

**THE LONG-RANGE DISABILITY ASSUMPTIONS
FOR THE 2020 TRUSTEES REPORT**

OFFICE OF THE CHIEF ACTUARY
SOCIAL SECURITY ADMINISTRATION

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DISABILITY

ASSUMPTIONS FOR THE 2020 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 2020 annual report of the Board of Trustees (the "Trustees Report").

At the time assumptions were selected for the 2020 Trustees Report, it was too early to anticipate the potential effects of the COVID-19 pandemic. The magnitude and duration of effects on the population and the economy are still unclear. Therefore, the potential effects of the pandemic are not reflected in these assumptions.

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.

Compared to the values assumed for the 2019 Trustees Report, these assumptions include lower disability incidence rates for all alternatives. The death and recovery rate assumptions are the same as those used for the 2019 Trustees Report, and there are no significant method changes in the disability model for the 2020 Trustees Report.

The alternative II age-sex-adjusted disability incidence rate was lowered from 5.2 in the 2019 Trustees Report to 5.0 in the 2020 Trustees Report. The lower disability incidence rates assumed for the 2020 Trustees Report reflect to a small extent the historically low level of recent incidence rates. Recent incidence rate data indicate a continued decline since the peak in 2010 to levels for 2018 and 2019 that are 4.1 and 4.0 respectively, as compared to a longer-term historical average close to 5.0. Applications and incidence rates are both near historic low levels. Possible explanations for the recent decline in disability applications and awards include the low unemployment rate, the drop in hearings allowance rates, and the greater availability of health care because of the Affordable Care Act. However, the largest and most persistent factor affecting incidence rates appears to be the changing nature of work, which allows more people with limiting impairments to become employed and to continue employment. The following table shows the ultimate summary measures for the assumptions.¹

¹ The ultimate disability death summary measures increased slightly due to data and methodology updates. The death rates shown are for the last year of the 75-year projection period. For the 2019 and 2020 Trustees Reports, the last years are 2093 and 2094, respectively. There is a small amount of mortality improvement reflected in the death rates between 2093 and 2094.

Key Disability Summary Measures for the Long-Range (75-year) Projection Period 2019 Trustees Report and 2020 Trustees Report									
	2019 Trustees Report Alternative			2020 Trustees Report Alternative			2020 Trustees Report Less 2019 Trustees Report		
	I	II	III	I	II	III	I	II	III
Age-sex-adjusted Disability Incidence Rate per 1,000 in the last year of the 75-year projection	4.2	5.2	6.2	4.0	5.0	6.0	-0.2	-0.2	-0.2
Age-sex-adjusted Disability Death Rate per 1,000 in the last year of the 75-year projection	18.9	12.0	7.1	19.0	12.1	7.2	0.1	0.1	0.1
Age-sex-adjusted Disability Recovery Rate per 1,000 in the last year of the 75-year projection	12.5	10.3	8.2	12.5	10.3	8.2	0.0	0.0	0.0

The assumed ultimate disability incidence and recovery 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 implementation of the ultimate rates as of the twentieth projection year. The age-sex adjusted incidence rate in year 10 is very close to the ultimate. Therefore, the transition from years 10 to 20 is very small.

The lower ultimate disability incidence rate assumption results in a 0.04 increase (improvement) in the long-range OASDI actuarial balance. Also including recent disability data, the new regulation to remove the inability to communicate in English as an education category in the disability determination process, and changes in near-term assumptions increased (improved) the actuarial balance by a combined total of 0.05 percent of 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 Rate

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 disabled-worker 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 recession that began in December 2007 resulted in an increase in disability applications and incidence to peak levels in 2010 that were 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, concurrent with the recovery from the 2007-2009 recession. Incidence rates have recently dropped to levels well below those expected over the long-term, and even below the levels that would be expected from the economic recovery alone, due to reasons mentioned above. 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 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 2017, SSA efforts resulted in a substantial reduction in the hearings backlog, producing the temporarily elevated level of incidence for that year and to a lesser extent for years through 2021. However, persistent declines in applications through 2018 and continuing low numbers of applications in 2019 resulted in very low incidence rates in 2018 and 2019, as seen in the blue line in Chart 1. With the disability backlog expected to be eliminated by 2021, new disabled-worker determinations are projected to be completed on a timely basis after 2021. In this year's report, incidence rates are assumed to rise more gradually early in the short-range period than in last year's report, and are lower later in the period. In 2029, at the end of the short-range period, age-sex-specific incidence rates approximate the ultimate rates assumed for the long-range period.

