# Answers to additional business exercises

# Chapter 6 Descriptive Statistics

Q1. Follow the procedures covered in this chapter to generate appropriate descriptive statistics to answer the following questions:

(a) What percentage of the staff in this organization are permanent employees (use the variable *employstatus*)?

**employstatus employment status**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 permanent | 328 | 61.2 | 62.8 | 62.8 |
| | 2 casual | 194 | 36.2 | 37.2 | 100.0 |
| | Total | 522 | 97.4 | 100.0 | |
| Missing | System | 14 | 2.6 | | |
| Total | | 536 | 100.0 | | |

*Not everyone in the sample responded to this question (14 people or 2.6% did not answer). Of the people who responded to this question a total of 62.8% are permanent employees.*

(b) What is the average length of service for staff in the organization (use the variable *service*)?

**Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| service length of service | 471 | 0 | 43 | 5.03 | 5.795 |
| Valid N (listwise) | 471 | | | | |

*For this sample years of service ranged from 0 to 43 years, with a mean of 5.03yrs (SD=5.80)*

(c) What percentage of respondents would recommend the organization to others as a good place to work (use the variable *recommend*)?

**recommend**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 no | 58 | 10.8 | 10.8 | 10.8 |
| | 1 yes | 477 | 89.0 | 89.2 | 100.0 |
| | Total | 535 | 99.8 | 100.0 | |
| Missing | System | 1 | .2 | | |
| Total | | 536 | 100.0 | | |

*Of the people who responded to this question, 89.2% said that they would recommend the organization to others.*

Q2 Assess the distribution of scores on the Total Staff Satisfaction scale (*totsatis*) for employees who are permanent versus casual (*employstatus)*.

(a) Are there any outliers on this scale that you would be concerned about?

*An inspection of the histogram for permanent employees revealed the presence of a low score (10) for total satisfaction. This value is more than 3 standard deviations (7) from the mean (33.9). A comparison of the full sample mean (33.93) and the 5% trimmed mean (33.94) are virtually identical, suggesting that this outlier does not have any major impact on the overall mean score. Therefore it is not necessary to remove or recode this value.*

(b) Are scores normally distributed for each group?

*The histograms for each group show scores that are reasonably normally distributed. The Kolmogorov-Smirnov value for the permanent employees is statistically significant (Sig=.037) indicating a deviation from normality. Statistical significance however is common with large samples. Given the reasonably normal shape to the distribution I would conclude that there is no serious deviation from normality for this group. The Kolmogorov-Smirnov value for the casual employees is not statistically significant (Sig=.20) indicating no serious deviation from normality.*

**Descriptives**

| | employstatus employment status | | | Statistic | Std. Error |
|---|---|---|---|---|---|
| totsatis | 1 permanent | Mean | | 33.93 | .407 |
| | | 95% Confidence Interval for Mean | Lower Bound | 33.13 | |
| | | | Upper Bound | 34.74 | |
| | | 5% Trimmed Mean | | 33.94 | |
| | | Median | | 34.00 | |
| | | Variance | | 50.234 | |
| | | Std. Deviation | | 7.088 | |
| | | Minimum | | 10 | |
| | | Maximum | | 50 | |
| | | Range | | 40 | |
| | | Interquartile Range | | 10 | |
| | | Skewness | | .004 | .140 |
| | | Kurtosis | | -.148 | .279 |
| | 2 casual | Mean | | 34.19 | .529 |
| | | 95% Confidence Interval for Mean | Lower Bound | 33.14 | |
| | | | Upper Bound | 35.23 | |
| | | 5% Trimmed Mean | | 34.29 | |
| | | Median | | 35.00 | |
| | | Variance | | 49.285 | |
| | | Std. Deviation | | 7.020 | |
| | | Minimum | | 14 | |
| | | Maximum | | 50 | |
| | | Range | | 36 | |
| | | Interquartile Range | | 10 | |
| | | Skewness | | -.231 | .183 |
| | | Kurtosis | | -.119 | .364 |

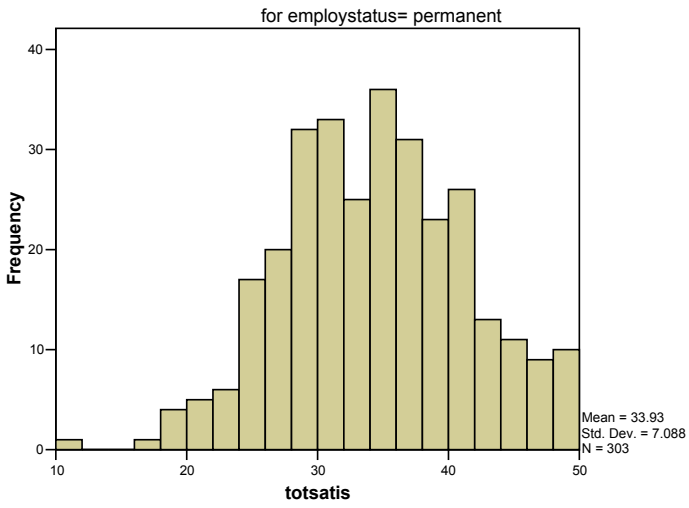
**Tests of Normality**

| | | Kolmogorov-Smirnov [a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | employstatus employment status | Statistic | df | Sig. | Statistic | df | Sig. |
| totsatis | 1 permanent | .053 | 303 | .037 | .993 | 303 | .168 |
| | 2 casual | .057 | 176 | .200* | .990 | 176 | .271 |

