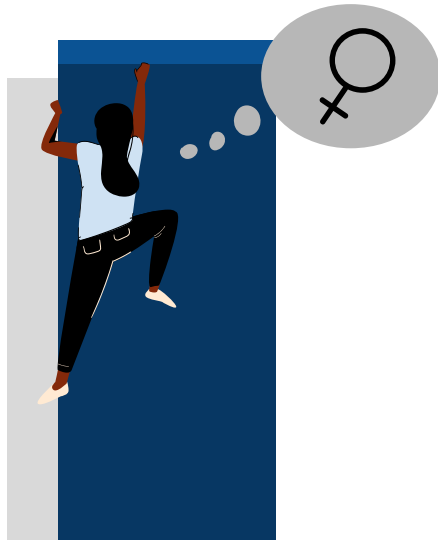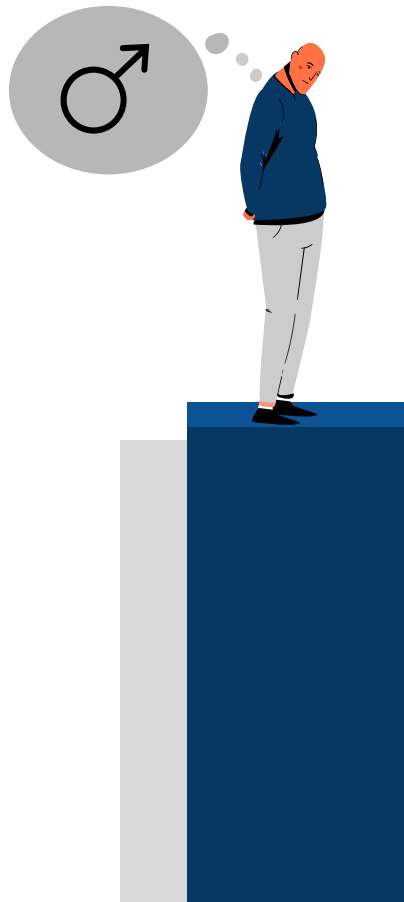# Beyond Graduation: The Struggle for Women in Academic Leadership Roles

Claudia Montero-Ramirez
clmontr@pa.uc3m.es
Irati Oiza-Zapata
ioiza@pa.uc3m.es

Department of Signal Theory and Communications,
Universidad Carlos III de Madrid
Madrid, Spain

Index

Beyond Graduation: The Struggle for Women in Academic Leadership Roles. **Precarity and Instability in Academia Symposium (PIAS)**

3

Index

Beyond Graduation: The Struggle for Women in Academic Leadership Roles. **Precarity and Instability in Academia Symposium (PIAS)**

