# Lec:15 Correlation & Regression

## Epidemiology Lecture #15

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# 4. Chapter: Lec:15 Correlation & Regression

## 1. Lec:15 Correlation & Regression Questions

# 4.1.1. What is the distinction between Pearson correlation and Spearman co...

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What is the distinction between Pearson correlation and Spearman correlation?

Please choose only one answer:

- Pearson correlation is used for continuous variables, whereas Spearman correlation is for dichotomous or binary variables.
- Pearson correlation can range between ?-1 and 1, whereas Spearman correlation can range between 0 and positive infinity.
- Pearson correlation measures the linear association between two variables, whereas Spearman correlation measures the quadratic association between two variables.
- Pearson correlation is used for normally distributed variables, whereas Spearman correlation is based on the ranks of two variables.
- Pearson correlation is used for discrete variables, whereas Spearman correlation is used for binary variables.

# 4.1.2. Which is the best interpretation of a Pearson correlation coefficie...

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Which is the best interpretation of a Pearson correlation coefficient of 0.7?

Please choose only one answer:

- For each 1?-unit increase in the exposure variable, we expect a 0.7?-unit increase in the outcome variable.
- For each 1?-unit increase in the outcome variable, we expect a 0.7?-unit increase in the exposure variable.
- For each 1?-unit increase in the exposure variable, we expect a multiplicative increase of 0.7 in the outcome variable.
- For each 1?-unit increase in the outcome variable, we expect the exposure variable rank to increase by a factor of 0.7.
- There is a moderately strong linear association between the exposure and outcome variables.

# 4.1.3. If a Pearson correlation for two variables is positive and statisti...

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If a Pearson correlation for two variables is positive and statistically significant (i.e.

significantly different than zero), what do we know about the linear regression

coefficient for the simple linear regression of those same variables?

Please choose only one answer:

- It will be negative and non?-significant.
- It will be negative and statistically significant.
- It will be positive and non?-significant.
- It will be positive and statistically significant.
- We know it will be positive, but we cannot determine if it will be statistically significant.

# 4.1.4. What type of statistical procedure or test was used to obtain the a...

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The following scenario is for Questions 4?-6:

Consider the table of results displaying odds ratios for the outcome of salmonellosis (yes/no)

and the exposure of beet consumption (yes/no). In the multivariate models, the odds ratios are

adjusted for age, sex, and owning a beet farm.

Odds ratios (and 95% Confidence Intervals)

[table]

Variable ;Unadjusted ;Adjusted

Beet consumption ;1.34 (1.19, 1.70) ;1.27 (0.98, 1.84)

[/table]

What type of statistical procedure or test was used to obtain the adjusted odds ratio?

Please choose only one answer:

- multivariate logistic regression
- chi square test
- relative risk assessment
- multivariate linear regression
- survival analysis

# 4.1.5. How can we interpret the exposure of beet consumption in the unadju...

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Odds ratios (and 95% Confidence Intervals)

[table]

Variable ;Unadjusted ;Adjusted

Beet consumption ;1.34 (1.19, 1.70) ;1.27 (0.98, 1.84)

[/table]

How can we interpret the exposure of beet consumption in the unadjusted model?

Please choose only one answer:

- Beet consumption is protective against salmonellosis and the association is statistically significant.
- Beet consumption is associated with an increased risk of salmonellosis and the association is statistically significant.
- Beet consumption is protective against salmonellosis and the association is not statistically significant.
- Beet consumption is associated with an increased risk of salmonellosis and the association is not statistically significant.
- Beet consumption is associated with an increased risk of salmonellosis, but we cannot tell if the findings are statistically significant without knowing the p?-value.

# 4.1.6. What can we infer from the results of the adjusted odds ratio?

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adjusted for age, sex, and owning a beet farm.

Odds ratios (and 95% Confidence Intervals)

[table]

Variable ;Unadjusted ;Adjusted

Beet consumption ;1.34 (1.19, 1.70) ;1.27 (0.98, 1.84)

[/table]

What can we infer from the results of the adjusted odds ratio?

Please choose only one answer:

- Since the confidence interval crosses 1, we cannot infer an association between beet consumption and salmonellosis.
- We would reject the null hypothesis of no association between beet consumption and salmonellosis.
- The p?-value for the association must be less than 0.05.
- The alpha for this association must be less than 0.05.
- A type I error may have been committed.

# 4.1.7. For the multivariate linear regression of the outcome of weight gai...

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For the multivariate linear regression of the outcome of weight gain (lbs) on the

exposure of cupcake consumption (continuous), we find a beta, or regression coefficient

of 0.76, with a 95% confidence interval of (0.46, 1.06). Which one of the following is a true statement?

Please choose only one answer:

- For each 1?-unit increase in average cupcake consumption, we expect, on average, an increase in weight of between 0.46 and 1.06 lbs. The best estimate is 0.76 lbs.
- For each 1?-unit increase in average cupcake consumption, we expect an odds ratio of weight gain of between 0.46 and 1.06. The best estimate is 0.76.
- For each 1?-unit increase in weight gain, we expect, on average, an increase in cupcake consumption of between 0.46 and 1.06. The best estimate is 0.76 cupcakes.
- For each 1?-unit increase in weight gain, we expect an odds ratio of cupcake consumption of between 0.46 and 1.06. The best estimate is 0.76 cupcakes.
- The p?-value is above 0.05.