

# Projected Changes in Healthy Life Expectancy and Healthcare Costs 2020–2040 Through Long-Term Care Prevention Among Older Japanese People

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## ABSTRACT

Healthcare costs are increasing in Japan owing to the growing older population. Prevention of long-term care needs would reduce healthcare costs in the short term, but the long-term impact of care needs is unknown. This study examined how healthcare costs might change by preventing the transition to health states requiring long-term care in older Japanese people. A simulation model was constructed comprising two aging chains for healthy and unhealthy people aged  $\geq 65$  years by sex. Model parameters were calibrated to population, number of long-term care recipients, number of deaths, and medical and long-term care expenditures 2010–2017. Healthy life expectancy was calculated using proportion of long-term care recipients. Changes in the base run from 2020 to 2040 were compared with those of three hypothetical scenarios: 2% annual reduction of death rates (S1), S1 plus 2% annual reduction of

transition rates from the healthy to unhealthy state (S2), and S2 plus 2% annual reduction in the proportion of unhealthy individuals at age 65 years (S3). The total population and the unhealthy population increased in the base run by, respectively, 12.3% and 25.8% for males and 10.0% and 64.0% for females. Healthy life expectancy at 65 years decreased in the base run by 0.06 years (males) and 0.53 years (females), but increased in S1, S2, and S3, respectively, by 1.22, 1.61, and 1.79 years for males and 0.25, 0.51, and 0.56 years for females. The sum of medical and long-term care expenditures increased in the base run, S1, S2, and S3, respectively, by 16.8%, 42.1%, 33.9%, and 32.3% for males and 30.4%, 47.9%, 40.0%, and 39.3% for females. In conclusion, healthcare costs would increase as death rates reduced, but the increase would be attenuated if healthy life expectancy was extended through long-term care prevention in the older population.