

STA 6360, Report 2.2

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Re-doing Example 2.2.3

```
## Warning: There were 2 divergent transitions after warmup. See
## https://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup
## to find out why this is a problem and how to eliminate them.

## Warning: There were 1 chains where the estimated Bayesian Fraction of Missed
## https://mc-stan.org/misc/warnings.html#bfmi-low

## Warning: Examine the pairs() plot to diagnose sampling problems

## Warning: There were 3766 divergent transitions after warmup. See
## https://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup
## to find out why this is a problem and how to eliminate them.

## Warning: Examine the pairs() plot to diagnose sampling problems

## Warning: There were 7831 divergent transitions after warmup. See
## https://mc-stan.org/misc/warnings.html#divergent-transitions-after-warmup
## to find out why this is a problem and how to eliminate them.

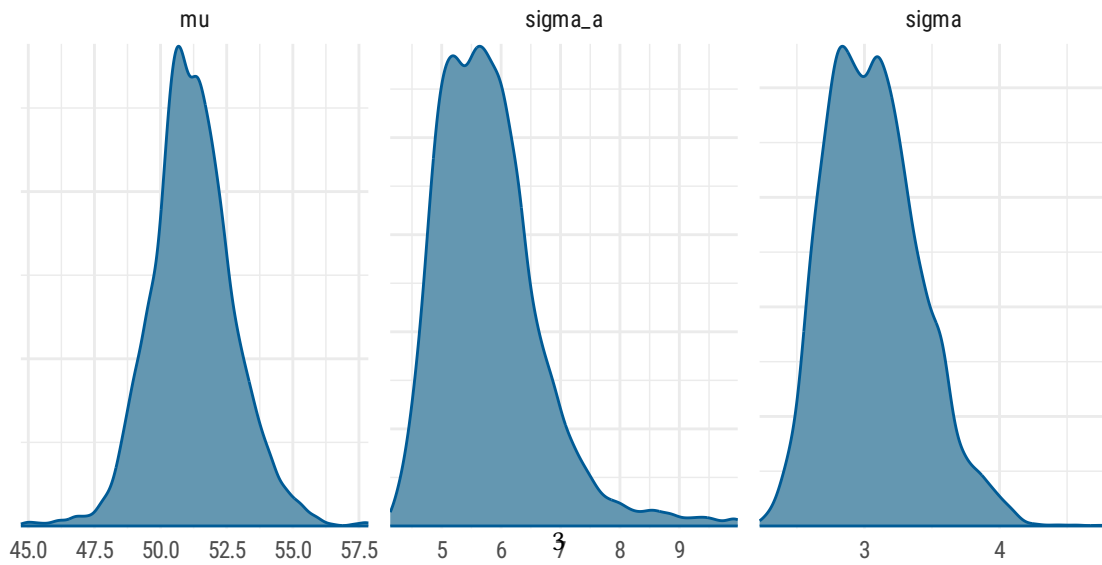
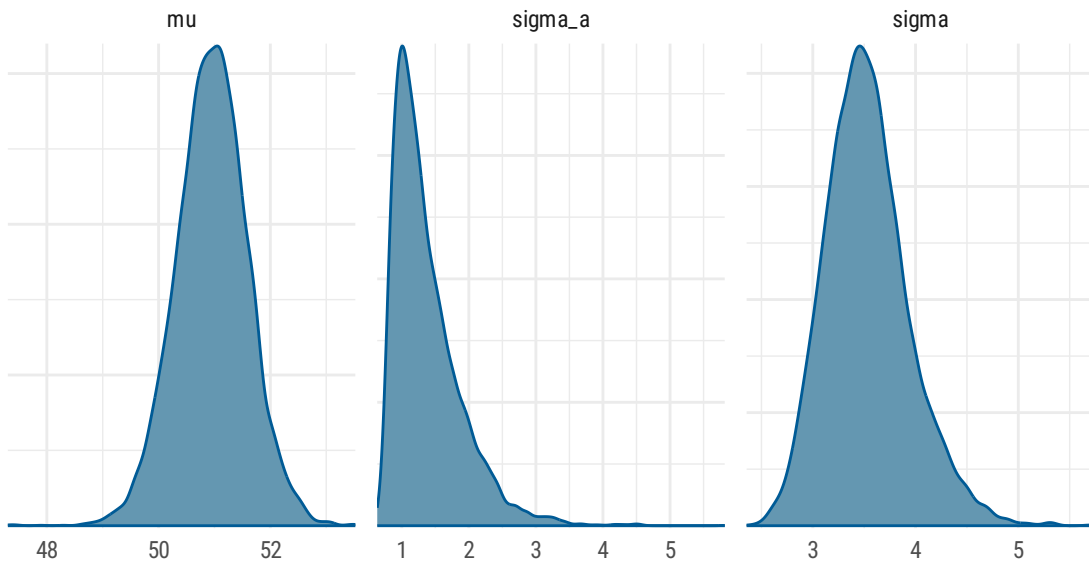
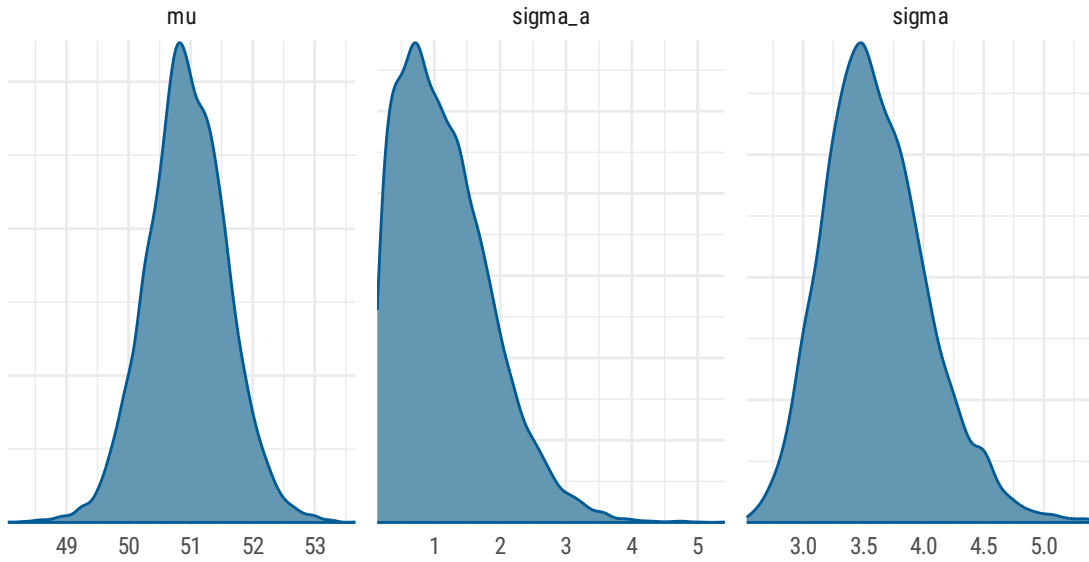
## Warning: Examine the pairs() plot to diagnose sampling problems

## Warning: Bulk Effective Samples Size (ESS) is too low, indicating posterior
## Running the chains for more iterations may help. See
## https://mc-stan.org/misc/warnings.html#bulk-ess
```

