

## Confidence, Likelihood, Probability

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Rather than merely presenting say a 95% confidence interval for a statistical parameter of interest, one may form the collection of such intervals for all levels of confidence. This may then be transformed to a *confidence distribution*. We discuss various issues and merits associated with such constructions, and also reach certain optimality theorems. Links between confidence distributions and likelihoods for focus parameters are also outlined, leading to optimal combinations of confidence from different sources of information. The use of our methodology is illustrated for problems involving optimal inference for collections of contingency tables and for a macro-econometric model for pre-war US government spending used by C. Sims in his Nobel Prize acceptance lecture. We reach however conclusions rather different from his. The work presented here is contained in the authors' recent research monograph *Confidence, Likelihood, Probability*.

**Key Words:** confidence distributions, confidence likelihood, econometric models, focused inference, meta analysis, optimal inference