


Contingency Tables. HW Questions.

How to use Statdisk

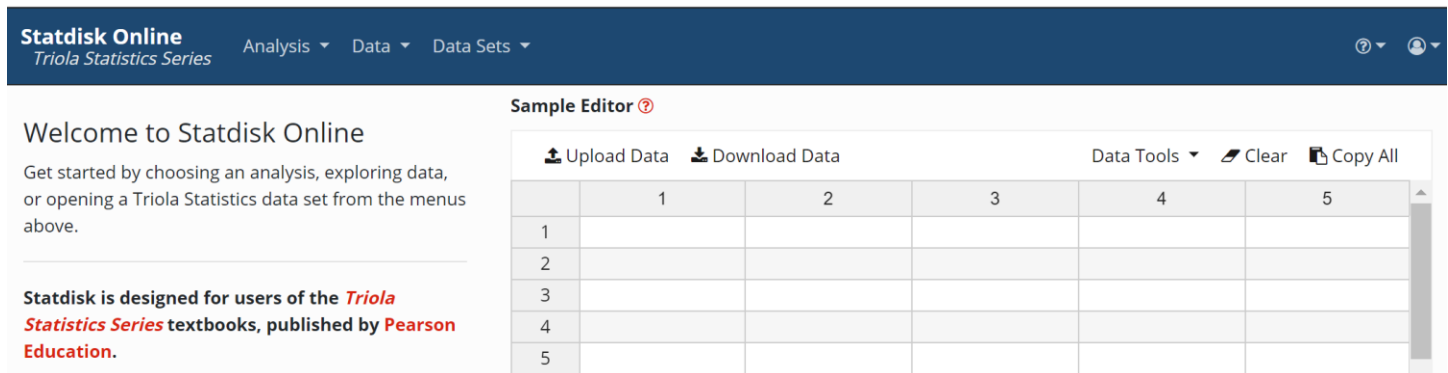
The table below includes results from polygraph (lie detector) experiments conducted by researchers. In each case, it was known if the subject lied or did not lie, so the table indicates when the polygraph test was correct. Use a 0.05 significance level to test the claim that whether a subject lies is independent of the polygraph test indication. Do the results suggest that polygraphs are effective in distinguishing between truth and lies?

 Click the icon to view the table.

	Did the Subject Actually Lie?	
	No (Did Not Lie)	Yes (Lied)
Polygraph test indicated that the subject lied.	8	39
Polygraph test indicated that the subject did not lie.	33	11

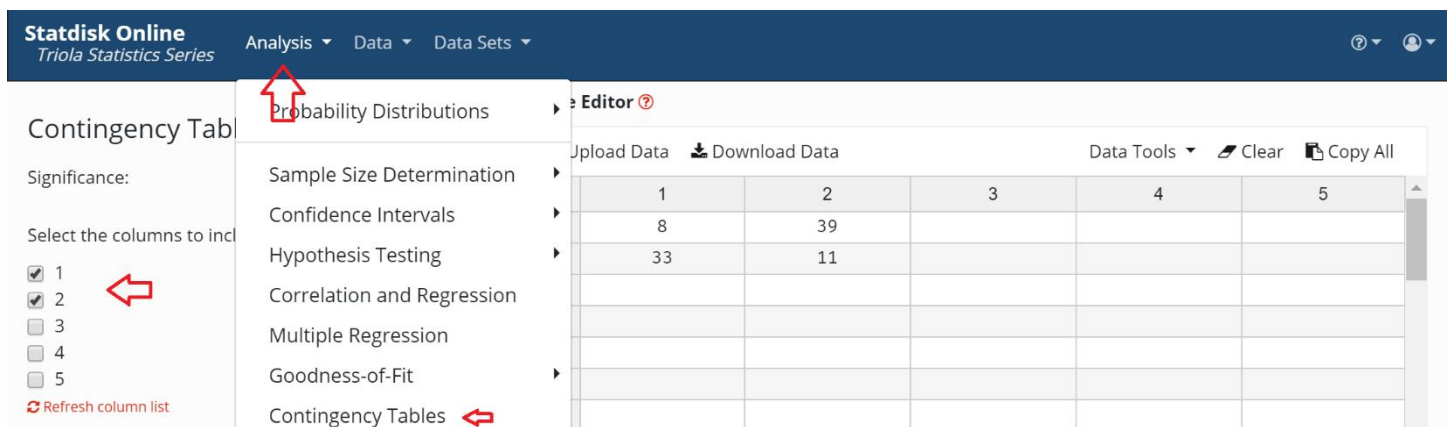
Open StatDisk:

<https://www.statdiskonline.com/>



The screenshot shows the Statdisk Online homepage. The header includes the logo "Statdisk Online Triola Statistics Series" and navigation menus for "Analysis", "Data", and "Data Sets". A "Sample Editor" window is open, displaying a table with 5 columns and 5 rows. The table is currently empty. The main content area contains a "Welcome to Statdisk Online" message and instructions on how to get started.

Click on Analysis, from the drop-down menu choose Contingency Table. Enter the data in the four first cells as indicated:



The screenshot shows the Statdisk Online interface with the "Analysis" menu open. The "Contingency Table" option is selected. The "Significance:" field is set to 0.05. The "Select the columns to include" section has checkboxes for columns 1, 2, 3, 4, and 5, with columns 1 and 2 checked. The "Sample Editor" window is open, showing the data from the contingency table entered into the first four cells of the first two rows.

Question indicates "0.05 significance"; therefore, keep Significance as 0.05:

Click **Evaluate** (see results next page): Those results include the test Statistics Chi-Square, X^2 , p-value and the critical value. Follow the universal rule about p-value and alpha (significance): if p-value is less than alpha, Reject the Null Hypothesis, which, in the case of the contingency tables always goes *the two variables are independent*. In this particular question the variables are *polygraph results and subject lies or not*. In technical terms: subject lies is independent of the polygraph test indication. By rejecting the Null the we support the alternative hypothesis: the two variables are not independent. In short: the polygraph results are credible (The person tested is not).

Contingency Tables

Significance:

0.05

Select the columns to include in the analysis

- 1
- 2
- 3
- 4
- 5

[Refresh column list](#)

Evaluate

Upload Data

Download Data

Data Tools

Clear

Copy All

	1	2	3	4	5
1	8	39			
2	33	11			
3					
4					
5					
6					
7					
8					
9					
10					
11					

Hide Sample Editor

Results

Plot

Download

Copy

Degrees of Freedom: 1

Test Statistic, χ^2 : 30.8585

Critical χ^2 : 3.84146

P-Value: 0