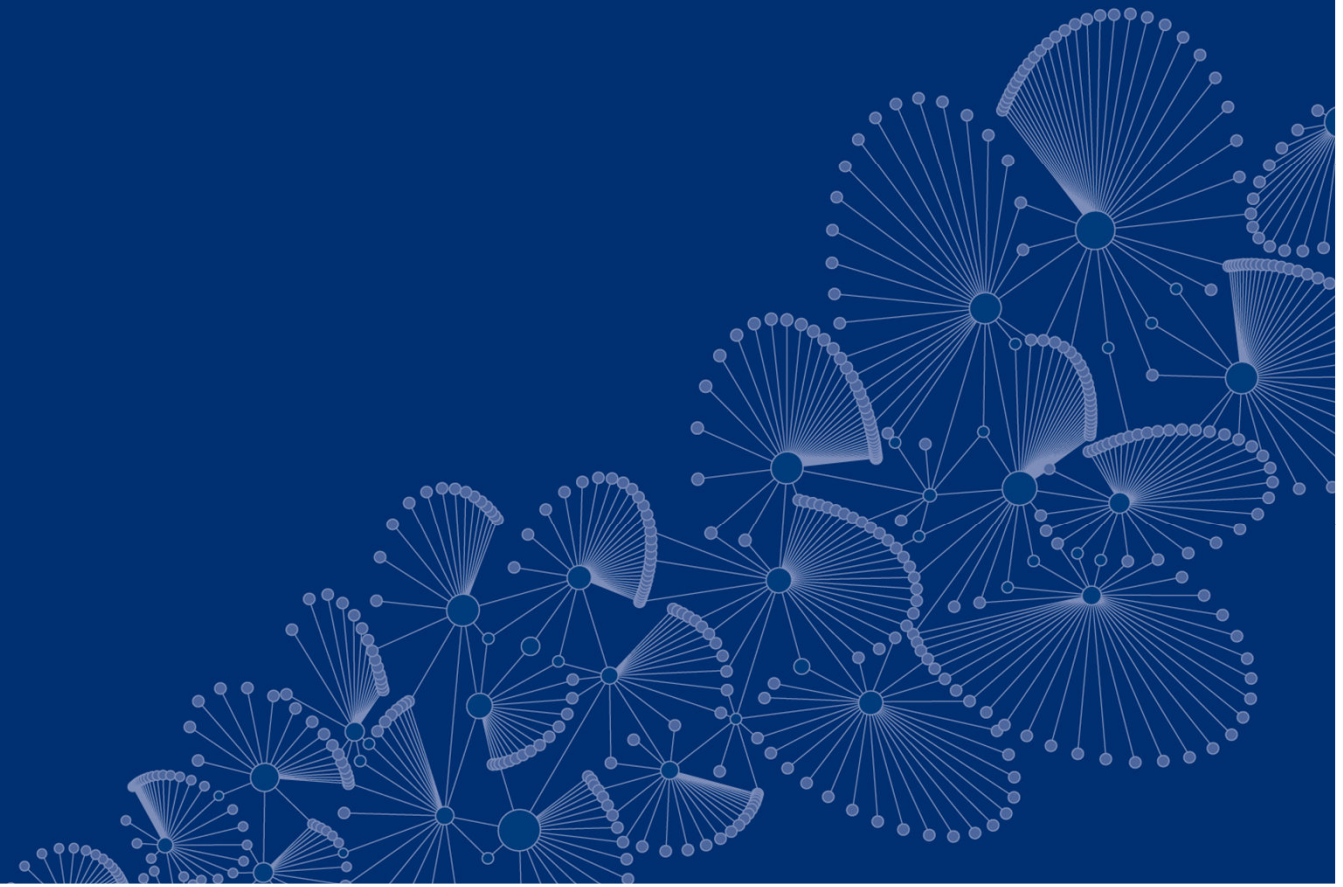
Life after the PhD

Gerlind Wallon, PhD
EMBO Deputy Director

MCFA Heidelberg, 2 May 2016



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History of the PhD

PhD: Philosophiae Doctor

- Latin: docere = to teach
- today the highest academic degree

Middle Ages

- all disciplines outside theology, medicine and law were termed “philosophy”

Today

- based on W. von Humboldt’s University reform (early 19th century)
  - unity of teaching and research
  - emphasis on original research

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Where will a PhD take you?

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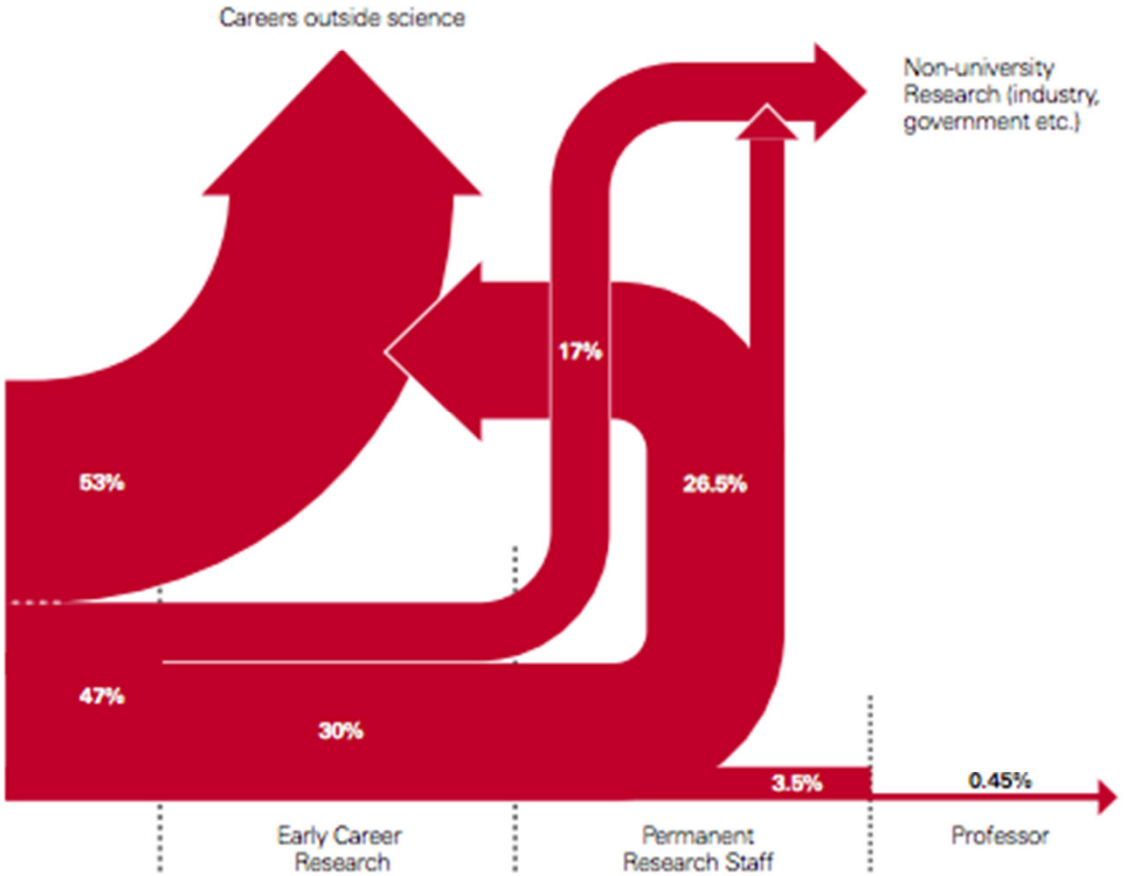
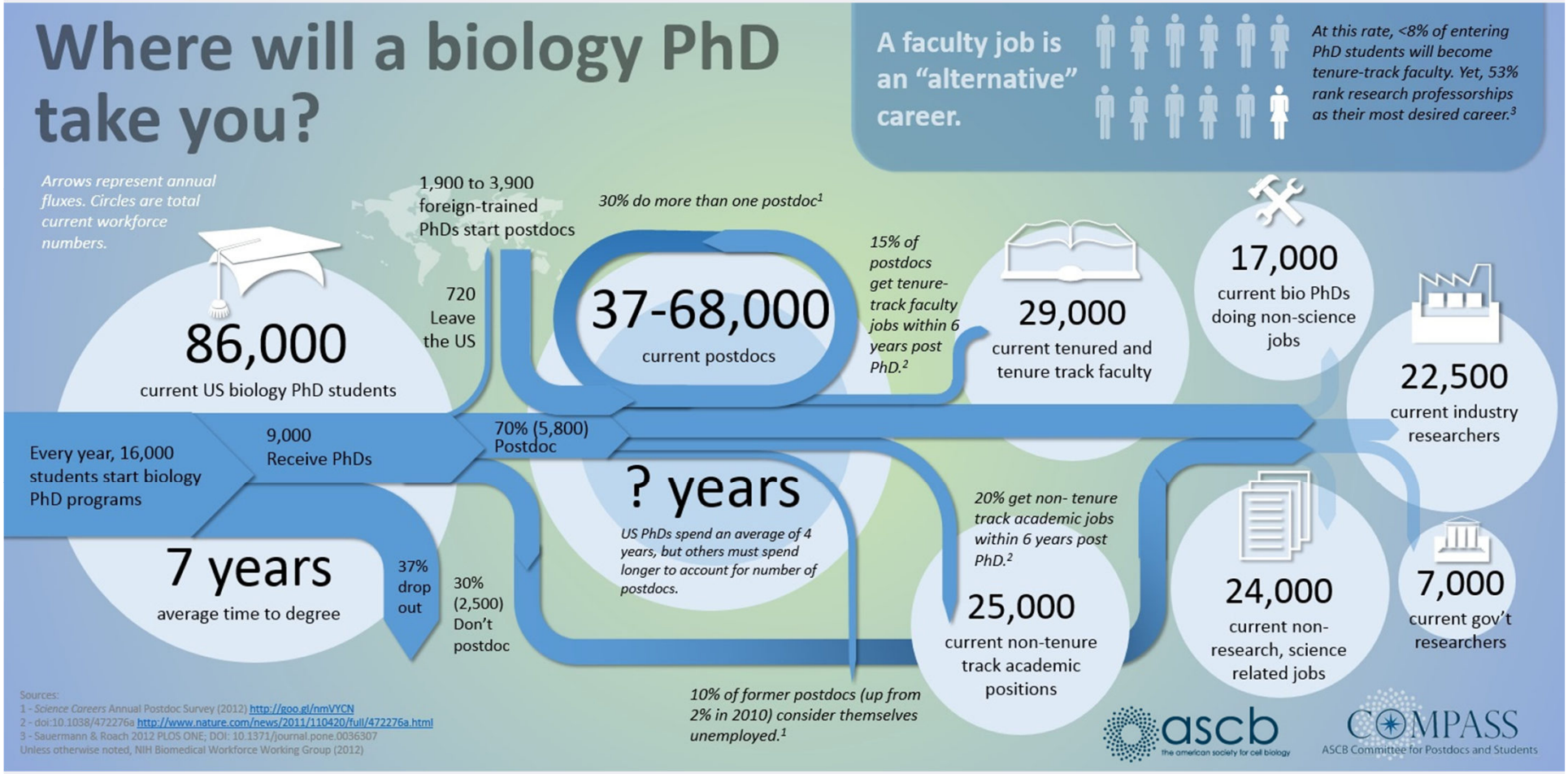
Figure 1.6 **Careers in and outside science**





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What drives this development?

