

STATISTICAL INFERENCE IN THE NON-PARAMETRIC CASE¹

BY HENRY SCHEFFÉ

Princeton University

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1. Introduction. In most of the problems of statistical inference for which we possess solutions the distribution function is assumed to depend in a known way on certain parameters. The values of the parameters are unknown, and the problems are to make inferences about the unknown parameter values. We refer to this as the parametric case. Under it falls all the theory based on normality assumptions.

Only a very small fraction of the extensive literature of mathematical statistics is devoted to the non-parametric case, and most of this is of the last decade. We may expect this branch to be rapidly explored however: The prospects of a theory freed from specific assumptions about the form of the population distribution should excite both the theoretician and the practitioner, since such a theory might combine elegance of structure with wide applicability. The process of development will no doubt inspire some mathematical attacks of considerable abstractness. There are already signs that more number-theoretic problems and measure-theoretic problems will enter our subject through this door, and perhaps even some topological ones. Some ability to think in terms of

¹ Parts of this paper were used in an invited address given under the title "Statistical inference when the form of the distribution function is unknown" before the meeting of the Institute of Mathematical Statistics on September 12, 1943 in New Brunswick, N. J.