Moodle Questions

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# Seating and the Liberal Arts at UC-Davis

The ucdavis1 data frame gives information on a random sample of students from the University of California at Davis. One variable, **Seat**, records where the student preferred to sit in a classroom (Front, Middle or Back), and another variable, **class**, says whether or not the student was planning to major in one of the liberal arts disciplines.

We are interested in the following Research Question:

*Do liberat arts students and non-liberal arts students differ in their seating preferences, and if so, how?*

To answer this question, we produce a two-way table using the following R-code:

classSeat <- xtabs(~class+Seat,data=ucdavis1)  
classSeat

## Seat  
## class Back Front Middle  
## LibArts 3 9 13  
## NonLib 34 32 80

Then we get a table of row percents:

rowPerc(classSeat)

## Back Front Middle Total  
## LibArts 12.00 36.00 52.00 100  
## NonLib 23.29 21.92 54.79 100

We decide to get a table of column percents as well:

colPerc(classSeat)

## Back Front Middle  
## LibArts 8.11 21.95 13.98  
## NonLib 91.89 78.05 86.02  
## Total 100.00 100.00 100.00

Each of the following percentages occurs as either a row or column percentage in one of the percentage tables above. Match each percentage with its correct verbal description.

* 36% The percentage of all the liberal arts students who prefer to sit in the Front.
* 78.05% This is the percentage, out of all students who prefer the Front, that are non-liberal arts students.
* 23,29% Out of all non-liberal arts student,s this is the percentage who prefer the Back.
* 13.98% Of all Middle-sitters, this percentage are liberal arts students.

# Seating and the Liberal Arts at UC-Davis: Describing the Relationship in the Sample

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Which of the following is the best way to describe the relationship (if any) that we see in the sample between seating preference and whether or not one is a liberal arts student?

* There is almost no relationship in this sample: 52% of liberal arts students prefer the Middle, and almost the same percentage (54.79%) of non-liberal arts students prefer the middle.
* Liberal arts students are more likely to prefer the front (36% vs. only 21.92% of non-liberal arts students), and less likely to prefer the back (12% as compared to 23.29% for on-liberal arts students).
* There is a relationship between whether or not one is a liberal arts student and where one prefers to sit: a majority of both types of student preferred the Middle.
* **Seat** and **class** are related: most liberal arts students preferred the middle (52%), whereas only a few of them (12%) preferred the front).

# Creating a Two-way Table

The attitudes data frame contains information on 267 Georgetown College students who were surveyed in the Fall of the year 2001. The variable **sex** records the sex of each student (male or female) and the variable **major** records the type of subject in which the student intended to major (humanities, math/science, social sciences, or a pre-professional discipline).

We are interested in the following Research Question:

*Is there any relationship between the sex of a student and the type of major he or she intends to pursue?*

To begin studying this question we would like to make a two-way table for **sex** and **major**, using the function xtabs(). Run the appropriate R-code on your computer, and find the number of men in the sample who intended to major in the humanities.

# Creating a Table of Row Percentages

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We are interested in the following Research Question:

*Is there any relationship between the sex of a student and the type of major he or she intends to pursue?*

In order to study the Research Question, we might make a table of row percentages. Which of the bits of R-code below would create the following table of row percents? (More than one answer is possible.)

## humanities math.sci pre.prof social.sci Total  
## female 15.76 27.88 41.21 15.15 100  
## male 11.65 30.10 38.83 19.42 100

Option A:

sexmajor <- xtabs(~sex+major,data=attitudes)  
rowPerc(sexmajor)

Option B:

george <- xtabs(~sex+major,data=attitudes)  
rowPerc(george)

Option C:

sexmajor <- xtabs(~major+sex,data=attitudes)  
rowPerc(sexmajor)

Option D:

sexmajor <- xtabs(~sex,data=attitudes)  
rowPerc(sexmajor)

Option E:

sexmajor <- xtabs(~major,data=attitudes)  
rowPerc(sexmajor)

Option F:

rowPerc(xtabs(~sex+major,data=attitudes))