Basic Arguments

`x, n, Hr, a, b, factor_levels`

→ `mult_bf_informed()` `binom_bf_informed()`

`$bf_list` `$cred_level` `$restrictions`
`$bridge_output` `$samples`

`summary()`

Results and posterior parameter estimates

`$hyp` `$bf` `$re2` `$bf_type`
`$prior` `$data` `$nr_equal`
`$nr_inequal` `$cred_level`
`$estimates`

`plot()`

Posterior median and credible interval of marginal densities under encompassing model

$H_r : 1 > 2 = 3 > 4$
$BF_{re} = 68.3$

$\widehat{\theta} \, [\, q_{0.05}, \, q_{0.5}, \, q_{0.95}\,]$

Parameter

`bayes_factor()`

Information about computed Bayes factors

`$bf_table` `$error_measures`
`$bf_ineq_table`

`samples()`

Samples from constrained densities used for bridge sampling

`$prior_samples`
`$post_samples`

`bridge_ouput()`
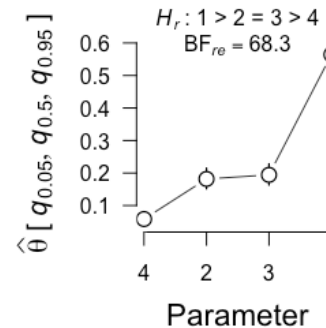
Bridge sampling output and error measures
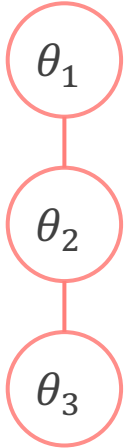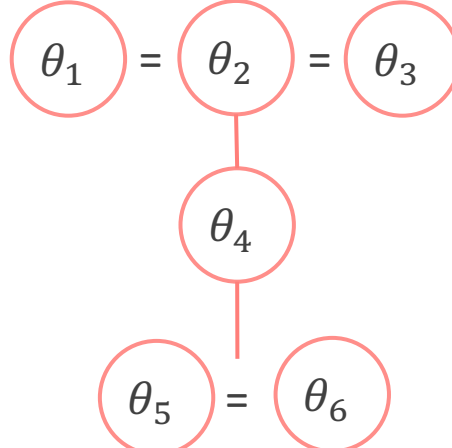
`$eval` `$niter` `$logml`
`$hyp` `$error_measures`

Stick Hypotheses

H_r: $\theta_1 < \theta_2 < \theta_3$

H_r: $\theta_1 = \theta_2 = \theta_3 < \theta_4 < \theta_5 = \theta_6$

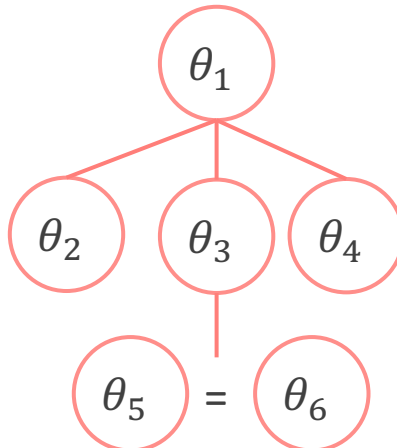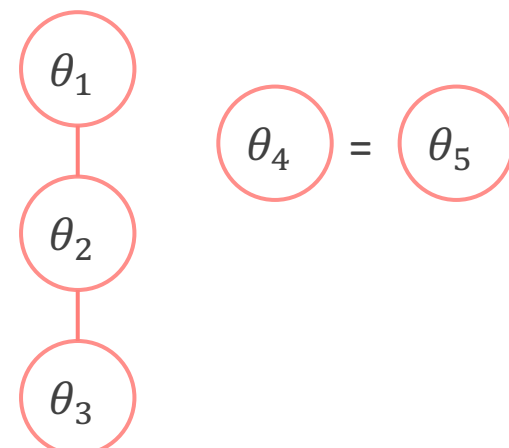H_r: $\theta_1 < \theta_2 < \theta_3$ & $\theta_4, \theta_5 = \theta_6$

