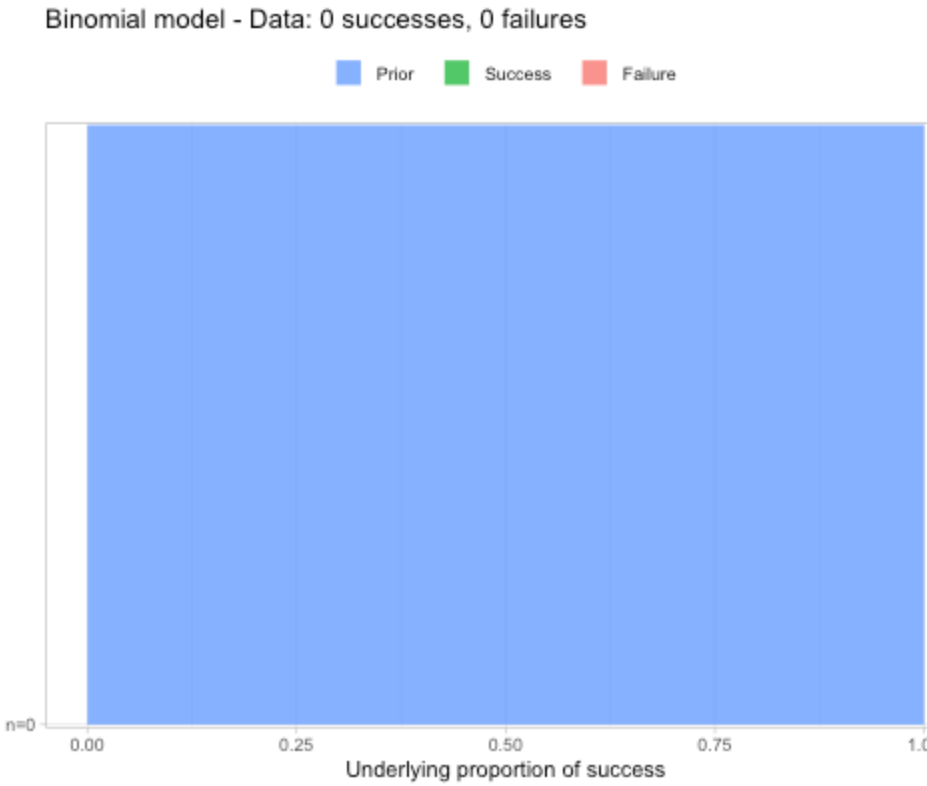
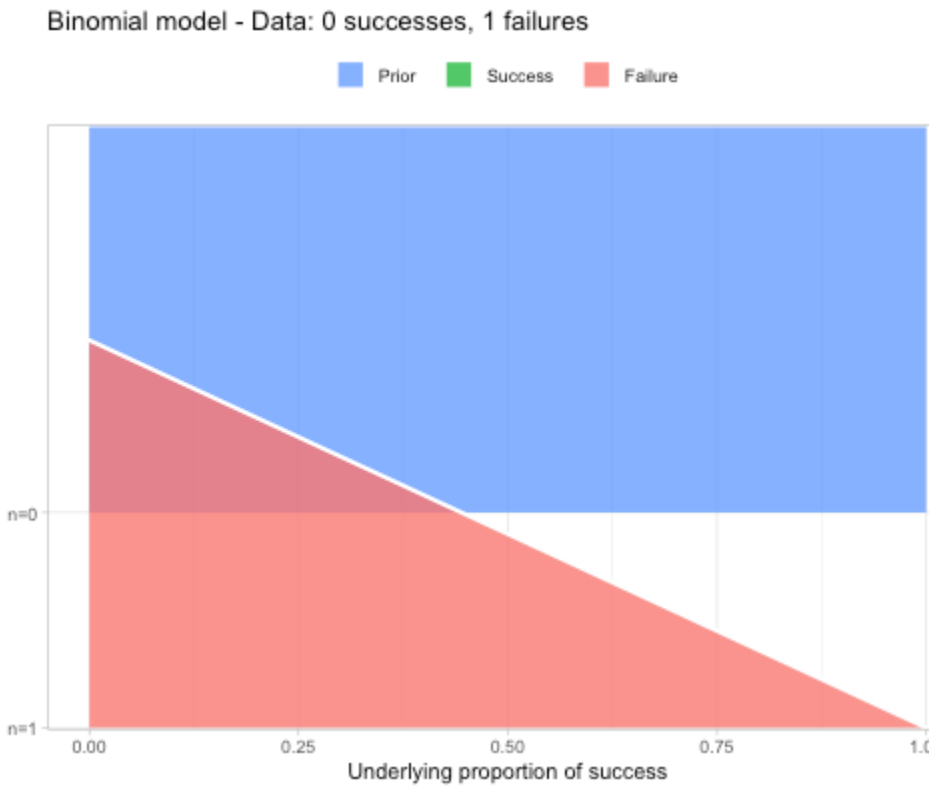
# Bayesian: Visualizing Priors and Posteriors

