

20.8: Appendix-

20.8.1 Rejection sampling

We will generate samples from our posterior distribution using a simple algorithm known as *rejection sampling*. The idea is that we choose a random value of x (in this case

Unexpected text node: '20.6 shows an example of a histogram of samples using rejection sampling, along with the 95% credible intervals obtained using this method.'

```
# Compute credible intervals for example

nsamples <- 100000

# create random uniform variates for x and y
x <- runif(nsamples)
y <- runif(nsamples)

# create f(x)
fx <- dbinom(x = nResponders, size = 100, prob = x)

# accept samples where y < f(x)
accept <- which(y < fx)
accepted_samples <- x[accept]

credible_interval <- quantile(x = accepted_samples,
0.0250.975                                probs = c(, ))
kable(credible_interval)
```

	x
2.5%	0.54
98%	0.73

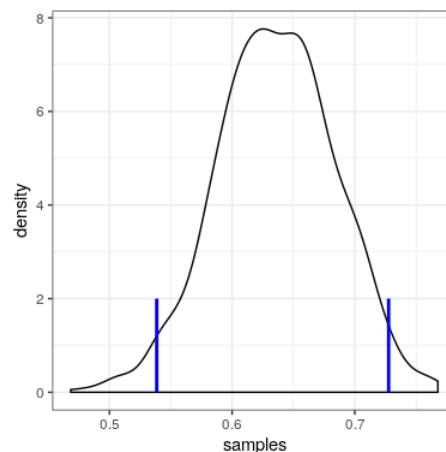


Figure 20.6: Rejection sampling example. The black line shows the density of all possible values of $p(\text{respond})$; the blue lines show the 2.5th and 97.5th percentiles of the distribution, which represent the 95 percent credible interval for the estimate of $p(\text{respond})$.

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