

The catch 22 of gender differences in research funding

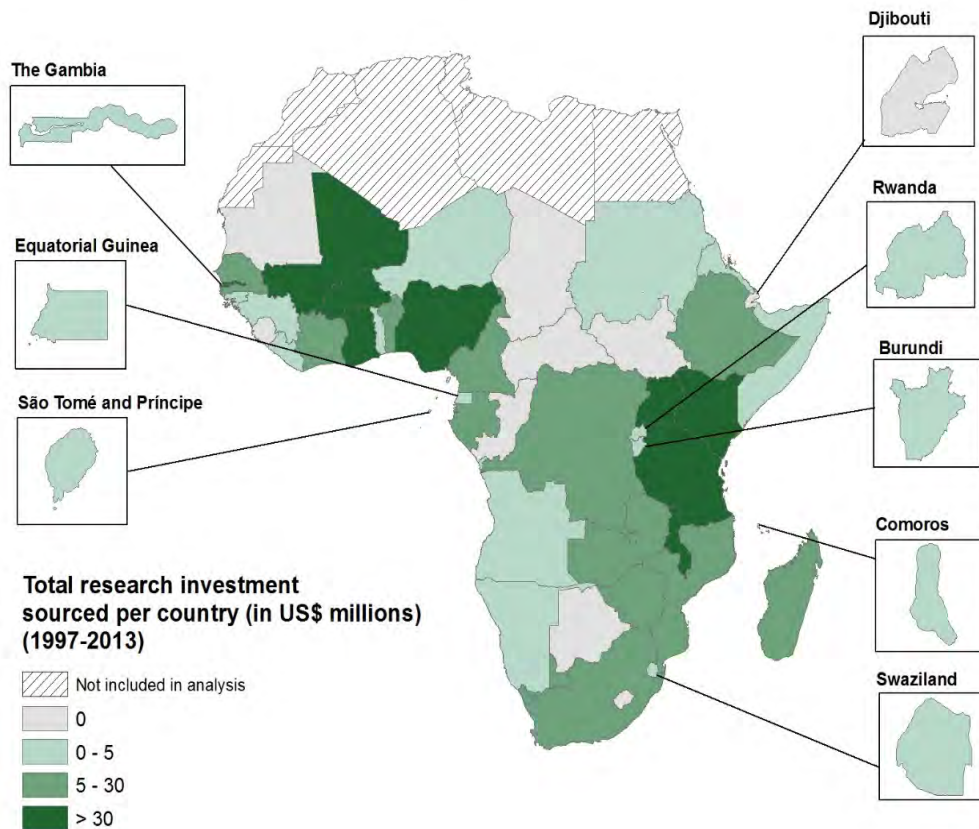
Dr Michael Head

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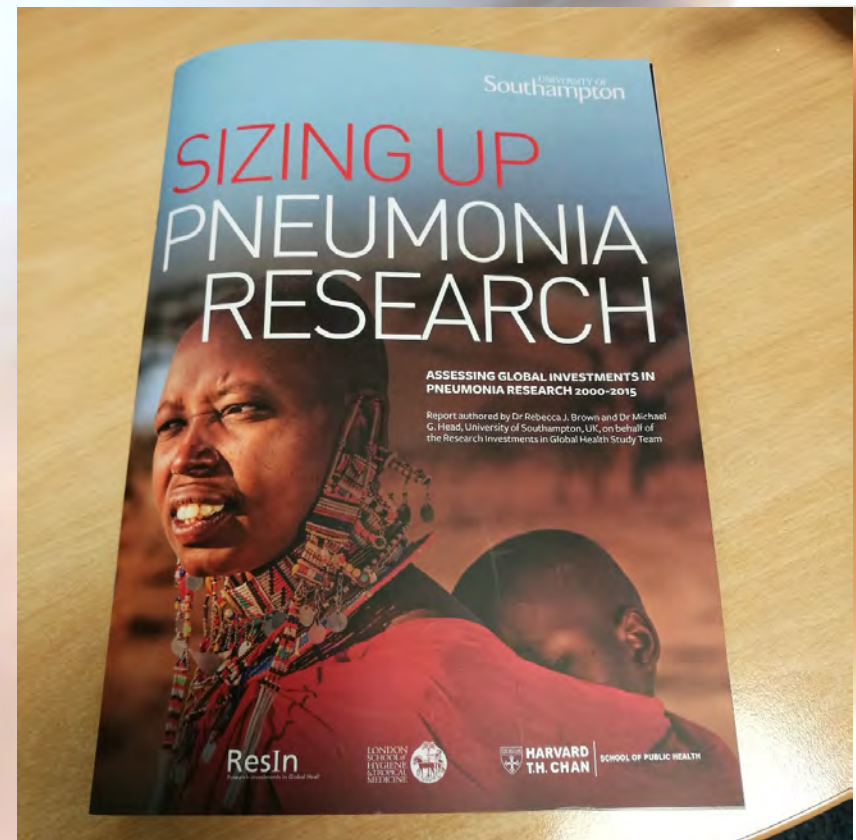
The Research Investments in Global Health study (ResIn)

