

Contents

1	Missing Observations and Data Quality Improvement	1
1.1	Missing Observations and Data Quality	1
1.2	Ranked Set Sample in the Presence of Missing Data	4
	References	5
2	Sampling Using Ranked Sets: Basic Concepts	7
2.1	Introduction	7
2.2	The Basic RSS Strategy	11
2.2.1	The Sampling Procedure	11
2.2.2	Estimation of μ	12
2.2.3	The Estimation of the Variance	14
2.2.4	Confidence Intervals	15
2.3	Some Other RSS Strategies	16
2.3.1	Median RSS Sampling (MRSS)	16
2.3.2	Extreme RSS Sampling (ERSS)	17
2.3.3	L-RSS Sampling	19
2.4	Some Particular Estimators	20
2.4.1	The Ratio Estimator	20
2.4.2	The Difference of Means	27
	References	28
3	The Non-response Problem: Subsampling Among the Non-respondents	31
3.1	Some Aspects of Non-response	31
3.2	Estimation of the Mean	32
3.3	RSS Designs and the Non-responses	34
3.3.1	Managing with NR	34
3.3.2	The Use of RSS for Subsampling s_2	35
3.3.3	The Use of the Extreme RSS for Subsampling s_2	38
3.3.4	The Use of Median RSS for Subsampling s_2	41
3.4	The Estimation of a Difference	43
3.5	Product-Type Estimators	46
3.6	The Non-response Problem: Double Sampling	52
	References	57

4	Imputation of the Missing Data	59
4.1	Introduction	59
4.2	Ignoring the Non-responses in the Estimation of the Mean	61
4.3	Ratio Imputation Procedures	62
4.3.1	SRWR Designs	62
4.3.2	The RSS Design	68
4.4	Imputation in Median RSS	73
4.4.1	Some Quotations	73
4.4.2	Mean Imputation	73
4.4.3	Ratio Imputation	76
4.5	Imputation Using Product-Type Estimators	79
4.6	Imputation in LRSS	83
4.6.1	Modeling the Non-responses	83
4.6.2	The Mean Substitution	84
4.6.3	Ratio Imputation	86
	References	88
5	Some Numerical Studies of the Behavior of RSS	91
5.1	Introduction	91
5.2	Studies of Some Estimators in RSS	92
5.2.1	Antecedents	92
5.2.2	Analysis of a Monte Carlo Experiment of the Behavior of the Estimator of the Difference of Means	92
5.2.3	Numerical Study of Ratio Type Estimators	93
5.2.4	Numerical Study of Other Estimators	96
5.3	Analysis of Non-response Models	97
5.3.1	Introduction	97
5.3.2	A Monte Carlo Comparison of the Accuracy for Estimating the Population Mean	97
5.3.3	Estimation of the Difference of Means: Analysis of a Monte Carlo Experiment	101
5.4	Numerical Studies of Imputation Methods	105
5.4.1	Some General Remarks	105
5.4.2	The Median Estimator	106
5.4.3	Imputation in LRSS	109
	References	112
	Index	115