

Women in science workshops and projects.

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IUPAP Gender Champion

When Women in Science get together 40th Anniversary, SISSA, May, 2018



Since 2002 I have been involved with the activities that the International Union of Pure and Applied Physics (IUPAP) has sponsored/encouraged to advance the situation of women physicists.

IUPAP: created in 1922, composed of 59 members.
Mission: To assist in the worldwide development of physics, to foster international cooperation in physics, and to help in the application of physics toward solving problems of concern to humanity



IUPAP WG on Women in Physics, created in 1999:
-to survey the present situation and report to the Council and the liaison committees.
-to suggest means to improve the situation for women in physics.



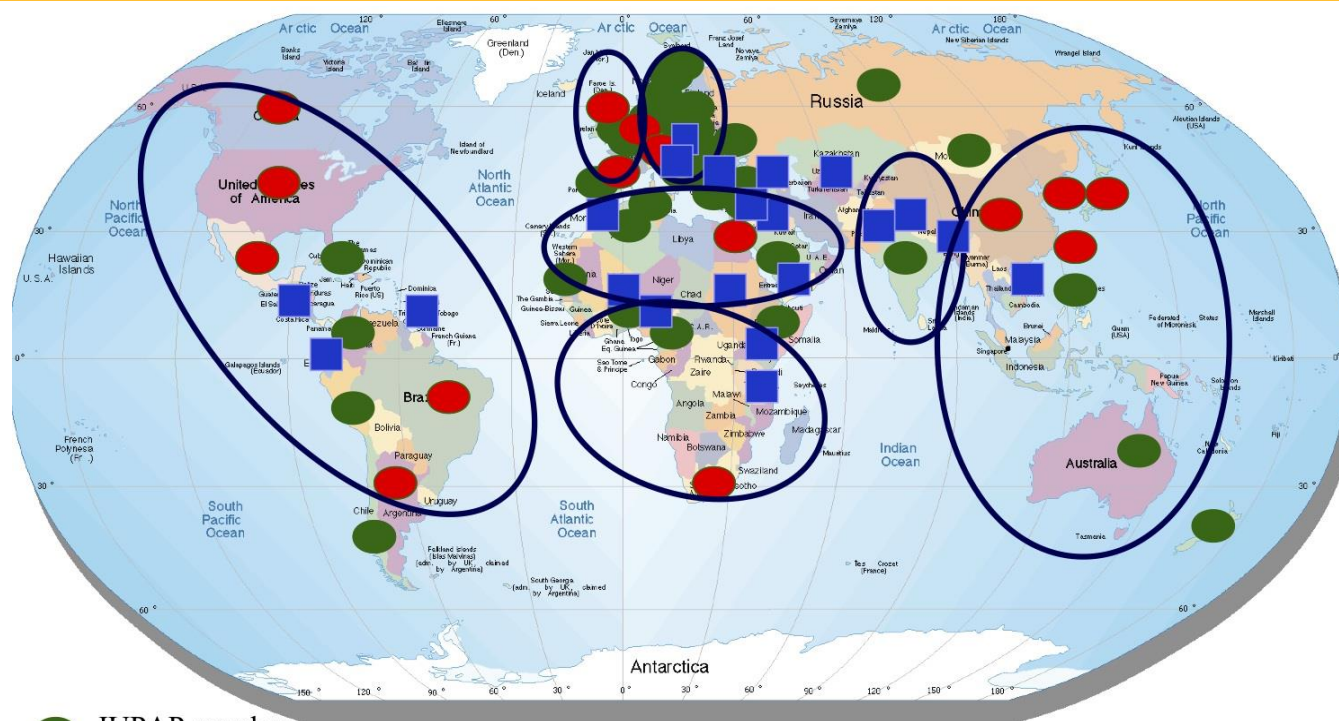
Working Group, June 2016



The creation of the Working Group led to the formation of a very large network of women physicists.

From the very beginning the activity was organized through country teams with a team leader that acts as the contact point.

We reached out to many more countries than IUPAP members. Country teams in 2007 (we have more now):



- IUPAP member
- IUPAP member + WG
- Non IUPAP member + WG

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Robinson Projection

One of the first activities of the Working Group was the organization of an International Conference on Women in Physics in 2002 in Paris. It had over 300 participants from 65 countries.

It was the first time I've heard about the "old boys club".

ICWIPs have been organized once every three years since 2002.

Paris, France, 2002



Rio de Janeiro, Brazil, 2005



Seoul, South Korea, 2008



Stellenbosch, South Africa, 2011



Waterloo, Canada, 2014



Birmingham, UK, 2017



ICWIPs provide a platform where (disciplinary or regional) networks and mentoring schemes can be established. Attendance is by country team, with number limits so that all countries are equally represented. Travel grants are awarded to participants from less developed countries.

