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*Statistics for smart people who don't know anything about statistics.*

This is an expository talk about modern mathematical statistics aimed at a mathematical audience whose eyes begin to glaze over when someone says “random variable” (that’s most of you). I’ll explain how Gauss invented least squares to find Ceres, how the Stein paradox shows how to improve on Gauss, and how it has changed the JPEG standards. All of this can be put in a rigorous framework, with nice connections to both analysis and group theory and approximation theory. (Received July 06, 2006)