

Publications of Lawrence D. Brown

- [1] BROWN, L. D. (1964). Sufficient statistics in the case of independent random variables. *Ann. Math. Statist.* **35** 1456–1475.
- [2] BROWN, L. D. (1965). Optimal policies for a sequential decision process. *J. Soc. Indust. Appl. Math.* **13** 37–46.
- [3] BROWN, L. D. (1966). On the admissibility of invariant estimators of one or more location parameters. *Ann. Math. Statist.* **37** 1087–1136.
- [4] BROWN, L. D. (1967). The conditional level of Student's t test. *Ann. Math. Statist.* **38** 1068–1071.
- [5] BROWN, L. D. (1968). Inadmissibility of the usual estimators of scale parameters in problems with unknown location and scale parameters. *Ann. Math. Statist.* **39** 29–48.
- [6] BROWN, L. D. (1971). Non-local asymptotic optimality of appropriate likelihood ratio tests. *Ann. Math. Statist.* **42** 1206–1241.
- [7] BROWN, L. D. (1971). Admissible estimators, recurrent diffusions, and insoluble boundary value problems. *Ann. Math. Statist.* **42** 855–904. See also correction in *Ann. Statist.* **1** (1973) 594–596.
- [8] BROWN, L. D. and PURVES, R. (1973). Measurable selections of extrema. *Ann. Statist.* **1** 902–912.
- [9] BROWN, L. D. and FOX, M. (1974). Admissibility in statistical problems involving a location or scale parameter. *Ann. Statist.* **2** 807–814.
- [10] BROWN, L. D. and FOX, M. (1974). Admissibility of procedures in two dimensional location parameter problems. *Ann. Statist.* **2** 248–266.
- [11] BROWN, L. D. and COHEN, A. (1974). Point and confidence estimation of a common mean and recovery of interblock information. *Ann. Statist.* **2** 963–976.
- [12] BROWN, L. D. (1975). On a theorem of Morimoto concerning sufficiency for discrete distributions. *Ann. Statist.* **3** 1180–1182.
- [13] BROWN, L. D. (1975). Estimation with incompletely specified loss functions (the case of several location parameters). *J. Amer. Statist. Assoc.* **70** 417–427.
- [14] BROWN, L. D., COHEN, A. and STRAWDERMAN, W. E. (1976). A complete class theorem for strict monotone likelihood ratio with applications. *Ann. Statist.* **4** 712–722.
- [15] BROWN, L. D. (1977). Closure theorems for sequential-design processes. In *Statistical Decision Theory and Related Topics II* 57–91. Academic Press, Inc.
- [16] BERGER, J., BOCK, M. E., BROWN, L. D., CASELLA, G. and GLESER, L. (1977). Minimax estimation of a normal mean vector for arbitrary quadratic loss and unknown covariance matrix. *Ann. Statist.* **5** 763–771.
- [17] BROWN, L. D. (1977). “Comment” on Conditional confidence statements and confidence estimators. *J. Amer. Statist. Assoc.* **72** 810–813.
- [18] BROWN, L. D. (1978). A contribution to Kiefer's theory of conditional confidence procedures. *Ann. Statist.* **6** 59–71.
- [19] BERK, R. H. and BROWN, L. D. (1978). Sequential Bahadur efficiency. *Ann. Statist.* **6** 567–581.

- [20] BROWN, L. D. (1979). Counterexample – an inadmissible estimator which is generalized Bayes for a prior with light tails. *J. Multivariate Anal.* **9** 332–336.
- [21] BROWN, L. D. (1979). A heuristic method for determining admissibility of estimators – with application. *Ann. Statist.* **7** 960–994.
- [22] BROWN, L. D., COHEN, A. and STRAWDERMAN, W. E. (1979). On the admissibility or inadmissibility of fixed sample size tests in a sequential setting. *Ann. Statist.* **7** 569–579.
- [23] BROWN, L. D., COHEN, A. and STRAWDERMAN, W. E. (1979). Monotonicity of Bayes sequential tests. *Ann. Statist.* **7** 1222–1230.
- [24] BROWN, L. D. (1979). A proof that Kramer’s multiple comparison procedure for differences between treatment means is level $-\alpha$ for 3, 4, or 5 treatments. Technical report, Statistics Center, Cornell Univ.