For alternative II of the 2020 Trustees Report, the Trustees assume an ultimate age-sex-adjusted disabled-worker incidence rate of 5.0. This rate was 5.2 awards per thousand for the 2019 Trustees Report, and 5.4 awards per thousand for the 2012 through 2018 Trustees Reports. The 5.0 ultimate incidence rate is 2 percent lower than the historical average experienced from 1995 through 2019 (5.1 awards per thousand) and is 2 percent higher than the most recent ten-year historical average experienced from 2010 through 2019 (4.9 awards per thousand). These new ultimate incidence rates are calculated by age group and sex using a no-lag unemployment rate

regression model for the years 1995-2018. The ultimate long-term unemployment rate assumption of 5.0 percent was incorporated into our regression model. We began our regression model in 1995, instead of 1990 (the first year we have unemployment rates by age group and sex), to better capture recent higher levels of female disability incidence rates. For ages 60-64, rates are increased from the regression results to reflect the planned increase in the Social Security Normal Retirement Age from 66 to 67. We calculated rates for ages 65 and older using a weighted average of our base incidence rates and projected exposure. We further adjusted these rates with a 0.3 percent discount for the reinstatement of the reconsideration step of the disability appeals process and a 0.25 percent discount for the removal of the inability to communicate in English as an education category in the disability determination process. The Office of the Chief Actuary will continue to monitor experience closely and review the disability incidence assumption.

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 2019 Technical Panel suggested lowering the disability incidence rate to 4.9, consistent with the Panel’s lower long-term unemployment rate assumption of 4.8 percent and taking into account some of the recent drop in incidence. The 2019 Panel also recommended continued monitoring of trends in the incidence rate (including external consultation with experts in the private disability industry) and linking the disability incidence rate and unemployment rate assumptions. 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 through 2018 reports, matching the Trustees. For the 2019 Long-Term Budget Outlook, they reduced the assumption to 5.2, again matching the Trustees.

Chart 2 shows age-adjusted historical and ultimate alternative II incidence rates for males and females. For males, the age-adjusted incidence rate has averaged 5.2 new disability awards per thousand exposed workers from 1995 through 2019. The female age-adjusted incidence rate has averaged 5.0 from 1995 through 2019. Since 1980, the age-adjusted incidence rate for females has increased to a level much closer to the rate for males. The male and female ultimate age-adjusted disability incidence rate assumptions under alternative II for the 2019 Trustees Report were both 5.2, assuming that females have caught up to males. For the 2020 Trustees Report, the Trustees assume ultimate age-adjusted disability incidence rates for both males and females are 5.0 new disability awards per thousand exposed workers.

Chart 3 and Chart 4 show the historical and ultimate alternative II incidence rates by age group for males and females, respectively. The table below shows the 2020 Trustees Report alternative II ultimate incidence rates by age group for 2094, the last year of the projection period.

Disability Incidence Rates per 1,000 Exposed for 2094, 2020 Trustees Report Alternative II											
	Age Group										
	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+
Male	0.4	1.4	1.6	2.0	2.6	3.7	5.1	8.6	14.7	18.4	10.0
Female	0.3	0.9	1.4	2.0	3.0	4.3	5.8	9.2	14.1	15.6	8.6

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 by duration, age, and sex (from an updated Social Security Disability Insurance Program Worker Experience Study completed by Tim Zayatz and Nettie Barrick that will be published soon) 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 lower projected mortality improvement in the general population results in slightly higher projected disability death rates for the 2020 Trustees Report. From the age-sex-adjusted death rate of 24.8 per thousand beneficiaries in 2019, this rate decreases to a preliminary rate of 12.1 per thousand for 2094 under the intermediate assumptions for the 2020 Trustees Report. 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. The 2019 Technical Panel did not address this 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 an updated Social Security Disability Insurance Program Worker Experience Study completed by Tim Zayatz and Nettie Barrick that will be published soon) 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 projected age-sex-adjusted recovery rate (medical improvement and return to work) under the intermediate assumptions decreases from the relatively high level of 18.9 per thousand beneficiaries in 2019 to the preliminary ultimate level of 10.3 per thousand beneficiaries under the intermediate assumptions for the 2020 Trustees Report. The recovery rate has been high recently due to an ongoing administrative effort to work down a backlog of continuing disability reviews. The rate is expected to decrease as the backlog is reduced.

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 from 10.7 to 8.7. The 2015 Technical Panel recommended reducing the ultimate alternative II recovery rate assumption from 10.4 to 10.1. The 2019 Technical Panel did not address this assumption.

