

**THE LONG-RANGE DISABILITY ASSUMPTIONS
FOR THE 2021 TRUSTEES REPORT**

OFFICE OF THE CHIEF ACTUARY
SOCIAL SECURITY ADMINISTRATION

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DISABILITY

ASSUMPTIONS FOR THE 2021 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 long-range disability assumptions used in the 2021 annual report of the Board of Trustees (the "Trustees Report").

The 2020 Trustees Report, which was released on April 22, 2020, did not reflect any potential effects of the COVID-19 pandemic and ensuing recession. The assumptions presented here for the 2021 Trustees Report include the Trustees' best estimates of the effects of the pandemic and recession as of May 2021. At that time, there was, and still is, no consensus on what the lasting effects of the pandemic on long-term disability experience might be, if any. Given the unprecedented level of uncertainty, the Trustees have assumed that the pandemic and recession will have no effect on the individual long-range disability assumptions.

The long-range disability assumptions are:

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

For the 2021 Trustees Report, there are no changes to these long-range assumptions from those used for the 2020 Trustees Report. There are also no significant method changes in the disability model for the 2021 Trustees Report.

The following table shows summary measures for the key disability assumptions.¹

¹ The disability incidence and recovery summary measures shown are the averages for the last 65 years of the 75-year projection period. For the 2020 and 2021 Trustees Reports, the averages are for the years 2030 through 2094 and 2031 through 2095, respectively. The disability death summary measures shown are for the last year of the 75-year projection period. For the 2020 and 2021 Trustees Reports, the last years are 2094 and 2095, respectively. There is a small amount of mortality improvement reflected in the death rates between 2094 and 2095.

Key Disability Summary Measures for the Long-Range (75-year) Projection Period 2020 Trustees Report and 2021 Trustees Report									
	2020 Trustees Report Alternative			2021 Trustees Report Alternative			2021 Trustees Report Less 2020 Trustees Report		
	I	II	III	I	II	III	I	II	III
Average age-sex-adjusted Disability Incidence Rate per 1,000 for the last 65 years of the 75-year projection	4.0	5.0	6.0	4.0	5.0	6.0	0.0	0.0	0.0
Age-sex-adjusted Disability Death Rate per 1,000 in the last year of the 75-year projection	19.0	12.1	7.2	22.2	12.8	6.2	3.2	0.7	-1.0
Average age-sex-adjusted Disability Recovery Rate per 1,000 for the last 65 years of the 75-year projection	12.5	10.4	8.4	12.5	10.4	8.3	0.0	0.0	-0.1

The disability incidence and recovery assumptions reach ultimate values for the tenth 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.

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. However, with elevated unemployment rates like those seen in the 2007-09 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 1981-82. 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 1990-91 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 2007-09 recession. Incidence rates have through 2020 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. Possible explanations for the decline through 2019 in disability applications and awards include the changing nature of jobs in the economy, the low unemployment rate, and the greater availability of health care because of the Affordable Care Act. Incidence rates were at an all-time low in 2020 partly due to the effects of the COVID-19 pandemic. 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. Future policy changes, technological advancements, and economic cycles will undoubtedly continue to cause fluctuations in disability incidence rates.

2.2 Assumed Future Disability Incidence Rates

In this year's report, incidence rates under the intermediate alternative are projected to rise quickly from the low level in 2020 to a temporary peak in 2022, decline from that peak in 2023, and then gradually rise through the rest of the short-range period toward the ultimate assumed levels. This projected pattern of incidence over the next several years reflects the assumption that disability applications will increase to pre-pandemic levels as the COVID-19 pandemic recedes and the economy continues to recover, and then there will be a temporary increase in applications partially offsetting reduced levels experienced during the pandemic. In 2030, at the end of the short-range period, age-sex-specific incidence rates match the ultimate rates assumed for the long-range period.

For alternative II of the 2021 Trustees Report, the Trustees assume an ultimate age-sex-adjusted disabled-worker incidence rate of 5.0, unchanged from the 2020 Trustees Report. 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 matches the historical average experienced from 1995 through 2020 (5.0 awards per thousand) and is 9 percent higher than the most recent ten-year historical average experienced from 2011 through 2020 (4.6 awards per thousand). These 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 from the 2020 Trustees Report was incorporated

into our regression model.² Our regression model uses data beginning in 1995 to 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. The 2020 and 2021 Long-Term Budget Outlooks do not explicitly mention the disability incidence assumption, so we assume it remains at 5.2.

