Analyzing Common Narratives: An Empirical Investigation of Women in Academic Science

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Common Narratives

1. Work life
2. Productivity
3. Salary & Satisfaction
4. Institutional Policies
5. Networks & Social Capital

The Data

Netwise I 2007

Responses from 1,628 faculty

Six fields: biology, chemistry, computer science, earth & atmospheric sciences, electrical engineering, physics

151 Research I universities (now Research Extensive & Intensive)

Netwise II - 2014

Responses from 1,324 faculty

Four fields: biology, biochemistry, engineering, mathematics

Research Extensive & Intensive
Master's I/II institutions
HBCUs
Hispanic Serving Institutions
Women's Colleges
Oberlin 50 baccalaureate institutions
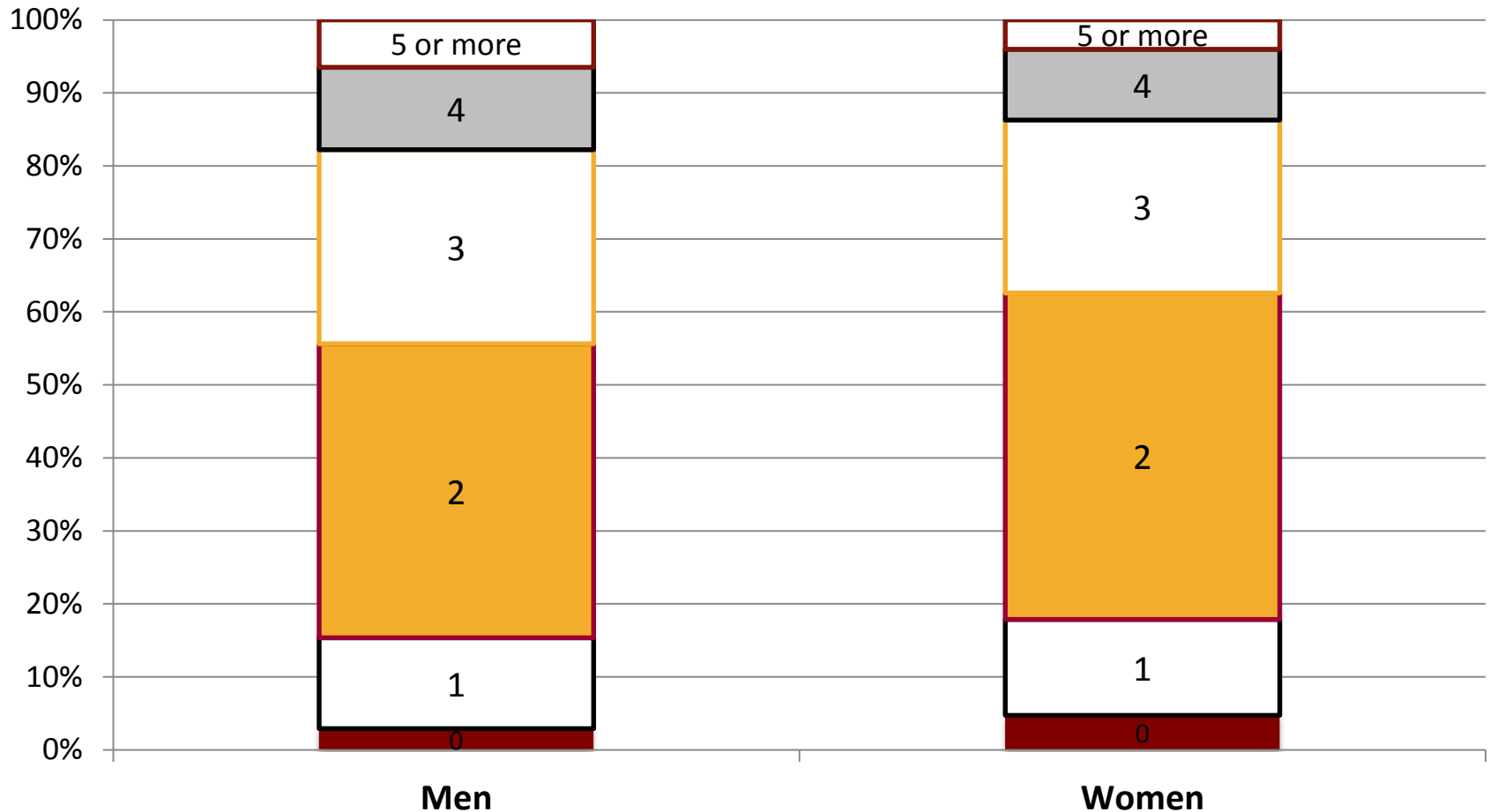
part I: Work Life Narratives

