

Notice: Please save your R code, and required outputs with your full name_CA_DM and GLM and BA to submit to the Moodle.

Full name:

Q1: Use the dataset_CA2 and test whether the proportion of males equals to the proportion of females. What is the test-value? Analyze the output. (**Hint:** let us 1 denotes a male and 0 be a female.)

Q2: Using the dataset available on <https://stats.idre.ucla.edu/stat/data/binary.csv> model the admit variable to GRE and GPA and rank using an appropriate GLM.

- a) Train the model using 80% of this dataset.
- b) Specify the important variables on admit at the level of $\alpha = 0.05$.
- c) Estimate the parameters of your model and propose the optimal predictive model.
- d) Predict the test dataset using the trained model.
- e) Provide the confusion matrix and obtain the probability of correctness of
- f) predictions.

Q3: Let x_1, \dots, x_{10} are identically independently distributed (iid) with $\text{Bin}(5, p)$.

- a) Find the maximum likelihood function (MLF).
- b) Adopt the conjugate prior to the parameter p (Hint: Choose hyperparameters optionally within the support of distribution).
- c) Using (a) and (b), find the posterior distribution of p .
- d) Compute the minimum Bayesian risk estimator of p .

Good luck

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