Primary Research Questions

1. Are there an equal number of male and female performers on Austin City Limits?
2. Are male performers just as likely to have had a Top 10 hit as female performers?

Breakdown Your Analysis

Let's break this analysis into its required steps:

Goodness of Fit Test:

1. Make a table of counts for gender.
2. Create a vector of the expected proportions.
3. Check the expected counts assumption.
4. Run the chi square test.
5. Interpret the chi square statistic and p-value.

Test of Independence:

1. Create a two-way table for gender and Top 10 hits.
2. Check the expected counts assumption.
3. Run the chi square test.
4. Interpret the chi square statistic and p-value.

Help

Here is the code you will use:

Question 1 (Goodness of Fit)

```
# Create a table of counts for Gender
gender_tab <-table(acl$Gender)
gender_tab

# Create vector of expected proportions
ExpGender <- c(.50, .50)

# Check expected counts assumption
chisq.test(gender_tab, p=ExpGender)$expected

# Run goodness of fit
chisq.test(gender_tab, p=ExpGender)
```

Question 2 (Test of Independence)

```
# Create two-way table
```

```
gender_top10 <-table(acl$Gender, acl$BB.wk.top10)
gender_top10

# Generate expected counts
chisq.test(gender_top10, correct=FALSE)$expected

# Run test of independence
chisq.test(gender_top10, correct=FALSE)
```

Help

(1 point possible)

1. If we wanted to test the hypothesis that the performers were 30% female and 70% male, what would the code look like? (Note that categorical values are referenced in alphabetical order).

- ExpGender <- c(.70, .30)
- ExpGender <- c(.30,.70) ✔
- ExpGender <- c(.50, .50)

CORRECT. BECAUSE "F" FOR "FEMALE" PRECEDES "M" FOR "MALE" ALPHABETICALLY, THIS LINE OF CODE SETS UP THE ASSUMPTION THAT 30% OF PERFORMERS WERE FEMALE AND 70% WERE MALE.

Hide Answer *You have used 0 of 2 submissions*

(1 point possible)

2. Suppose the following values were returned for the "check expected counts" assumption in our goodness of fit test. Would the assumption be violated?

F M

3 29

Help

- No, because the total number of expected counts is greater than 5.
- Yes, because there are fewer females than males expected, and the test proportion is 50/50.
- Yes, because there are fewer than 5 expected Females. ✔

CORRECT. ONE OF OUR EXPECTED COUNTS IS LESS THAN 5, WHICH IS A VIOLATION OF AN ASSUMPTION FOR THE GOODNESS OF FIT TEST.

Hide Answer *You have used 0 of 2 submissions*

(1 point possible)

3. Which line of code is **not** necessary for a test of independence because there is no particular distribution model being tested?

- gender_top10 <-table(acl$Gender, acl$BB.wk.top10)
- ExpGender_top10 <- c(.25, .25, .25, .25) ✔
- chisq.test(gender_top10, correct=FALSE)

CORRECT. FOR A GOODNESS OF FIT TEST, WE NEED TO CONCATENATE THE EXPECTED PROPORTIONS FOR EACH VALUE OF A GIVEN CATEGORICAL VARIABLE. WE DON'T NEED TO DO THIS IN A TEST OF INDEPENDENCE BECAUSE WE ARE COMPARING TWO CATEGORICAL VARIABLES TO EACH OTHER RATHER THAN TO AN EXPECTED DISTRIBUTION.

Hide Answer *You have used 0 of 2 submissions*

Help

(1 point possible)

4. How many degrees of freedom should there be for our test of independence? Remember, performers have either had (or not had) a Top 10 hit.

- 1 ✔
- 2
- 3

CORRECT. FOR THE TEST OF INDEPENDENCE, DF=(ROWS-1)(COLUMNS-1). SINCE EACH OF OUR VARIABLES CAN TAKE 1 OF 2 OUTCOMES, DF=(1)(1)=1.

Hide Answer *You have used 0 of 2 submissions*

EdX offers interactive online classes and MOOCs from the world's best universities. Online courses from MITx, HarvardX, BerkeleyX, UTx and many other universities. Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, math, medicine, music, philosophy, physics, science, statistics and more. EdX is a non-profit online initiative created by founding partners Harvard and MIT.

Terms of Service and Honor Code

Privacy Policy (Revised 10/22/2014)

Help

About edX

About

News

Contact

FAQ

edX Blog

Donate to edX

Jobs at edX

Follow Us

Twitter

Facebook

Meetup

LinkedIn

Google+