



GENDER GAP IN SCIENCE

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

What did we learn from the project about the gender gap in science in developed/less developed countries?

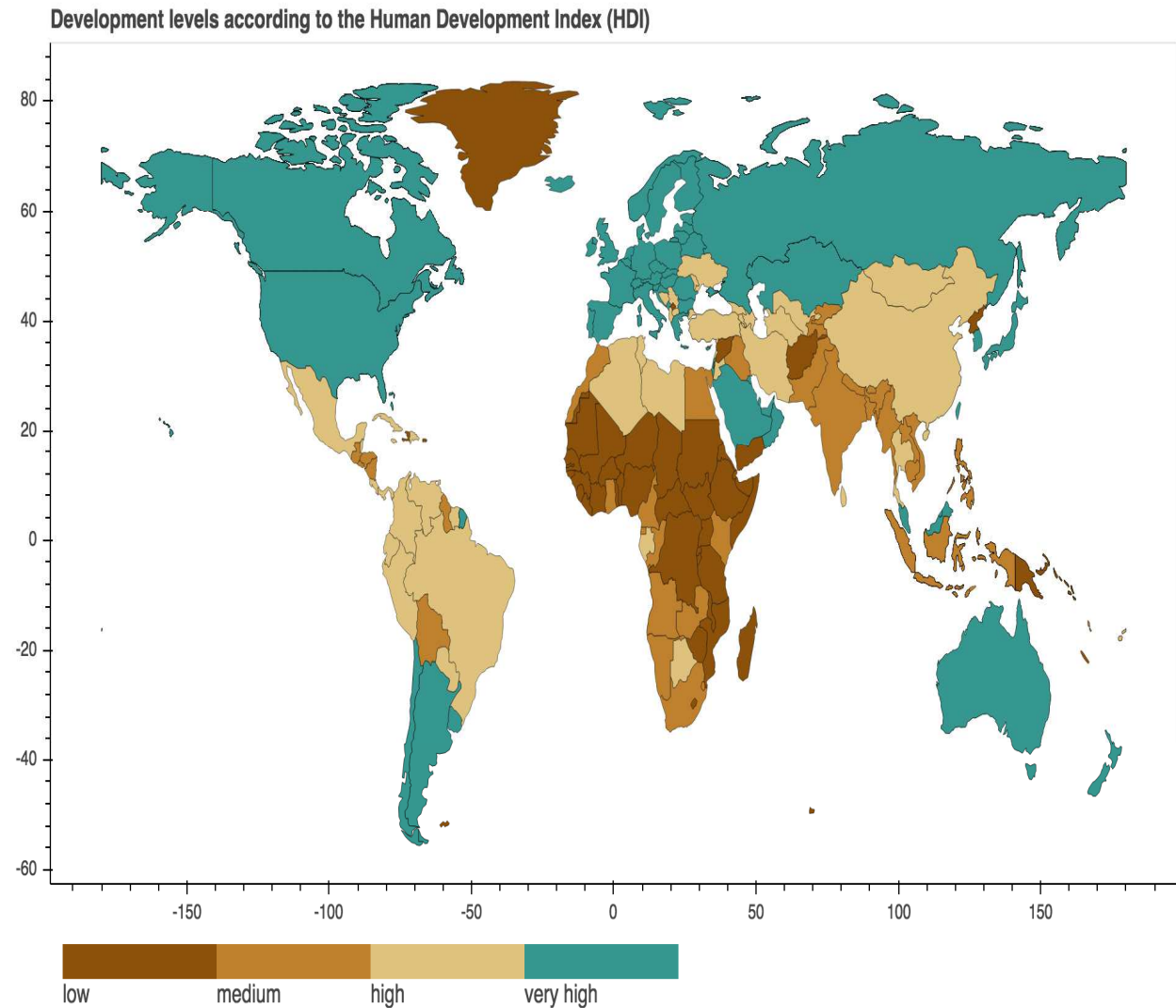
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African Women in Mathematics Association*



More developed/less developed countries 1

- **Based of the classification of Human Development Index (HDI), a United Nations Development Programme** (<http://hdr.undp.org/en/data>)
- **The index is a composite score that considers health, education, and standard of living in a country**
- **The countries were divided into four categories according the value of HDI :**
low, medium, high and very high





More developed/less developed countries 2

The classification of more developed and less developed countries

Based of the classification of Human Development Index (HDI), the countries are divided into two categories of development

- **“more developed”** countries consisting of those with HDI being categorized as **high or very high**
- **“less developed”** countries consisting of those with HDI being categorized as **low or medium**
- Most of African countries appear in the list of less developed countries



Analysis of the survey by Development Level

The aim is to examine gender differences within and across human development levels. The following four items were analysed

Doctoral studies

- Relationship with the Advisor or Supervisor
- Fairness in the doctoral programs
- Gender of the Primary Advisors
- Significant Interruptions in the Doctoral Studies



Analysis of the survey by Development Level

Career

- The Statement "My employer treats everyone fairly"
- The Statement "My co-workers are respectful of everyone"
- Comparison of their Career Progression to Their Colleagues Who Completed their Final Degrees at the Same Time
- Comparison of Their Salary to Their Colleagues with Similar Qualifications
- Serving on Important Committees at Their Institute or Company

Analysis of the survey by Development Level



Discrimination

- Discrimination in the Assessment or Evaluation of Achievements because of Their **Gender**
- Discrimination in the Assessment or Evaluation of Achievements because of Their **Age**
- **Never** Experiencing Discrimination

Analysis of the survey by Development Level



Personnal life

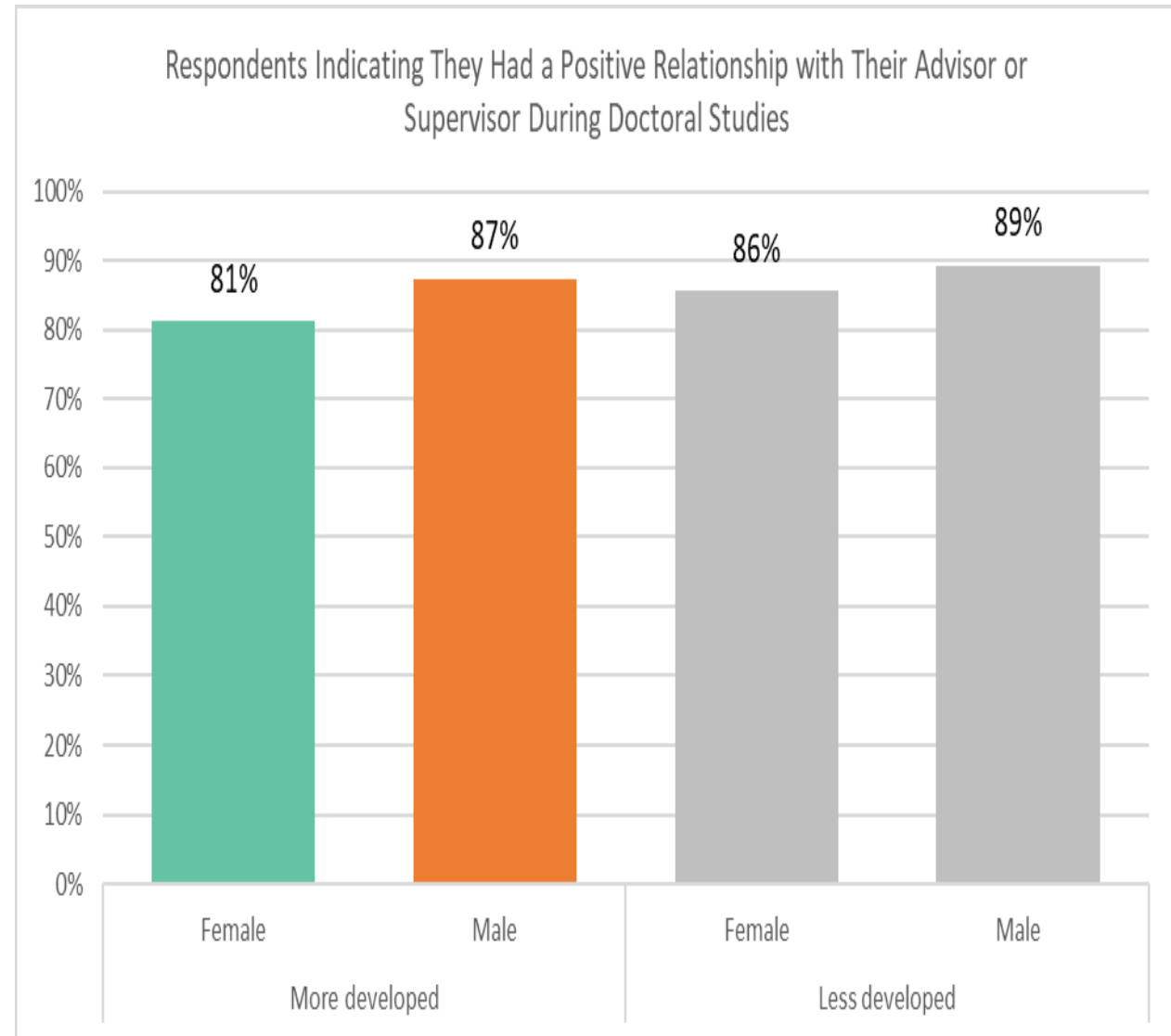
- Influence of the Career on Their Decisions about Children, Marriage, or a Similar Long-Term Partnership
- Respondents Comparing Their Salary to Their Partner or Spouse
- Respondents Indicating Whether Their Spouse is Employed in Their Field
- Respondents Indicating Their Work or Career Did Not Change Significantly
- Respondents Indicating Who is Responsible for the Majority of the Housekeeping in Their Household
- Respondents Indicating They Personally Encountered Sexual Harassment at School or Work

