Review
CPS_3

Title of the project
Crab length prediction and correlation analysis

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Score

Points: 24 / 27

Percentage: 88.9 [%]

Problem formulation [4.5 / 5 pts.]

- Is the problem clearly stated?
  Yes, the Problem formulation section describes project problems. [1 pt]
- What is the point of creating the model? Are potential use cases defined?
  Yes, the Problem formulation section describes the goals of the project. The potential use cases for e.g. commercial and scientific purposes are also defined. [1 pt]
- Where does the data come from, what does it contain?
  All of the above are included in the project. [1 pt]
- Has a DAG been drawn?
  Yes, the DAG has been drawn. [1 pt]
- Confoundings (pipe, fork, collider) have been found?
  Yes, they have been described. But confoundings are not divided to the different factors: pipe, fork, collider – all of it is grouped in confoundings [0.5 pt]

Data preprocessing [2 / 2 pts.]

- Is the preprocessing step clearly
  described?
  Yes, the preprocessing is clearly described.
  [1 pt]
- Have reasoning and types of actions taken on the dataset been described?
  Yes, taken specific actions on the dataset are described such as choosing specific age

group and gender of the crabs (reasons behind it were also added). [1 pt]

Model [4 / 4 pts.]

- Are two models specified?
  Yes. [1 pt]
- Are the differences between the two models explained?
  Yes. [1 pt]
- Is the difference between the models justified (e.g., does adding additional parameter make sense)?
  The differences between the models are explained, reason behind adding specific predictor variable is stated.
- Are the models sufficiently described (what are the formulas, what are the parameters, what data are required)?
  Yes, they have been defined well enough. [1 pt]

Priors [4 / 4 pts.]

- Is it explained why particular priors for parameters were selected?
  Yes, the explanation behind selected priors is stated. [1 pt]
- Have prior predictive checks been done for parameters (do parameters simulated from priors make sense)?
  Yes, prior predictive checks has been done for parameters and stimulated data makes sense. [1 pt]
- Have prior predictive checks been done for measurements (do measurements simulated from priors make sense)?
  Yes, prior predictive checks has been done for measurements and stimulated measurements makes sense. [1pt]
- How prior parameters were selected?
  Yes, priors were selected based on the scientific article to which the link was provided. [1 pt]

Posterior analysis (model 1) [3 / 4 pts.]

- Were there any issues with sampling? If there were what kind of ideas for mitigation were used?
  No problems with sampling. [1 pt]
- Are the samples from posterior predictive distribution analyzed?
  The generated samples appear to be analyzed only to a basic extent. It is based only on data frame with *summary* statistics (arviz.summary function). [0.5 pt]

- Is the data consistent with posterior predictive samples and is it sufficiently commented (if they are not, then is the justification provided)?
  The data is consistent. [1 pt]
- Have parameter marginal distributions been analyzed (histograms of individual parameters plus summaries, are they diffuse or concentrated, what can we say about values)?
  The parameter marginal distributions appear to be analyzed only to a basic extent. [0.5 pt]

Posterior analysis (model 2) [3 / 4 pts.]

- Were there any issues with sampling? If there were what kind of ideas for mitigation were used?
  No problems with sampling. [1 pt]
- Are the samples from posterior predictive distribution analyzed?
  The generated samples appear to be analyzed only to a basic extent. It is based only on data frame with summary statistics (arviz.summary function). [0.5 pt]
- Is the data consistent with posterior predictive samples and is it sufficiently commented (if they are not, then is the justification provided)?
  The data is consistent. [1 pt]
- Have parameter marginal distributions been analyzed (histograms of individual parameters plus summaries, are they diffuse or concentrated, what can we say about values)?
  The parameter marginal distributions appear to be analyzed only to a basic extent. [0.5 pt]

Model comparison [3.5 / 4 pts.]

- Have models been compared using information criteria?
  Yes, PSIS-LOOCV and WAIC have been used. [1 pt]
- Have results for WAIC been discussed (is there a clear winner, or is there an overlap, were there any warnings)?
  Yes, the resulting WAIC criteria were exhaustively explained, the winner was marked and the lack of overlap was reported. Although the warning during executing WAIC comparison appeared and it was not explained by the authors. [0.5 pt]
- Have results for PSIS-LOO been discussed (is there a clear winner, or is there an overlap, were there any warnings)?
  Yes, the resulting LOO criteria were exhaustively explained, the winner was marked and the lack of overlap was reported. [1 pt]
- Was the model comparison discussed? Do authors agree with information criteria? Why in your opinion was one model better than the other?

Comparision of the models are discussed.

It’s clear from the information criteria that the model 1 (linear) has better performance.

[1 pt]