- [25] BROWN, L. D. (1980). A necessary condition for admissibility. *Ann. Statist.* **8** 540–545.
- [26] BROWN, L. D. (1980). Examples of Berger’s phenomenon in the estimation of independent normal means. *Ann. Statist.* **8** 572–586.
- [27] BROWN, L. D., COHEN, A. and STRAWDERMAN, W. E. (1980). Complete classes for sequential tests of hypotheses. *Ann. Statist.* **8** 377–398.
- [28] BROWN, L. D. and DOSHI, B. T. (1980). Existence of optimal policies in stochastic dynamic programming. *Probab. Math. Statist. (Poland)* **1** 171–184.
- [29] BERK, R. H., BROWN, L. D. and COHEN, A. (1981). Properties of Bayes sequential tests. *Ann. Statist.* **9** 678–682.
- [30] BERK, R. H., BROWN, L. D. and COHEN, A. (1981). Bounded stopping times for a class of sequential Bayes tests. *Ann. Statist.* **9** 834–845.
- [31] BROWN, L. D., JOHNSTONE, I. M. and MacGibbon, K. B. (1981). Variation diminishing transformations: A direct approach to total positivity and its statistical applications. *J. Amer. Statist. Assoc.* **76** 824–833.
- [32] BROWN, L. D. and COHEN, A. (1981). Inadmissibility of large classes of sequential tests. *Ann. Statist.* **9** 1239–1247.
- [33] BROWN, L. D. (1981). A complete class theorem for statistical problems with finite sample spaces. *Ann. Statist.* **9** 1289–1300.
- [34] BROWN, L. D. and HWANG, J. T. G. (1982). A unified admissibility proof. In *Proc. Third Purdue Symp.* 205–288.
- [35] BROWN, L. D. (1982). A proof of the central limit theorem motivated by the Cramer-Rao inequality, Essays in Honor of C. R. Rao, ed. by P. R. Krishnaiah 141–148.
- [36] IGHODARO, A., SANTNER, T. and BROWN, L. D. (1982). Admissibility and complete class results for the multinomial estimation problem with entropy and squared error loss. *J. Multivariate Anal.* **12** 469–479.
- [37] BROWN, L. D., COHEN, A. and SAMUEL-CAHN, E. (1983). A sharp necessary condition for admissibility of sequential tests – necessary and sufficient conditions for admissibility of SPRT’s. *Ann. Statist.* **11** 640–653.
- [38] BROWN, L. D. (1983). Comments on “the robust Bayesian viewpoint”, by James Berger. In *Robustness of Bayesian Analyses* (J. B. Kadane, ed.) 126–133. Elsevier.
- [39] BROWN, L. D. (1984). The research of Jack Kiefer outside the area of experimental design. *Ann. Statist.* **12** 406–415.
- [40] BROWN, L. D. and SACKROWITZ, H. (1984). An alternative to Student’s t-test for problems with indifference zones. *Ann. Statist.* **12** 451–469.
- [41] BROWN, L. D. (1984). A note on the Tukey-Kramer procedure for pairwise comparisons of correlated means. In *Design of Experiments* (T. J. Santner

- and A. C. Tamhane, eds.) 1–6. Marcel Dekker, Inc.
- [42] BROWN, L. D., RUYMGAART, F. H. and TRUAX, D. R. (1984). Hodges-Lehmann efficiencies for likelihood ratio type tests in curved bivariate normal families. *Statist. Nearlandica* **38** 21–35.
- [43] BROWN, L. D. and FARRELL, R. H. (1985). All admissible linear estimators of a multivariate Poisson mean vector. *Ann. Statist.* **13** 282–294.
- [44] BROWN, L. D. and FARRELL, R. H. (1985). Complete class theorems for estimation of multivariate Poisson means and related problems. *Ann. Statist.* **13** 706–726.
- [45] BROWN, L. D., OLKIN, I., SACKS, J. and WYNN, H. P. (1985). *Jack Carl Kiefer Collected Papers*, 3 vols. Springer-Verlag, New York.
- [46] ADLER, R. J. and BROWN, L. D. (1986). Tail behaviour for suprema of empirical processes. *Ann. Probab.* **14** 1–30.
