Practice Quiz: Hypothesis Testing

Your grade: 100%
Your latest: **100%** • Your highest: **100%** • To pass you need at least 80%. We keep your highest score.

Next item →

1. A p-value is: 1 / 1 point

   ⦿ the smallest significance level at which the null hypothesis would be rejected

   > Correct!

   ○ the probability of the null hypothesis being true
   ○ the probability of the null hypothesis being false
   ○ the smallest significance level at which the null hypothesis is accepted

2. Type 1 Error 1 is defined as: 1 / 1 point

   ⦿ Saying the null hypothesis is false, when it is actually true

   > Correct!

   ○ Saying the null hypothesis is true, when it is actually false

3. You find through a graph that there is a strong correlation between Net Promoter Score and the visual time   1 / 1 point
   that customers spend on a website. Select the TRUE assertion:

   ⦿ There is an underlying factor that explains this correlation, but manipulating the time that customers
   spend on a website may not affect the Net Promoter Score they will give to the company

   > Correct!

   ○ To boost the Net Promoter Score of a business, you need to increase the time that customers spend on a
   website.

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Graded Quiz: Module 4 - Inferential Statistics and Hypothesis Testing

Your grade: 90%

Your latest: **90%** • Your highest: **90%** • To pass you need at least 70%. We keep your highest score.

Next item →

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1. Which one of the following is common to both machine learning and statistical inference?

   1 / 1 point

   ○ Using population data to make inferences about a null sample.

   ○ Using sample data to make inferences about a hypothesis.

   ⦿ Using sample data to infer qualities of the underlying population distribution.

   ○ Using population data to model a null hypothesis.

   ⊘ **Correct**
   Correct. In both machine learning and statistical inference, we're using sample data to infer qualities of the underlying population distribution.

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2. Which one of the following describes an approach to customer churn prediction stated in terms of probability?

   1 / 1 point

   ○ Churn prediction is a data-generating process representing the actual joint distribution between our x and the y variable.

   ○ Data related to churn may include the target variable for whether a certain customer has left.

   ⦿ Predicting a score for individuals that estimates the probability the customer will leave.

   ○ Predicting a score for individuals that estimates the probability the customer will stay.

   ⊘ **Correct**
   Correct. Churn prediction is often approached by predicting a score for individuals that estimates the probability the customer will leave.

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3. What is customer lifetime value?

   1 / 1 point

   ○ The total churn generated by a customer over their lifetime.

   ○ The total value that the customer receives during their life.

   ⦿ The total purchases over the time which the person is a customer.

   ○ The total churn a customer generates in the population.

   ⊘ **Correct**
   Correct. Customer lifetime value consists of the purchase amounts over the entire time that a person has been a customer.

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4. Which one the following statements about the normalized histogram of a variable is true?

   1 / 1 point

   ○ It is a parametric representation of the population distribution.

   ○ It serves as a bar chart for the null hypothesis.

   ○ It is a non-parametric representation of the population variance.

   ⦿ It provides an estimate of the variable's probability distribution.

   ⊘ **Correct**
   Correct. The normalized histogram of a variable estimates the variable's probability distribution, and the estimate improves with the amount of data used.

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5. The outcome of rolling a fair die can be modelled as a _____ distribution.

   1 / 1 point

   ○ Poisson

   ○ log-normal

   ⦿ uniform

   ○ normal

   ⊘ **Correct**
   Correct. The chance of rolling any particular value for a fair die is equally likely, so the outcome is uniformly distributed.

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6. Which one of the following features best distinguishes the Bayesian approach to statistics from the Frequentist approach?

   1 / 1 point

   ○ Frequentist statistics requires construction of a prior distribution.

   ⦿ Bayesian statistics incorporate the probability of the hypothesis being true.

   ○ Frequentist statistics incorporates the probability of the hypothesis being true.

   ○ Bayesian statistics is better than Frequentist.

   ⊘ **Correct**
   Correct. Bayesian statistics allows for experimenters to incorporate their prior beliefs of the [population] distribution [of a given variable]. For frequentists, it's solely based on the data available. [that is, there is no formal mechanism in frequentist statistics for incorporating prior knowledge, one 'lets the data do the talking']

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7. Which of the following best describes what a hypothesis is?

   1 / 1 point

   ⦿ A hypothesis is a statement about a population.

   ○ A hypothesis is a statement about a sample of the population.

   ○ A hypothesis is a statement about a prior distribution.

   ○ A hypothesis is a statement about a posterior distribution.

   ⊘ **Correct**
   Correct. A hypothesis could be suggested by a sample of the population, but it is a statement about the entire population.

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8. A Type 2 error in hypothesis testing is _____:

   1 / 1 point

   ○ correctly rejecting the alternative hypothesis.

   ○ incorrectly accepting the alternative hypothesis.

   ⦿ incorrectly accepting the null hypothesis.

   ○ correctly rejecting the null hypothesis.

   ⊘ **Correct**
   Correct. A type 2 error is incorrectly accepting the null hypothesis.

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9. Which statement best describes a consequence of a type II error in the context of a churn prediction example? Assume that the null hypothesis is that customer churn is due to chance, and that the alternative hypothesis is that customers enrolled for greater than two years will not churn over the next year.

   1 point

   ○ You incorrectly conclude that customer churn is by chance

   ⦿ You incorrectly conclude that there is no effect

   ○ You correctly conclude that customer churn is by chance

   ○ You correctly conclude that a customer will eventually churn

   ⊗ **Incorrect**
   Incorrect. Review the Type 1 vs Type 2: Example video.

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10. Which of the following is a statistic used for hypothesis testing?

   1 / 1 point

   ○ The acceptance region.

   ○ The rejection region.

   ⦿ The likelihood ratio.

   ○ The standard deviation.

   ⊘ **Correct**