

11. Tennis Challenges The table below shows results since 2006 of challenged referee calls in the U.S. Open. Use a 0.05 significance level to test the claim that the gender of the tennis player is independent of whether the call is overturned.

	Was the Challenge to the Call Successful?	
	Yes	No
Men	421	991
Women	220	539

12. Lefties A random sample of 760 subjects was obtained, and each was tested for left-hand writing. Results are in the table below (based on data from “The Left-Handed: Their Sinister History,” by Elaine Fowler Costas, Education Resources Information Center, Paper 399519). Use a 0.05 significance level to test the claim that left-handedness is independent of gender.

	Writes with Left Hand?	
	Yes	No
Male	23	217
Female	65	455

13. Soccer Strategy In soccer, serious fouls result in a penalty kick with one kicker and one defending goalkeeper. The table below summarizes results from 286 kicks during games among top teams (based on data from “Action Bias Among Elite Soccer Goalkeepers: The Case of Penalty Kicks,” by Bar-Eli et al., *Journal of Economic Psychology*, Vol. 28, No. 5). In the table, jump direction indicates which way the goalkeeper jumped, where the kick direction is from the perspective of the goalkeeper. Use a 0.05 significance level to test the claim that the direction of the kick is independent of the direction of the goalkeeper jump. Do the results support the theory that because the kicks are so fast, goalkeepers have no time to react, so the directions of their jumps are independent of the directions of the kicks?

	Goalkeeper Jump		
	Left	Center	Right
Kick to Left	54	1	37
Kick to Center	41	10	31
Kick to Right	46	7	59

14. Is Seat Belt Use Independent of Cigarette Smoking? A study of seat belt users and nonusers yielded the randomly selected sample data summarized in the given table (based on data from “What Kinds of People Do Not Use Seat Belts?” by Helsing and Comstock, *American Journal of Public Health*, Vol. 67, No. 11). Test the claim that the amount of smoking is independent of seat belt use. A plausible theory is that people who smoke more are less concerned about their health and safety and are therefore less inclined to wear seat belts. Is this theory supported by the sample data?

	Number of Cigarettes Smoked per Day			
	0	1–14	15–34	35 and over
Wear Seat Belts	175	20	42	6
Don't Wear Seat Belts	149	17	41	9