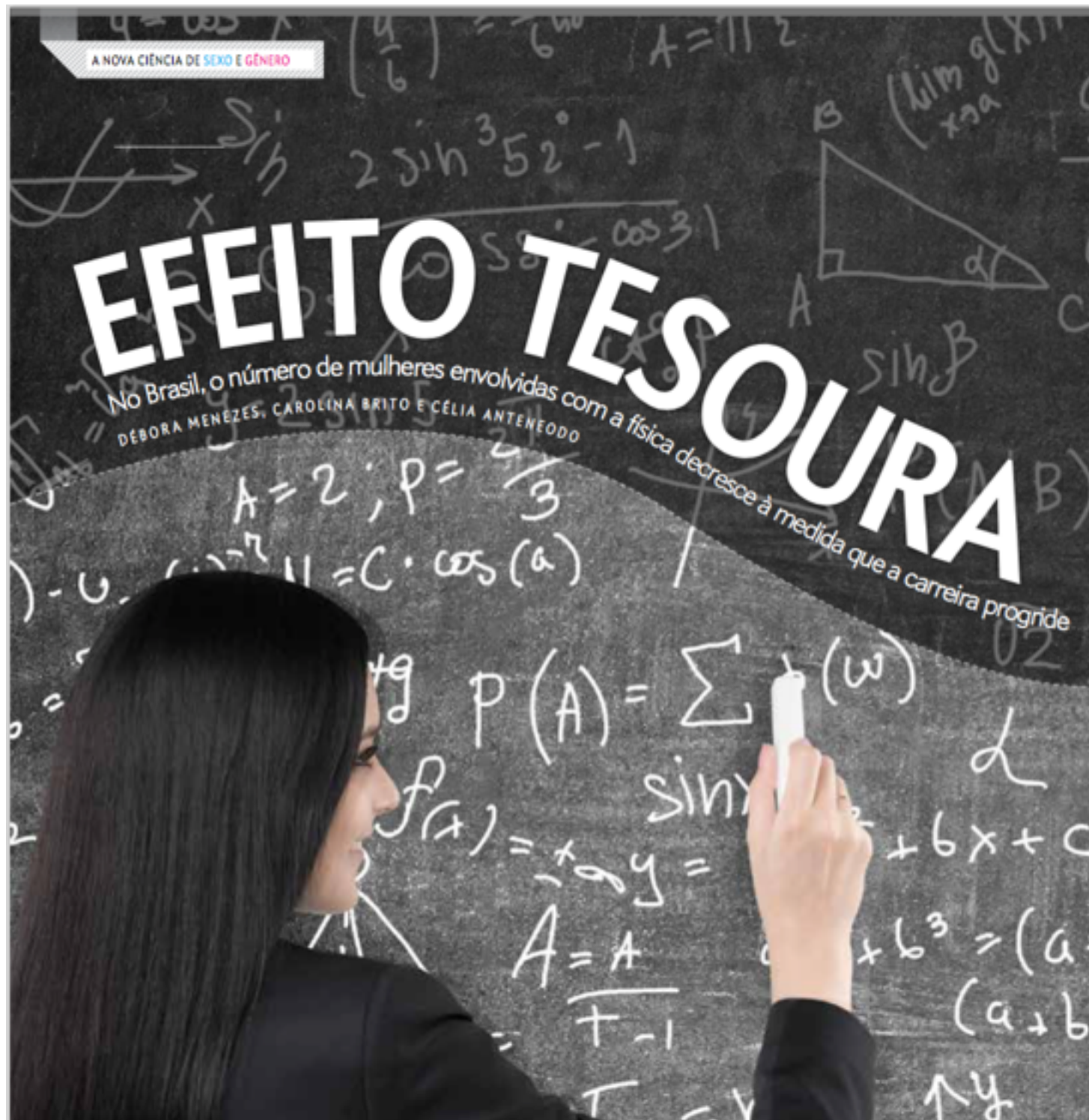


The **scissors effect** in the life of female physicists



Scientific
American Brasil,
Ed. n 177,
outubro 2017,
76-80

Débora Peres Menezes - UFSC

IDPASC - Coimbra - 06/2018

What is the scissors effect?

When does it start?

The self confidence of young girls changes quite early: intelligent people are associated with people of the same gender when they are 5 and to the masculine gender when they are 7.

Possible reasons for gender stereotype are: the Disney films, children toys, (lack of) social stimuli.

Why Europe's **girls** aren't studying STEM?

Microsoft Corporation Study - 11,500 women 11-30 years old
in 12 countries

<http://www.voced.edu.au/content/ngv%3A76105>

**There is a narrow 4-year window to foster girls' passion in
STEM
(11-12 / 15-16)**

**The country where young women live has a major impact on
their attitudes towards STEM**

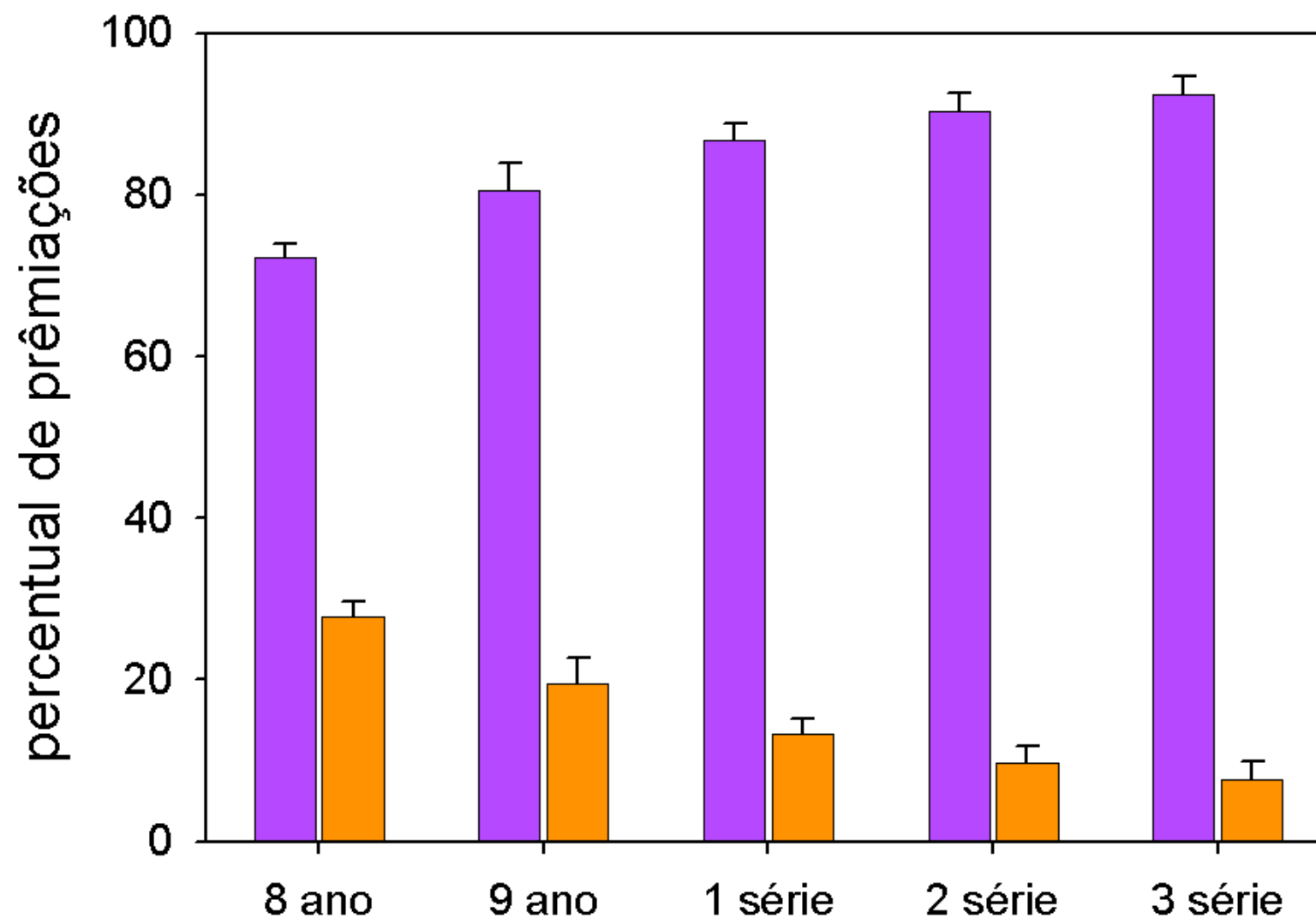
**Five major drives: encouragement, mentorship, practical
experience, visible role models, perceived intellectual equality**