What is it

- 'Research on research'
- Two separate collection of research awards - infection and cancer
- Each award is individually categorised to allow analyses of funding trends across specific areas and over time
- For example - how much is spent on research for HIV, tuberculosis and malaria? Does pneumonia appear to be underfunded compared to its burden of disease?
- Within these datasets, we have the name of the principal investigator (PI)...



Sizing Up Pneumonia Research
(investments across the G20
between 2000 and 2015)
Brown and Head, 2018



↑ Total research investment (US\$ millions) for
malaria sourced per country for 1997–2013
Head et al, Lancet Global Health, 2017



Differences in research funding by gender of principal investigator

Case study 1 – infectious diseases

Case study 2 - cancer

Case study 1 – UK infectious disease research

Dataset

- Public or philanthropic awards to a UK institution 1997-2010 for infectious disease research
- Included 6052 awards covering £2.3 billion of research investment

Publication

Head MG, Fitchett JR, Cooke MK, *et al*

Differences in research funding for women scientists: a systematic comparison of UK investments in global infectious disease research during 1997–2010

BMJ Open 2013;**3**:e003362. doi: 10.1136/bmjopen-2013-003362

Case study 1 – UK infectious disease research

Headline figures

6052 awards

4357 (72%) awarded to men and 1695 (28%) awarded to women

By total funding, £1.8 billion (79%) awarded to men, £0.5 billion (22%) to women.

Median award size – (1.4 fold difference, $P < 0.001$)