Chart 2 shows age-adjusted historical and long-range alternative II incidence rates for men and women. For men, the age-adjusted incidence rate has averaged 5.1 new disability awards per thousand exposed workers from 1995 through 2020. The female age-adjusted incidence rate has averaged 5.0 from 1995 through 2020. Since 1980, the age-adjusted incidence rate for women has increased to a level much closer to the rate for men. For the 2021 Trustees Report, the Trustees assume ultimate age-adjusted disability incidence rates for both men and women are 5.0 new disability awards per thousand exposed workers.

Chart 3 and Chart 4 show the historical and long-range alternative II incidence rates by age group for men and women, respectively. The table below shows the 2021 Trustees Report alternative II average disability incidence rates by age group for the last 65 years of the 75-year projection.

Average Disability Incidence Rates per 1,000 Exposed for the Last 65 Years of the 75-year Projection, 2021 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	18.3	10.0
Female	0.3	0.9	1.4	2.0	3.0	4.3	5.8	9.2	14.0	15.6	8.6

² The ultimate age-sex-adjusted unemployment rate has been reduced to 4.5 percent for the 2021 Trustees Report.

Because the low-cost and high-cost alternative long-range 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 [Actuarial Study No. 125](#)) 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. Death rates through 2023 reflect the elevated mortality expected due to the pandemic. The incorporation of lower projected mortality improvement in the general population results in higher projected disability death rates for the 2021 Trustees Report. The age-sex-adjusted death rate decreases from 28.2 per thousand beneficiaries in 2020 to 12.8 per thousand for 2095 under the intermediate assumptions for the 2021 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. Because the Trustees widened the general population mortality range between the low-cost and high-cost alternatives for the 2021 Trustees Report, the range between the low-cost and high-cost cost alternative disability death rates also widened.

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) convert 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 terminations for reasons (3) and (4) to the average number of disabled-worker beneficiaries during the year. Base probabilities of recovery (from [Actuarial Study No. 125](#)) 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 14.0 per thousand beneficiaries in 2020 to the ultimate level of 10.4 per thousand beneficiaries under the intermediate assumptions for the 2021 Trustees Report. The recovery rate has been high in recent years due to an ongoing administrative effort to eliminate a backlog of medical continuing disability reviews. The recovery rate is expected to increase temporarily through 2022 as these reviews are completed and the backlog is eliminated over the next several years. Thereafter, the rate decreases as the backlog is reduced.

Because the low-cost and high-cost alternative long-range 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