Results from Stan

	Minimum.Correlation	mean	sd	2.5%	97.5%
mu	Ind.	50.942827	0.6470821	49.6814307	52.226512
sigma_a		1.162564	0.7127869	0.1757467	2.802398
sigma		3.607619	0.4305096	2.8741020	4.548600
mu.1	5%	50.951122	0.6379642	49.6692628	52.199467
sigma_a.1		1.374674	0.5049568	0.7906268	2.662815
sigma.1		3.530365	0.4054644	2.8339224	4.442855
mu.2	75%	51.216220	1.5520417	48.3353119	54.442539
sigma_a.2		5.796335	0.8647673	4.5473807	7.952502
sigma.2		3.065805	0.3457651	2.4968560	3.833032

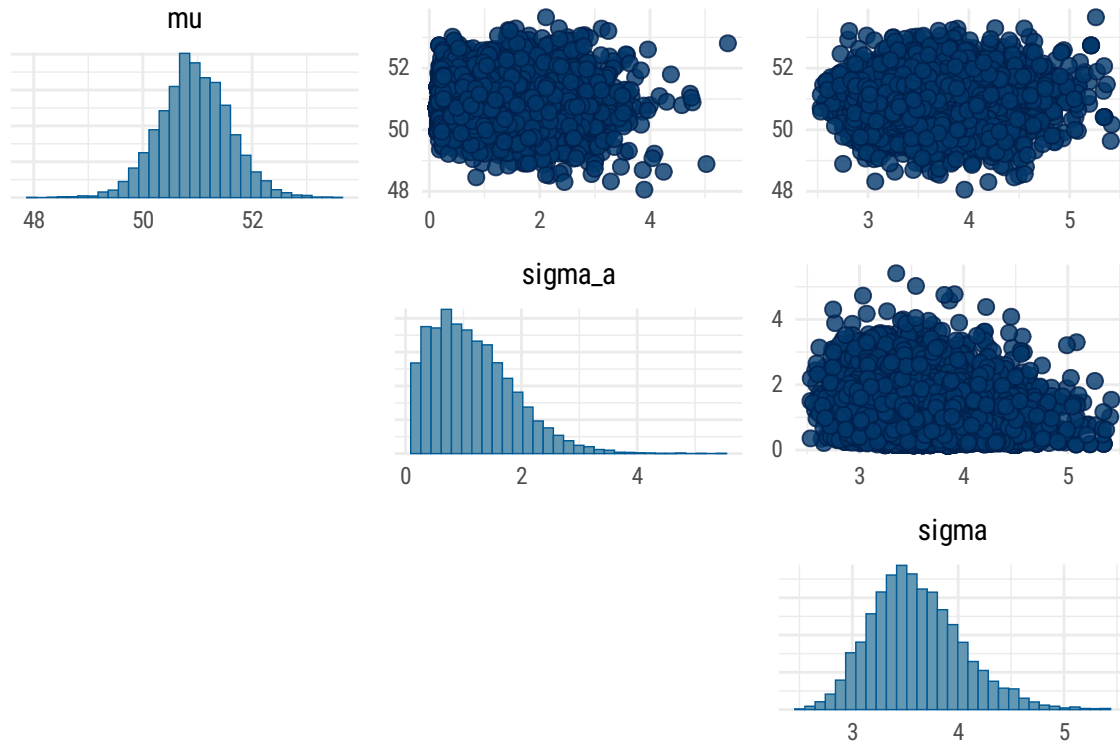
Posterior Densities for Independent (top), 5% Correlation (middle) and 75% Correlation (bottom)



Pairs Plots for Posterior Densities

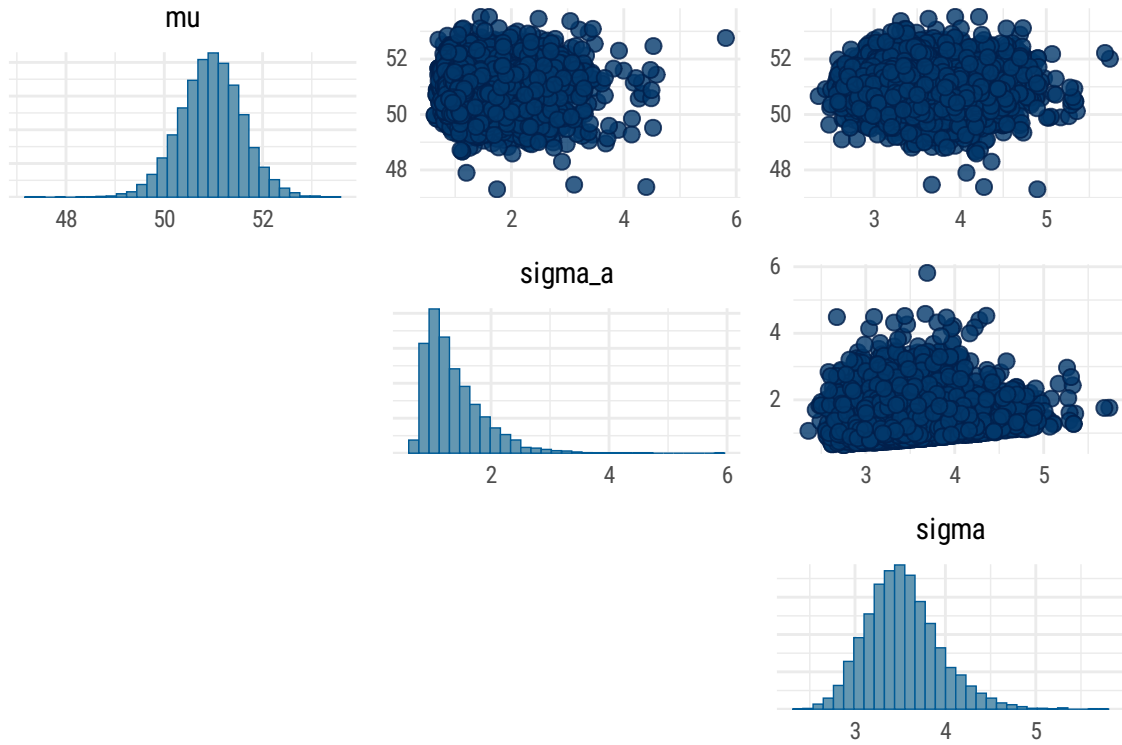
Independent

```
## Warning: Only one chain in 'x'. This plot is more useful  
## with multiple chains.
```



