

1)

a. To address respondents' skill level and the preferred choice of brand for golf ball, I used a Chi-Square test since both are discrete.

Ho: There is no difference in the preferred golf ball brand based on golfer's skill level.

Ha: There is a difference in the preferred golf ball brand based on golfer's skill level.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	18.726 ^a	9	.028
Likelihood Ratio	20.497	9	.015
Linear-by-Linear Association	.023	1	.880
N of Valid Cases	143		

a. 5 cells (31.3%) have expected count less than 5. The minimum expected count is 2.62.

I am able to reject the null hypothesis since the p value is 0.028. This tells me that respondents' preferred brand choice can vary based on their skill level.

b. To address the number of rounds of golf that the respondents play a year and the preferred choice of brand for golf ball, I used a Chi-Square test since both are discrete.

Ho: The number of rounds of golf that the respondents play a year makes no difference in the preferred golf ball brand

Ha: The number of rounds of golf that the respondents play a year makes a difference in their preferred golf ball brand.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.399 ^a	6	.054
Likelihood Ratio	12.918	6	.044
Linear-by-Linear Association	.318	1	.573
N of Valid Cases	143		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is 2.62.

I am unable to reject the null hypothesis since our alpha is 0.05 and the p value is 0.054. The p value is quite close to the alpha, but this tells me the situation slightly leans more towards the number of rounds of golf that the respondents play a year has no effect on the preferred golf ball brand.

c. To analyze respondents' favorite golfer and the preferred choice of brand for golf ball, I used a Chi-Square test since both are discrete.

Ho: Golf ball brand preference is not different based on respondent's favorite golfer

Ha: Golf ball brand preference is different based on respondent's favorite golfer.

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	61.868 ^a	12	.000
Likelihood Ratio	63.885	12	.000
Linear-by-Linear Association	.047	1	.829
N of Valid Cases	143		

a. 3 cells (15.0%) have expected count less than 5. The minimum expected count is 4.55.

Since the p value is 0, I would reject the null hypothesis. This tells me that a respondent's favorite golfer does have an effect on their preference of golf ball brands, possibly certain players that are endorsed by certain brands.

d. Conclusions from C:

Player * Brand Crosstabulation

Count		Brand				Total
		Callaway	Titleist	Nike	other	
Player	TigerWoods	7	7	10	3	27
	Phil Mickelson	15	3	1	13	32
	Rory McIlroy	5	9	11	1	26
	Steve Stricker	5	18	3	5	31
	Adam Scott	1	19	4	3	27
Total		33	56	29	25	143

According to C, players do favor brands based on their favorite golf celebrity. With the Chi Squared table and the above cross tab, we can see that Adam Scott clearly endorses Titleist and 19 respondents bought Titleist. This tells me that people buy this brand because Adam Scott endorses it. Additionally, we can also look at Phil endorsing Callaway.

Based on the chi squared table in C and this table, there would be less people buying Callaway if Phil was not endorsing this brand.

2) T- test and anova

a. To analyze willingness to pay for a dozen of golf balls for respondents who are beginners vs. expert skilled golfers, I used a T-Test and Anova table since there are more than two discrete categories.

Ho: Respondents that are beginners and experts have the same willingness to pay for a dozen golf balls

Ha: Respondents that are beginners and experts do not have the same willingness to pay for a dozen golf balls.

Independent Samples Test									
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
WillingnesstoP	Equal variances assumed	.109	.743	.598	37	.553	2.158	3.607	-5.151 9.468
	Equal variances not assumed			.609	31.560	.547	2.158	3.545	-5.066 9.383

Oneway

ANOVA

WillingnesstoP					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	182.857	3	60.952	.481	.696
Within Groups	17629.423	139	126.830		
Total	17812.280	142			

In the T-test, equal variance is assumed since the sig. value is 0.743 and the p value is 0.553. Therefore, I am unable to reject the null hypothesis. This means beginners and experts have the same willingness to pay for a dozen golf balls. Additionally, in the anova table, I am unable to reject the null hypothesis since the sig. value is 0.696. This means that skills have no effect on a players willingness to pay for a dozen golf balls.

b. To analyze willingness to pay for a dozen of golf balls for those who play less than 5 rounds vs. 10 or more rounds a year, I used a T-Test and Anova table since there are more than two discrete categories.

Ho: People that play less than 5 rounds and 10 or more rounds a year have the same willingness to pay for a dozen of golf balls.

Ha: People that play less than 5 rounds and 10 or more rounds a year have a different level of willingness to pay for a dozen of golf balls.

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
WillingnesstoP	Equal variances assumed	1.362	.245	.677	126	.500	2.035	3.006	-3.914 7.984
	Equal variances not assumed			.595	16.771	.560	2.035	3.418	-5.183 9.253

ANOVA

WillingnesstoP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	186.341	2	93.171	.740	.479
Within Groups	17625.939	140	125.900		
Total	17812.280	142			

Since equal variance is assumed in the T-test and the p value is 0.500, I would be unable to reject the null hypothesis. Therefore, the number of rounds (less than 5, greater than 10) has no effect on a player's willingness to pay for a dozen golf balls. The anova table tells me the same thing since the p value is 0.479—that the number of rounds has no effect on the willingness to pay for a dozen golf balls.

c. In order to analyze willingness to pay for those who prefer Callaway vs. Nike brand, I used a T-Test and Anova table since there are more than two discrete categories.

Ho: Those who prefer Callaway vs. Nike brand have the same willingness to pay.

Ha: Those who prefer Callaway vs. Nike brand do not have the same willingness to pay.

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper
WillingnesstoP	Equal variances assumed	.052	.820	-4.370	60	.000	-11.771	2.694	-17.159 -6.383
	Equal variances not assumed			-4.349	57.643	.000	-11.771	2.706	-17.189 -6.353

ANOVA

WillingnesstoP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3614.104	3	1204.701	11.794	.000
Within Groups	14198.176	139	102.145		
Total	17812.280	142			

Since equal variance is assumed in the T-test because the sig value is 0.820, I would reject the null hypothesis. I reject the null hypothesis because the p value is 0, meaning those who prefer

Callaway vs. Nike brand do not have the same willingness to pay. Also, when comparing all the brands with the anova table, the p value is 0—across all 4 brands, players do not have the same willingness to pay.

d. In order to analyze willingness to pay for those who reside in the northeast vs. west, I used a T-Test and Anova table since there are more than two discrete categories.

Ho: Those who reside in the northeast vs. west have the same willingness to pay.

Ha: Those who reside in the northeast vs. west do not have the same willingness to pay.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
WillingnesstoP	Equal variances assumed	1.385	.243	.114	75	.910	.290	2.551	-4.791	5.371
	Equal variances not assumed			.113	69.859	.910	.290	2.571	-4.838	5.419

ANOVA

WillingnesstoP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	221.438	3	73.813	.583	.627
Within Groups	17481.950	138	126.681		
Total	17703.387	141			

Those who reside in the northeast vs. west have the same willingness to pay—unable to reject the null hypothesis. This is because in the T-test, equal variances assumed, the p value is 0.910. In the anova test, the p value is 0.627, which means across all regions, players have the same willingness to pay. The p value in the anova table dropped compared to the T-test which might indicate other regions need to be compared separately.