

Contents

Preface to the series	v
Photo	vii
Preface to the volume	ix
Acknowledgments	xiii
Contributors	xxiii
Biographical Sketch	xxv
Bibliography	xxxiii
PhD Students	li
Part I Decision Theory	
Commentary: Erich L. Lehmann's Work on Decision Theory, by Javier Rojo ...	3
E. L. Lehmann. On families of admissible tests. <i>Ann. Math. Statist.</i> , Vol. 18, pp. 97–104, 1947. Reprinted with permission of the Institute of Mathematical Statistics.....	7
J. L. Hodges, Jr. and E. L. Lehmann. Some problems in minimax point estimation. <i>Ann. Math. Statist.</i> , Vol. 21, pp. 182–197, 1950. Reprinted with permission of the Institute of Mathematical Statistics	15
J. L. Hodges, Jr. and E. L. Lehmann. Some applications of the Cramér-Rao inequality. <i>Proc. Second Berkeley Symp. Math. Statist. Prob.</i> , University of California Press, pp. 13–22, 1951. Reprinted with permission of the University of California Press.....	31
E. L. Lehmann. A general concept of unbiasedness. <i>Ann. Math. Statist.</i> , Vol. 22, pp. 587–591, 1951. Reprinted with permission of the Institute of Mathematical Statistics.....	41
J. L. Hodges, Jr. and E. L. Lehmann. The use of previous experience in reaching statistical decisions. <i>Ann. Math. Statist.</i> , Vol. 23, pp. 396–407, 1952. Reprinted with permission of the Institute of Mathematical Statistics.....	47
E. L. Lehmann. On the existence of least favorable distributions. <i>Ann. Math. Statist.</i> , Vol. 23, pp. 408–416, 1952. Reprinted with permission of the Institute of Mathematical Statistics.....	59

E. L. Lehmann and C. M. Stein. The admissibility of certain invariant statistical tests involving a translation parameter. <i>Ann. Math. Statist.</i> , Vol. 24, pp. 473–479, 1953. Reprinted with permission of the Institute of Mathematical Statistics.....	69
R. R. Bahadur and E. L. Lehmann. Two comments on “sufficiency and statistical decision functions”. <i>Ann. Math. Statist.</i> , Vol. 26, pp. 139–142, 1955. Reprinted with permission of the Institute of Mathematical Statistics	77
E. L. Lehmann. On a theorem of Bahadur and Goodman. <i>Ann. Math. Statist.</i> , Vol. 37, pp. 1–6, 1966. Reprinted with permission of the Institute of Mathematical Statistics.....	81
Part II Hypothesis Testing	
Commentary: On Testing of Hypotheses, by Javier Rojo.....	89
E. L. Lehmann. On optimum tests of composite hypotheses with one constraint. <i>Ann. Math. Statist.</i> , Vol. 18, pp. 473–495, 1947. Reprinted with permission of the Institute of Mathematical Statistics	95
E. L. Lehmann and C. Stein. Most powerful tests of composite hypotheses. I. Normal Distributions. <i>Ann. Math. Statist.</i> , Vol. 19, No. 4, pp. 495–516, 1948. Reprinted with permission of the Institute of Mathematical Statistics.....	117
E. L. Lehmann. Some principles of the theory of testing hypotheses. <i>Ann. Math. Statist.</i> , Vol. 21, pp. 1–26, 1950. Reprinted with permission of the Institute of Mathematical Statistics.	139
J. L. Hodges, Jr. and E. L. Lehmann. Testing the approximate validity of statistical hypotheses. <i>J. Roy. Statist. Soc. Ser. B</i> , Vol. 26, pp. 261–268, 1954. Reprinted with permission of John Wiley and Sons and the Royal Statistical Society	165
E. L. Lehmann. Significance level and power. <i>Ann. Math. Statist.</i> , Vol. 29, pp. 1167–1176, 1958. Reprinted with permission of the Institute of Mathematical Statistics.....	173
E. L. Lehmann. Optimum invariant tests. <i>Ann. Math. Statist.</i> , Vol. 30, pp. 881–884, 1959. Reprinted with permission of the Institute of Mathematical Statistics	183
E. L. Lehmann. Sections 3.10 – 3.12 from <i>Testing Statistical Hypotheses</i> . John Wiley and Sons, 1959.....	187
E. L. Lehmann. The Fisher, Neyman–Pearson theories of testing hypothesis: One theory or two? <i>J. Amer. Statist. Assoc.</i> , Vol. 88, pp. 1242–1249, 1993. Reprinted with permission of the American Statistical Association	201
E. L. Lehmann. On likelihood ratio tests. In <i>The Second Erich L. Lehmann Symposium Optimality</i> , (J. Rojo, Ed.), IMS Lecture Notes-Monograph Series Vol. 49, pp. 1–9, 2006. Reprinted with permission of the Institute of Mathematical Statistics.....	209

