

# Lizards on islands: the final project

Inbar



how is the number and morphology of  
co-occurring species related to sexual  
dimorphism in shape and size across  
island anoles?



Dave John  
May 4, 2010

# aim

SD ~ number of congeners

+ morphology of congeners

+ phylogenetic relationship

+ (1 | home island)

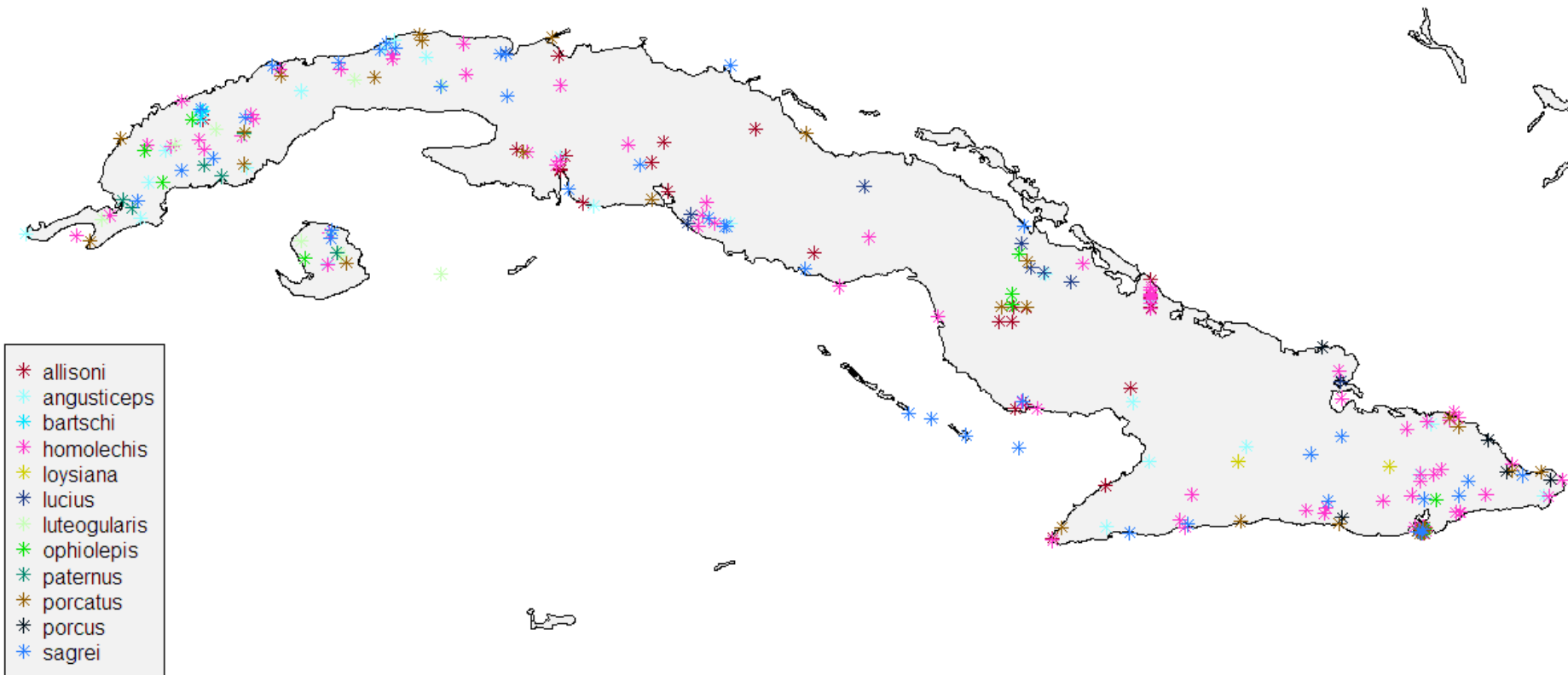
# Establishing number of congeners

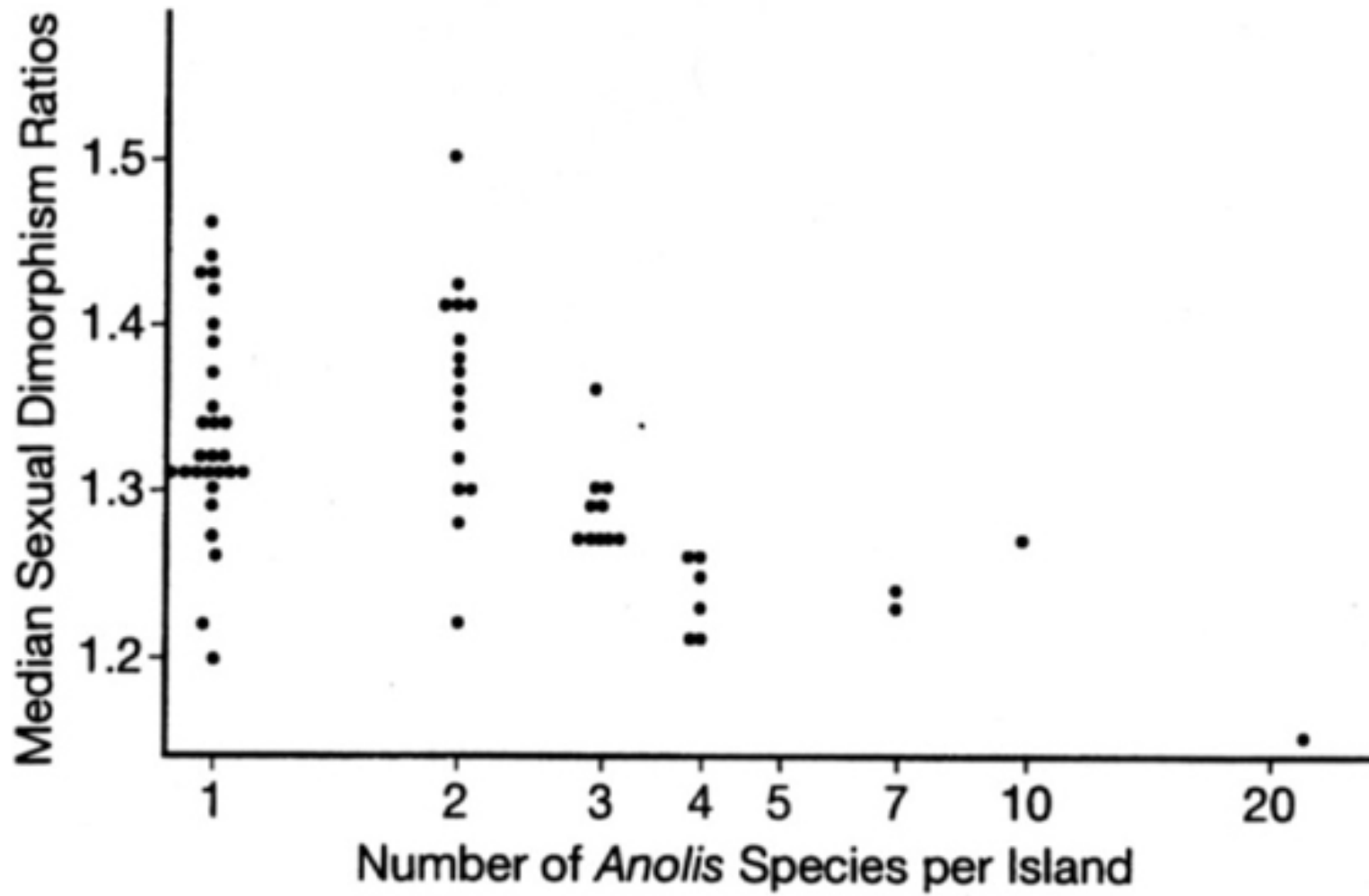


Museum records are great and terrible.