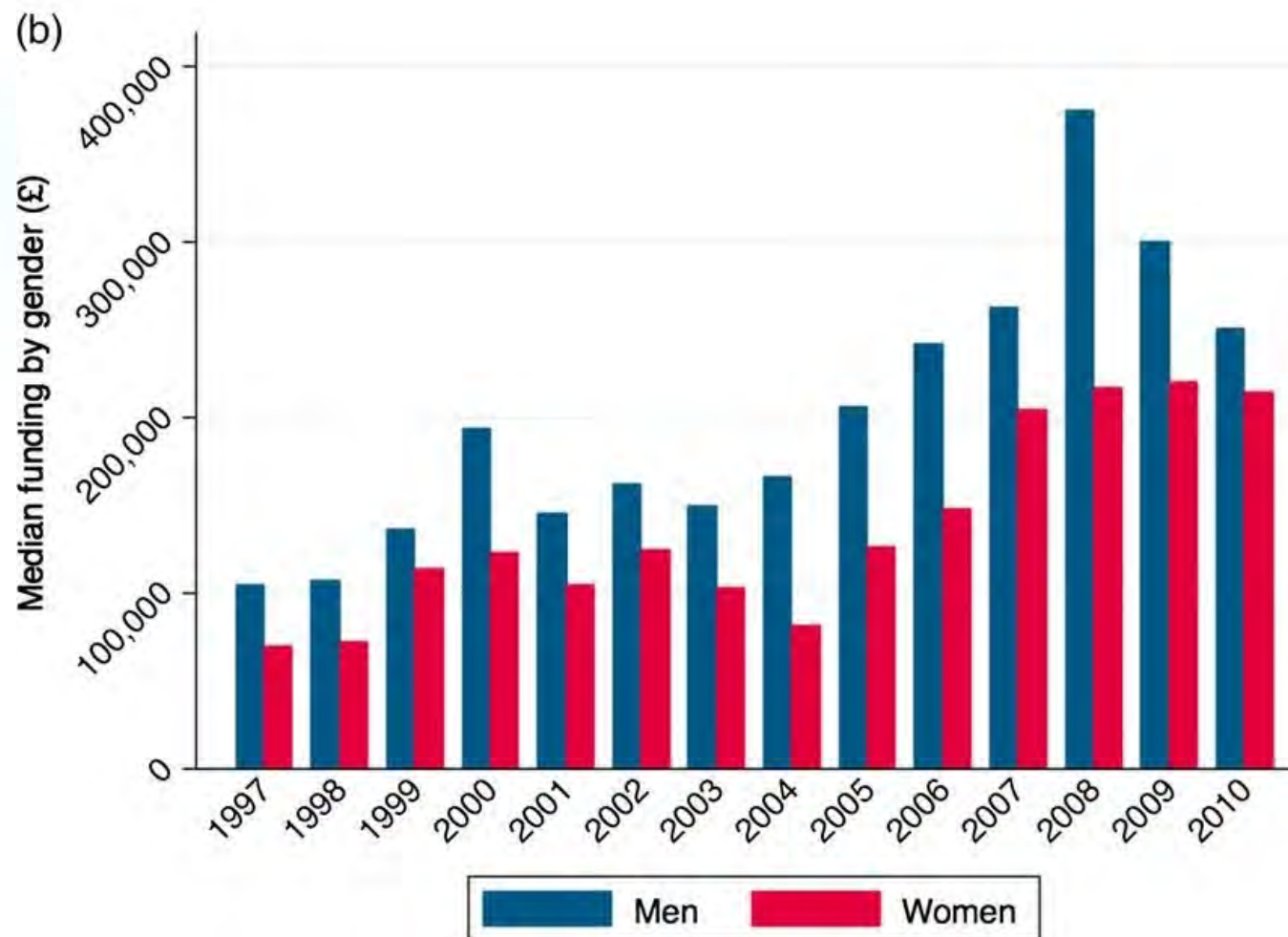
Men - £179 389

Women - £125 556