The amount of available funding—and not the supply of career opportunities for young Ph.D.s—determines the number of new scientists that universities train.

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Is it worth it?

- Financially
- Job security

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Table 1. Earnings premia by type of level of degree, discipline and sex.

	Men			Women		
	BA/BSc	MA/MSc	PhD	BA/BSc	MA/MSc	PhD
Medicine and related	20	20	38	41	49	55
Sciences	12	12	20	22	30	36
Maths and computing	28	28	28	34	49	47
Engineering and technology	25	33	25	32	48	32
Architecture and related	16	30	16	36	36	*
Social sciences	14	22	22	28	46	42
Business and financial studies	24	38	44	35	54	46
Arts	–3	6	–3	19	27	28
Languages	7	7	7	19	19	19
Education	18	30	18	42	49	54
Combined	14	23	26	23	38	38

Einstiegsgehälter von Akademikerinnen und Akademikern nach Hochschulabschluss

– Durchschnittliches Bruttomonatsgehalt ohne Sonderzahlungen in € –

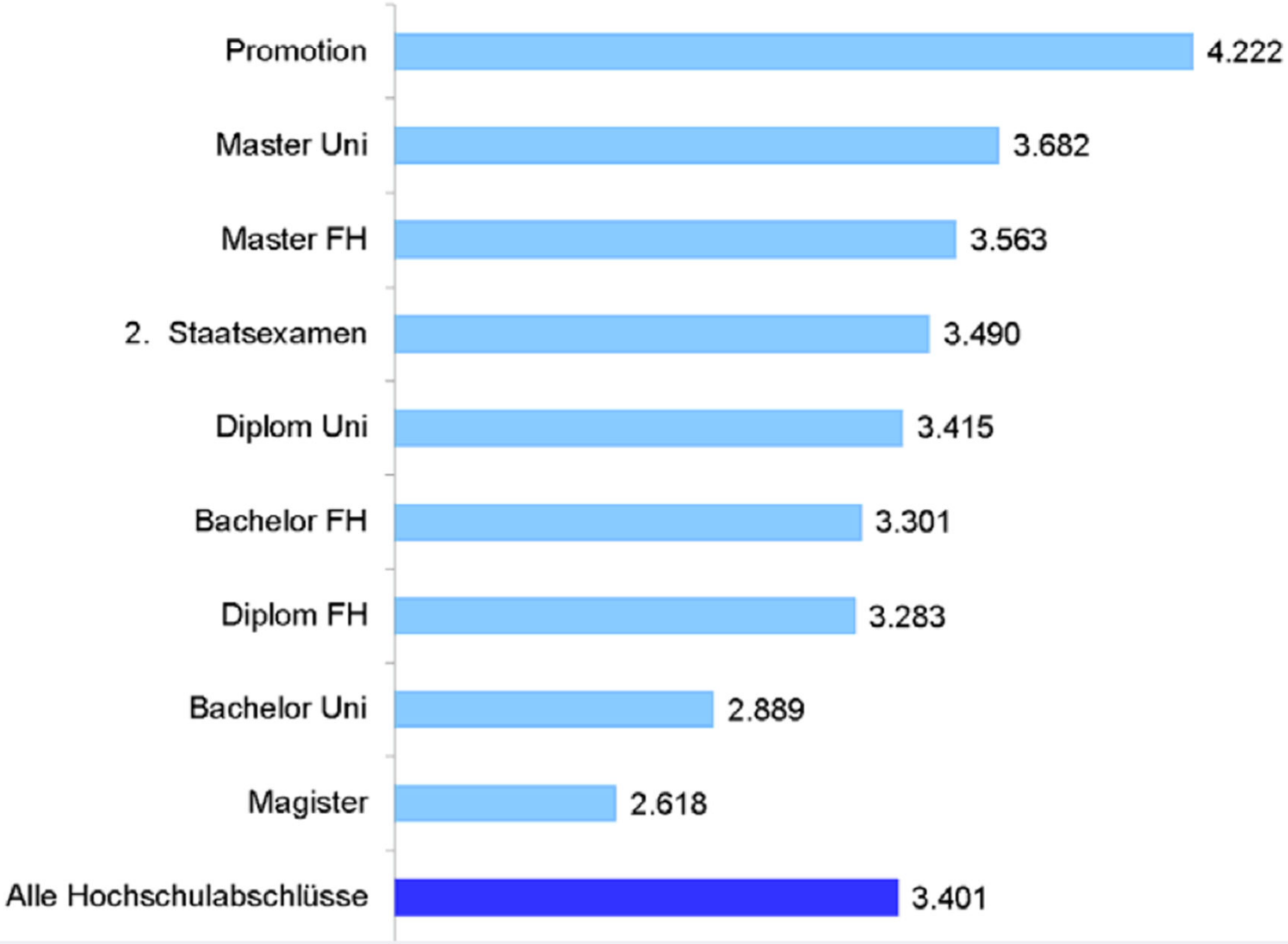
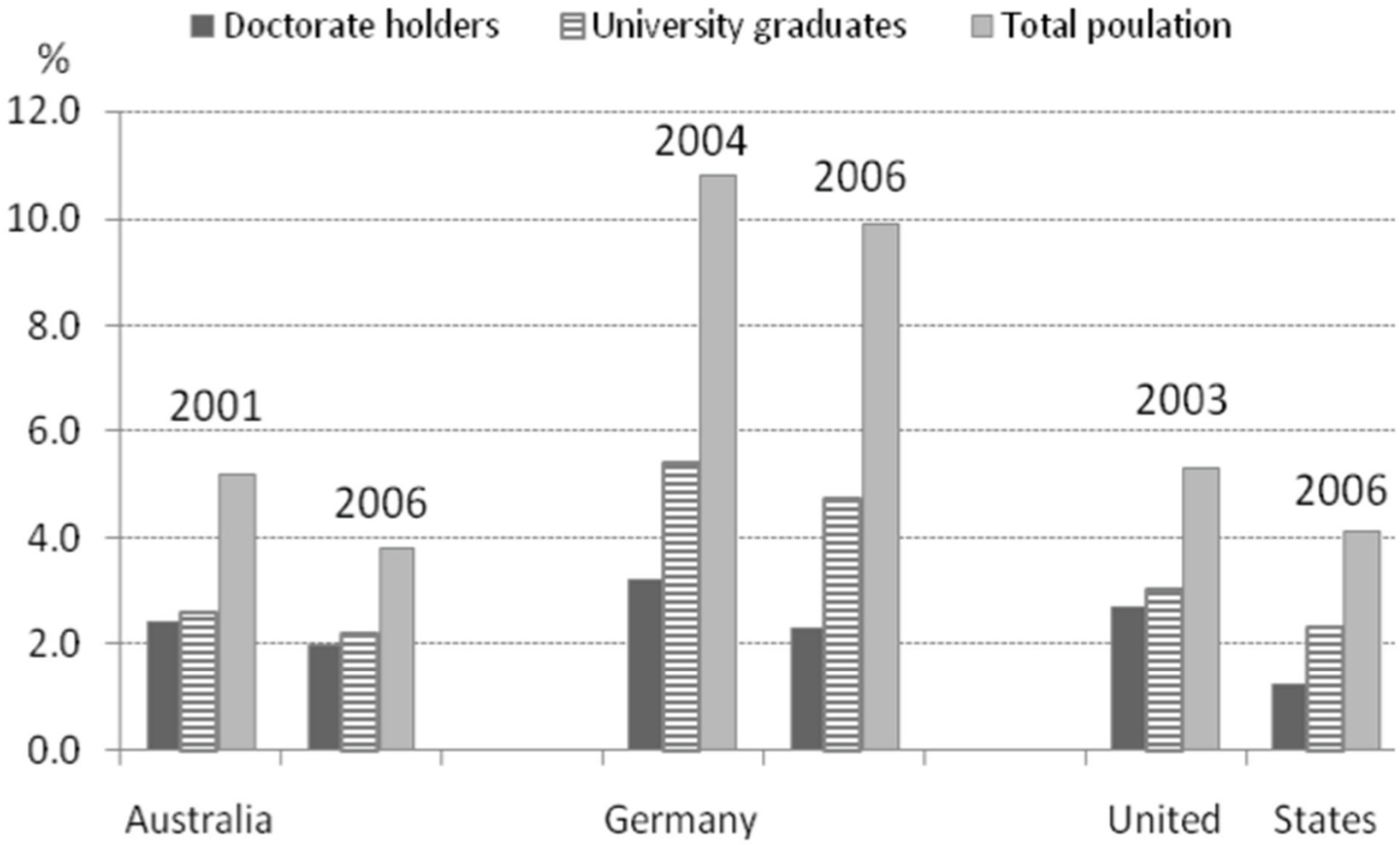


Figure 8. Trend cycles in unemployment rates by educational attainment



PhD researchers were seen by many . . . to possess skills and competencies that are hard to find among new graduates. . . . [Recruiters] describe PhD graduates as 'being able to hit the ground running'. This can manifest itself in a variety of ways, such as PhD graduates' familiarity with specialist techniques and equipment, their ability to review and précis reports or in the structured way they approach solving complex problems. (p. 29)

…but what else?

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Laboratory Management Courses

EMBO Laboratory Management Courses

> Lab leadership courses for group leaders and post docs (academic and non-academic)

> Leadership skills, communication skills, negotiation skills, conflict solving strategies, recruitment, team development

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EMBO Career Day

The Career Day offers a number of career development workshops for young scientists - PhD students and postdocs. The skills developed in these sessions are essential for successful academic or science-related careers. These sessions are uniquely developed for scientists by scientists; all the trainers have a research background and work extensively with researchers in the life sciences.

Time	Session No.	Topic
09:15 – 12:15	A1	Distilling the nucleus of your project
09:15 – 12:15	A2	Career planning for scientists
09:15 – 12:15	A3	CV + job applications (academic positions)
09:15 – 12:15	A4	*more details to follow*
12:30 – 14:00	B	Career options lunch
14:15 – 17:15	C1	Distilling the nucleus of your project
14:15 – 17:15	C2	Effective Networking for researchers
14:15 - 17:15	C3	CV + Job Applications (non-academic positions)
14:15 – 17:15	C4	How to get your paper published

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Save the date
the 7th
EMBO
meeting
advancing the life sciences
2016
Mannheim
GERMANY
10 – 13 September
the-embo-meeting.org
20
concurrent sessions
covering the latest
research in the
life sciences
Conference
Chairs
Jannie Borst
Brian Charlesworth
Jan Ellenberg
Speakers
include
Naama Barkai
Patrick Cramer
Caroline Dean
Peter Donnelly
Ronald N. Germain
Edith Heard
Charles Langley
Jennifer Lippincott-
Schwartz
Erik Sahai

From PhD to ….