Analysis through relationship with their advisors



Over 80% of all respondents indicated that they had an excellent, very good, or good relationship with their advisor or supervisor

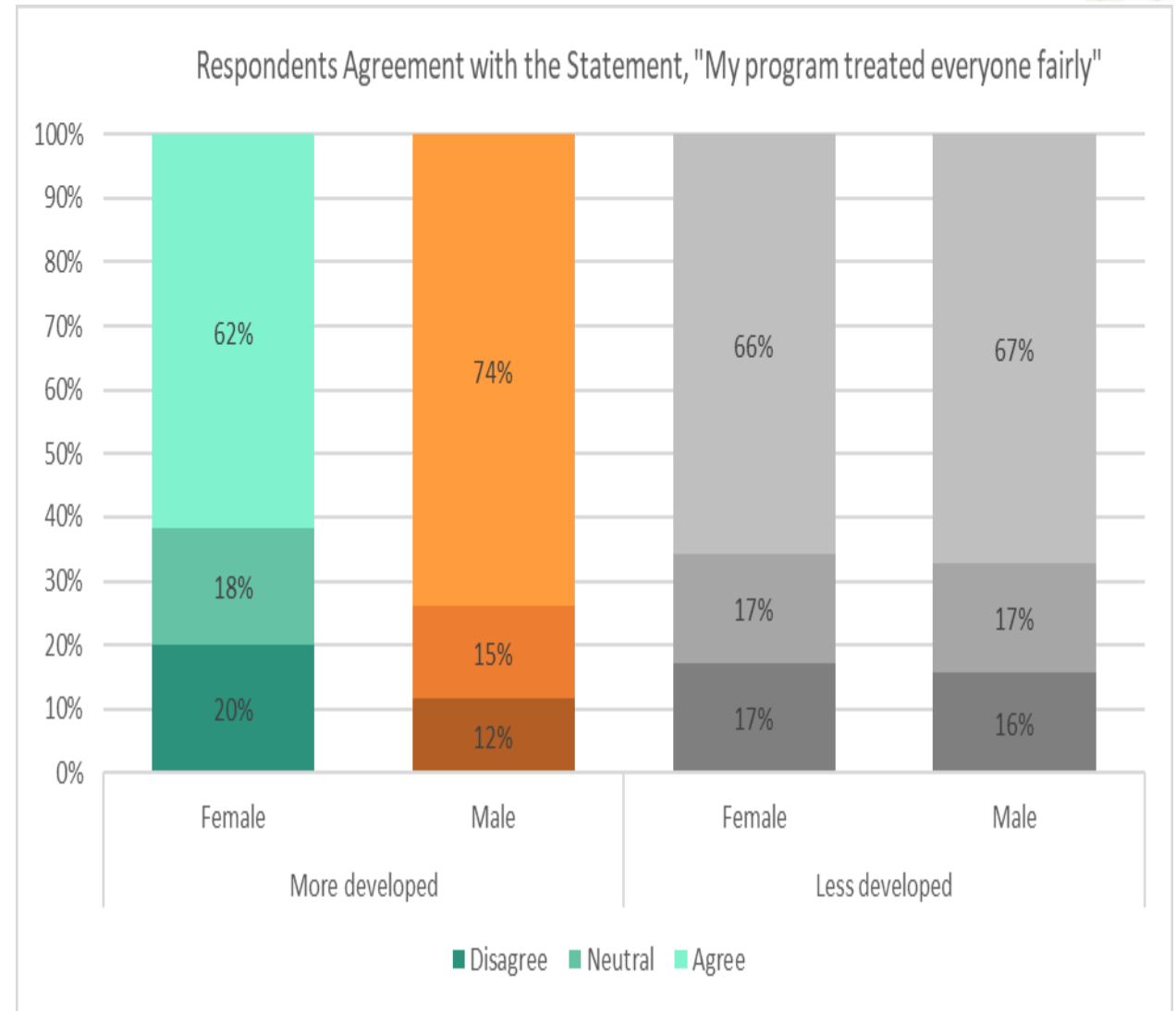
- women were less likely than men to indicate a positive experience with their advisor or supervisor in more developed countries.
- Women in less developed countries were more likely than their counterparts in more developed countries to indicate a positive experience with their advisor or supervisor.



Analysis through fairness in their doctoral programs



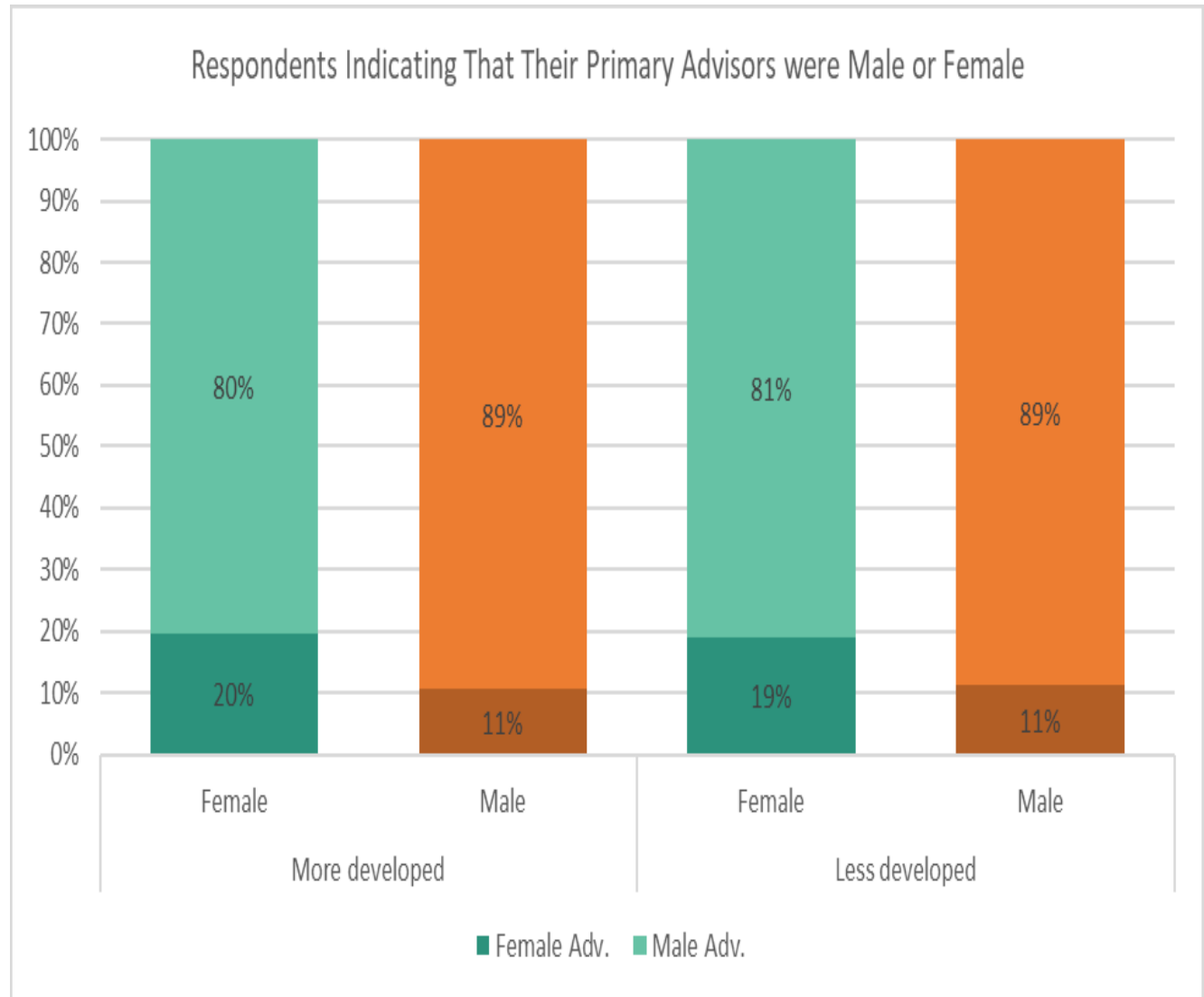
- In more developed countries, there were significant differences between responses from women and men about fairness in their doctoral programs.
- women from more developed countries were less likely than men to agree that their program treated everyone fairly.



