

## Analysis Report

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SAMPLE REPORT - Rafael Data Analysis Portfolio

This report is divided in three parts. The first presents the measures of reliability for the comfort and encouragement scales, which were measured with more than one question using Likert-type scales. The second section shows the results of a cross-tabulation analysis, which aimed to find significant associations between the categorical variables of interest. The report ends with a correlation analysis, which aimed to find association between comfort, encouragement and the rest of the variables under study.

### **Reliability Tests**

The first step was to execute reliability analysis. Reliability is an assessment of the degree of consistency between multiple measurements of a variable. One form of reliability is test-retest, by which consistency is measured between the responses for an individual at two points in time. The objective is to ensure that responses are not too varied across time periods so that a measurement taken at any point in time is reliable. A second and more commonly used measure of reliability is internal consistency, which applies to the consistency among the variables in a summated scale. The rationale for internal consistency is that the individual items or indicators of the scale should all be measuring the same construct and thus be highly intercorrelated (Hair et al., 2014). The analysis in the table below shows the descriptive statistics and Alpha coefficients for comfort and encouragement, which were the questions measured using Likert-type scales (5-points).

*Item Statistics*

Variable	Mean	Std. Deviation	N	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Q9 Comfort	3.38	1.524	844	0.677	-0.148
Q10 Comfort	4.48	0.808	844	0.023	0.815
Q11 Comfort	2.29	1.400	844	0.547	0.171
Q4 Encouragement	2.36	1.332	844	0.808	-
Q5 Encouragement	2.00	1.146	844	0.808	-

While Encouragement reached an acceptable level of internal consistency (0.808), the scale for comfort did not (0.572). An examination of the item-total correlations reveals that the item "I feel comfortable" had a low correlation (0.023) with the total score. If this item was deleted, Alpha would increase to 0.815. Thus, the rest of the analysis was performed

with the separate items. Encouragement items were averaged to form a single score to represent the concept.

### **Cross-Tabulations**

Vj g"tgurmm"qh"j ku"cpnf uku"ku"rtgugpvgf"qp"j g"-EtquVcdwrcvkuu"urtgcf sheet on the Excel file attached. The table below shows the frequencies of each question per levels of advocacy, training, education and practice pattern (Kenalog current use, past use and frequency of use). This table is supported by a statistical test for proportion differences (chi-square test). This test is used when you wish to explore the relationship between two categorical variables. Each of these variables can have two or more categories. This test compares the observed frequencies or proportions of cases that occur in each of the categories, with the values that would be expected if there was no association between the two variables being measured (Pallant, 2010). The table below shows an example of a cross-tabulation table.

		Q1 Advocacy				Q2 Training	
		No, none of the faculty	Yes, about half of the faculty	Yes, most of the faculty	Yes, only a few of the faculty	No	Yes
Q2 Training	No	83.99% <sub>a</sub>	9.41% <sub>b</sub>	4.93% <sub>b</sub>	31.62% <sub>c</sub>	-	-
	Yes	16.01% <sub>a</sub>	90.59% <sub>b</sub>	95.07% <sub>b</sub>	68.38% <sub>c</sub>	-	-
Q3 Educated	No	74.38% <sub>a</sub>	4.71% <sub>b</sub>	3.45% <sub>b</sub>	26.20% <sub>c</sub>	79.71% <sub>a</sub>	3.99% <sub>b</sub>
	Yes	25.62% <sub>a</sub>	95.29% <sub>b</sub>	96.55% <sub>b</sub>	73.80% <sub>c</sub>	20.29% <sub>a</sub>	96.01% <sub>b</sub>
Q6 Residency_Program	Academic (University- affiliated)	92.17% <sub>a</sub>	89.41% <sub>a,b</sub>	84.24% <sub>b</sub>	93.77% <sub>a</sub>	94.12% <sub>a</sub>	88.25% <sub>b</sub>
	Combined	2.14% <sub>a</sub>	4.71% <sub>a</sub>	3.94% <sub>a</sub>	3.66% <sub>a</sub>	2.65% <sub>a</sub>	3.78% <sub>a</sub>
	Military	2.14% <sub>a</sub>	1.18% <sub>a</sub>	2.46% <sub>a</sub>	1.10% <sub>a</sub>	0.88% <sub>a</sub>	2.39% <sub>a</sub>
	Private Institution	3.56% <sub>a</sub>	4.71% <sub>a,b</sub>	9.36% <sub>b</sub>	1.47% <sub>a</sub>	2.35% <sub>a</sub>	5.58% <sub>b</sub>

Statistical differences are represented as subscript letters. If any pair of groups show different letters, that means that the different proportions observed are statistically

different. These tests are sensitive to sample size, so a lack of statistical significance does not necessarily mean that differences do not exist, but that there is no sufficient statistical power in the test.

According to the table above, the proportion of those who received training is significantly different between those who were not advocated (16.01%) and those who were advocated only a few of the faculty (68.38%). It is also significantly different from those who were advocated most of the faculty and about half of the faculty. The difference between those advocated half of the faculty (90.59%) is not significantly different from those advocated most of the faculty (95.07%), since the subscript letter is the same (b).

The results of a chi-square analysis indicate if both concepts are statistically related (e.g. Training and Advocation). The table below shows a sample of the chi-square coefficients.

*Pearson Chi-Square Tests*

		Q1 Advocation	Q2 Training	Q3 Educated	Q14 Practice Patterns Kenalog Use	Q15 Practice Patterns Past Use	Q16 Practice Patterns Frequency of Use
Q2 Training	Chi- square Sig.	370.323 <b>0.000</b>	.	513.107 <b>0.000</b>	67.345 <b>0.000</b>	67.991 <b>0.000</b>	81.996 <b>0.000</b>
Q3 Educated	Chi- square Sig.	325.369 <b>0.000</b>	513.107 <b>0.000</b>	.	54.603 <b>0.000</b>	47.539 <b>0.000</b>	56.148 <b>0.000</b>

Vj g"-Uk 0'npgu"lpf kcvg'r-values for statistical significance. When the values are lower than 0.05, it means that the concepts are significantly related at the 95% confidence level. In other words, it means that the differences on the proportions presented earlier are significant.

### **Correlations**

Correlation coefficients are indicators of associations between variables (Pallant, 2010). Values between 0.10 and 0.29 indicate a small degree of association, while values between 0.30 and 0.49 are considered medium and values higher than 0.50 represent a high degree of association (Cohen, 1988). There are several different statistics available,

designed for use with ordinal level or ranked data and is particularly useful when the data does not meet the criteria for Pearson correlation (Pallant, 2010). As some of the variables under study are measured in an ordinal or categorical manner, the data was transformed into dummy variables (coded as 0 and 1) before being inserted into the procedure.

The table with correlation coefficients and associated p-values is displayed on the following page. There are several significant correlations between comfort or encouragement and the rest of the variables, which may guide the further development of predictive models for these concepts.

### References

- Cohen, J., 1988. Statistical power analysis for the behavioral sciences, 2nd ed. Erlbaum, Hillsdale, NJ.
- Hair, J.F., Black, W., Babin, B., Anderson, R., 2014. Multivariate data analysis, Seventh. ed. Pearson Education, Inc., Edinburgh.
- Pallant, J., 2010. SPSS Survival Manual, 4th ed. McGraw-Hill, Berkshire, England.