credible intervals

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$$\mathrm{L},\ \mathrm{U} = \mathrm{pe} \pm \mathrm{se} * \mathrm{cv}$$

confidence intervals

95% confidence interval on the mean

"95% of similarly constructed intervals will contain the true mean"

~~"the probability that true mean lies between **L** and **U** is 0.95"~~

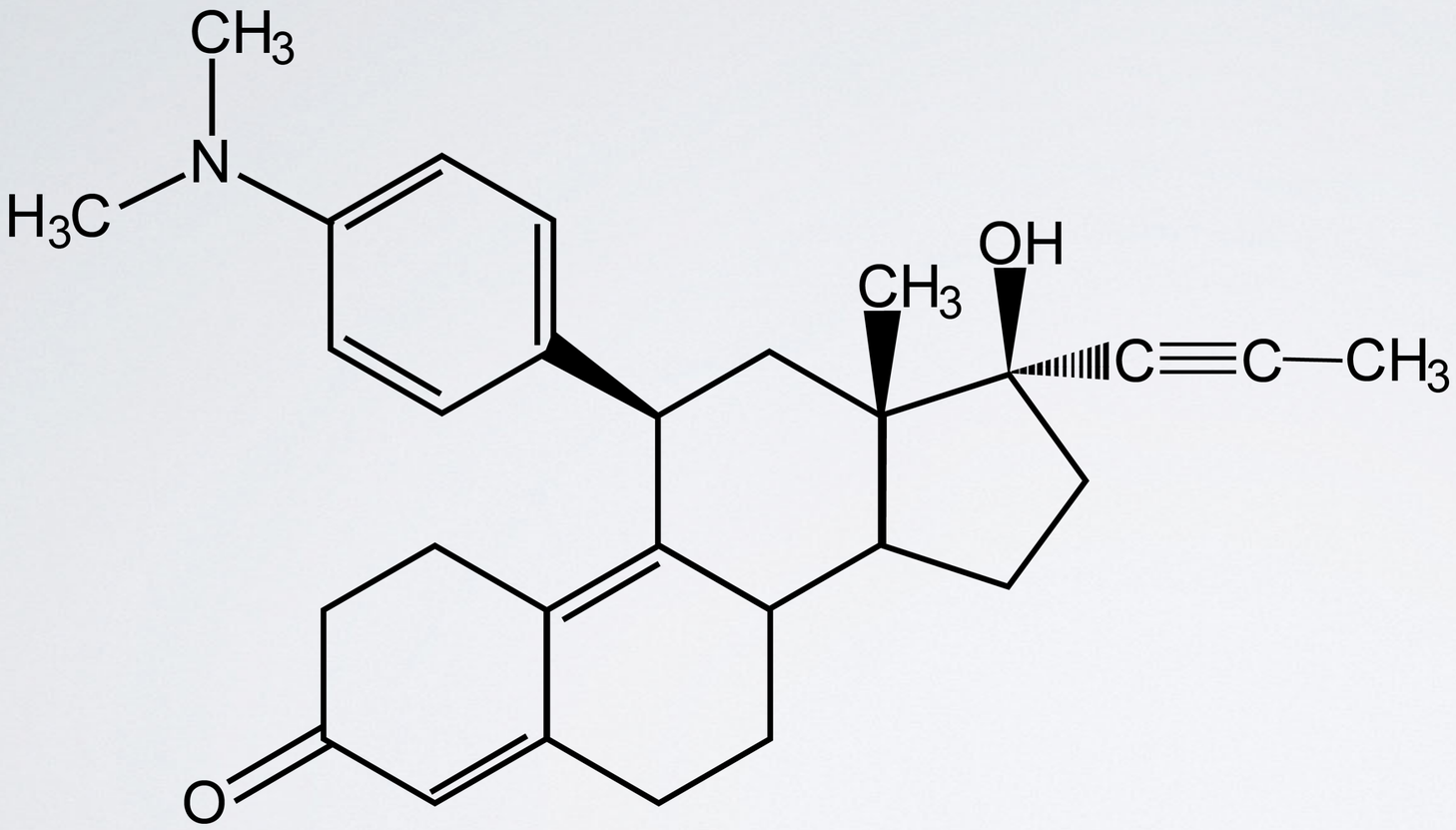
confidence intervals

"the probability the true mean is contained within a given interval is 0.95"

