FEMALE SCIENTISTS IN FIGURES 2023

EXECUTIVE SUMMARY

GOBIERNO DE ESPAÑA
MINISTERIO DE CIENCIA E INNOVACIÓN
UMYC UNIDAD DE MUJERES Y CIENCIA
FECYT INNOVACIÓN
OMCI Observatorio Mujeres, Ciencia e Innovación

Women and Science Unit
Ministry of Science and Innovation
March 2023
e-NIPO 831230046

"The Government of Spain is developing a roadmap though dialogue and social collaboration to advance towards a better collective destiny; towards a more equal, prosperous and sustainable society. Only by attracting and retaining the scientific talent of women, will we achieve a fair and efficient transformation of our country."

Diana Morant, Minister of Science and Innovation

The Ministry of Science and Innovation has published the report 'Female Scientists in Figures 2023', which analyses the presence of women in the different science areas and levels in Spain, with special attention to research careers in Public Research Organisations (PRSs) and universities.

MEASURING FOR PROGRESS

There is a firm commitment from the Government and the different Administrations and agents of the Spanish Science, Technology and Innovation System (Spanish acronym: SECTI) to advance towards the full and equal participation of women in the fields of science and innovation, and to eradicate the inequalities which, as shown in the previous chapters, still persist.

It is worth recalling the introduction of measures established by Organic Law 3/2007, of 22 March, for the effective equality of women and men, whose scope also encompasses universities and research centres; Law 14/2011, of 1 June, in the case of PRIs (D.A.13), which reinforces the existence of equality plans and establishes the obligation to have equality units in all ministerial departments of the General State Administration, as well as in the academic sphere, Organic Law 4/2007, of 12 April, which modifies Organic Law 6/2001, of 21 December, which also incorporates equality units in its structure.

Law 17/2022, of 5 September, amending Law 14/2011, of 1 June, on Science, Technology, and Innovation, adds a new Article 4 bis. Gender mainstreaming, and a new Article 4 ter. Measures for effective equality, two specific articles to reinforce the gender perspective throughout the science, technology and innovation system, which is also integrated transversally throughout the text.

The "Female scientists in Figures" series continues to report on progress in gender equality and also on the gaps that still exist. This edition incorporates new indicators and new sources of data, to continue to learn about the presence of women and men in the Spanish science, technology and innovation system.

Its final objective is to monitor the gender impact of R&D&I policies and to propose actions for effective equality in the participation of women and men.

METHODOLOGY AND AREAS OF ANALYSIS

This edition provides the latest data in the sources used and requested, to the date October 15 2022 (2022, 2021 y 2020 are the data years, subject to product availability on this date). The following data sources have been consulted: Statistics on R&D Activities of the INE, Integrated University Information System (SIIU) of the Ministry of Universities, FECYT's Social Perception of Science Survey and Eurostat. In addition, information has been collected from public and private universities in Spain through their rectorates, and also from the 4 PRIs, through the General Secretariat for Research of the Ministry of Science and Innovation.

It also includes information from the different state research funding agencies, such as the State Research Agency, from the autonomous regions (regional ministries responsible for R&D in the Autonomous Regions of Andalusia, Asturias, the Canary Islands, Castile-La Mancha, Extremadura, Galicia, Madrid and Valencia), and from Europe (European Research Council (ERC) and the European Commission, Marie Sklodowska-Curie Programme (MSCA)), as well as the National Agency for Quality Assessment and Accreditation (ANECA). For the first time, this edition provides data from the Science, Technology, and Innovation Information System (SICTI), which contains information on all actions funded by public bodies, both from the National Government and the Autonomous Regions.

Science in Figures 2023 consists of five Chapters and three annexes:

Chapter 1. Scientific vocations.

Chapter 2. Labour market participation.

Chapter 3. Presence and participation of women researchers in higher education and PRIs.

Chapter 4. Scientific agenda.

Chapter 5. Equality policies.

Aneex I. Methodology.

Aneex II. Tables with data from charts.

Aneex III. Tables with additional indicators not available for download.

All graphs, Annex tables, associated data and additional indicators are available for download.

POSITIVE TRENDS

This edition of Female Scientific in Figures, as in previous studies, has identified some positive trends that were already noted in the previous edition:

- The percentage of female researchers increases another point and they now represent **42% of the research personnel** in Spain. The gap in the business sector remains unchanged, with 31% of female researchers in the business sector (See Chart 2.2)

- **The proportion of women continues to rise as research careers** in universities and PRIs progress. In 2021 they represent 44.3% at grade B, and 25.7% at grade A (See Chart 3.10).

