A3Q2

Started: 18 May at 12:04

Quiz instructions

In this question, you need to follow the instructions given in

SMA3-lung-instructions.html (https://myuni.adelaide.edu.au/courses/74975/files/10440260/download?download_frd=1)

to produce an analysis of the lung data:

lung_cancer.csv (https://myuni.adelaide.edu.au/courses/74975/files/10440262/download?download_frd=1)

Once complete please complete the following quiz.

Question 1 — 1 pts

What is the mean population size for the groups (2 decimal places)?

1,100.33

Question 2 — 1 pts

What is the mean number of cases for the groups (2 decimal places)?

9.33

Question 3 — 1 pts

Which age group has the smallest median number of cases?

- ○ 40-54
- ◉ 55-59
- ○ 60-64
- ○ 65-69
- ○ 70-74
- ○ 75+

Question 4 1 pts

Which city has a potential outlier in the number of cases?

- ○ Fredericia
- ○ Horsens
- ○ Kolding
- ◉ Vejle

Question 5 1 pts

Which age group has the maximum median proportion of cases?

- ○ 40-45
- ○ 55-59
- ○ 60-64

- ○ 65-69
- ◉ 70-74
- ○ 75+

Question 6 1 pts

Which city has the smallest IQR of proportions?

- ◉ Fredericia
- ○ Horsens
- ○ Kolding
- ○ Vejle

Question 7 2 pts

Are age and city significant predictors for the rate of lung cancer? Justify your answer (copy and paste in any output to support your answer)

Model: poisson, link: log

Response: cases

Terms added sequentially (first to last)

	Df	Deviance	Resid. Df	Resid. Dev	Pr(>Chi)	
NULL			23	129.908		
age	5	101.601	18	28.307	<2e-16	***
city	3	4.859	15	23.447	0.1824	

From the table above, we can conclude that at a 5% significance level, age is a significant predictor but city is not.

p 171 words </>

Edit View Insert Format Tools Table

12pt Paragraph B I U A

Question 8

Even though the AIC for M3 is smaller than M2. Jono decides to use M2 as the final model. Give reasons why this might be the case.

Jono decides to use M2 because it has lower degrees of freedom but an AIC that isn't much higher than M3, hence increasing the accuracy of the model.

p 28 words </>

Question 9

2 pts

In `M2` give an explanation of the coefficient `age55-59`

Edit View Insert Format Tools Table

12pt Paragraph

Model 2 states that: The rate of lung cancer cases increases by 3.007214 times (in comparison to people aged (40-54)) for every person that is aged 55-59 with all other things being equal.

p 33 words

Question 10 2 pts

In the residuals versus city plot which cities have potential outliers.

- [ ] Fredericia
- [ ] Horsens
- [x] Kolding
- [x] Vejle

Question 11 1 pts

What is the probability (4 decimal places) of have five cases or fewer in Fredericia in the 40-54 age group assuming the same rate as given by M2.

0.0044

Question 12

2 pts

Is this a significant decrease? Justify your answer.

Edit View Insert Format Tools Table

12pt Paragraph

It is a significant decrease because, in 1980, the rate of cases of lung cancer in the 40-54 age group (population 4000) was 5, however the predicted rate was 14.3 with these parameters using M2. The probability of achieving 5 given M2 is 0.44% which is impossible to hit randomly at a 5% significance level(0.44%<5%). Therefore at a 5% significance level, the health campaign must have made a significant difference to make the number of cases 5.

p 79 words

Saved at 14:51 Submit quiz