Brazilian reality - Girls

Premiações - Olimpíadas Brasileiras de Física

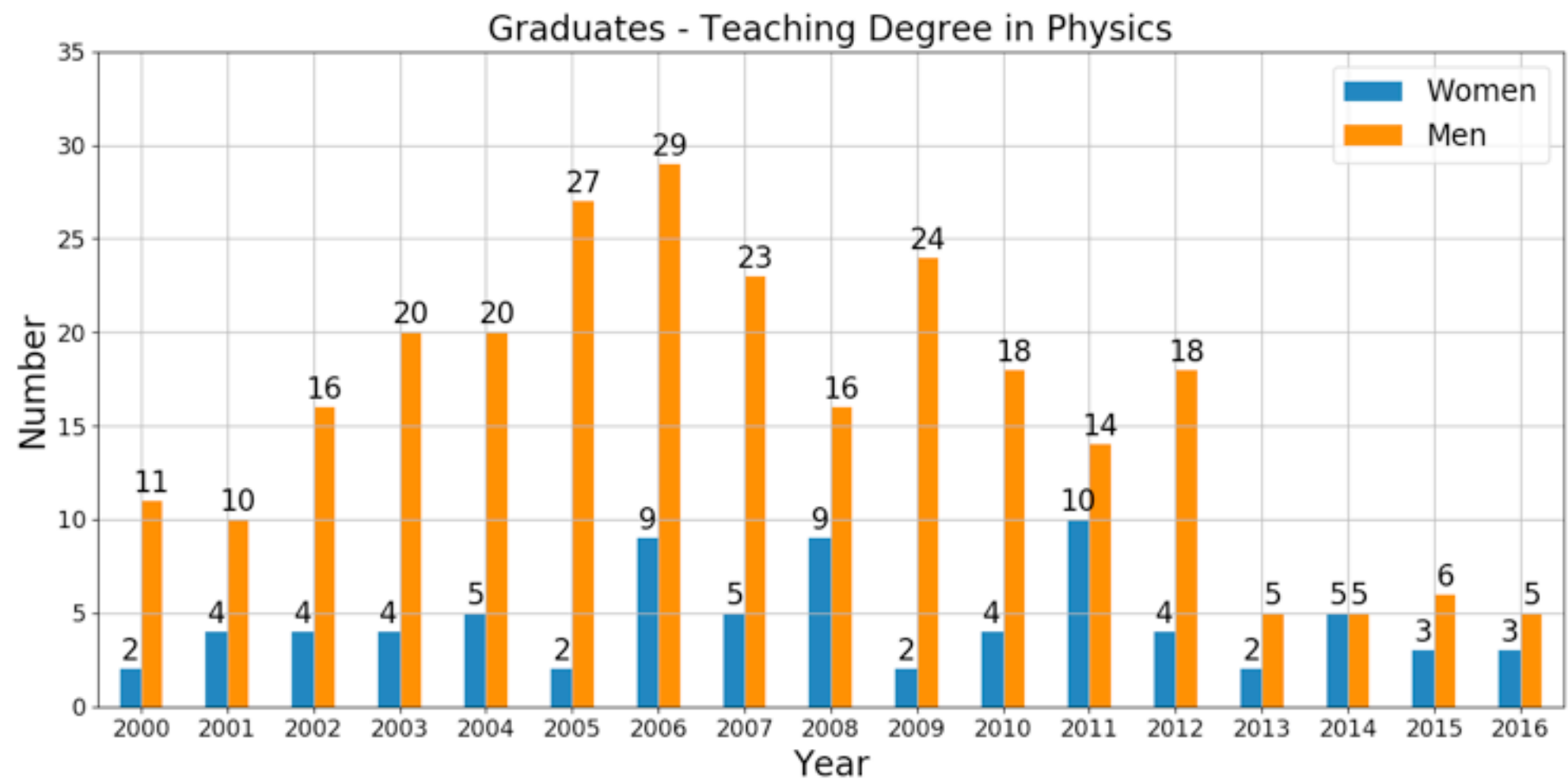
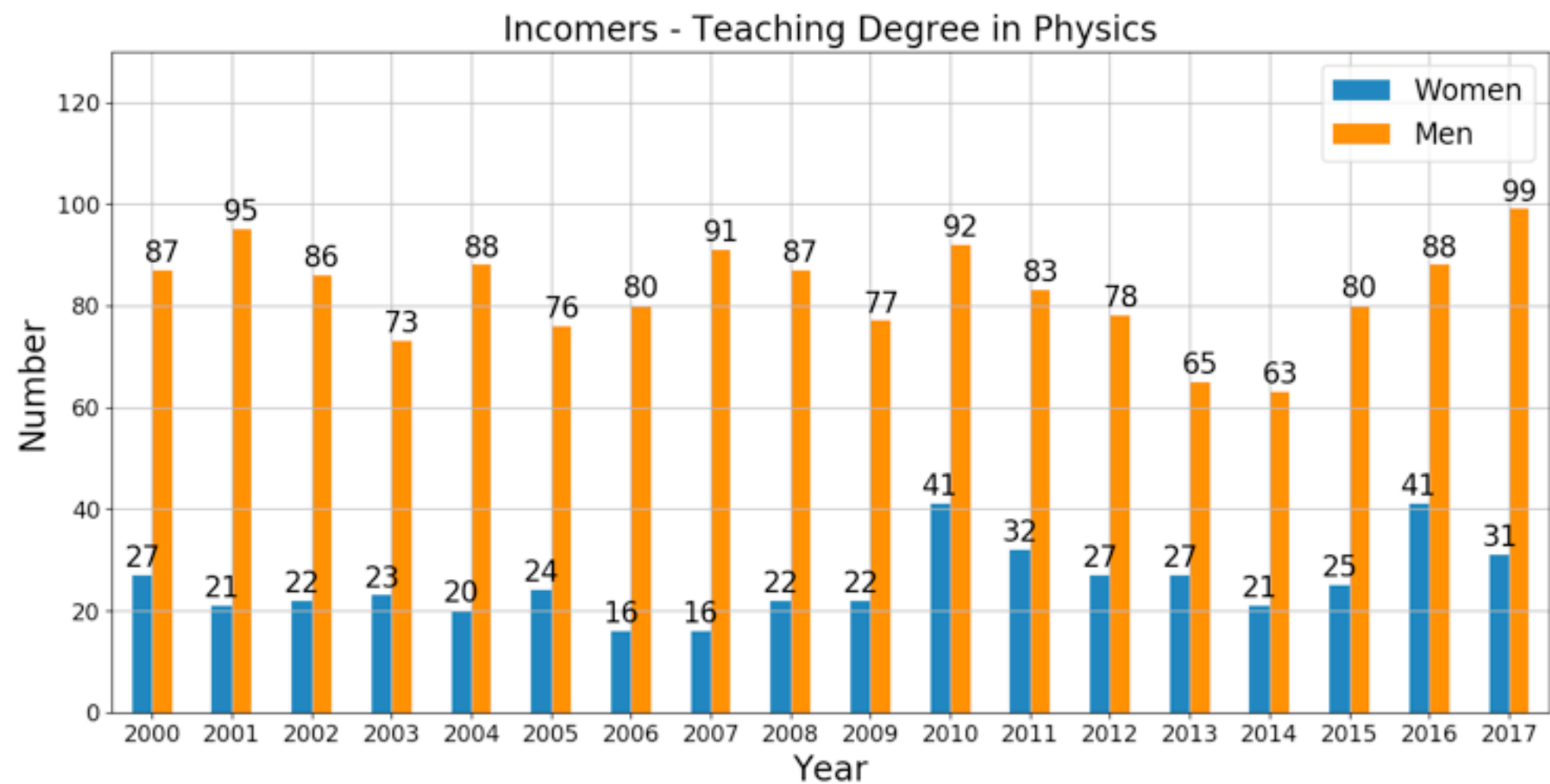