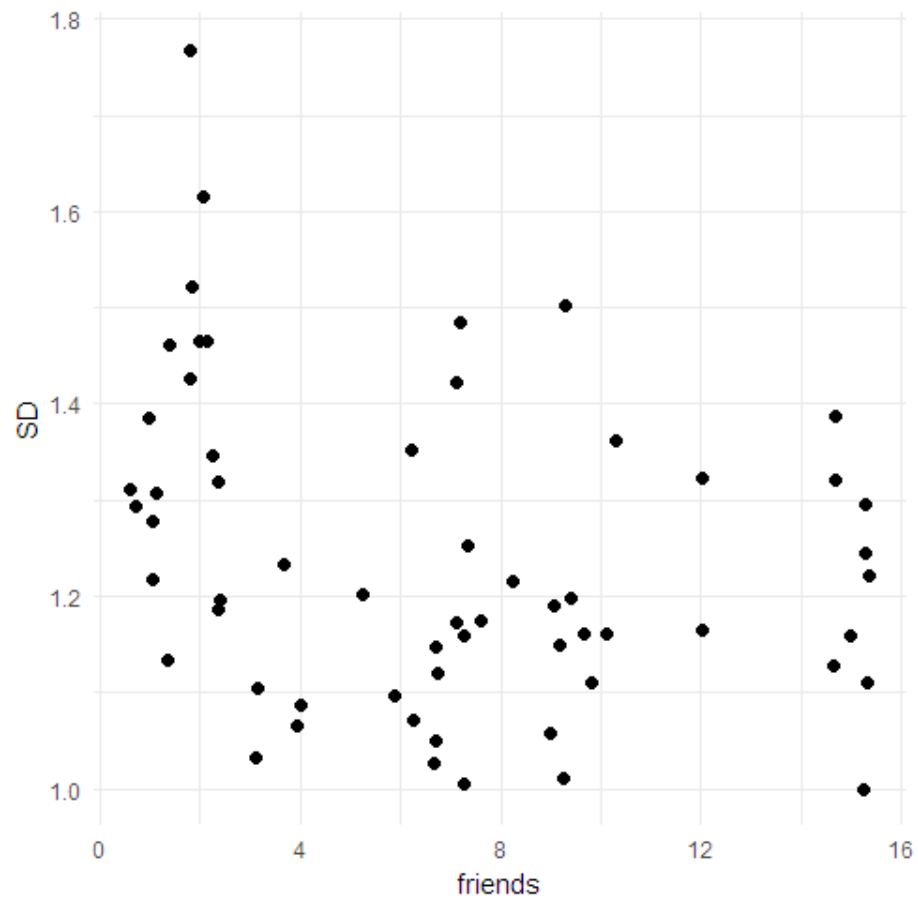
# Establishing number of congeners



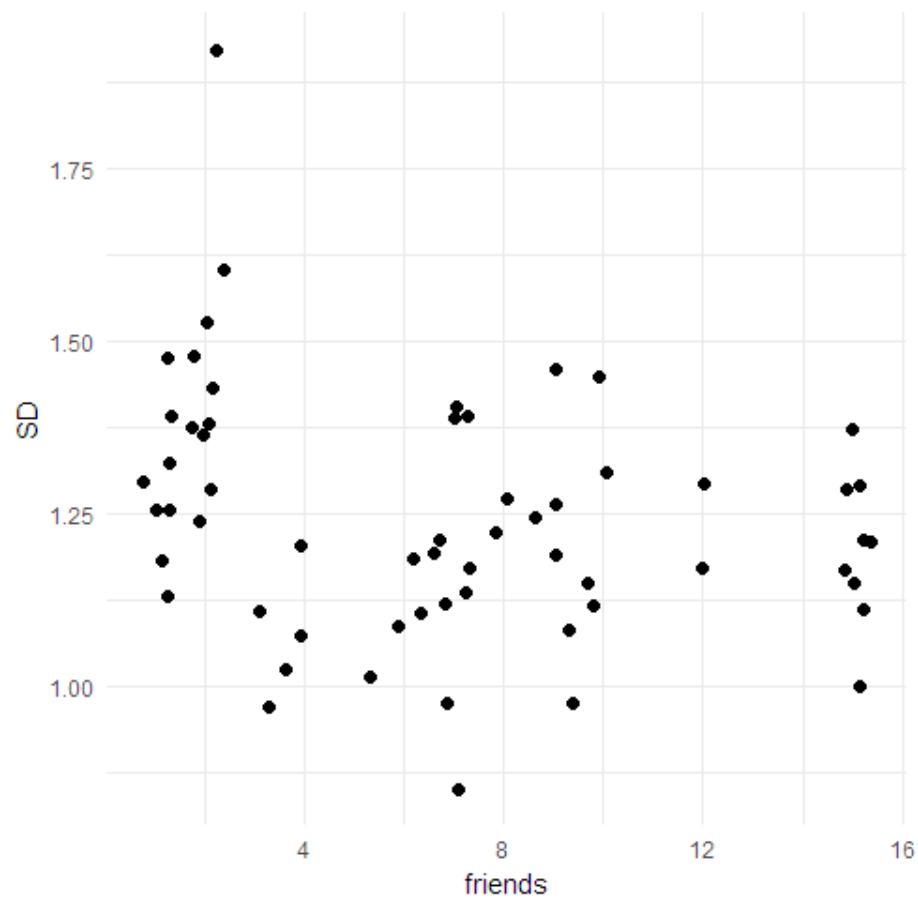


Schoener 1977

Mean-based SD



Max-based SD





# Brewing fake data

- Number of islands and how many species live on them
- Adjusting parameters