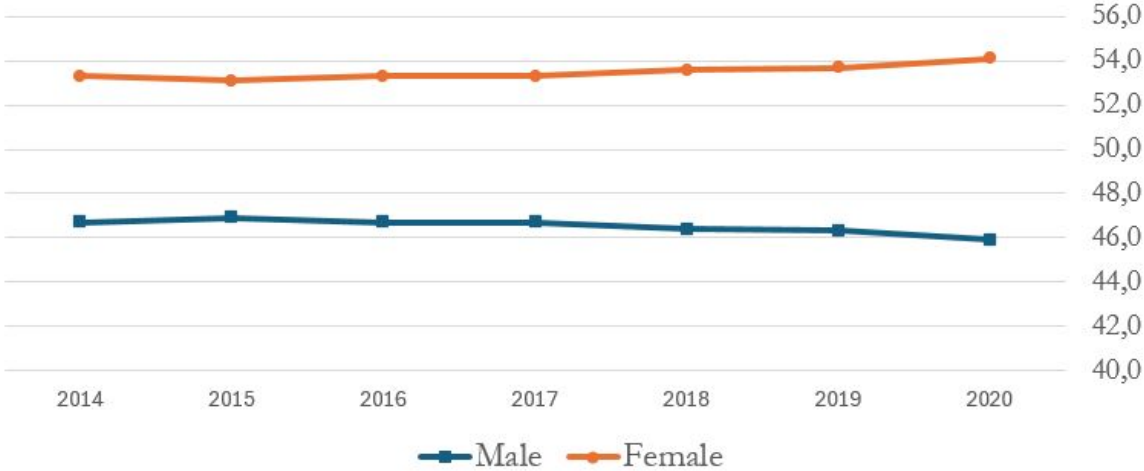Motivation   4
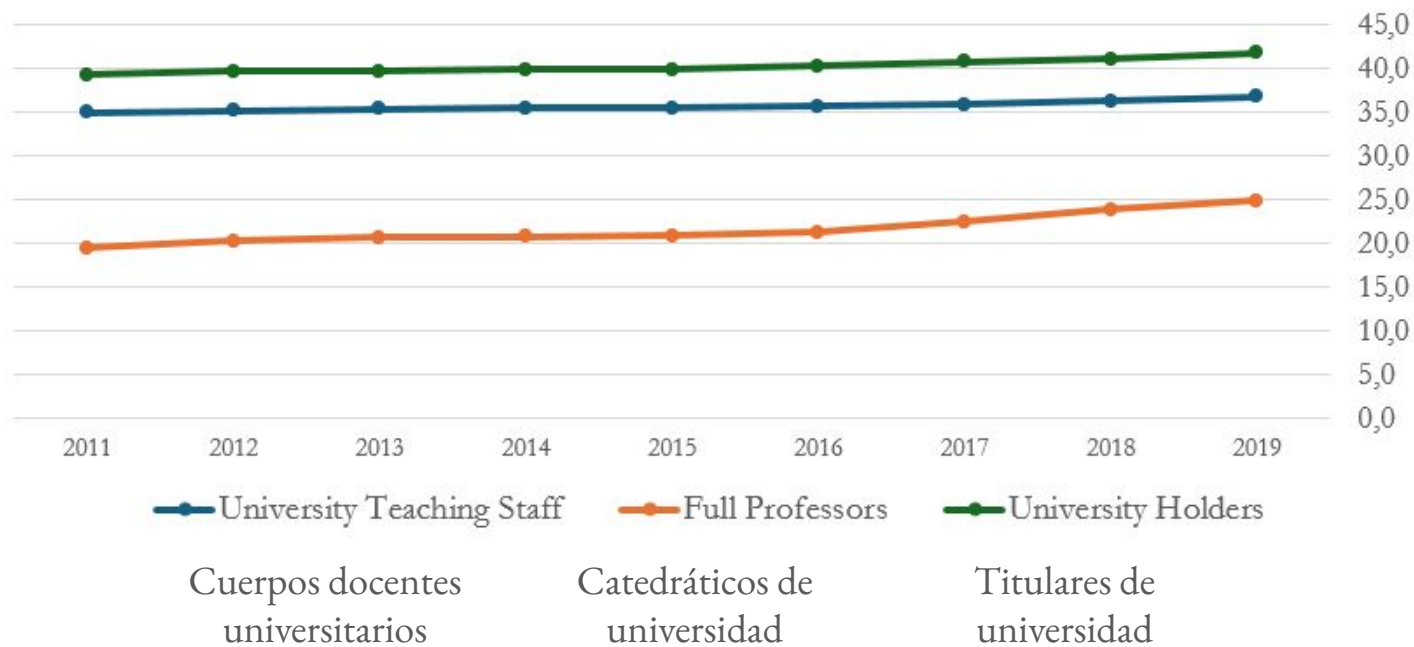
Percentage of male and female higher education graduates in Spain

Women in university teaching positions in public universities by category and academic year. Units in %. Spain.

University Teaching Staff — Cuerpos docentes universitarios

Full Professors — Catedráticos de universidad

University Holders — Titulares de universidad

Objectives

Adopt simplified approach

Rely on statistical data without considering crucial factors such as individuals' socioeconomic status.

Present compelling statistics

That raise awareness about this pressing issue

Analyze the intersection of caregiving responsibilities and professional advancement

