**Examination Sheet Unit 1 and 2**

Quick Tip:

The assignment for Unit 1 and 2 is a joint practice sheet. The first part consists of a small quiz on the theory part taught in Unit 1. The second part of the assignment deals with practical application examples as shown in the teaching videos of Unit 2.

Please **review the entire assignment** before the meeting on **Thursday, November 02**, to discuss any questions that may arise.

Please **work on the assignment** after the meeting on Thursday, November 02, so that we can discuss the R exercises in the meeting on **Thursday, November 09**.

Complete it by including your answers in the document and sending the completed document **by Monday, November 13** to all of the following three e-mail-addresses:

hb@hanna-brenzel.de; hariolf.merkle@gmail.com; [berd-academy@stat.uni-muenchen.de](mailto:berd-academy@stat.uni-muenchen.de)

**Part 1 (40% of the grade)**

Question 1 (True or false?)

In principle, the main difference between a dynamic MSM and a static one is the aging procedure.

True

False

Question 2 (True or false?)

In static MSMs aging is done by re-weighting, in a dynamic MSM each microunit is aged individually by an empirically based survival probability.

True

False

Question 3 (Mark the right statement)

Selection of a base dataset is easy, because most of the micro datasets contain all information required.

Base dataset selection is important in a microsimulation model as the quality of the input data determines the quality of the output.

Question 4 (Mark the right statement)

What's true for dynamic microsimulation?

The microdata base usually comprises cross-sectional information.

The primary objective is to predict the future in the sense of point prediction.

Dynamic models extend the static model by allowing individuals to change their characteristics due to endogenous factors within the model and let individual units to progress over time.

Allows for the study of short-term effects with respect to some assumed scenario.

Question 5 (Mark the right statement)

What's true for static microsimulation?

Some newer static models improved the traditional model by incorporating certain behaviour responses assuming the market adjusts to the new steady state overnight.

Allows for the study of long-term effects with respect to some assumed scenario.

Population is studied for a single period given a proposed scenario with respect to some characteristic.

Static models focus on the immediate distributional impact of changes on the population of interest.

Question 6

Please state 5 aspects in which dynamic microsimulation methods can be differentiated!

1. Click or tap to enter text

2. Click or tap to enter text

3. Click or tap to enter text

4. Click or tap to enter text

5. Click or tap to enter text

Question 7

​Assign the right statements to either cohort models or population models:

* Model a single cohort over an extended time period

Cohort model Population model

* Base population represents a cross-sectional synthetic replica of the real-world population to be studied

Cohort model Population model

* Model structure inflexible

Cohort model Population model

* Modeling of the entire population regardless of research objectives

Cohort model Population model

* Reduced computational requirements

Cohort model Population model

* Base population represents a relevant share of the real-world population given the research objectives

Cohort model Population model

Question 8

​Assign the right statements to either closed models or open models:

* Flexible interfaces for adding new individuals

Closed model Open model

* Demographic projection includes synthetically generated partners

Closed model Open model

* Population only changes through migration, birth and mortality

Closed model Open model

* Population evolution is exclusively driven by intrinsic events

Closed model Open model

* Partner matching module required for demographic projection

Closed model Open model

* Population evolution may be also driven by external events

Closed model Open model

**Part 2 (60% of the grade)**

Question 9

For the reweighting process, we usually need microdata and population totals, projections or assumptions or thereof.

True

False

Question 10

State three R packages that can be used for microsimulation.

1. Click or tap to enter text

2. Click or tap to enter text

3. Click or tap to enter text

Question 11

Dynamic microsimulation usually produces one final dataset that should be analysed.

True

False

Question 12

Spatial microsimulation is a method to create synthetic datasets on a regional level for which original data is not available.

True

☐ False

Question 13

Reconsider exercise no°3 a)-b). Redo this exercise by taking into account additional projections:

The share of individuals aged 60 and above will increase by 25 percent and the share of female individuals will increase by 5 percent.

What is the at-risk-of-poverty-rate for Austria regarding 3b)? Round to two digits after the decimal.

1. Click or tap to enter text

What is the at-risk-of-poverty-threshold for Austria regarding 3b)? Round to two digits after the decimal.

1. Click or tap to enter text

Question 14

Reconsider exercise no°4 a)-b). Create a deterministic module for the variable ecoStat to avoid at least some of the implausible variables combinations regarding age. Hand in your modified code of exercise no°4.