

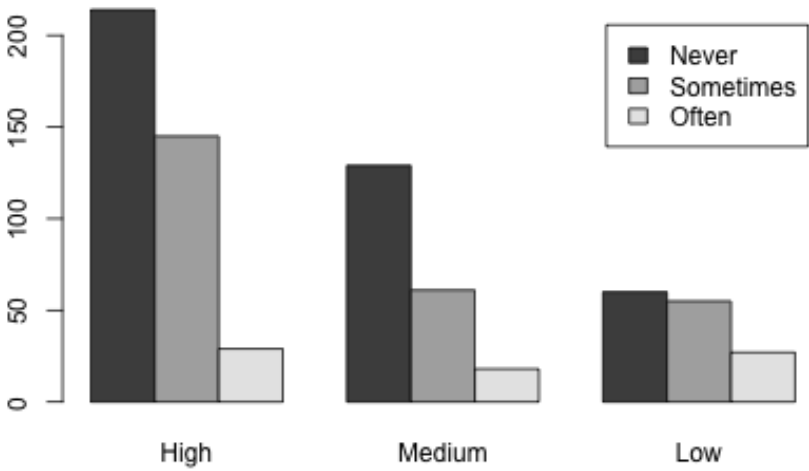
# Lesson 19: Inference for Several Proportions, Goodness-of-Fit, and Independence

## Homework

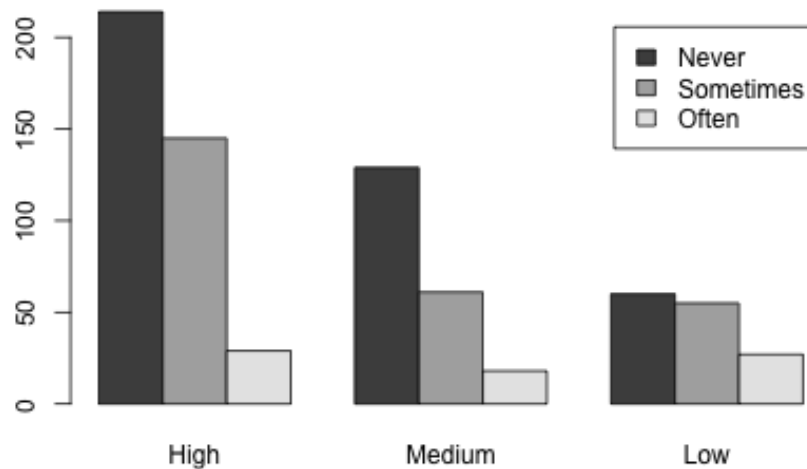
### Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

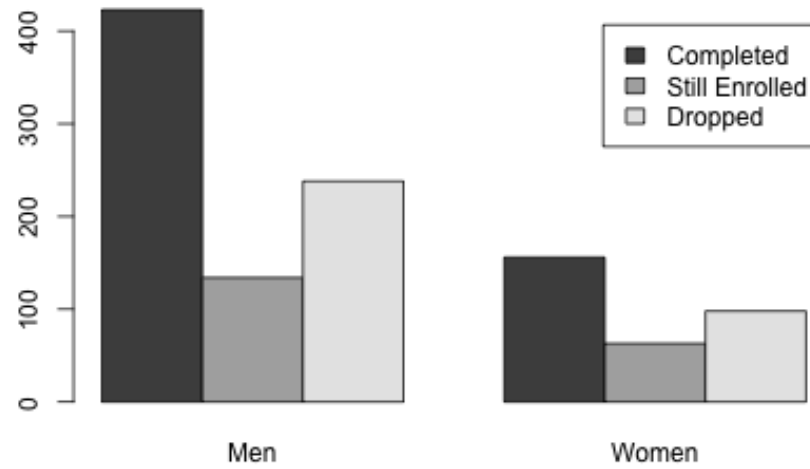
Problem	Part	Solution
1	-	The requirements are met because all expected counts are greater than or equal to five



2	-	
3	-	$H_0$ : Religiosity and frequency of anger are independent
		$H_a$ : Religiosity and frequency of anger are not independent
4	-	$\chi^2 = 23.474$
		$df = 4$
5	-	P-value = 0.0001
6	-	reject the null hypothesis
7	-	There is sufficient evidence to suggest that religiosity and frequency of anger at something beyond one's control are not independent.
8	-	The requirements are met because all expected counts are greater than or equal to five



- 9 -
- 10 -  $H_0$  : Family structure and whether a girl goes to college are independent
- 11 -  $H_a$  : Family structure and whether a girl goes to college are not independent
- 12 -  $\chi^2 = 10.357$
- 13 -  $df = 3$
- 14 - P-value = 0.016
- 15 - reject the null hypothesis
- 16 - There is sufficient evidence to suggest that family structure and whether a girl goes to college are not independent
- 17 - The requirements are met because all expected counts are greater than or equal to five



- |    |   |   |
|----|---|---|
| 16 | - |   |
| 17 | - | $H_0$ : Gender and PhD status are independent   |
|    |   | $H_a$ : Gender and PhD status are not independent.  |
| 18 | - | $\chi^2 = 1.932$  |
|    |   | $df = 2$  |
| 19 | - | P-value = 0.381   |
| 20 | - | fail to reject the null hypothesis  |
| 21 | - | There is insufficient evidence to conclude that a student's gender and status in a PhD program are not independent. |
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