

Retrieval quality in manual and semi-automated screening

Retrieval quality (recall) is an important topic in literature reviews, as literature reviews are designed to retrieve the highest possible number of relevant references. However, in using this metric, it should be taken into account that pure manual literature reviews average 94% recall per screener (Edwards, Phil, et al.). In addition, freed-up time using semi-automated screening, can now be spent on broader searches (time-frame, more databases), leading to finding even more relevant references.

EXAMPLE

An example literature review has 2000 references, of which 200 relevant and 1800 not relevant

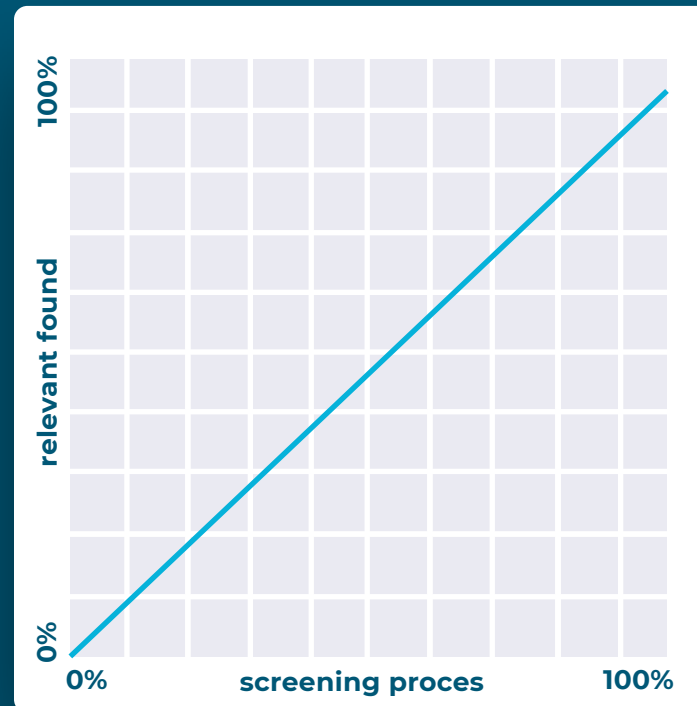
An ideal screening effort would yield 100% of the 200 relevant papers.



In this example, 10% of the references are relevant

Manual screening finds 94% of references*, yielding 184 references in this example

With 750 references screened per day, the manual process takes 2,7 days to complete. 6% of references is missed. The screening curve (below) shows the process in a linear way.

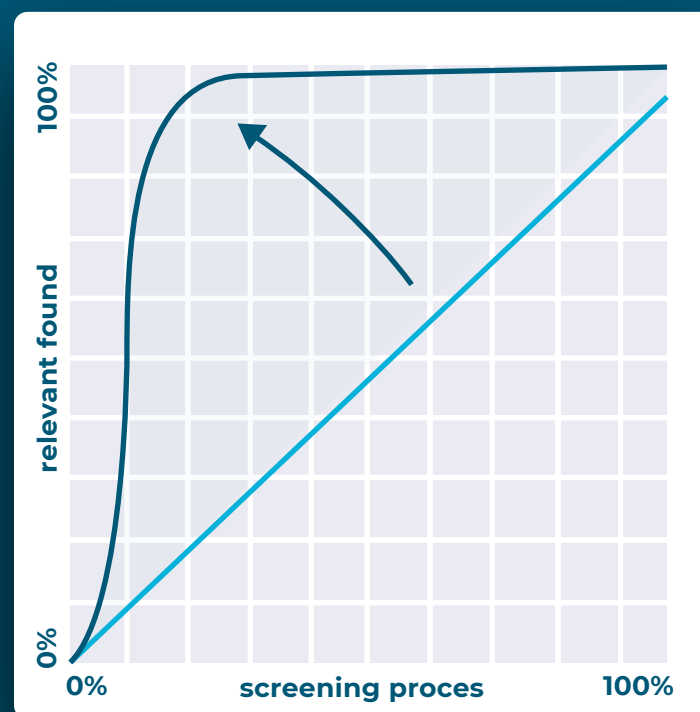


The screening process has a linear line

*Edwards, Phil, et al. "Identification of randomized controlled trials in systematic reviews: accuracy and reliability of screening records." *Statistics in medicine* 21.11 (2002): 1635-1640.

Semi-automated screening finds 98% of references. Yielding 196 relevant references

The semi-automated process takes on average 1,1 days. Saving an average 60% of time. The screening curve (below) shifts to the top left, as the relevant references are identified earlier in the screening process.



The screening curve shifts to top left

Testing literature reviews finds 98% (average) of relevant references (range 96% to 100%)

Testing eight Cochrane literature reviews on diagnostic test accuracy finds that recall is an average of 98% (range 96% en 100%). The average efficiency is 59% (range 0 to 86%).

Total references	Relevant references	Not relevent references	Recall at stopping point	Efficiency at stopping point
7861	143	7718	96%	85%
6411	138	6273	96%	86%
5194	99	5095	99%	81%
4783	104	4679	96%	51%
3814	97	3717	97%	68%
2961	201	2760	100%	0%
1451	128	1323	98%	26%
2371	137	1604	99%	43%

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