



## Why

We model a real-valued output as corrupted by small random errors with a normal density. In other words, we make further distributional assumptions on the probabilistic errors linear model for the purposes of hypothesis testing and interval estimation.<sup>1</sup>

## Definition

Let  $(x, A, e)$  be a probabilistic errors model and assume  $e$  has a normal density with mean 0 and covariance  $\sigma^2 I$ . In this case we call  $(x, A, e)$  a *classical linear model with normality assumption*. In this case  $y$  is normally distributed with mean  $Ax$  and variance  $\sigma^2 I$ .

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<sup>1</sup>Future editions will define and need these sheets.