média 2005-2016

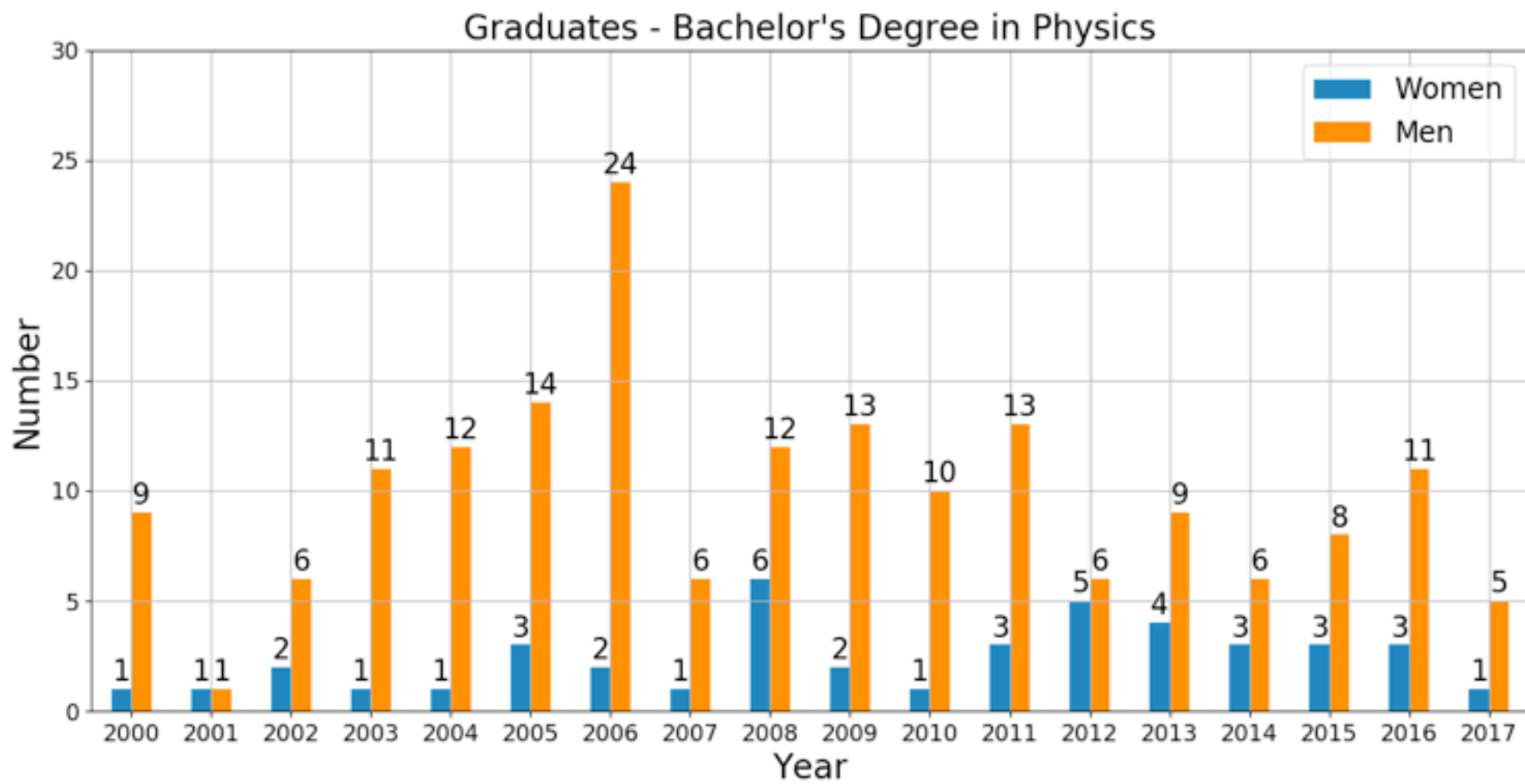
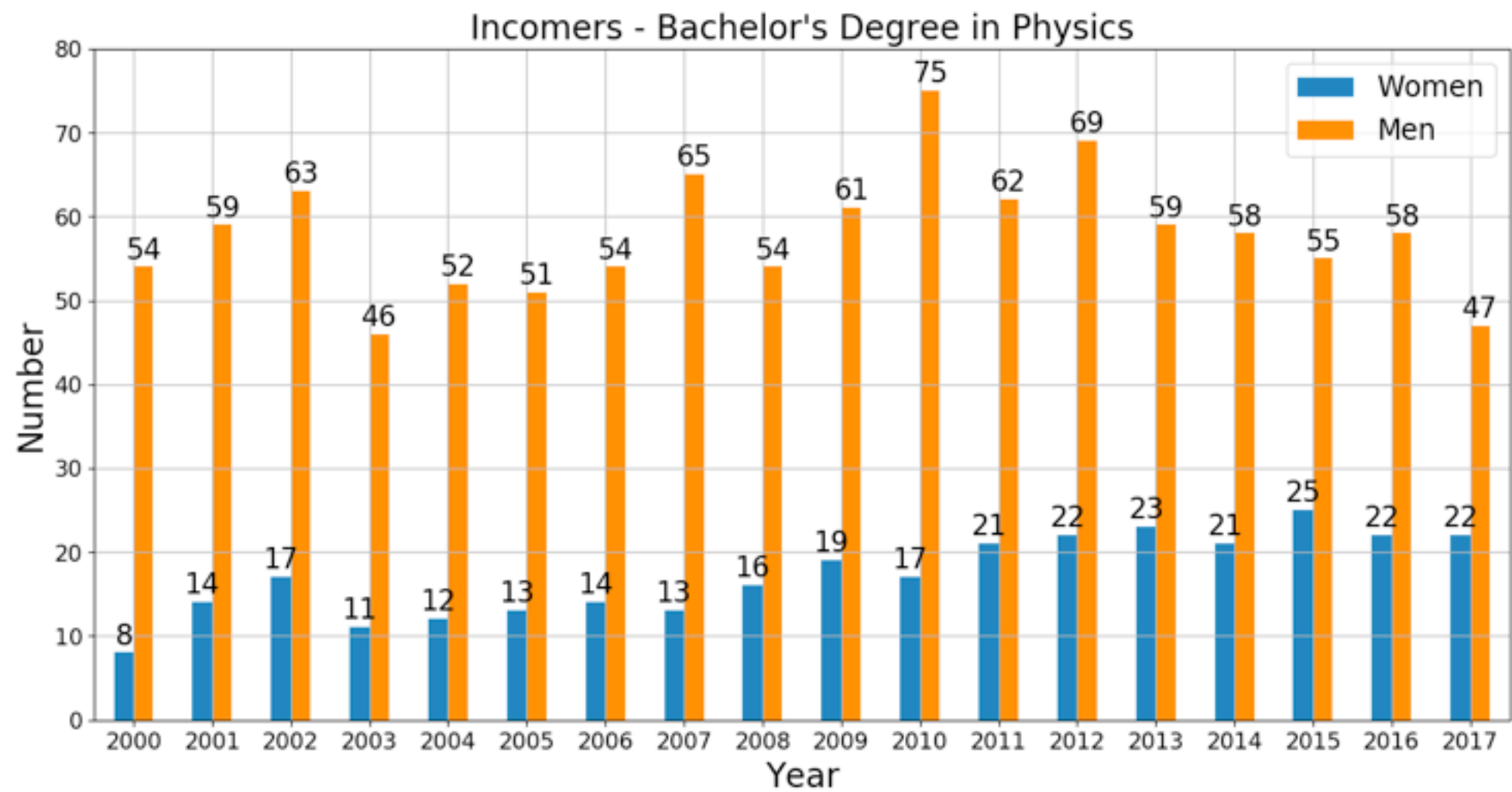
barras = desvio padrão