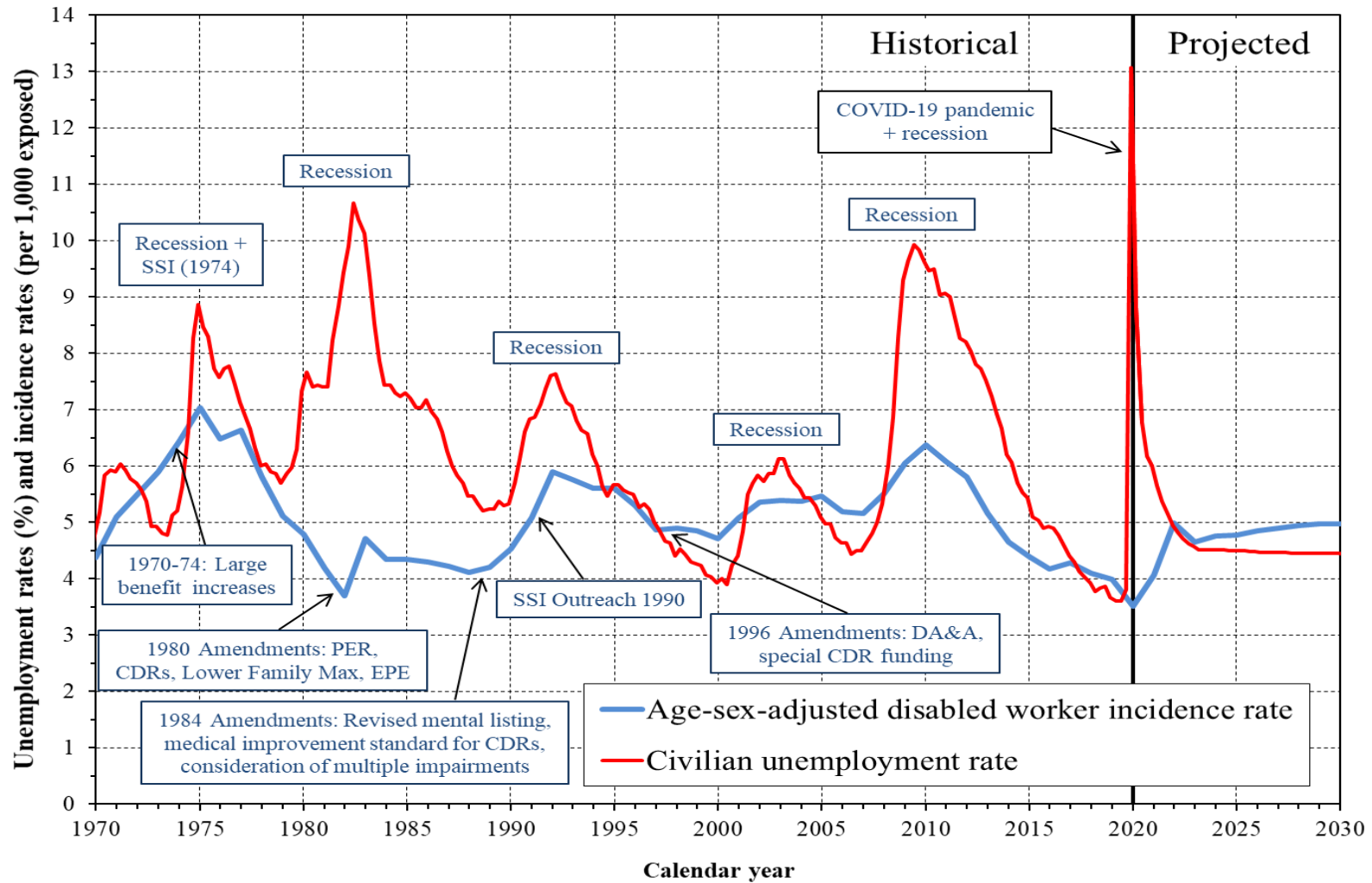
The disability prevalence rate is the percentage of the disability insured population that is in receipt of disability benefits. Changes in prevalence rates are a direct result of changes in incidence rates and termination rates. Age-sex-adjusted prevalence rates have increased primarily because: (1) 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 38.6 per thousand disability insured at the end of 2020 to 44.9 per thousand at the end of 2095. Chart 7 illustrates the historical incidence rates and the projected disabled worker prevalence rates for men and women from the 2021 Trustees Report. 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 generally higher for men than women. In 2095, the age-adjusted prevalence rate is 44.8 for men and 45.1 for women. We note that the projected prevalence rates for the 2021 Trustees Report differ from those for the 2020 Trustees Report in the near term due to the effects from the pandemic, and throughout the projection period because of the updated general population mortality improvement rates developed for the 2021 Trustees Report.

