

# SPRING FINAL

## Tests of Significance

#1 Big Game Tickets is a national on-line ticket broker that connects buyers and sellers of concert and sporting event tickets. The company serves millions of customers every month. The CEO has asked his marketing team to study the age and gender of its customers by ticket type. This information is not currently captured in the purchase data collected when customers place orders. You, as her administrative assistant, performed five separate random samples for five ticket categories – Pro Football, College Football, College Basketball, Concerts and Plays. Each random sample consisted of 100 customers. Shown below are the questions and statistics for each of the five surveys.

**Question:** How old are you? Please give your answer in years.

### Results:

<u>Ticket Type</u>	<u>Average Age</u>	<u>Standard Deviation</u>
Pro Football	46.1 years	13.8 years
College Football	26.7 years	7.9 years
College Basketball	33.4 years	9.4 years
Concerts	32.1 years	10.4 years
Plays	38.9 years	8.3 years

**A1.** Is there statistically significant evidence that the mean “age in years” in the population of Big Game Ticket pro football customers is more than 45 years? Assume a significance level of 5%.

**B1.** Is there statistically significant evidence that the mean “age in years” in the population of Big Game Ticket college football customers is more than 25 years? Assume a significance level of 5%.

**C1.** Is there statistically significant evidence that the mean “age in years” in the population of Big Game Ticket college basketball customers is less than 35 years? Assume a significance level of 5%.

**D1.** Is there statistically significant evidence that the mean “age in years” in the population of Big Game Ticket concert customers is more than 30 years? Assume a significance level of 5%.

**E1.** Is there statistically significant evidence that the mean “age in years” in the population of Big Game Ticket play customers is less than 40 years? Assume a significance level of 5%.

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**#2 As part of these surveys, the 100 customers were asked their gender. The results are shown below.**

<u>Ticket Type</u>	<u>Male Responses</u>	<u>Female Responses</u>
Pro Football	88	12
College Football	63	37
College Basketball	73	27
Concerts	35	65
Plays	45	55

**A2. Determine if there is statistically significant evidence to show the proportion of male customers in the population of Big Game Ticket college basketball customers is less than 80%. Assume a significance level of 10%.**

**B2. Determine if there is statistically significant evidence to show the proportion of female customers in the population of Big Game Ticket concert customers is less than 70%. Assume a significance level of 10%.**

**C2. Determine if there is statistically significant evidence to show the proportion of female customers in the population of Big Game Ticket play customers is more than 50%. Assume a significance level of 10%.**

**D2. Determine if there is statistically significant evidence to show the proportion of male customers in the population of Big Game Ticket pro football customers is less than 90%. Assume a significance level of 10%.**

**E2. Determine if there is statistically significant evidence to show the proportion of female customers in the population of Big Game Ticket college football customers is more than 30%. Assume a significance level of 10%.**