Are Cox Regression Models a Valuable Tool for Social Stratification Research on Health?

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Abstract In our contribution, we assess the possibilities and limits of Cox regression models in social stratification research in the area of health. We are motivated by the need for a structured analytical strategy through which researchers can deal with health inequality. Previous findings suggest considering health as a relevant resource but also one, which is unequally distributed among the members of a population. Along these lines, we focus on the inequality of risks distribution and the social stratification of (non) access to health as a resource. Using the substantive example of health inequality, we perform five Monte Carlo simulations in constructed longitudinal data. Each setting simulates a different source of bias. Specifically: a) Measurement error (misspecification of time measurement); b) Linear dependency between class of origin, destination and mobility effects; c) Omitted variables bias; d) Disentangle of timing/probability effects, namely speed/overall occurrence likelihood of an event; and e) Unobserved heterogeneity among groups. The health-related risks approach in analyzing health inequalities has a twofold advantage: a) it splits the health outcome in a true differential and in a stochastic component due to chance and b) it considers only the first – and in most cases more interesting part – as a source of inequality. Moreover, Cox regression models allow for a flexible parameterization conditional to the specific research settings. For instance, addition of frailty parameters to the regression equation can help social scientists to reduce unobserved heterogeneity. This problem is especially encountered in social stratification research when comparing logit transition probabilities. In summary, this study contributes to the current literature by demonstrating the flexibility of Cox regression models in social stratification research in the area of health. It further provides valuable analytic avenues for theory-driven empirical research in social scientific health research as it uncovers how various sources of bias affect estimates.

Keywords: Social Stratification; Health Inequalities; Cox Regression Model; Monte Carlo Simulation; Estimation Biases.