Analysis through gender of the advisor



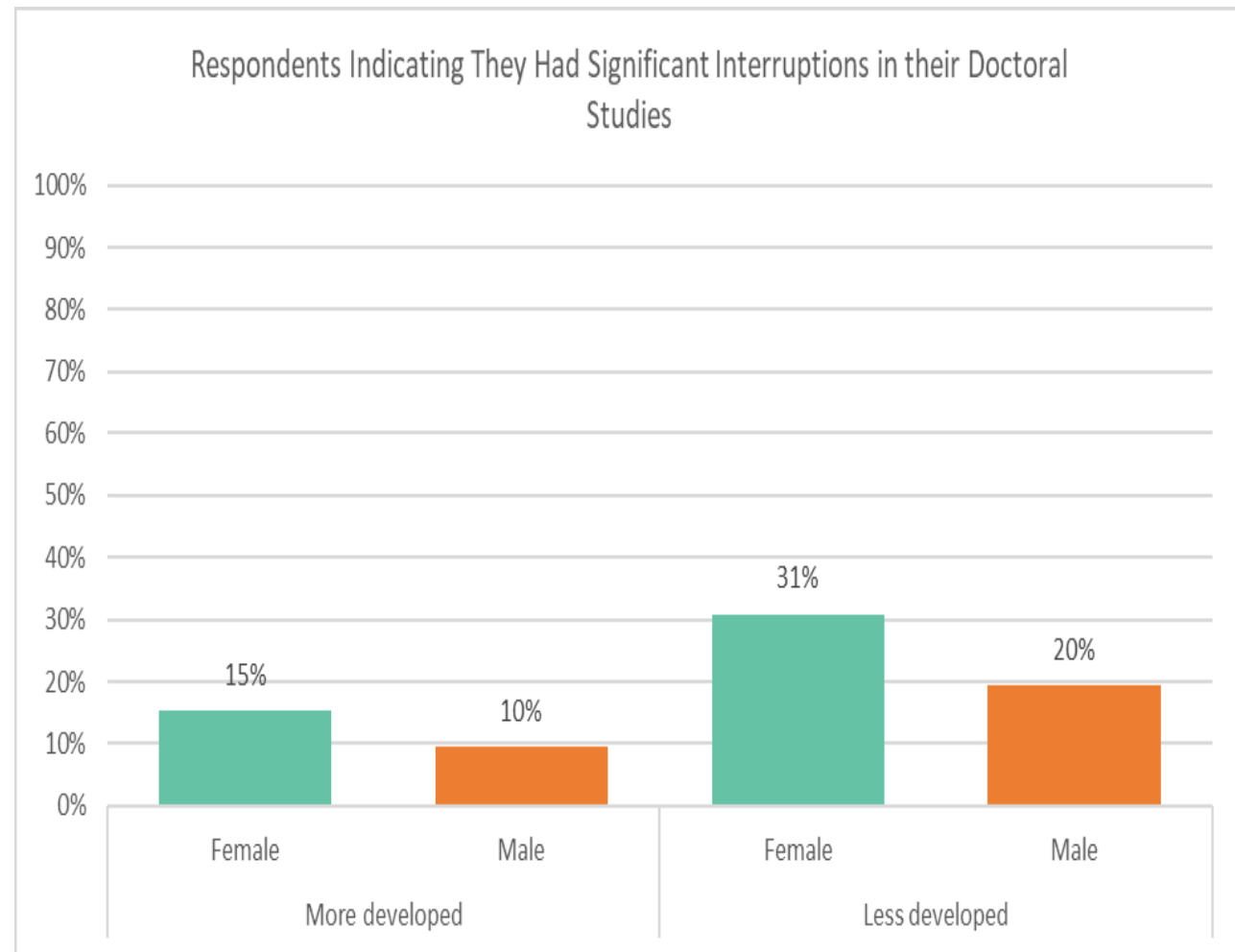
- The majority of women and men in both more developed countries and less developed countries indicated that their primary advisors were male.
- However, in both categories, women were more likely than their male counterparts to indicate that they had female advisors or supervisors.





Analysis through interruptions in their doctoral studies

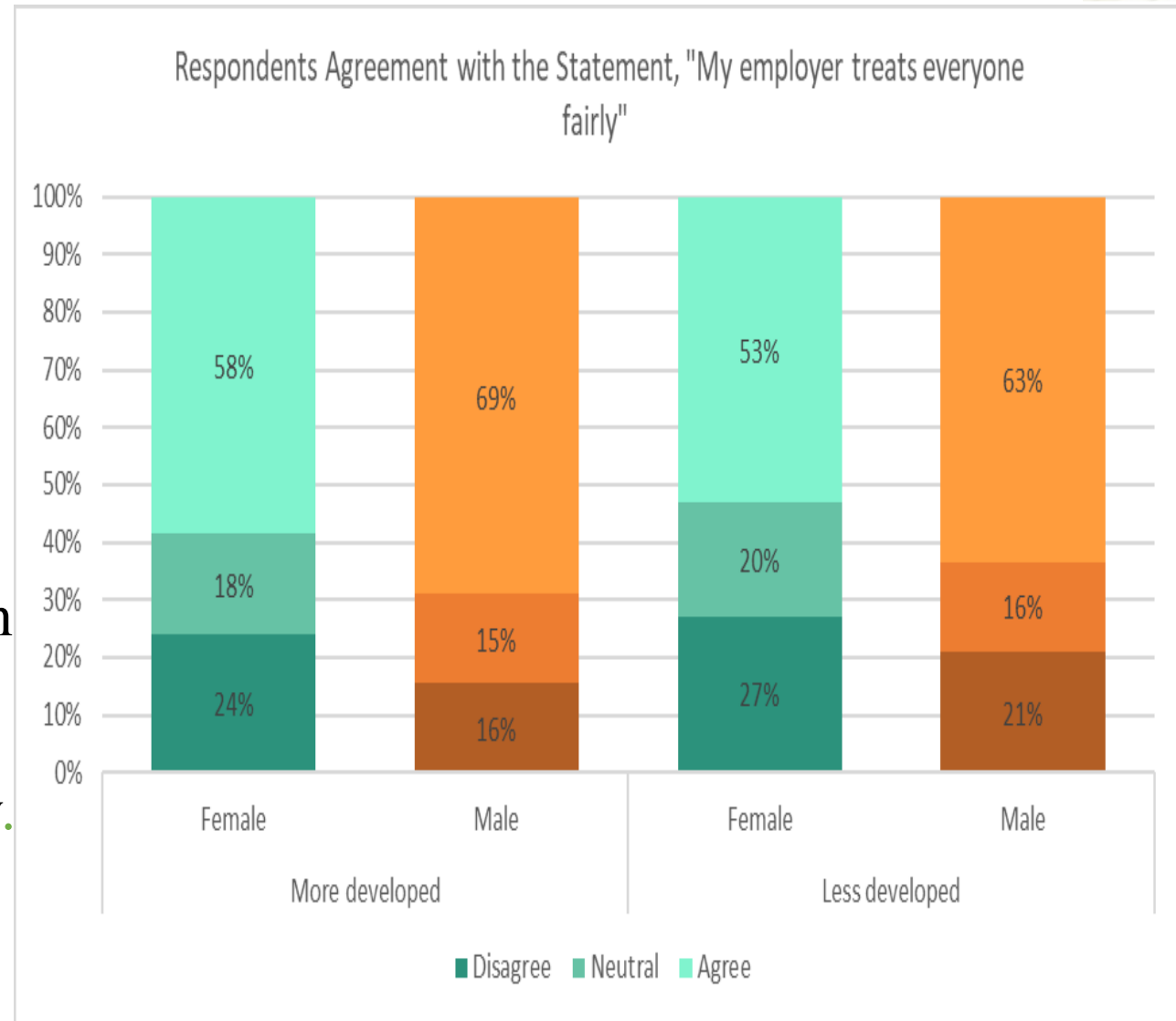
- In both more developed and less developed countries, women were more likely than men to indicate that they had significant interruptions in their doctoral studies.
- Interruptions were more prevalent in less developed areas compared to more developed areas for both men and women.