- [47] BROWN, L. D. and HWANG, J. T. G. (1986). Some limitations on Stein's phenomenon. *Comm. Statist.* **15** 2025–2043.
- [48] BROWN, L. D., OLKIN, I., SACKS, J. and WYNN, H. P. (1986). *Jack Carl Kiefer Collected Papers Supplementary Volume*. Springer, New York.
- [49] BROWN, L. D. (1986). Commentary on paper [19] (Invariance, sequential estimation and continuous time processes). In *J. C. Kiefer Coll. Papers, Supp. Vol.* Springer, New York.
- [50] BROWN, L. D. (1986). *Fundamentals of Statistical Exponential Families with Applications in Statistical Decision Theory*. IMS, Hayward, CA.
- [51] BROWN, L. D. (1988). The differential inequality of a statistical estimation problem. In *Statist. Dec. Thry. and Rel. Topics, IV*, Vol. 1 (S. S. Gupta and J. O. Berger, eds.) 299–323.
- [52] BROWN, L. D. and FARRELL, R. H. (1988). Proof of a necessary and sufficient condition for admissibility in discrete multivariate problems. *J. Multivariate Anal.* **24** 46–52.
- [53] BROWN, L. D. and RINOTT, Y. (1988). Inequalities for multivariate infinitely divisible processes. *Ann. Probab.* **16** 642–657.
- [54] BROWN, L. D. (1988). Review of asymptotic methods in statistical decision theory by L. Le Cam. *J. Amer. Statist. Assoc.* **83** 564–565.
- [55] BROWN, L. D. (1988). Admissibility in discrete and continuous invariant non-parametric estimation problems and their multinomial analogs. *Ann. Statist.* **16** 1567–1593.
- [56] BROWN, L. D. and HWANG, J. T. G. (1989). Universal domination and stochastic domination: U-admissibility and U-inadmissibility of the least squares estimator. *Ann. Statist.* **17** 252–267.
- [57] BROWN, L. D. and MARDEN, J. I. (1989). Complete class results for hypothesis testing problems with simple null hypotheses. *Ann. Statist.* **17** 209–235.
- [58] BROWN, L. D., COHEN, A. and STRAWDERMAN, W. E. (1989). Correction to “Complete classes for sequential tests of hypotheses”. *Ann. Statist.* **17** 1414–1416.
- [59] FELDMAN, I. and BROWN, L. D. (1989). The minimax risk for estimating a bounded normal mean. Technical report, Cornell Statistics Center.
- [60] ADLER, R. J., BROWN, L. D. and LU, K.-L. (1990). Tests and confidence bands for bivariate cumulative distribution functions. *Comm. Statist. (Simul. and Comput.)* **19** 25–36.
- [61] BROWN, L. D. (1990). Comment on “Developments in Decision-Theoretic Variance Estimation” by J. M. Maatta and G. Casella. *Statist. Sci.* **5** 103–106.

- [62] BROWN, L. D. (1990). An ancillarity paradox which appears in multiple linear regression (with discussion). *Ann. Statist.* **18** 471–538.
- [63] BROWN, L. D. and GAJEK, L. (1990). Information inequalities for the Bayes. *Ann. Statist.* **18** 1578–1594.
- [64] BROWN, L. D. and FARRELL, R. H. (1990). A lower bound for the risk in estimating the value of a probability density. *J. Amer. Statist. Assoc.* **85** 1147–1154.
- [65] BROWN, L. D. and HWANG, J. T. G. (1990). Admissibility of confidence estimators, Technical report, Cornell Statistics Center.
- [66] ALDER, R. J., BROWN, L. D. and LU, K.-L. (1990). Tables for tests and confidence bands for bivariate cumulative distribution functions, Technical report, Cornell Statistics Center.
- [67] BROWN, L. D. (1990). Comment on “Developments in decision theoretic variance estimation”. *Statist. Sci.* **5** 103–106.
- [68] BROWN, L. D. and LOW, M. G. (1991). Information inequality bounds on the minimax risk (with an application to nonparametric regression). *Ann. Statist.* **19** 329–337.
- [69] HWANG, J. T. G. and BROWN, L. D. (1991). Estimated confidence under the validity constraint. *Ann. Statist.* **19** 1964–1977.