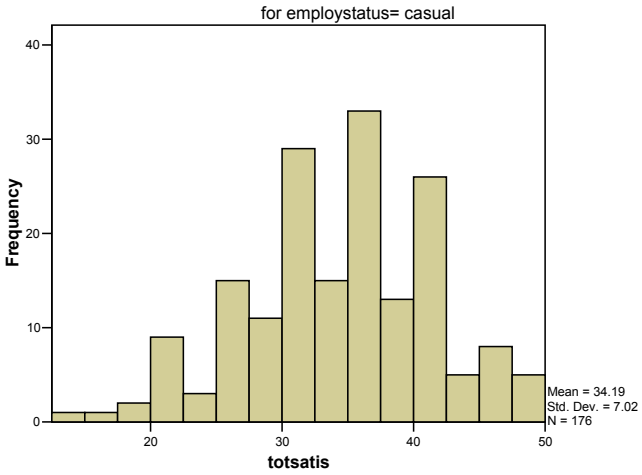
*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

**Histogram**

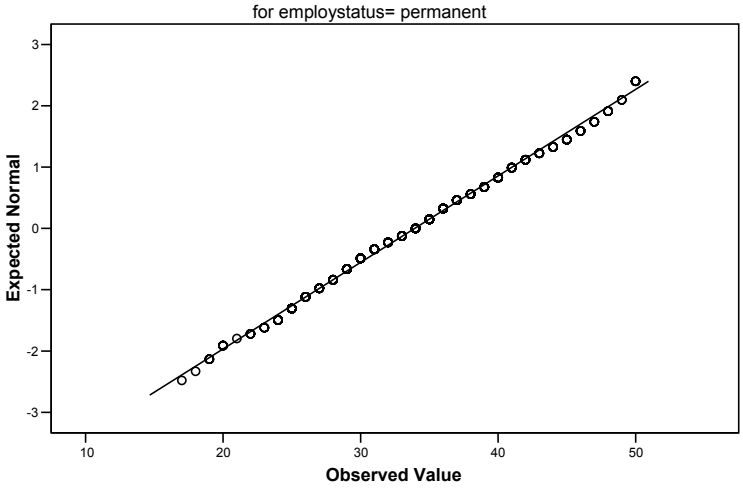



**Histogram**



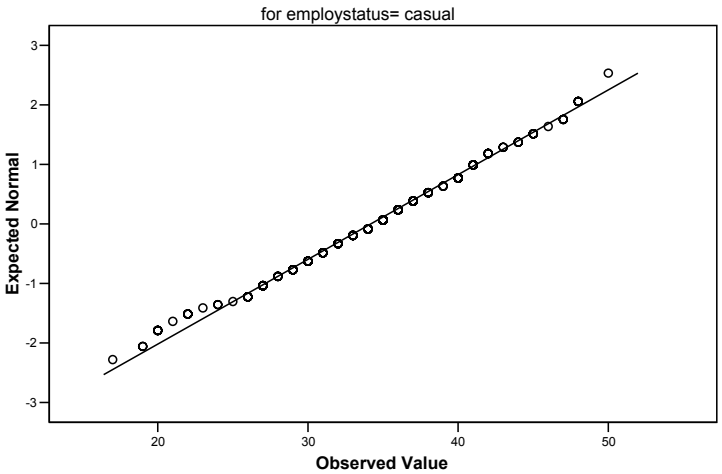
**Normal Q-Q Plot of totsatis**

for employstatus= permanent

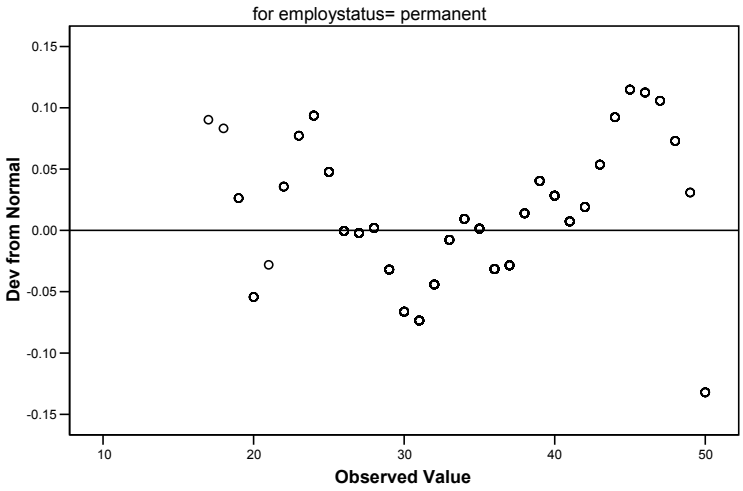



**Normal Q-Q Plot of totsatis**

for employstatus= casual



**Detrended Normal Q-Q Plot of totsatis**




**Detrended Normal Q-Q Plot of totsatis**