Lately, ICWIPs have six main types of activities:

- Plenary talks, most of them by women physicists to talk about their research intermixed with their personal life history.
- Country Poster Session in which each country team presents an account of their local situation
- Scientific Poster Session, for young female physicists to share their work
- Outreach activities
- Workshops on specific issues related to gender or the practice of science in general
- Final assembly where recommendations and resolutions to be presented at the IUPAP General Assembly are drafted

Workshops have addressed (discussed!) the following topics:

- Gender Studies and Intersectionality
- Improving the Workplace/Science Practice and Ethics
- Professional Development and Leadership
- Cultural Perception and Bias/Learning from regional differences
- Physics & Science Education/Attracting Girls into Physics
- Balancing Family and Career

Workshop discussions lead to recommendations that are then presented to the IUPAP for their adoption. Country team members take these ideas back to their own countries too.

Among them, there were recommendations for the IUPAP to:

- Include women in its commissions
- Check that women are among invited speakers and in conference committees of IUPAP funded conferences
- Require that IUPAP sponsored conferences have outreach activities that provide a gender-balanced vision of the field
- Require that women are taken into account for prizes and awards

These workshops + the connections that are made at ICWIPs also inspired the organization of various activities. Among them, the Career Development Workshops for Women in Physics @ICTP.



Talks by successful female scientists, sessions on how to write a CV, how to give oral presentations, how to write scientific articles, the art of negotiation in an academic environment, and how to try to balance career and family.

With other colleagues we replicated this initiative in Latin America.

Workshops for young Latin American scientists and science students (Puebla, Cuernavaca, Buenos Aires, Bogota).

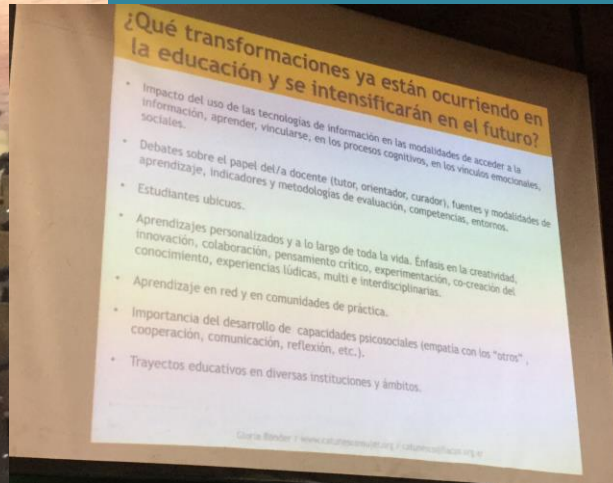
1st Workshop, Puebla, Mexico



We've organized three of them with Lilia Meza (Mexico) and Alba Avila (Colombia) to "empower" young women and we discovered that the exchange went both ways (from us to them and viceversa)

The atmosphere that prevails at these workshops is very special with much emotional openness that helps exchange experiences.

As with previous gender-related regional conferences, they are not just for physicists, and not just for women (we debated it!).



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Hacia un Diálogo de Saberes en Ciencia, Tecnología e Innovación



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- ciantes del
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2nd Workshop, Buenos Aires, Argentina

3rd Workshop, Bogota, Colombia

One of the most relevant activities to advance the gender agenda that the IUPAP is participating of:

Gender Gap in Science Project funded by ICSU

The screenshot shows the homepage of the Gender Gap in Science project. At the top left is a logo combining a female symbol (♀) and a male symbol (♂) with an equals sign (=). The main title is "GENDER GAP IN SCIENCE" with the subtitle "A Global Approach to the Gender Gap in Mathematical and Natural Sciences: How to Measure It, How to Reduce It?". A search bar and a Twitter icon are on the right. Below the title is a navigation menu with five items: "Home", "Project" (with a description: "A Global Approach to the Gender Gap in Mathematical and Natural Sciences"), "Work packages" (with a description: "Description of the three tasks for the project"), "Organization" (with a description: "Latest events within the gender gap project"), and "News". At the bottom, there is a banner with logos of partner organizations: International Council for Science (ICSU), International Mathematical Union (IMU), IUPAC (International Union of Pure and Applied Chemistry), IUPAP (International Union of Pure and Applied Physics), IUHPST (International Union of History and Philosophy of Science and Technology), UAIU, UNESCO, IUBS, Gender InSITE, and ICIAM.

<https://icsugendergapinscience.org/>



INTERNATIONAL
COUNCIL
FOR SCIENCE

ICSU a non-governmental organization composed of national scientific bodies (122 members representing 142 countries) + 31 international scientific unions. Its last general assembly approved the merger with the International Council of Social Sciences.