- Random removal of species



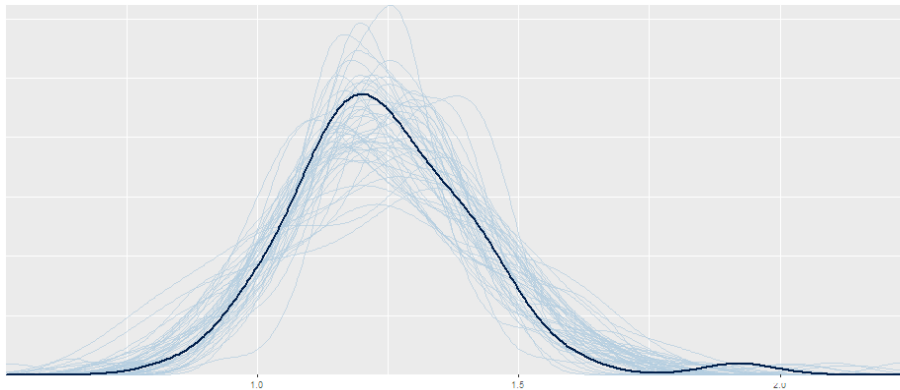
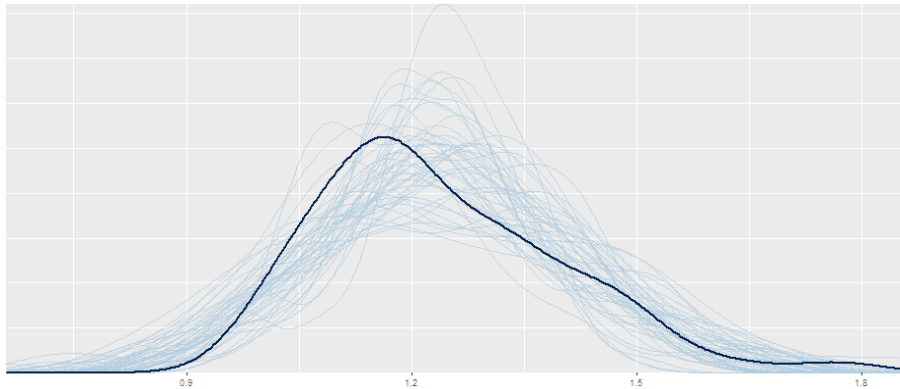
# Brewing fake data

- Number of islands and how many species live on them
- Adjusting parameters
- Random removal of species

Fake data are great and terrible.



