Statistical Rethinking Notes - Chapter 2

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Chapter 2

Notes on chapter 2.

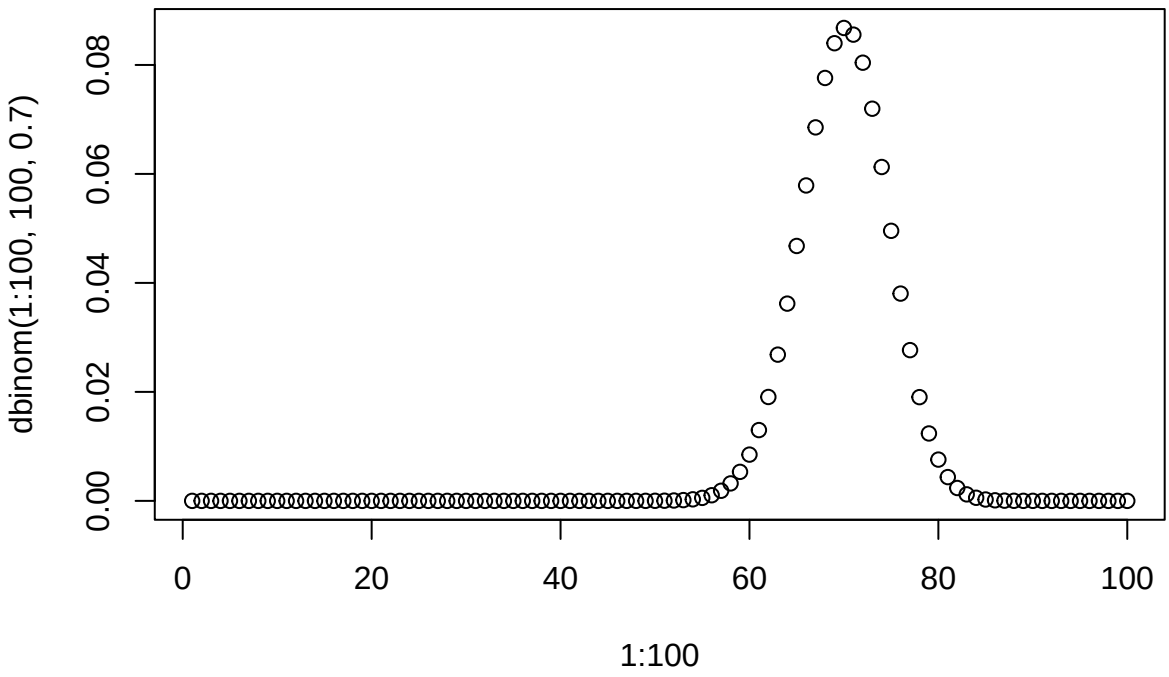
Bayesian data analysis: For each possible explanation of the data, Count all the ways the data can happen. Explanations with more ways to produce the data are more plausible.

$\Pr(W, L|p) = \frac{(W+L)!}{W!L!} p^W (1-p)^L$ where W is the number of water hits and L is the number of land hits.

```
dbinom(6, 9, 0.7)
```

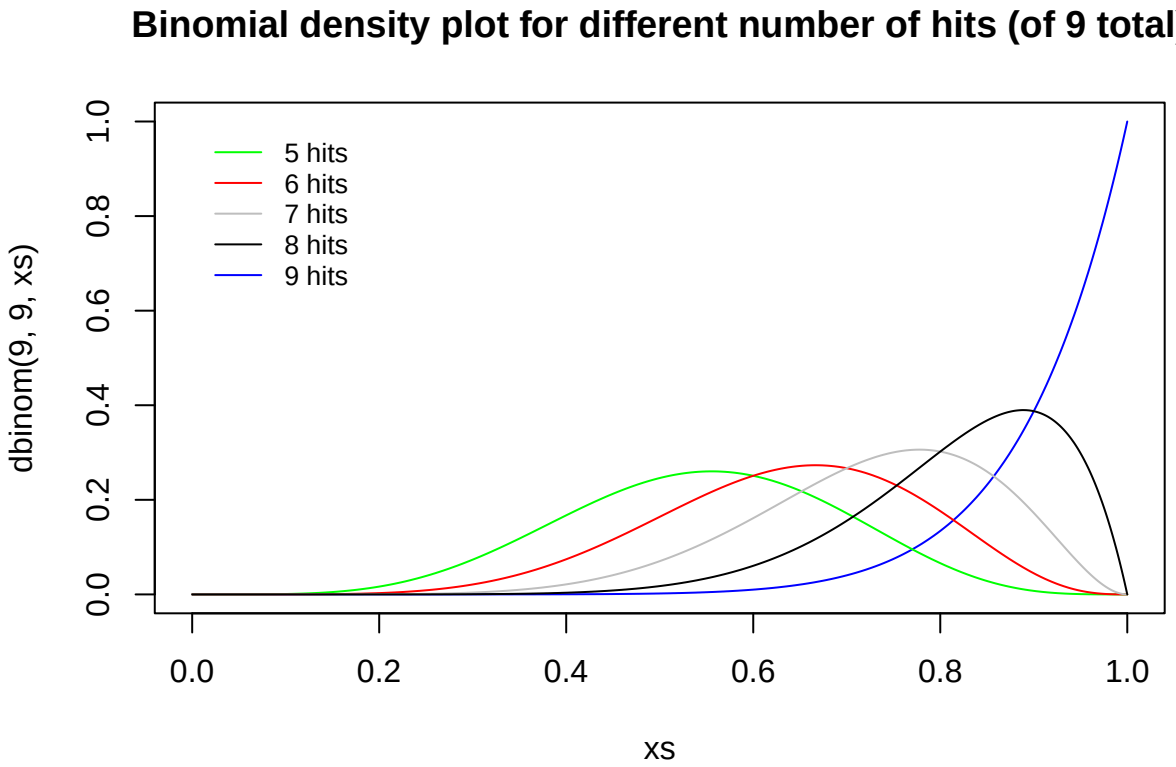
```
## [1] 0.2668279
```

```
plot(1:100, dbinom(1:100, 100, 0.7))
```




```
xs <- seq(0, 1, 0.001)
plot(xs, dbinom(9, 9, xs), type="l", col="blue",
     main="Binomial density plot for different number of hits (of 9 total)")
lines(xs, dbinom(5, 9, xs), col="green")
lines(xs, dbinom(6, 9, xs), col="red")
lines(xs, dbinom(7, 9, xs), col="gray")
lines(xs, dbinom(8, 9, xs), col="black")
legend(0, 1,
```

```
       legend=c("5 hits", "6 hits", "7 hits", "8 hits", "9 hits"),
       col=c("green", "red", "gray", "black", "blue"),
       lty=1, cex=0.8,
       box.lty=0)
```



Question 1: why is it okay to set the prior to 1 (rather than 1 / sum(prior))? (in the code example given in the lecture) (answer: because we will normalize after anyway, so it doesn't matter.)

Question 2: why is the evidence of a single W or L a line (and not some other shape)?