Some scientific unions that are members of ICSU

Math (IMU, ICIAM), Chemistry (IUPAC), Physics (IUPAP), Biology (IUBS), Astronomy (IAU)

ICSU mobilizes knowledge and resources of the international scientific community to strengthen international science for the benefit of society. It is very focused on sustainable development.

ICSU works with the UN as organizing partner for the Scientific and Technological Community Major Group.

The ICSU Secretariat is in Paris. There are also three regional offices in Africa, Asia-Pacific and Latin America.

In 2016 ICSU started a new grants program. Projects needed at least two scientific unions that acted as leading applicants. Unions could not lead more than one project but could support more.

The Gender Gap Project, led by IMU and IUPAC, got one of the three 300,000 euro grants.

ICSU Grants Programme

Three Projects are awarded under the 2016-2019 Grants Programme.

Lead Applicant	Supporting Applicants	Regional Offices	Title of Proposal
IMU-IUPAC	IUPAC, IAU, IUBS, ICIAM, UNESCO, GenderInsite	ROA, ROLAC	<u>A Global Approach to the Gender Gap in Mathematical and Natural Sciences: How to Measure it? How to Reduce it?</u>
IUBS-INQUA	IUSS, IMU, IUGS, IUGG, IUPHST, IUFRO, AUC, CODATA, IMAGINARY, NRF, AAS, INSA, Mongolia, Ecuador and Egypt	ROA	<u>TROP-ICSU: Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding</u>
IUPAP-IUCr	IUMRS, UNESCO, ICTP, SESAME, AflS	ROA, ROLAC	<u>Utilisation of Light Source and Crystallographic Sciences to Facilitate the Enhancement of Knowledge and Improve the Economic and Social Conditions in Targeted Regions of the World</u>

The Project

A Global Approach to the Gender Gap in Mathematics, Natural and Computational Sciences: How to Measure It, How to Reduce It?"

Three tasks:

- A global survey including all natural sciences and math (AIP again in charge of it).
- Study of patterns of publication (detailed analysis of metadata)
- Compilation and elaboration of lists of good practices (considering regional differences)

All information is available on its website:

<https://icsugendergapinscience.org/>

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Project Partners

Original ones:

International Mathematical Union (IMU); the International Union of Pure and Applied Chemistry (IUPAC); the International Union of Pure and Applied Physics (IUPAP); the International Astronomical Union (IAU); the International Union of Biological Sciences (IUBS); the International Council for Industrial and Applied Mathematics (ICIAM); the United Nations Educational, Scientific and Cultural Organization (UNESCO); Gender in Science, Innovation, Technology and Engineering (GenderInSITE).

Partners that joined later:

The International Union of History and Philosophy of Science and Technology (IUHPST), an ICSU member, the Organization of Women in Science for the Developing World (OWSD) and the Association for Computing Machinery (ACM)

The project was possible because of our previous network of contacts.

Project Organization

Executive Committee of 21 members:

4 from IMU, 4 from IUPAC, 4 from IUPAP, 1 from IAU, 1 from IUBS, 1 from ICIAM, 1 from IUHPST, 1 from ACM, 2 from UNESCO, 1 from GenderInSITE, 1 from OWSD

Coordination groups:

Each one in charge of one of the three tasks (IUPAP is on the coordination group for the survey)

Advisory Board

Funding

The participating scientific unions contribute with additional funds beyond those received from ICSU.

The three tasks of the project are related to previous activities of some of the partners.

The survey has its immediate antecedent on the global survey of physicists carried out by the American Institute of Physics with the direct involvement of the IUPAP working group on women in physics for the elaboration of the questionnaire and dissemination.

As in the case of the survey of physicists, the new survey of scientists has been together by the AIP, it is hosted on their secure servers, they will collect and analyze the data (more on this later).