- [70] BROWN, L. D. and GREENSHTEIN, E. (1992). Two sided sequential tests, *Ann. Statist.* **20** 545–554.
- [71] BROWN, L. D., CHOW, M. and FONG, D. K. H. (1992). On the admissibility of the maximum likelihood estimator of the binomial variance. *Canad. J. Statist.* **20** 353–358.
- [72] BROWN, L. D. and MARDEN, J. I. (1992). Local admissibility and local unbiasedness in hypothesis testing problems. *Ann. Statist.* **20** 832–852.
- [73] LIU, R. C. and BROWN, L. D. (1993). Non-existence of informative unbiased estimators in singular problems. *Ann. Statist.* **21** 1–13.
- [74] BROWN, L. D. and LIU, R. C. (1993). The asymptotic risk in a signal parameter estimation problem. *IEEE Trans. on Inf. Thry.* **39** 254–257.
- [75] BROWN, L. D. and LIU, R. C. (1993). Bounds on the Bayes and minimax risk for signal parameter estimation. *IEEE Trans. on Inf. Thry.* **39** 1386–1394.
- [76] BROWN, L. D. and HWANG, J. T. G. (1993). How to approximate a histogram by a normal density. *Amer. Statist.* **47** 251–256.
- [77] BROWN, L. D. (1993). An information inequality for the Bayes risk under truncated squared error loss. In *Multivariate Analysis: Future Directions* (C. R. Rao, ed.) 85–94. Elsevier Science, Amsterdam.
- [78] BROWN, L. D. (1993). Minimaxity, more or less. In *Statistical Decision Theory and Related Topics V* 1–18. Springer, New York.
- [79] BERGER, J. O., BROWN, L. D. and WOLPERT, R. L. (1994). A unified conditional frequentist and Bayesian test for fixed and sequential simple hypothesis testing. *Ann. Statist.* **22** 1787–1807.
- [80] BROWN, L. D., D'AMATO, R. and GERTNER, R. (1994). Racetrack betting: Do bettors understand the odds? *Chance* **7** 17–23.
- [81] BROWN, L. D. and COHEN, A. (1995). Complete classes for confidence set estimation. *Statist. Sinica* **5** 291–302.
- [82] BROWN, L. D., CASELLA, G. and HWANG, J. T. G. (1995). Optimal confidence sets, bioequivalence, and the limacon of Pascal. *J. Amer. Statist. Assoc.* **90** 880–889.
- [83] BROWN, L. D. and LOW, M. G. (1996). Asymptotic equivalence of nonparametric regression and white noise. *Ann. Statist.* **24** 2384–2398.

- [84] BROWN, L. D. and LOW, M. G. (1996). A constrained risk inequality with applications to nonparametric function estimation. *Ann. Statist.* **24** 2524–2535.
- [85] TSENG, Y. L. and BROWN, L. D. (1997). Good exact confidence sets for a multivariate normal mean. *Ann. Statist.* **25** 2228–2258.
- [86] BROWN, L. D., HWANG, J. T. G. and MUNK, A. (1997). An unbiased test for the bioequivalence problem. *Ann. Statist.* **25** 2345–2367.
- [87] BROWN, L. D., LOW, M. G. and ZHAO, L. H. (1997). Superefficiency in nonparametric function estimation. *Ann. Statist.* **25** 2607–2625.
- [88] BROWN, L. D. (1998). Minimax theory, entry. In *Encyclopedia of Biostatistics* (P. Armitage and T. Colton, eds.).
- [89] BROWN, L. D. and ZHANG, C.-H. (1998). Asymptotic non-equivalence of nonparametric experiments when the smoothness index is. *Ann. Statist.* **26** 279–287.
- [90] CAI, T. and BROWN, L. D. (1998). Wavelet shrinkage for nonequispaced samples. *Ann. Statist.* **26** 1783–1799.
- [91] CAI, T. and BROWN, L. D. (1999). Wavelet estimation for samples with random uniform design. *Statist. Probab. Lett.* **42** 313–321.
- [92] BROWN, L. D., EATON, M. L., FREEDMAN, D. A., KLEIN, S. P., OLSHEN, R. A., WACHTER, K. W., WELLS, M. T. and YLVISAKER, D. (1999). Statistical controversies in census 2000. *Jurimetrics* **39** 347–376.