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women’s career progression

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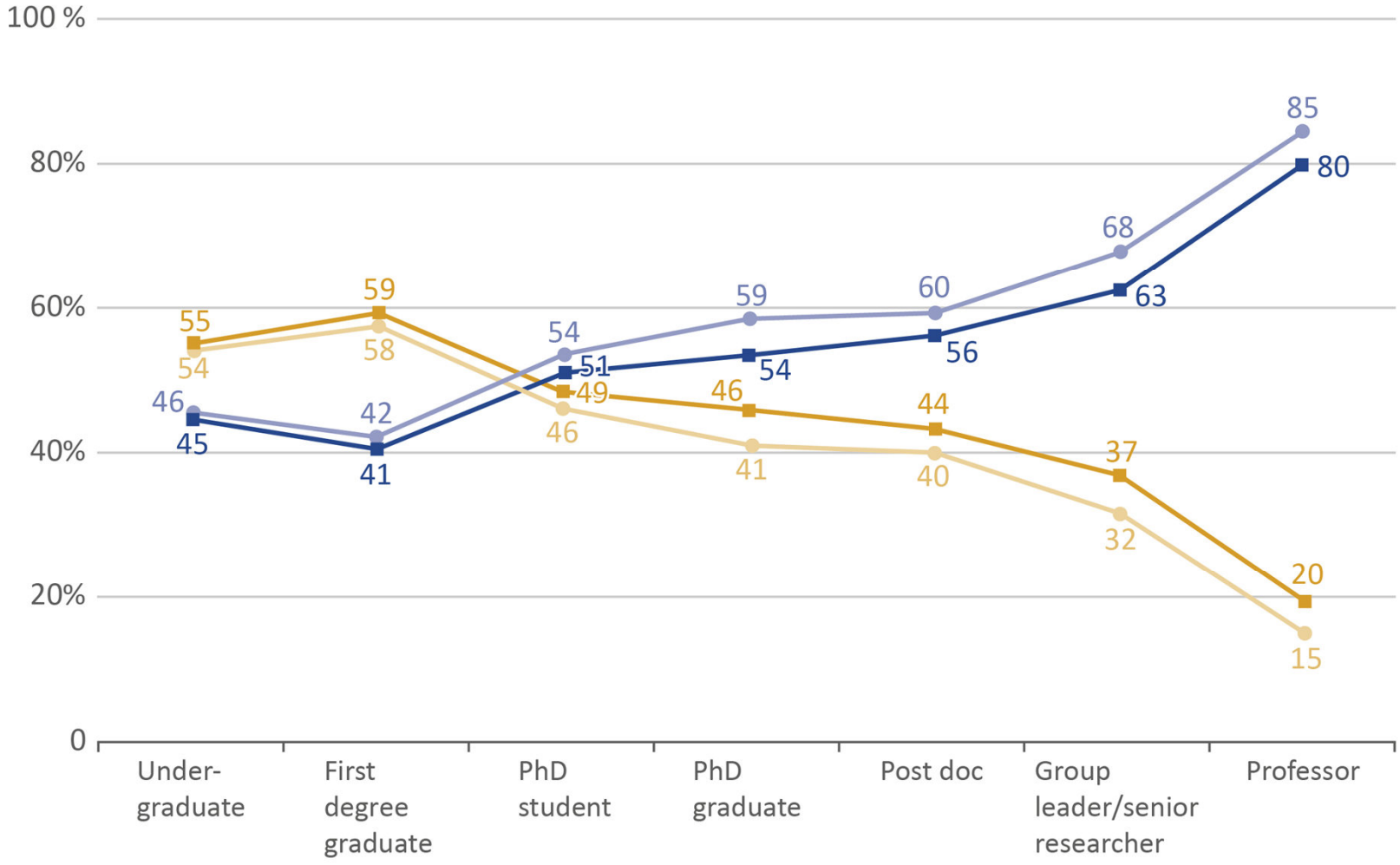

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adapted from SheFigures 2012

Who’s right:

optimists or pessimists?

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Demographic inertia revisited: An immodest proposal to achieve equitable gender representation among faculty in higher education.

R. Marschke, S. Laursen, J. M. Nielsen, P. Dunn-Rankin

Journal of Higher Education, 78, 1 (2007)

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"Change in occupational segregation is moving at a glacial speed"

Demographic constraints:

- faculty age structures
- gender composition among PhD earners
- faculty attrition/retention
- number of new faculty positions

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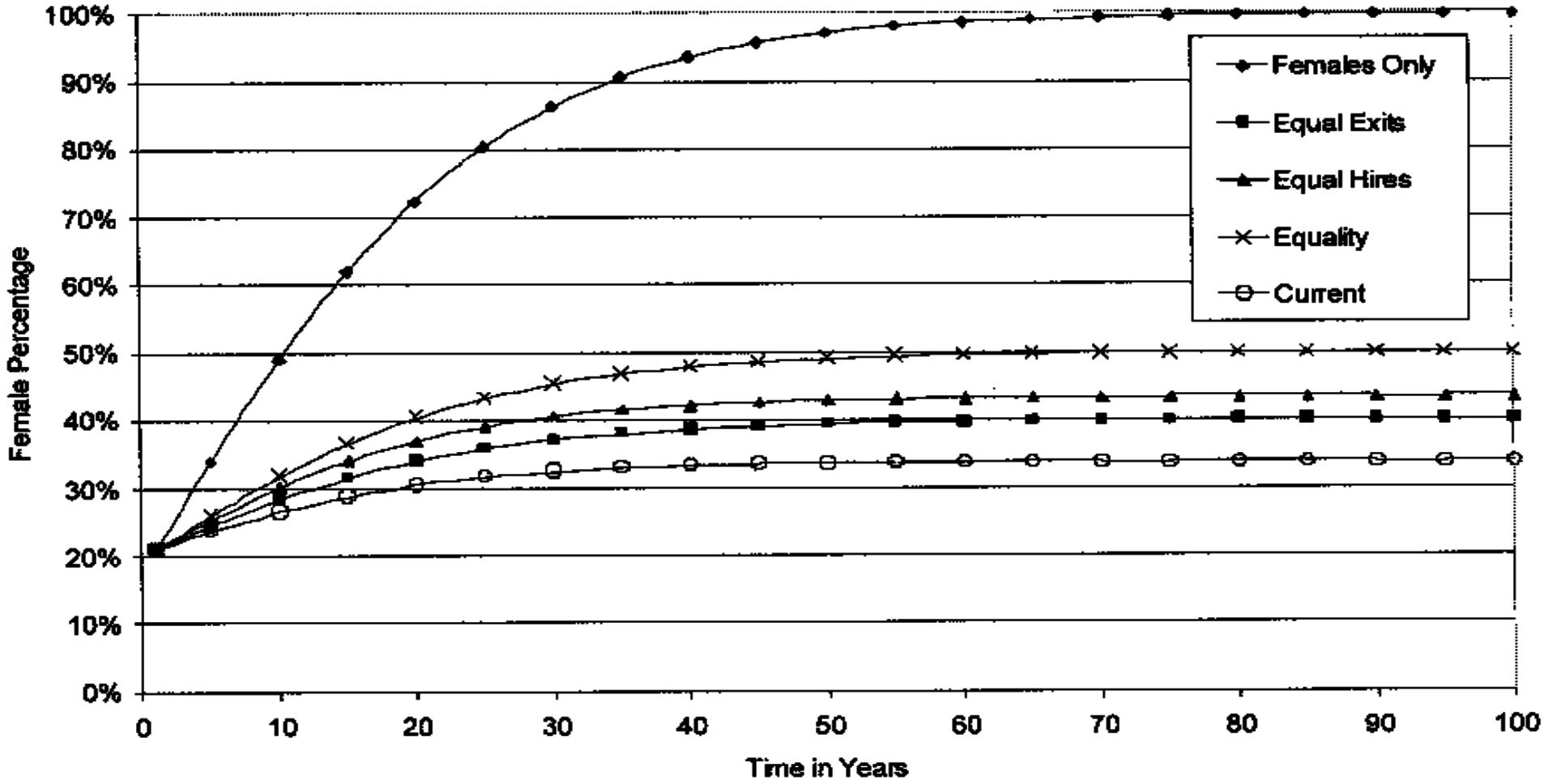

FIG. 2. Graph of female percentage of faculty per differential equations model.

Gender Differences at Critical Transitions in the Careers of Science, Engineering and Mathematics Faculty

Committee on Gender Differences in the Careers of Science, Engineering, and Mathematics Faculty;
Committee on Women in Science, Engineering, and Medicine;
National Research Council

ISBN: 978-0-309-11463-9 (2010)