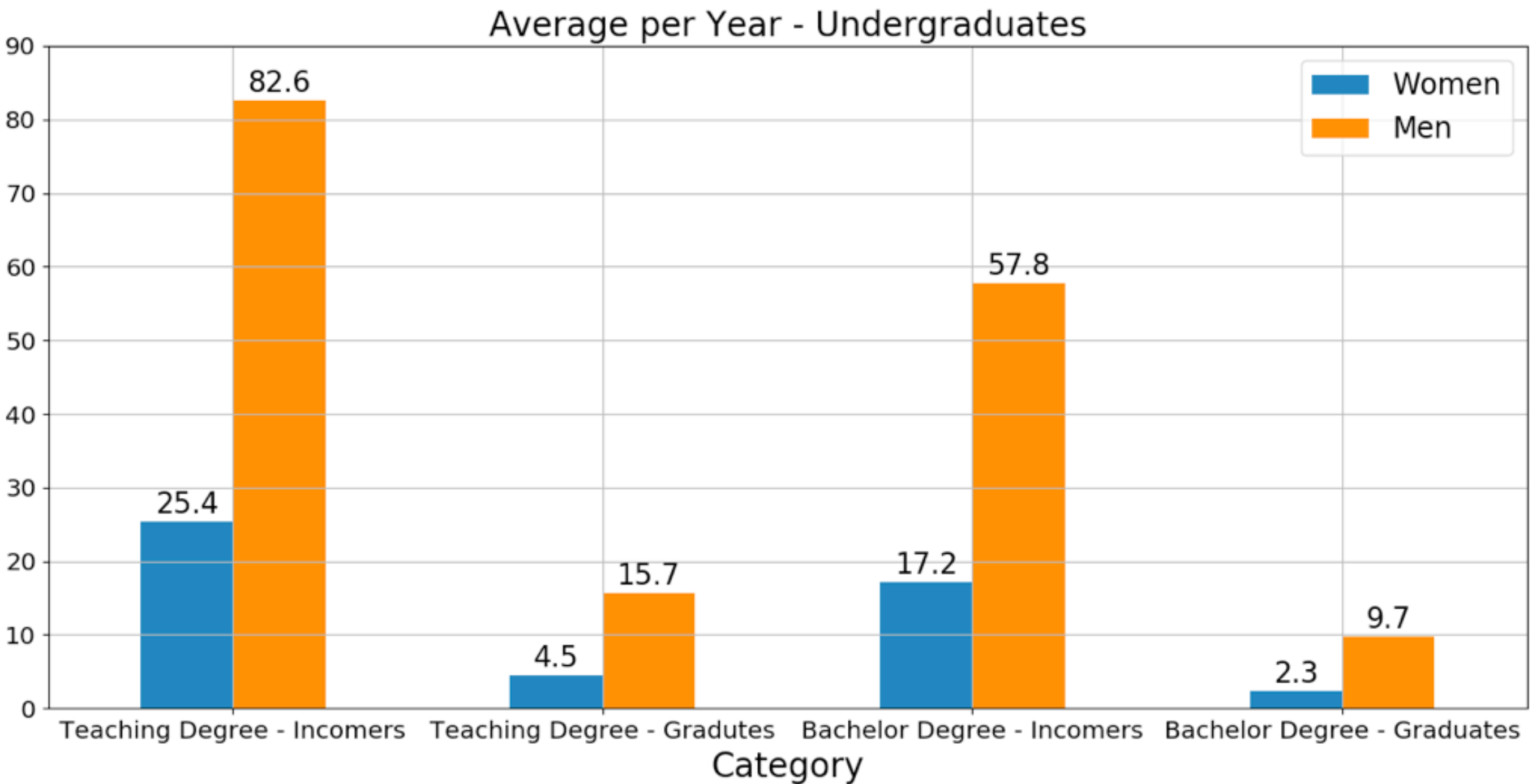
orange - girls
purple - boys

Young
Women

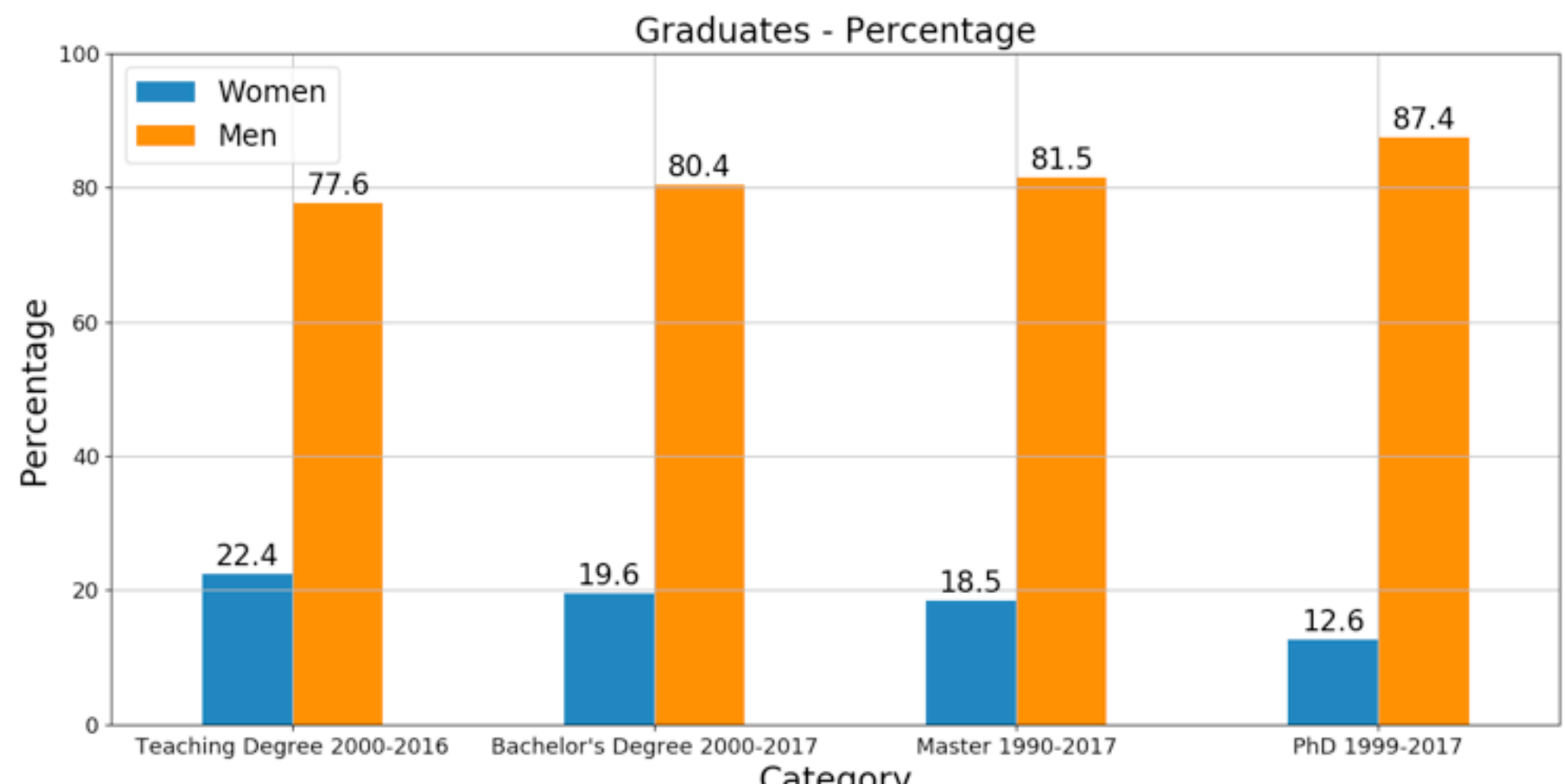
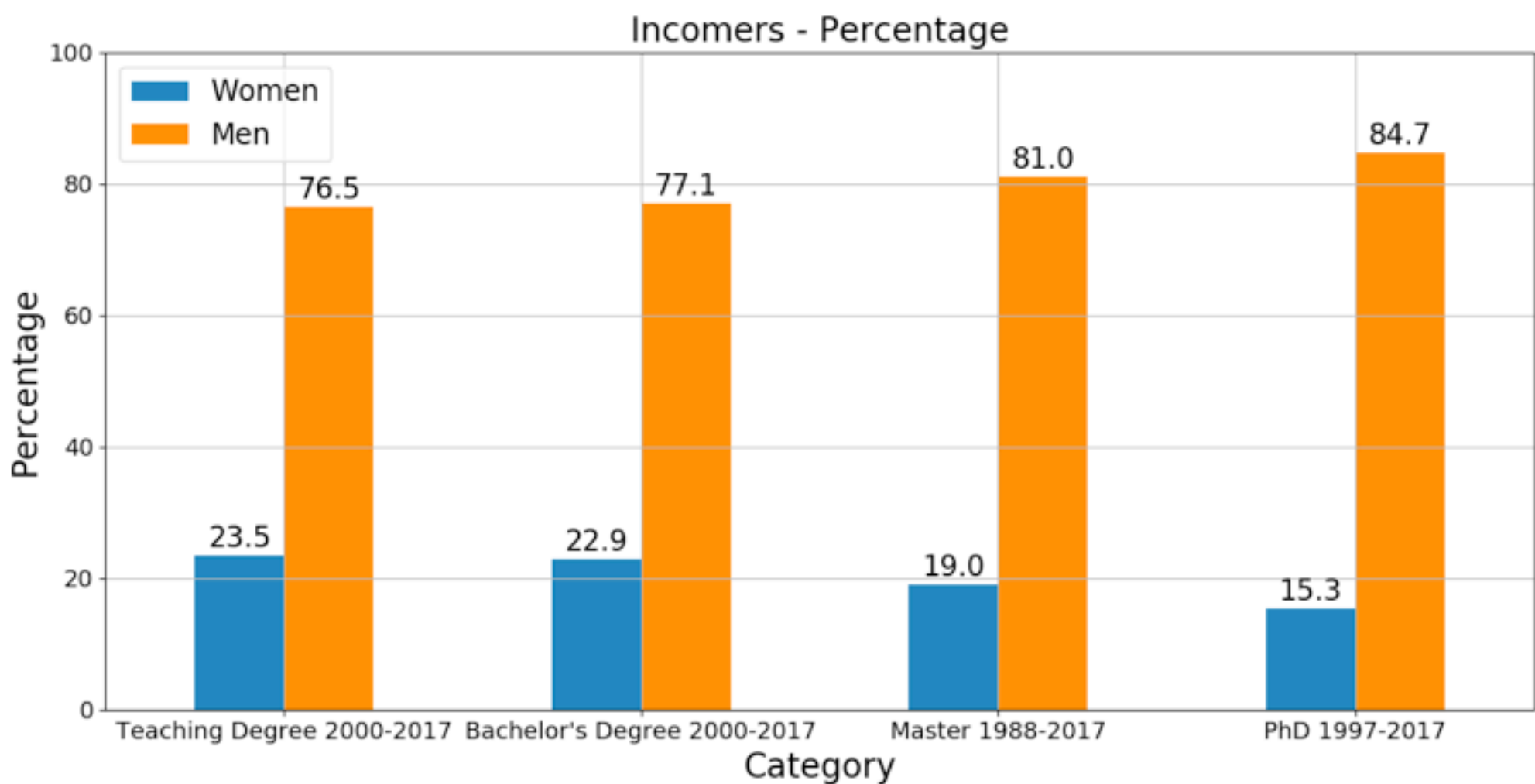