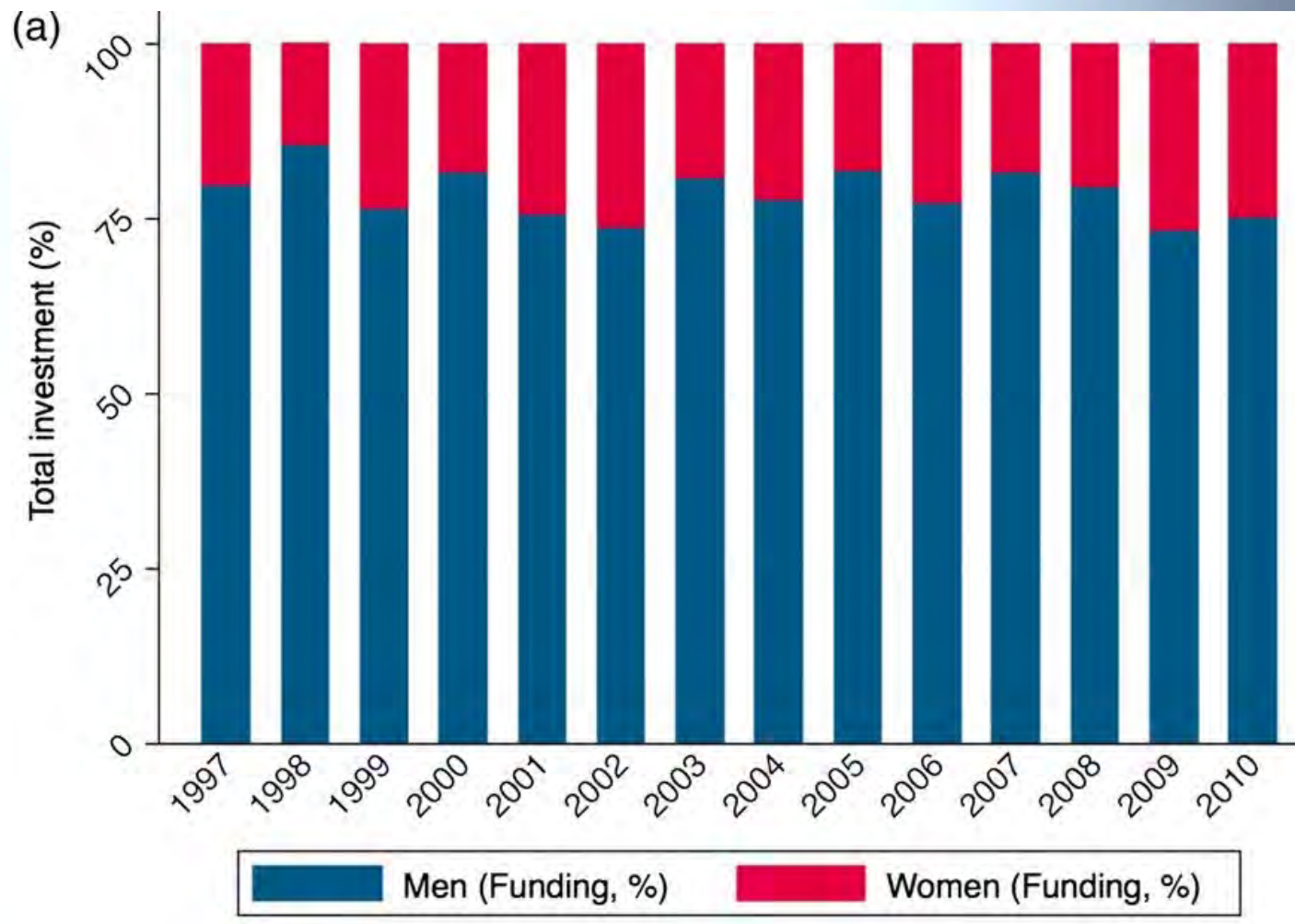
Mean award size (1.4 fold difference)

