SMM634 - Individual Assignment

(worth 50% of final grading)

Deadline 9 December 2024

The dataframe `hospital` on Moodle contains data on 978 randomly selected patients admitted between January and September 2014 to an over-500-bed medical center in the state of Virginia. Interest focuses on exploring the effect that several variables may have on in-hospital mortality `died` (1 dead, 0 alive) and patient length of hospital stay in days (`los`). Of particular interest are the variables:

- `age`: Age of the patient.

- `gender`: Either male or female.

- `bmi`: Body mass index.

- `severity`: Subjective assessment of severity level of patient. Value between 1 and 4, with 1 representing the lowest severity level.

- `risk`: Subjective assessment of risk of dying. Value between 1 and 4, with 1 representing the lowest level.

- `sp02`: Oxygen saturation level.

- `sbp`: Systolic blood pressure.

- `dbp`: Diastolic blood pressure.

- `pulse`: Pulse rate.

- `respiratory`: Respiratory rate.

- `avpu`: AVPU score (A: alert, V: responding to voice, P: responding to painful stimuli, U: unresponsive).

- `temp`: Temperature.

Using the provided data, prepare a comprehensive report addressing the following points:

1. **Model Selection for Mortality**: Fit a suitable model to analyse the probability of death, providing a clear justification for your choice of model. [7.5]

2. **Model Selection for Length of Stay**: Fit a suitable model to analyse the length of stay, again providing a clear justification for your choice. [7.5]

3. **Results Summary and Interpretation**: Summarise the results obtained from both models, using tables and figures where appropriate. Provide a clear interpretation of the empirical findings. [15]

4. **Analysis Evaluation**: Discuss the strengths and limitations of each analysis, including their interconnections and any complementary insights. [12.5]

5. **Report Structure and Presentation**: The report will also be assessed on its overall structure, including neatness, presentation style, and any additional effort to enhance clarity and professionalism. [7.5]

The report should be submitted in PDF format and structured according to the five points outlined above. It is expected to be approximately 1,500 words, with a flexibility of up to 10% (allowing a maximum of 1,650 words). This word count excludes tables, figures, references, and programming code.

[Total marks: 50]