Analysis through Employers



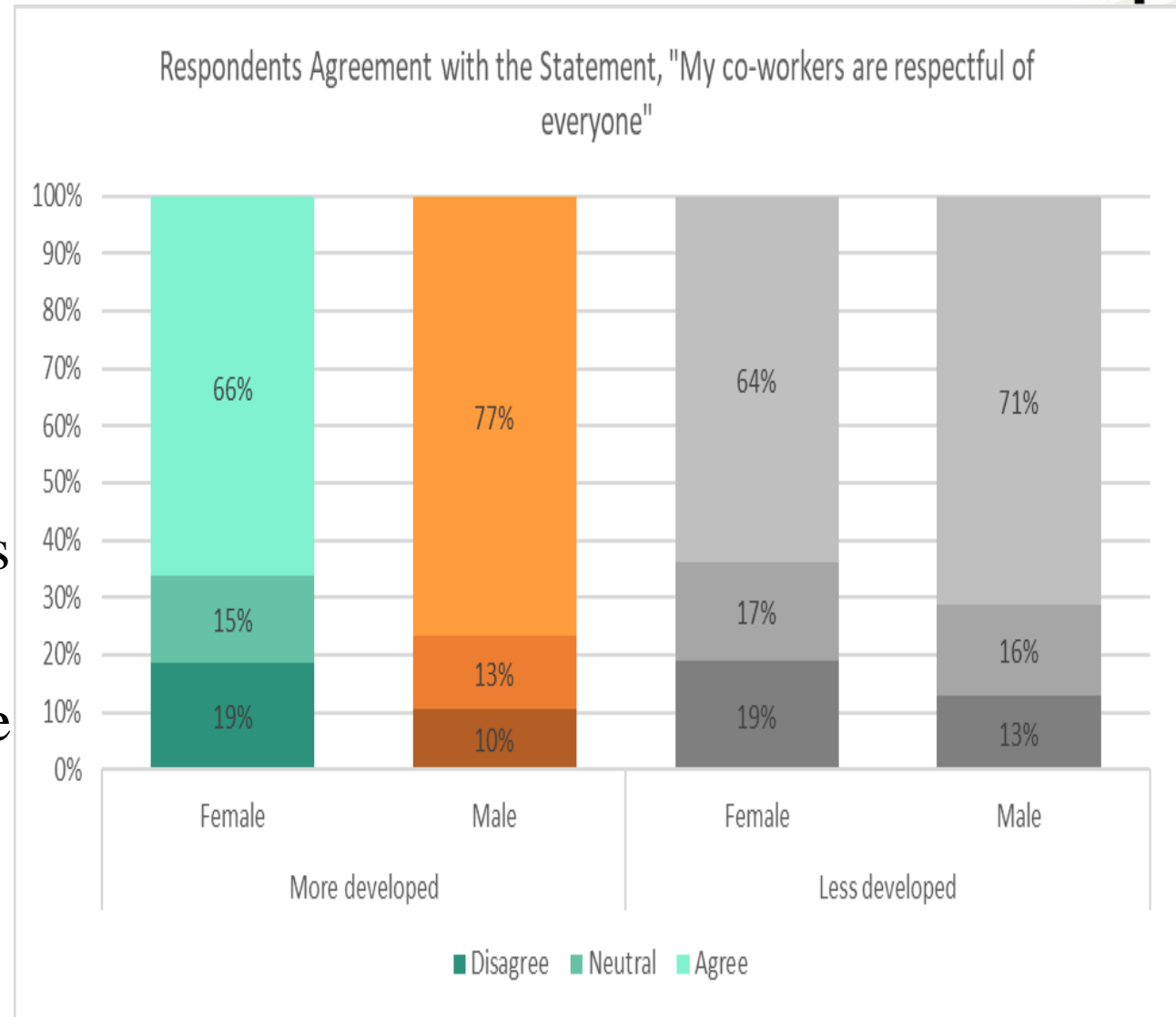
- In more and less developed countries, women were more likely than men to disagree with the statement “My employer treats everyone fairly.”
- Women in less developed countries were more likely than women in more developed countries to disagree that their employer treats everyone fairly.



Analysis through Co-workers



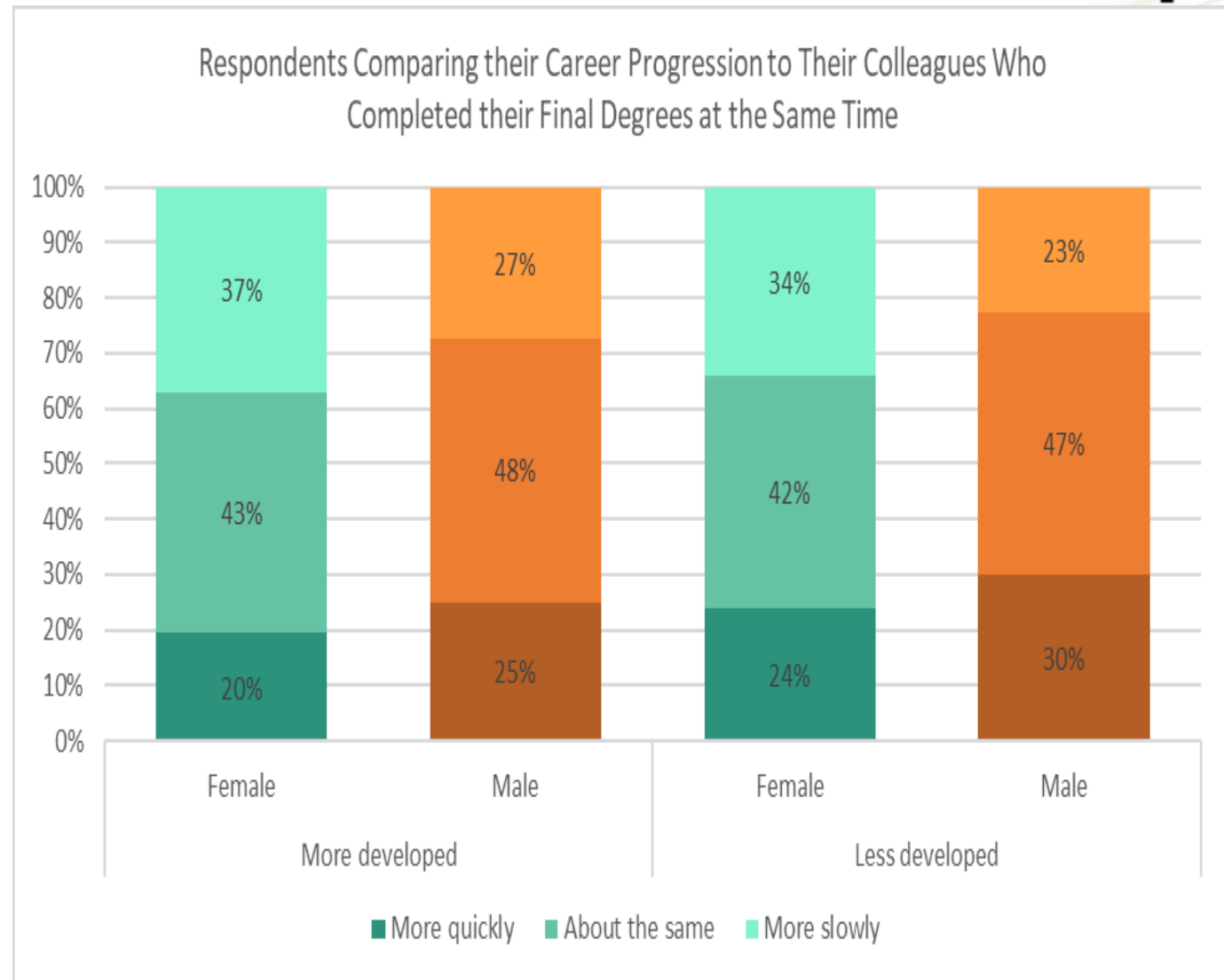
- In more developed countries, women were more likely than men to disagree with the idea that their co-workers were respectful of everyone.
- Both women and men in not very highly developed countries were more likely than women and men in very highly developed countries to disagree with the idea that their co-workers treat everyone fairly.