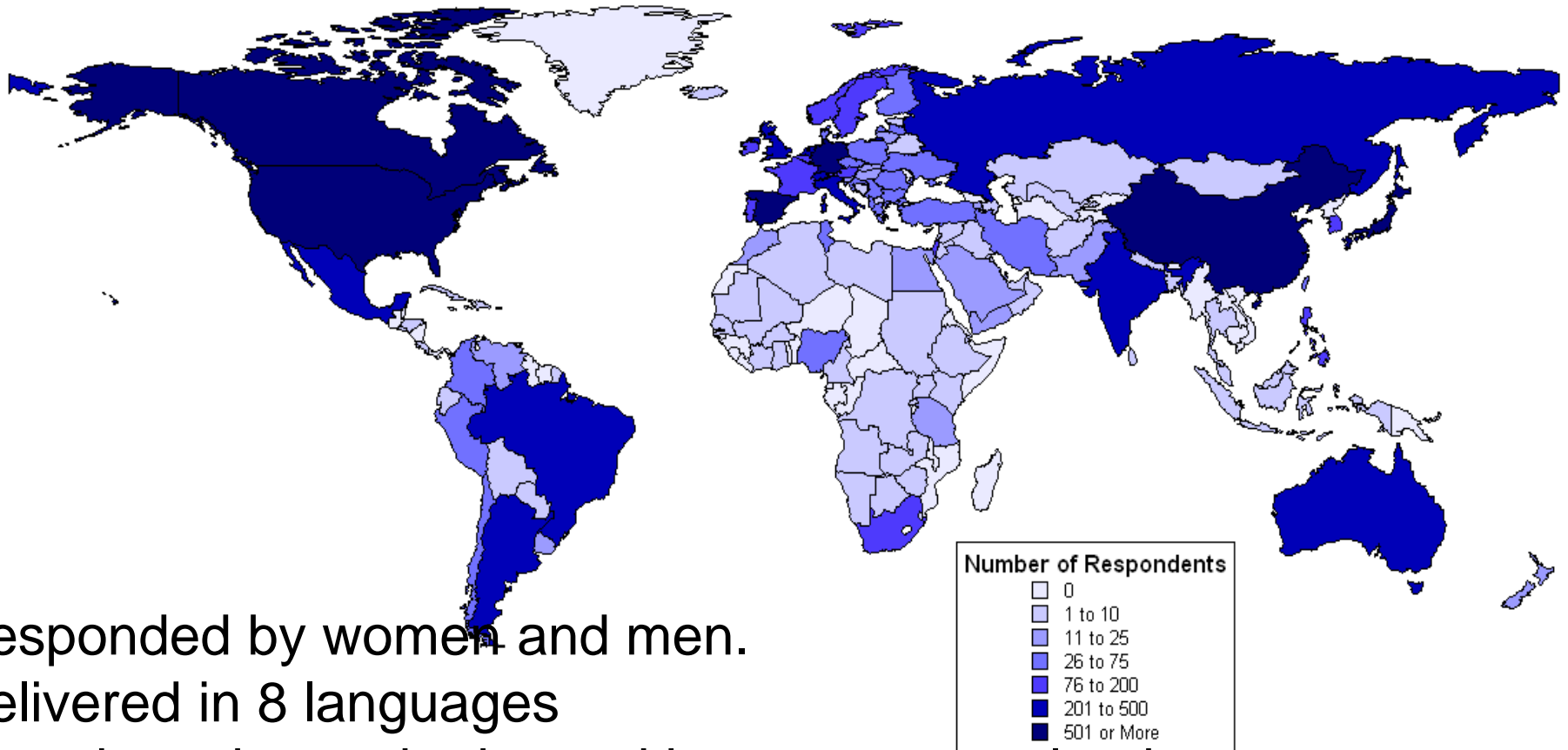
The study of publication patterns is based on a previous study performed on mathematics publications

The dissemination of lists of good practices among its members is something that most scientific unions have been doing.

The Global Survey of Physicists (2009-2010)

Carried out by the American Institute of Physics (funded by the Henry Luce Foundation)

Global Survey of Physicists; Most Recent Country of Respondent



Responded by women and men.

Delivered in 8 languages

Questionnaire worked out with country team leaders.

Comparability across countries insured.

GLOBAL SURVEY OF PHYSICISTS

إجراء استطلاع للرأي باللغة العربية. يرجىكم في استطلاع الرأي العالمي بشأن الفيزيائيين

欢迎参与全球物理工作者调查。以中文参与调查，请点击此处

Welcome to the Global Survey of Physicists. [To take the survey in English, click here](#)

Bienvenue à l'étude mondiale à l'intention des physiciens et physiciennes. [Pour participer à cette étude en français, cliquez ici](#)

Wir möchten Sie bei der globalen Umfrage unter Physikerinnen und Physikern begrüßen. [Klicken Sie hier, um die Umfrage in deutscher Sprache auszufüllen](#)

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Le damos la bienvenida a la Encuesta global de profesionales de la física. [Para hacer la encuesta en español, haga clic aquí](#)

Data from Rachel Ivie, AIP

<30% of the respondents were students
(students: mainly graduate)

Web distributed

14,932 respondents from 130
countries

Language of responses:

60% English; 11% German; 11%
Spanish; 7% Japanese; 5% Chinese;
3% French; 2% Russian; 1% Arabic

Responses by region:

37% Europe

32% North America

17% Asia

7% South America

3% Africa

2% Middle East

2% Australia

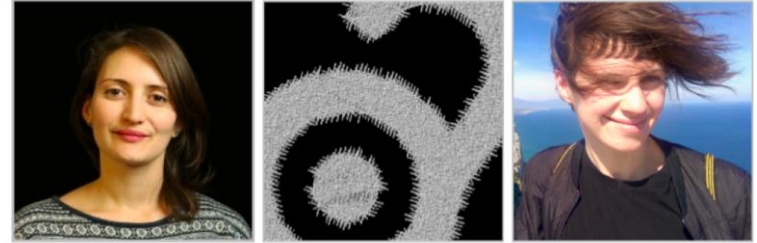
75% from Very Highly Developed Countries
(21% Female); 25% from Less Developed
Countries (27% Female); 1% had been to
ICWIP's

A physicist, a social scientist, a mathematician

Previous work: Study of patterns of publication in math using data stored in zbMATH on millions of publications since 1970 by ~150000 mathematicians

Task 2: joint data-backed study
Team

Lucía Santamaría, Marco Tullney, Helena Mihaljević-Brandt



Looked at: development over time, collaboration through co-authorships, presumed journal quality and distribution of research topics. Observed significant differences between genders (PLoS ONE, 2016).

Goals:

- Extend existing study on math to other disciplines
- Include information on countries, regions and institutions
- Establish continuous data import and processing flow to allow for easy updates and longitudinal analyses
- Build professional code interfaces and offer analyses and visualizations to the public
- Help develop additional items for the global survey to answer questions that remained open in previous study

About Task 3

The people in charge of collecting the lists of good practices have already put some at:

<https://icsugendergapinscience.org/work-packages/database-good-practices/>

I've generated a website for the Latin American workshop associated to the project:

<http://wp.df.uba.ar/ggapsla>, where we collected information from Latin America and other regions.

Timeline of the project and activities.

We've had a first coordination workshop in Paris in June, 2017.



In 2017 we also had regional workshops in Asia, Latin America and Africa to bring in a regional point of view.

The survey has just been launched (will be open May-Oct 2018).

We will have a closing activity (organized by OWSD @ICTP in Trieste) in 2019.

Asia regional workshop, Taiwan, November, 2017



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Latin America regional workshop, Colombia, November, 2017



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Africa regional workshop, South Africa, December, 2017

The Global Survey of Scientists.

We had a first draft of the questionnaire for the regional workshops. We discussed extensively about it (and made suggestions).

A new version was available in February for the Executive committee to make suggestions/corrections.

Translations (into 6 languages) were available for revision in March (a lot of work there about “gendered language”).

Dissemination letter re-worked in the 7 languages.

It is now available in 7 languages (English, Spanish, French, Russian, Chinese, Arabic and Japanese) and as of May 1st, open for responses (until the end of October, 2018).

Available at:

<https://statisticalresearchcenter.aip.org/cgi-bin/global18.pl>

Global Survey of Scientists

Welcome to the Global Survey of Scientists. [To take the survey in English, click here.](#)

Bienvenue dans l'enquête mondiale destinée aux scientifiques. [Pour répondre aux questions de l'enquête en français, veuillez cliquer ici.](#)

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Bienvenido/a a la Encuesta mundial de científicos y científicas. [Para hacer la encuesta en español, haga clic aquí.](#)

مرحبًا بك في الاستبيان العالمي للعلماء. [للمشاركة في الاستبيان باللغة العربية، انقر هنا.](#)

Dissemination of questionnaire and sampling

Snowball distribution.

Possibility of drawing some “good” samples (in agreement with scientific societies) as done in the past with APS, GPS.

We expect to have the first results in 2019

We need data to make informed recommendations!

Please help us disseminate!

In summary

Networks are important for most activities in life

They are particularly important to advance in an academic career.

In STEM careers where the fraction of women is relatively low, female networks provide a means to share experiences, to organize mentoring schemes, to help one another in their career development.

Science has been practiced for many centuries now. Women have entered the field much more recently.

It is through networking and joint activities that women can change the landscape of science practice.

The aim of these changes is to improve the workplace environment, to make the practice of science a more diverse and collaborative endeavor.

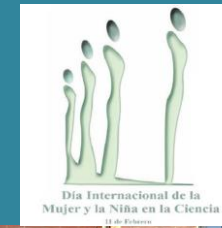
In places that have made changes, the improvement achieved proved to be good for everybody.