Men - £409 910

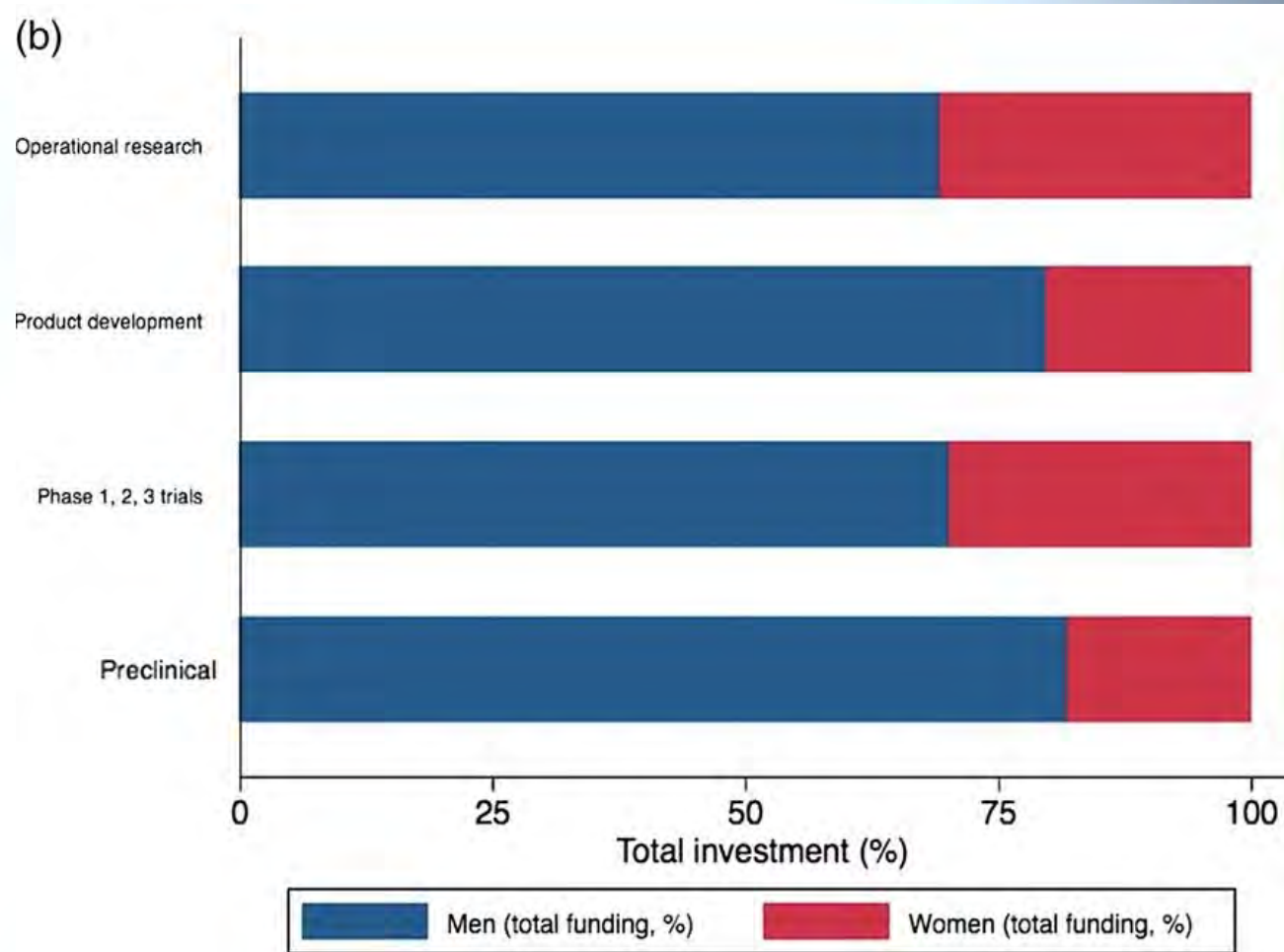
Women - £288 011



Median investment over time awarded to male and female PIs



Proportion of investment over time awarded to male and female PIs



Total investment by research pipeline awarded to male and female PIs

Case study 2 – UK oncology research

Dataset

- Public or philanthropic awards to a UK institution 2000-2013 for cancer-related research
- Included 4186 awards, sum total £2.33 billion of research investment

Publication

Zhou CD, Head MG, Marshall DC, *et al*

A systematic analysis of UK cancer research funding by gender of primary investigator

BMJ Open 2018;**8**:e018625. doi: 10.1136/bmjopen-2017-018625

Case study 2 – UK oncology research

Headline figures

4186 awards

2890 (69%) awarded to men, 1296 (31%) awarded to women

By total funding, £1.8 billion (78%) awarded to men and £0.5 billion (22%) to women.

Median award size – (1.3 fold difference, $P < 0.001$)

