



## Seminar Series in Statistics and Data Science

16.11.2021, 14:15 @ Erling Sverdrups plass, Niels H. Abels hus, 8th floor

### **Celine Marie Løken Cunen:** Non-Markovian parametric multi-state models for interval censored data

**Abstract:** For many real-life phenomena one may assume that the units of observation, typically patients, transition through a set of discrete states on their way towards an absorbing state. The states often constitute various stages of a disease, from perfect health through various stages of dementia for example. Multi-state models are a class of statistical models which allow us to study the time spent in different states, the probability of transitioning between states, and the relationship between these quantities and covariates of interest. In many applications the transition times between states are not observed exactly; instead, the current state of the patients is queried at arbitrary times. The transition times are therefore interval censored, and this makes inference and modelling challenging. Most current approaches are based on the Markov assumption, for example the simplest parametric model available - the time-homogeneous Markov model. Here, we propose a new, general framework for parametric inference with interval censored multi-state data. Our models allow non-Markovian behaviour. I will present the framework and an algorithm for the automatic construction of the likelihood function, along with real-data examples. This talk is based on joint work with Marthe Aastveit and Nils Lid Hjort.



#### **Celine Marie Løken Cunen**

University of Oslo

Celine Marie Løken Cunen received a PhD in statistics at the University of Oslo in 2018. Since then Celine was employed at the department of mathematics as a senior lecturer and a postdoc. Celine received the prestigious **2021 Sverdrup Prize for young researcher in Statistics** and the **2018 Titan prize**. Cunen's research themes are varied, with particular interest in combination of information, meta-analysis, confidence distributions, change-point detection, biostatistics, piece research, and model selection.

#### **Next seminar**

TBA

#### **Contact Information**

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