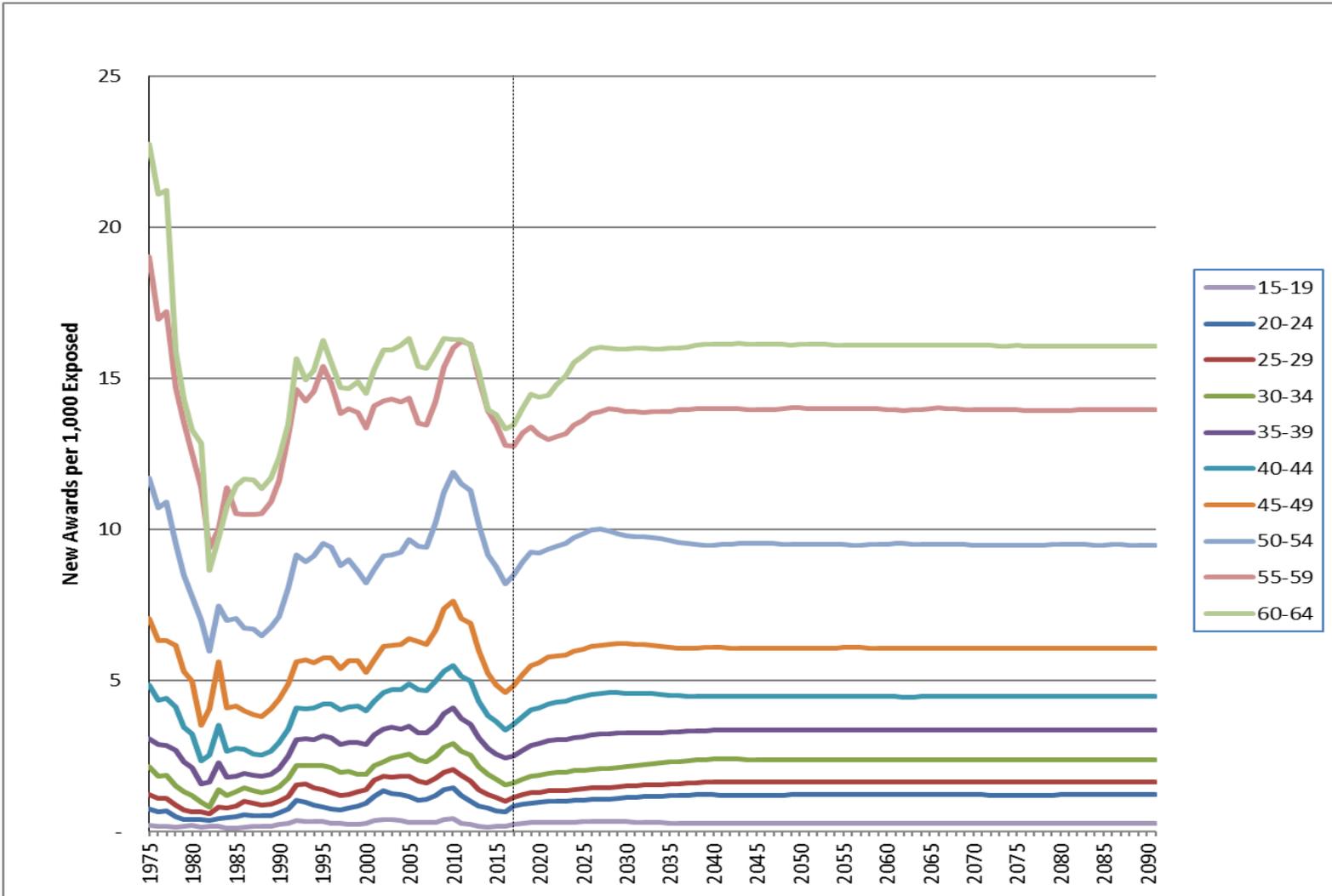
Note: The projections reflect the Trustees' assumptions for the 2018 Trustees Report.