5 Disability Prevalence Rates

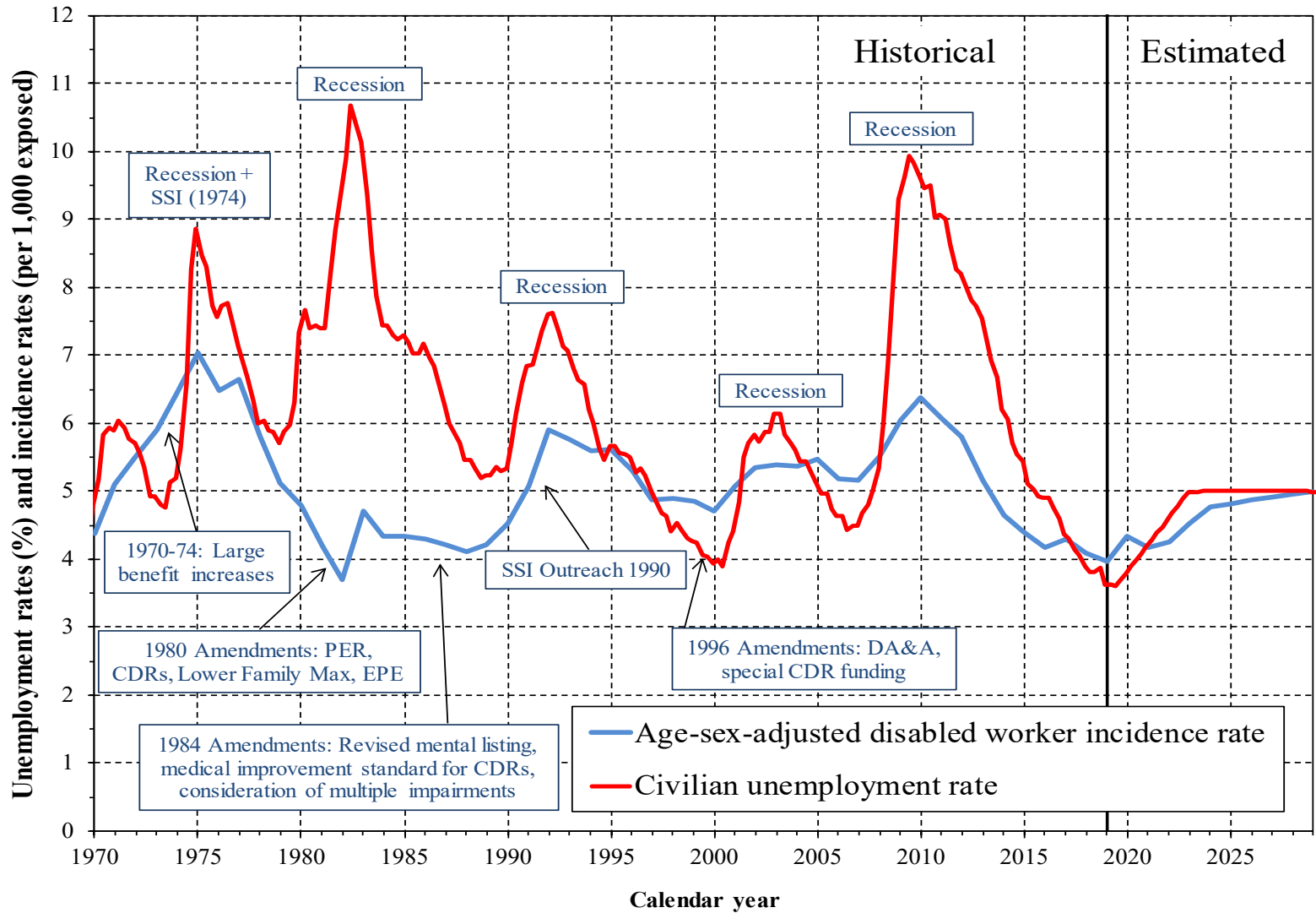
The disability prevalence rate is the percentage of the disability insured population that is in receipt of disability benefits. Changes in prevalence rates are a direct result of changes in incidence rates and termination rates. Age-sex-adjusted prevalence rates have increased primarily because: (1) termination rates, in particular death termination rates, have declined; (2) incidence rates at younger ages have increased relative to rates at older ages (new beneficiaries at younger ages have more potential years on the disability rolls); (3) incidence rates have increased substantially for women to parity with men; and (4) the DI program has matured (disabled worker benefits became available to those over age 50 at the start of the program in 1957 and to younger workers in 1960, and disability insured status requirements were eased for those under age 31 in 1968). Age-sex-adjusted prevalence rates are projected to grow at a slower pace based on the assumed stabilization in incidence rates by age and gender and in DI program age and insured requirements. As these factors gradually stabilize, the declining death termination rate continues to have a small influence toward higher disability prevalence rates, because applying the same rate of reduction in death rates for the disabled as for the general population results in larger declines in the death rate for the disabled.

The projected age-sex-adjusted disability prevalence rate grows from 39.7 per thousand disability insured at the end of 2019 to 45.3 per thousand at the end of 2094. Chart 7 illustrates the historical and projected disabled worker prevalence rates for males and females. The female prevalence rate rises to the level of the male rate around 2010, and then is slightly higher than the male rate for the remainder of the projection period, because the disability death and recovery rates are higher for males than females. In 2094, the age-adjusted prevalence rate is 45.1 for males and 45.6 for females.

