

## Activity 4, 20 Marks

DANA 4820

Fall 2023, Due: Dec 1

Please include your RStudio output to support your answers

### Question

the Credit data file at the text website, shows data for a sample of 100 adults randomly selected for an Italian study on the relation between  $x$  = annual income and  $y$  = whether you have a travel credit card (1 = yes, 0 = no). At each level of  $x$  (in thousands of euros), the table indicates the number of subjects in the sample and the number of those having at least one travel credit card.

- a) Report the prediction equation and interpret the sign of  $\hat{\beta}$ .

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- b) When  $P(\hat{Y} = 1) = 0.50$ , show that the estimated logit value is 0. Based on this, for these data explain why the estimated probability of a travel credit card is 0.50 at income = 33.4 thousand euros.

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- c) Use the logistic output to interpret the effect of income on the odds of possessing a travel credit card, and conduct a significance test and a confidence interval for that effect.

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