Young women



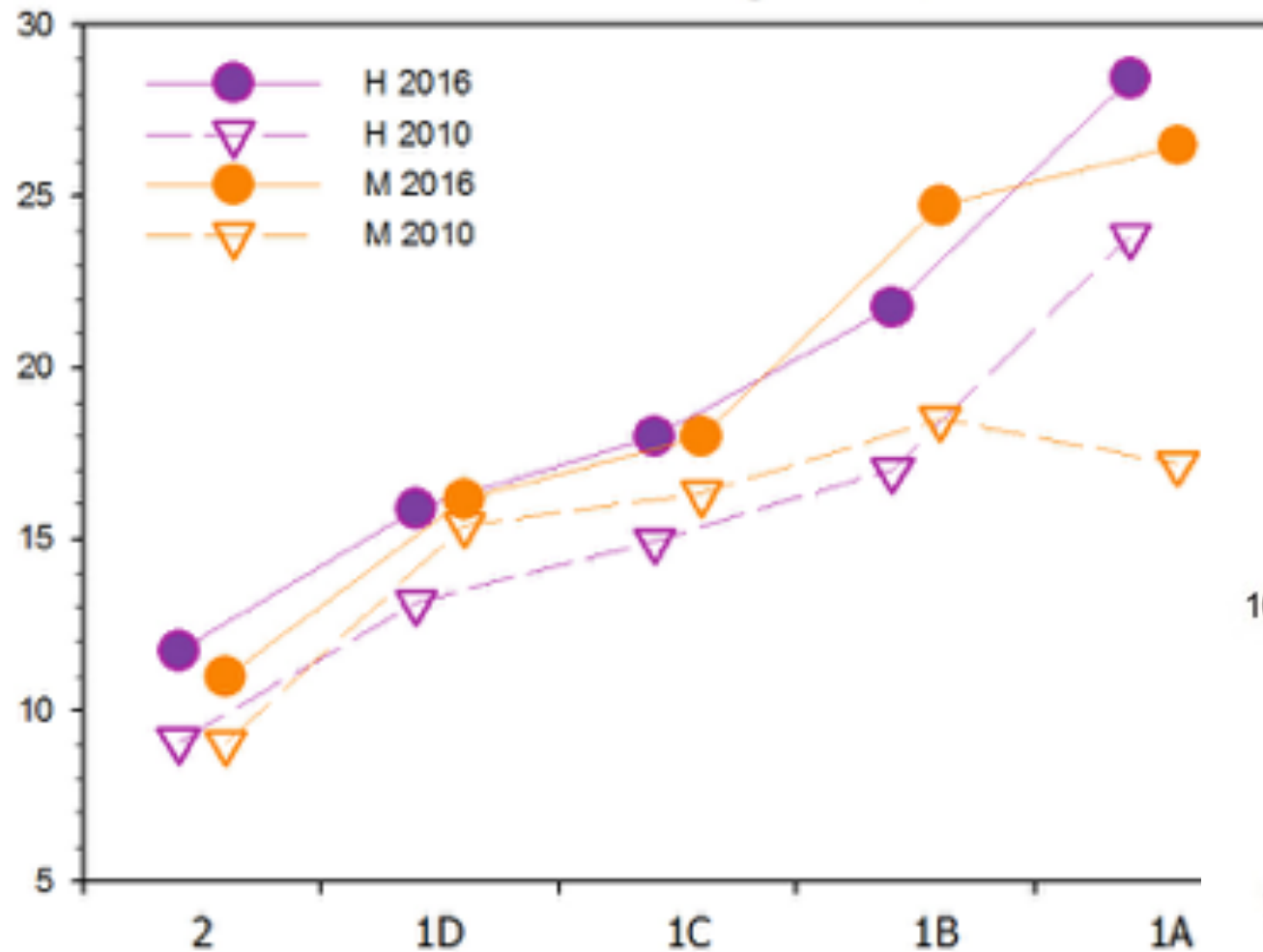
Gender Filter



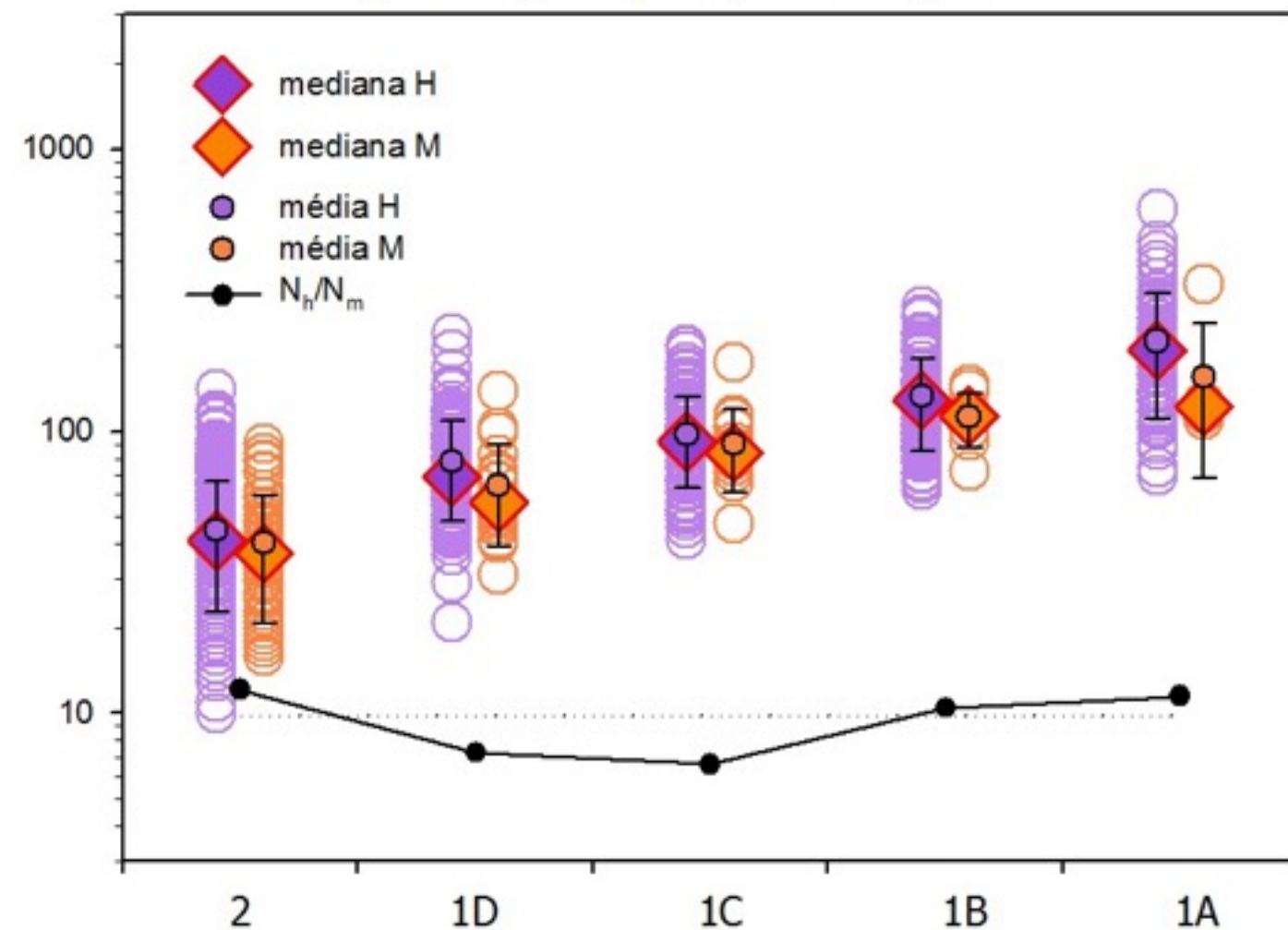
Women - professionals

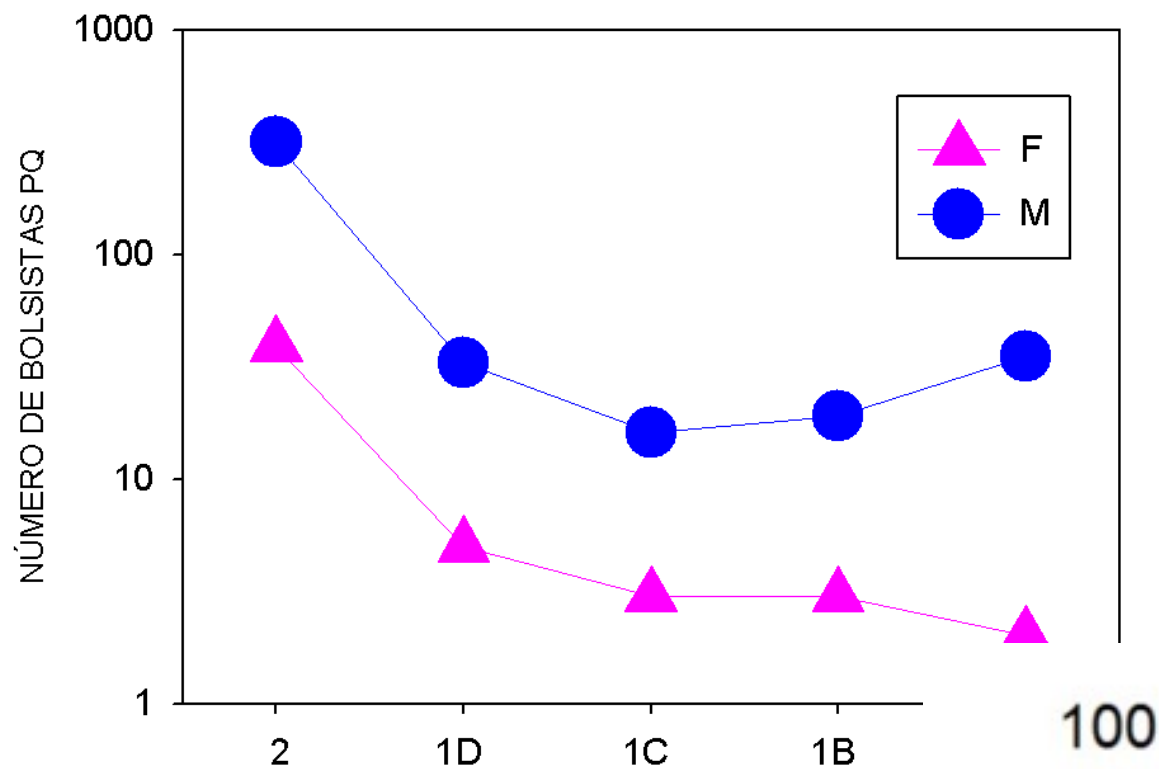
CNPq productivity grants - Physics and Astronomy

