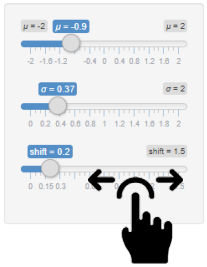
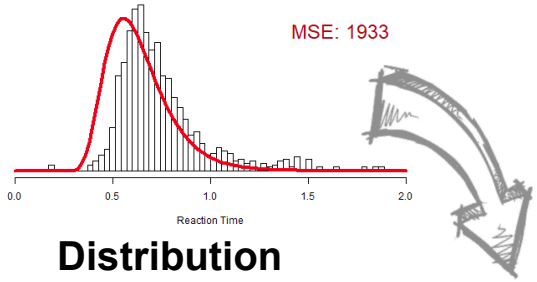
Reaction time distributions

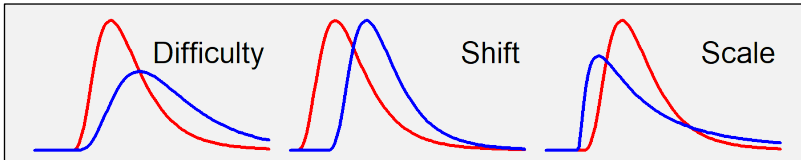
KTry the interactive applets and read more at https://lindeloev.net/shiny/rt/.





Distribution

Parameters



Difficulty: Disperses distribution towards longer RTs. This is very RT-like.
Shift: Moves the whole distribution towards longer RTs.
Scale: Disperses the distribution.
Messy: None or more than one of the above.

Code

Variant of…	Name	RT fit	Shift	Scale	Difficulty	Messy	Example brms::brm code
NORMAL Descriptive	Normal (Gaussian)		μ	σ			`brm(rt ~ x + (1|id), data, family=gaussian())`
	Ex-gaussian	✓✓	μ	σ		λ	`brm(rt ~ x + (1|id), data, family=exgaussian())`
	Skew normal		μ	σ		α	`brm(rt ~ x + (1|id), data, family=skew_normal())`
	Log-normal	✓		σ	μ		`brm(rt ~ x + (1|id), data, family=lognormal())`
	Shifted log-normal	✓✓	*shift*	σ	μ		`brm(rt ~ x + (1|id), data, family=shifted_lognormal())`
DRIFT … towards response thresholds.	Wald / Inverse Gaussian	✓		λ	μ		`brm(rt ~ x + (1|id), data, family=inverse.gaussian())`
	Shifted Wald / Inverse Gaussian	✓✓	*shift*	λ	μ		Custom brms family and see this post.
	Wiener / Decision Diffusion	✓✓	Mechanism: 4 parameters				See brms tutorial.
	Linear Ballistic Accumulator	✓✓	Mechanism: 7 parameters				See `glba::lba`
SURVIVAL Time to event.	Weibull				λ	k	`brm(rt ~ x + (1|id), data, family=weibull)`
	Shifted Weibull	✓	*shift*		λ	k	Custom brms family.
	Gamma	✓				α, β	`brm(rt ~ x + (1|id), data, family=gamma())`

This is an overview of distributions that are commonly used to model reaction times. Read the arguments for this way of organizing and evaluating the distributions at https://lindeloev.net/shiny/rt/. This link also contain interactive applets as well as a more extensive code example on distributional regression.

Red parameter: It is hard to interpret any given value in isolation.

Bold parameter: Default predictor in regression. Control this using e.g., `formula = bf(rt ~ 1, ndt ~ x + (1|id), sigma ~ x).`