# The Beta-binomial

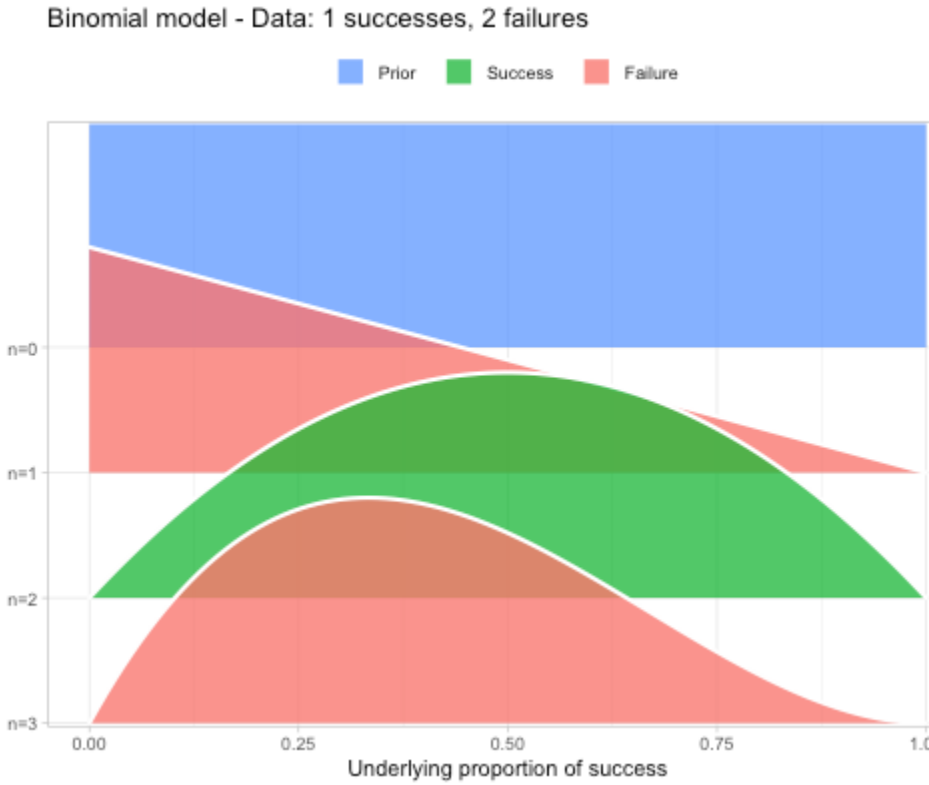
# No data


Binomial model - Data: 0 successes, 0 failures
Prior
Success
Failure
n=0
0.00
0.25
0.50
0.75
Underlying proportion of success