Part III Estimation

Commentary: Professor Erich Lehmann’s Contributions to Testing
of Hypotheses and Estimation, by C. R. Rao..... 219

E. L. Lehmann and C. Stein. Completeness in the sequential case. *Ann. Math. Statist.*, Vol. 21, pp. 376–385, 1950. Reprinted with permission of the Institute of Mathematical Statistics. 223

E. L. Lehmann and H. Scheffé. Completeness, similar regions, and unbiased estimation. Part I. *Sankhya*, Vol. 10, pp. 305–340, 1950. Reprinted with permission of the Indian Statistical Institute..... 233

E. L. Lehmann and H. Scheffé. Completeness, similar regions, and unbiased estimation. Part II. *Sankhya*, Vol. 15, pp. 219–236, 1955. Reprinted with permission of the Indian Statistical Institute..... 269

J. L. Hodges, Jr. and E. L. Lehmann. Estimates of location based on rank tests. *Ann. Math. Statist.*, Vol. 34, pp. 593–611, 1963. Reprinted with permission of the Institute of Mathematical Statistics. 287

P. J. Bickel and E. L. Lehmann. Unbiased estimation in convex families. *Ann. Math. Statist.*, Vol. 40, pp. 1523–1535, 1969. Reprinted with permission of the Institute of Mathematical Statistics. 301

E. L. Lehmann. An interpretation of completeness and Basu’s theorem. *J. Amer. Statist. Assoc.*, Vol. 76, pp. 335–340, 1981. Reprinted with permission of the American Statistical Association..... 315

P. J. Bickel and E. L. Lehmann. A minimax property of the sample mean in finite populations. *Ann. Statist.*, Vol. 8, pp. 1119–1122, 1981. Reprinted with permission of the Institute of Mathematical Statistics..... 321

E. L. Lehmann. Estimation with inadequate information. *J. Amer. Statist. Assoc.*, Vol. 78, pp. 624–627, 1983. Reprinted with permission of the American Statistical Association..... 325

Part IV Nonparametrics I

Commentary: Erich Lehmann on rank methods, by Willem R. van Zwet..... 331

E. L. Lehmann and C. Stein. On the theory of some non-parametric hypotheses. *Ann. Math. Statist.*, Vol. 20, pp. 28–45, 1949. Reprinted with permission of the Institute of Mathematical Statistics..... 339

E. L. Lehmann. Consistency and unbiasedness of certain nonparametric tests. *Ann. Math. Statist.*, Vol. 22, pp. 165–179, 1951. Reprinted with permission of the Institute of Mathematical Statistics 357

E. L. Lehmann. The power of rank tests. *Ann. Math. Statist.*, Vol. 24, pp. 23–43, 1953. Reprinted with permission of the Institute of Mathematical Statistics 373

J. L. Hodges, Jr. and E. L. Lehmann. The efficiency of some nonparametric competitors of the *t*-test. *Ann. Math. Statist.*, Vol. 27, pp. 324–335, 1956. Reprinted with permission of the Institute of Mathematical Statistics..... 391