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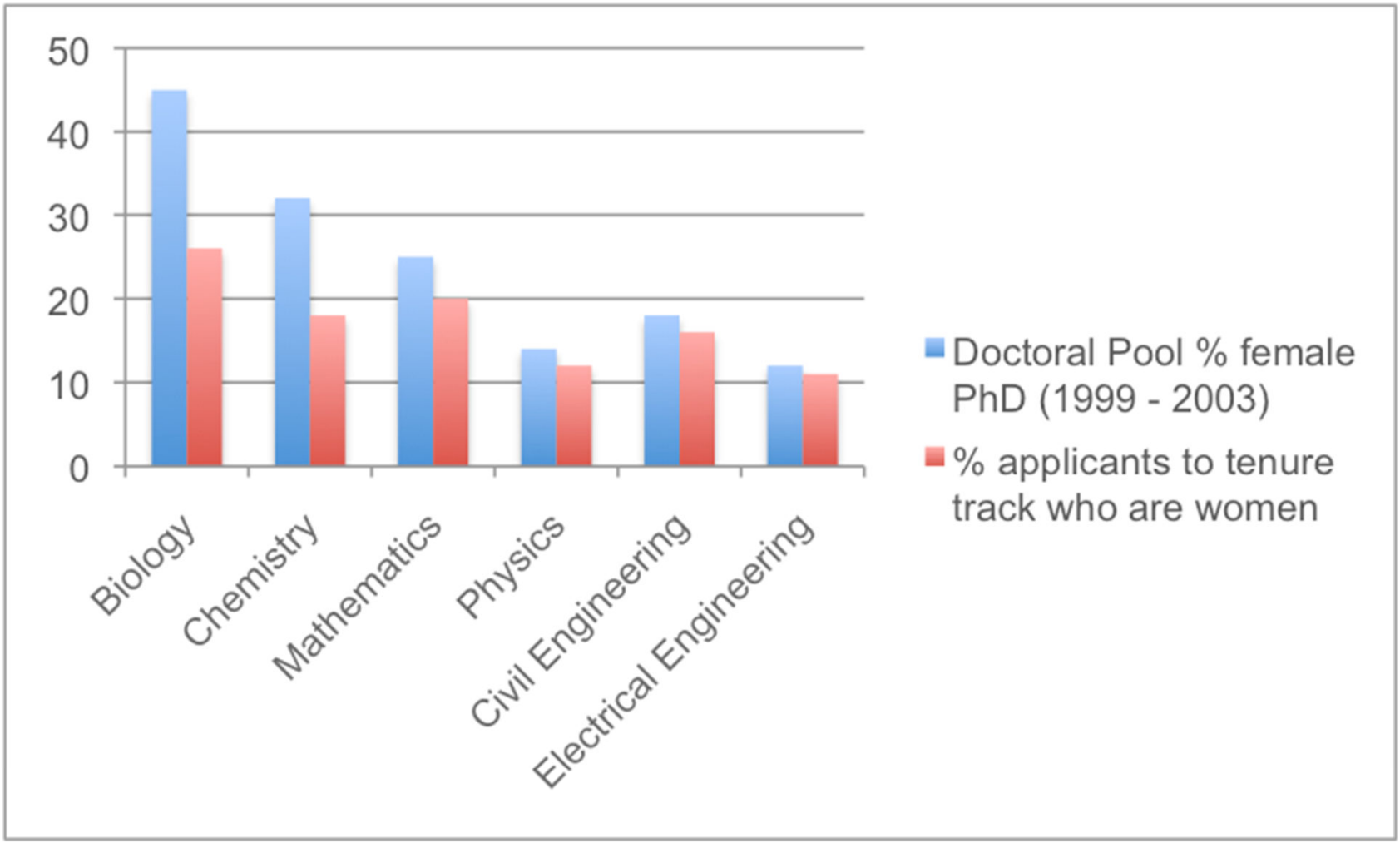
TABLE S-2 Transitions from Ph.D. to tenure-track positions by field at the Research I Institutions Surveyed (%)

	Doctoral Pool	**Pools for Tenure-Track Positions**		
	% women Ph.D.s (1999-2003)	Mean % of applicants who are women	Mean % of applicants invited to interview who are women	Mean % of offers that go to women
Biology	45	26	28	34
Chemistry	32	18	25	29
Civil Engineering	18	16	30	32
Electrical Engineering	12	11	19	32
Mathematics	25	20	28	32
Physics	14	12	19	20

SOURCE: Survey of departments; Ph.D. data is from NSF, WebCASPAR.



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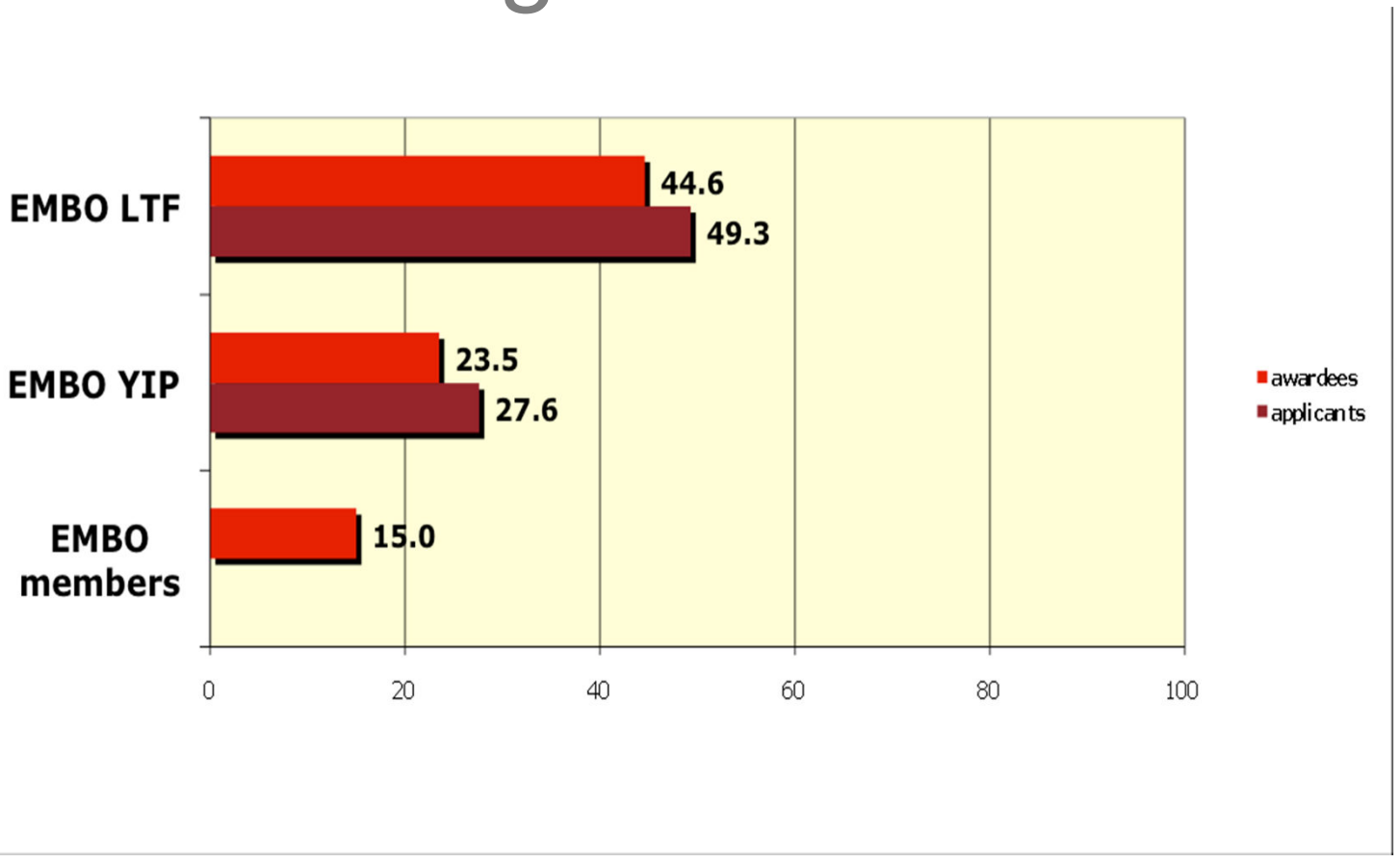
EMBO Programmes



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Women in Science

A persistent problem

Traditional gender roles hold back female scientists

EMBO reports | Volume 8 | 2007 | 982 - 987

Anna Ledin, Lutz Bornmann, Frank Gannon and Gerlind Wallon

Anna Ledin, PhD
EMBO Women in Science
Royal Academy of Sweden

Lutz Bornmann, PhD
Formerly ETH Zurich
Max Planck Gesellschaft

Prof. Frank Gannon
Former Executive Director of EMBO
Director Queensland Institute of Medical Research

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Analysis

1. Gender-blinding
2. Bibliometry on application
3. Bibliometry since application
4. Survey

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Analysis

1. Gender-blinding

   The difference in success rate persisted

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Analysis

1. Gender-blinding

   The difference in success rate persisted

2. Bibliometry on application

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Results from bibliometric analysis

at application in 1998

- Awarded women publish as well as awarded men
- Women overall publish fewer papers, but of the same quality as men

eight years later in 2006

- the gap has increased

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Analysis

1. Gender-blinding

   The difference in success rate persisted

2. Bibliometry on application

   Women overall publish fewer papers, but of the same quality as men

3. Bibliometry since application

   The gap has increased

4. Survey

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Summary

The gender gap increases as time goes by because:

- Women more frequently
  - have a partner with an equivalent education
  - move due to their partners' career
- Women work fewer hours then their partners
- Men generate a larger percentage of the family income
- Women accumulate career breaks due to children
- Women experience discrimination and less support

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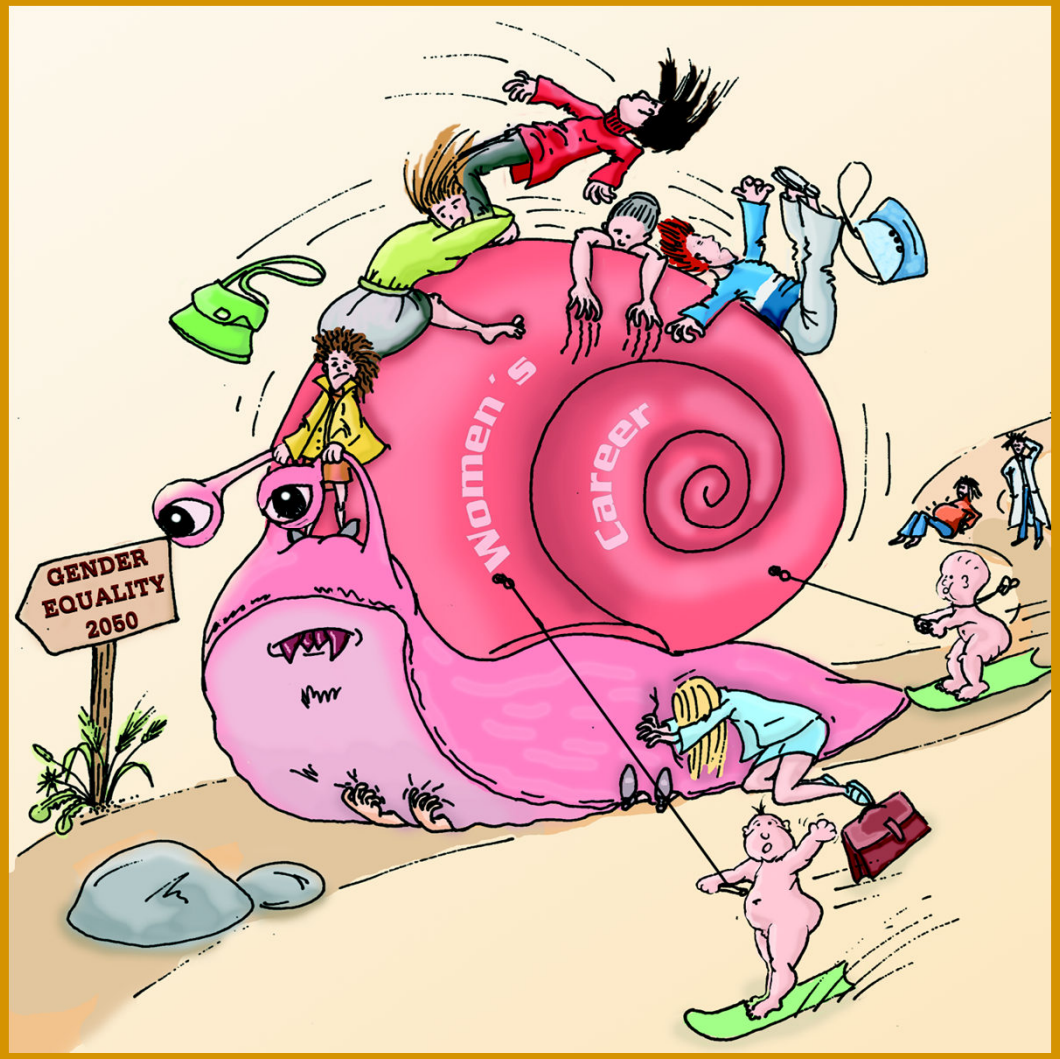

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Where have all the women gone…?