By leveraging data from National Statistics institute (INE) to understand gender disparities in academia
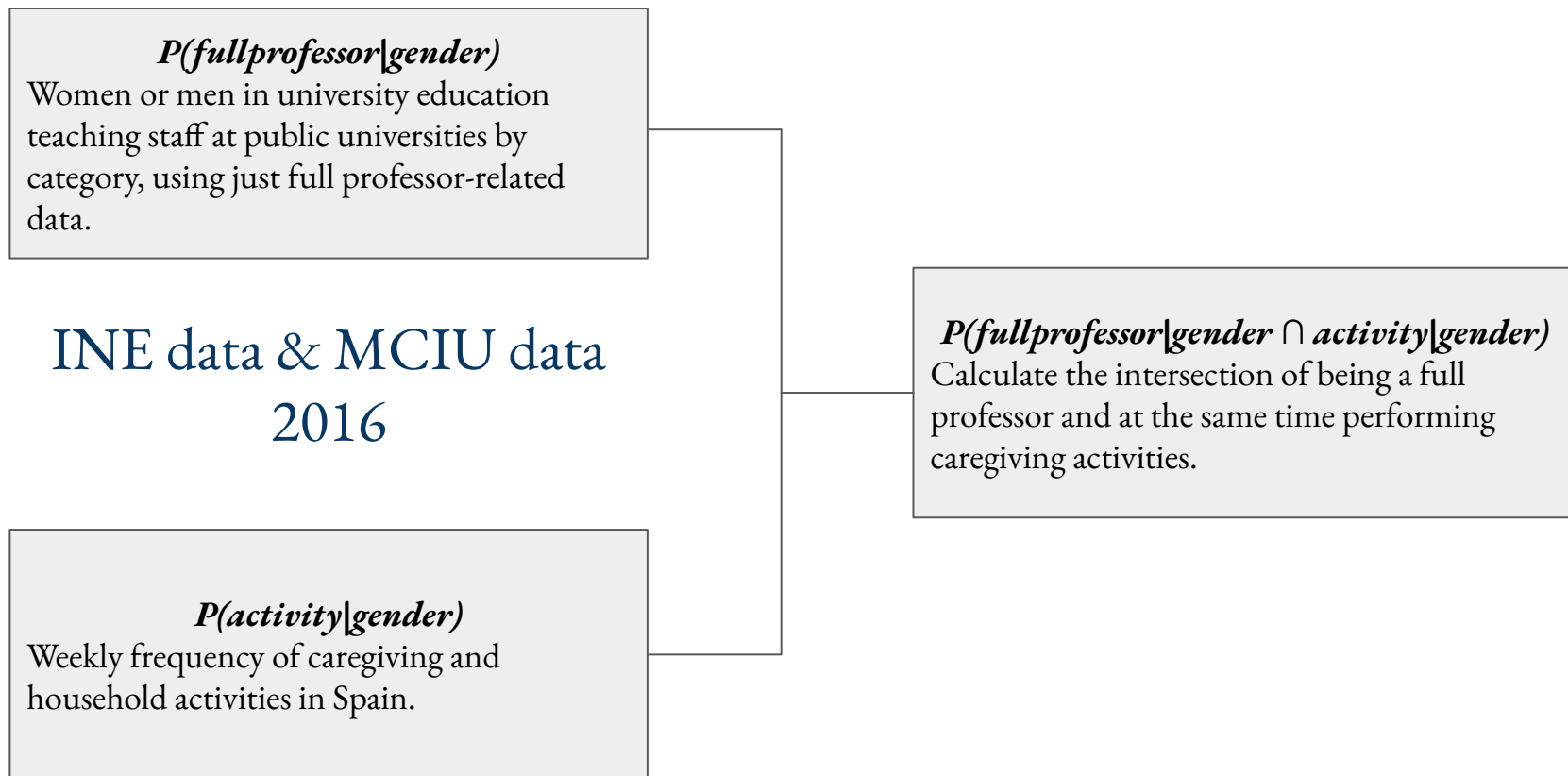
Index

1   Motivation

2   Methods

3   Results

4   Conclusions

P(fullprofessor|gender)
Women or men in university education teaching staff at public universities by category, using just full professor-related data.

INE data & MCIU data 2016

P(fullprofessor|gender ∩ activity|gender)
Calculate the intersection of being a full professor and at the same time performing caregiving activities.

P(activity|gender)
Weekly frequency of caregiving and household activities in Spain.

P(fullprofessor|gender)
People by gender in university education teaching staff at public universities by category, using just full professor-related data.

The information reached is the P(gender|fullprofessor) we need to:

$$P(fullprof|men) = \frac{P(men|fullprof) \cdot P(fullprof)}{P(men)}$$

$$P(fullprof|women) = \frac{P(women|fullprof) \cdot P(fullprof)}{P(women)}$$

P(activity|gender)
Weekly frequency of caregiving and household activities in Spain.

ID	Activity	Men	Women
1	Care or education of children	76	95
2	Care or education of grandchildren	33	32
3	Cooking or performing household chores	60	93
4	Care of sick or disabled family members, neighbors, or friends under 75 years old	7	8
5	Care of sick or disabled family members, neighbors, or friends over 75 years old	5	10

P(fullprofessor|gender ∩ activity|gender)

Calculate the intersection (joint probability) of being a full professor and at the same time performing caregiving activities.