J. L. Hodges, Jr. and E. L. Lehmann. Rank methods for combination of independent experiments in analysis of variance. <i>Ann. Math. Statist.</i> , Vol. 33, pp. 482–497, 1962. Reprinted with permission of the Institute of Mathematical Statistics	403
E. L. Lehmann. Robust estimation in analysis of variance. <i>Ann. Math. Statist.</i> , Vol. 34, pp. 957–966, 1963. Reprinted with permission of the Institute of Mathematical Statistics.....	419
E. L. Lehmann. A class of selection procedures based on ranks. <i>Math. Annalen</i> , Vol. 150, pp. 268–275, 1963. Reprinted with permission of Springer Science+Business Media.	429
E. L. Lehmann. Parametric versus nonparametrics: two alternative methodologies. Invited paper with discussion. <i>J. Nonpar. Statist.</i> , Vol. 21, pp. 397–405, 2009. Reprinted with permission of Taylor & Francis.....	437
E. L. Lehmann. Rejoinder to Parametric versus nonparametrics: two alternative methodologies, with discussion. <i>J. Nonpar. Statist.</i> , Vol. 21, pp. 425–426, 2009. Reprinted with permission of Taylor & Francis.....	447
Part V Nonparametrics II	
Commentary: Descriptive statistics for nonparametric models. The impact of some Erich Lehmann’s papers, by Hannu Oja	451
E. L. Lehmann. Nonparametric confidence intervals for a shift parameter. <i>Ann. Math. Statist.</i> , Vol. 34, pp. 1507–1512, 1963. Reprinted with permission of the Institute of Mathematical Statistics	459
P. J. Bickel and E. L. Lehmann. Descriptive statistics for nonparametric models. I. Introduction. <i>Ann. Statist.</i> , Vol. 3, pp. 1038–1044, 1975. Reprinted with permission of the Institute of Mathematical Statistics.....	465
P. J. Bickel and E. L. Lehmann. Descriptive statistics for nonparametric models II. Location. <i>Ann. Statist.</i> , Vol. 4, pp. 1045–1069, 1976. Reprinted with permission of the Institute of Mathematical Statistics.	473
P. J. Bickel and E. L. Lehmann. Descriptive statistics for nonparametric models. III. Dispersion. <i>Ann. Statist.</i> , Vol. 4, pp. 1139–1158, 1976. Reprinted with permission of the Institute of Mathematical Statistics.....	499
P. J. Bickel and E. L. Lehmann. Descriptive statistics for nonparametric models. IV. Spread. In <i>Contributions to Statistics, Jaroslav Hajek Memorial Volume</i> , Prague, 1979. Reprinted with permission of Karolinum Press.....	519
Part VI Asymptotics	
Commentary: Erich Lehmann’s Work on Asymptotics, by David Draper	529
H. Chernoff and E. L. Lehmann. The use of maximum likelihood estimates in χ^2 tests for goodness of fit. <i>Ann. Math. Statist.</i> , Vol. 25, pp. 579–586, 1954. Reprinted with permission of the Institute of Mathematical Statistics	541

E. L. Lehmann. Asymptotically nonparametric inference: an alternative approach to linear models. *Ann. Math. Statist.*, Vol. 34, pp. 1494–1506, 1963. Reprinted with permission of the Institute of Mathematical Statistics. 551

E. L. Lehmann. Asymptotically nonparametric inference in some linear models with one observation per cell. *Ann. Math. Statist.*, Vol. 35, pp. 726–734, 1964. Reprinted with permission of the Institute of Mathematical Statistics 565

J. L. Hodges, Jr. and E. L. Lehmann. Deficiency. *Ann. Math. Statist.*, Vol. 41, pp. 783–801, 1970. Reprinted with permission of the Institute of Mathematical Statistics 575

E. L. Lehmann and W.-Y. Loh. Pointwise Versus uniform robustness of some large-sample tests and confidence intervals. *Scand. J. Statist.*, Vol. 17, pp. 177–187, 1990. Reprinted with permission of John Wiley and Sons 595

Part VII Multiple Decisions

Commentary: Erich Lehmann’s contributions to multiple decision making, by Juliet P. Shaffer 609

E. L. Lehmann. A theory of some multiple decision problems. I. *Ann. Math. Statist.*, Vol. 28, pp. 1–25, 1957. Reprinted with permission of the Institute of Mathematical Statistics. 617

E. L. Lehmann. A theory of some multiple decision problems. II. *Ann. Math. Statist.*, Vol. 28, pp. 547–572, 1957. Reprinted with permission of the Institute of Mathematical Statistics..... 643

E. L. Lehmann and J. P. Shaffer. Optimum significance levels for multistage comparison procedures. *Ann. Statist.*, Vol. 7, pp. 27–45, 1979. Reprinted with permission of the Institute of Mathematical Statistics..... 669

E. L. Lehmann, J. P. Romano, and J. P. Shaffer. On optimality of stepdown and stepup multiple test procedures. *Ann. Statist.*, Vol. 33, pp. 1084–1108, 2005. Reprinted with permission of the Institute of Mathematical Statistics 689

E. L. Lehmann and J. P. Romano. Generalizations of the familywise error rate. *Ann. Statist.*, Vol. 33, pp. 1138–1154, 2005. Reprinted with permission of the Institute of Mathematical Statistics 715

Part VIII Orderings of Probability Distributions

Commentary: Erich Lehmann’s Contributions to Orderings of Probability Distributions, by Marco Scarsini 735

E. L. Lehmann. Testing multiparameter hypotheses. *Ann. Math. Statist.*, Vol. 23, pp. 541–552, 1952. Reprinted with permission of the Institute of Mathematical Statistics 741