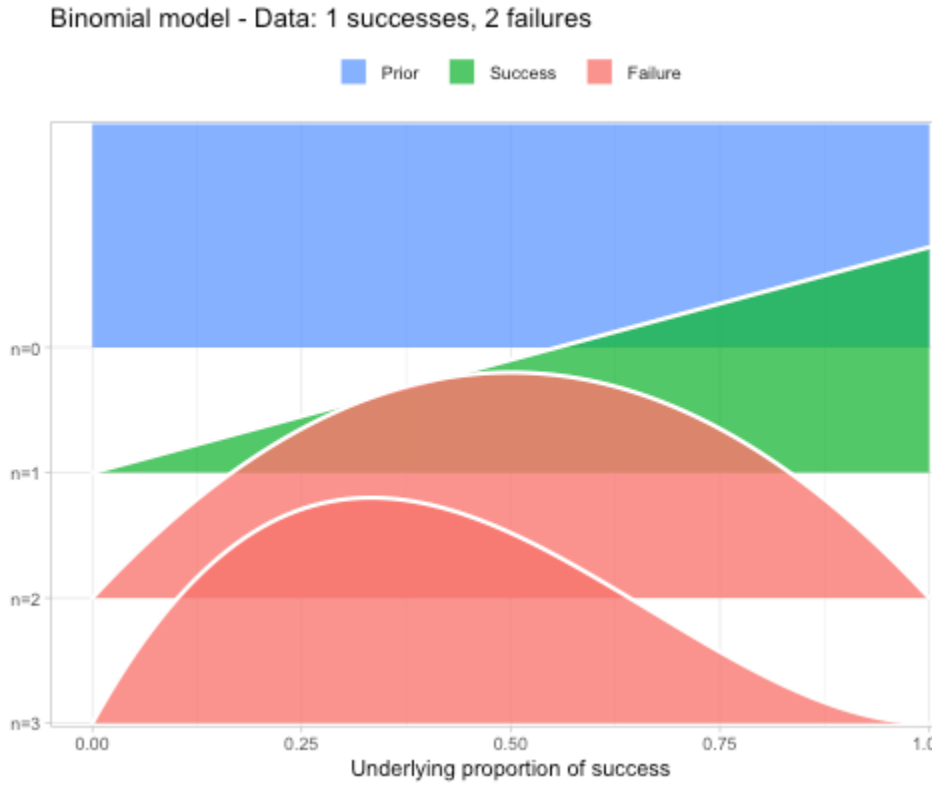
# One observation



# Three observations



# Three observations, reordered



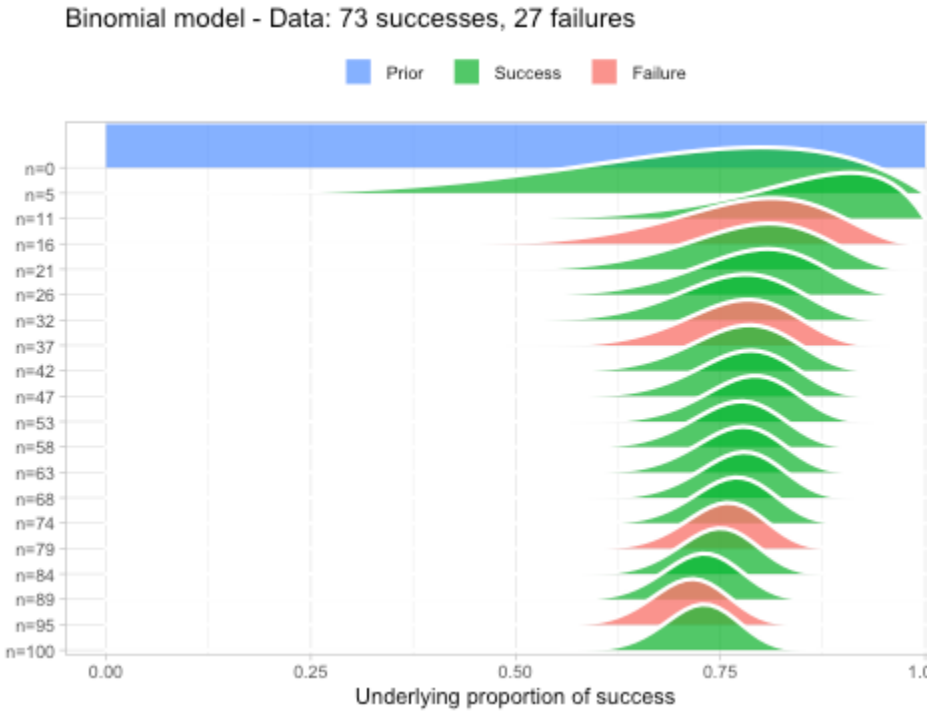
# Sequential observations

There are two ways of thinking about updating a prior:

1. In one lump, based on the full dataset $\mathbf{x}$.
2. As a sequence of $n$ individual updates to the prior.

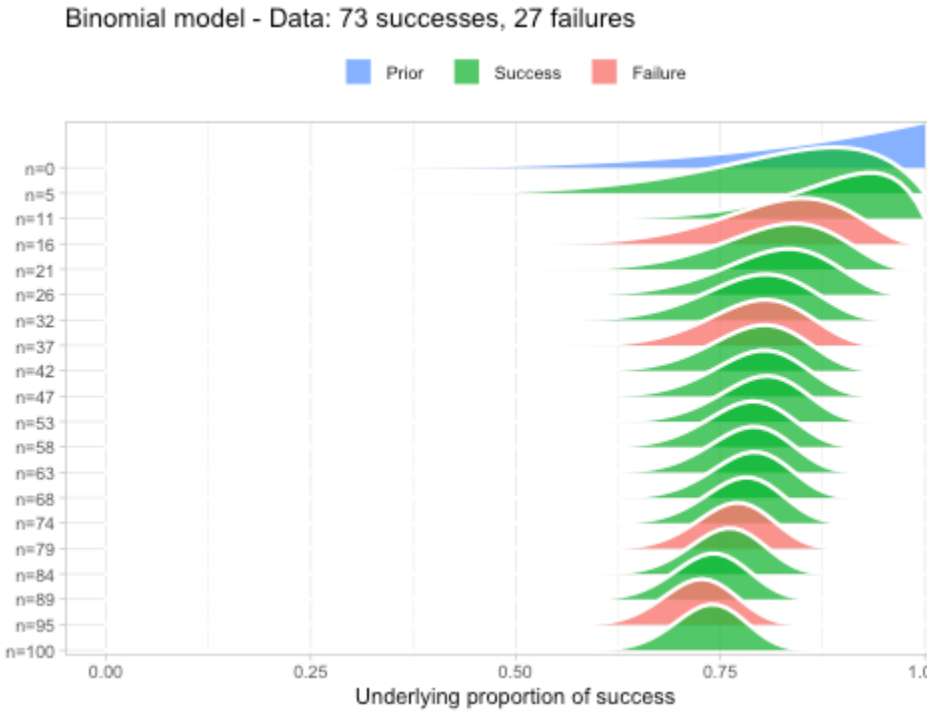
*The posterior will be the same by both methods.*

