

PSYC234: Lecture 9 post-lecture worksheet

This worksheet is to help you consolidate what you learned during Lecture 9. It contains two activities.

This worksheet could be completed as part of the independent study hours for PSYC234. **It is optional but recommended. It is recommended that you complete this worksheet in advance of the WBA.**

Once you have finished, compare your answers to the answer sheet provided on Moodle. You can also use this sheet and the answer sheet for revision purposes when preparing for the class test.

Activity 1: Interpreting odds ratios from multiple binary logistic regression:

Imagine you are interested in examining factors that predict whether an individual has a dog (yes/no). The variables you are interested in are: has children (yes/no), working pattern (full-time, part-time, unemployed), and number of pets previously (continuous). You code dog into a numeric variable where 0 = No and 1 = Yes. You set "No" as the reference category for "has children" and "unemployed" as the reference category for working pattern. Below are the odds ratios and 95% confidence intervals around the odds ratio that you obtain.

	Odds ratio	Lower confidence interval bound	Upper confidence interval bound
Has_childrenYes	3.67	2.14	5.64
Working_patternFull-time	6.85	1.34	14.67
Working_patternPart-time	3.12	0.67	1.35
Num_previous_pets	0.45	0.23	0.67

Interpret these odds ratios

- Individuals who had children had higher odds of having a dog relative to individuals who did not have children (odds ratio = 3.67, 95% confidence interval = 2.14-5.64) when holding other variables constant

- Individuals who worked full time had had higher odds of having a dog relative to individuals who were unemployed (odds ratio = 6.85, 95% confidence interval = 1.34-14.67) when holding other variables constant
- Individuals who worked part-time had higher odds of having a dog relative to individuals who were unemployed (odds ratio = 3.12, 95% confidence interval = 0.67-1.35) when holding other variables constant
- A one unit increase in the number of previous pets was associated with lower odds of currently having a dog (odds ratio = 0.45, 95% confidence interval = 0.23-0.67) when holding other variables constant

OR

- Individuals who had children had 3.67x higher odds of having a dog relative to individuals who did not have children (95% confidence interval = 2.14-5.64), when holding other variables constant
- Individuals who worked full time had had 6.85x higher odds of having a dog relative to individuals who were unemployed (95% confidence interval = 1.34-14.67), when holding other variables constant
- Individuals who worked part-time had 3.12x higher odds of having a dog relative to individuals who were unemployed (95% confidence interval = 0.67-1.35)
- A one unit increase in the number of previous pets was associated with a 0.45x higher odds (i.e. lower odds) of having a dog (odds ratio = 0.45, 95% confidence interval = 0.23-0.67), when holding other variables constant

Both ways of reporting are fine.

Activity 2: Interpreting odds ratios from ordinal logistic regression:

Imagine you are interested in examining factors that predict severity of a disease (mild, moderate or severe). The variables you are interested in are: pre-existing health condition (yes/no), smokes (yes/no), and number of units of alcohol consumed weekly (continuous). You code disease severity into an ordered factor (mild < moderate < severe). You set “No” as the reference category for “pre-existing health condition” and “smoking”. Below are the odds ratios and confidence intervals you obtain.

	Odds ratio	Lower confidence interval bound	Upper confidence interval bound
Pre-existing_healthYes	2.31	1.45	4.56

SmokesYes	1.45	0.89	4.56
Num_alcohol_units	1.12	1.02	1.45

Interpret these odds ratios

- Individuals who had a pre-existing health condition had higher odds of having more severe disease (e.g. “severe” disease vs “mild” or “moderate” disease) relative to individuals who did not have a pre-existing health condition (odds ratio = 2.31, 95% confidence interval = 1.45-4.56), when holding other variables constant
- Individuals who smoked had higher odds of having more severe disease (e.g. “severe” disease vs “mild” or “moderate” disease) relative to individuals who did not smoke (odds ratio = 1.45, 95% confidence interval = 0.89-4.56) when holding other variables constant
- A one unit increase in the number of alcohol units consumed weekly increased the odds of having more severe disease (e.g. “severe” disease vs “mild” or “moderate” disease), when holding the other variables constant (odds ratio = 1.12, 95% confidence interval = 1.02-1.45)

OR

- Individuals who had a pre-existing health condition had 2.31x higher odds of having more severe disease (e.g. “severe” disease vs “mild” or “moderate” disease) relative to individuals who did not have a pre-existing health condition (95% confidence interval = 1.45-4.56), when holding other variables constant
- Individuals who smoked had 1.45x higher odds of having more severe disease (e.g. “severe” disease vs “mild” or “moderate” disease) relative to individuals who did not smoke (95% confidence interval = 0.89-4.56) when holding other variables constant
- A one unit increase in the number of alcohol units consumed weekly increased the odds of having more severe disease (e.g. “severe” disease vs “mild” or “moderate” disease) by 1.12, when holding the other variables constant (95% confidence interval = 1.02-1.45)

Both ways of reporting are fine.