# I got overly curious.



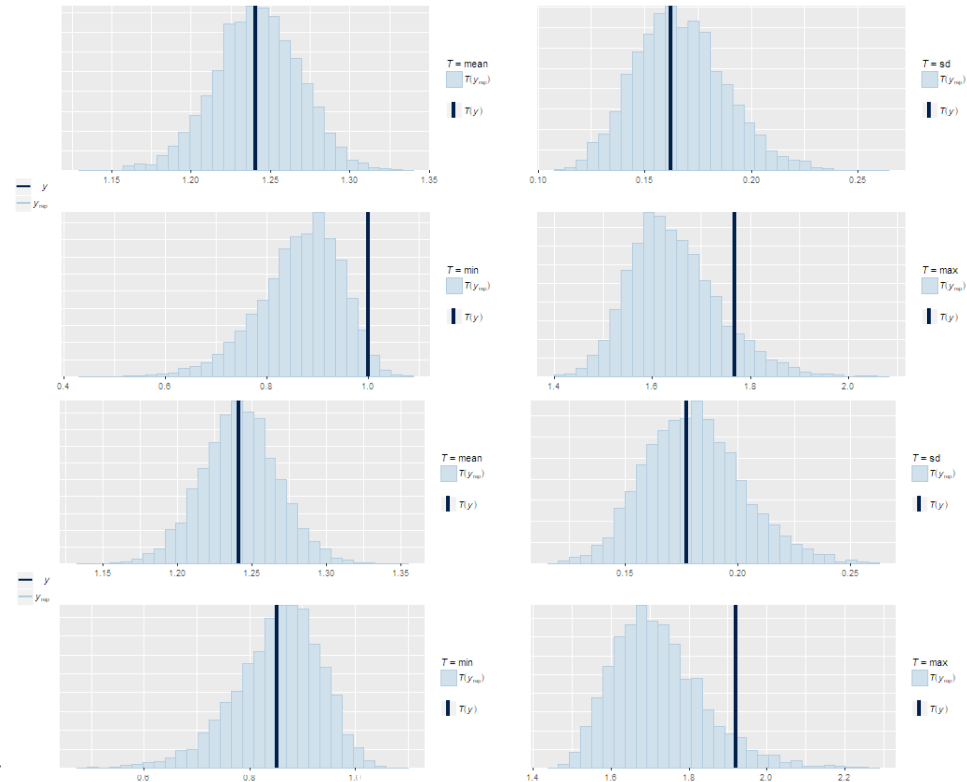
$\mu_\alpha$	1.308
$\sigma_\alpha$	0.040
$\beta$	-0.004
$\sigma_y$	0.147