Analysis through Career Progression and salary



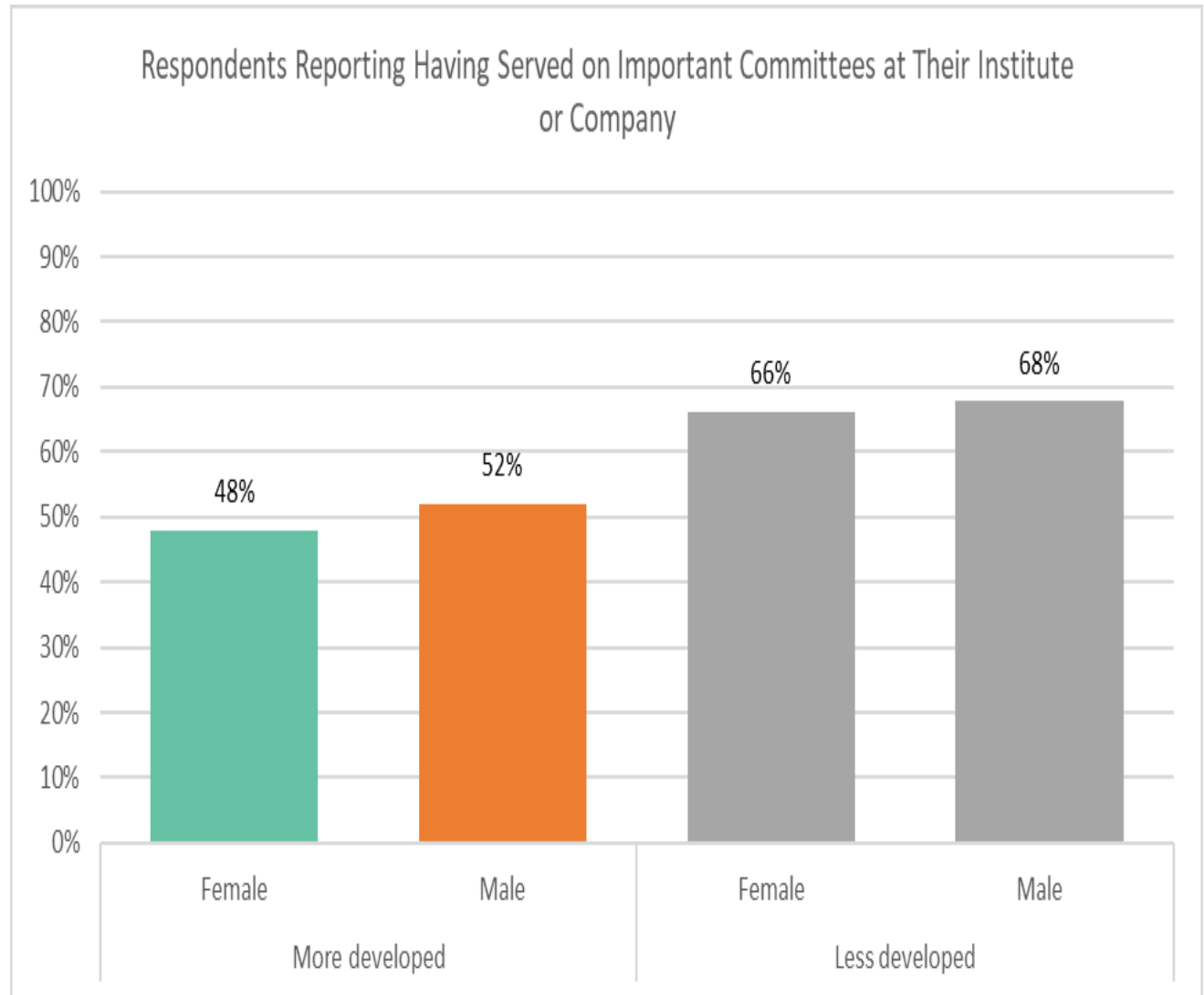
- Women were more likely than men in both more and less developed countries to indicate their careers progressed more slowly.
- **Similar observation on the salary: lower than their colleagues in their workplace with similar qualifications.**





Analysis through Serving on Important Committees

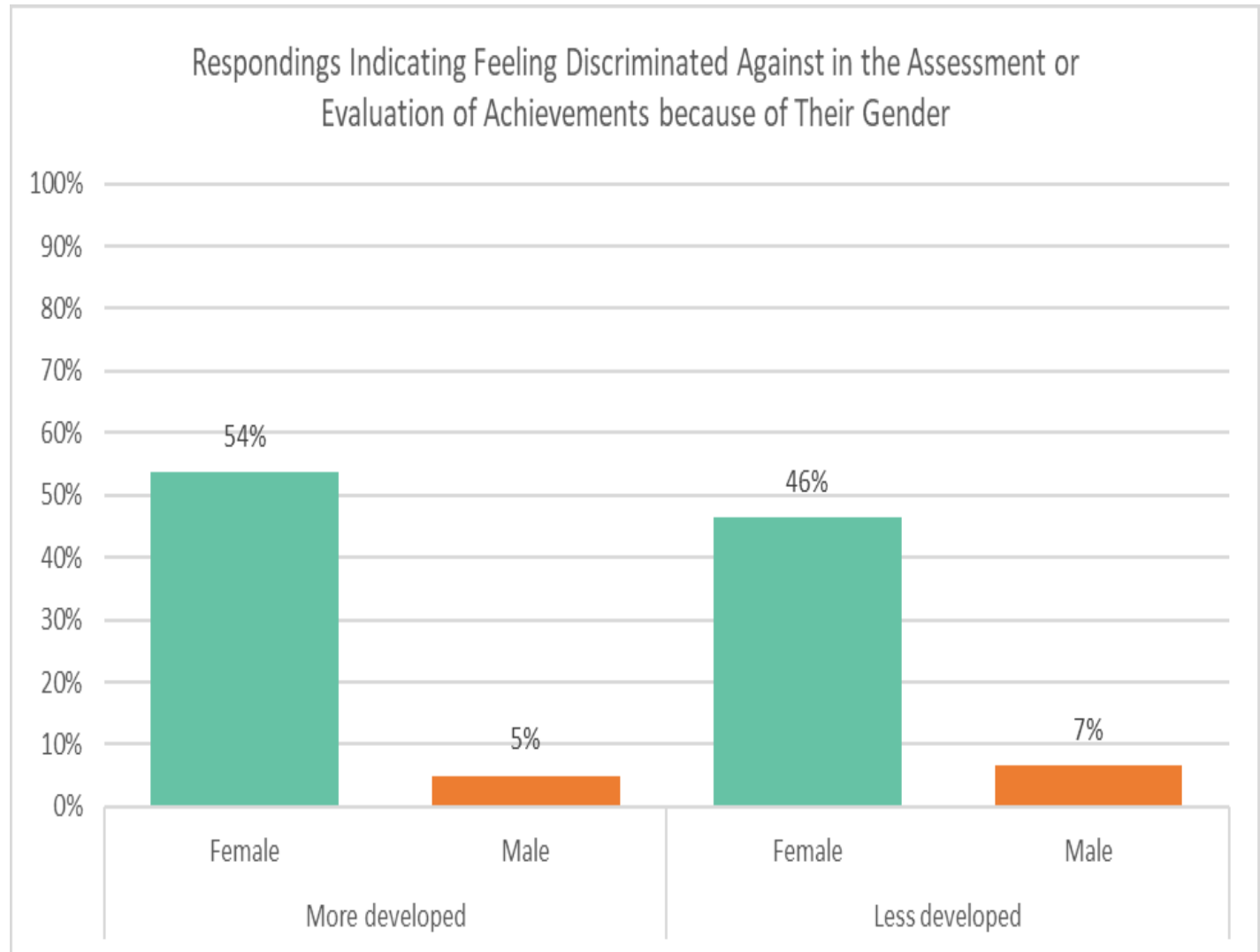
- In more developed countries, men were more likely than women to have served on important committees
- There is no difference between women and men in less developed countries





