

Statistics and Data Science Seminar

Stat Wars Episode VI: Return of the Fiducialist

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Abstract: Priors are the path to the dark side. Fisher developed the Fiducial argument to obtain prior free "posterior" inferences but at the seeming cost of violating basic probability laws. Was Fisher crazy or did madness mask innovation? Fiducial calculations can be easily understood through the missing-data perspective which illuminates for us that the Fiducial "posterior" is in fact a prior updated not with the full data likelihood, but a *partial* likelihood in the spirit of Cox regression. Just as Cox regression arose from a need to render inferences robust to an unknown hazard function, so Fiducial inferences are insensitive to the prior. While Statistics has fixated two extremes—fully conditional (but fragile) Bayesian inferences or unconditional (but robust) Frequentist inferences—a compromise via partial conditioning has gone ignored. Surely, the middle ground is more fiducial than either extreme.

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