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~~W~~ere Why have all the women gone…?

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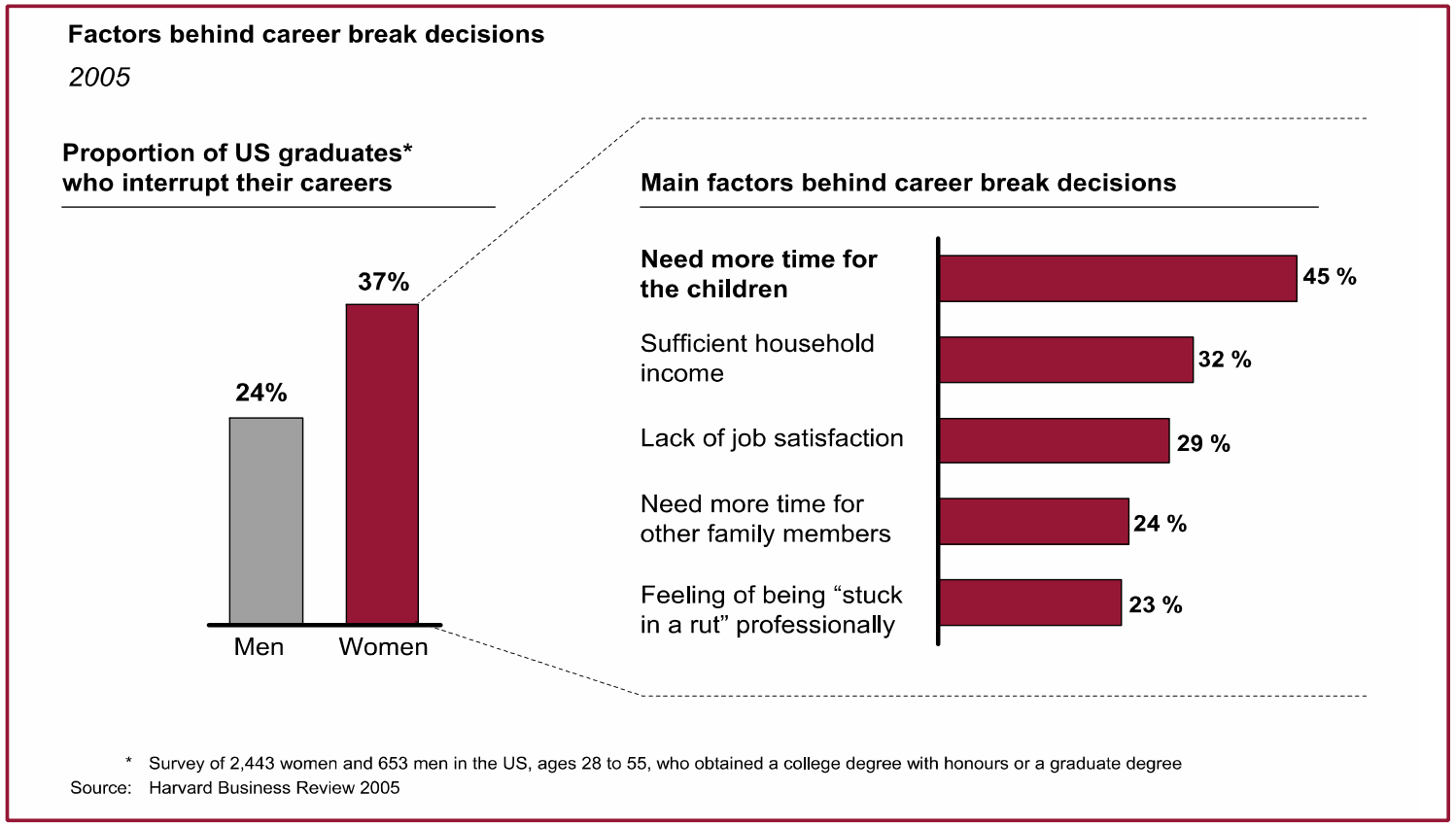
Exhibit 4

Career breaks for women are mainly motivated by the need to spend more time with family



Women Matter

McKinsey & Company, 2007

from: Off-ramps and on-ramps

Sylvia Ann Hewlett

Harvard Business Review, March 2005

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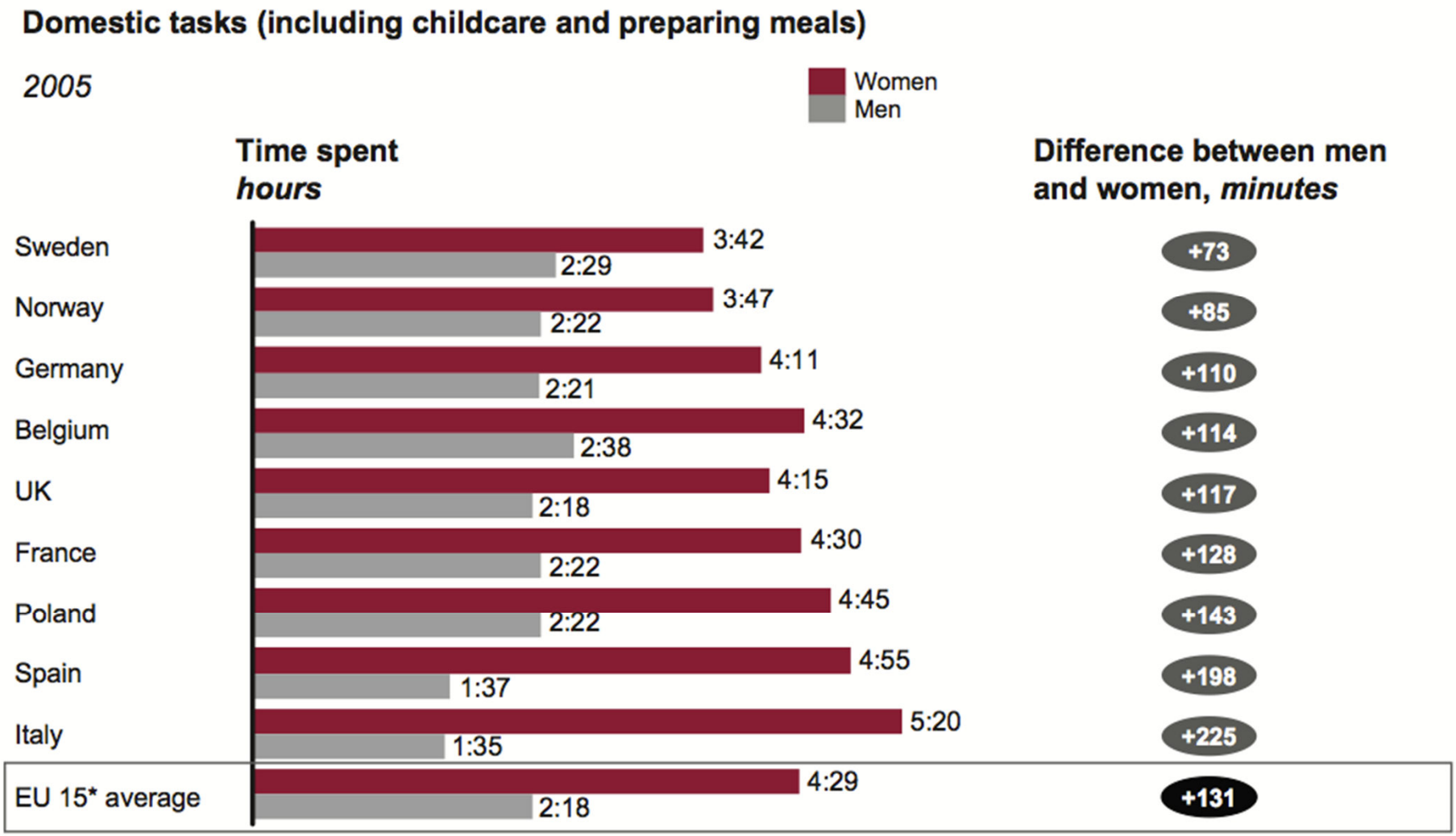

* Sweden, Norway, Finland, Germany, Belgium, UK, Latvia, France, Estonia, Hungary, Slovenia, Lithuania, Poland, Spain, Italy