Analysis through discrimination based on gender and age

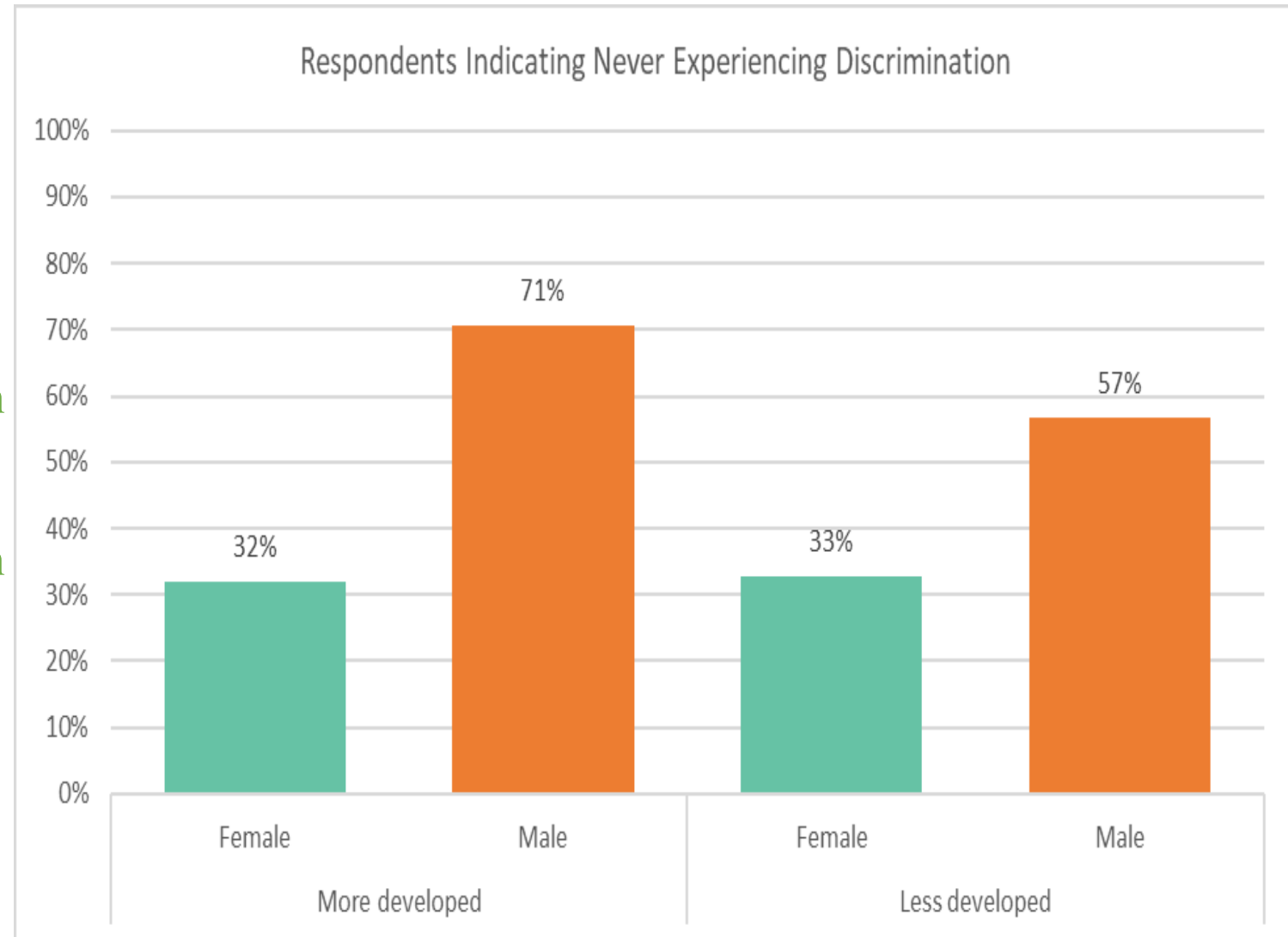
- Women were significantly more likely than men to report discrimination based on gender in both more and less developed countries
- **Similar observation for age**





Analysis through never experiencing discrimination

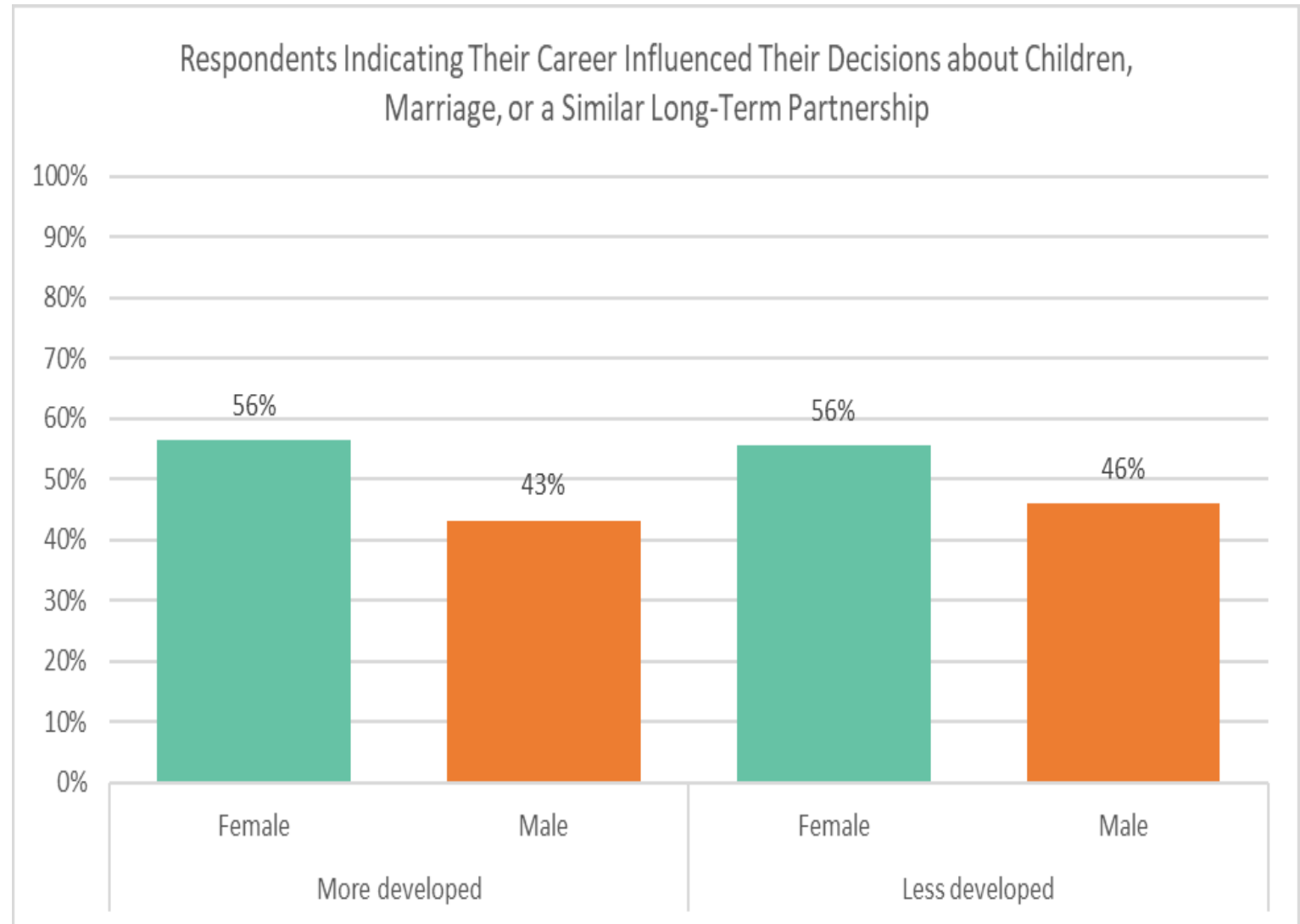
- Women were significantly more likely to report experiencing discrimination in both more and less developed countries
- The majority of men reported that they never experienced discrimination compared to just under one-third of all women reporting that they had experienced discrimination
- Men in less developed countries were less likely to indicate that they had never experienced discrimination than men in more developed countries