fator h vs categoria PQ



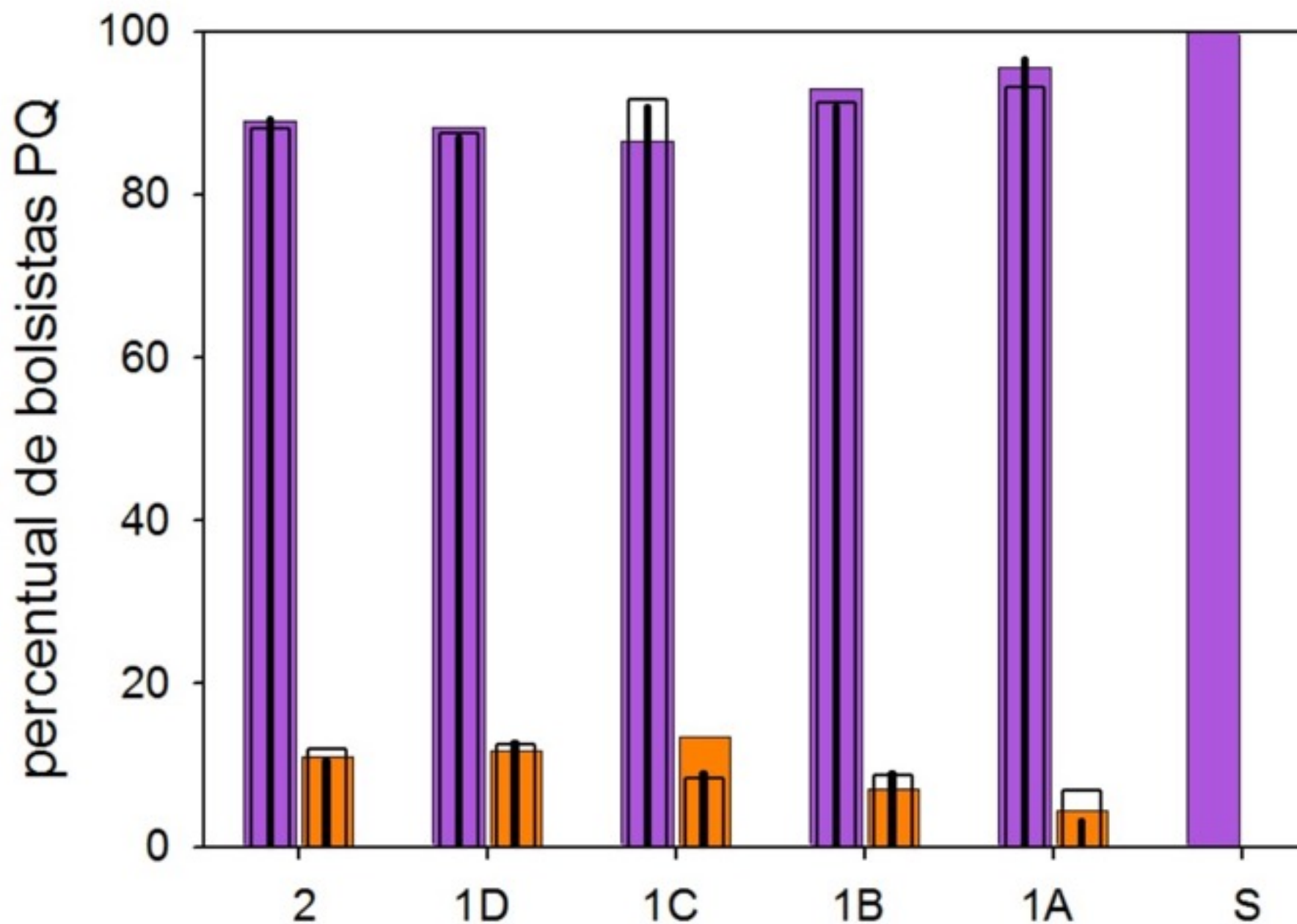
publicações (total) vs categoria PQ





Women - professionals

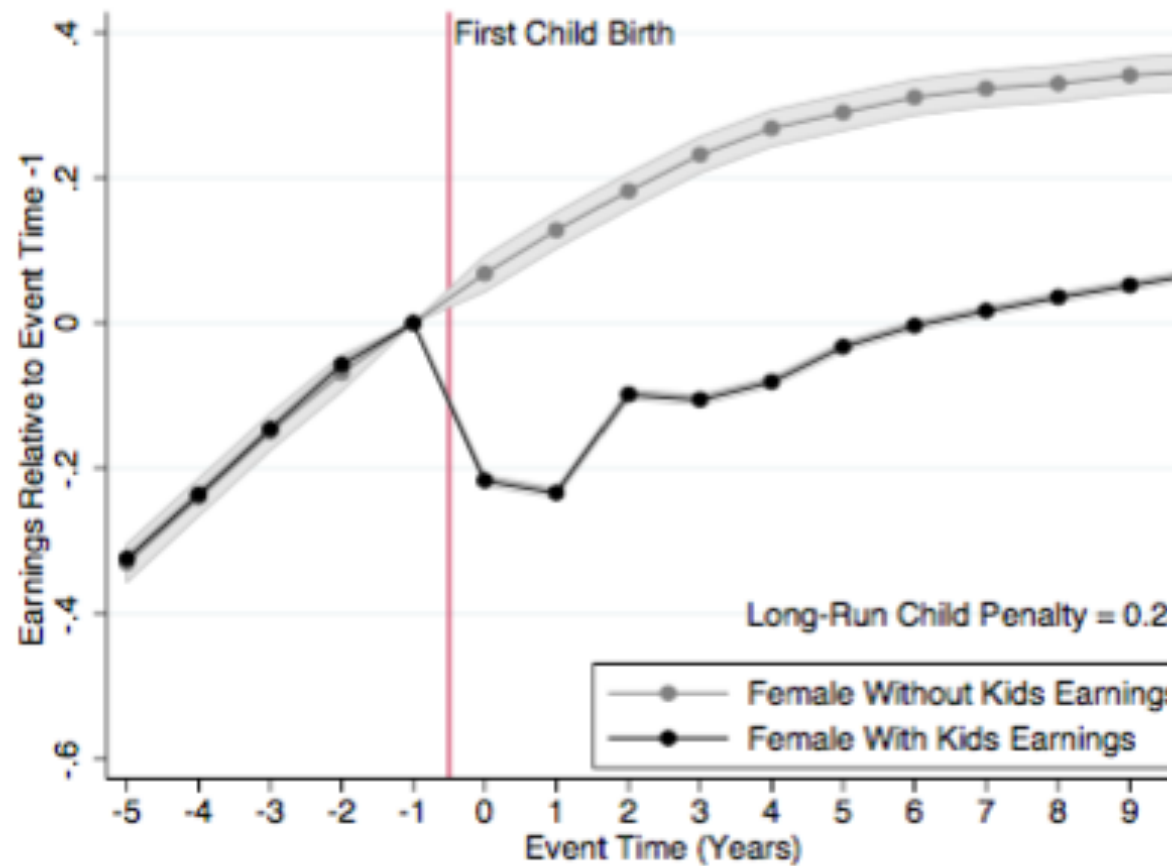
orange - women - 2016
 purple - men - 2016
 transparent bars - 2010
 thin bars - 2005



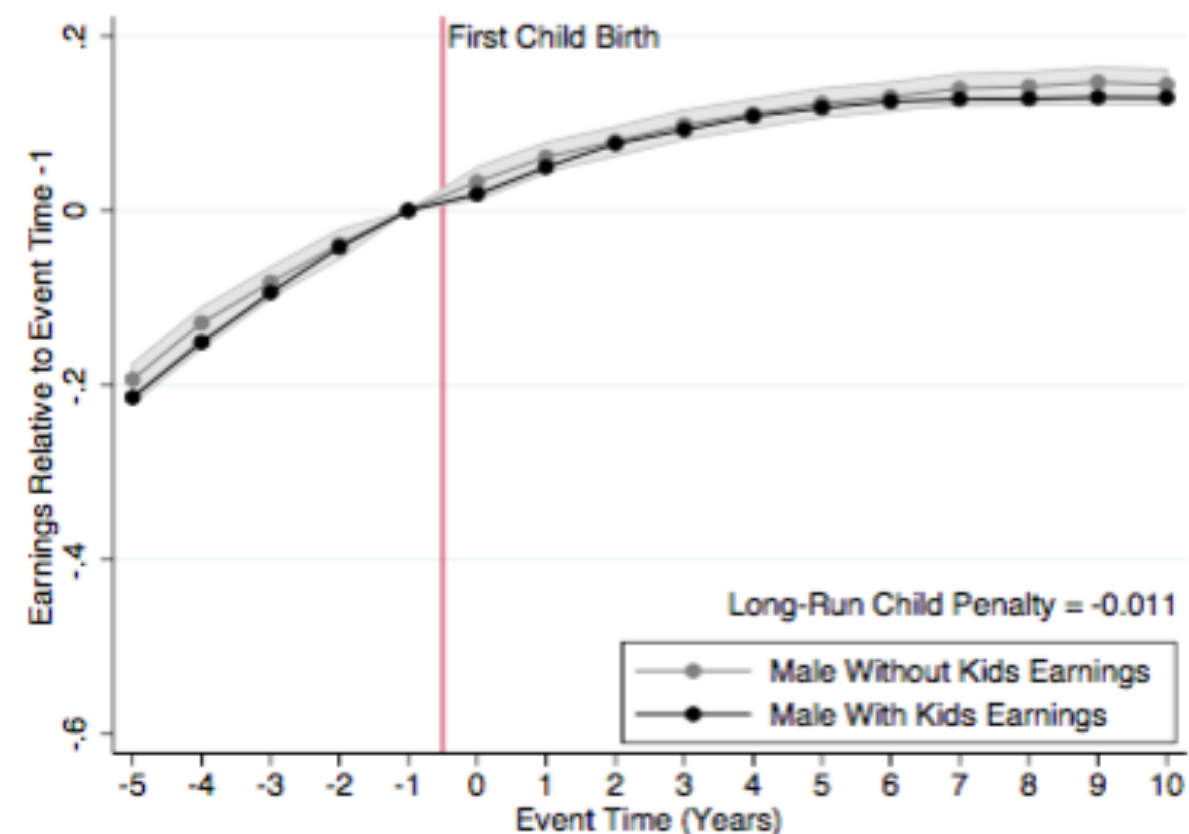
Children and Gender Inequality : Evidence from **Denmark**

www.nber.org/papers/w24219

A: Women Who Have Children vs Women Who Don't
Earnings Impact



B: Men Who Have Children vs Men Who Don't
Earnings Impact



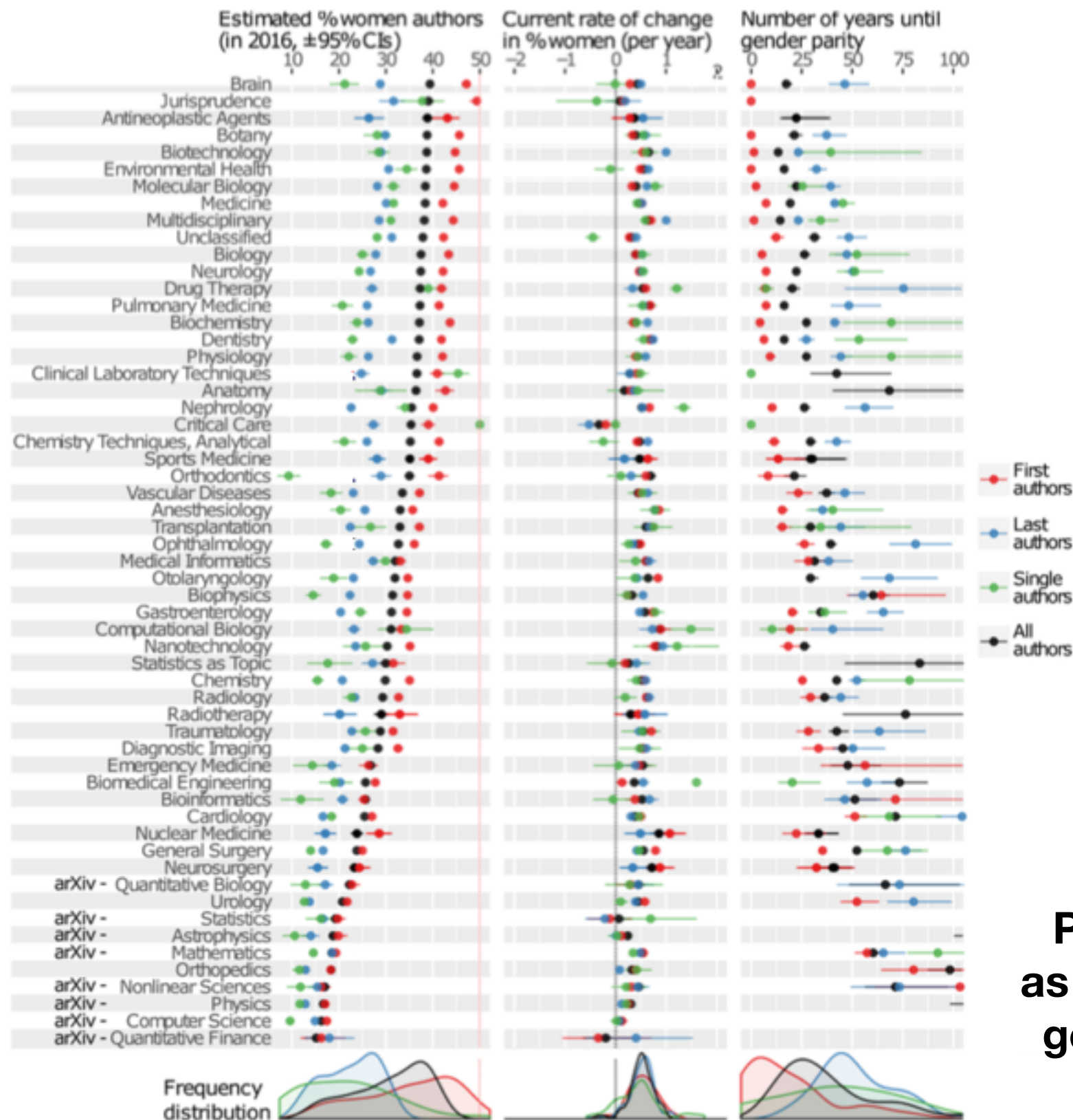


Fig 1. The panels show the current author gender ratio, its rate of change per year, and the estimated number of years until the gender ratio comes within 5% of parity (all parameters estimated by fitting Eq 1 to the data using maximum likelihood). The colours correspond to different authorship positions, and the error bars show 95% confidence intervals estimated by bootstrapping. For clarity, the x-axis of the third panel is truncated at 100 years. Missing data in the third panel indicate either: A) the field is never projected to reach parity, B) parity is projected to be reached in >100 years, or C) the data do not allow us to ascertain whether the percentage of women authors is presently rising or falling (full details in S1 Data). The eight disciplines using data from arXiv are marked, and the remaining disciplines are from PubMed. The data underlying this figure can be found in S1 Data.

