Instructions – project work

- Groups chooses a data set and makes all the steps of Bayesian data analysis workflow described in the course.
- The model can be something already used in the course or something else, but don't try to do too complex things. Ther are separate project courses work for more complex models.
- Project outcome is a Python or R notebook similar to notebooks in
  - BDA R demos `https://github.com/avehtari/BDA_R_demos/tree/master/demos_rstan`
  - BDA Python demos `https://github.com/avehtari/BDA_R_demos/tree/master/demos_pystan`
  - Stan case studies `http://mc-stan.org/users/documentation/case-studies.html`
  - StanCon case studies `http://mc-stan.org/users/documentation/case-studies.html` (some of these notebooks are for a bigger projects, but reflect still the basic idea of a notebook presentation)
- The submitted notebooks need to illustrate the knowledge of the Bayesian workflow.
- The notebooks have to include
  - Description of the data, and the analysis problem
  - Description of the model
  - Description of the prior choices
  - Stan code
  - How Stan model is run
  - Convergence diagnostics (Rhat, divergences, neff)
  - Posterior predictive checking
  - Model comparison if applicable (e.g. with loo)
  - Predictive performance assessment if applicable (e.g. classification accuracy)
  - Potentially sensitivity analysis
  - Discussion of problems, and potential improvements

Peergrade rubric

Part of the questions are used to check that the minimal requirements of the project work are included. Most of the questions are for giving feedback to other students. The received feedback and your response to that will be discussed in the evaluation meeting. Peergrade score you receive is not you final grade for the project work.

- Can you open the notebook?
  - yes
  - no
- Is there an introduction?
  - There is no clear introduction
  - The introduction touches on the main topic

  - The introduction states the main topic and provides an overview of the notebook
  - The introduction is inviting, presents an overview of the notebook. Information is relevant and presented in a logical order.
- Do you have any suggestions on how to improve the introduction?
- Is there a conclusion?
  - There is no clear conclusion
  - A conclusion is included
  - The conclusion is clear

  Describe in your own words what is the main conclusion of the data analysis in this notebook?
- The structure and organization of the notebook
  - The notebook lacks a clear data analysis story
  - The notebook attempts to tell a coherent data analysis story but lacks some focus and clarity.
  - The notebook presents a clear cohesive data analysis story
  - The notebook presents a clear cohesive data analysis story, which is enjoyable to read
- Overall, what did you think of the structure and organization of the notebook? Name at least one way your peer could improve structure and organization.
- Accuracy of use of statistical terms
  - There are numerous errors in use statistical terms
  - There are some errors in use of statistical terms
  - Statistical terms are used accurately but sometimes lack clarity
  - Statistical terms are used accurately and with clarity
- Description of the data, and the analysis problem
  - yes
  - no
  - Did you get a sense of what is the data and the analysis problem when they were first introduced? Where and how might the author make the model description more clear?
- Description of the model
  - yes
  - no
  - Did you get a sense of what is the model? Where and how might the author make the model description more clear?
- Description of the prior choices

  - No priors
  - Priors listed but not justified
  - Priors are listed and justified
- Is Stan code included?
  - yes
  - no
- Is code for how Stan model is run included?
  - yes
  - no
- Is required convergence diagnostics (Rhat, divergences, neff) included?
  - No convergence diagnostics at all
  - Not all required diagnostics are included
  - Required convergence diagnostic results shown but not discussed
  - Required onvergence diagnostic results shown and maning of the results is discussed
- Is there posterior predictive checking?
  - yes
  - no
- Is there a discussion of problems and potential improvements ?
  - yes
  - no
- Choose something you like about the notebook and explain why you like it.
- If you were to go back and redo your own notebook after reading this submission, what would you change?
- If the student were to complete this project work again, what could they change, to make it overall better?