- In decision-making positions, **the presence of women increases by three points to 25% for rector positions** in 2021, and from 25% (2021) to 50% (2022) the percentage of women at the head of the four PRIs increases from 25% (2021) to 50% (2022) (See Chart 3.17 and 3.19).

CHALLENGES AND GENDER GAPS

Main challenges

Attracting *female talent to research, especially in* ***engineering and technology***

Retaining and supporting female talent in Research

Integrate the gender perspective in R&D&I

Despite the improvements observed, some gender gaps remain in this edition:

- **There is a drop of more than 6 points in the presence of women researchers in engineering and technology and of more than two points in exact sciences** in the Higher Education sector (See Chart 2.5).

- **The presence of women in grade B,** which indicates stabilization in the research career, **is still 11 points below that of men in universities** (45%) and falls by 2.3 points in PRIs (41.3%) (See Chart 3.1.b and 3.7).

- **The proportion of female principal investigators represents barely 40% of applications and awards in R&D project calls;** they also **receive 38% of the funding.**

- There is a **marked gender gap** in **applications for six-year awards** that evaluate and recognize the research activity of teaching and research staff **in STEM areas,** with 21% in Communication, Computer and Electronic Engineering, 28% in Mathematics and Physics, and 31% in Architecture, Civil Engineering, Construction and Urban Planning.

- Only one fourth of the decision-making positions in the science system are represented by women, **25% female rectors** and **24% female directors of research institutes (PRIs).**

- The **success rate** for R&D project applications related to **feminist, women's and gender studies** is 35% in 2020, compared to 44% for the social sciences in whole.

- 13% of **universities do not have a gender equality plan in place, and one of the four OPIS does not have one either.**

- **Regarding equality structures, there are still limitations:** only 50% of PRIs (2) and 53.8% of private universities have a gender equality unit (94% of public universities).

RECOMMENDATIONS

The Women and Science Unit has highlighted in this report some lines of action on which progress is recommended and for which the commitment and involvement of all agents in the science, technology and innovation system is required:

- **Reforming the content on equality and the gender perspective** in the training of students and teachers at all levels of education, so that they have the necessary awareness and training to eradicate gender stereotypes and promote vocations and science teaching with a gender perspective.

  - The activation of empowerment and mentoring mechanisms are measures that favour the presence of women in pre-doctoral stages and aim to correct the under-representation of women in critical areas such as engineering and mathematics.

- **Implementing positive action measures** in line with those indicated in article 4ter. of the Science Act, especially in calls for R&D projects from funding agencies to improve the success rates and funding ratios obtained by women PIs.

  - Developing mechanisms to monitor the incorporation of the gender dimension into the content of R&D&I projects.

- **Implementing measures to remove gender bias from selection and appraisal processes,** in line with Article 4bis of the Science Act, either by training and capacity building of research and other staff, or by having equality experts to advise on such processes.

- **Design, implement and monitor equality plans and protocols against sexual and gender-based harassment,** as established in Article 4bis of the Science Act, to be evaluated on an annual basis, as well as the royal decrees for the private sector and regional regulations. Adequate resources and structures for this will be key.

- **Implementation of the R&D&I equality label** for universities and research centres to recognise those research centres where equality and gender mainstreaming are already promoted and to motivate others to follow in their footsteps.

- **Establish mechanisms for monitoring** compliance with the equality measures set out in the Law on Science, Technology and Innovation in universities, PRIs and funding agencies, as well as assessments of the achievement of objectives and the positive gender impact of these measures.

- **Monitor, within the framework of the Women, Science and Innovation Observatory,** the level of compliance and implementation of equality policies, plans and measures in the science, technology and innovation system, in order to make the necessary adjustments and corrective measures to reverse gender gaps.

For all these reasons and bearing in mind that Spain's policies and structures for equality in R&D&I are a benchmark in the European Union, it is essential to be able to show their positive impact through successive editions of the series Female Scientists in Figures.