Analysis through Career influence in personal life



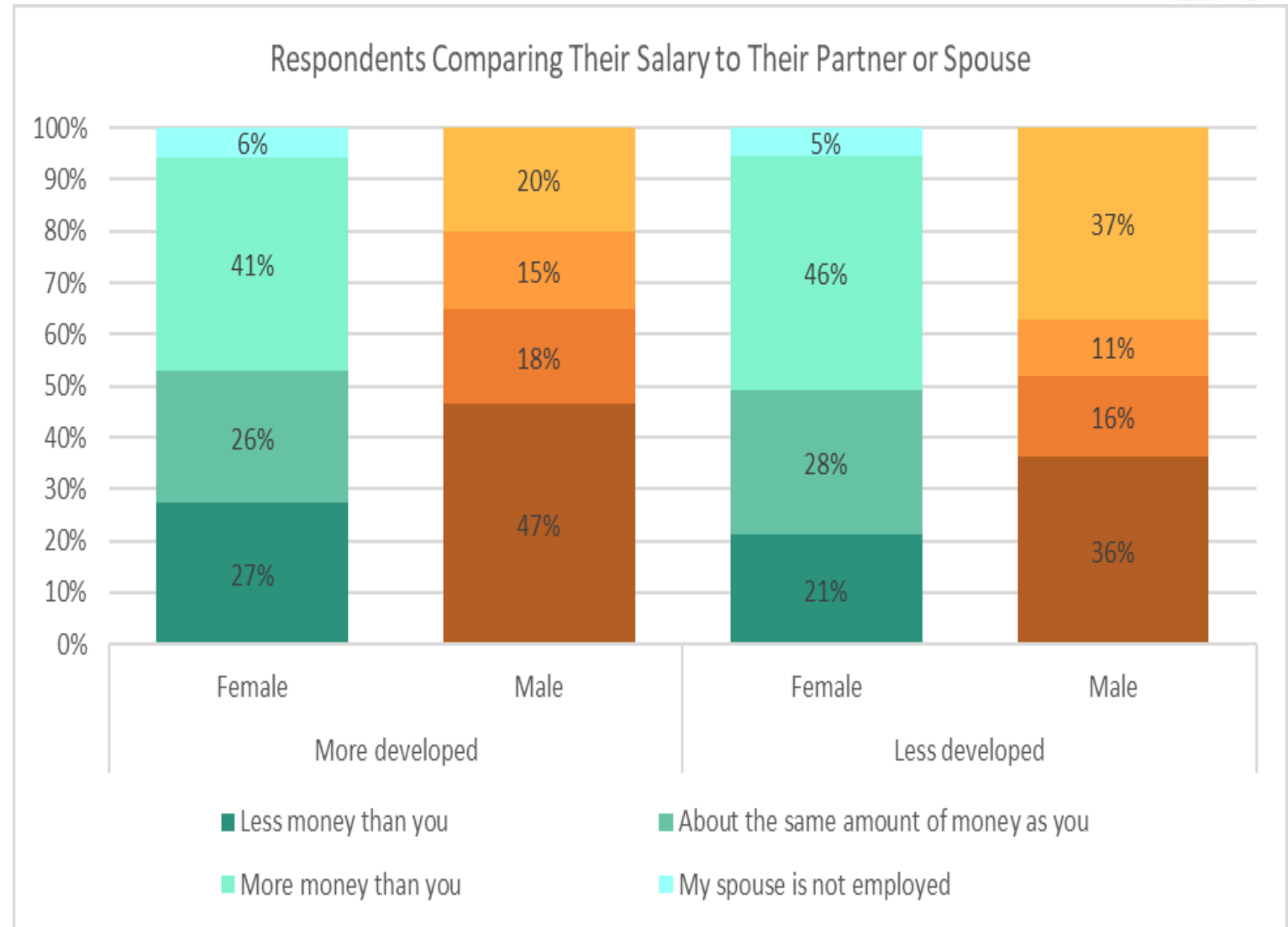
Women were more likely than men in both more and less developed countries to say their career influenced their decision about children, marriage, or a similar long-term partnership.



Analysis through Comparing Their Salary to Their Partner or Spouse salary



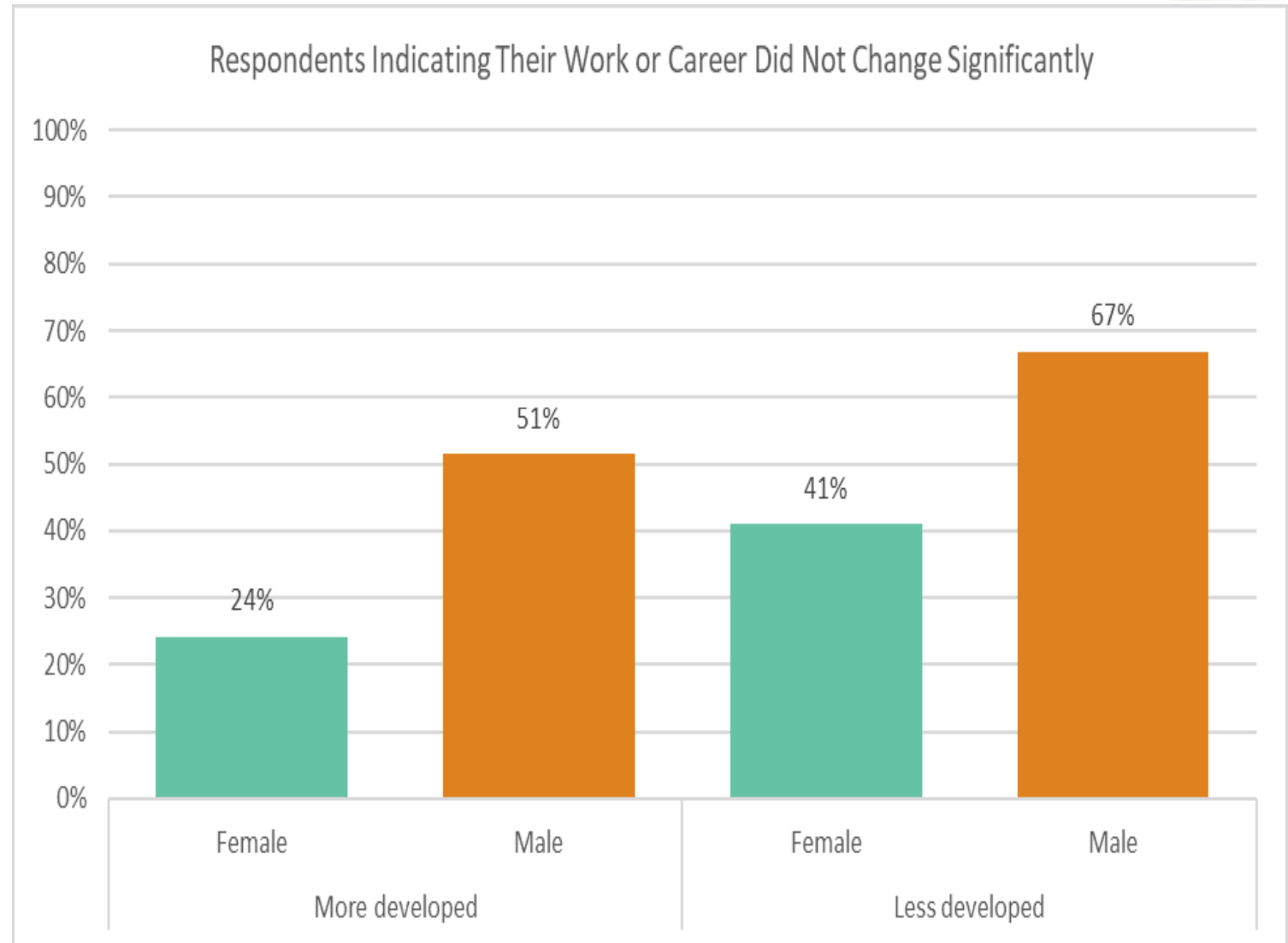
- In both more and less developed countries, women were more likely than men to say their spouse or partner earned more money than them
- **Similar observation about the question “their partner or spouse is employed in the same field as them”**



