Prof. Dr. Stefan Kettemann
Spring Term 2024
Exercise Sheet 1, due Wednesday Feb, 14th 2024.
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1. Components of Data Generating Scenarios [5 points]

Suppose you have an idea for a new Product which you intend to sell via an online platform. So, you want to check the size of the potential market, before you invest the time and money in developing and producing the product. Identify the 5 components of the corresponding Data Generating Scenario to collect the data which you need:

1. the Universe Ω = Portion of Reality in which data is collected (Also called Statistical Pop- ulation). 2. Elementary Events ω = opportunities in the universe in which an observation (measurement) can be made. 3. the Measurable Function (RV-function) = Procedure of mea- suring Data. 4. the Action of actually measuring Data. 5. the Data Value Space S = space of possible Data values you want to find out.

Answer:

1. Universe = { Human population (region of interest), Internet service providers, Access to internet services, access to delivery/pick up services}
2. Elementary Events = { All available online purchases events }
3. Measurable Function = { Web cookies that log online purchase }
4. Action = { purchase of our product }
5. Data Value Space = { Purchase | Not Purchase }

2. Components of Data Generating Scenarios [5 points]

Take a Data Generating Scenario of your own choice and find its five components.

Scenario: Planning a New Train Route in Bremen

1. Universe = { Population in Bremen, Number of Trains/Buses and other modes of transport (private cars), current available train routes, all possible start and end points of journeys }
2. Elementary Events = { Every time someone uses a train for transport }
3. Measurable Function = { Number of tickets sold ~ Number of trips takes }
4. Action = { Every time a train is boarded }
5. Data Value Space = { Take the train | Not take the train }