More info

Press release from the Ministry of Science and Innovation
Promotional video Female Scientists in Figures 2023
Female Scientists in Figures 2023 – Full Report

Tables and additional indicators

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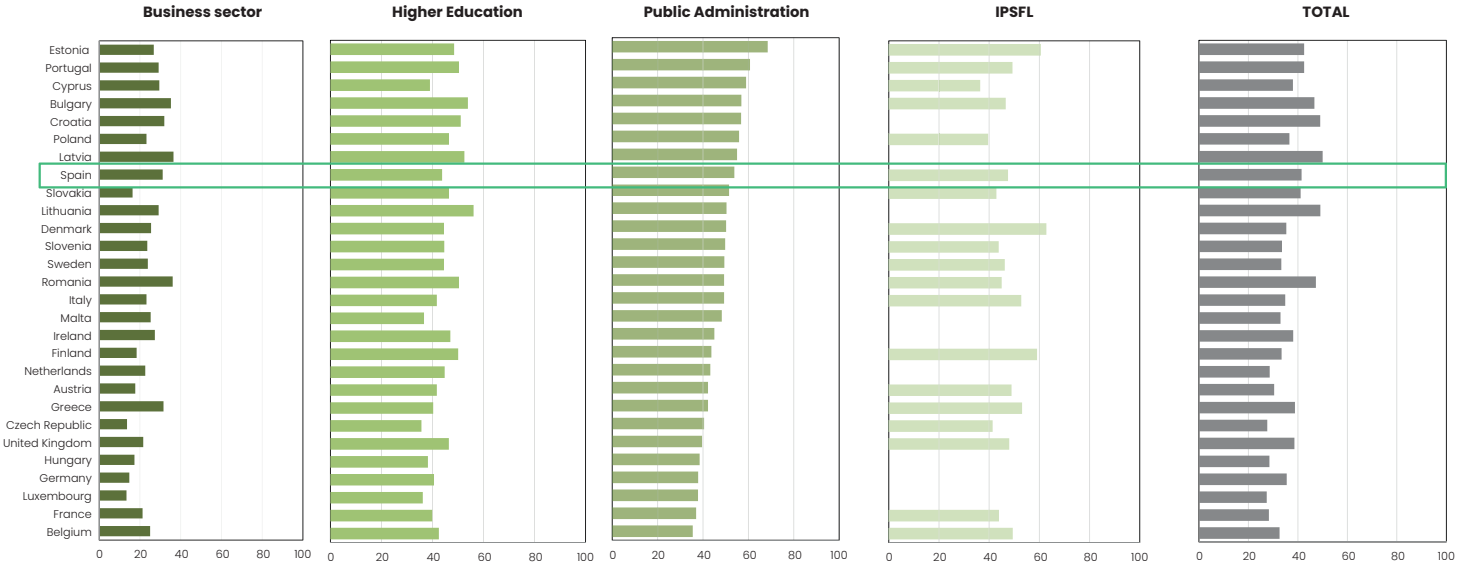
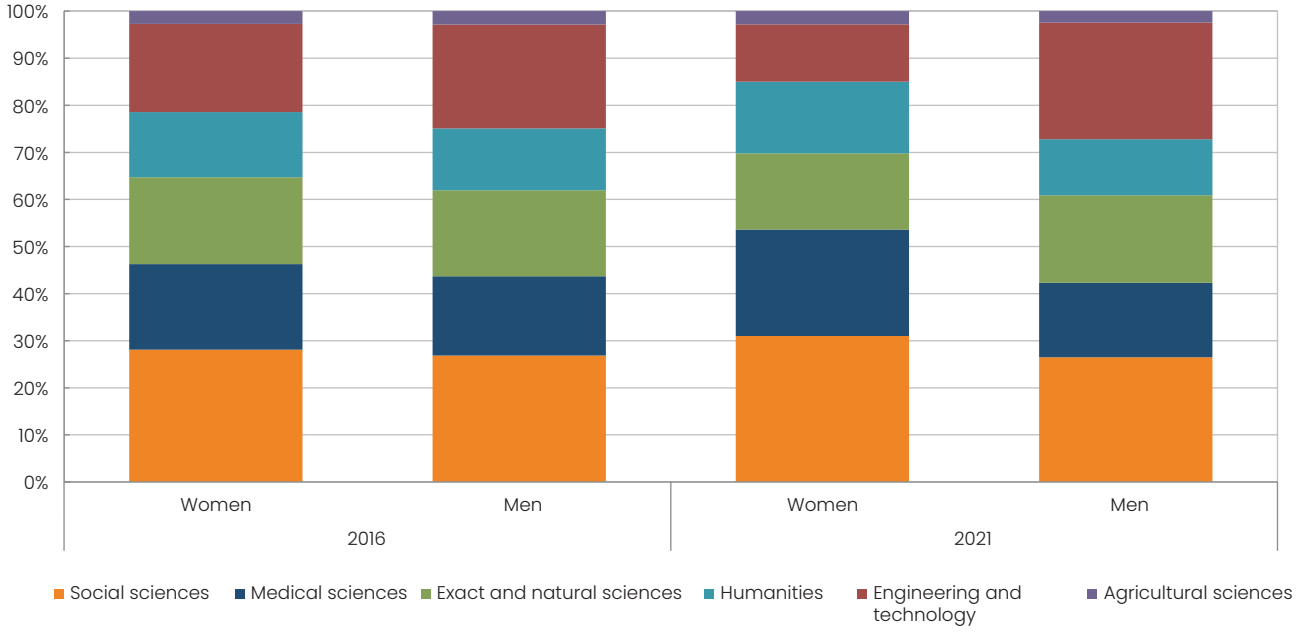
CHARTS

