

Adapting how to use Google Search to identify studies for systematic reviews in view of a recent change to how search results are displayed

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Dear Editors,

In a recent journal article published in *Research Synthesis Methods*, we drew attention to the feasibility and desirability of screening Google Search results exhaustively to identify studies for systematic reviews.¹ In summary, when searching Google Search the search engine typically estimates a very high number of search results, often in the hundreds of thousands or millions, which is prohibitively high to screen exhaustively. Thus, systematic reviewers and information specialists have historically used stopping-rules when screening Google Search results, such as limiting the screening process to the first 100 results or until a page of results is screened with no relevant content.²⁻⁴ However, our study, which built on similar findings in Briscoe and Rogers,⁵ showed that the viewable number of results retrieved by the search engine is often a small proportion of the estimated results and is likely to be feasible to screen exhaustively.¹ Furthermore, we showed that Google Search will sometimes identify relevant results uniquely (i.e. which are not retrieved by other search methods) and that relevant search results are likely to be retrieved beyond the first 100 results, suggesting that it is desirable to screen the results more extensively than typically carried out.

In our study we used a method described by Briscoe and Rogers for quickly ascertaining the viewable number of results in Google Search, which involves changing the number of results displayed per page from the default of ten to the maximum of 100.⁵ This was done using the settings menu in Google Search. However, in the last year Google Search has started to display results via continuous scrolling which replaces the use of separate pages of results.⁶ This change to how search results are displayed started in December 2022 for the desktop version of Google Search⁶ and was gradually rolled out across regional domains in the following months.⁷ The move to continuous scrolling means that it is no longer possible to set Google Search to display a set number of results per page, thus Briscoe and Rogers' method for quickly ascertaining how many viewable results there are per search is no longer applicable.⁵

However, we have ascertained that it is still the case that the viewable number of results identified by Google Search may be lower than the estimated number. For example, we recently searched the

UK version of Google Search (www.google.co.uk) for studies for an ongoing systematic review using the following search terms and syntax:

"carbon emissions" (health OR hospital).

Google Search estimated a total of 45,800,000 search results for this search string (date of search: 19th September 2023; searcher: SB). However, we were able to screen to the end of the search results, at which point the search engine displayed the following message (as in the previous version of Google Search):

"In order to show you the most relevant results, we have omitted some entries very similar to the 188 already displayed. If you like, you can repeat the search with the omitted results included."

When we selected the option to repeat the search with omitted results showing and scrolled to the final result, we counted a total of 410 results. Thus it is clear that although the screening process for search results from Google Search has changed, the viewable number of results may still be far fewer than the estimated number, and may be feasible (and potentially desirable) to screen exhaustively or more extensively than often reported in systematic reviews to date.²⁻⁴

The screening process is, unfortunately, slightly more onerous for searchers who want to view all the available results. Without the option to display 100 results per page and obtain links to each page at the bottom of page one, there is no way to quickly link to the final page and click the option to repeat the search with omitted results showing. Thus, the searcher must scroll through all of the initially viewable results to execute this function. It may be useful to know that the searcher will see 60 results before needing to click "More results" to continue scrolling down.⁸ After this, the searcher will need to click "More results" every ten results, thus it is possible to keep track of how many results there are when scrolling quickly through without counting each individual result. There is an option in the search settings menu (accessed via the gear cog icon) to de-activate continuous scrolling, however this does not revert to the use of separate pages of results; rather, de-activating continuous scrolling only has the effect of reducing the number of results initially displayed before needing to click "More results" from 60 to ten results.

Finally, at the time of writing, the process of scrolling through results can be expedited by inserting "&num=100" to the end of the URL in Google Search after a search has been run. This function was used prior to continuous scrolling to increase the number of results per page to 100 without needing to access the search settings menu.⁹ The function is still available despite the removal of separate pages of results (confirmed by SB on 20th October 2023).¹⁰ However, it appears to have the effect of overriding the need to click "More results" not only after 60 results but all the way through to the

end of the search results, regardless of whether there are more than 100 results. This makes it faster to scroll to the end of results, but harder to keep track of how many results there are in total once the searcher has clicked the option to repeat the search with the omitted results showing. Adding “&num=100” to the end of a URL when continuous scroll is de-activated appears to increase the search results from ten to 100 before needing to click “More results”, but after this the searcher will need to click “More results” every ten results.

Conflicts of interest

The authors declare they have no conflicts of interest.

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