



COMBINED INFERENCE OF LABORATORY AND FIELD DATA WITH APPLICATION TO WARRANTY PREDICTION

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Abstract: Warranty policy is a useful tool for manufacturers to attract customers and to compete with other companies. In this study, we propose a hierarchical failure model to incorporate all failure information from multiple products, under which the empirical Bayes inference is applied for parameter estimation. Because of using the information from similar products, the proposed method is generally more efficient in characterizing the laboratory reliability for each individual product, especially under the scenarios of few or even no testing failures. Furthermore, demonstrated by a real case study, this empirical Bayes approach provides better connections between laboratory and field reliability, leading to an improvement on prediction for the field return rates.

Keywords: field failure rate prediction; go/no-go laboratory data; empirical Bayes inference.