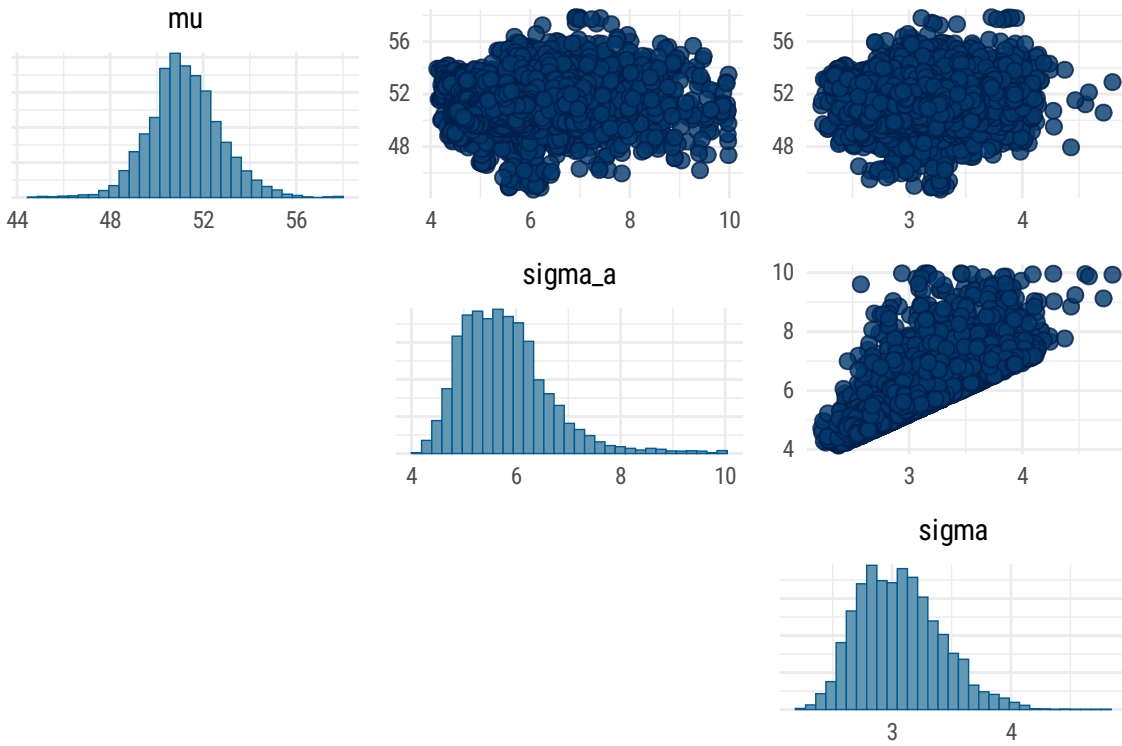
5% Correlation

```
## Warning: Only one chain in 'x'. This plot is more useful  
## with multiple chains.
```



75% Correlation

Warning: Only one chain in 'x'. This plot is more useful
with multiple chains.



What Happened...

Comparing these results to the results in the notes, there does not seem to be any major differences other than the actual estimates for the parameters, but this makes sense because of the data being used to compute the likelihood with uniform priors for the variance parameters.