Chart 2.2. Proportion of female researchers by area of execution. EU28 countries. 2020.
(Percentage of women out of the total number of research staff in each sector).



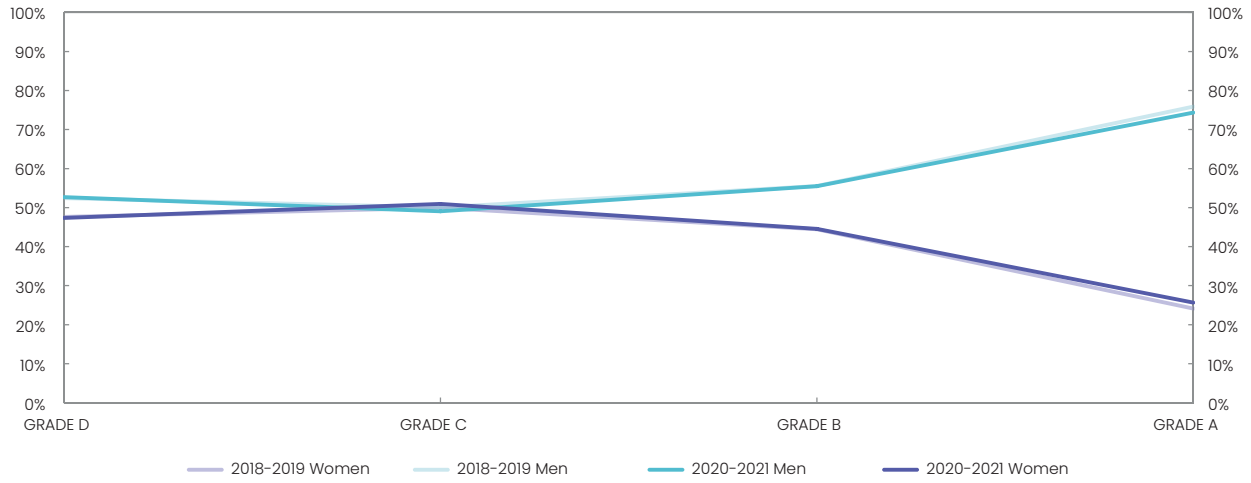
Source: Prepared by the authors based on data from Eurostat, Statistics on R&D. Code of consultation TSC00005. Data extracted in October 2022.
Notes: (1) Data in number of natural persons. (2) Data IPSFL (Private Non-Profit Institutions) not available for Germany, Croatia, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta and Netherlands. (3) Data year 2019 for Germany, Austria, Belgium, Denmark, Greece, Ireland, Luxembourg and Sweden. Data year 2018 for United Kingdom. Data year 2017 for France.

Chart 2.5. Distribution of research personnel in Higher Education according to gender and scientific and technological area. 2016 y 2021.
(Percentage of research staff in each area).



