New Master's program in Applied Biostatistics

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School of Public Health and Community Medicine, Sahlgrenska Academy

FMS meeting in December 2023:

Master’s Programme in Applied Biostatistics

starting HT25 at GU

Who are we?

University of Gothenburg

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Sahlgrenska Academy

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Institute of Medicine

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School of Public Health and Community Medicine

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Biostatistics group

Biostatistics Group





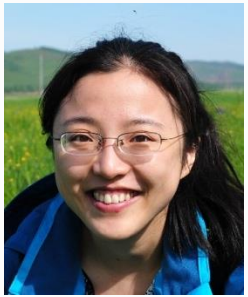






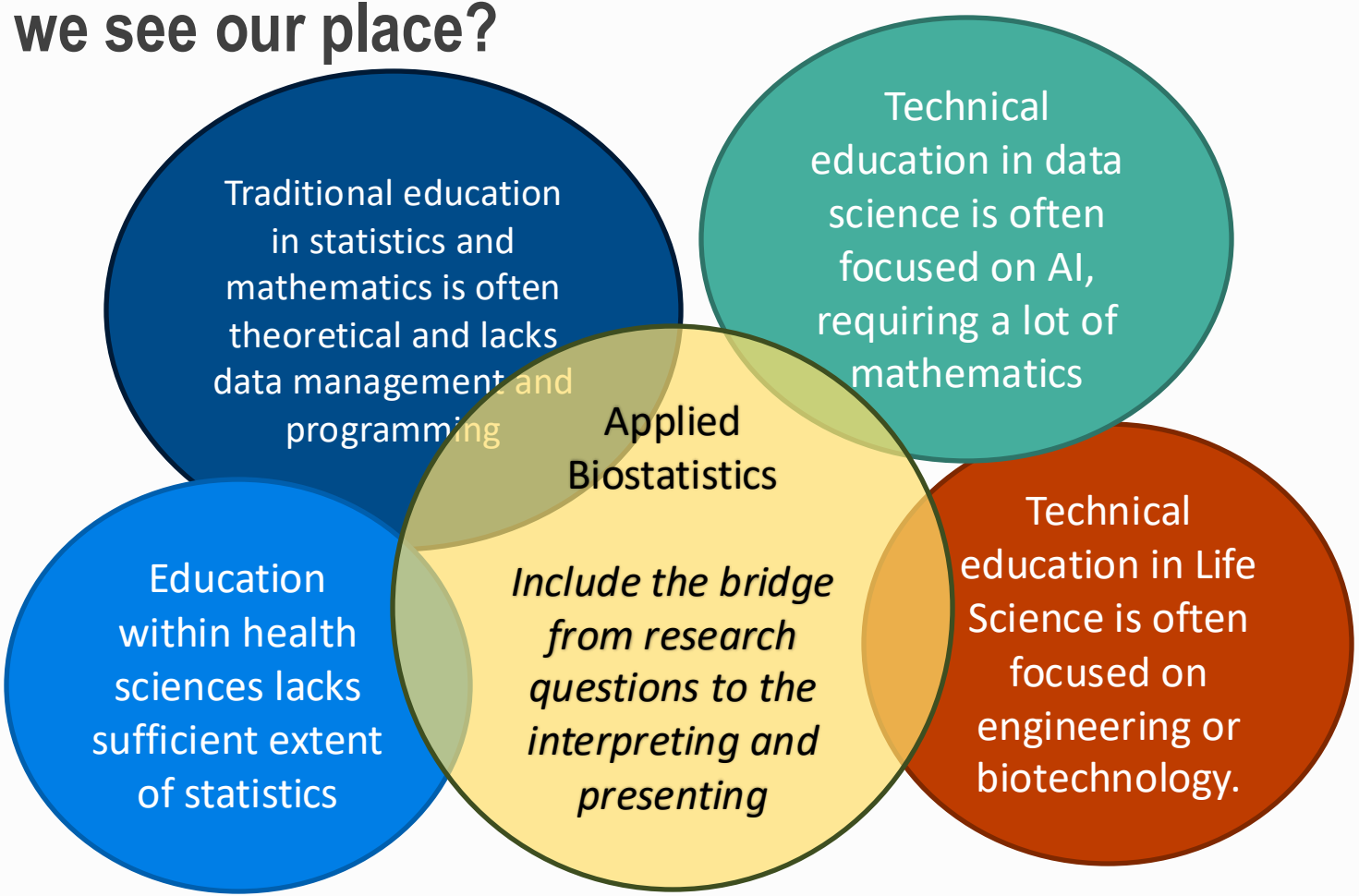







Martin Adiels, Erik Bülow, Anna Grimby Ekman, Rode Grönkvist, **Barbora Kessel**, Ying Li, Qinyun Lin, Kirsten Mehlig, Anders Muszta, Adnan Noor Baloch, Anna Rehammar, Koen Simons, Viktor Tasselius, Catrin Wessman, Emina Hadzibajramovic, (Max Petzold)

Where do we see our place?



An applied biostatistician shall be able to accompany a project from start to finish.