Real data  
mean-based  
sexual dimorphism

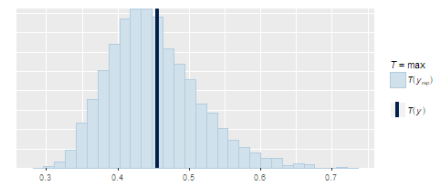
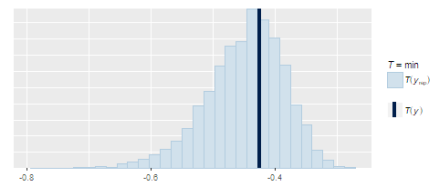
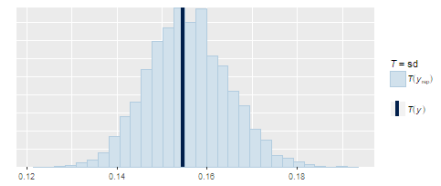
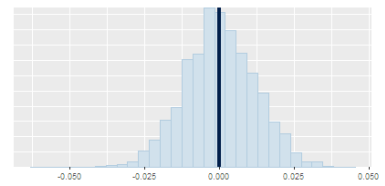
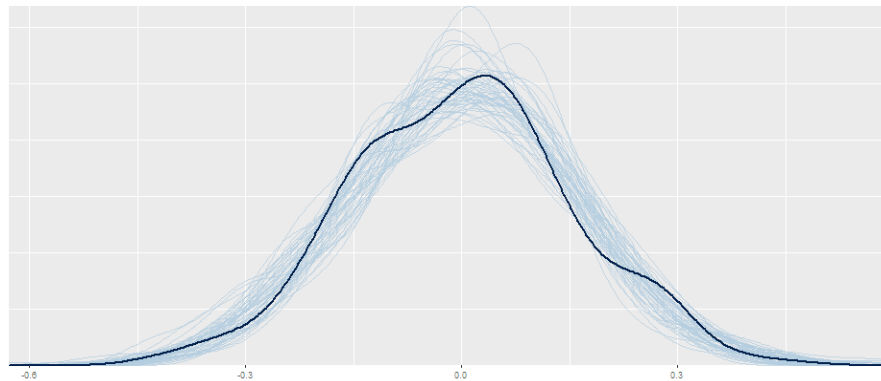
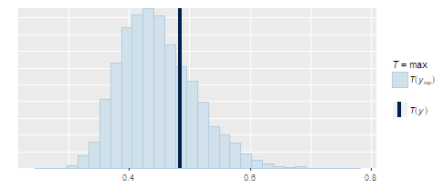
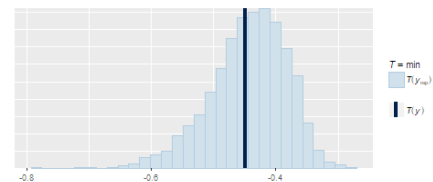
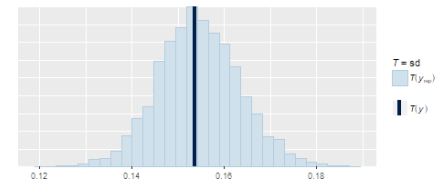
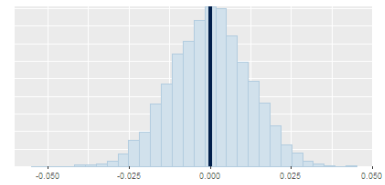
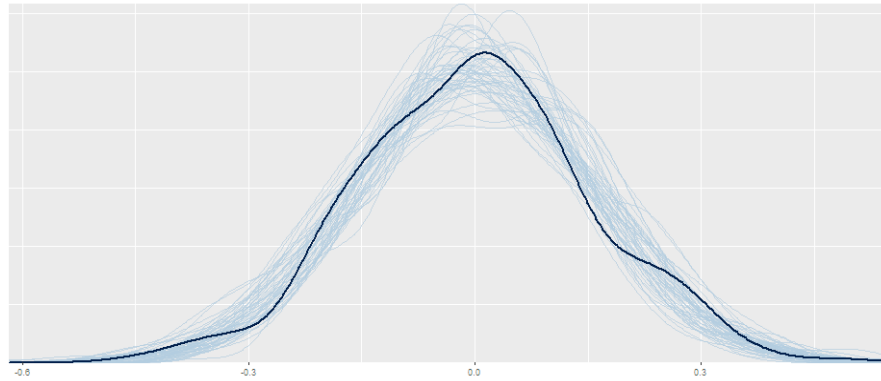
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$\mu_\alpha$	1.302
$\sigma_\alpha$	0.046
$\beta$	0.004
$\sigma_y$	0.144