Source: Eurostat

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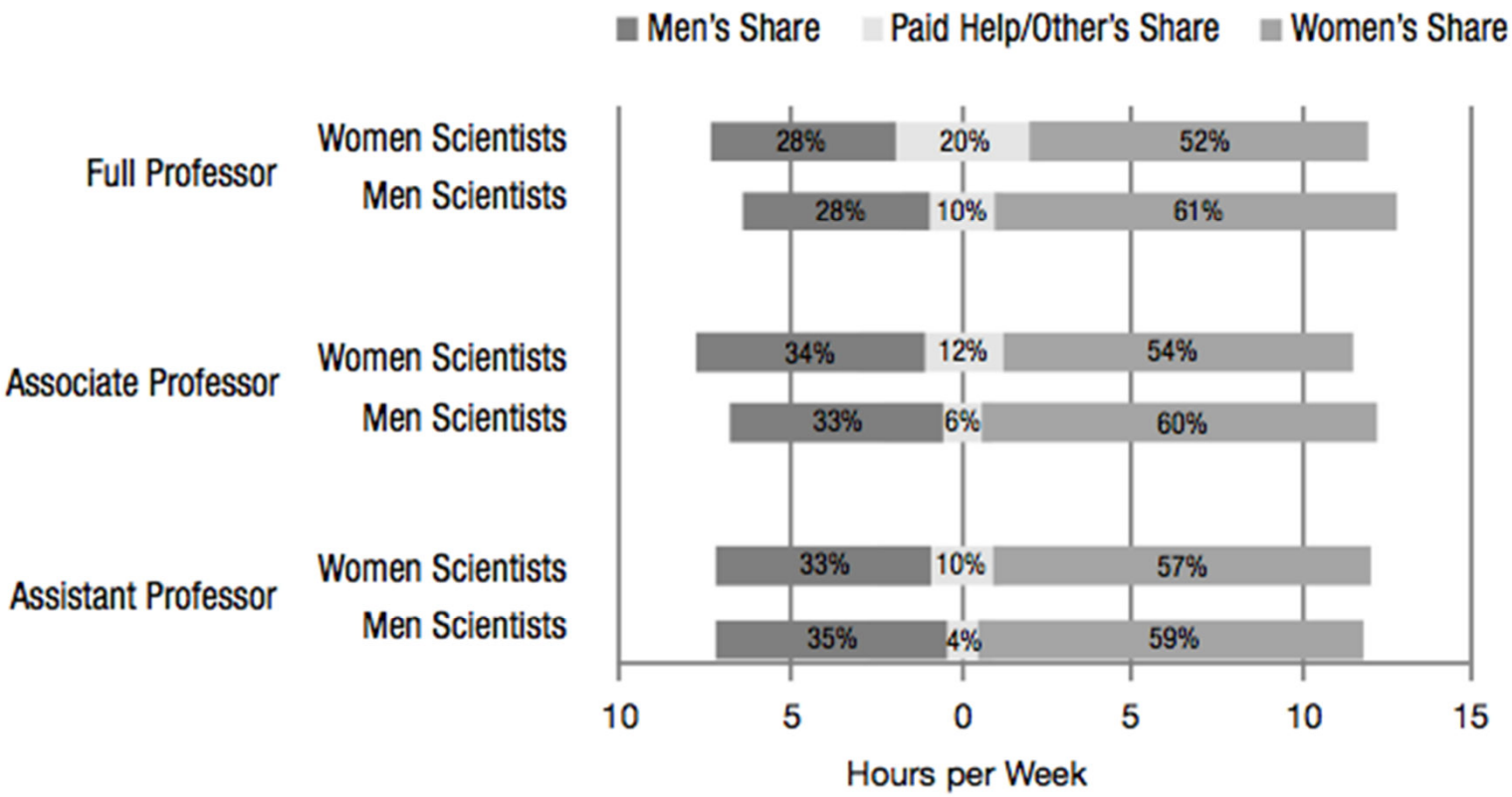
Women Matter

McKinsey & Company, 2007

Figure 3
Division of Core Household Tasks, by Academic Rank



Note: Figure describes scientists in dual-career partnerships only.

Women scientists take on a greater share of core housework than do men scientists at all ranks. Men assistant professors take on more core housework than do men full professors.

Discrimination, biases and stereotype threat

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Science faculty's subtle gender biases favor male students

Corinne A. Moss-Racusin, John F. Dovidio, Victoria L. Brescollc, Mark J. Graham, and Jo Handelsman.

PNAS, 109, 16474-16479 (2012)

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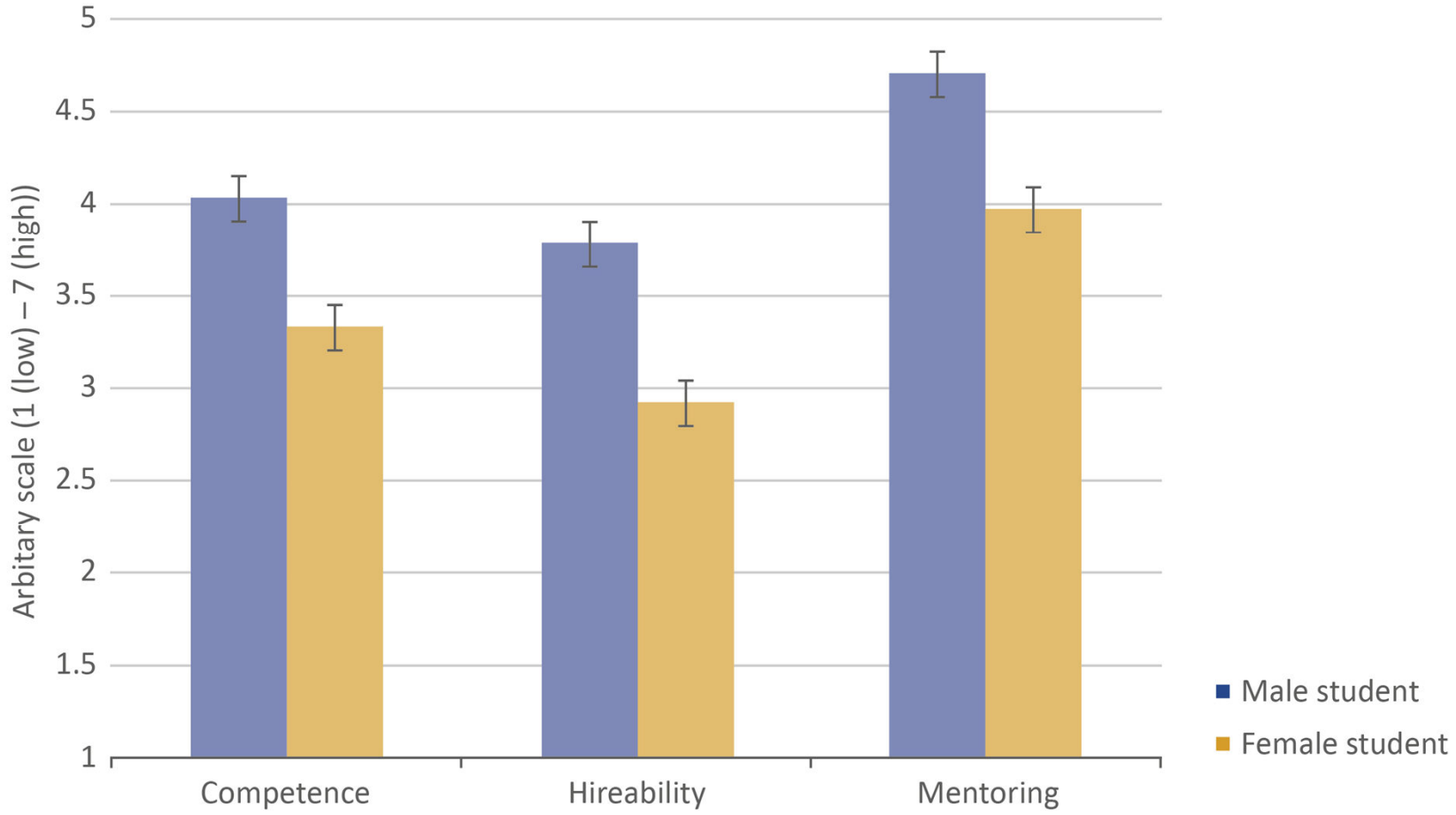

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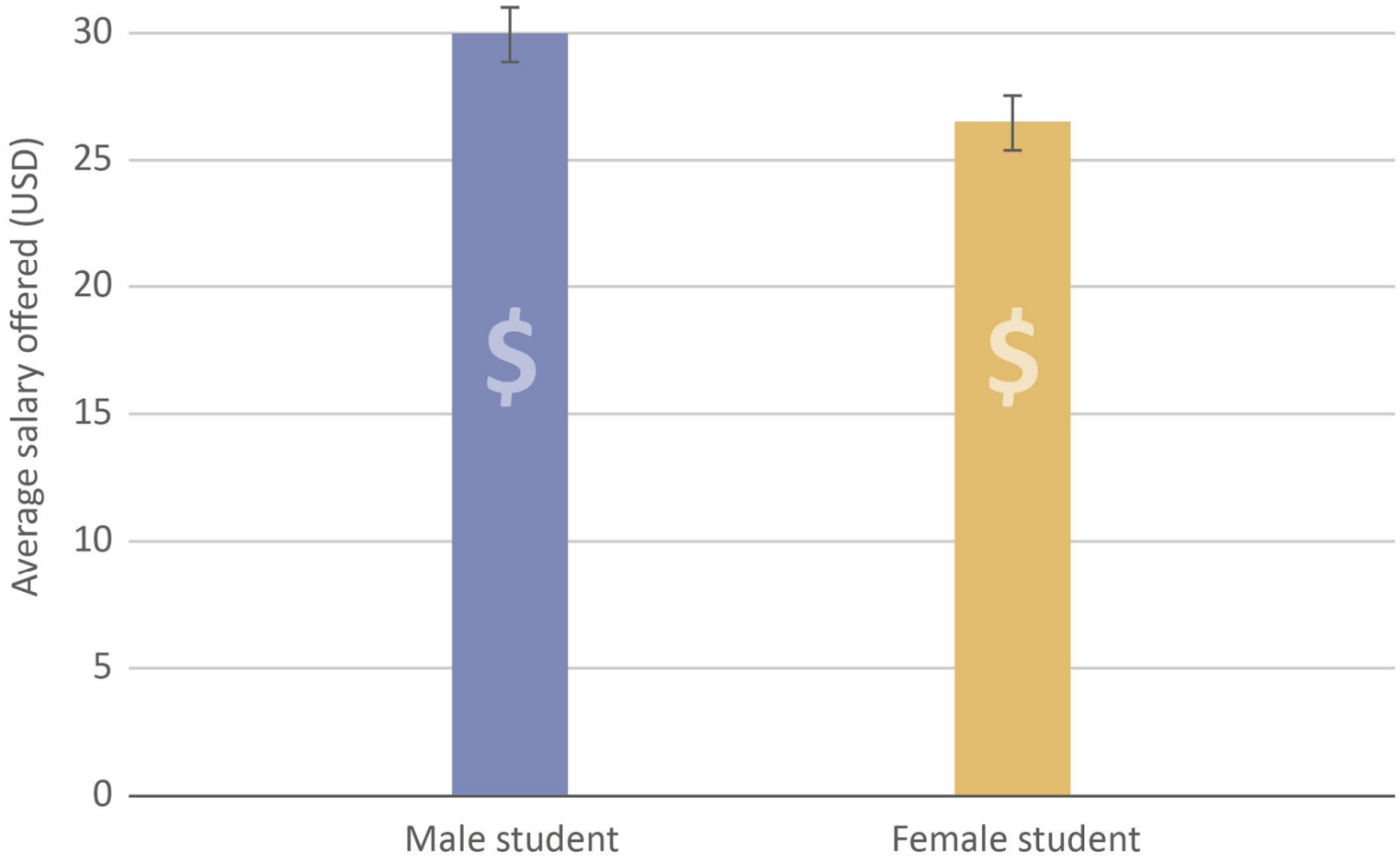

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Test your unconscious biases

The Implicit Association Test (IAT)

