Kinship Structures

EDSD Course syllabus

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European Doctoral School of Demography (EDSD)
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1 Introduction

1.1 Course description

Kinship is a fundamental property of human populations and a key form of social structure. Demographers have long been interested in the interplay between demographic change and family configuration. This has led to the development of sophisticated methodological and conceptual approaches for the study of kinship, some of which are reviewed in this course.

1.2 Goals

The course will provide a succinct and practical introduction to kinship demography. By the end of the course, students will be familiar with the current state of the sub-field and the tools to conduct independent research in this area. The main goals of the course are to:

1. present a general overview of the current state of the field of kinship demography,
2. introduce the fundamentals of the formal demography of kinship, and
3. provide hands-on experience running models of kinship in R.

1.3 Lectures and exercises

The in-person course comprises independent reading, lectures, and lab sessions. There are required and optional readings each day. Students are expected to attend all lectures and lab sessions. There is no exam; only a final assignment which needs to be turned in at the end of the week (see Section 2).

Schedule

- In-person sessions take place between 09:00 and 12:30 (note that on Monday we will start at 09:30 with the course content)
- From Monday to Wednesday, we will have 1.5 hours of lectures and 1.5 hours of lab session (with breaks in between)
- On Thursday, we will meet to work on your assignments

1.4 Hardware and software

Lab sessions will be in R ($\geq$ 4.0.2). Students are required to bring a laptop for the lab sessions. Participants should install the following packages from CRAN: `DemoKin`, `devtools`, and `tidyverse`.

1.5 Online resources and lab sessions

There are two online resources with all the information you need about the course, including lab sessions. We will update the materials constantly, so please make sure that you are working with the latest version of the data.:

- A GitHub repository including the syllabus, slides, and other important materials: https://github.com/amandamartinsal/EDSD_kinship_24-25. Please make sure to download (clone) the **entire repository** into your computer!
- The website with the lab exercises: https://amandamartinsal.github.io/EDSD_kinship_24-25/.

2 Final assignment

The assignment should be completed in groups (of three) that will be defined at the start of the course.

2.1 Description

You will use data on kinship structures to benchmark formal models of kinship. For this exercise, you will use the `DemoKin` R package to implement formal models of kinship. You should choose one country and run four different models according to the following specifications:

- One-sex model; approximate male kin using GKP factors
  - time-invariant rates
  - time-variant rates
- Two-sex model; approximate male kin using the androgynous assumption
  - time-invariant rates
  - time-variant rates

Use the output of the four models to answer the following questions:

1. Plot the **expected number of living relatives by age of focal** for each specification. For extra points (i.e., this is optional), also plot the **expected number of deceased relatives by age of focal**.
2. Discuss 1-2 key insights, when would you use different specifications? Consider the specific context and the data available for the country you selected. (max 250 words)
3. Can you think of other ways of incorporating male fertility into the kinship models (beyond the options we discussed in the course)? (max 250 words)

2.2 Handing in the assignment

Assignments (one per group) should be sent to martins@demogr.mpg.de **before midnight of Friday, November 22.** You should hand in the following files:

1. An .RMD file with all your code and answers to the exercise questions
2. A compiled .pdf of your markdown file showing all the code
3. All input data needed to replicate your code

3 Lecture Plan

Monday, Nov 18: Introduction to kinship demography

Required reading

- Alburez-Gutierrez, D., Barban, N., Caswell, H., Kolk, M., Margolis, R., Smith-Greenaway, E., Song, X., Verdery, A. M., & Zagheni, E. (2022, June). *Kinship, Demography, and Inequality: Review and Key Areas for Future Development* (preprint). SocArXiv. https://doi.org/10.31235/osf.io/fk7x9

Tuesday, Nov 19: Mathematical models of kinship

Required reading

- Caswell, H. (2019). The formal demography of kinship: A matrix formulation. *Demographic Research*, *41*, 679–712. https://doi.org/10.4054/DemRes.2019.41.24

Optional reading

- Goodman, L. A., Keyfitz, N., & Pullum, T. W. (1974). Family formation and the frequency of various kinship relationships. *Theoretical Population Biology*, *5*(1), 1–27

Wednesday, Nov 20: Extensions of the kinship model

Required reading

- Alburez-Gutierrez, D., Williams, I., & Caswell, H. (2023). Projections of human kinship for all countries. *Proceedings of the National Academy of Sciences*, *120*(52), e2315722120. https://doi.org/10.1073/pnas.2315722120

Optional reading

- Caswell, H., & Song, X. (2021). The formal demography of kinship. III. kinship dynamics with time-varying demographic rates. *Demographic Research*, *45*, 517–546
- Caswell, H. (2022). The formal demography of kinship IV: Two-sex models and their approximations. *Demographic Research*, *47*, 359–396. https://doi.org/10.4054/DemRes.2022.47.13

Thursday, Nov 21: Meet to work on assignment

No required readings