

Measuring Inequality of Opportunity in Health When the Health Variable is Ordinal and Multidimensional

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Health inequalities have received significant attention in the economic literature and rank high in the agenda of policy makers and international organizations such as the World Health Organization and the World Bank. Traditional analyses of inequality in health tend to focus on a single dimension of inequality, typically income-related, and on a one-dimensional and ordinal measure of health, most often self-assessed health. Also, the vast majority of this literature relies on mean-based measures of inequality, namely the concentration index (see O'Donnell, Van Doorslaer, Wagstaff and Lindelow (2008) and references therein).

A more recent strand of research, devoted to inequality of opportunity in health (Trannoy et. al. (2009), Rosa Dias (2009; 2010)), has advanced this literature by considering multiple sources of inequality, vectors of circumstances beyond individual control. However, it still focuses largely on inequality of opportunity in self-assessed health, and uses mean-based inequality indices to measure it, such as the Gini-opportunity index. As shown by Allison and Foster (2004), an ideal measure of dispersion for ordinal data cannot be mean-based: mean-based measures require imposing a cardinal scale on the values taken by inherently ordinal variables. Furthermore, the most recent literature on health and human development (Conti and Heckman (2010); Heckman et al (2011)) stresses the inherently multidimensional nature of health, advocating the combined use of multiple health indicators, instead of one-dimensional measures.

We go beyond the current literature by proposing a methodology designed to measure inequality of opportunity in health, when the latter is proxied by a series of ordinal health indicators. The method's indices are applicable to an arbitrarily large number of circumstances defining the population groups over which inequality of opportunity in health is assessed. We use two sets of indices. Firstly, the indices of between-group inequality recently developed by Silber and Yalonetzky (2011). These indices fulfil the appealing property of being sensitive to the relative desirability of the ordinal variable's category. Secondly, we adapt the segregation indices studied by Reardon and Firebaugh (2002) to the measurement of inequality of opportunity when health status is multidimensional. These adaptations follow the method proposed by Yalonetzky (2010) to adapt the Pearson-Cramer index for the measurement of multidimensional inequality of opportunity. The advantage of this approach is its sensitivity to the joint distribution of the indicators used to measure health multidimensionally. We illustrate these methods by applying them to data from the National Child Development Study, which follows a large cohort of individuals, who were born in Great Britain in the week of 3rd March 1958, from birth up until age 46. Circumstances are represented by a wide range of parental, genetic and childhood influences, beyond individual control. Health status is characterised by the incidence of sixteen distinct health conditions, classified in adulthood according to the International Statistical Classification of Diseases and Related Health Problems. Given that health gradients tend to open-up at early ages and to amplify throughout life, we measure inequality of opportunity in health when the cohort-members are 23, 33, 42 and 46 years old.

Keywords: Health; inequality of opportunity; multidimensional inequality; mean-based inequality indices; NCDS

JEL codes: I12, I32, C23

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