- [93] BROWN, L. D. (2000). An essay on statistical decision theory. *J. Amer. Statist. Assoc.* **95** 1277–1282.
- [94] MUNK, A., HWANG, J. T. and BROWN, L. D. (2000). Testing average equivalence-finding a compromise between theory and practice. *Biometrical J.* **5** 531–552.
- [95] BROWN, L. D. and WONG, W.-K. (2000). An algorithmic construction of optimal minimax designs for heteroscedastic regression models. *J. Statist. Plan. Inference* **85** 103–114.
- [96] BROWN, L. D., CAI, T. and DASGUPTA, A. (2001). Interval estimation for a binomial proportion. *Statist. Sci.* **16** 101–133 (with discussion).
- [97] BROWN, L. D. (2001). Decision theory, classical. In *International Encyclopedia of the Social and Behavioral Sciences* (P. B. Baltes and N. J. Smelser, eds.).
- [98] BROWN, L. D., CAI, T. and DASGUPTA, A. (2002). Confidence intervals for binomial proportions and asymptotic expansions. *Ann. Statist.* **30** 160–201.
- [99] BROWN, L. D., CAI, T., LOW, M. G. and ZHANG, C.-H. (2002). Asymptotic equivalence theory for nonparametric regression with random design. *Ann. Statist.* **30** 688–707.
- [100] BROWN, L. D. and ZHAO, L. H. (2002). A new test for the Poisson distribution. *Sankhya Ser. A* **64** 611–625.
- [101] BROWN, L. D. and LIN, Y. (2002). Discussion of “random rates in anisotropic regression” by Hoffman and Lepski. *Ann. Statist.* **30** 363–369.
- [102] BROWN, L. D., CAI, T. and DASGUPTA, A. (2003). Interval estimation in exponential families. *Statist. Sinica* **13** 19–50.
- [103] BROWN, L. D., WANG, Y. and ZHAO, L. H. (2003). Statistical equivalence at suitable frequencies of GARCH and stochastic volatility models with the corresponding diffusion model. *Statist. Sinica* **13** 993–1015.
- [104] BROWN, L. D., MANDELBAUM, A., SAKOV, A., SHEN, H., ZELTYN, S. and ZHAO, L. H. (2003). Multifactor Poisson and Gamma-Poisson models for call center arrival times, Technical report.
- [105] BROWN, L. D. and LIN, Y. (2003). Racetrack betting and consensus of sub-

- jective probabilities. *Statist. Probab. Lett.* **62** 175–187.
- [106] BROWN, L. D. and ZHAO, L. H. (2003). Direct asymptotic equivalence of nonparametric regression and the infinite-dimensional location problem. Preprint. Available at <http://wharton.upenn.edu/lzhao/>.
- [107] BROWN, L. D. (2003). The analogy between statistical equivalence and stochastic strong limit theorems. Preprint. Available at <http://wharton.upenn.edu/lbrown/>.
- [108] LIN, Y. and BROWN, L. D. (2004). Statistical properties of the method of regularization with the periodic Gaussian reproducing kernel. *Ann. Statist.* **32** 1723–1743.
- [109] BROWN, L. D., CARTER, A. V., LOW, M. G. and ZHANG, C.-H. (2004). Equivalence theory for density estimation, Poisson processes and Gaussian white noise with drift. *Ann. Statist.* **32** 2074–2097.
- [110] BROWN, L. D., DASGUPTA, A., MARDEN, J. and POLITIS, D. (2004). Characterizations, sub and resampling and goodness of fit. In *A Festschrift for Herman Rubin. Lecture Notes and Monographs* **45** 180–206. IMS.
- [111] BROWN, L. D., GANS, N., MANDELBAUM, A., SAKOV, A., SHEN, H., ZELTYN, S. and ZHAO, L. H. (2005). Statistical analysis of a telephone call center: A queueing science perspective. *J. Amer. Statist. Assoc.* **100** 36–50.
- [112] BROWN, L. D., PLEWES, T. J. and GERSTEIN, M. A. (2005). *Measuring Research and Development in the United States Economy*. National Academies Press (paperback, 194 pages).