Prerequisites

- Bachelor’s degree (180 credits) in health sciences, economic, natural sciences, or engineering.
- At least 7.5 credits in statistics.
- English 6/English B or equivalent and
- Mathematics 3b/3c or equivalent.

Outline

Throughout the program, students are attending statistical consultation meetings.

Semester 1

- Introduction to biostatistics
- R programming for applied biostatistics
- Study and experimental design
- Regression analysis

Semester 2

- Causal inference
- Health data and questionnaires
- Statistical learning
- Advanced statistical methods

Semester 3

- Survival analysis
- Machine learning and AI
- Elective courses

Semester 4

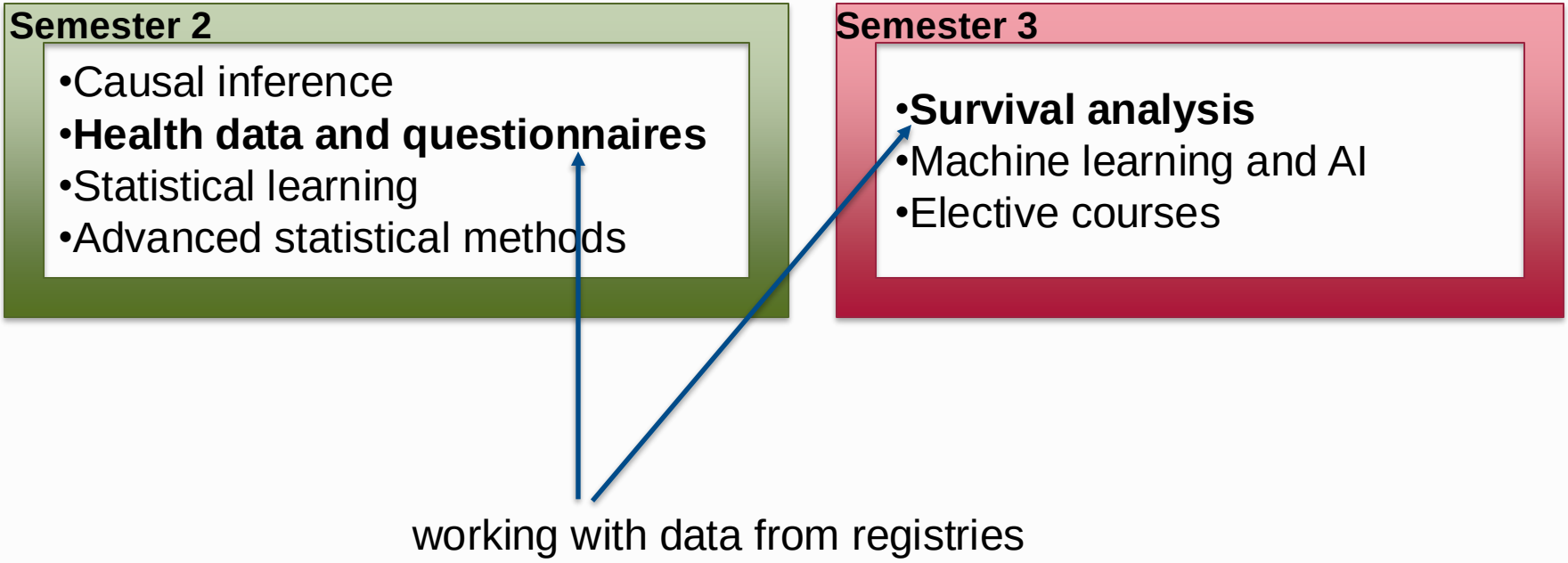
Master's thesis in Applied Biostatistics

Semester 1

- **Introduction to biostatistics**
  - Probability calculus
  - Distributions and their characteristics
  - Point and interval estimators, testing
  - CLT, LLN
  - Recap of needed mathematics
- **R programming**
  - Object types, file formats, packages
  - Wide and long format
  - Functions and loops
  - Reproducible analysis
  - Methodical verification of the behavior of scripts/functions
- **Study and experimental design**
  - Different study designs, randomization procedures, observational studies
  - Estimands, ITT, PP
  - power calculations, Interim analysis, FWER
  - SAP
- **Regression analysis**
  - Linear regression
  - Logistic regression
  - Simple random effect

    -> splines, interactions, model checking, inference, reporting, sample size

Semester 2 and 3



Semester 2 and 3

Semester 2

- Causal inference
- Health data and questionnaires
- **Statistical learning**
- Advanced statistical methods

Semester 3

- Survival analysis
- Machine learning and AI
- Elective courses

predictive models, principles of model validation

Elective courses 15hp

- Bayesian statistics 7.5hp 
- Spatial epidemiology 3hp 
- Health economy modelling 7.5hp,
- Health technology assessment and evidence-based medicine 7.5hp
- Clinical trials 7.5hp
- ….

Current state of things

- International application round: 81 eligible students.
- National round of applications is open until April 15th.

…. and we are busy preparing the welcome week at the end of August and organizing details of the first semester.

Thanks!

Happy to hear your opinion!