As mentioned above, we project the growth in prevalence will slow relative to the historical period. The low-cost and high-cost alternative disability prevalence rates are determined using

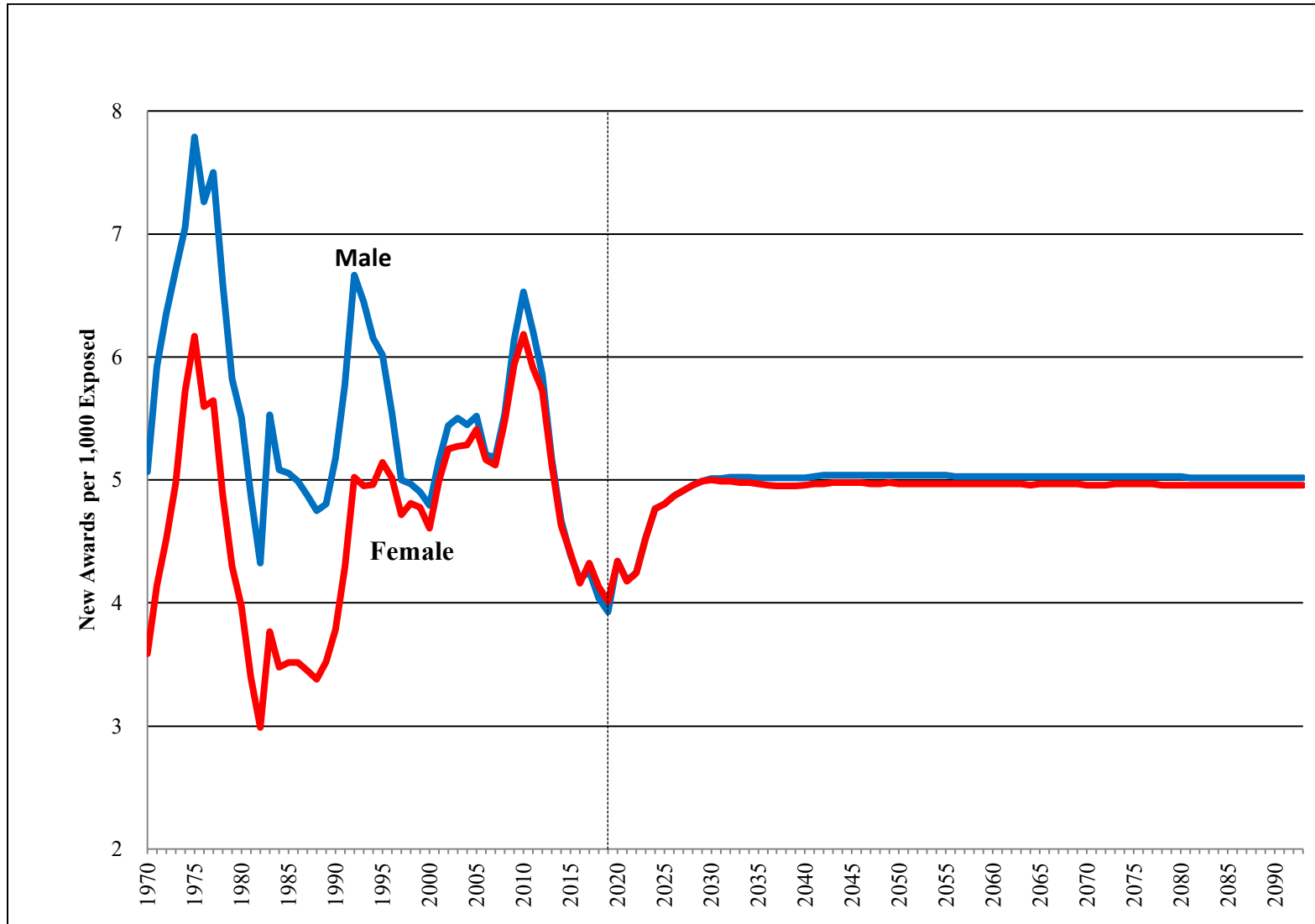
the disability incidence rate, disability death rate, and disability recovery rate assumptions for that alternative.

