Reflect on the Question | Analyze the Data | Draw Conclusions

Primary Research Question

Do female artists play different kinds of music on Austin City Limits than male artists?

Breakdown Your Analysis

Let's break this analysis into its required steps:

1. Create a table to show the marginal distribution for each variable.
2. Create a contingency table to show the conditional distribution for gender and genre.
3. Make a bar chart to better visualize how many male and female artists played in each genre.
4. Calculate P(A): the probability of each type of music (genre) being played.
5. Calculate P(A|B): the probability of each genre, given the artist's gender.
6. Interpret what these probabilities tell us about the relationship between genre and gender.

Here is the code you will use:

```
# Create tables of marginal distributions
genre <- table(acl$Genre)
genre
gender <- table(acl$Gender)
gender

# Create contingency table
twoway <- table (acl$Gender,acl$Genre)
twoway

# Visualize the counts
barplot(twoway, legend=T, beside=T)

# Calculate P(A): the probability of each genre being played
prop.table(genre)

# Calculate P(A|B): the probability of each genre being played, given the artist's gender
prop.table(twoway,1)
```

(1/1 point)

1) How many columns will be present in the table generated by the following line of code?

```
gender <- table(acl$Gender)
```

- 3
- 2 ✔
- 1
- 4

Help

Correct. The columns represent each of the values the categorical variable can take in the dataset, which in this case is either male or female.

Final Check | Save | Hide Answer *You have used 1 of 2 submissions*

(1/1 point)

2) This code produces a bar chart with both a legend and side-by-side bars for each gender:

```
barplot(twoway, legend=TRUE, beside=TRUE)
```

What would the code look like if we wanted to keep the legend but stack the bars (instead of set them side-by-side)?

- barplot(twoway, beside=TRUE)
- barplot(twoway)
- barplot(twoway, legend=TRUE) ✔

Correct. The barplot would be stacked because the code does not include "beside=TRUE," and it would contain a legend (legend="TRUE").

Help

Final Check | Save | Hide Answer | *You have used 1 of 2 submissions*

(1/1 point)

3) This line of code will produce four values, one for each genre of music:

```
prop.table(genre)
```

What value should you get if you sum the four values together?

- 0.25
- 1.00 ✔
- 0.50
- 4.00

Correct. The proportions of all possible genres in the dataset necessarily adds up to 1.00. Each proportion is equal to the number of musicians who played a particular genre divided by 116, the total number of musicians. Since every musican in the dataframe is assigned 1 and only 1 of the 4 genres, the sum of the proportions must equal 116/166, which is 1.00.

Final Check | Save | Hide Answer *You have used 1 of 2 submissions*

(1/1 point)

4) What does the value "1" refer to in this line of code:

```
prop.table(twoway,1)
```

Help

Hint: Go back and look at the comment line.

- (•) The number 1 references the first variable (gender) listed in the contingency table code. ✔
- ( ) The number 1 refers to the first kind of question we typically ask of a contingency table.
- ( ) The number 1 refers to the fact that we typically code gender as (0,1) for (male,female).

Correct. The code provides a table of the conditional probabilities of genre given gender, because "1" tells "R" to give us the probabilities by row, which in "twoway" represents gender. If the code read prop.table(twoway,2), we would get a table of the probilities of gender given genre.

Final Check | Save | Hide Answer *You have used 1 of 2 submissions*

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