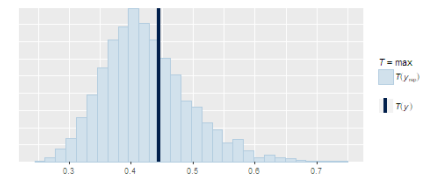
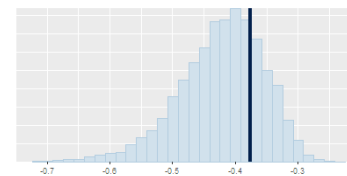
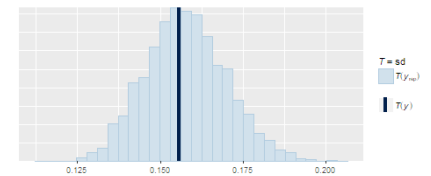
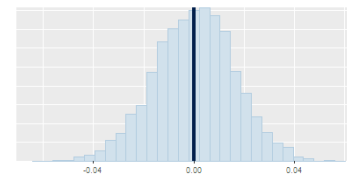
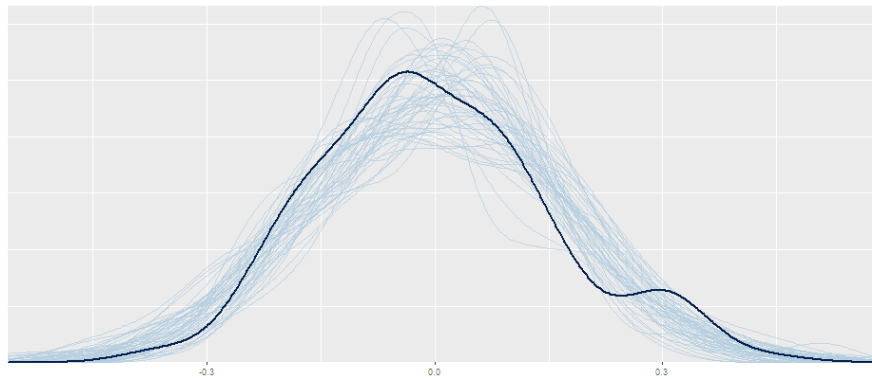
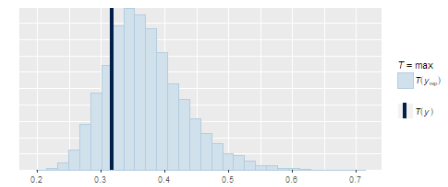
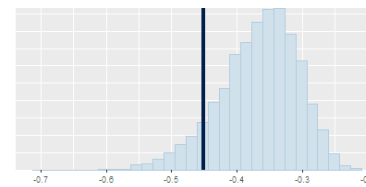
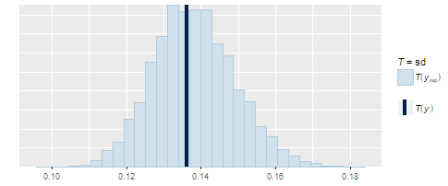
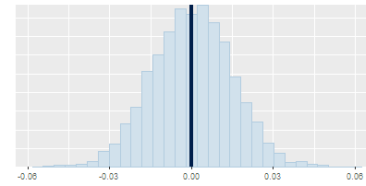
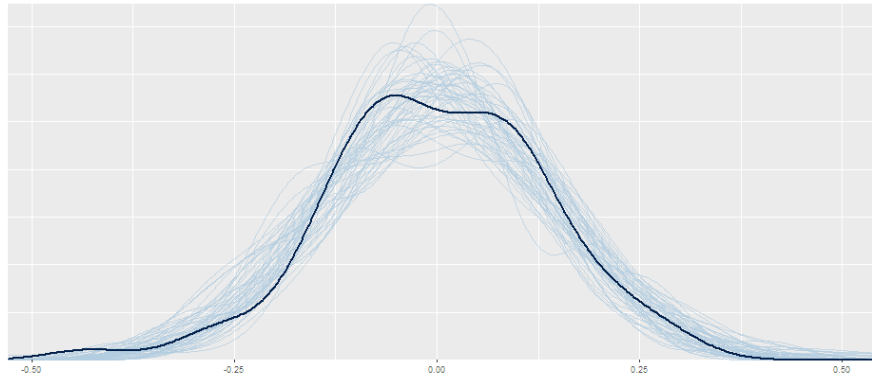
Real data  
max-based  
sexual dimorphism