H_r: $\theta_1 = \theta_2 = \theta_3$

H_r: $\theta_1 < \theta_2, \theta_3, \theta_4 < \theta_5 = \theta_6$

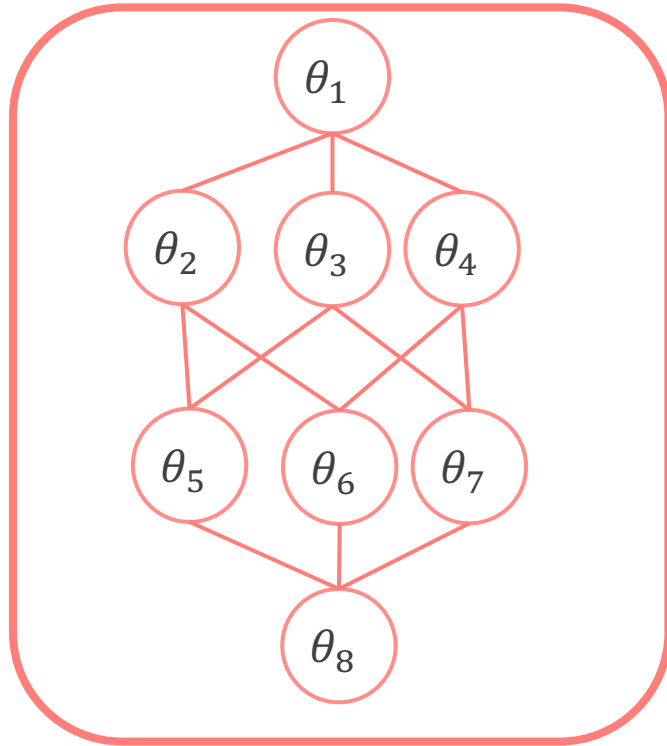H_r: $\theta_1 < \theta_2 < \theta_3$ & $\theta_4 = \theta_5$
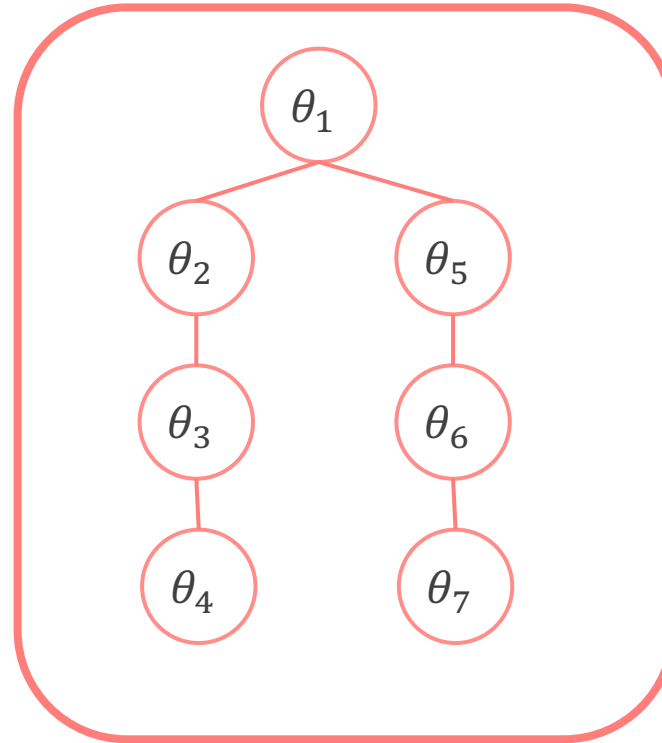
Ordinal hypotheses and equality constraints

