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Bayesian Foundations of Insurance

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The foundation of insurance in the frequentist framework is well-understood by experts in actuarial science, insurance and risk management. In the past two decades there has been a surge in the application of Bayesian analysis in insurance. However, the foundation of insurance under the Bayesian framework remains unexplored. This paper fills the gap by investigating the foundation of insurance in the Bayesian setup. We demonstrate that the foundation of insurance in the Bayesian world corresponds to the consistency of the posterior distribution at the true parameter value. We discuss several key results of posterior consistency and give insurance examples in both parametric and nonparametric cases to illustrate their applications.