



Mathematisches Kolloquium

Business Demography

Sprecher: Prof. Dr. Rafael Weißbach, Universität Rostock
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The primary focus in demography is life expectancy. German data sources to determine the duration of a business life, from foundation to closure, can be official statistics (“Unternehmensregister”) and - as one particular cause of closure - insolvencies registered by the federal ministry of finance. Life expectancy is usually reported cohort by cohort, in order to study the life expectancy developing over time. The two mentioned observational data have a cross-sectional as well as a longitudinal component and unfortunately missing data for a cohort-specific analysis are a common consequence. Especially, a currently active business is “right-censored” in the sense that its future closure (i.e. laying “right” on the time line) is still uncertain. Hence its life length that would be needed for an average, as an estimate of the expectancy, is unknown. Furthermore, if an analyst starts the data collection (and ends somewhat later), a business might well already be active from the beginning. In order to make a statement for cohorts that haven been founded before the analyst started the collection, i.e. in order not to ignore these businesses, one needs to take account of other businesses that have been closed before the study’s start (i.e. laying “left” on the time line), the “left-truncated”. Even worse is the case of the second data source where a business is only reported when it is not closed after the study, otherwise it is “right-truncated”. The talk will mainly introduce methodologically in the statistical treatment of truncated durations (but also of censored) and will demonstrate methods for the two data sets. Aspects such as the influences to business lives - positively or negatively - will benefit from the described methods not only because requires methodological advances are straight forward, but especially because larger models must be compared to the basic model, in order to assure trust in a scientific audience.