

Medical research threatened by lack of investment in stats

October 29 2019



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A lack of attention to biostatistics as a core scientific discipline threatens the value of the \$800 million spent annually on Australian health research investment, in terms of improved health and lives saved, according to the authors of a Perspective published online today by the *Medical Journal of Australia*.

"The entire Australian medical research enterprise is at considerable risk of 'drowning in data but starving for knowledge'," wrote the authors, led by Associate Professor Katherine Lee and Professor John Carlin, of the Clinical Epidemiology and Biostatistics Unit at the Murdoch Children's Research Institute.

Biostatistics "provides the theoretical basis for extracting knowledge from data in the presence of variability and uncertainty", they wrote.

"It is a critical element of most empirical research in public [health](#) and clinical medicine, with the best studies incorporating biostatistical input on aspects from study design to [data analysis](#) and reporting. Biostatistical methods underpin key [public health](#) research disciplines, such as epidemiology and health services research, a role that reflects the core nature of the discipline of biostatistics.

"Superficial understanding of statistics can easily lead to unscientific practice (recently characterised as 'cargo-cult statistics') and may be seen as responsible in large part for the current 'crisis of reproducibility' in research.

"The emerging era of big data heightens the need for biostatistical expertise, with more [decision makers](#) and researchers aiming to extract value from complex messy data."

In the US, the UK and continental Europe major universities have established departments of biostatistics, or have national centres in biostatistical methodology, as well as dedicated streams of funding for methodological research, they wrote.

In Australia, however, "there has never been systematic investment in the development of biostatistics ... either in universities or via national funding schemes", Carlin and colleagues wrote.

"None of the major universities has a department of biostatistics."

The authors suggested three potential solutions:

- universities and research institutes need to foster the development of organisational structures with a critical mass of academic biostatisticians working both in methodology and collaborating with health researchers, as well as training opportunities and career development for biostatisticians;
- biostatistical teaching and advanced training must keep pace with the dramatic changes in the data science landscape, to ensure that graduates have the necessary breadth of skills to support medical research in the modern era; and
- funding bodies need to invest in biostatistical research; for example, by the creation and support of graduate and postdoctoral methodological training programs.

More information: Katherine J Lee et al. Biostatistics: a fundamental discipline at the core of modern health data science, *Medical Journal of Australia* (2019). [DOI: 10.5694/mja2.50372](https://doi.org/10.5694/mja2.50372)

Provided by Medical Journal of Australia

Citation: Medical research threatened by lack of investment in stats (2019, October 29) retrieved 18 April 2024 from

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