Chart 1: Effect of the Economy on DI Incidence Rate



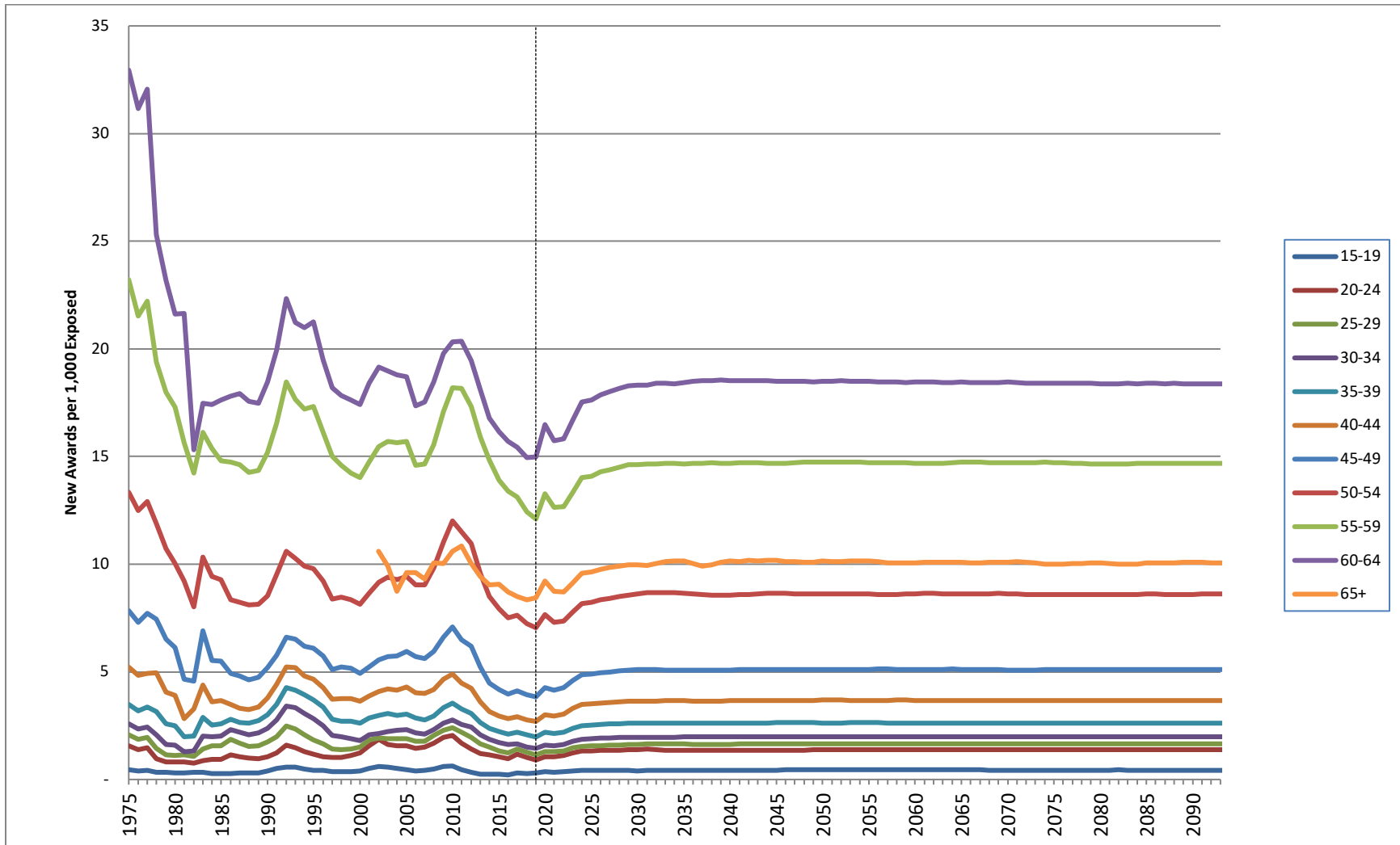
Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.

