Answers to additional business exercises

Chapter 19 Two way between groups ANOVA

Conduct a two-way ANOVA with post hoc tests to compare staff satisfaction scores (*totsatis*) across each of the length of service categories (use the *servicegp3* variable) for permanent versus casual staff (*employstatus*).

Between-Subjects Factors

			Value Label	N
employstatus employment status		1	permanent	279
		2	casual	147
servicegp3 length of service grp 3		1	<= 2	166
		2	3 - 5	127
		3	6+	133

Descriptive Statistics

Dependent Variable: totsatis

employstatus employment status	servicegp3 length	Mean	Std. Deviation	N
1 permanent	1 <= 2	35.47	6.515	86
	2 3 - 5	32.77	6.801	87
	3 6+	33.58	7.562	106
	Total	33.91	7.077	279
2 casual	1 <= 2	36.00	6.392	80
	2 3 - 5	34.58	5.887	40
	3 6+	31.48	7.851	27
	Total	34.78	6.722	147
Total	1 <= 2	35.72	6.442	166
	2 3 - 5	33.34	6.558	127
	3 6+	33.15	7.638	133
	Total	34.21	6.961	426

Levene's Test of Equality of Error Variances [a]

Dependent Variable: totsatis

F	df1	df2	Sig.
1.579	5	420	.165

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

[a]. Design: Intercept+employstatus+servicegp3+employstatus * servicegp3

Tests of Between-Subjects Effects

Dependent Variable: totsatis

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	821.196[a]	5	164.239	3.489	.004	.040
Intercept	388090.418	1	388090.418	8244.209	.000	.952
employstatus	.564	1	.564	.012	.913	.000
servicegp3	652.774	2	326.387	6.933	.001	.032
employstatus * servicegp3	187.667	2	93.834	1.993	.138	.009
Error	19771.210	420	47.074			
Total	519119.000	426				
Corrected Total	20592.406	425				

a. R Squared = .040 (Adjusted R Squared = .028)

Estimated Marginal Means of totsatis
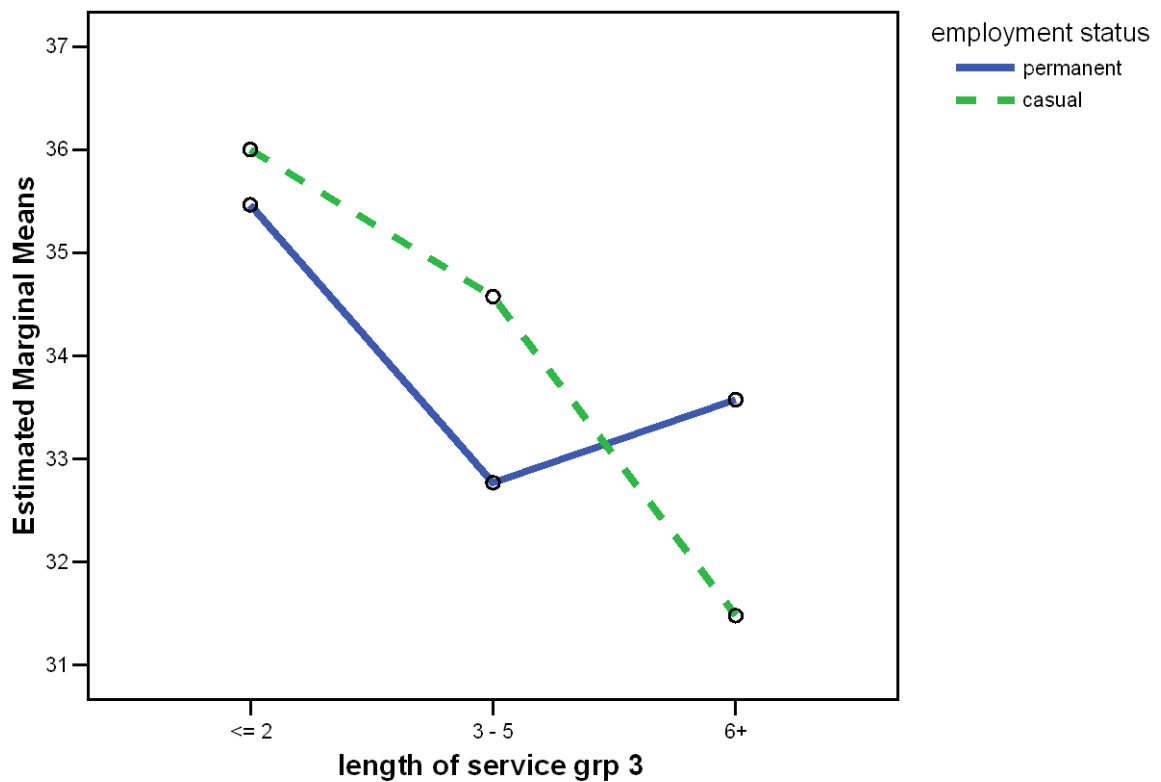
Levene's test is not significant (p=.165), indicating no violation of the assumption of homogeneity of variances.

Inspection of the table of Tests of Between Subjects Effects indicates a non-significant interaction effect (employstatus*servicegp3: p=.14), therefore we can consider the main effects for each independent variable. The main effect for employment status is not significant (p=.91), however the main effect for length of service was significant (p=.001).

The direction of the effect can be determined by looking at the mean scores provided in the Descriptive Statistics table and graphically in the plot of mean scores. Overall the level of staff satisfaction was higher for employees with 2 years or less service. With permanent and casual staff collapsed the mean satisfaction score for staff with 2 or less years service was 35.72 (SD=6.44), between 3 and 5 years the mean was 33.34 (SD=6.56) and 6 or more years service the mean was 33.15 (SD=7.64).