Women have larger teaching loads, leaving men more time for research

Women have larger service loads, leaving men more time for research
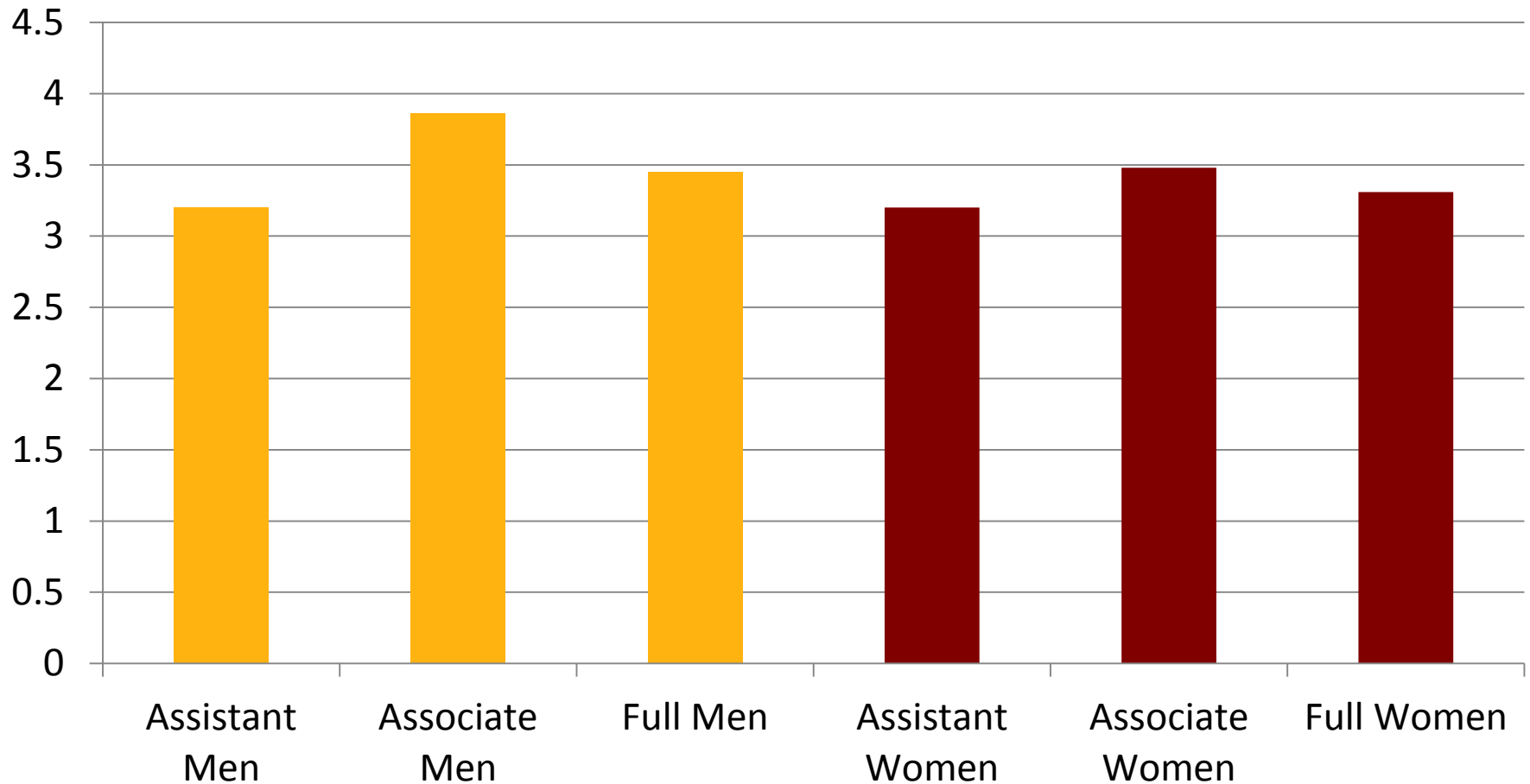
Women have fewer leadership roles