Holman L, Stuart-Fox D, Hauser

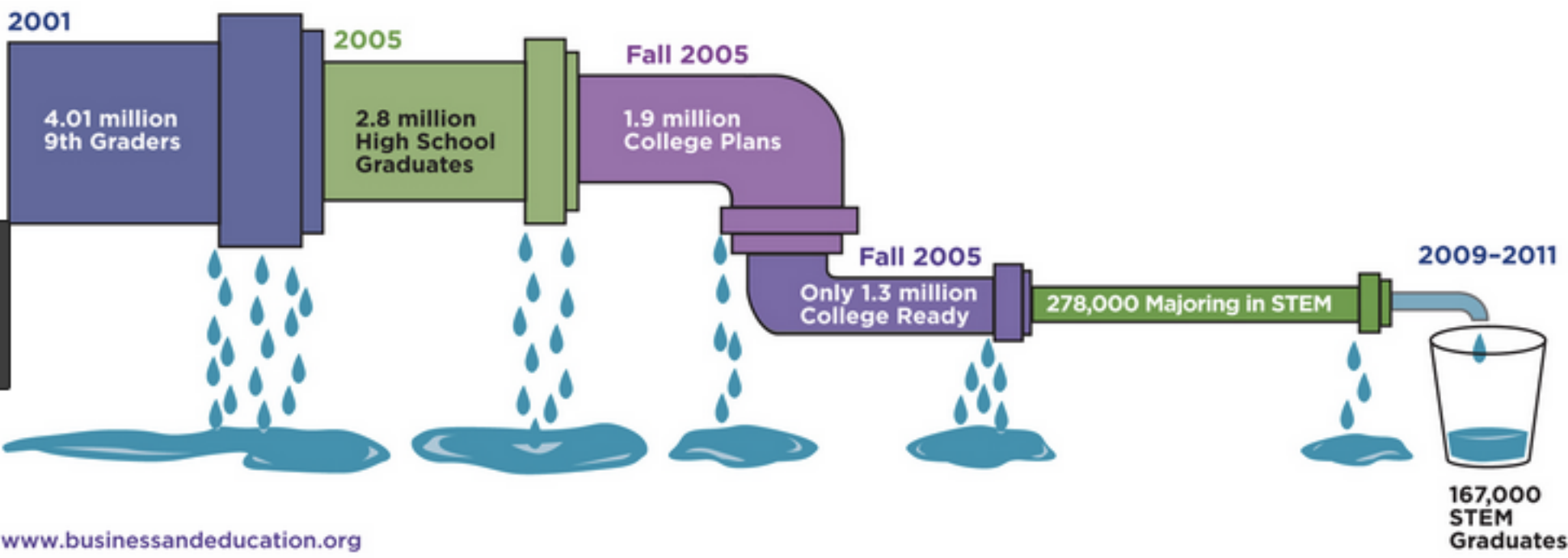
**The gender gap in science:
How long until women are
equally represented?**

PLoS Biol 16(4): e2004956.

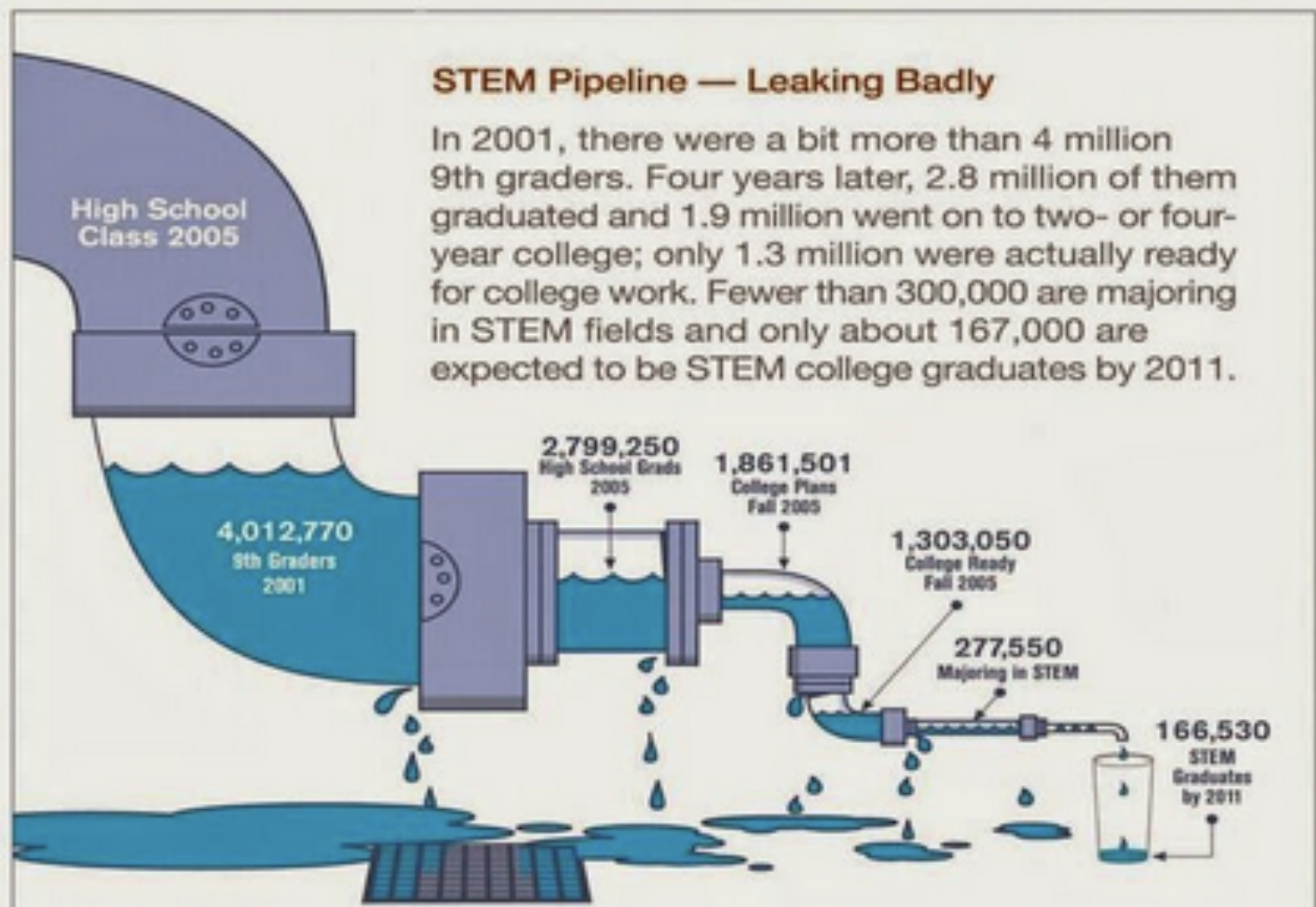
**Leaky pipeline (Gender filter)
in STEM**

**Physics arXiv: only 13% women
as last authors: 258 years until the
gender ratio of senior physicists
comes within 5% of parity**

A Leaking STEM Pipeline



The Problem: A Leaky Pipeline



Source: NCES Digest of Education Statistics; Science & Engineering Indicators 2008

PHYSICS TODAY

March 2018 • volume 71, number 3

A publication of the American Institute of Physics

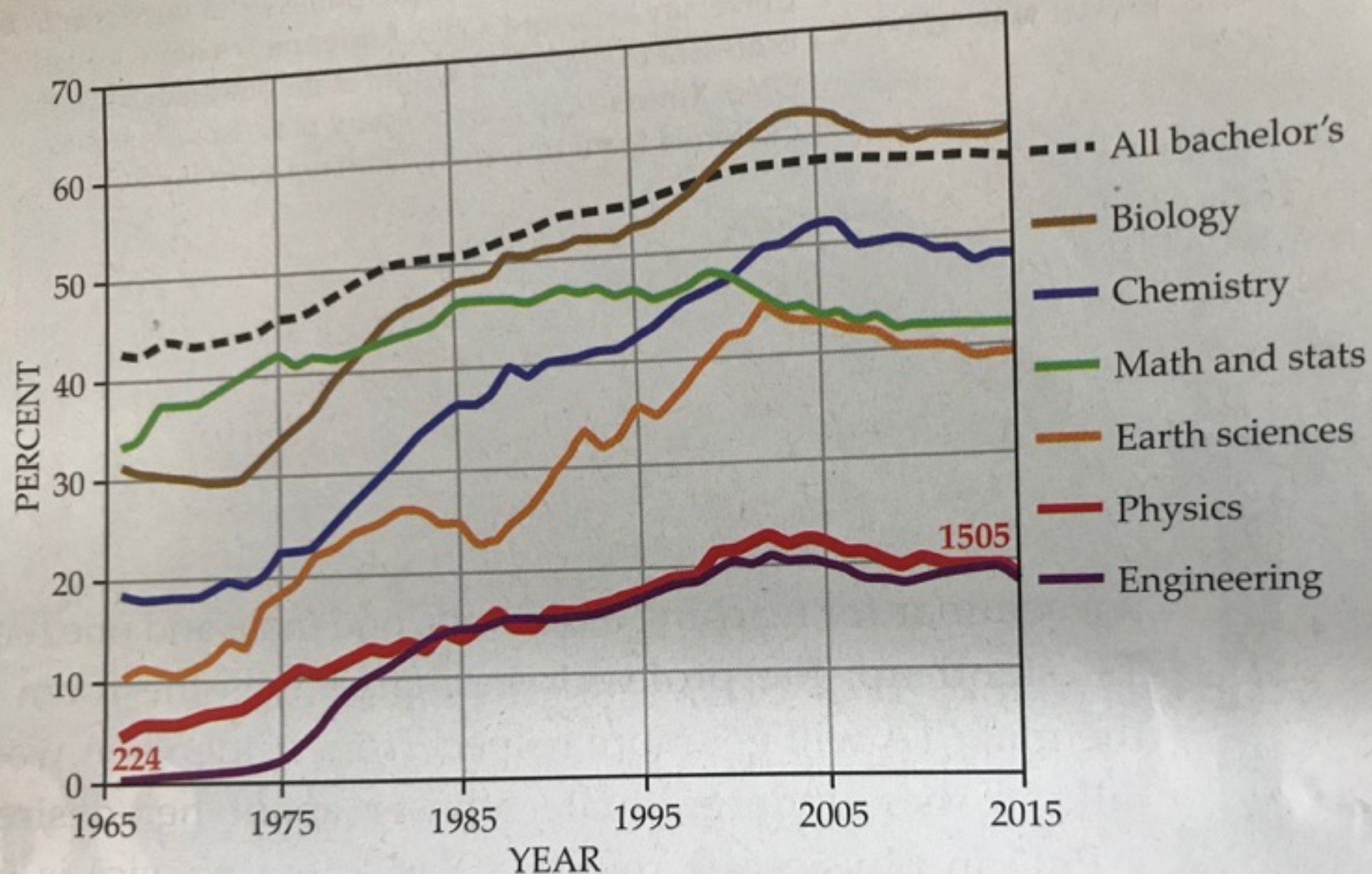


FIGURE 1. STEM BACHELOR'S DEGREES EARNED by women in the US, 1965–2015. Women now earn nearly 60% of all bachelor's degrees in the US but make up just 20% of physics majors, and that number has remained static over the past 20 years. (Courtesy of the Integrated Postsecondary Education Data System and the American Physical Society.)