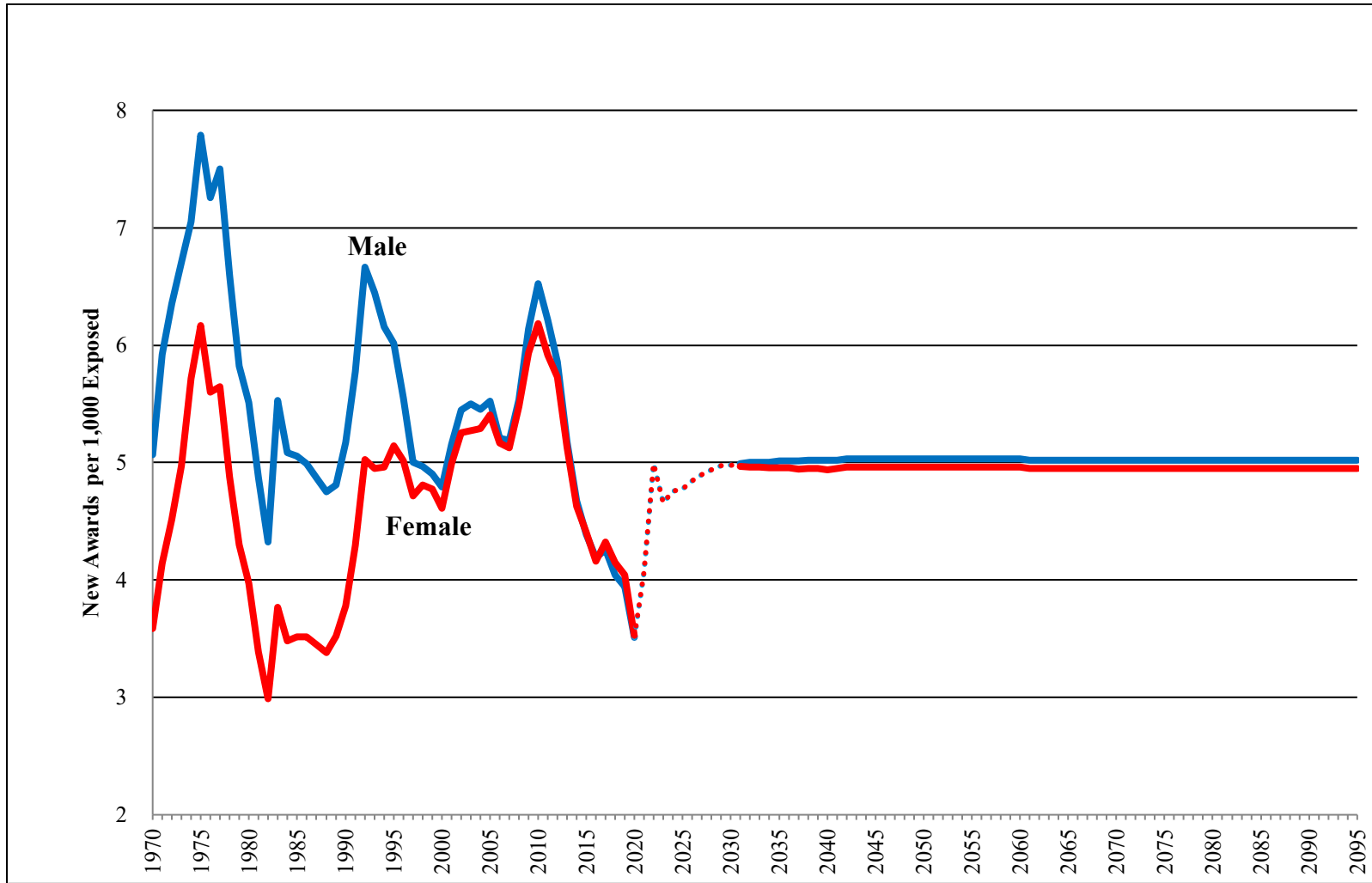
The low-cost and high-cost alternative disability prevalence rates are determined using the disability incidence rate, disability death rate, and disability recovery rate assumptions for that alternative.

Chart 1: Effect of the Economy on DI Incidence Rate



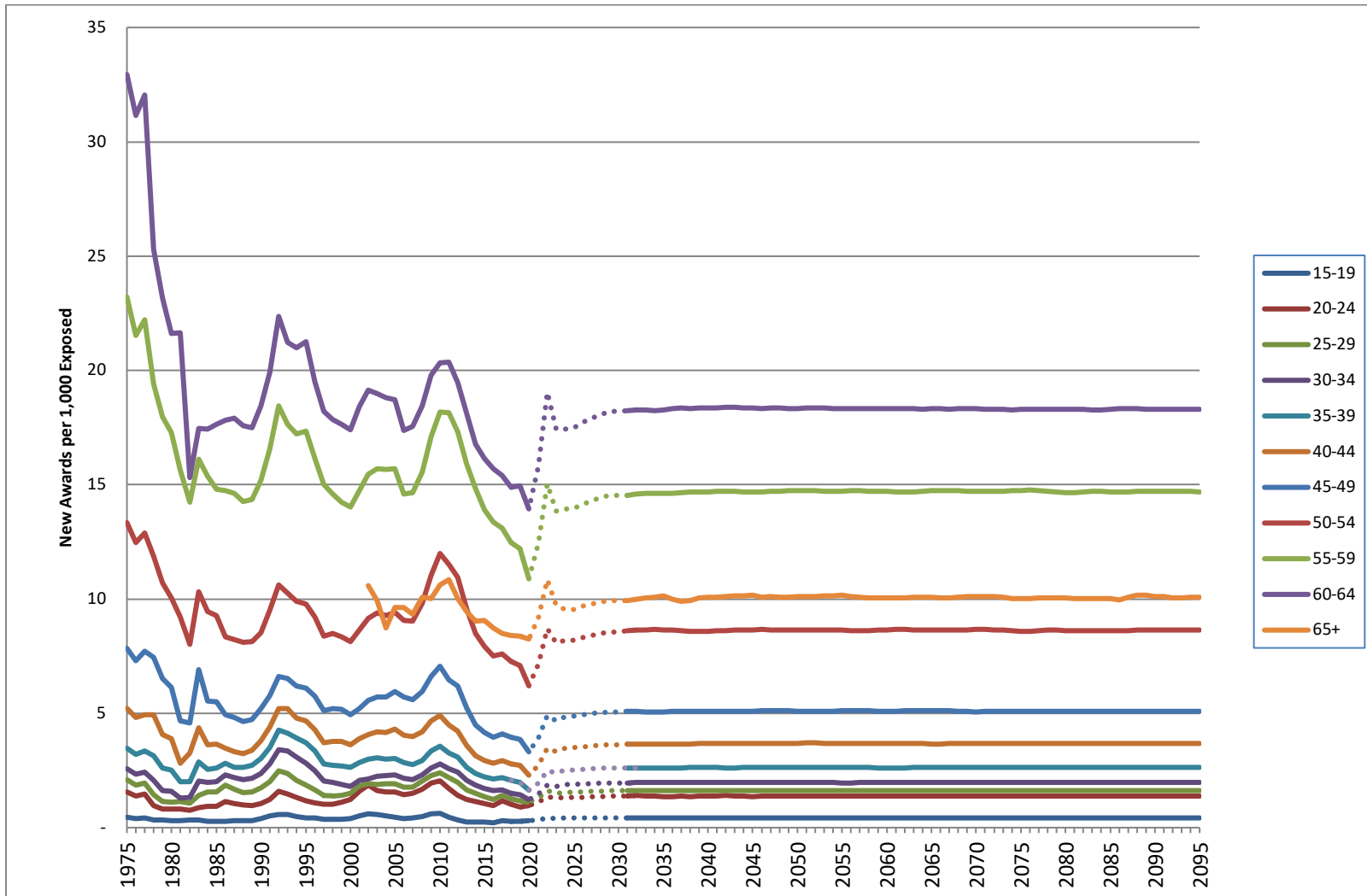
Note: The projections reflect the Trustees' assumptions for the 2021 Trustees Report.

