40 mins **Students to prepare oral presentation based on the following topics regarding <u>Question 3</u>.**

* You can use the following bullet proof outline to prepare for your presentation.
* Remember to write the group members and topic chosen on the draft you hand in to Quercus!

Topic one:

- Describe the content of the graph (mention the variable of interest)
  - What does the x-, y-axis represent?
  - Describe the distribution (range, center, symmetry, skewness, number of points).
- How was one dot calculated:
  - How a single bootstrap sample is produced (e.g. size, with/without replacement)?
  - What statistic did you calculate from this particular bootstrap sample?
- How can the generated distribution of mean age be used for inference?
  - Since the observed data were generated … (this was a key word from last week), we can … (a key word from today's vocab list) from the observed data by sampling with replacement.
  - In other words, if the data resemble the … (a key word from today's vocab list), the bootstrap samples will also resemble the (the same key word from today's list).
  - Using the statistic calculated from each bootstrap sample, we can obtain a distribution of sample statistic and it gives an estimate of the … (a key phrase from today's vocab list) of the statistic.

Topic two:

- Rationale of using the bootstrap sampling distributions:
  - Does distribution of bootstrap sample statistic tend to capture the population value (mean/median)?
  - Where does the population value tend to be in the range of the bootstrap distribution?
- Construct the confidence interval
  - What is the range of values (in terms of percentile) taken to construct the 90% CI?
  - Describe how you did the above in R (are there ties? Was it easy or difficult to do this in R and why?)
- State the interval with reference to the data and variable (E.g. "A 90% CI for the mean (median) of the mother's age is ….").
- Interpret the interval you produced.
- (Bonus) Could you check if the interval produce is indeed the 90% CI? Why or why not?
  - Do you know the population parameter value (mean)?
  - Do you need to do more calculations?
  - How many times do you check if the population mean is captured by the CI?

Topic three:

- Describe how to produce the plot
  - How a single bootstrap sample is produced (e.g. number of data points used, with/without replacement)?
  - What statistic did you calculate from each bootstrap sample?
- Describe the content of the graph (mention the variable of interest)
  - What does the x-, y-axis represent?
  - Describe the shape of the distribution (range, center, symmetry, skewness, number of points).
- Rationale of using the bootstrap sampling distributions:

    - Does distribution of bootstrap sample statistic tend to capture the population value (median)?
    - Where does the population value tend to be in the range of the bootstrap distribution?
- Construct the confidence interval
    - What is the range of values (in terms of percentile) taken to construct the 99% CI?
    - Describe how you did the above in R (are there ties? Was it easy or difficult to do this in R and why?)
- State the interval with reference to the data and variable (E.g. “A 99% CI for the median of the mother’s age is ….”).
- Interpret the interval you produced.