Men report higher teaching loads

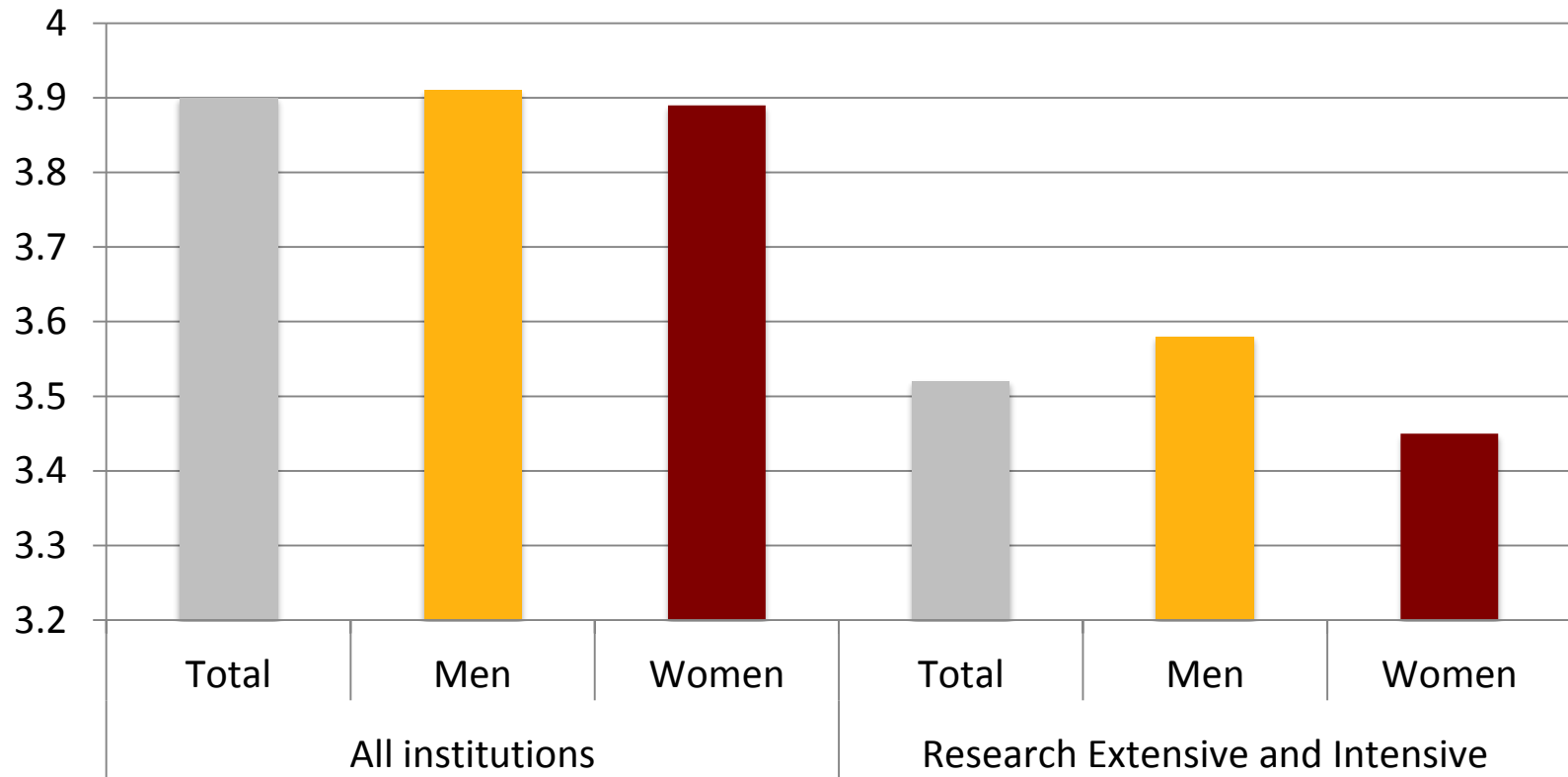Mean number of courses taught last year

Pearson Chi-Square 12.186, df=5, Asymp. Sig. (2-sided) .032. Netwise I

Women report lower teaching loads

Mean number of courses taught last year, Sig. .000. Netwise I

No significant difference in service loads, by sex

During the past academic year on how many of the following did you serve? (1) faculty search committees, (2) other department committees, and (3) university of college committees.
Not Significant. Netwise II

Women in leadership roles

Three types of leadership:
1. Research center director
2. University level administrative leader
3. Discipline leader

Controlling for multiple factors including productivity, awards, social capital, discipline, age and minority status...

1. Women are **less likely** to hold research center position
2. Women are **less likely** to hold university leadership positions
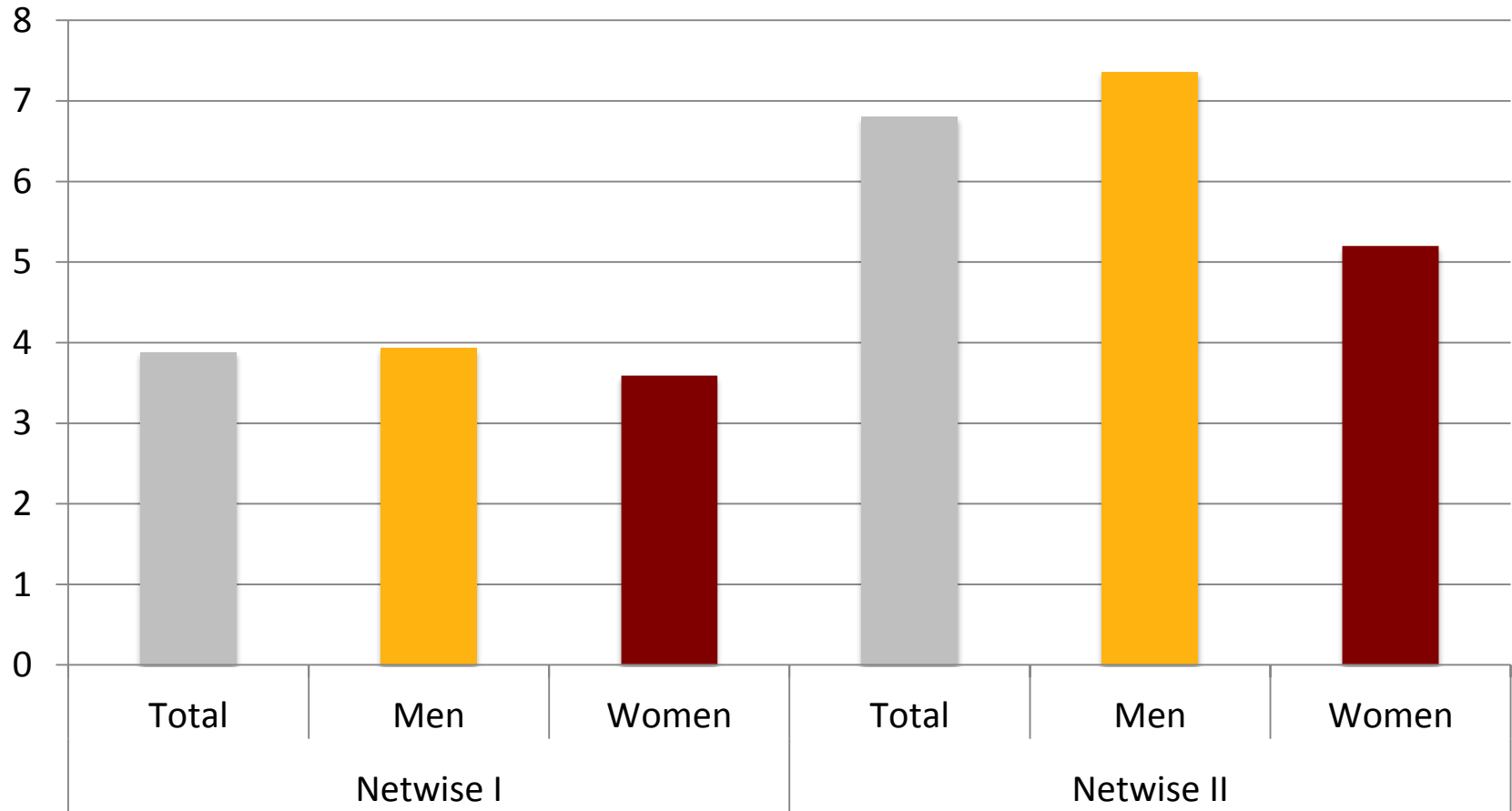3. Women **more likely** to hold discipline-level leadership positions