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



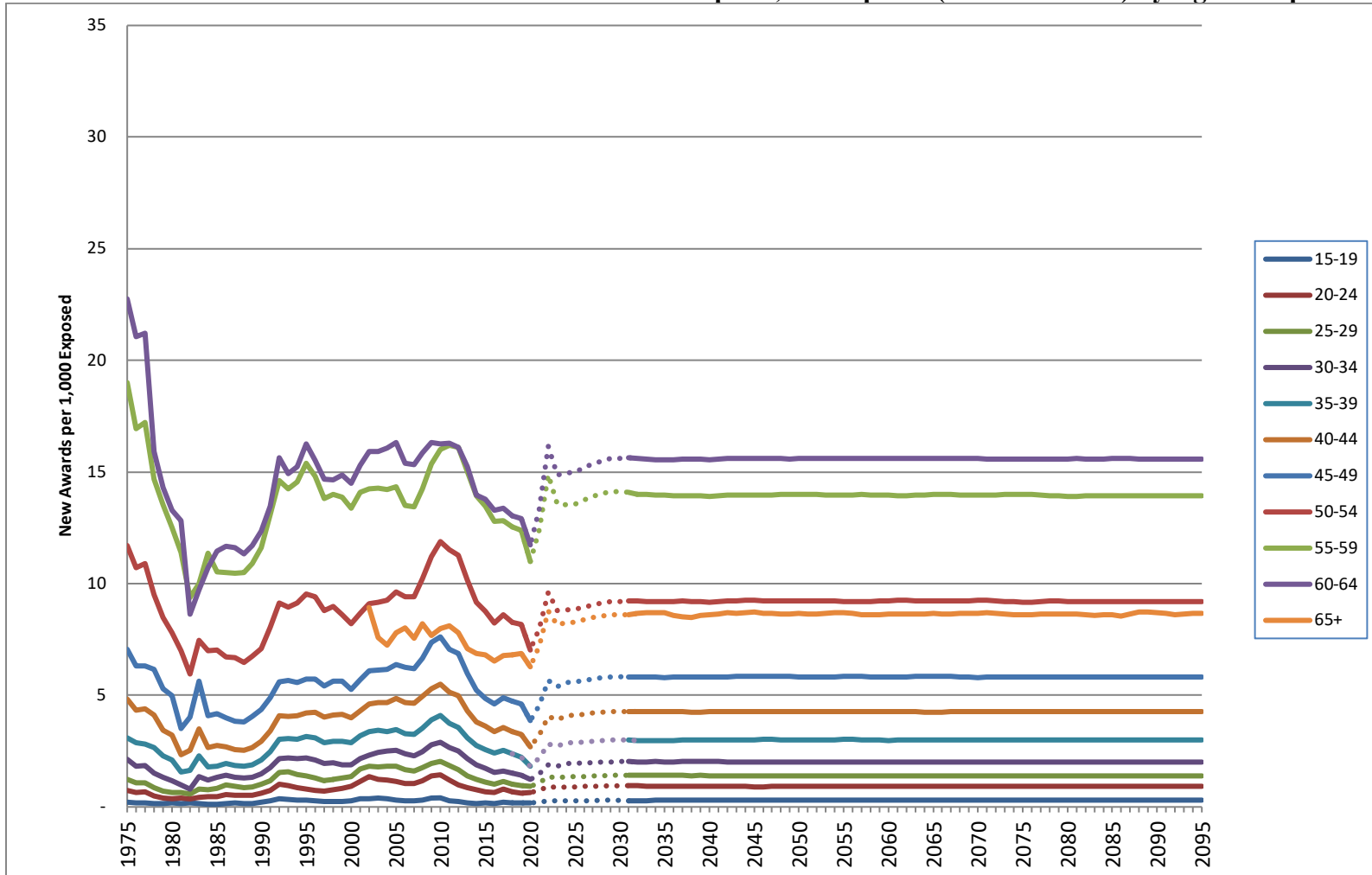
Note: The projections reflect the Trustees' assumptions for the 2021 Trustees Report. The dotted lines show the short-range assumptions for the 2021 Trustees Report.