E. L. Lehmann. Ordered families of distributions. *Ann. Math. Statist.*, Vol. 26, pp. 399–419, 1955. Reprinted with permission of the Institute of Mathematical Statistics 753

E. L. Lehmann. Comparing location experiments. <i>Ann. Statist.</i> , Vol. 16, pp. 521–533, 1988. Reprinted with permission of the Institute of Mathematical Statistics	775
E. L. Lehmann and J. Rojo. Invariant directional orderings. <i>Ann. Statist.</i> , Vol. 20, pp. 2100–2110, 1992. Reprinted with permission of the Institute of Mathematical Statistics.....	789
Part IX Probability Theory	
Commentary: The Impact of Lehmann’s Work in Applied Probability, by Moshe Shaked and Walter W. Piegorsch	803
E. L. Lehmann. Some concepts of dependence. <i>Ann. Math. Statist.</i> , Vol. 37, pp. 1137–1153, 1966. Reprinted with permission of the Institute of Mathematical Statistics	811
E. L. Lehmann and J. P. Shaffer. Inverted distributions. <i>Am. Statist.</i> , Vol. 42, pp. 191–194, 1988. Reprinted with permission of the American Statistical Association.....	829
Part X Biographical work	
Commentary: Erich L. Lehmann’s Biographical Work, by Javier Rojo.....	835
T. W. Anderson, H. Cramer, J. L. Hodges, Jr. H. A. Freeman, E. L. Lehmann, A. M. Mood, C. Stein. The life of Abraham Wald. In <i>Selected Papers in Statistics and Probability</i> . New York: McGraw-Hill, 1955.....	839
T. W. Anderson, K. L. Chung, and E. L. Lehmann. Pao-Lu Hsu, 1909–1970. <i>Ann. Statist.</i> , Vol. 7, pp. 467–470, 1979. Reprinted with permission of the Institute of Mathematical Statistics.	841
E. L. Lehmann. Hsu’s work on inference. <i>Ann. Statist.</i> , Vol. 7, pp. 471–473, 1979. Reprinted with permission of the Institute of Mathematical Statistics	845
C. Daniel and E. L. Lehmann. Henry Scheffé, 1907–1977. <i>Ann. Statist.</i> , Vol. 7, pp. 1149–1161, 1979. Reprinted with permission of the Institute of Mathematical Statistics.....	849
E. L. Lehmann. Jerzy Neyman (1894–1981). In <i>Biographical Memoirs of the Nat. Acad. of Sci.</i> , Vol. 63, pp. 395–420. The National Academies Press, 1994. Reprinted with permission of the National Academy of Sciences	863
E. L. Lehmann. Le Cam at Berkeley. In <i>Festschrift for Lucien Le Cam</i> , pp. 297–304, Springer-Verlag, 1997. Reprinted with permission of Springer Science+Business Media.....	889
D. Blackwell, A. H. Bowker, and E. L. Lehmann. Joseph L. Hodges, Jr. In <i>Memoriam</i> , University of California, pp. 83–85, 2000	897
K. J. Arrow and E. L. Lehmann. Harold Hotelling. In <i>Biographical Memoirs</i> , National Academy of Sciences, Vol. 87, pp. 221–233. The National Academies Press, 2005. Reprinted with permission of the National Academy of Sciences	899

Part XI Historical work

Commentary: Erich L. Lehmann’s Work on the History of Classical Statistics,
by Javier Rojo 915

E. L. Lehmann. Some Early Instances of Confidence Statements.
Statistical Laboratory, University of California, Berkeley. ONR 5 Technical
Report to the Office of Naval Research. Unpublished. September 1958..... 921

M. H. DeGroot. A Conversation with Erich L. Lehmann. *Statist. Sci.*,
Vol. I, 243–258, 1986. Reprinted with permission of the Institute
of Mathematical Statistics..... 935

E. L. Lehmann. Model specification: The views of Fisher and Neyman,
and later developments. *Statist. Sci.*, Vol. 5, pp. 160–168, 1990.
Reprinted with permission of the Institute of Mathematical Statistics..... 951

E. L. Lehmann. The Bertrand-Borel Debate and the origins of the
Neyman-Pearson theory. In *Statistics and Probability. A Raghu Raj Bahadur
Festschrift*, (Ghosh et al Eds.), pp. 371–380. Wiley Eastern Ltd.
New Delhi, 1993 961