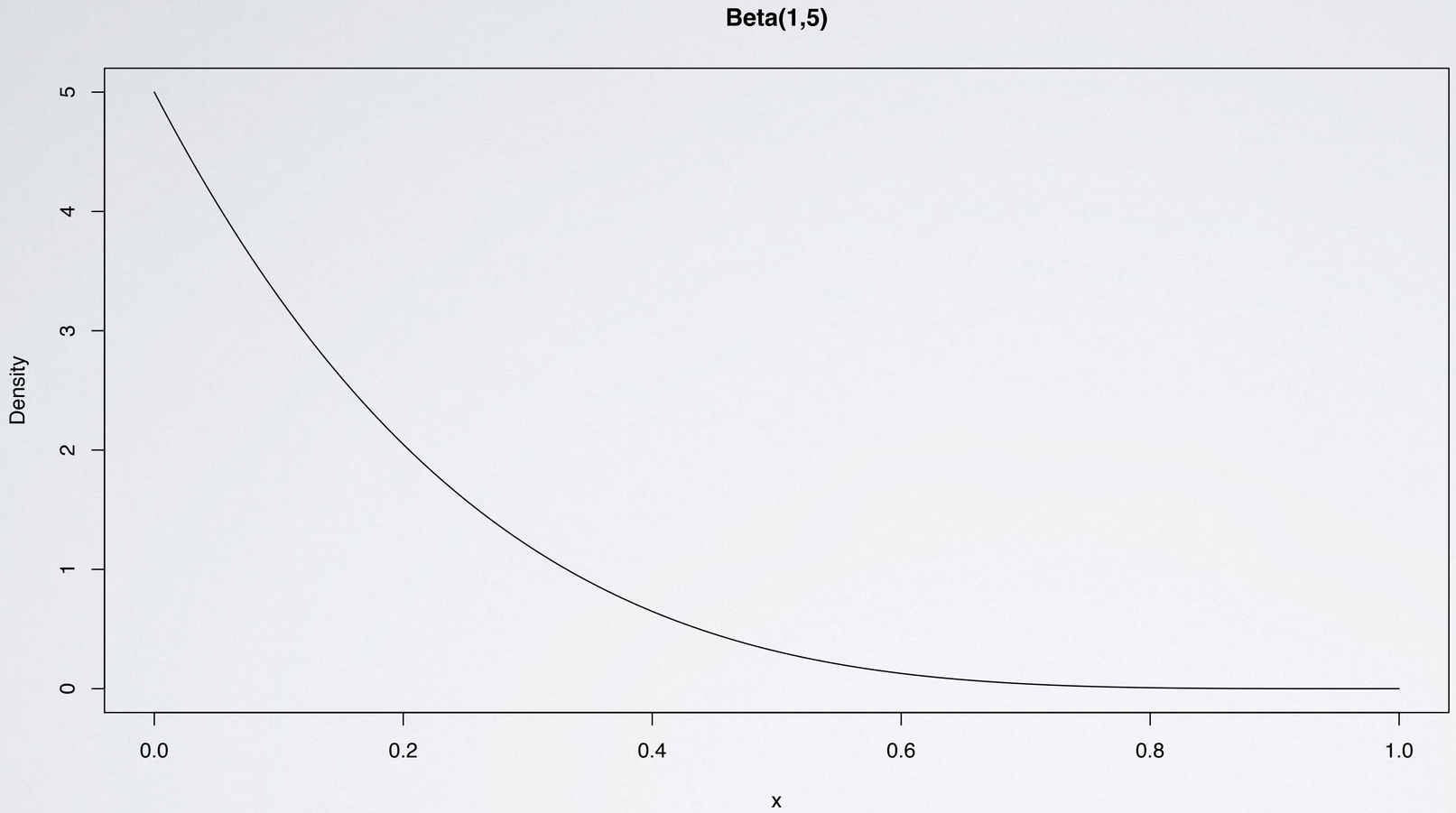
credible intervals

"the probability the true mean is contained within a given interval is 0.95"

RU-486 example



RU-486 posterior



RU-486 credible interval

95% credible interval is any L and U such that posterior probability is $L < p < U = 0.95$

the density of the beta(1,5) is

$f(p) = 5(1 - p)^4$ for $0 \leq p \leq 1$

and the area under the density between 0 and x is

$F(x) = 1 - (1 - x)^5$ for $0 \leq x \leq 1$

the Bayesian wants to find L and U such that $F(U) - F(L) = 0.95$

the answer

the shortest such interval has

$L = 0$ and $U = 0.45$

summary

- the difference in interpretations between **frequentist confidence intervals** and **Bayesian credible intervals**
- the **general form** of a credible interval
- an example for RU-486 of the construction of a Bayesian credible interval