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



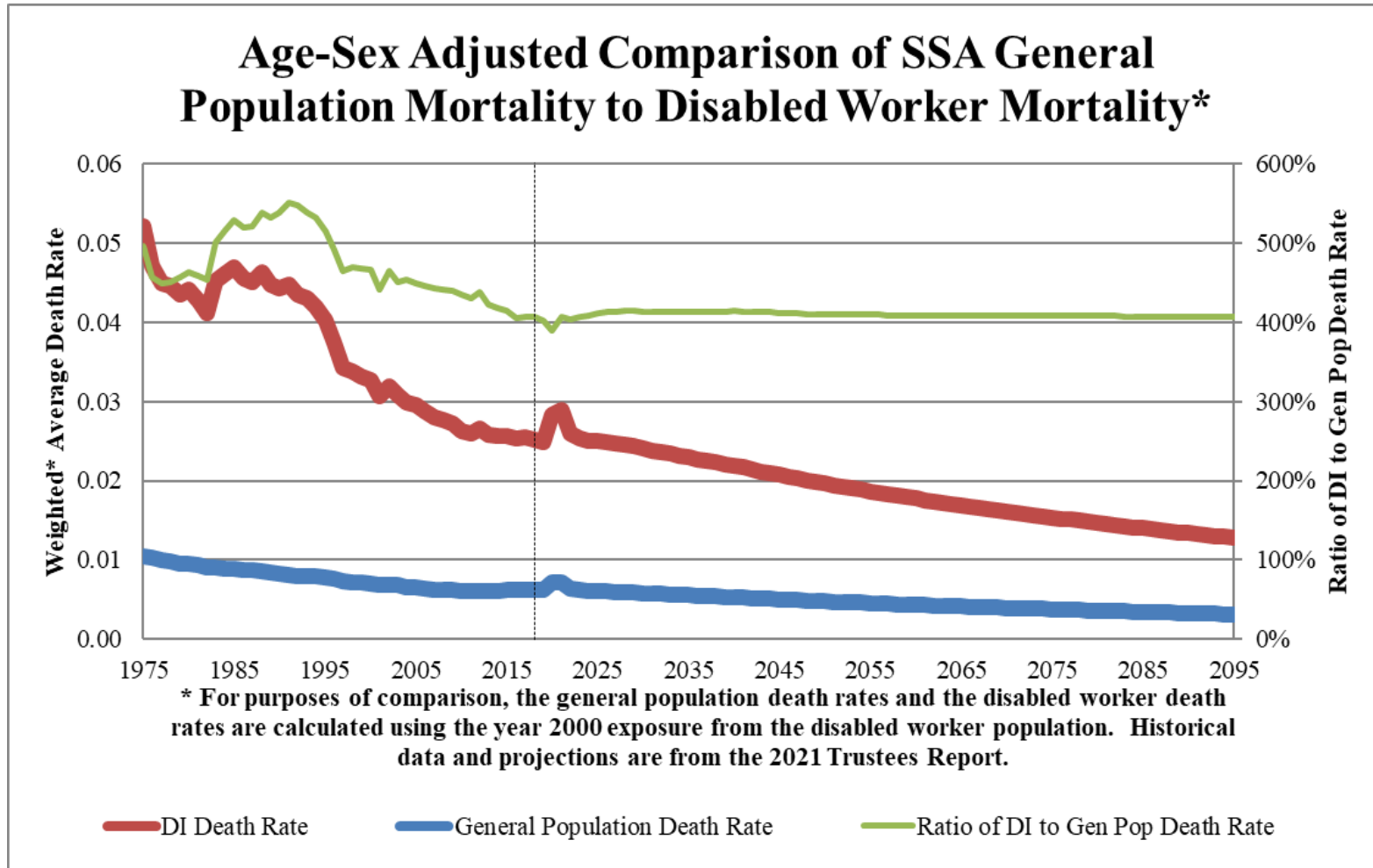
Note: The projections reflect the Trustees' assumptions for the 2021 Trustees Report. The dotted lines show the short-range assumptions for the 2021 Trustees Report.