Hacia un Diálogo de Saberes en Ciencia, Tecnología e Innovación



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4th INTERNATIONAL CONFERENCE FOR WOMEN IN PHYSICS
SOUTH AFRICA, STELLENBOSCH 4 to 9 APRIL 2011

#NI UNA MENOS



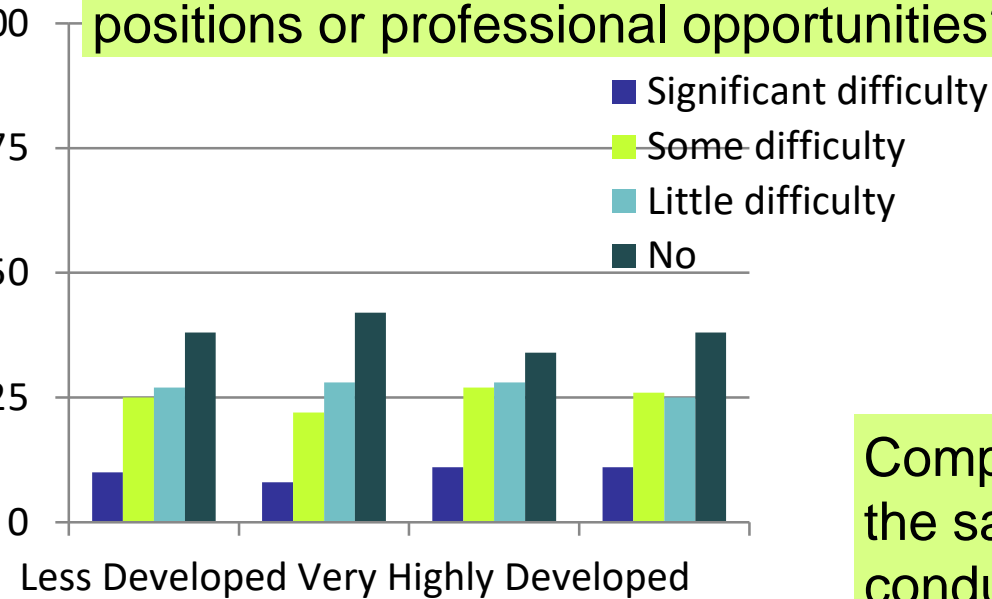
#SoyCientífica
[Dto. de Física, Exactas-UBA, ARGENTINA]



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Thank you!

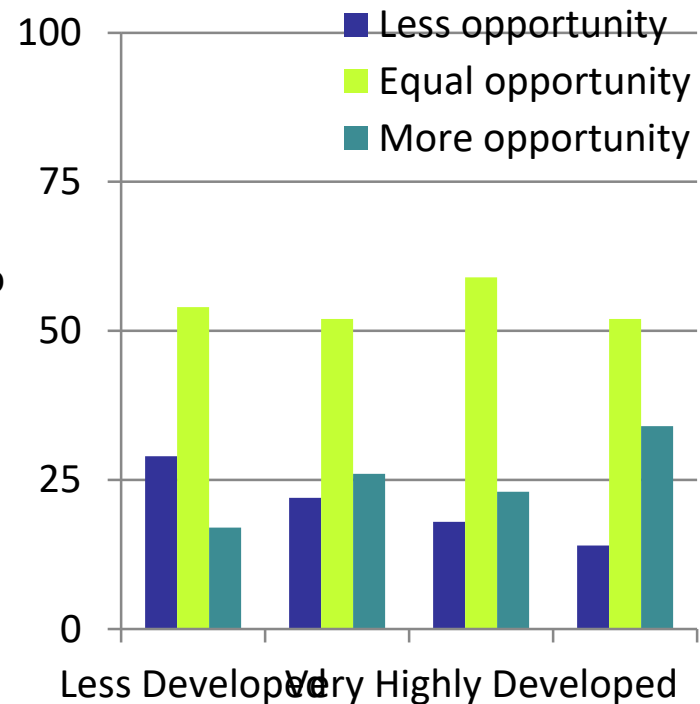
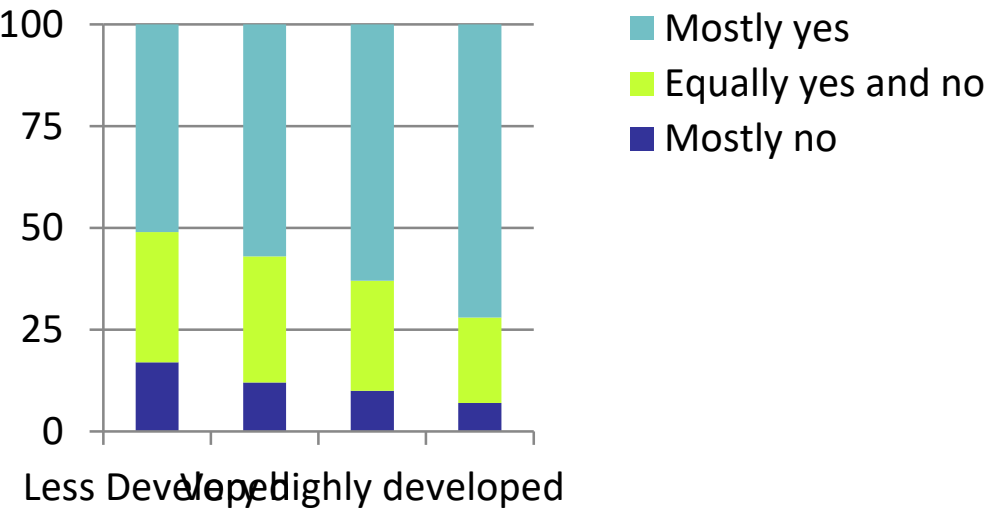
Have you had any difficulty finding positions or professional opportunities?



