

HOW TO READ STEP-FUNCTION SELECTION MODEL RESULTS



What is a step-function selection model?

A step-function selection model is a type of statistical model used in meta-analysis to assess and adjust for selective reporting bias. The model estimates how selection probability changes at specified p value cutoffs. Below is an example output from the [metaselection package in R](#).

Interpreting step-function model results

The **Beta coefficient (β)** (0.133) is the adjusted mean effect estimate effect size alongside the **heterogeneity estimate (τ^2)** (0.0811).

This is a **3-PSM (3-parameter selection model)** with a single p value cutoff at .025 (one-tailed).

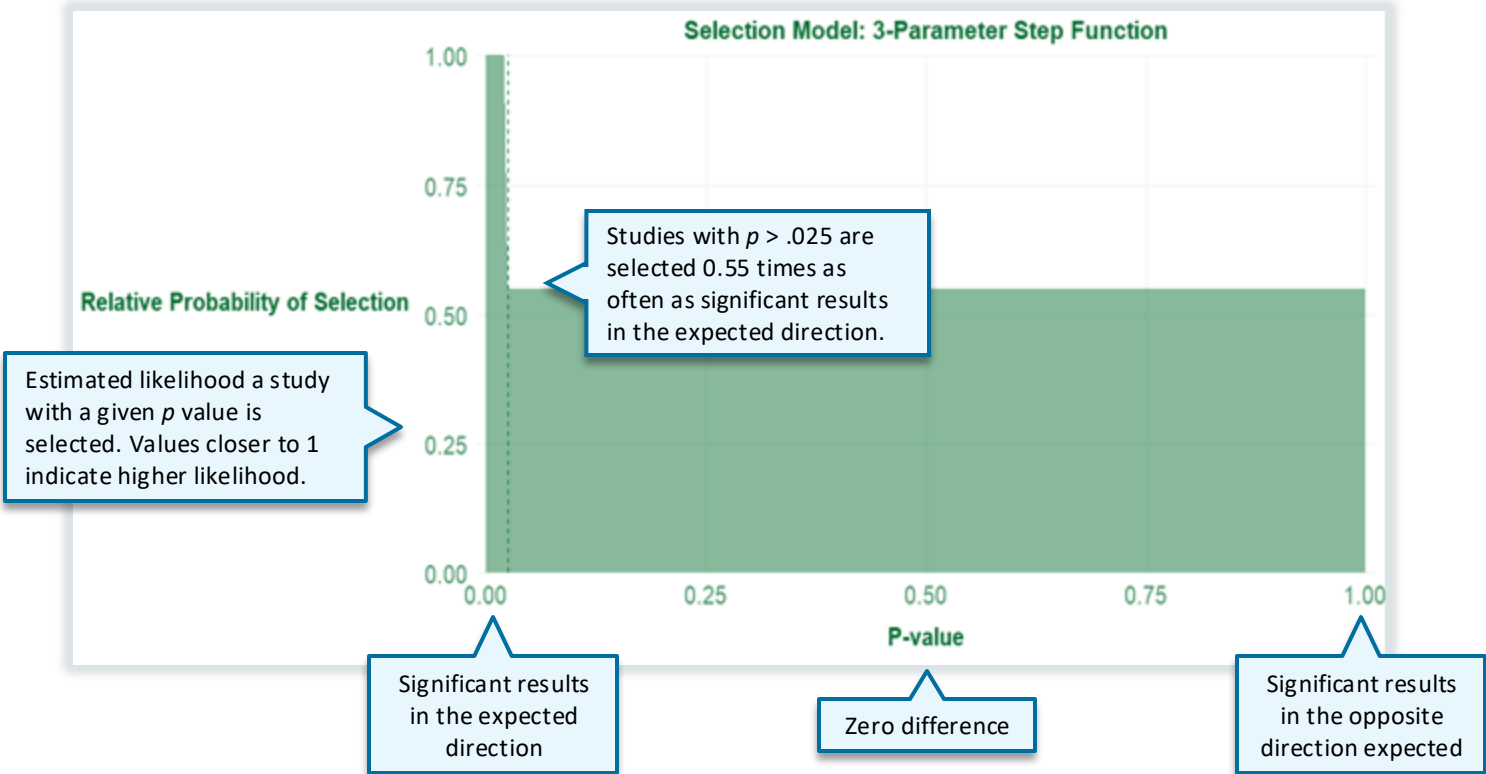
This **Lambda coefficient (λ)** indicates the relative likelihood that non-statistically significant results will be selected relative to significant results. $\lambda = 1$ implies no selection bias.

This is the **confidence interval**, which presents the uncertainty associated with the Lambda coefficient.

Mean effect estimates:					
Coef	Estimate	Std. Error	Percentile Bootstrap		
beta	0.133	0.137	Lower	Upper	
			-0.0327	0.377	
Heterogeneity estimates:					
Coef	Estimate	Std. Error	Percentile Bootstrap		
tau2	0.0811	0.0845	Lower	Upper	
			0.0015	0.198	
Selection process estimates:					
Step: 0 < p <= 0.025; Studies: 16; Effects: 25					
Coef.	Estimate	Std. Error	Percentile Bootstrap		
lambda0	1	---	---	---	---
Step: 0.025 < p <= 1; Studies: 29; Effects: 56					
Coef	Estimate	Std. Error	Percentile Bootstrap		
lambda1	0.548	0.616	Lower	Upper	
			0.0888	3.05	

Probability-of-selection graph

This graph illustrates the likelihood of reporting as a function of the p value of an effect size. The step at the model's cutoff of $p = .025$ indicates that effect sizes with $p > .025$ are about half as likely (0.55) to be reported than effect sizes with smaller p values. Because this is a one-tailed step function, p values are one-tailed and oriented to the expected direction of the effect.



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