# 100 observations



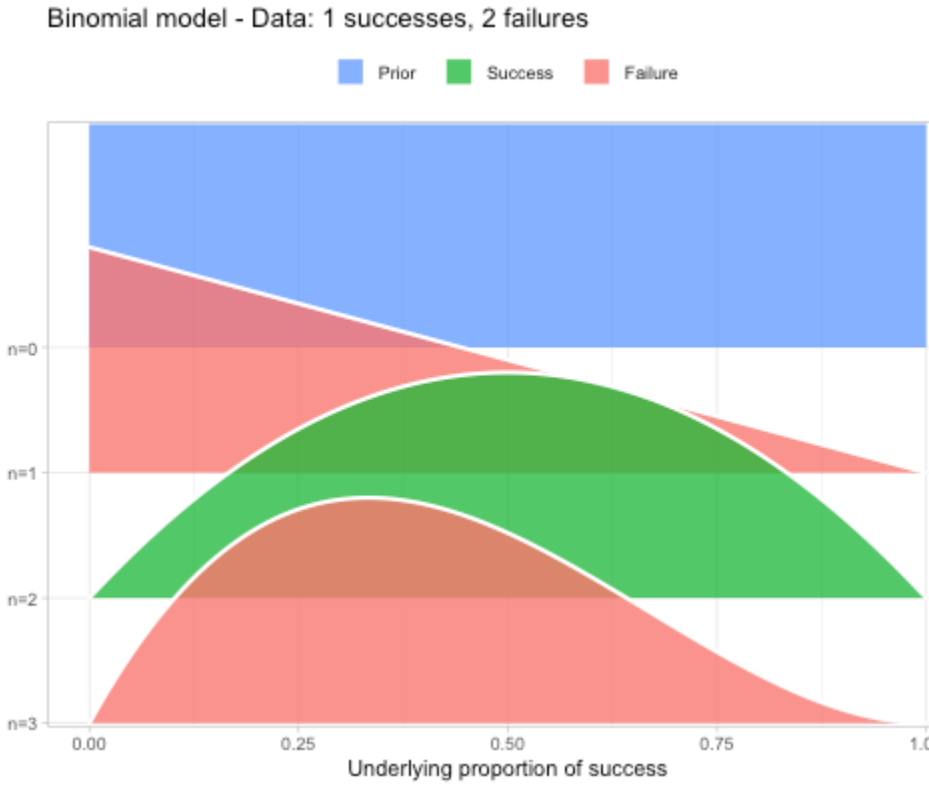

More data leads to less uncertainty around the parameter.

# A strong positive prior (p ~ .8, parameters: (5,1))

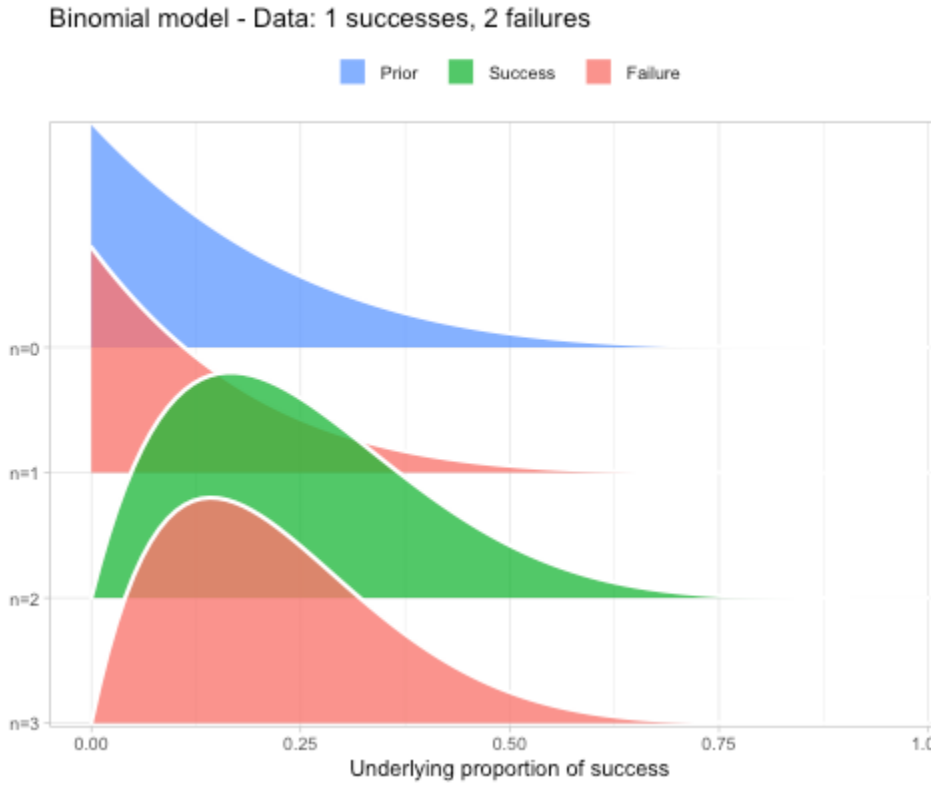


# A strong negative prior (p ~ .2 , parameters: (1,5))

# Back to three observations



# n = 3 with strong prior (p ~ .8)



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