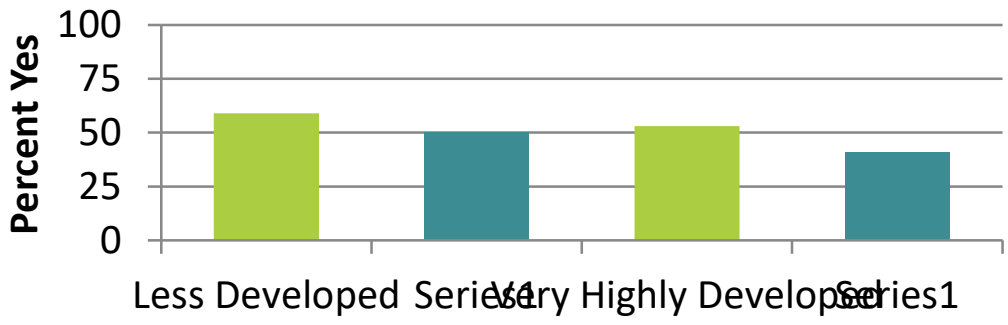
Some results (provided by R. Ivie)

Compared to your colleagues, did you have the same, fewer, or more opportunities to conduct research abroad?

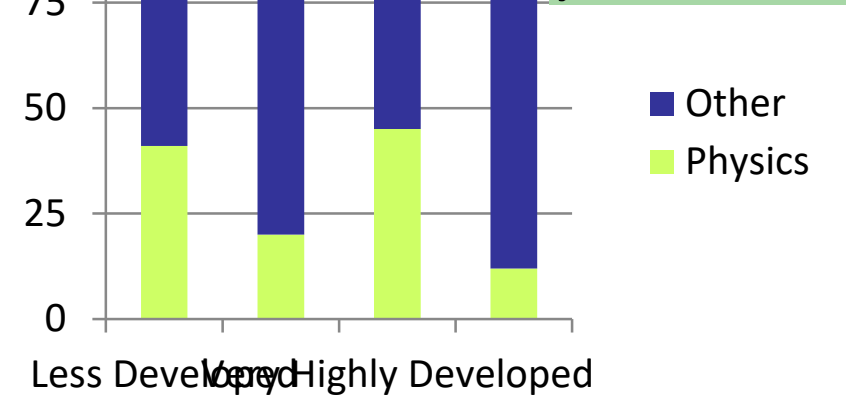
I feel comfortable raising concerns with my boss



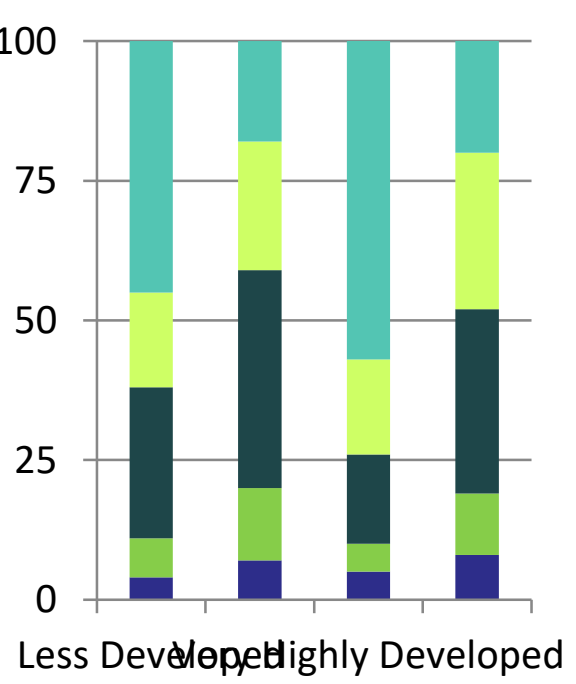
Has your career changed your personal life, e.g. decisions about marriage or children?



