

contents

1	ON UNDERSTANDING RESEARCH PUBLICATIONS	1
	A few introductory remarks about the purpose of the book	1
2	EVALUATING AN EXPERIMENT: A First Example	5
	Defining an experiment	5
	Terminology of experimentation	6
	Definitions	6
	A published experiment with accompanying commentary and an evaluation of findings	8
	An introduction to research design	18
3	EVALUATING AN EXPERIMENT: A Second Example	23
	A review of a research project carried out in 1930, with criticisms	23
	Some remarks about the control of variables	26
4	THE EVALUATION OF EXPERIMENTS	29
	An example of an “ideal” experiment	29
	Problems in meeting the criteria for an ideal experiment	31
	Good and bad research designs	33
	Untangling problems in research designs	35
	Bias in experiments	37
	Interpreting experimental results	39

5	EVALUATING SURVEY RESEARCH STUDIES	41
	Introduction to survey research	41
	An example of survey research with accompanying commentary .	44
	Evaluation of survey research methods	55
6	FIELD OBSERVATIONAL STUDIES	57
	Introduction to field research methods	57
	Illustration of field approaches	58
	An example of field research method in a contemporary American setting	60
	Commentary	74
7	FUNDAMENTAL CONCEPTS IN UNDERSTANDING STATISTICAL INFERENCE	77
	Introduction to statistical inference	77
	Concepts of population, sample, and random sampling	78
	The uses of the mean and standard deviation	80
	Defining the normal curve, probability, and random sampling distributions	89
	The accuracy of statistical inferences	98
	Use of the standard error of the mean	99
	Probability statements	102
	Sampling distributions of differences	103
	The <i>t</i> statistic	104
	Interpreting the <i>t</i> statistic	106
	Addendum: Demonstration of random sampling methods	111
8	TESTING FOR THE SIGNIFICANCE OF DIFFERENCES BETWEEN GROUPS	115
	The <i>t</i> statistic for repeated measures	115
	One- and two-tailed tests	117
	Introduction to the analysis of variance	117
	A demonstration of the use of analysis of variance	119
	Interpreting the <i>F</i> statistic	123

Complex uses of analysis of variance	124
The meaning of interactions in analysis of variance	126
Analysis of covariance	128
Multiple comparison techniques	128
Limitations of analysis of variance methods	129
An experiment utilizing complex analysis of variance with accompanying commentary	130
Comparisons of frequencies	138
Chi square	139
The Fisher Exact Test	141
Comparing proportions and percentages	141
Non-parametric (distribution-free) tests	142

9 MEASURES OF HOW THINGS ARE ASSOCIATED

An example of associative methods	145
The Pearson correlation coefficient	146
Limitations of correlation methods	149
Prediction	150
Other measures of association	151
Reliability and validity	154
Multiple correlation	156
A correlation study with accompanying commentary	158
Non-parametric measures of correlation	171
A few remarks about tests and test construction	171

10 FACTOR AND CLUSTER ANALYSIS

Introduction to factor and cluster analysis	177
Uses and interpretations	179
A factor analytic study	181
Commentary	190

11 MULTIVARIATE STATISTICAL METHODS

The uses and potential of multivariate methods	193
--	-----

Preparing data for a digital computer 194
An example of two-group discriminant function analysis 196
A discriminant function analysis of multiple groups 200
Stepwise multiple regression methods 201
Multivariate analysis of variance 212

Appendix. Commonly Used Statistical Symbols 217

Index 221