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



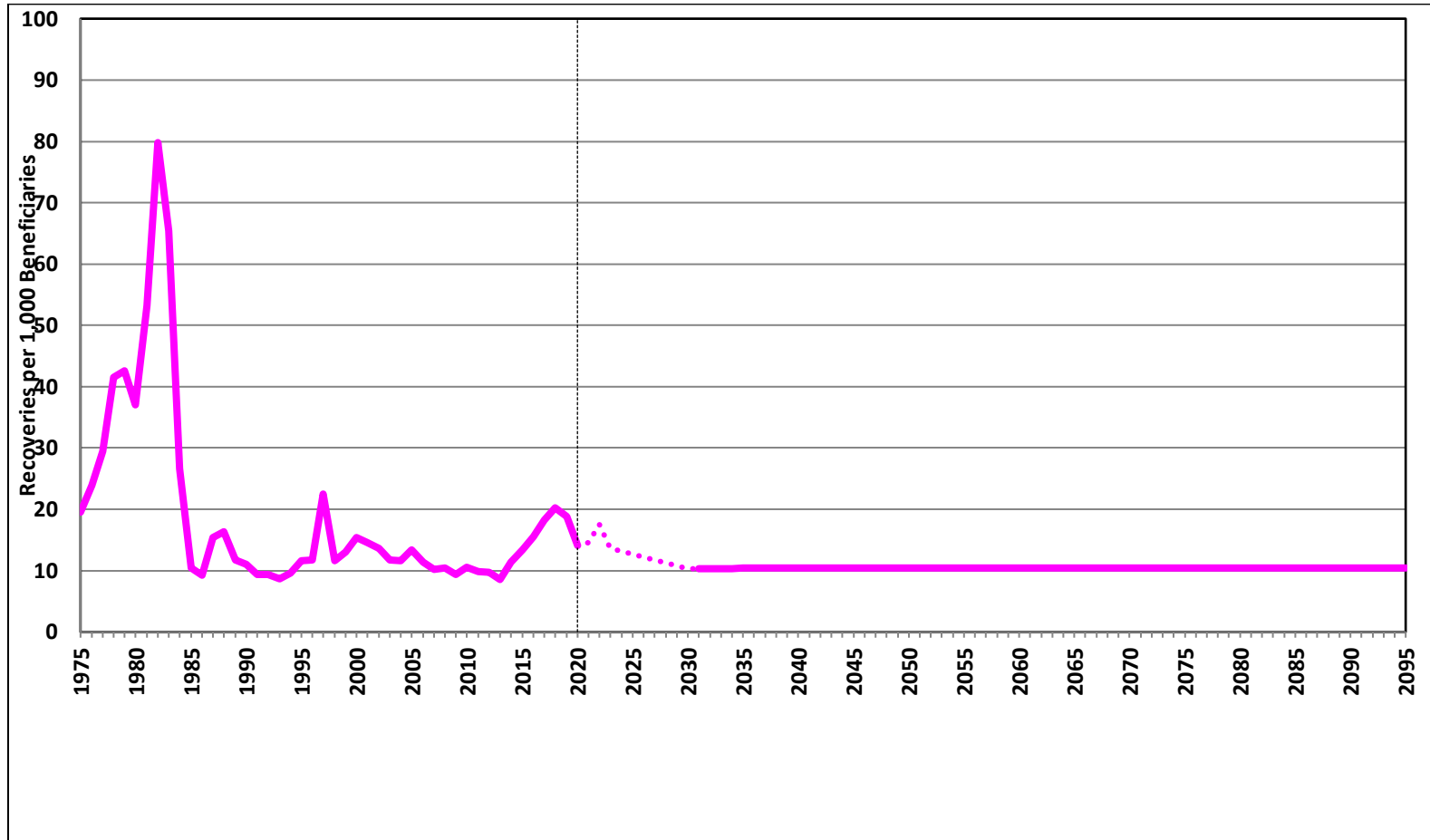
Note: The projections reflect the Trustees' assumptions for the 2021 Trustees Report. The dotted lines show the short-range assumptions for the 2021 Trustees Report.