Extended opinion: **caregiving responsibilities and professional development are independent**

The joint probability of both events can be expressed as follows :

$$P(A \cap B) = P(A) \cdot P(B)$$

$P(fullprof|men \cap activity|men) =$
$P(fullprof|men) \cdot P(activity|men)$

$P(fullprof|women \cap activity|women) =$
$P(fullprof|women) \cdot P(activity|women)$

% of difference between genders

Percentage difference between the probabilities of men and women achieving the position of *full professor* and their participation in a specific activity.

$$\% = \frac{|A - B|}{\frac{A+B}{2}} \cdot 100$$

Knowing: A is *P(fullprofessor|men ∩ activity|men)* and B is *P(fullprofessor|women ∩ activity|women)*

Index

1 Motivation

2 Methods

3 Results

4 Conclusions

P(fullprofessor|gender) People by gender in university education teaching staff at public universities by category, using just full professor-related data.	**P(activity|gender)** Weekly frequency of caregiving and household activities in Spain.

$$P(fullprof|men) = \frac{P(men|fullprof) \cdot P(fullprof)}{P(men)}$$

$$P(fullprof|women) = \frac{P(women|fullprof) \cdot P(fullprof)}{P(women)}$$

$$P(activity = ID1|women) = \frac{95}{100} = 0.95$$

$$P(activity = ID1|men) = \frac{76}{100} = 0.76$$

Knowing...

$P(fullprofessor) = 2.32 \cdot 10^{-4}$

$P(men) = 0.491$
$P(women) = 0.509$

$P(men|fullprofessor) = 0.789$
$P(women|fullprofessor) = 0.211$

| *P(fullprofessor\|gender)*
People by gender in university education teaching staff at public universities by category, using just full professor-related data. | | *P(activity\|gender)*
Weekly frequency of caregiving and household activities in Spain. | |

Activity	P(activity|men)	P(activity|women)	P(fullprofessor|men)	P(fullprofessor|women)
Care or education of children	0.76	0.95	$3.73 \cdot 10^{-4}$	$9.57 \cdot 10^{-5}$
Care or education of grandchildren	0.33	0.32	$3.73 \cdot 10^{-4}$	$9.57 \cdot 10^{-5}$
Cook or perform household chores	0.60	0.93	$3.73 \cdot 10^{-4}$	$9.57 \cdot 10^{-5}$
Care of sick or disabled realtives, neighbors or friends <75 years old	0.07	0.08	$3.73 \cdot 10^{-4}$	$9.57 \cdot 10^{-5}$
Care of sick or disabled relatives, neighbors, or friends >75 years old	0.05	0.10	$3.73 \cdot 10^{-4}$	$9.57 \cdot 10^{-5}$

> ### $P(fullprofessor|gender \cap activity|gender)$
>
> Calculate the intersection (joint probability) of being a full professor and at the same time performing caregiving activities.

$$P(fullprofessor|gender \cap activity|gender) = P(fullprofessor|gender) \cdot P(activity|gender)$$

Activity	$P(fullprofessor|men \cap activiy|men)$	$P(fullprofessor|women \cap activiy|women)$
Care or education of children	$2.84 \cdot 10^{-4}$	$9.09 \cdot 10^{-5}$
Care or education of grandchildren	$1.23 \cdot 10^{-4}$	$3.06 \cdot 10^{-5}$
Cook or perform household chores	$2.24 \cdot 10^{-4}$	$8.90 \cdot 10^{-5}$
Care of sick or disabled realtives, neighbors or friends <75 years old	$2.61 \cdot 10^{-5}$	$7.66 \cdot 10^{-6}$
Care of sick or disabled relatives, neighbors, or friends >75 years old	$1.87 \cdot 10^{-5}$	$9.57 \cdot 10^{-6}$

Beyond Graduation: The Struggle for Women in Academic Leadership Roles. **Precarity and Instability in Academia Symposium (PIAS)**

Results   17

% of difference between genders

Activity	%
Care or education of children	103.01
Care or education of grandchildren	120.31
Cook or perform household chores	86.26
Care of sick or disabled relatives, neighbors or friends <75 years old	109.24
Care of sick or disabled relatives, neighbors, or friends >75 years old	65.59

Beyond Graduation: The Struggle for Women in Academic Leadership Roles. **Precarity and Instability in Academia Symposium (PIAS)**

18

Index

Significant gender gap in academic world in Spain

NOT independent events and various intersecting factors

Academic institutions must **recognize and actively combat the structural barriers that perpetuate gender inequality**

Limitations

Data from 2016

Simplified approach with only two variables

Future work

- Use more recent data
- Explore main reasons of fewer women in academia

Beyond Graduation: The Struggle for Women in Academic Leadership Roles. **Precarity and Instability in Academia Symposium (PIAS)**

20

Thanks!

Any questions?

clmontr@pa.uc3m.es & **ioiza@pa.uc3m.es**