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Review ISZ_20

1. **Problem formulation [5/5 pts]:**

- is the problem clearly stated

Problem is clearly stated. **[1 pt]**

- what is the point of creating model, are potential use cases defined

Point of creating model and potential use cases are defined and correctly mentioned. **[1 pt]**

- where do data comes from, what does it contain

There are sources attached for all data. Content is specified and what type of data will be used in the models. **[1 pt]**

- DAG has been drawn

Yes. All variables are considered for impact. **[1 pt]**

- confoundings (pipe, fork, collider) were described

Confoundings were described. **[1 pt]**

2. **Data preprocessing [2/2 pts]:**

- is preprocessing step clearly described

The whole data preprocessing steps are clearly described. Every preprocessing step is explained. **[1 pt]**

- reasoning and types of actions taken on the dataset have been described

Steps were explained, reasoning behind actions was justified. **[1 pt]**

Model [4/4 pts]:

- are two different models specified

Two models are specified and described. **[1 pt]**

- are difference between two models explained

Differences between models are clearly explained. There are different distributions used . **[1 pt]**

- is the difference in the models justified (e.g. does adding aditional parameter makes sense?

It is explained that the second model has more probability mass and allows better representation of the data. **[1 pt]**

- are models sufficiently described (what are formulas, what are parameters, what data are required

Models are described by explaining the reasoning behind them and with formulas. **[1 pt]**

4. **Priors [3/4 pts]:**

- Is it explained why particular priors for parameters were selected

There is not much explanation why particular distributions were used for parameters. **[0.5 pt]**

- Have prior predictive checks been done for parameters (are parameters simulated from priors make sense)

There are histograms for parameters and all of them are analyzed. **[1 pt]**

- Have prior predictive checks been done for measurements (are measurements simulated from priors make sense)

There are plots comparing real and generated values with appropriate analysis. **[1 pt]**

- How prior parameters were selected

Prior parameters should be based on overall knowledge of the data and correlations inside of it and not on the data that is being used to “train” the posterior model. **[0.5 pt]**

5. **Posterior analysis (model 1) [3.5/4 pts]:**
   - were there any issues with the sampling? if there were what kind of ideas for mitigation were used

There is no problem with the sampling process, therefore there is no mitigation necessary. **[1 pt]**

- are the samples from posterior predictive distribution analyzed

There is analysis of generated samples, they are compared with real data. **[1 pt]**

- are the data consistent with posterior predictive samples and is it sufficiently commented (if they are not then is the justification provided)

Data is consistent with posterior samples,There are plots comparing real and generated values with appropriate analysis. **[1 pt]**

- have parameter marginal disrtibutions been analyzed (histograms of individual parametes plus summaries, are they diffuse or concentrated, what can we say about values)

There could be also histograms for alpha and beta parameters. **[0.5 pt]**

6. **Posterior analysis (model 2) [3.5/4 pts]:**
   - were there any issues with the sampling? if there were what kind of ideas for mitigation were used

It looks like there is no problem with the sampling process **[1 pt]**

- are the samples from posterior predictive distribution analyzed

There is analysis of generated samples, they are compared with real data. **[1 pt]**

- are the data consistent with posterior predictive samples and is it sufficiently commented (if they are not then is the justification provided)

Data is consistent with posterior samples,There are plots comparing real and generated values with appropriate analysis. **[1 pt]**

- have parameter marginal disrtibutions been analyzed (histograms of individual parametes plus summaries, are they diffuse or concentrated, what can we say about values)

There could be also histograms for alpha and beta parameters. **[0.5 pt]**

7. **Model comparison [4/4 pts]:**

- Have models been compared using information criteria

Yes. **[1 pt]**

- Have result for WAIC been discussed (is there a clear winner, or is there an overlap, were there any warnings)

The analysis of WAIC was discussed and a better model was chosen based on comparison outcome. **[1 pt]**

- Have result for PSIS-LOO been discussed (is there a clear winner, or is there an overlap, were there any warnings)

The analysis of the PSIS-LOO metric, similar to WAIC, was discussed and a better model was also chosen based on comparison outcome. **[1 pt]**

- Whas the model comparison discussed? Do authors agree with information criteria? Why in your opinion one model better than another

There are detailed conclusions from comparison of models, differences are clearly explained. **[1 pt]**