MANNHEIM DATA SCIENCE CERTIFICATE: WORKING WITH MISSING SURVEY DATA

This certificate is designed to prepare you for positions such as (Survey) Statistician, Research Scientist, or Decision Scientist in which you are dealing with data that might be incomplete. Missing data can lead to biased analysis results and will limit the use of the data for an organization that collects large amounts of data. With the skills acquired through this certificate, you provide the technical foundation for your organization to successfully implement strategies to overcome the problems of missing data.

KEY FACTS

STRUCTURE
Asynchronous learning through video lectures combined with weekly 1-hour live online meetings

LANGUAGE
English

CREDITS
Certificate of Completion

CERTIFICATE DURATION
3 courses
4 weeks per course

APPLICATION REQUIREMENTS
- An academic degree
- Fluency in English

PARTICIPANTS
Limited to 20

TIME COMMITMENT
Part-Time (12 hours/week)

CERTIFICATE DESCRIPTION

Missing data is a common problem, which can lead to biased results if the missingness is not taken into account at the analysis stage. Imputation is often suggested as a strategy to deal with item nonresponse allowing the analyst to use standard complete data methods after the imputation. After learning how to use the statistical computing software R, you will be introduced to the idea why thinking about missing data is important and understand which goals a useful imputation method should try to achieve (and which it should not). On this basis, you will learn how to apply multiple imputation, a strategy for dealing with (item) nonresponse in surveys. You will study the concept of multiple imputation and see why multiple imputation should generally be preferred over single imputation methods. The main focus of the certificate will be on strategies to generate (multiple) imputations and how to deal with common problems when applying the methods for large scale surveys.

KEY BENEFITS

- Excellence: Theoretically based and practice-oriented learning from a faculty from world's top ranked universities, statistical agencies and businesses
- Flexibility: Join courses online from anywhere in the world, at your own pace.
- Online learning: Asynchronous learning experience (pre-recorded lectures, readings) and synchronous learning experience (virtual classroom, weekly live discussions led by the instructor)
- Participant profile: Participants benefit from a diverse group of international peers coming from various industries and with different occupational profile

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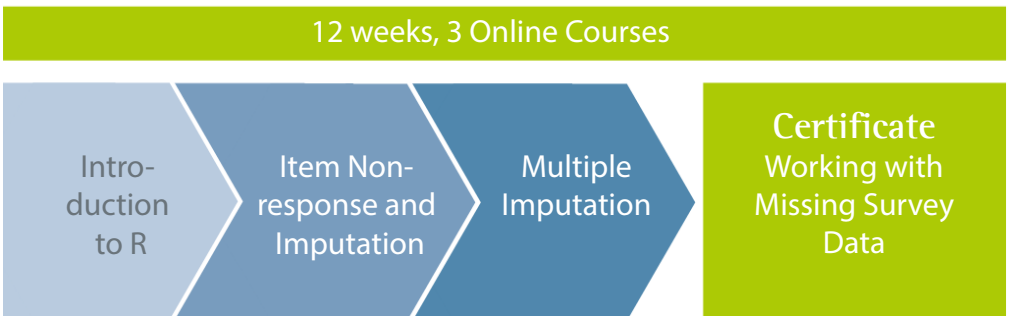
BY COMPLETION OF THE CERTIFICATE YOU WILL...

- understand why the default way of dealing with missing data as implemented in most statistical software is often problematic
- realize that it is better not to account for the missingness instead of applying simplistic imputation methods such as mean imputation or last-observation carried forward
- know what is meant by a missing data mechanism and understand the implication of the different mechanisms
- be familiar with the principle ideas and concepts of multiple imputation
- understand why multiple imputation should be preferred over single imputation methods in most situations
- know about the two main approaches for multiple imputation
- be familiar with various imputation routines for different types of variables
- know how to implement these routines using R
- be able to deal with various problems that typically arise when imputing data in large scale surveys
- know about various strategies to assess the quality of the generated imputations

COURSES



SAMPLE SCHEDULE

21	Introduction to R for Social Scientists	Item Nonresponse and Imputation	Multiple Imputation – Why and How
Mandatory weekly online meeting	This is a self-paced course without mandatory online meetings.	Fridays 8 AM ET / 2 PM CET November 12 – December 3, 2021	Tuesdays 11 am ET/ 5 pm CET January 11 – February 1, 2022
Final Exam	-	December 10, 2021	February 8, 2022

CASE STUDIES & EXAMS

There will be a mixture of weekly online quizzes and assignments. Additionally, the courses each conclude with a final exam.

To see all courses in the upcoming term click here.

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