Netwise II data

part II: Productivity Narratives

Women produce fewer papers

Women have lower grant getting success

Women produce fewer papers

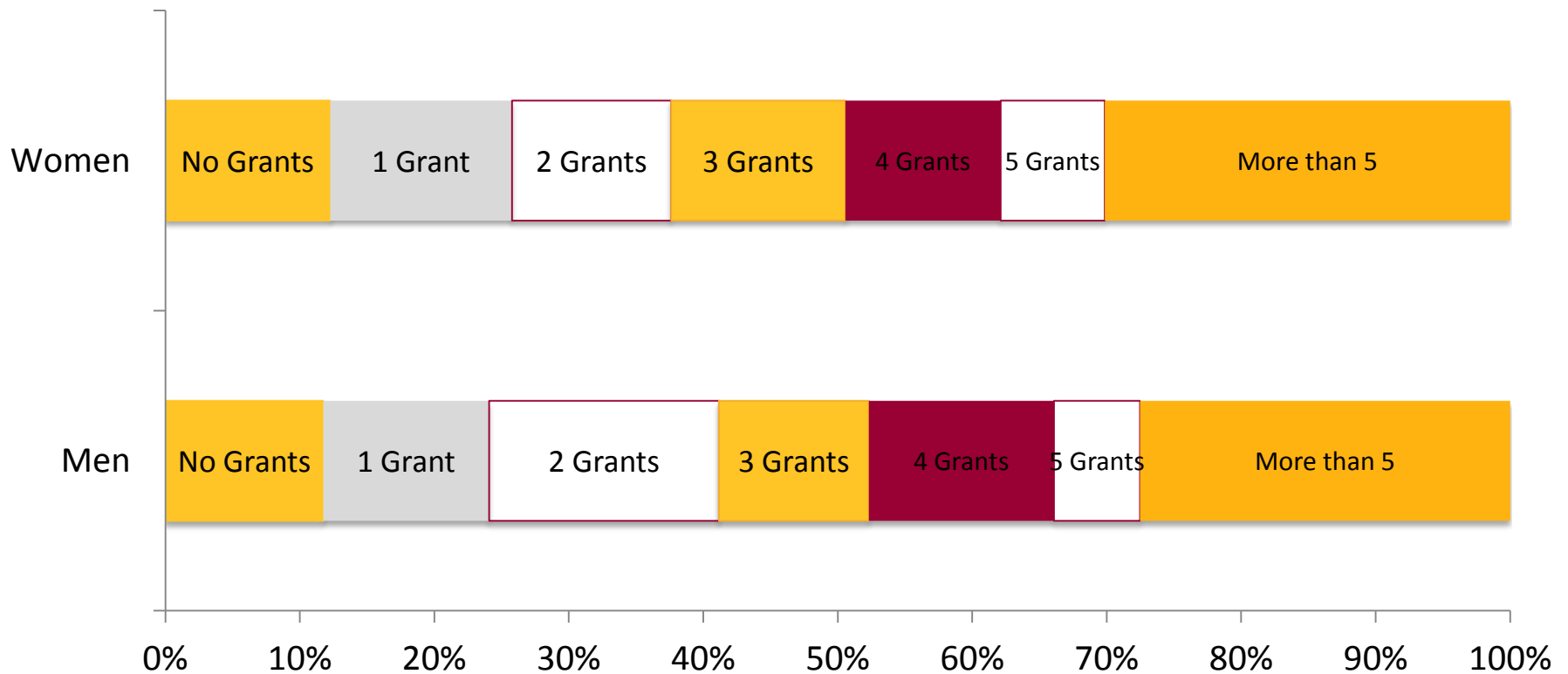Mean number of publications last year

T-Test, p<0.001. Netwise I
T-Test, p<0.001. Netwise II

There is *no significant difference* in publication rates, by sex

- Controlling for field of science and academic rank, there is no significant difference in publication rates, by sex