Problems: Macho society (religion, freemasonry and even women)

Low representation of women are due to:
discrimination, stereotypes, black-sheep effect,
queen bee effect, mentorship, lack of support,
harassment, gender filter, lack of role models,
psychological (lack of confidence, lack of interest).

Very few women in Science & Technology policy-making positions - professional success is not facilitated

Diversity in science is essential for excellence!

STANDOUT WORDS

(more often used to describe men)

Excellent	Terrific
Superb	Fabulous
Outstanding	Magnificent
Unique	Remarkable
Exceptional	Extraordinary
Unparalleled	Amazing
Most	Supremely
Wonderful	Unmatched

GRINDSTONE WORDS

(more often used to describe women)

Hardworking	Assiduous
Conscientious	Trustworthy
Dependable	Responsible
Meticulous	Methodical
Thorough	Industrious
Diligent	Busy
Dedicated	Work
Careful	Persistent
Reliable	Organized
Effort	Disciplined

“STANDOUT” WORDS AND “GRINDSTONE” WORDS in letters of recommendation. Standout words, which portray a candidate as talented and exciting, are most often found in letters of recommendation for men. Grindstone words, which create the impression that a candidate works hard but is not intellectually exceptional, are more often used for women. (Adapted from ref. 9.)

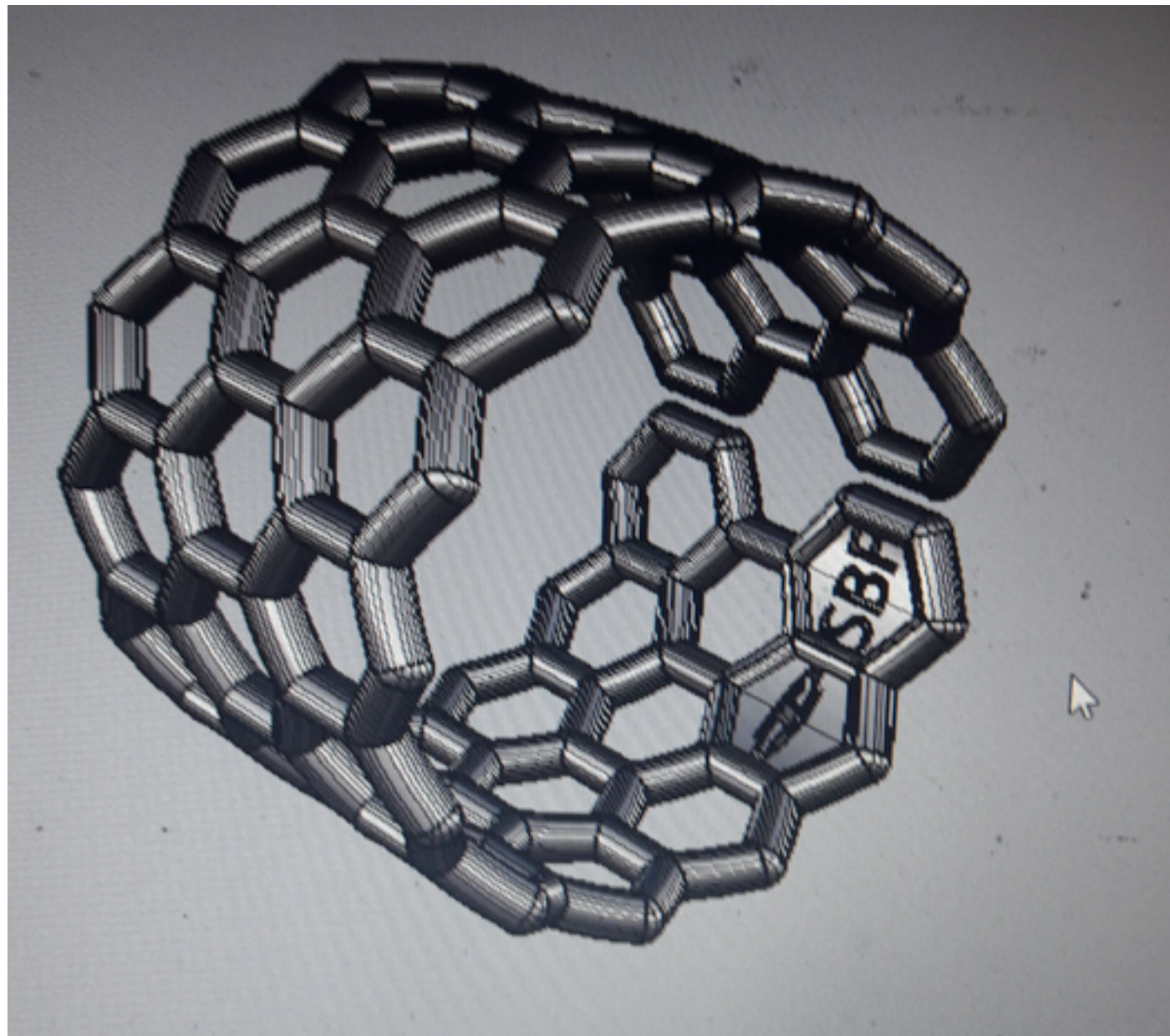
One recent statement about sexual harassment in the sciences came from an NSF-funded workshop held in September 2016. Participants drafted a set of principles for addressing harassment, including the following one: "Science and education are social endeavors. Professional societies, academic departments, organizations that fund research, and government agencies should have a comprehensive code of conduct to guide ethical behavior in the conduct of research, which includes treatment of people as well as data."¹⁶

Tackling the problem

**Deal with the major drives (girls and young ladies):
encouragement, mentorship, practical experience,
visible role models, perceived intellectual equality, help
young mothers.**

**We have to keep obtaining data, talking, talking...
and take some affirmative actions:**

Brazilian Physics Olympiads
gold and silver medalists
awarded (also) with a ring in the format of a
carbon nanotube and a diploma - FB



Young female scientist prize



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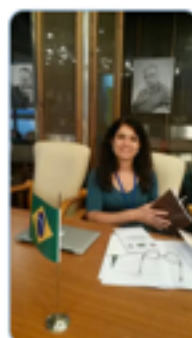
Maternidade

10-11 de Maio, 2018 : PORTO ALEGRE : RS

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Debora Peres Menezes

Bolsista de Produtividade em Pesquisa do CNPq - Nível 1B

Endereço para acessar este CV: <http://lattes.cnpq.br/4521038966994688>

Última atualização do currículo em 19/06/2018

Possui graduação em Física/bacharelado (1983) e em Física/licenciatura (1984) pela Universidade de São Paulo, mestrado em Física pela Universidade de São Paulo (1986), doutorado pela University of Oxford, Inglaterra (1989), pós-doutorado pela Universidade de Coimbra, Portugal (1998), estágio sênior pela Sydney University, Austrália (2005) e pela Universidade de Alicante, Espanha (2014). Trabalha, com regularidade, como pesquisadora visitante na Universidade de Coimbra (Portugal) e no Laboratoire de Physique Corpusculaire - EnsiCaen (França). É professora titular da Universidade Federal de Santa Catarina, integra o Comitê Gestor do INCT-Física Nuclear e Aplicações e o Grupo de Trabalho sobre Questões de Gênero, ligado à Sociedade Brasileira de Física. Integrou o Comitê Assessor de Física e Astronomia do CNPq de setembro de 2013 a agosto de 2016, a Comissão de Física Nuclear e Aplicações da SBF de 2012 a 2017, foi Pró-Reitora de Pesquisa e Extensão da UFSC de maio de 2008 a maio de 2012, fez parte da Comissão de Avaliação da Extensão Universitária (CPAE), ligada ao Fórum de Pró-Reitores de Extensão (FORPROEX) de 2010 a 2013 e coordenadora do Programa de Pós-Graduação em Física da UFSC de outubro de 2006 a maio de 2008. Tem experiência na área de Física, com ênfase em Física Nuclear e de Hádrons, atuando principalmente nos seguintes temas: equações de estado, estrelas de nêutrons, álgebras quânticas, modelos relativísticos e astrofísica nuclear. É assessora ad hoc do CNPq, CAPES, FINEP, FAPESC, Fundação Araucária, FAPERGS, FAPESP, UERJ e USP e arbitra regularmente para várias revistas internacionais (Phys. Rev., Int. J. Modern Phys., Nucl. Phys., Chinese Physics C, etc). Foi contemplada com a Medalha e Diploma de Mérito Francisco Dias Velho pela Câmara Municipal de Florianópolis por suas contribuições nas ciências e nomeada como membro da Comissão de Física Nuclear (C12) da International Union of Pure and Applied Physics (IUPAP). MATERNIDADE: um filho (nascido em 1995, 4 meses de licença maternidade). (Texto informado pelo autor)

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sobre questões de Gênero**
<http://www1.fisica.org.br/gt-genero/>

Débora Peres Menezes - UFSC