Combinations of ordinal constraints, equality constraints, and free parameters

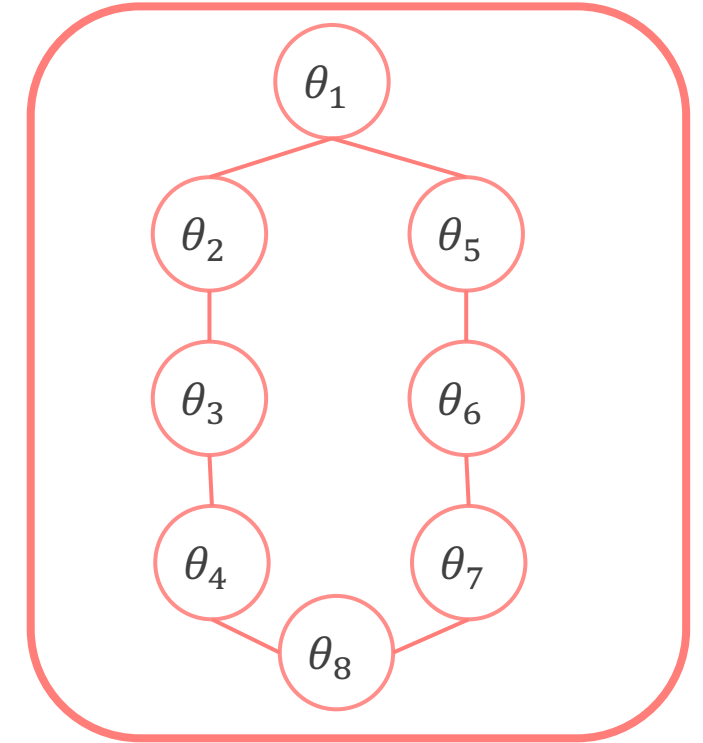Combinations of independent constraints

Branched Hypotheses

The parameters θ_2, θ_3 and θ_4 do not share common upper bounds

The branches $(\theta_2, \theta_3, \theta_4)$ and $(\theta_5, \theta_6, \theta_7)$ do not share common upper bounds

The parameters (θ_2, θ_3) and (θ_5, θ_6) do not share common upper bounds

Transform elements from the real line (ξ_1, ξ_2, ξ_3) to an ordered probability space $(\theta_1 < \theta_2 < \theta_3)$

0 is the lower bound of the smallest element

With 3 elements in the stick, the smallest one cannot be larger than $\frac{1}{3}$
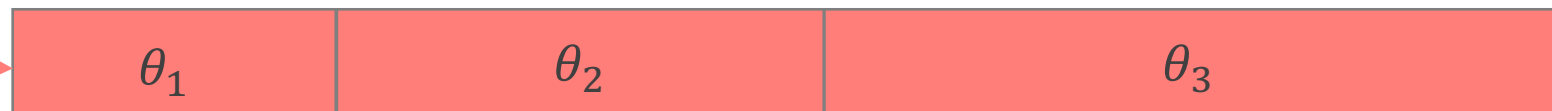
Stick of length 1

Step 1:
$$\theta_1 = \left(\frac{1}{3} - 0\right)\Phi(\xi_1) + 0$$
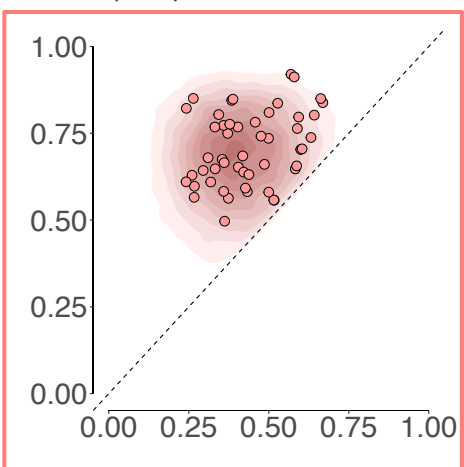
θ_1 is the lower bound for the second element

The upper bound is the length of the remaining stick $(1 - \theta_1)$ divided by the number of remaining elements

θ_1

Step 2:
$$\theta_2 = \left(\frac{(1 - \theta_1)}{2} - \theta_1\right)\Phi(\xi_1) + \theta_1$$
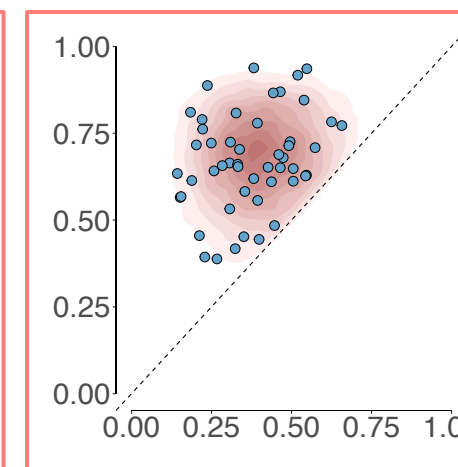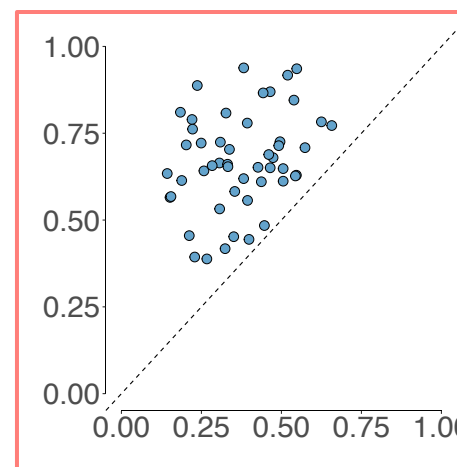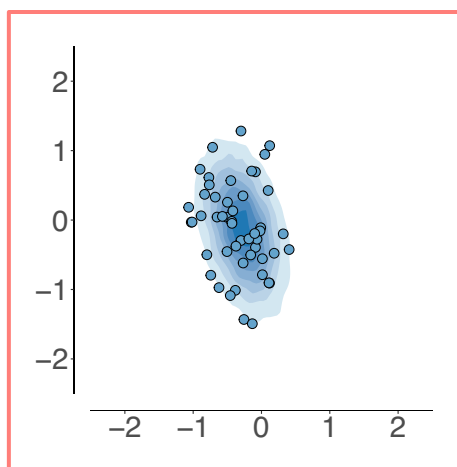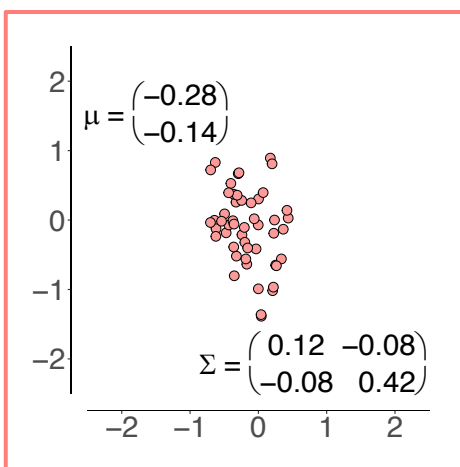
θ_1 θ_2