E. L. Lehmann. Mentors and early collaborators: reminiscences from the years
1940–1956 with an epilogue. *Statist. Sci.*, Vol. 8, pp. 331–341, 1993.
Reprinted with permission of the Institute of Mathematical Statistics..... 971

E. L. Lehmann. The creation and early history of the Berkeley statistics
department. In *Festschrift for David Blackwell, IMS Lecture Notes - Monograph
Series*, Vol. 30, (T. Ferguson, Ed.), pp. 139–146, 1996. Reprinted
with permission of the Institute of Mathematical Statistics..... 983

E. L. Lehmann. Testing statistical hypotheses: The story of a book.
Statist. Sci., Vol. 12, pp. 48–52, 1997. Reprinted with permission
of the Institute of Mathematical Statistics. 991

E. L. Lehmann. “Student” and small-sample theory. *Statist. Sci.*,
Vol. 14, pp. 418–426, 1999. Reprinted with permission of the Institute
of Mathematical Statistics..... 997

E. L. Lehmann. Optimality and symposia: Some history. In *The First Erich L.
Lehmann Symposium - Optimality*. (V. Perez-Abreu and J. Rojo, Eds.),
IMS Lecture Notes-Monograph Series, Vol. 44, pp. 1–10, 2004.
Reprinted with permission of the Institute of Mathematical Statistics..... 1005

E. L. Lehmann. On the history and use of some standard statistical models.
In *Probability and Statistics: Essays in Honor of David A. Freedman*,
(D. Nolan and T. Speed, Eds), *IMS Collections Vol. 2*, pp. 114–126, 2008.
Reprinted with permission of the Institute of Mathematical Statistics..... 1015

E. L. Lehmann. Some history of optimality. In *The Third Erich L. Lehmann
Symposium –Optimality*, (J. Rojo, Ed.) *IMS Lecture Notes-Monograph Series*,
Vol. 57, pp. 10–17, 2009. Reprinted with permission of the Institute
of Mathematical Statistics..... 1029

Part XII Philosophical work

- Commentary: Erich L. Lehmann's Work on the Philosophy of Statistics,
by Javier Rojo 1039
- E. L. Lehmann. The Neyman-Pearson Theory After Fifty Years. In Proceedings
of the Berkeley Conference in Honor of Jerzy Neyman and Jack Kiefer, Vol. I.
(L. Le Cam and R. A. Olshen, Eds), pp. 1–14, Wadsworth 1985.
Reprinted with permission of Springer Science+Business Media..... 1043
- E. L. Lehmann. Foundational issues in statistics: theory and practice.
Foundations of Science, Vol. 1, pp. 45–49, 1995. Reprinted with permission
of Springer Science+Business Media. 1057
- E. L. Lehmann. Neyman's statistical philosophy. Dedicated to the memory
of Jerzy Neyman. Probability and Math. Statistics, Vol. 15, pp. 29–36, 1995.
Reprinted with permission of the Institute of Mathematical Statistics 1063
- P. J. Bickel and E. L. Lehmann. Frequentist inference. In International
Encyclopedia of the Social and Behavioral Sciences, pp. 5789–5796. Pergamon,
Oxford, 2001. Reprinted with permission of Oxford University Press 1071
- P. J. Bickel and E. L. Lehmann. Frequentist interpretation of probability.
In International Encyclopedia of the Social and Behavioral Sciences,
N. J. Smelser and Paul B. Baltes (Eds.), pp. 5796–5798. Pergamon,
Oxford, 2001. Reprinted with permission of Oxford University Press 1079

Part XIII Books

- Commentary: The Books, by Javier Rojo..... 1085
- Commentary on On the Third Edition of *Testing Statistical Hypotheses*,
Joseph P. Romano 1089
- Commentary on Writing TPE2, George Casella..... 1093
- On “Nonparametrics: Statistical Methods Based on Ranks”: Commentary
by Douglas A. Wolfe and Book Review by J. L. Gastwirth 1097
- Susan P. Holmes (2000). Review of Elements of Large Sample Theory.
Journal of the American Statistical Association, 95, 328–329. Reprinted with
permission of the American Statistical Association. 1107
- Terry Speed (2008). Review of Reminiscences of a Statistician:
The Company I Kept by Erich L. Lehmann. International Statistical Review,
76, 153. Reprinted with permission of the International Statistical Institute..... 1109



<http://www.springer.com/978-1-4614-1411-7>

Selected Works of E. L. Lehmann

Rojó, J. (Ed.)

2012, XLVIII, 1109 p., Hardcover

ISBN: 978-1-4614-1411-7