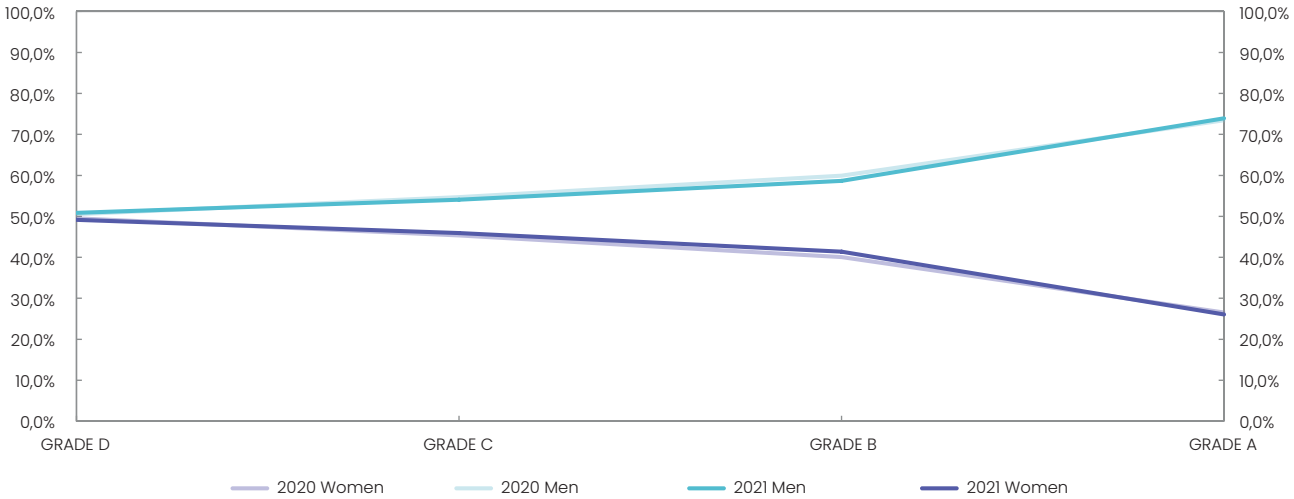
Source: Prepared by the authors based on data from INE, Statistics on R&D.
Note: Data in number of natural persons.

Chart 3.1.b. Evolution of the distribution of women and men in the research staff of universities according to research category. Academic year 2018-19 and 2020-21.
(As a percentage of total research staff).



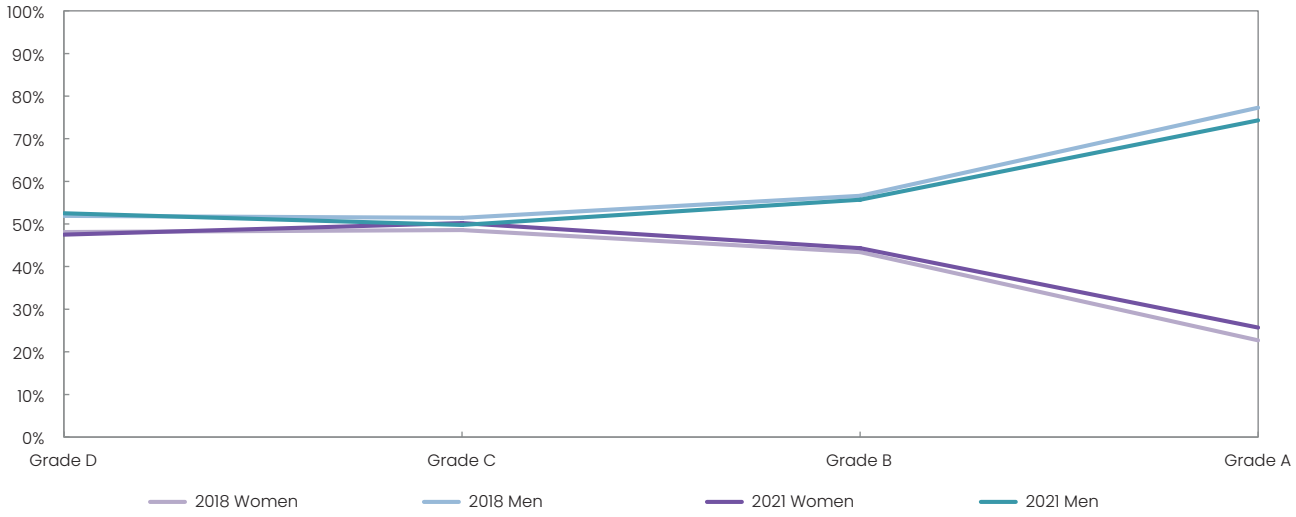
Source: Prepared by the authors based on data from the Ministry of Universities.
Notes: (1) Data in Full Time Equivalence (FTE). (2) Grade A (Highest position): Full Professor. Grade B (Doctors): Titular, Catedrático de Escuela, Titular de Escuela doctor, lector doctor, visitante doctor and Contratado doctor of public universities; Profesor con capacidad investigadora de centros adscritos/universidades privadas: Profesores doctores de Facultades o E. T.S. with levels between I and II, Professors with doctorate from Faculties or E.T.S. with level III, Professors with doctorate from E.U. and Other Teaching with levels between I and II; Ramón y Cajal, other postdoctoral and visiting researcher. Grade C (First university access doctoral position/newly qualified doctors): Assistant doctor of public universities; Juan de la Cierva. Grade D (Predoctoral): Assistant at public universities Predoctoral researchers, FPI and FPU. (3) Includes public universities, affiliated centres and private universities.