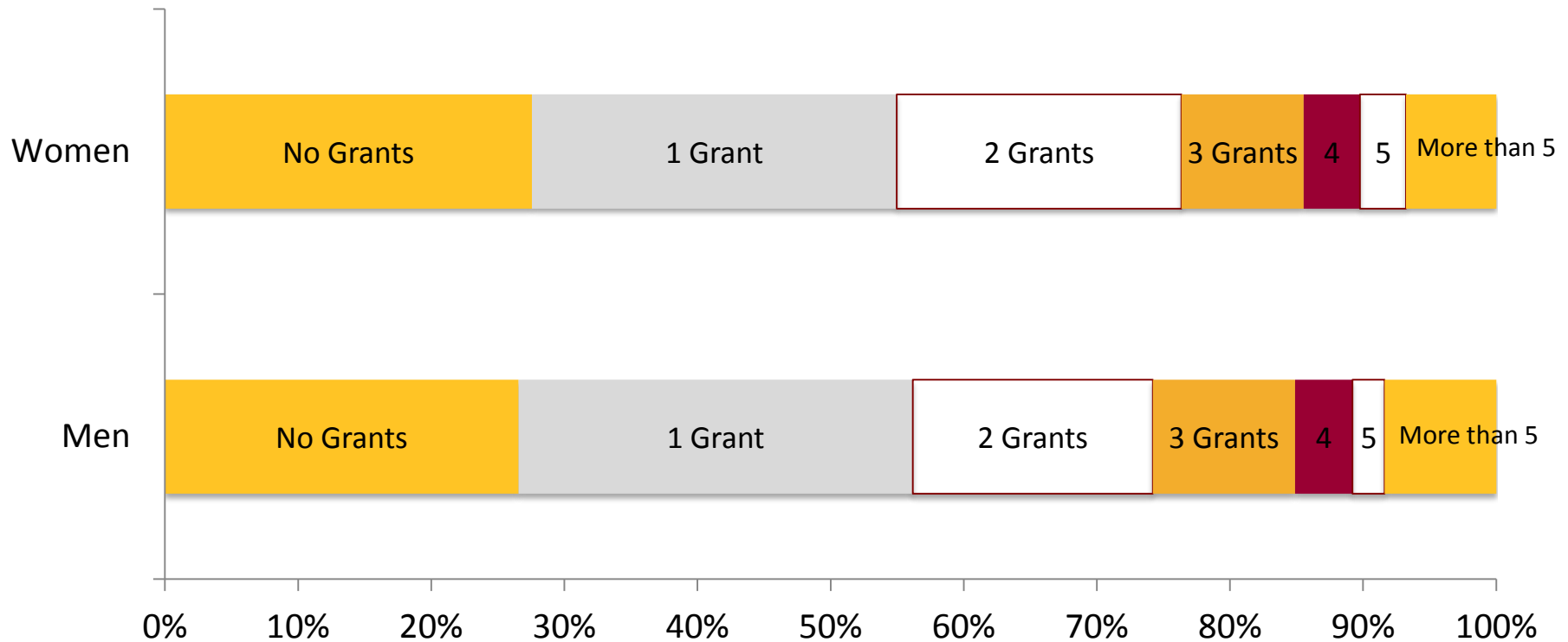
Netwise I

There is no significant difference in grant applications by sex

Mean number of grant submissions last year. Pearson Chi Square 46.889, df=34 sig. (2-tailed) .070, N=1553. Netwise I

There is no significant difference in grants awarded, by sex

Mean number of grants awarded last year. Pearson Chi Square 34.173, df=28 sig. (2-tailed) .195, N=1451. Netwise I
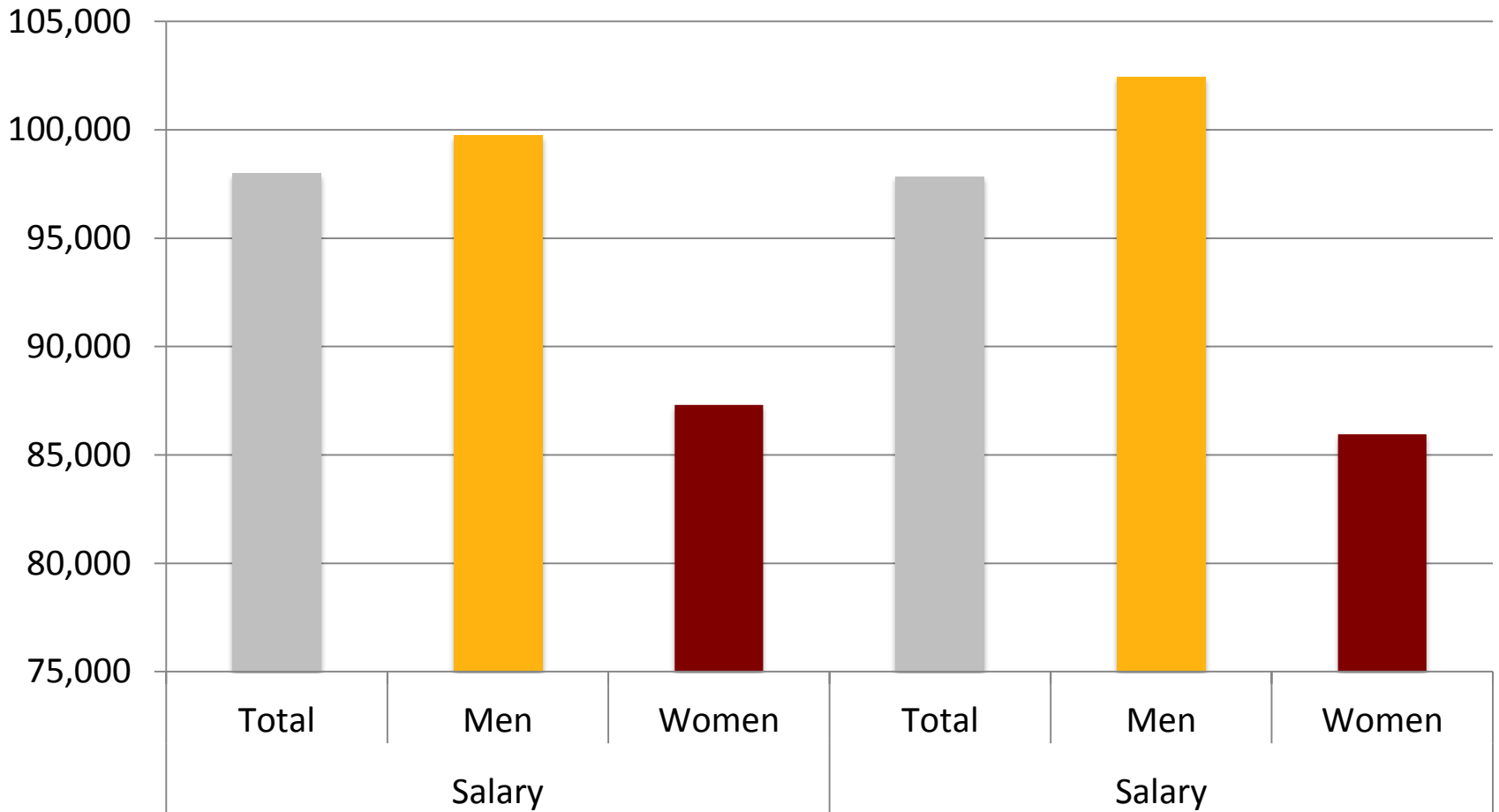
part III: Salary & Satisfaction Narratives

