

Mid-semester quiz

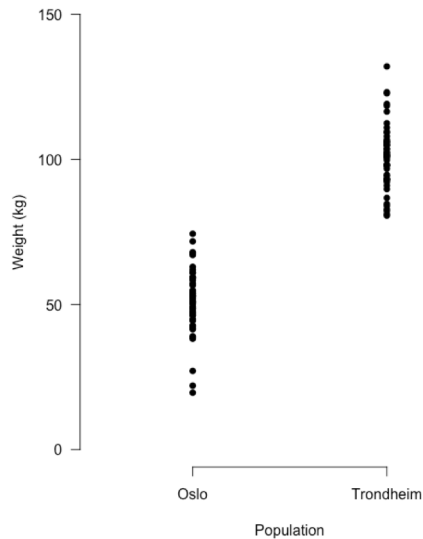
Where to find it

<https://forms.gle/dDMutnDYAN7z2ArK8>

ANSWERS

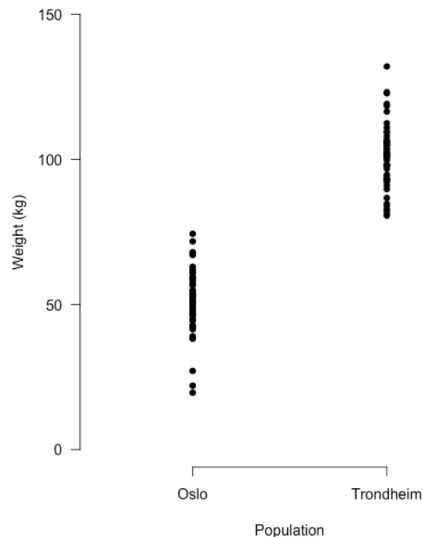
ANSWERS

Question: You have been given some data on the weight of trolls in Norway. One population was from close to Oslo, the other from near Trondheim. For each population you have the weight of 50 trolls in kg. Your variables are weight and population (Oslo or Trondheim). What model would you choose to analyse these data?



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Linear model

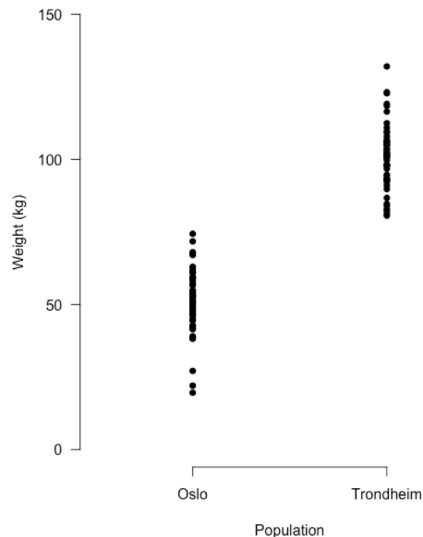
t-test

ANOVA

~~linear regression~~

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Categorical explanatory variable (groups)

ANSWERS

Question: This residual versus fitted plot has been made for a linear regression model. Which assumptions does this plot help us check?

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Linearity

Equal variance

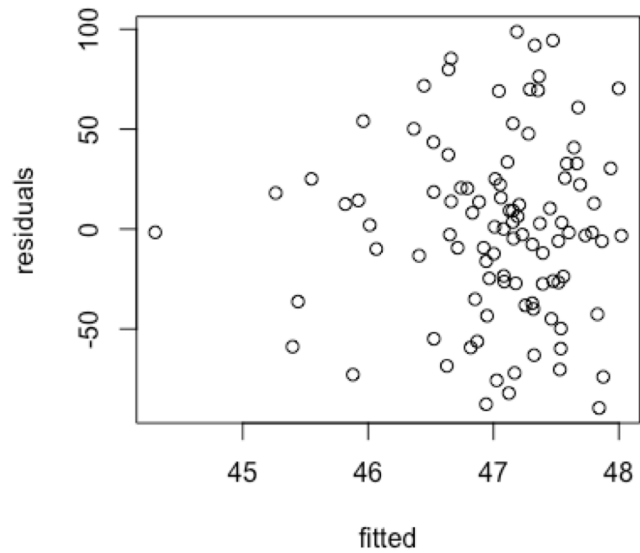
~~Normality of residuals~~ Normal QQ plot

Outliers? Cook's D

~~Independence of data points~~ Data collection method

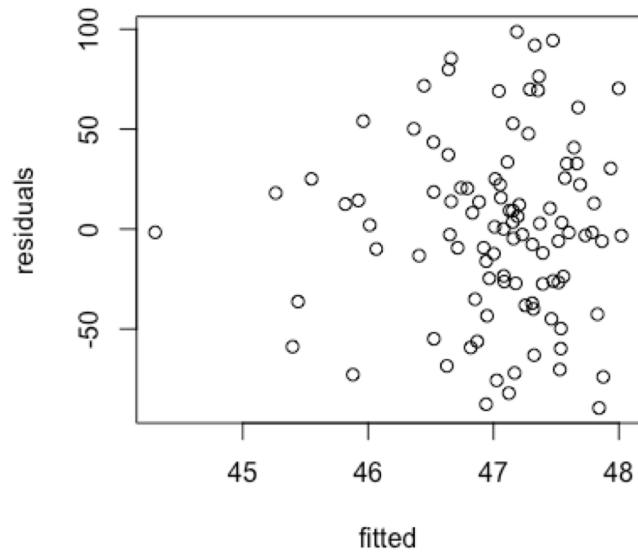
ANSWERS

Question: Are the assumptions met here?



ANSWERS

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No – variance is not equal

ANSWERS

Question: We have run a model to look at whether temperature influences the height that a magical beanstalk grows to (in cm). Height is our response and temperature is our predictor/explanatory variable. Look at the output of this model. What can you conclude based on these results?

```
> model <- lm(Height ~ Temperature, data = beans)
> coef(model)
(Intercept) Temperature
 -30.61426    41.28512
> confint(model)
                2.5 %    97.5 %
(Intercept) -515.79518 454.56666
Temperature  22.36786  60.20238
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Bean stalks grow taller when it is warmer

ANSWERS

Question: What is the definition of the likelihood?

The probability of the data given the parameters. $\Pr(\text{Data} \mid \text{Parameters})$

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The probability that we have the right answer

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Question: What does this line of code do?

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Plots a normal QQ plot