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



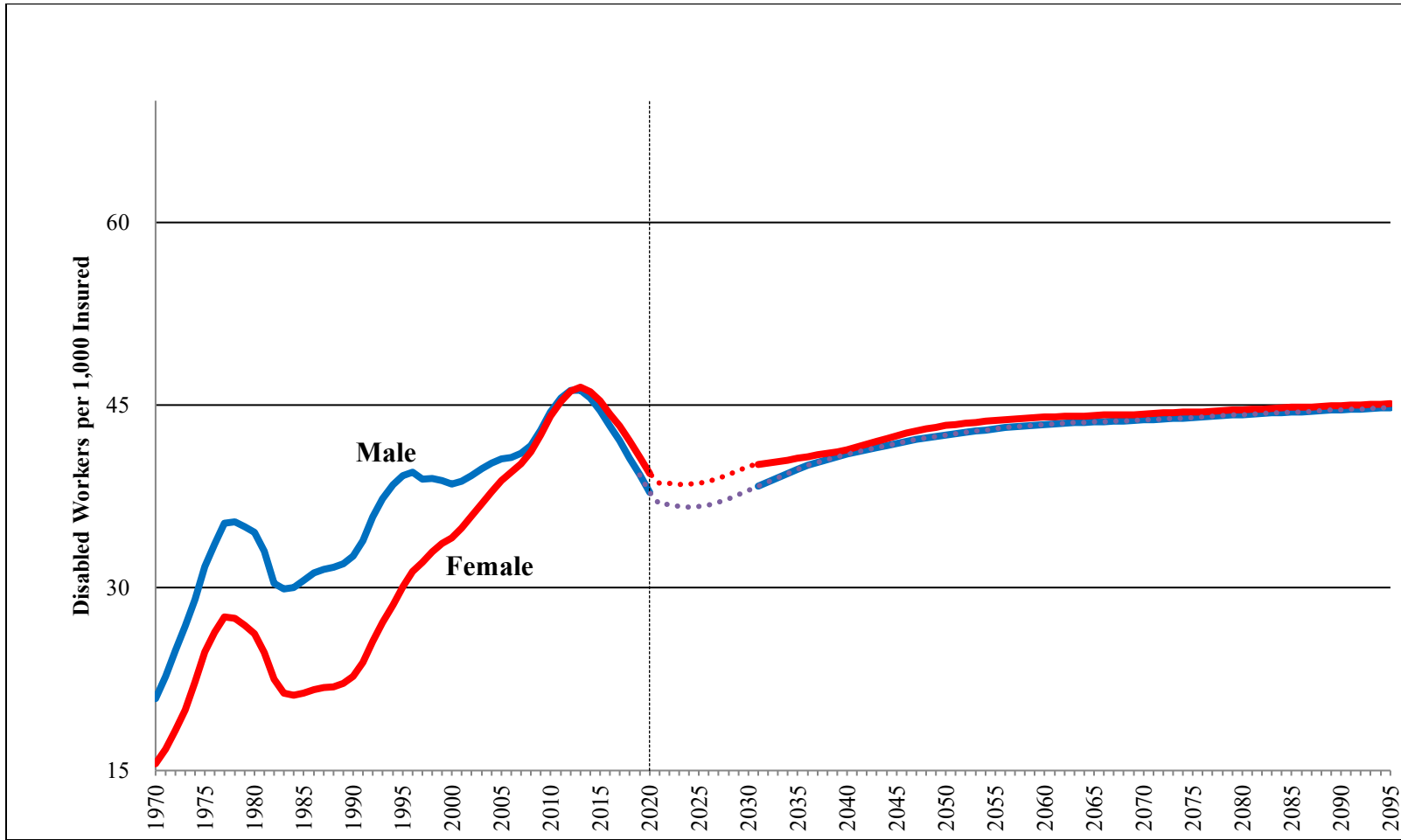
Note: The projections reflect the Trustees' assumptions for the 2021 Trustees Report.

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



Note: The projections reflect the Trustees' assumptions for the 2021 Trustees Report. The dotted line shows the short-range assumptions for the 2021 Trustees Report.

**Chart 7: 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 2021 Trustees Report. The dotted lines show the short-range assumptions for the 2021 Trustees Report.