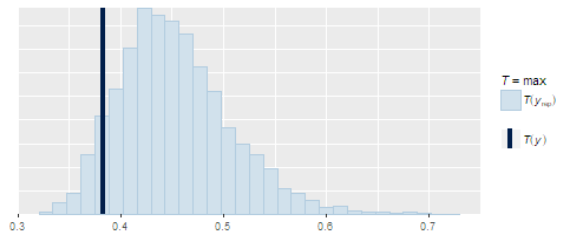
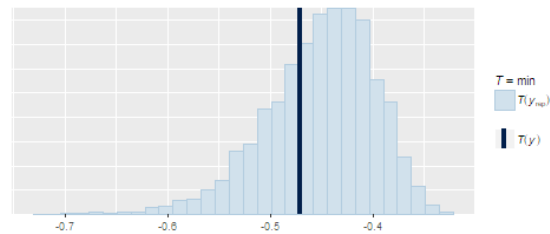
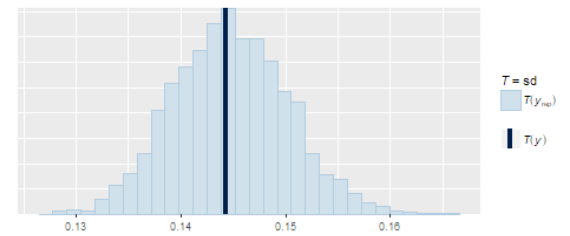
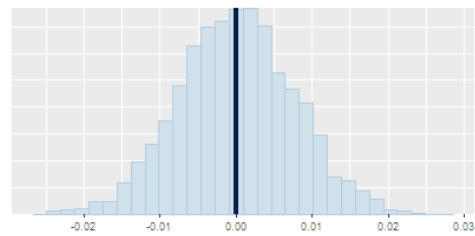
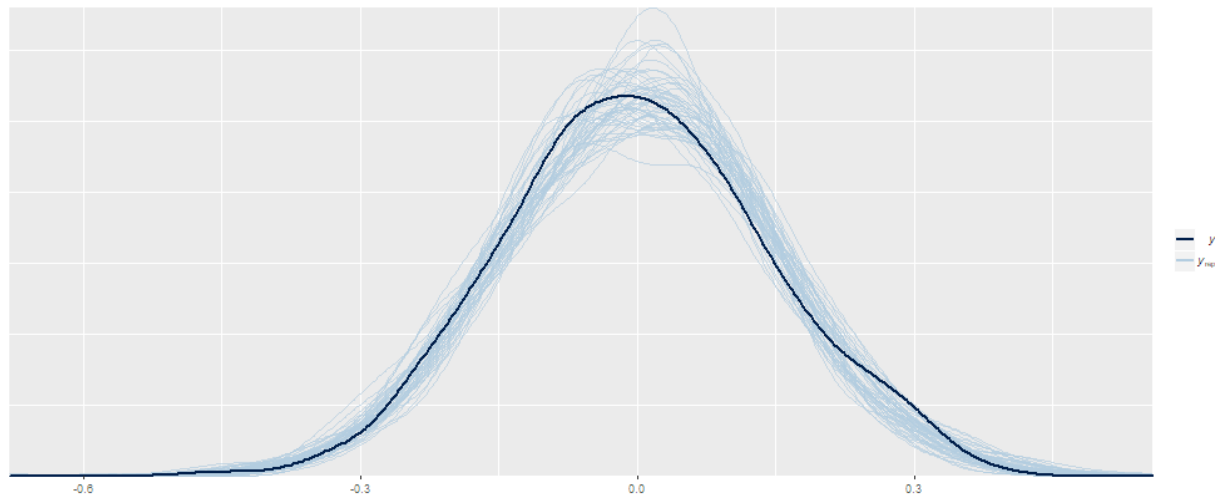
# Simulate instead



# What if it's crappy?



# ...or better



# next steps

- data imputation [*Hmisc*, *missForest*, *mi*]
- add more morphological characters to analysis
- Figure out how to include community matrix
- incorporate phylogeny [*brms*], and **geo data**