Women are paid less than men

Women do not negotiate for more

Women are less satisfied at work

Women are paid less than men
Mean annual salary

T-Test, p<0.001. Netwise I
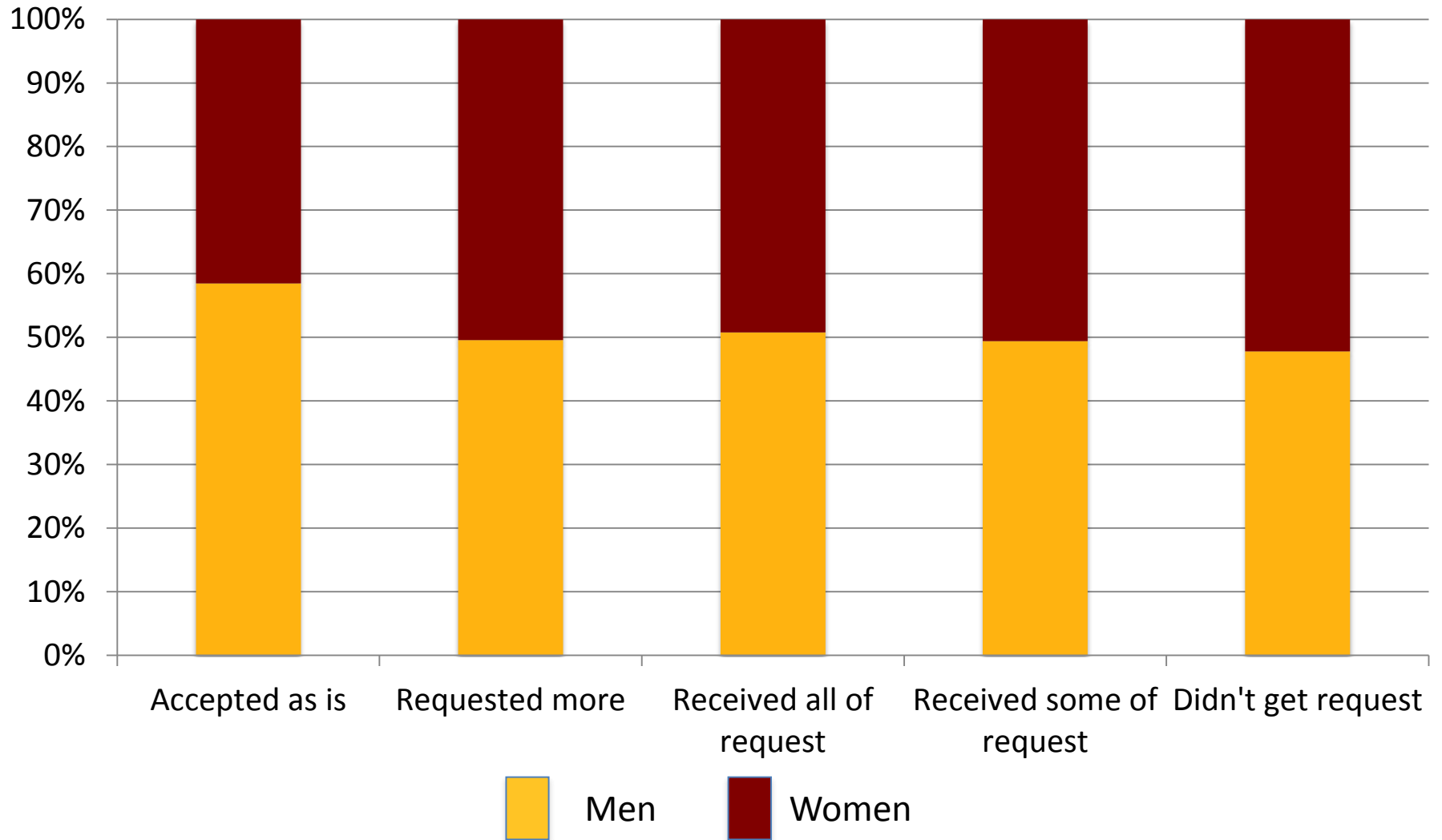T-Test, p<0.001. Netwise II

Women are *not* paid less than men

When aggregated across disciplines and rank, salary differences between men and women are statistically significant (true in our data and CHE).

