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Mortality Projections With Explicit Consideration of Behavioral Factors

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Abstract

Human behavior plays a significant role in shaping mortality experience. Two primary behavioral drivers of mortality assessed in this paper are smoking and obesity[1]. The smoking epidemic has been on the wane for several decades in the United States, but its adverse consequences on mortality will continue to be felt for quite some time. In the United States, obesity is still on a 40-year rise, with its most significant effects on mortality expected in the future.

This paper reports on the results of an analysis of historical patterns of reductions in smoking and increases in obesity in the United States, together with their effect on mortality. For this purpose, a model was constructed on a gender and age basis, reflecting the effects of both sets of behavior. Reductions in smoking will continue to affect both lung cancer and chronic obstructive pulmonary disease, among other diseases, although over the next 30 years, the decline in smoking will contribute to an overall reduction in mortality. The continued increase in the incidence and severity of obesity is expected to result in an increase in premature deaths.

The estimated deterioration in cohort life expectancy for a 35-year-old in 2015 due to the net effect of reductions in smoking and increases in obesity prevalence is about 0.23 years for a female and about 0.62 years for a male. For a corresponding 65-year-old, the net effect is an estimated deterioration of about 0.02 years for a female and about 0.18 years for a male. Based on alternative obesity prevalence trajectories, the estimated decrease in cohort life expectancy due to the obesity epidemic for a 35-year-old in 2015 is between 0.95 and 1.41 years for females and between 1.34 and 1.84 years for males; for a 65-year-old, the decrease is between 0.53 and 0.78 for females and between 0.67 and 0.90 for males. The overall effect of reductions in smoking is an increase of about 0.96 years for a 35-year-old female and about 0.99 years for a 35-year-old male. For 65-year-olds, the effect is an increase of about 0.61 years for a female and about 0.79 years for a male.

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[1] Obesity, though not strictly a behavior, is a condition associated with a combination of behaviors and genetic factors, which can adversely affect health and in turn mortality. In this paper, obesity is used as a marker for these behaviors.