Chart 3.7. Evolution of the distribution of women and men in the research staff of PRIs according to research category. 2020 y 2021.
(As a percentage of total research staff).



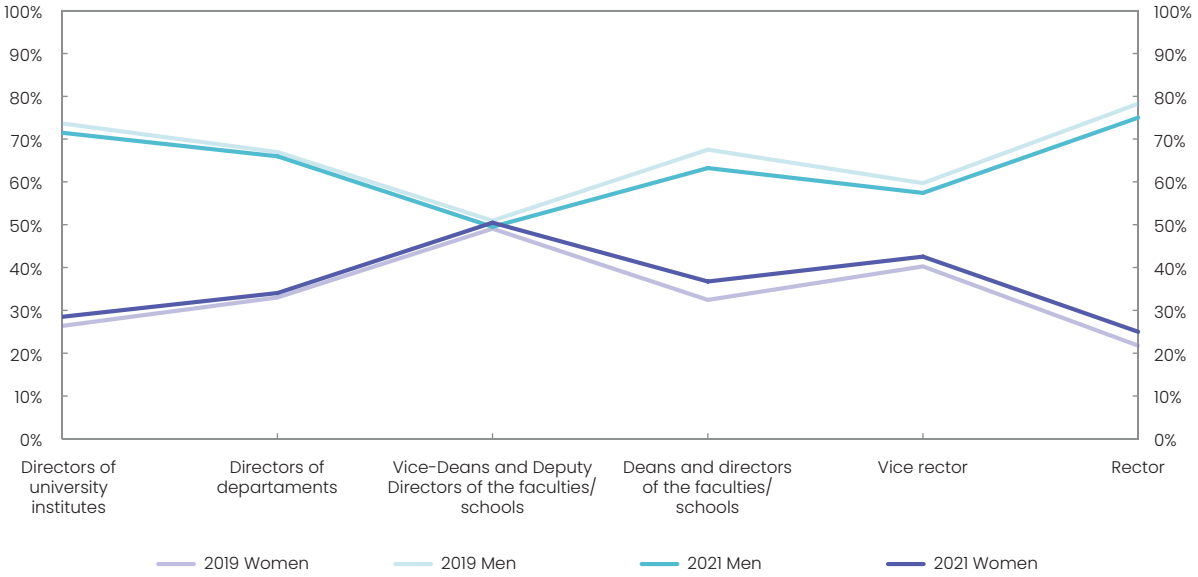
Source: Prepared by the authors based on data from the Ministry of Science and Innovation.
Notes: (1) Data in Full Time Equivalence (FTE). (2) Grade A (highest position): Scale of Research Professors of PRIs. Grade B: Scale of Research Scientists of PRIs; Scale of Tenured Scientists of PRIs; Distinguished Researcher; With a contract of the "Ramón y Cajal" Programme. Grade C: With a contract from the "Juan de la Cierva" Programme; With a contract from the "Miguel Servet" Programme; Work and service in charge of research projects; With another Postdoctoral contract. Grade D: Research Staff in Training (FPI, FPU and other pre-doctoral contracts from competitive calls).

Chart 3.10. Evolution of the distribution of women and men in the research staff of universities and PRIs according to research category. 2018 y 2021.
(As a percentage of total research staff).