- [113] BROWN, L. D. and LI, X. (2005). Confidence intervals for the two sample binomial distribution problem. *J. Statist. Plann. Inference* **130** 359–375.
- [114] BROWN, L. D., CAI, T. and DASGUPTA, A. (2005). Discussion of “Fuzzy and randomized confidence intervals and P-values”, by Geyer and Meeden. *Statist. Sci.* **20** 375–379.
- [115] BROWN, L. D., DASGUPTA, A., HAFF, L. R. and STRAWDERMAN, W. E. (2006). The heat equation and Stein’s identity: connections and applications. *J. Statist. Plann. Inference* **136** 2254–2278.
- [116] SHEN, H., BROWN, L. D. and ZHI, H. (2006). Efficient estimation of log-normal means and its application to pharmacokinetic data. *Statist. Med.* **25** 3023–3038.
- [117] SHEN, H. and BROWN, L. D. (2006). Nonparametric modeling of time varying customer service times at a bank call center. *Appl. Stoch. Models Bus. Ind.* **22** 297–311.
- [118] WEINBERG, J., BROWN, L. D. and STROUD, J. R. (2007). Bayesian forecasting of an inhomogeneous Poisson process, with applications to call center data. *J. Amer. Statist. Assoc.* **102** 1185–1198.
- [119] BROWN, L. D. and LEVINE, M. (2007). Variance estimation in nonparametric regression via the difference sequence method. *Ann. Statist.* **35** 2219–2232.
- [120] BROWN, L. D. and ZHAO, Z. (2008). Alternative formulas for synthetic dual estimation in the 2000 census. *Probability and Statistics Essays in Honor of David A. Freedman* **2** 90–113.
- [121] WANG, L., BROWN, L. D., CAI, T. and LEVINE, M. (2008). Effect of mean on variance function estimation in nonparametric regression. *Ann. Statist.* **36** 646–664.
- [122] BROWN, L. D. (2008). In-season prediction of batting averages: A field test of empirical Bayes and hierarchical Bayes methodologies. *Ann. Appl. Statist.* **2** 113–152.
- [123] BROWN, L. D., GEORGE, E. and XU, X. (2008). Admissible predictive density

- estimation. *Ann. Statist.* **36** 1156–1171.
- [124] BROWN, L. D., CAI, T. and ZHOU, H. (2008). Robust nonparametric estimation via wavelet median regression. *Ann. Statist.* **36** 2055–2084.
- [125] WANG, L., BROWN, L. D. and CAI, T. (2008). A difference based approach to the semiparametric partial linear model. Preprint.
- [126] BROWN, L. D. (2008). A unified view of regression, shrinkage, empirical Bayes, hierarchical Bayes, and random effects. In Gather, U., Hall, P. and Kunsch, H.-R. *Reassessing the Paradigms of Statistical Model Building*. Mathematisches Forschungsinstitut Oberwohlfach, Report No. 50/2007, 2954–2956.
- [127] BERK, R., BROWN, L. D. and ZHAO, L. (2009). Statistical inference after model selection. *Journal of Quantitative Criminology*. Published online, Oct 2009.
- [128] NAGARAJA, C., BROWN, L. D. and ZHAO, L. (2009). House price models. *Ann. Appl. Statist.* Submitted.
- [129] BROWN, L. D. and ZHAO, L. H. (2009). Estimators for Gaussian models having a block-wise structure. *Statist. Sinica* **19** 885–903.
- [130] BROWN, L. D. and GREENSHTEIN, E. (2009). Nonparametric empirical Bayes and compound decision approaches to estimation of a high dimensional vector of normal means. *Ann. Statist.* **37** 1685–1704.
- [131] BROWN, L. D., CAI, T. and ZHOU, H. (2010). Nonparametric regression in exponential families. *Ann. Statist.* **38** 2005–2046.
- [132] BROWN, L. D., CAI, T., ZHANG, R., ZHAO, L. and ZHOU, H. (2010). The root-unroot algorithm for density estimation as implemented via wavelet block thresholding. *Probab. Related Fields* **146** 401–433.
- [133] BROWN, L. D., FU, X. and ZHAO, L. (2010). Confidence intervals for nonparametric regression. *J. Nonparametric Anal.* To appear.