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



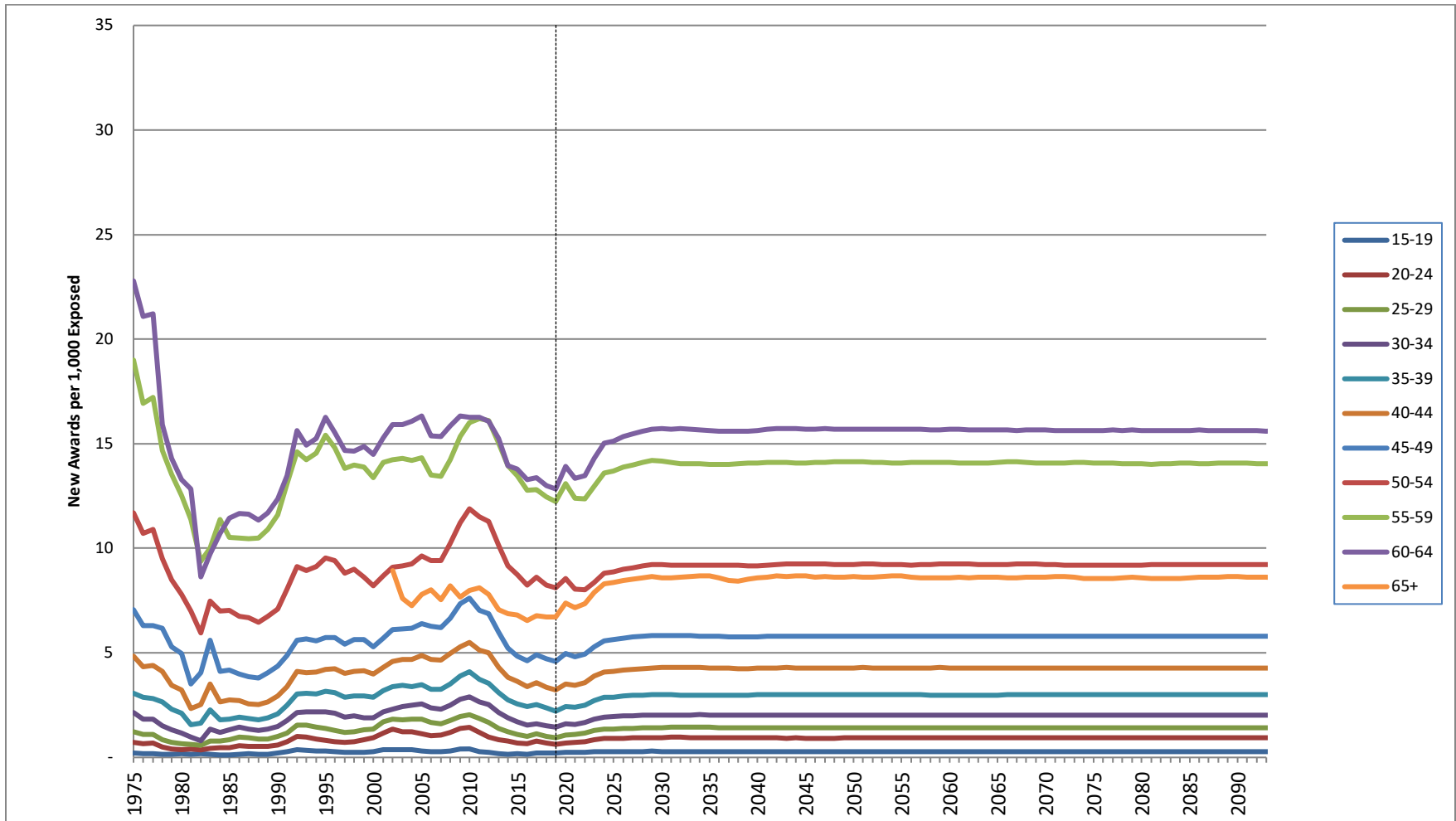
Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.

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



Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.

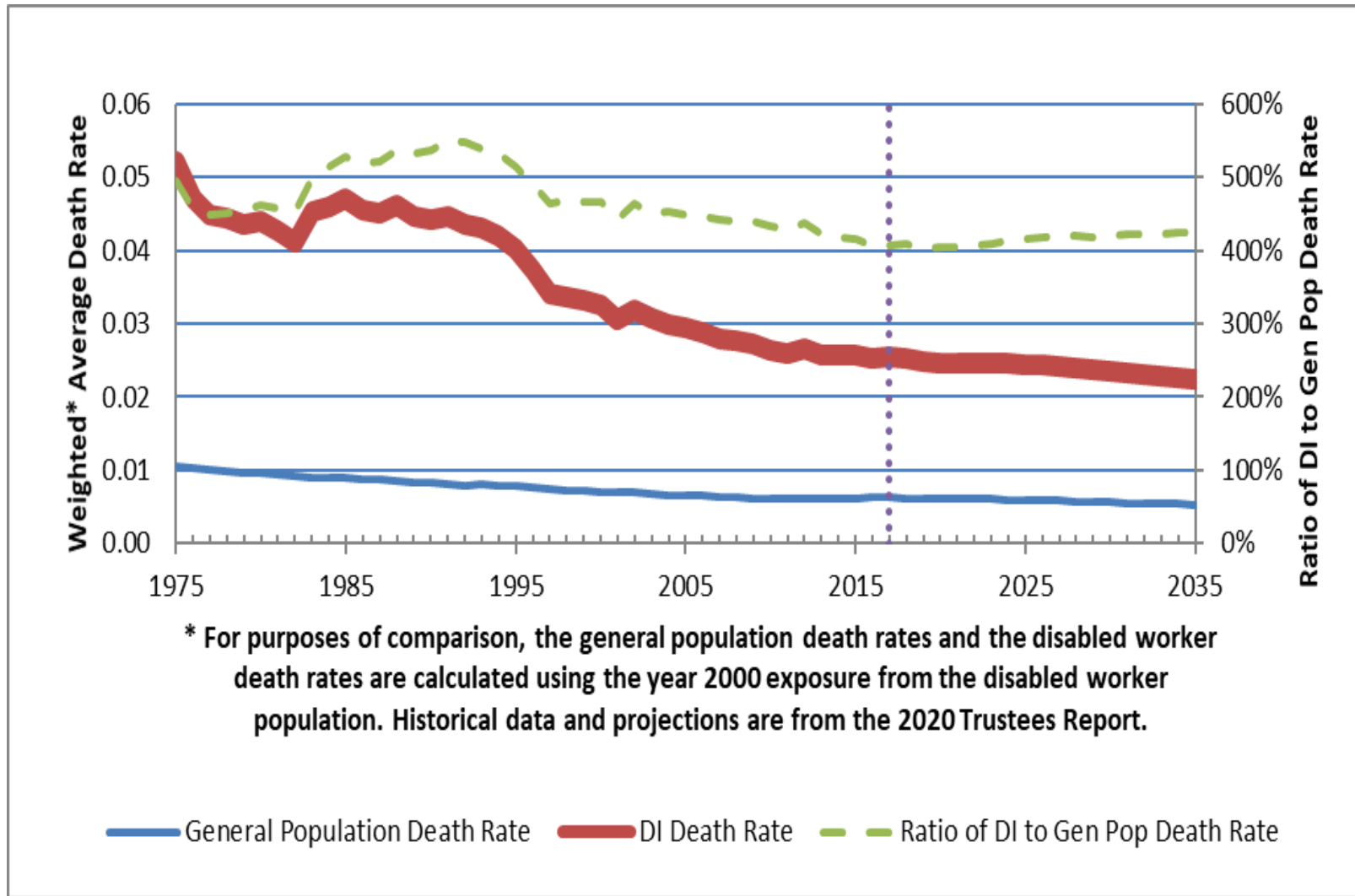
Chart 4: Female Disabled-Worker Awards per 1,000 Exposed (Incidence Rate) by Age Group



Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.

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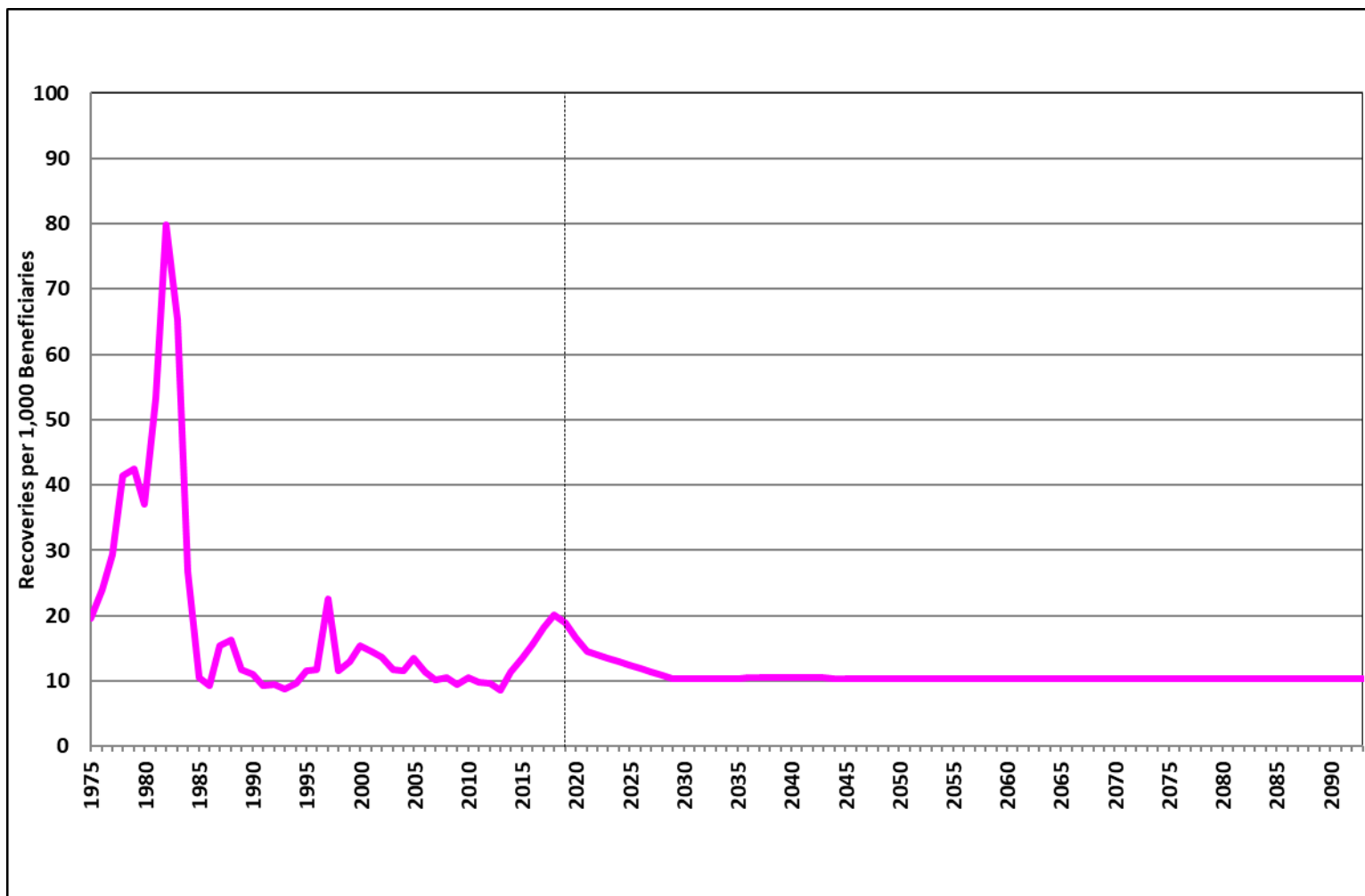
Chart 5: Age-Sex-Adjusted Comparison of SSA General Population to Disabled-Worker Death Rates



Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.

