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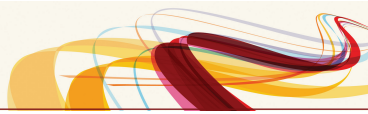
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Visualizing Individual Outcomes of Social Mobility Using Heatmaps

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Abstract

Research on the consequences of social mobility usually draws on information about categorical origin and destination variables as well as an outcome variable. The author shows an example of a heatmap created in Stata to visualize the relationship between social mobility and poor self-rated health in Germany and discusses the advantages of this heatmap approach to other visualization approaches.

Keywords

social mobility, self-rated health, visualization, heatmap

Understanding the individual consequences of social mobility for outcomes such as attitudes, fertility, and health and well-being has gained greater attention in a period of increasing social inequalities. Current social and political developments such as the support for right-wing populist parties are often described as the consequence of blocked opportunities for upward social mobility. Particularly research on the health consequences of social mobility is flourishing at the moment (Gugushvili, Zhao, and Bukodi 2019; Präg and Richards 2019; Vable, Gilsanz, and Kawachi forthcoming), examining questions as to whether upward mobility is able to compensate for childhood socioeconomic disadvantage or whether social mobility per se is a stressful experience taking a toll on individual health.

Social mobility is the movement between an origin social position to a destination social position. This makes it necessary to relate two independent variables to an outcome variable. Figure 1 presents a heatmap of the percentage of poor self-reported health in different origin and destination class positions. Specifically, Figure 1 visualizes the percentage of individuals aged 25 to 65 years reporting poor health by parental social class (origin, on the y axis) and own social class (destination, on the x axis), on the basis of the German General Social Survey (Gesis 2018) for the years 2004 to 2016. The axes create a grid for origin and destination social class, and different shades of blue and red indicate for which groups the prevalence rate of poor self-rated health is significantly higher (red) and lower (blue).

The main diagonal of Figure 1 reveals a social gradient of poor health for the socially immobile. Those in a higher social class enjoy on average better health. Those above the main

diagonal are the upwardly mobile, for whom health benefits mostly accrue when they make it into the top three social classes. Below the diagonal, the downwardly mobile are shown, revealing that downward mobility is often associated with poor health.

I argue that this heatmap approach to visualizing social origin, destination, and outcome variables is superior to other visualizations sometimes seen in the literature. Grouped bar charts (e.g., the average outcome by destination class, broken down into groups of bars defined by destination class) become unwieldy if the number of origin and destination classes is large. In Figure 1, I am distinguishing among seven different social classes, which would result in a $7 \times 7 = 49$ -bar chart. Practically, this can be difficult to fit on a page and difficult to label intuitively if social classes are not just numbered but also to be named. Substantively, such a figure can be difficult to understand, as data points that might be thought of as adjacent—say, the bar for working-class respondents from a working-class origin and the bar for working-class respondents from an intermediate-class background—might appear in very different places. Three-dimensional bar graphs address some of the aforementioned problems to an extent. A three-dimensional bar graph often is easier to fit on a page even when the number of bars is large. The structure of the data is reflected more accurately, with adjacent data points being closer to one another. However, three-dimensional graphs can

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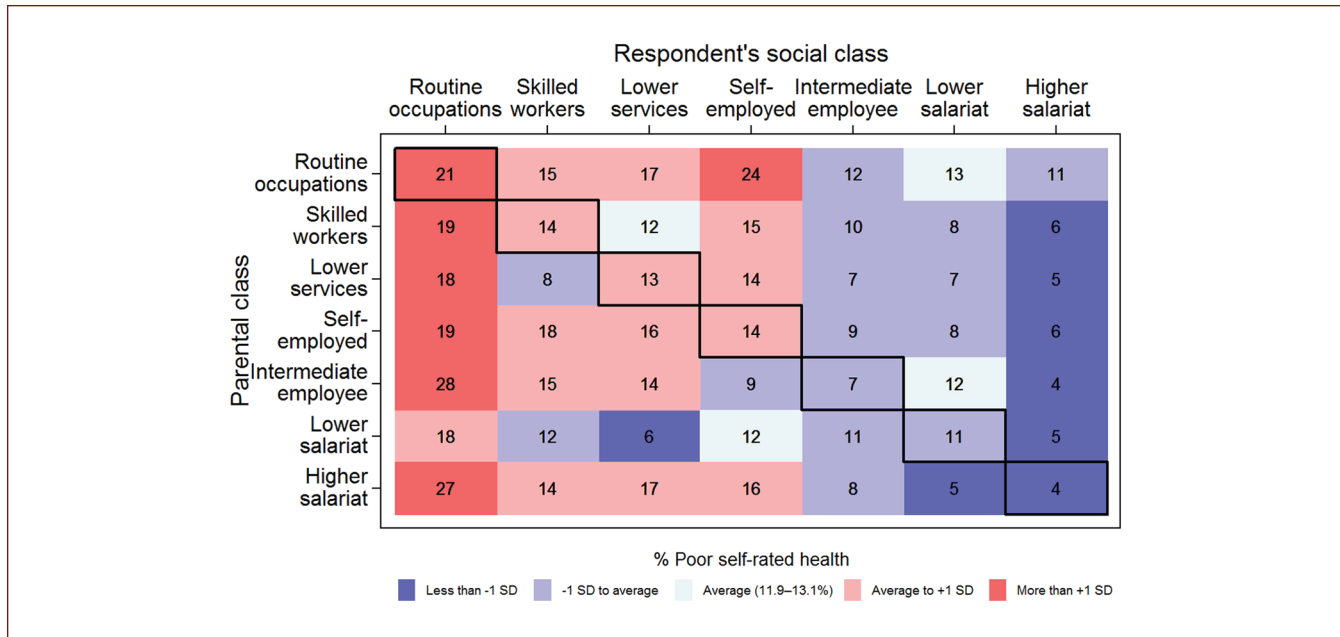


Figure 1. Heatmap of the percentage of individuals with poor self-rated health by parental social class and respondent’s own social class. Numbers denote percentage of individuals with poor self-rated health by parental class–own class combination. Blue fields denote groups significantly healthier than the population average (12.5 percent, 95 percent confidence interval = 11.9 percent to 13.1 percent) and red fields significantly less healthy groups. Source: German General Social Survey, 2004 to 2016 (Gesis 2018), author’s calculations. Note: Information to replicate this figure using Stata is available in the Supplemental Material. Rounding error sometimes causes differences in color (e.g., lower salariat → skilled workers: 11.7 percent).

be difficult to read, can distort the data being shown, can violate the principle of maximizing the data-to-ink ratio (Tufte 1983), and are considered “chart junk” by some. The heatmap approach presents adjacent data points next to one another yet restricts itself to two dimensions.

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Supplemental Material

Supplemental material for this article is available online.

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Author Biography

Patrick Präg is a researcher in the Department of Sociology at the University of Oxford and a research fellow at Nuffield College. He does research on social stratification, social demography, and health and well-being. Recent articles were published in *European Sociological Review*, *Social Science & Medicine*, and the *Journal of Epidemiology and Community Health*.