Step 3:
The vlaue of the last element is the remainder of the stick

θ_1 θ_2 θ_3

Use half of the samples to
fit the proposal distribution

Compute μ and Σ and
fit a MV normal

$$\mu = \begin{pmatrix} -0.28 \\ -0.14 \end{pmatrix}$$

$$\Sigma = \begin{pmatrix} 0.12 & -0.08 \\ -0.08 & 0.42 \end{pmatrix}$$

Draw samples from
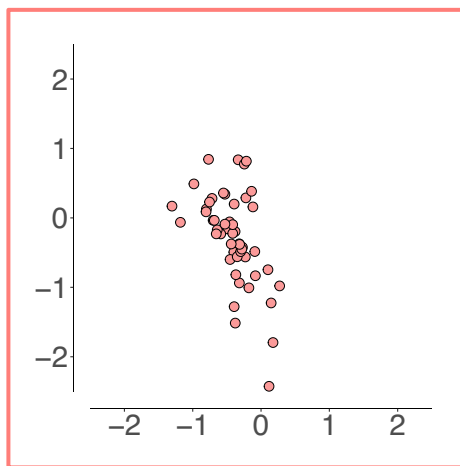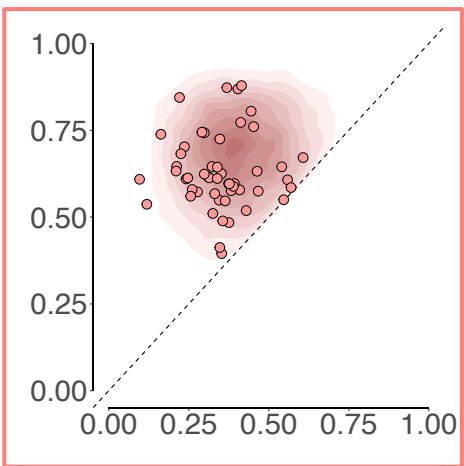the constrained prior
distribution

Transform samples
to the real line

Sample from the MV
normal with mean
vector μ and
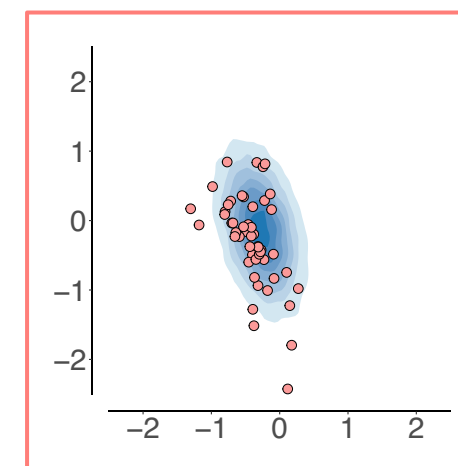covariance matrix Σ

Transform samples
from the proposal
to the constrained
probability space

Evaluate samples
from the MV
normal and the
constrained prior at
the respective other
density

Run bridge
sampling
algorithm

The biggest challenge in
this routine lies in the stick-
breaking transformation

Keep half of the samples