**Chart 3: Male Disabled Worker Awards per 1,000 Exposed (Incidence) by Age Group Age-Adjusted (2000)**



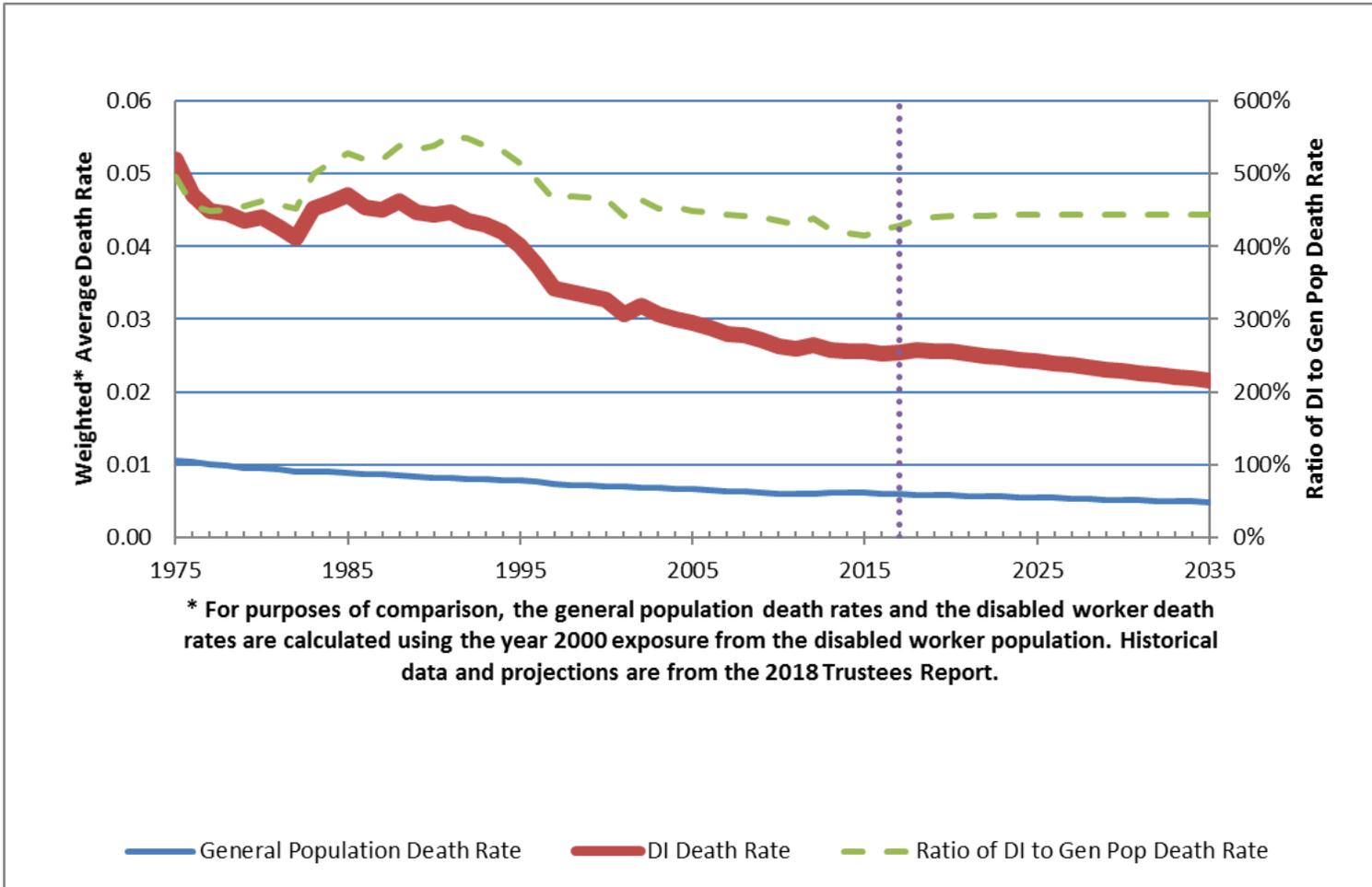
Note: The projections reflect the Trustees' assumptions for the 2018 Trustees Report.