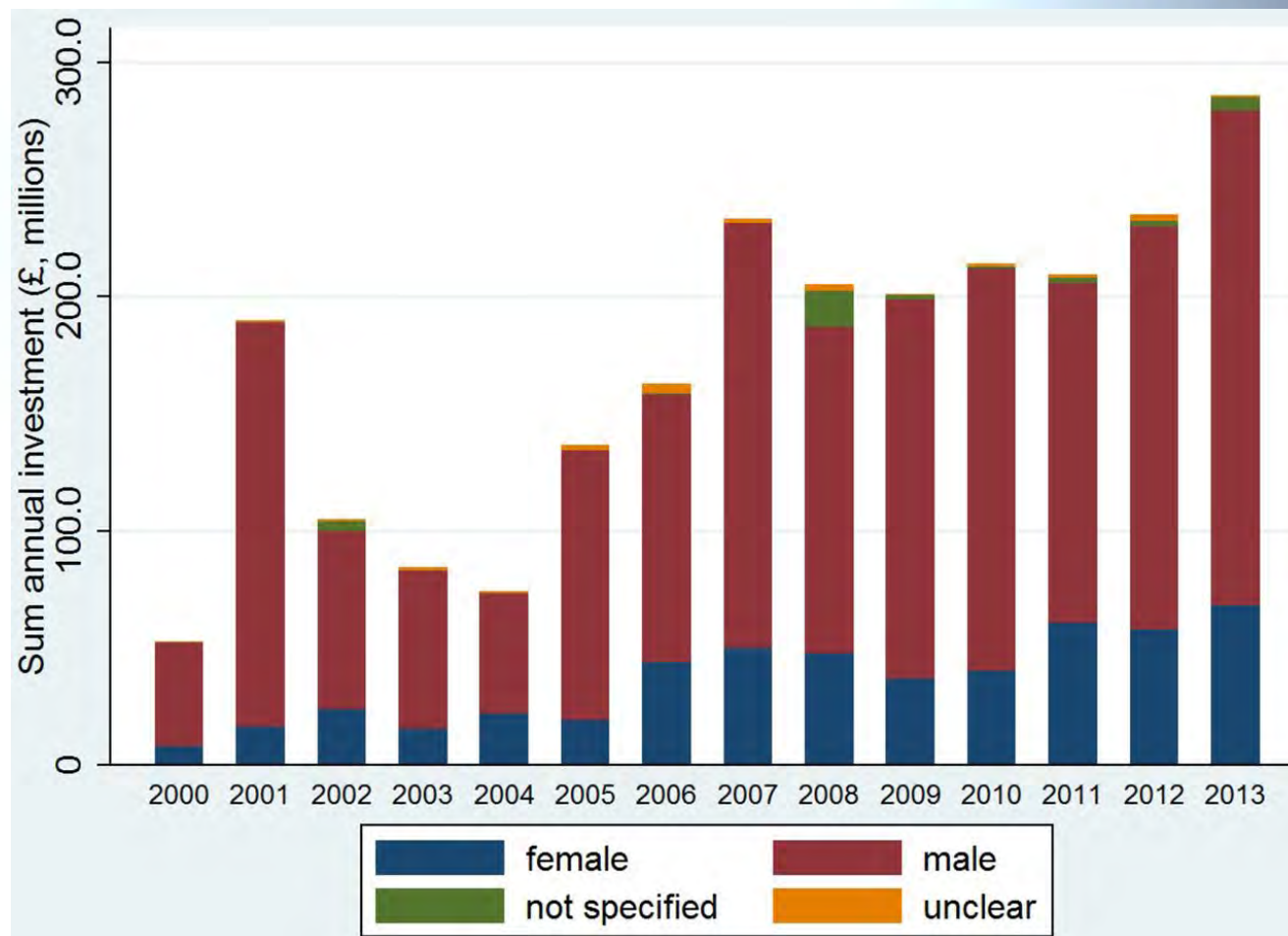
Men - £252 647

Women - £198 485

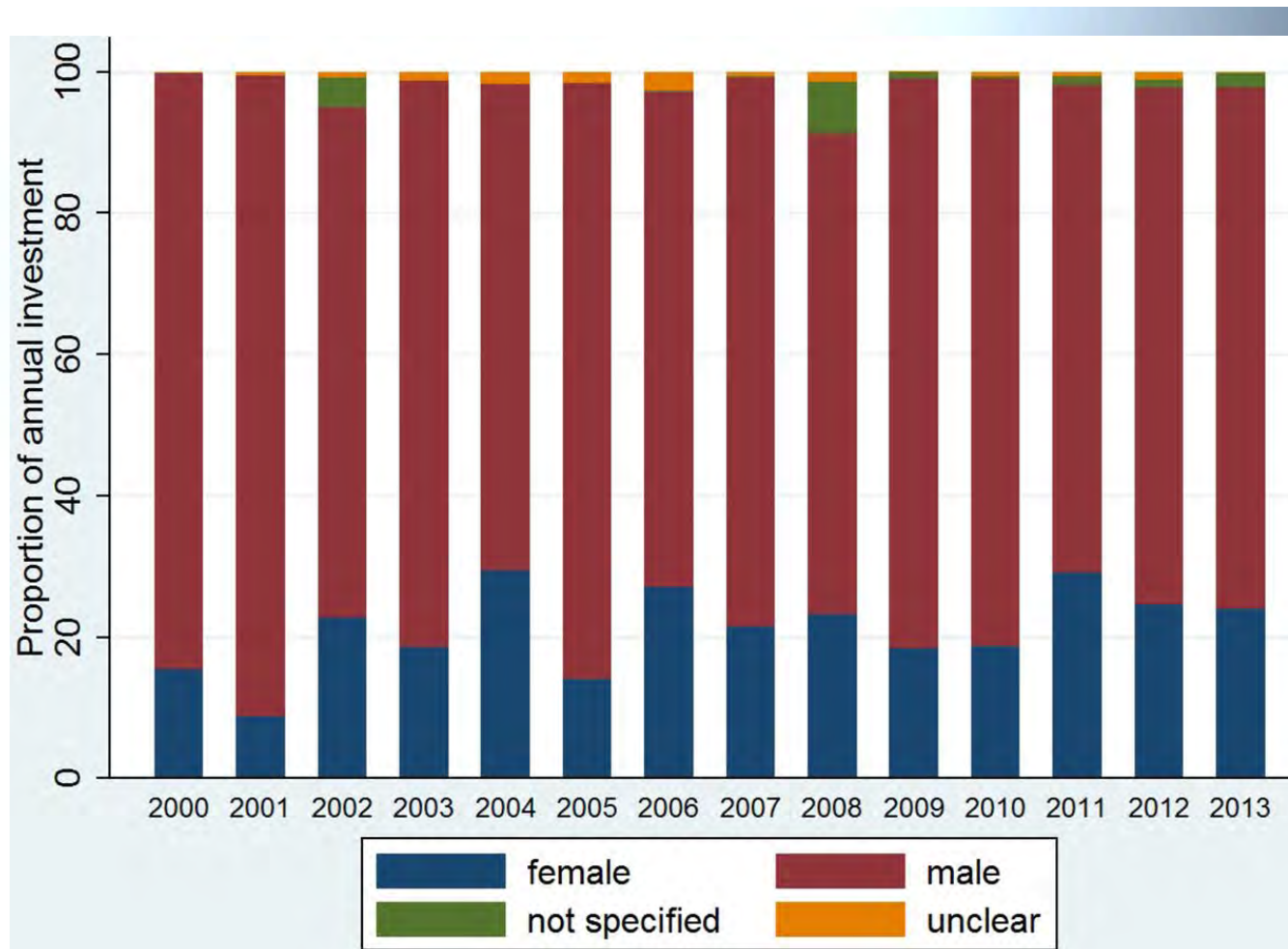
Mean award size (1.6 fold difference)

Men - £630 324

Women - £394 730



Sum total of annual UK cancer research funding by gender



Proportion of annual UK cancer research funding by gender

Differences in investment levels for selected cancer types

Type of cancer	Fold difference in sum investment	Fold difference in median award size
Men's health	14.1	2.1
Women's health	1.9	1.3
Cervical cancer	9.9	2.9
Breast cancer	1.6	1.4

Conclusions and discussion

We do NOT assess for gender bias

Describe 'clear and consistent' differences in award distributions, and quantify changes (or not) over time with large cross-disciplinary datasets

Provides empirical evidence to underpin and inform discussions, and support other quantitative and qualitative data

Differences explained in part by a) numbers of those who apply, and b) senior researchers will apply for bigger awards, and they are overwhelmingly male...

However, differences in mean and median award size awarded to male and female researchers add further context and are still concerning

Also of concern is the consistent 'gender gap' over time (the 80/20 split)

So thus the catch 22

There are not enough female professors (and equivalent senior posts)

Thus women do not tend to apply for the big grants

However, if female scientists are not able to reach senior positions in large enough numbers, this obvious gap in funding distributions will continue

Your catch 22...



Further reading and what's next

The Conversation article (2017)

<https://theconversation.com/men-get-most-of-the-research-funding-its-a-serious-problem-for-women-and-science-85469>

Digital Science and Ada Lovelace Day report (2017)

https://figshare.com/articles/_/5463502

Ongoing work to categorise around 80 000 awards related to infectious disease research across the G20 nations, 2000-2017. (Expect publication in 2019)

Fin

Acknowledgements – numerous co-authors, collaborators, funders who provided data

For more about these papers and the ResIn study
<http://researchinvestments.org/publications/>

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