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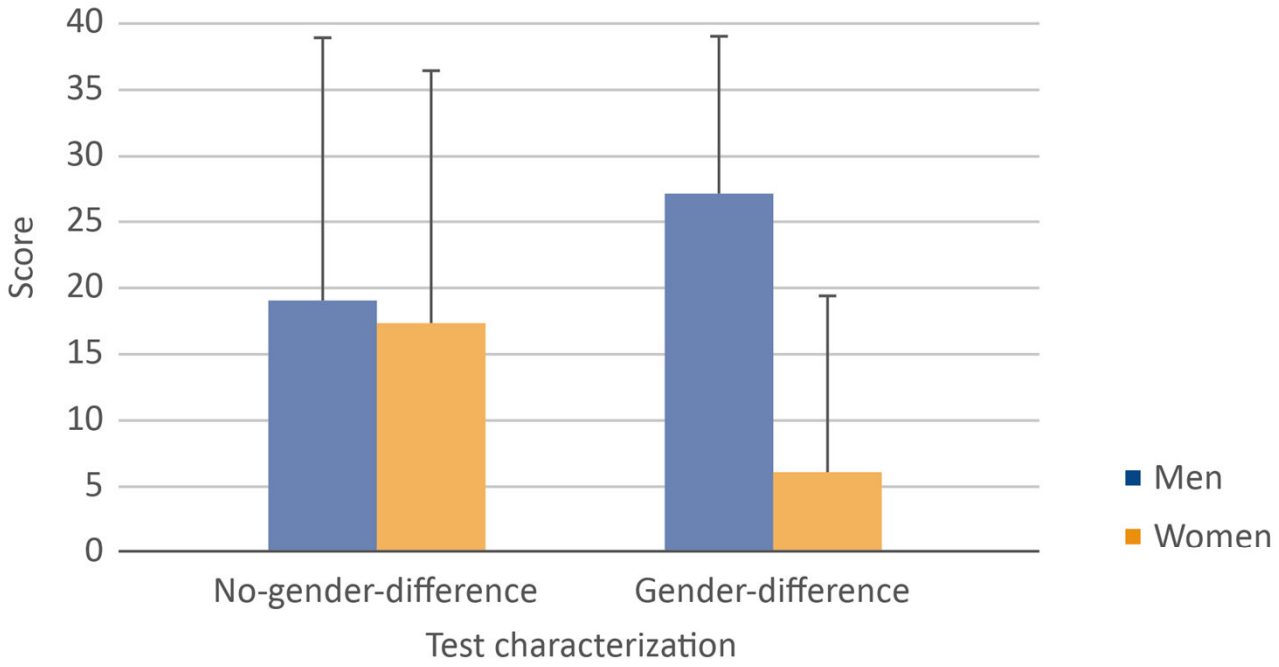
Biases also work on ourselves:

Stereotype threat



Journal of Experimental Social Psychology 35, 4–28 (1999)

Discrimination, biases and stereotype threat

Stereotype threat

“ Are men overconfident and women realistic
or
are men realistic and women underconfident?”
Brian Nosek

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Small effects?

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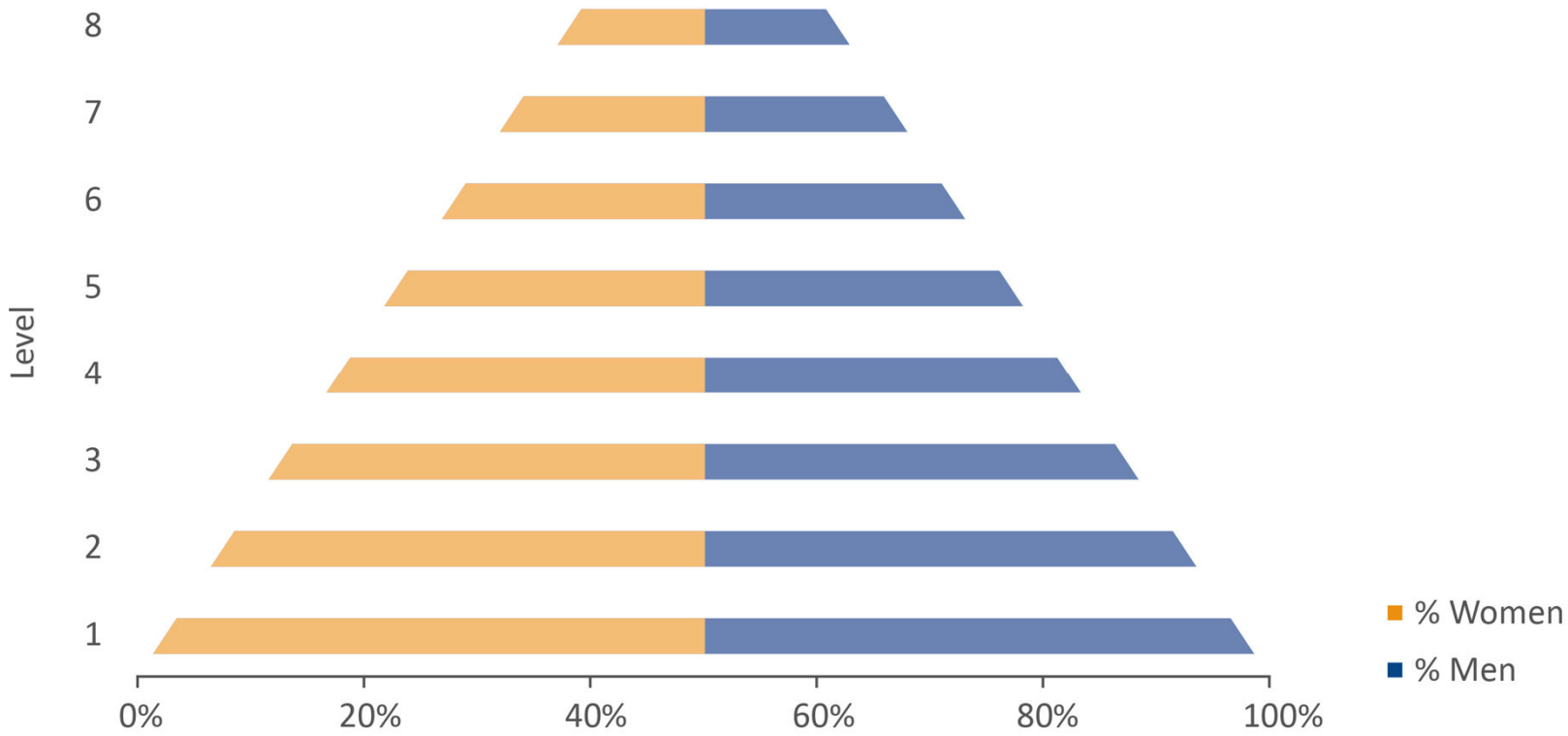
With 1% variability in promotion to the advantage of men…



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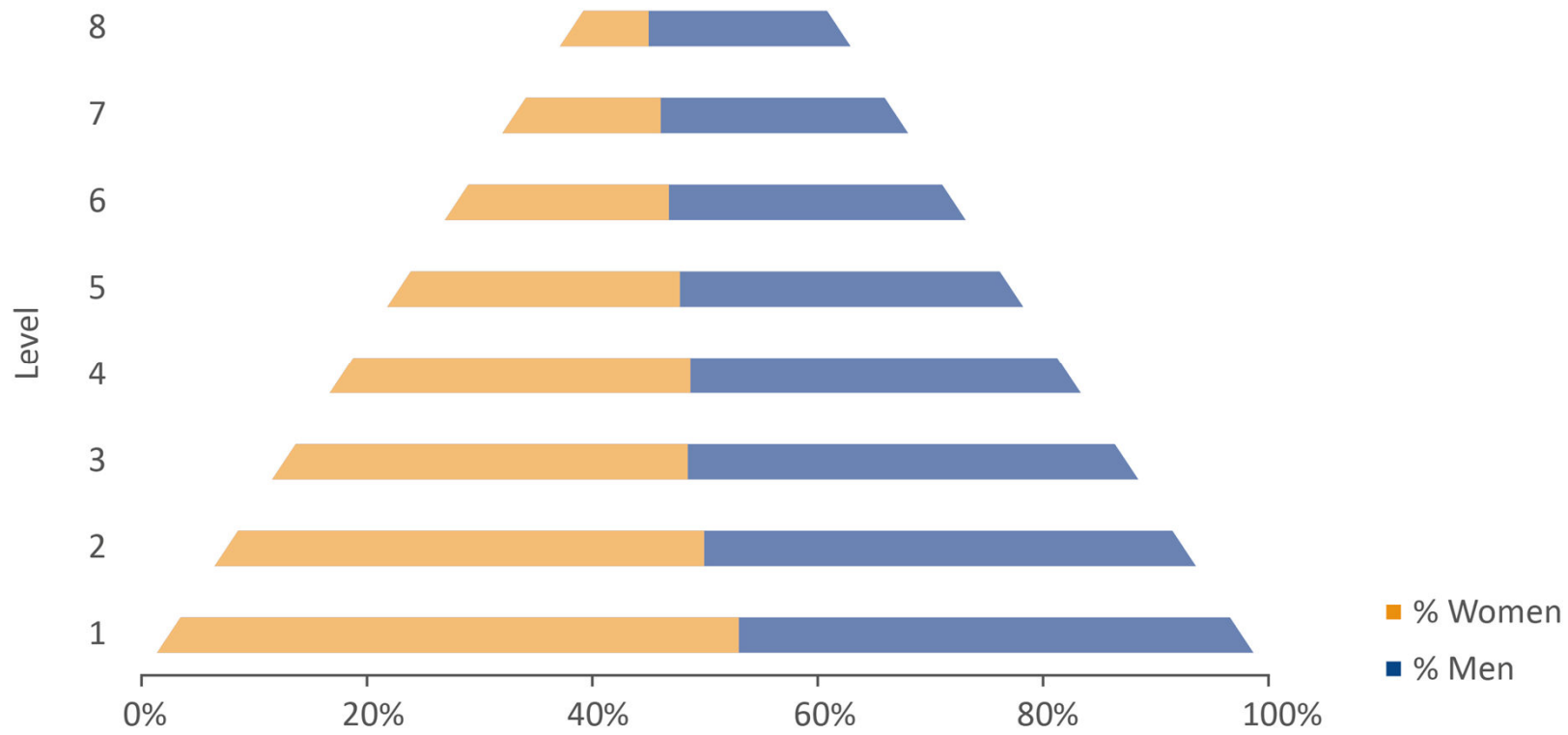
Martell R., Lane D. M., & Willis C. 1996
Male-female differences: A computer simulation.
American Psychologist, 51, 157–157

With 1% variability in promotion to the advantage of men…the top level became 65% male.



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Martell R., Lane D. M., & Willis C. 1996
Male-female differences: A computer simulation.
American Psychologist, 51, 157–157

Summary

- Laissez-faire will not work

- Main factors hindering progression of women:
  - Babies
  - Biases

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Science Policy

Published
October 2015

Thank you for your attention!

