

Do pressures to publish increase scientists' bias?

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The quality of scientific research may be suffering because academics are being increasingly pressured to produce 'publishable' results, a new study suggests. A large analysis of papers in all disciplines shows that researchers report more "positive" results for their experiments in US states where academics publish more frequently. The results are reported in the online, open-access journal *PLoS ONE* on April 21st, by Daniele Fanelli, of the University of Edinburgh.

The condition of today's [scientists](#) is commonly described by the expression "publish or perish". Their careers are increasingly evaluated based on the sheer number of papers listed in their CVs, and by the number of [citations](#) received - a measure of scientific quality that is hotly debated. To secure jobs and funding, therefore, researchers must publish continuously. The problem is that papers are likely to be accepted by journals and to be cited depending on the results they report.

"Scientists face an increasing [conflict of interest](#), torn between the need to be accurate and objective and the need to keep their careers alive" says Fanelli, "while many studies have shown the deleterious effects of financial conflicts of interests in biomedical research, no one has looked at this much broader conflict, which might affect all fields".

Dr Fanelli analysed over 1300 papers that declared to have tested a [hypothesis](#) in all disciplines, from physics to sociology, the principal author of which was based in a U.S. state. Using data from the National Science Foundation, he then verified whether the papers' conclusions

were linked to the states' productivity, measured by the number of papers published on average by each academic.

Findings show that papers whose authors were based in more "productive" states were more likely to support the tested hypothesis, independent of discipline and funding availability. This suggests that scientists working in more competitive and productive environments are more likely to make their results look "positive". It remains to be established whether they do this by simply writing the papers differently or by tweaking and selecting their data.

"The outcome of an experiment depends on many factors, but the productivity of the US state of the researcher should not, in theory, be one of them," explains Fanelli "we cannot exclude that researchers in the more productive states are smarter and better equipped, and thus more successful, but this is unlikely to fully explain the marked trend observed in this study".

Positive results were less than half the total in Nevada, North Dakota and Mississippi. At the other extreme, states including Michigan, Ohio, District of Columbia and Nebraska had between 95% and 100% positive results, a rate that seems unrealistic even for the most outstanding institutions.

These conclusions could apply to all scientifically advanced countries.

"Academic competition for funding and positions is increasing everywhere", says Fanelli "Policies that rely too much on cold measures of productivity might be lowering the quality of science itself".

More information: Fanelli D (2010) Do Pressures to Publish Increase Scientists' Bias? An Empirical Support from US States Data. PLoS ONE 5(4): e10271. [doi:10.1371/journal.pone.0010271](https://doi.org/10.1371/journal.pone.0010271)

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