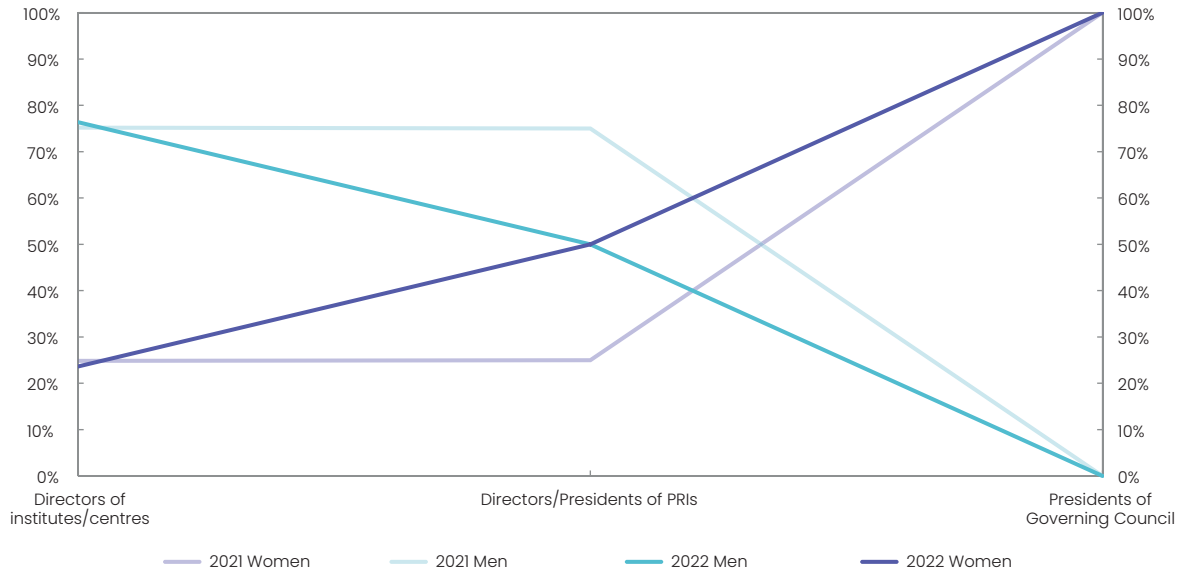
Source: Prepared by the authors based on data from the Ministry of Universities and the Ministry of Science and Innovation
Notes: (1) Data in Full Time Equivalence (FTE). (2) Universities. Grade A (Highest position): Full Professor. Grade B (Doctors): Titular, Catedrático de Escuela, Titular de Escuela doctor, lector doctor, visitante doctor and Contratado doctor of public universities; Profesor con capacidad investigadora de centros adscritos/universidades privadas: Profesores doctores de Facultades o E. T.S. with levels between I and II, Professors with doctorate from Faculties or E.T.S. with level III, Professors with doctorate from E.U. and Other Teaching with levels between I and II; Ramón y Cajal, other postdoctoral and visiting researcher. Grade C (First university access doctoral position/newly qualified doctors): Assistant doctor of public universities; Juan de la Cierva. Grade D (Predoctoral): Assistant at public universities Predoctoral researchers, FPI and FPU. (3) Includes public universities, affiliated centres and private universities. (4) PRIs. Grade A (highest position): Scale of Research Professors of PRIs. Grade B: Scale of Research Scientists of PRIs; Scale of Tenured Scientists of PRIs; Distinguished Researcher; With a contract of the "Ramón y Cajal" Programme. Grade C: With a contract from the "Juan de la Cierva" Programme; With a contract from the "Miguel Servet" Programme; Work and service in charge of research projects; With another Postdoctoral contract. Grade D: Research Staff in Training (FPI, FPU and other pre-doctoral contracts from competitive calls).

Chart 3.17. Proportion of women and men in single-member university governing bodies by type of body. 2019 y 2021.
(Percentage on total).



Source: Prepared by the authors, based on data provided by 76 universities (50 public and 26 private).
Notes: (1) Data as of 31 December of the reference year. (2) The position of Vice-Dean/Deputy Director is not, according to the Organic Law 6/2001, of 21 December of 6/2001, of 21 December, on Universities (LOU) a unipersonal governing body, but it is introduced in the Chart to continue the series and as a contrast with the unipersonal bodies considered.

Chart 3.19. Proportion of women and men in single-member PRIs governing bodies by type of body. 2021 y 2022.
(Percentage on total).



Source: Prepared by the authors based on data from the Ministry of Science and Innovation.
Notes: (1(1) Data as of 31 December of the reference year. (2) The data are from the Energy, Environmental and Technological Research Centre (CIEMAT), the Spanish National Research Council (CSIC), the Canary Islands Astrophysics Institute (IAC) y el Carlos III Health Institute (ISCIII).

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