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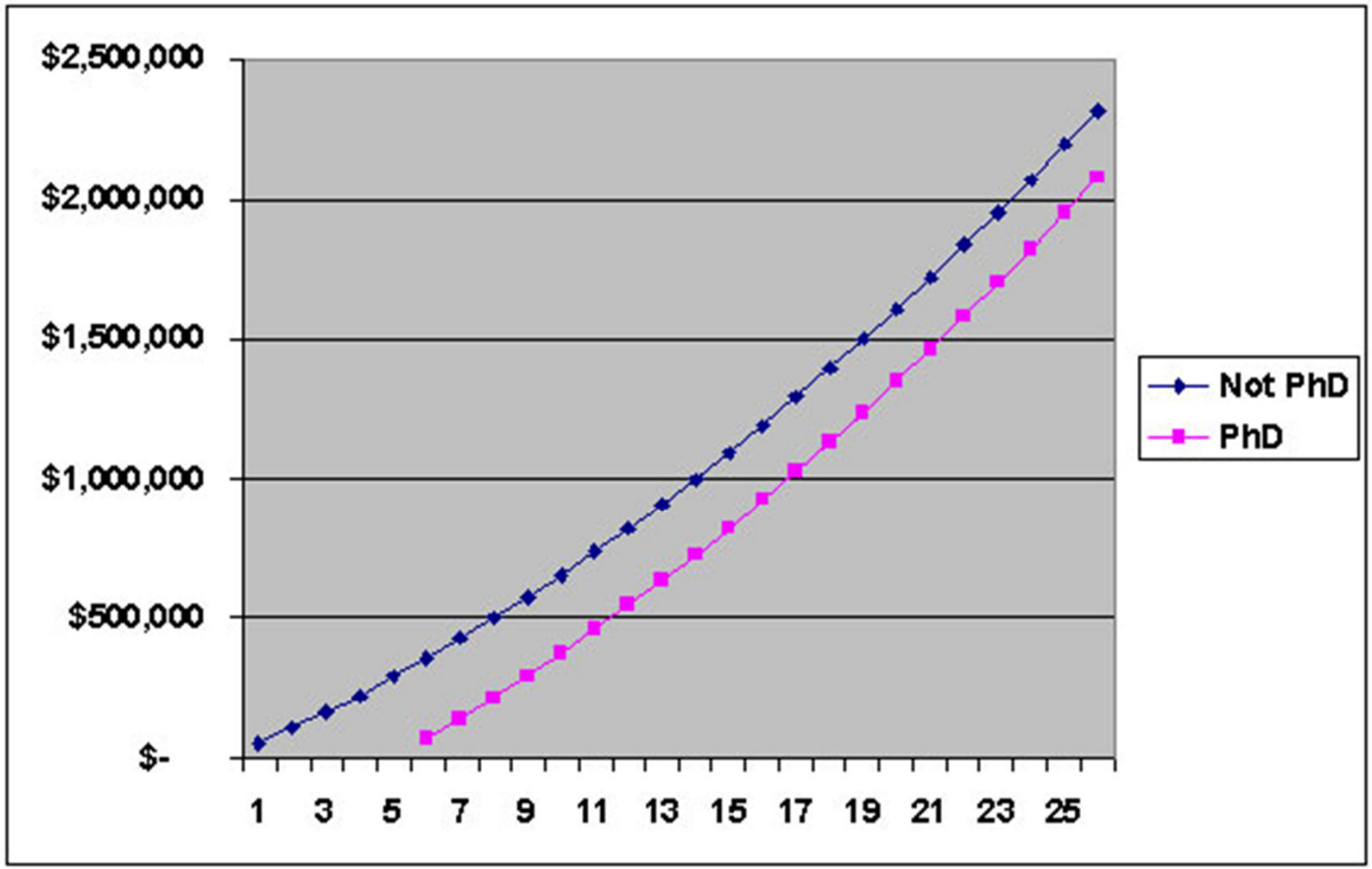
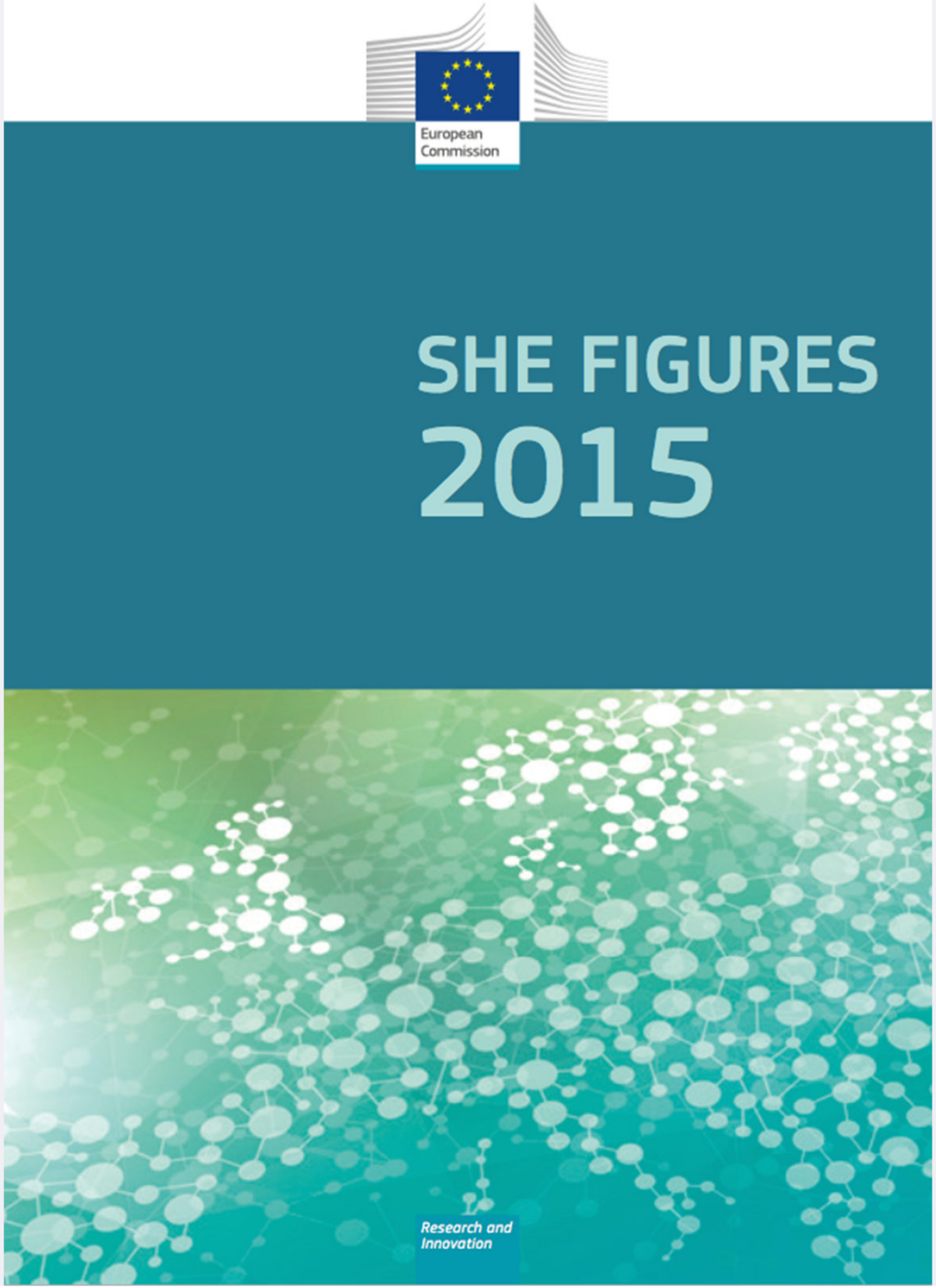


Figure 2: Lifetime earnings of a PhD vs. not having a PhD (Bachelor, Masters or less).



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What can be done?

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What can YOU do?

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On ramps off ramps

% of women who wanted to go back

etc….

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Research on divorce: Continuing trends and new developments

"The common belief that about half of all marriages end in divorce is a reasonable approximation."

Paul R. Amato

Journal of Marriage and Family, 72, 650 – 666 (2010)

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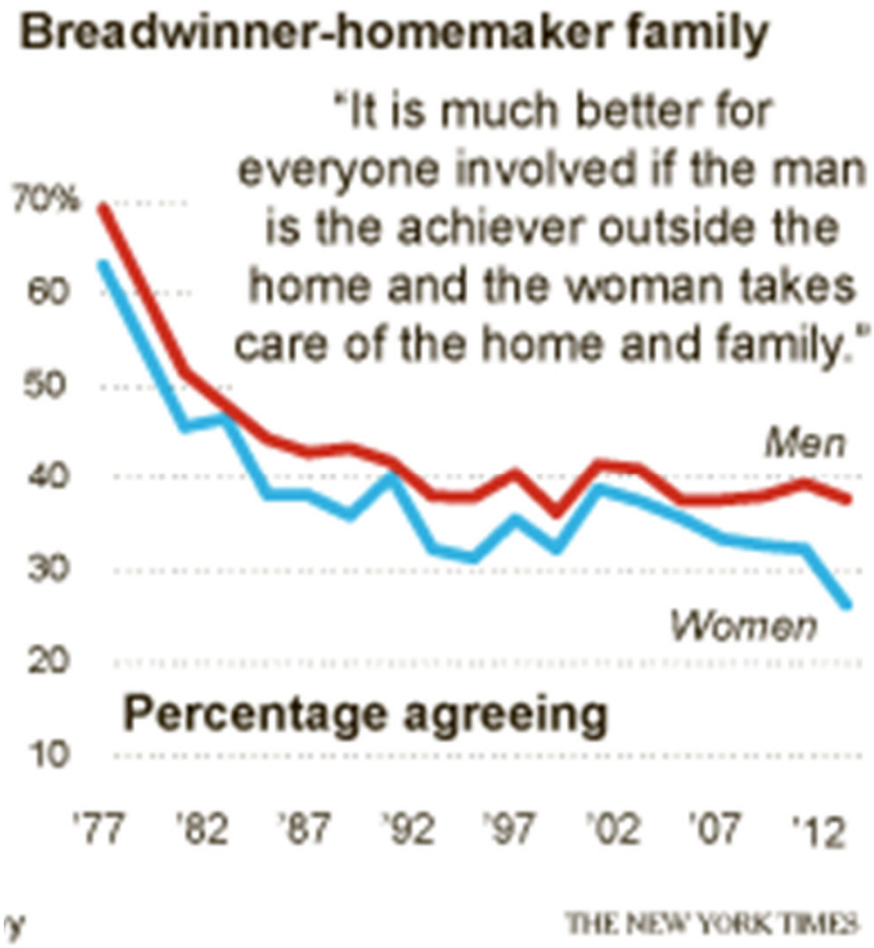

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What can YOU do?

…on the personal level (women only?):

3Women must take their careers seriously:

If women do not respect their own careers - why should anyone else?

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