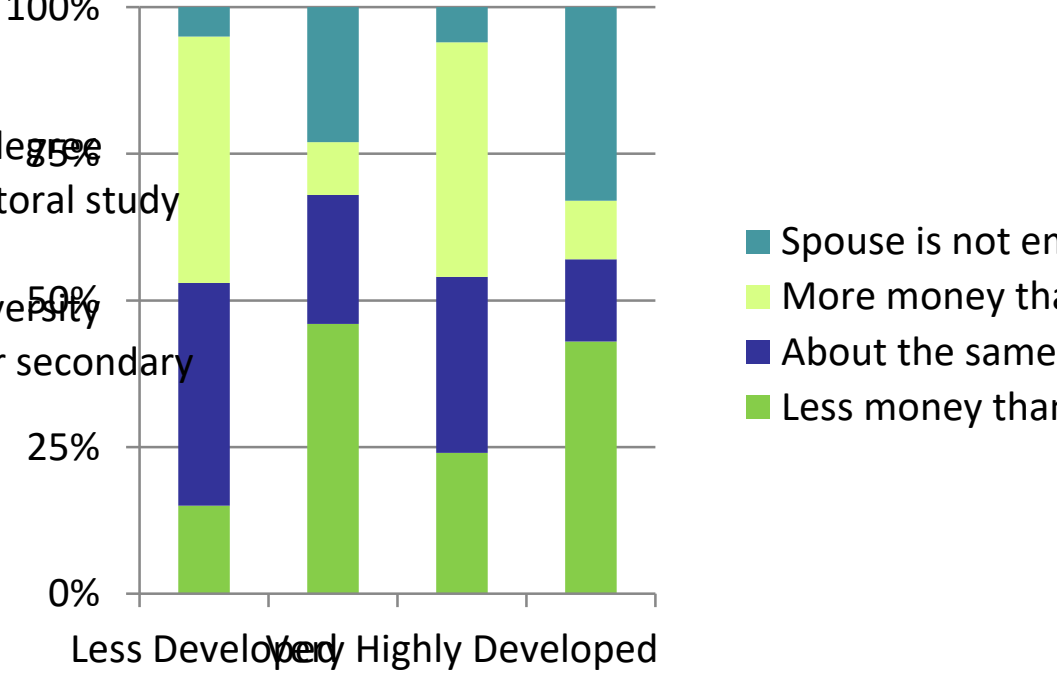
Partner's job:



How much school did your partner or spouse complete?



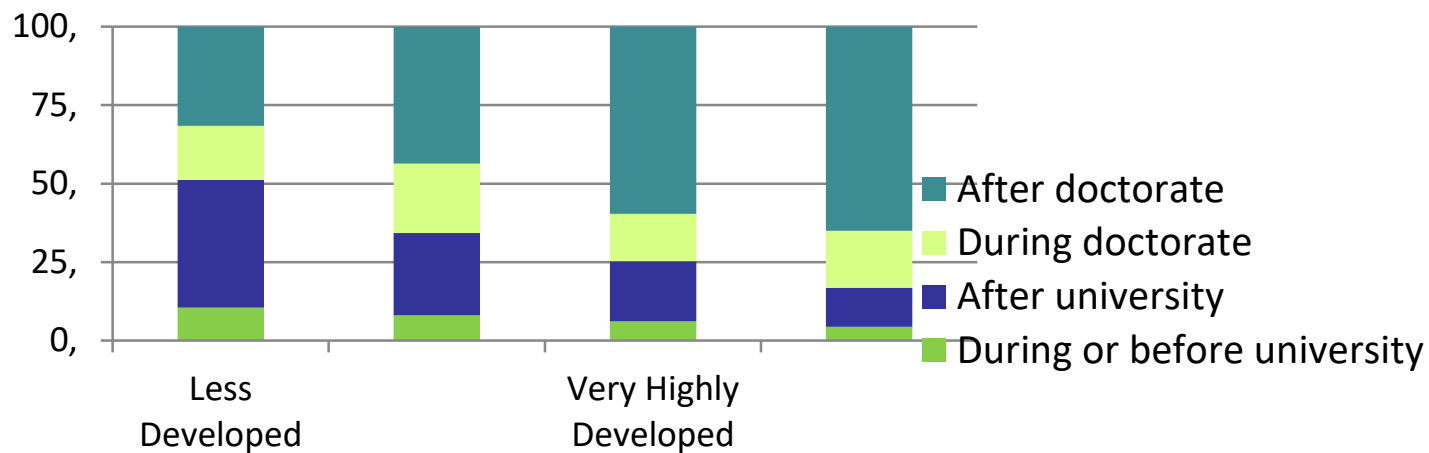
If your partner is employed, does he or she earn:



Do you have enough of the following to conduct or present your research?

% Yes	Less Developed		Very Highly Developed	
	Women	Men	Women	Men
Funding	34	51	52	60
Office space	64	74	72	77
Lab space	42	47	46	52
Equipment	42	49	58	64
Travel money	31	47	57	64
Clerical support	22	38	30	43
Employees or students	42	53	33	43

When did you have children?



Who is responsible for the majority of the housekeeping in your household?