**Chart 4: Female Disabled Worker Awards per 1,000 Exposed (Incidence) by Age Group  
Age-Adjusted (2000)**



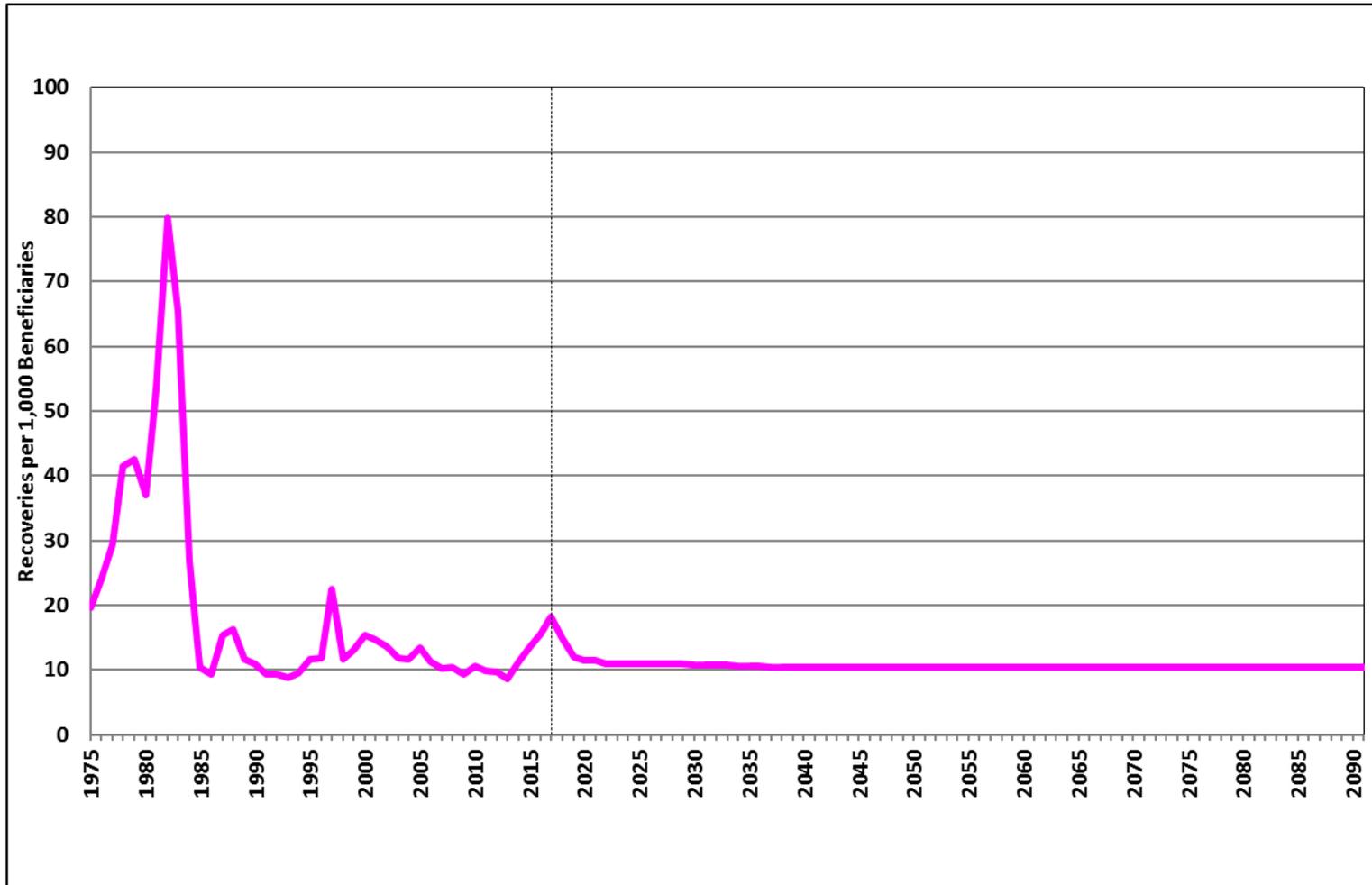
Note: The projections reflect the Trustees' assumptions for the 2018 Trustees Report.

**Chart 5: Age-Sex-Adjusted Comparison of SSA General Population to Disabled Worker Death Rates**



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**Chart 6: Disabled Worker Recoveries per 1,000 Beneficiaries  
Age-Sex-Adjusted (2000)**



Note: The projections reflect the Trustees' assumptions for the 2018 Trustees Report.

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