

## SOME ASPECTS OF CHANGE-POINT ANALYSIS

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Change-points divide statistical models into homogeneous segments. Inference about change-points is discussed here in the context of testing the hypothesis of ‘no change’, point and interval estimation of a change-point, changes in non-parametric models, changes in regression, and detection of change in distribution of sequentially observed data.

**1. Introduction.** Suppose that in a linear array of independent observations  $Y_1, \dots, Y_n$ , the distribution is subject to change after  $Y_\tau$  for some  $1 \leq \tau \leq n - 1$ . Detection and estimation of change-points which in this way divide statistical models into homogeneous segments is a fast-developing area of research in statistical theory and methods. We shall present here a brief account of some of the areas of change-point analysis.

The most basic problems are those of testing the hypothesis of “no change,” and of estimating a change-point by a point estimator or a confidence set when the presence of one is suspected. In Sections 2–4, we shall discuss these problems and some nonparametric methods will be presented in Section 5. Change-point problems also occur in the context of regression when the nature of dependence of one variate on another may be different in two segments of the data, and in situations where the observations are obtained sequentially with the possibility of a change in distribution at any stage. Methods in these two areas will be discussed in Sections 6 and 7.

In presenting these accounts, our aim is to concentrate on the main issues rather than provide a comprehensive review of the available literature. There is an annotated bibliography compiled by Shaban (1980) and a survey article by Zacks (1983) where references to many of the early works on change-point analysis may be found. Our references will be mostly limited to the sources

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