

Sample Problems
Frequency Distributions, Descriptive Statistics, Chi-square and t- tests¹

The primary purpose of this study was to ascertain how customers perceived National Insurance Company's quality of service and to identify areas for improvement. A 4-page questionnaire was mailed to a random sample of 1000 policyholders from National's customer database. Completed questionnaires were received from 285 respondents. The table in the appendix describes the variables, and the data file is in the Data File folder on BB.

1. Jill Baxter, Vice President of Customer Service for National Insurance Company, and her assistant, Tom Kurtis, want you to develop and briefly discuss the demographic profile of the survey respondents. Please conduct frequencies and cross tabulations on any variables you feel may be of interest to Jill and Tom.
2. Jill and Tom want to find out National's average service perception ratings along each of the five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. They also want to know the most and least critical service dimensions, as perceived by the customers. Perform the necessary statistical analyses and report the findings in statistical and managerial terms.
3. Jill and Tom want to see whether there are significant² relationships between customers' willingness to recommend National to a friend and the variables listed below. Perform the necessary statistical analyses and report the findings in statistical and managerial terms.
 - a. Age
 - b. Marital status
 - c. Income
 - d. Education
4. Jill and Tom are wondering whether there are significant relationships between recommending National to a friend and overall perception of service quality and perception of each of the five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Perform the necessary statistical analyses and report the findings in statistical and managerial terms.
5. Jill and Tom are wondering if the perceptions of the features listed below are significantly greater than 6.5. If not, are they significantly greater than 5.5? Perform the necessary statistical analyses and report the findings in statistical and managerial terms.
 - a. Tangibles
 - b. Reliability
 - c. Responsiveness
 - d. Assurance
 - e. Empathy

¹ Adapted from Parasuraman, A., Dhruv Grewal, and R. Krishnan (2007), *Marketing Research*, 2nd Edition, Houghton Mifflin Company.

² In all cases, assume $\alpha = .05$, unless specified otherwise.

Appendix: Table of Variables Descriptions

Question Number	Construct Measured	Measurement Level of Response	Variable Name	Coding
Section 1, Q1 – Q5	Perception of Reliability	Interval	p1 – p5	1 = Strongly Disagree to 7 = Strongly Agree
Section 1, Q6 – Q10	Perception of Empathy	Interval	p6 – p10	
Section 1, Q11 – Q14	Perception of Tangibles	Interval	p11 – p14	
Section 1, Q15 – Q18	Perception of Responsiveness	Interval	p15 – p18	
Section 1, Q19 – Q22	Perception of Assurance	Interval	p19 – p22	
Section 2, Q1	Importance of Tangibles	Ratio	tanimp	0 – 100 points
Section 2, Q2	Importance of Reliability	Ratio	relimp	0 – 100 points
Section 2, Q3	Importance of Responsiveness	Ratio	resimp	0 – 100 points
Section 2, Q4	Importance of Assurance	Ratio	asrimp	0 – 100 points
Section 2, Q5	Importance of Empathy	Ratio	empimp	0 – 100 points
Section 3, Q1	Overall quality of service	Interval	OQ	1 = extremely poor; 10 = extremely good
Section 3, Q2	Recommend service to others	Nominal; may be treated as ordinal as '1' is better than '2'	rec	1 = yes; 2 = no
Section 3, Q3	Length of service usage	Ordinal	use	1 = less than 1 year; 2 = 1 to less than 2 years; 3 = 2 to less than 5 years; 4 = 5 years or more
Section 3, Q4	Problem with service	Nominal; may be treated as ordinal as '1' is better than '2'	prob	1 = yes; 2 = no
Section 3, Q5	Problem resolved to satisfaction	Nominal; may be treated as ordinal as '1' is better than '2'	resolve	1 = yes; 2 = no
Section 4, Q1	Gender	Nominal	sex	1 = male; 2 = female
Section 4, Q2	Marital status	Nominal	mstat	1 = single; 2 = married; 3 = widowed; 4 = divorced
Section 4, Q3	Age	Ordinal	age	1 = under 25; 2 = 25 – 44; 3 = 45 – 64; 4 = 65 or over
Section 4, Q4	Income	Ordinal	inc	1 = under £10000; 2 = £10,000 - £19,999; 3 = £20,000 - £29,999; 4 = £30,000 - £49,999; 5 = £50,000 - £64,999; 6 = £65,000 or over
Section 4, Q5	Education	Ordinal	Ed	1 = Secondary school or less; 2 = Some University; 3 = UG degree; 4 = Post graduate education