

Preface

The Lexis diagram is taken as one of the most basic and simple tools in demography. So what is the story behind it? One may ask, is there still a reason for such a simple tool in contemporary demographic research? This book provides a brief insight into topics related to Wilhelm Lexis as well as the famous demographic instrument that is named after him: the Lexis diagram. Additionally, this topic is chosen to commemorate the centenary of the death of Wilhelm Lexis, who had an unquestionable influence on demographic research.

In times of rapid development of complex and sophisticated methods and modeling in demography, it is worth looking back to the roots and clarifying the basics. One can see that many methods were influenced by the simple Lexis diagram. It is reasonable to claim that demographers from all around the world would be unable to imagine demography without the Lexis diagram, in spite of the fact that the diagram's ties to Lexis are not as direct as they may seem.

The initial idea for this book came to our minds in a cafeteria in Boston, USA where we attended the conference of the Population Association of America. During the discussion related to heard contributions, we concurred that quite often the discrete and continuous forms, as well as the exact and completed ages in relation to Lexis diagram and life tables, are mixed up. The Lexis diagram is a basic instrument for the demographers. However, the majority of us know only one version of the diagram, and we are vaguely familiar with the others. Additionally, based on our experiences as members of the Department of Demography and Geodemography at Charles University, we recognize that students have difficulties applying real data to the Lexis diagram sometimes. Furthermore, the state of affairs is complicated by the fact that the notation in relation to Lexis diagram and life tables in the textbooks may differ not only by demographic school, but also by the time of the initial publication. Therefore, we concluded that it could be worthwhile to have all basics of the Lexis diagram summed up in one publication. When we returned to Prague, our decision was supported by Prof. Zdeněk Pavlík, who could be viewed as a “guru” of Czech demography and who, among others, deals with the principles of demographic notation and clarification of the symbols as well as their

understanding. He specifically asked us not to omit the topic of life table construction in this book because of its close connections to the Lexis diagram.

It is important to mention that this book is not intended to replace the generally known (or unknown) textbooks or classical materials about principles of demographic analysis. We selected just the main and basic principles from such texts and attempted to clarify them better using the unit notation, we then focused our attention on the development of the Lexis diagram (also called a demographic grid) and its practical usage. Still, there are some works dealing with almost the same topic (e.g., papers of Keiding, Vandeschrick, and so on, which are also introduced and used within the text of this book). However, we tried to enrich their output by including practical examples of how the historical forms of the diagram were used as well as introducing possible contemporary usages regarding the principles of the diagram in research.

This book consists of seven chapters which cover Lexis' life and work, as well as life tables, the most important model related to the Lexis diagram. Development of the diagram through time and elemental applications of the Lexis diagram in SAS, R, and Stata are also covered. This book introduces the basic tools which enable us to handle demographic data specified by the three time dimensions (time of observation, age, and cohort). Therefore, the text may be useful not only for students of demography and demographers themselves, but also for all scientists who work with population data.

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