If we control for sex, field of science, and academic rank, there is no longer a significant difference in salary levels between men and women.
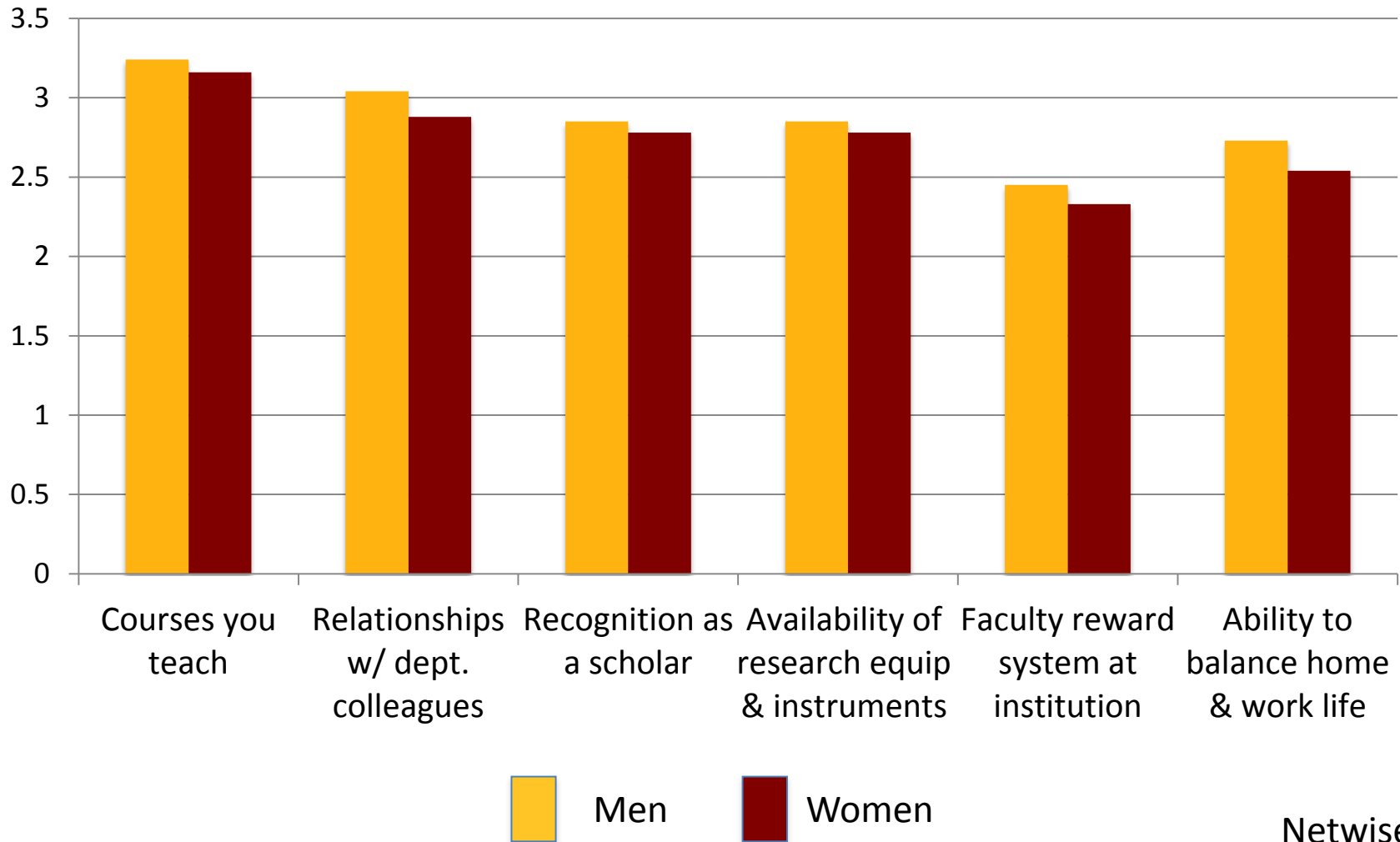
Women negotiate more

Pearson Chi-Square 12.655, df=3, Asymp. Sig. (2-sided) = 0.005. Netwise I

Women are less satisfied at work
Significant differences for some types of satisfaction

Men   Women

Netwise I

part IV: Institutional Policies Narratives

Family-friendly policies improve the workplace & productivity for women

Family-friendly policies differently affect men and women

University family-leave policies are related to increased journal publications for women and are not significantly related to men's teaching loads or publication rates

Onsite childcare is related to increased teaching loads for women and increased journal publication rates for men

There are no significant relationships between formal policies for stopping or delaying the tenure clock, formal spousal hiring policies, and academic productivity for women

Netwise I

part V: **Networks & Social Capital Narratives**

Women and men have different professional networks

Women are more likely to seek advice from other women (men)

