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MEDIAN ESTIMATORS FOR REGRESSION MODELS - THE BROWN-MOOD APPROACH

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Recent work on robust estimation of a location parameter has led to generalizations of the sample median which are suitable for estimating the parameters of linear regression models. As our basic approach to the problem of defining median estimators in regression, we have chosen a much older intuitive method of estimation, namely Brown-Mood estimation.

Chapter 1 introduces the basic Brown-Mood approach for simple linear regression, and shows what modifications are required for the estimators to have asymptotic efficiency properties analogous to those of more recent median regression estimators proposed in the literature. Chapter 1 also gives an algorithm for computing the estimates exactly.

Chapter 2 contains generalizations of the results of Chapter 1 to multiple regression models. Chapter 2 also contains an iterative form of the estimators, and discussion on the relationship of our methods to other median regression estimators already in the literature.

Chapter 3 introduces a class of short-cut Hodges-Lehmann type estimators for the slope parameter in simple linear regression. These can be used as robust preliminary estimators for the iterative versions of our estimators found in Chapter 2.

Chapter 4 then illustrates the methods of the first three chapters. The performance of some of our estimators is compared with the performance of least squares estimators on some artificially contaminated scientific data.

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