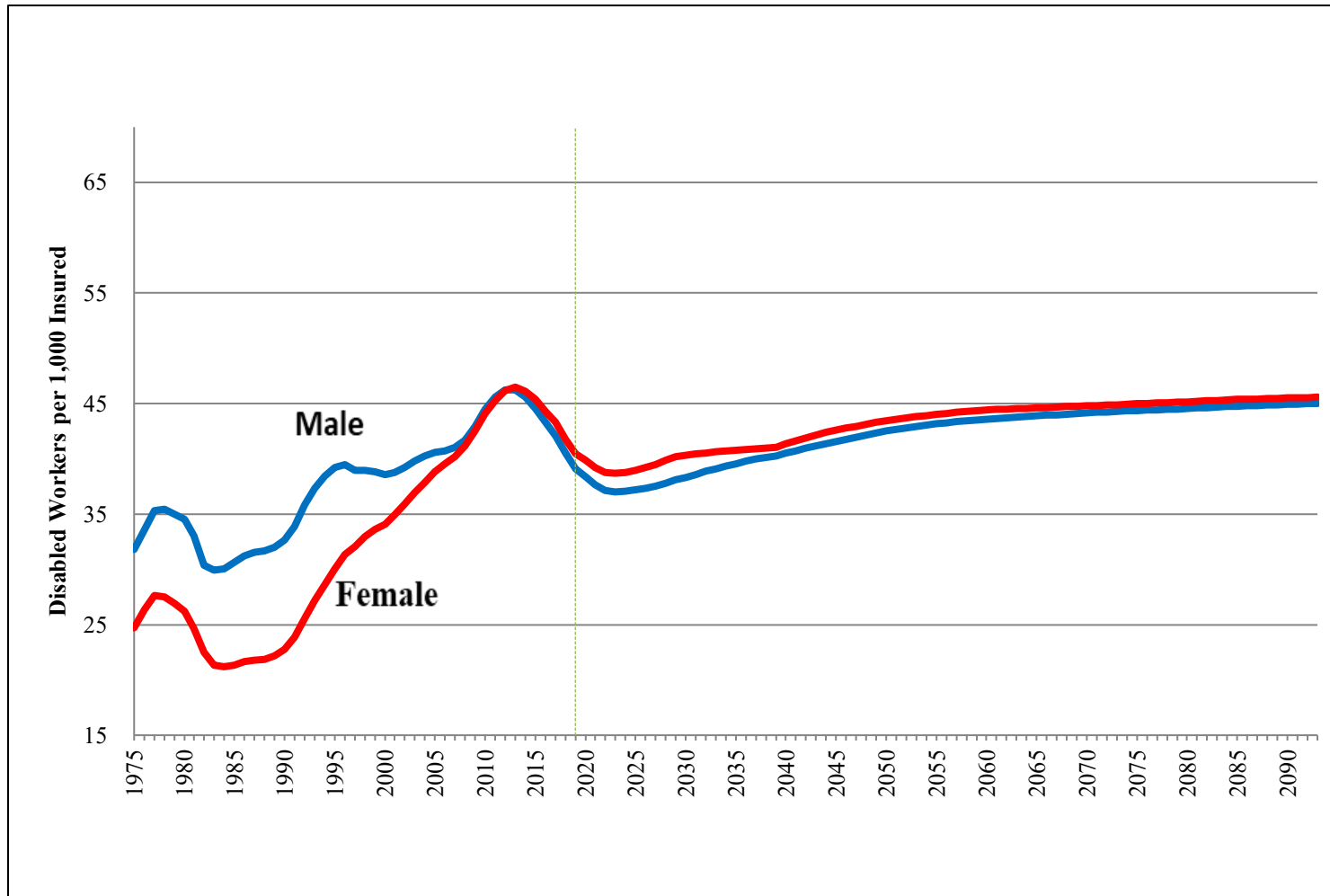
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**Chart 6: Disabled-Worker Recoveries per 1,000 Beneficiaries
Age-Sex-Adjusted (2000)**



Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.

**Chart 7: DI Disabled Worker Prevalence Rates through NRA (per 1,000 Insured Population)
Age-Adjusted to the 2000 Insured Population**



Note: The projections reflect the Trustees' assumptions for the 2020 Trustees Report.