There are significant differences in women's and men's networks

Netwise I
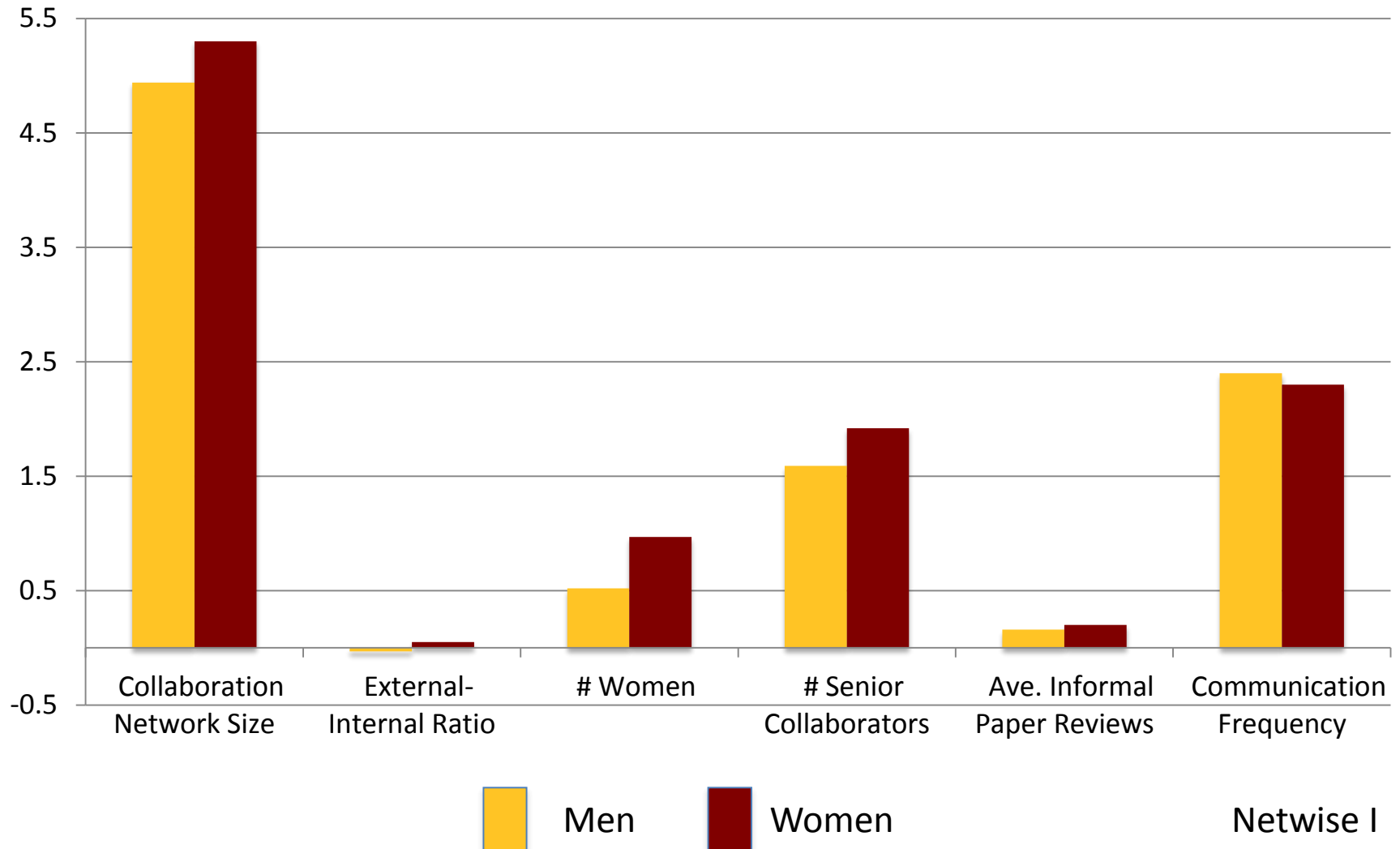
Women are more likely to be present in women's networks

Women are more likely than men to have women in their advice and support networks (55% of men and 80% of women scientists report having at least one woman in their networks)

Women report seeking more work/family balance advice (46%) than publishing advice (23%) from other women

There is no significant difference in the presence of women in advice or support networks based on age, time since PhD, marital status, parental status, or race.

The proportion of women in these networks varies by field of science

Findings & Conclusions

General Findings

- **Increasing evidence that women scientists perform at comparable rates as men with regard to:**
  - **Applying for and getting grants**
  - **Publishing papers**
  - **Acquiring research time**
  - **Receiving equal pay**
  - **Negotiating salaries**

General Findings

- **Differences between men and women academic scientists persist with regard to:**

  - **Leaderships roles**
  - **Benefiting from family-friendly policies**
  - **Satisfaction**
  - **Networks**

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Where to now?

Women in academic science face a number of challenges – institutional bias, structural bias, field bias, small policies, big policies, and choice.

Issues aimed at increasing gender diversity evolve, as should university policies

What now?

Universities should be encouraged to invest in policies that are important for recruiting talented women faculty - spousal hiring policies, on-site childcare, tenure clock stopping policies, and generous family leave – as they do not, in general, reduce the productivity of women scientists.

Programmatic efforts dedicated to networking, advancing collaborative activities, and advancing the development of strong, diverse professional network ties might be advantageous for increasing productivity and satisfaction.

What now?

Universities should create an environment for networking and success, not just institutional policies aimed to cater to women or traditional notions of women's obligations to family life.

Acknowledgements

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