Analysis through questions regarding career, family, and work/life balance



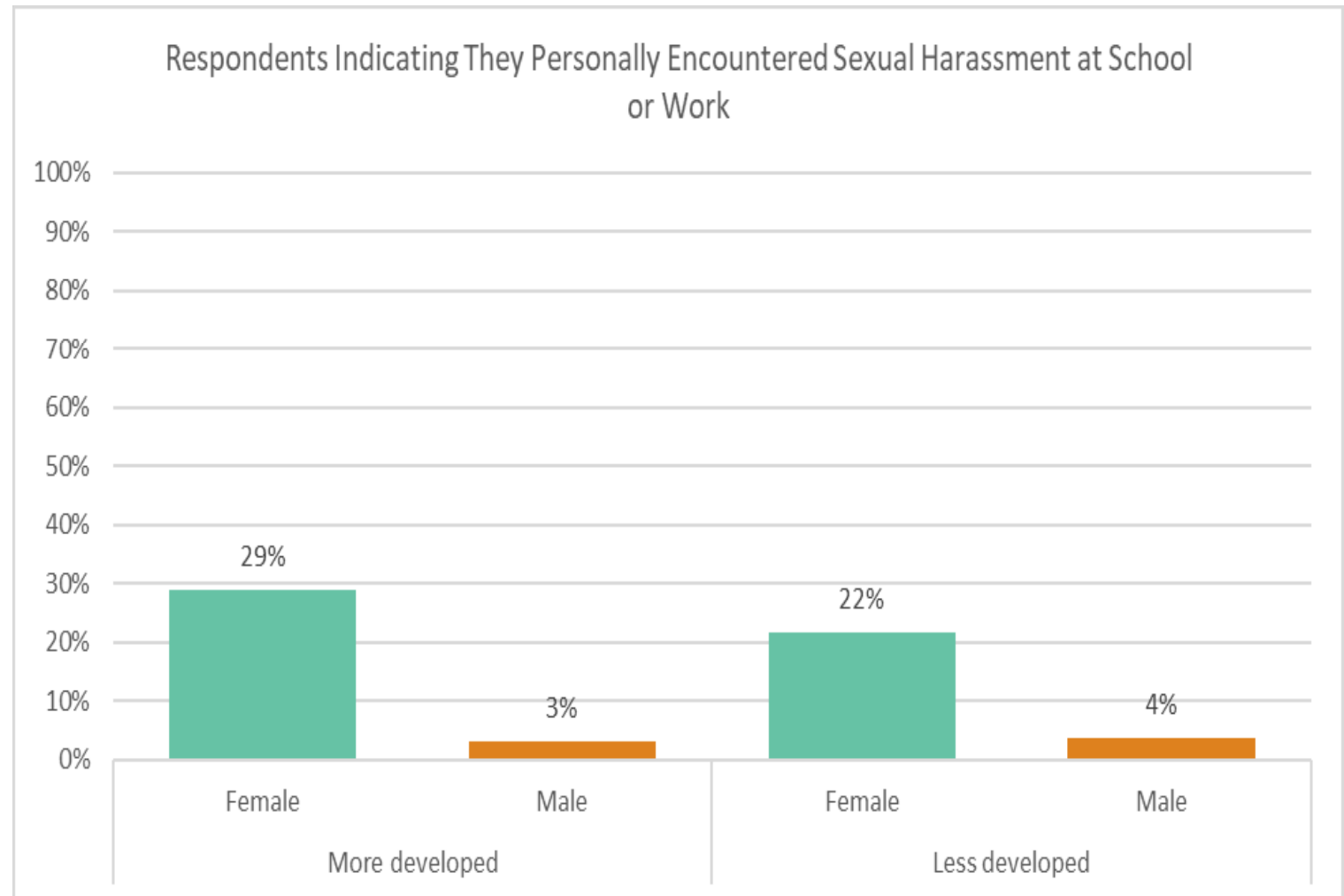
- In both more and less developed countries, women were more likely than men to say that their career **changed significantly** after having a child.
- **Similar observation about the question “Who is Responsible for the Majority of the Housekeeping in Their Household”**



Analysis through Indicating They Personally Encountered Sexual Harassment at School or Work



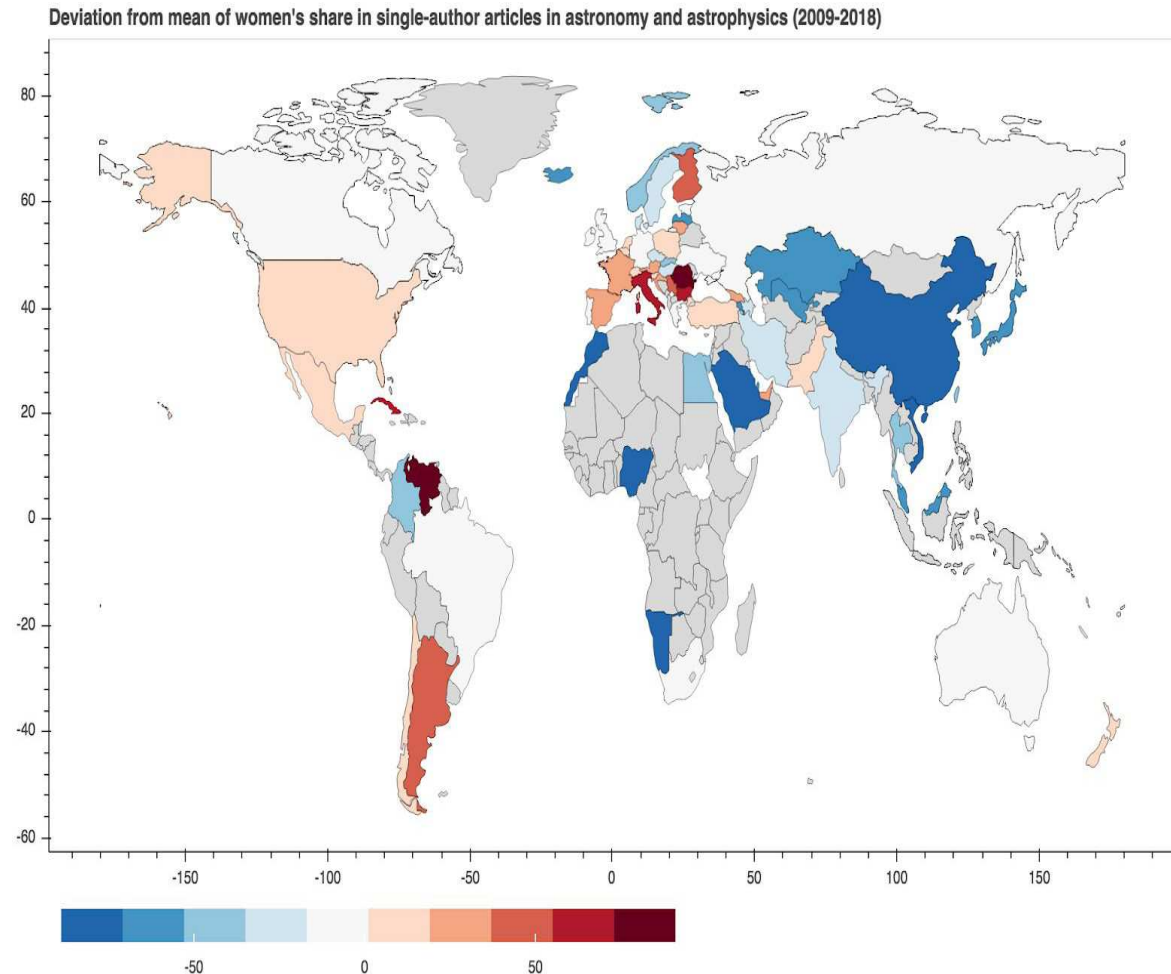
Women were more likely than men in both more and less developed countries to state that they personally encountered sexual harassment at school or work.



Analysis of Gendered publication patterns by Development Level



- In the time period 2009-2018 the average share of single-author publications in ADS that can be attributed to women is 13.4% of the total.
- The map displays the deviation from the average proportion in different countries.
- **Light blue:** we can expect to see 13.4% of single-author papers to be written by women.
- **Red:** higher fractions of women authors (>13.4%)
- **Blue:** lower fractions of women authors (<13.4%)
- **Grey:** not enough data was available.

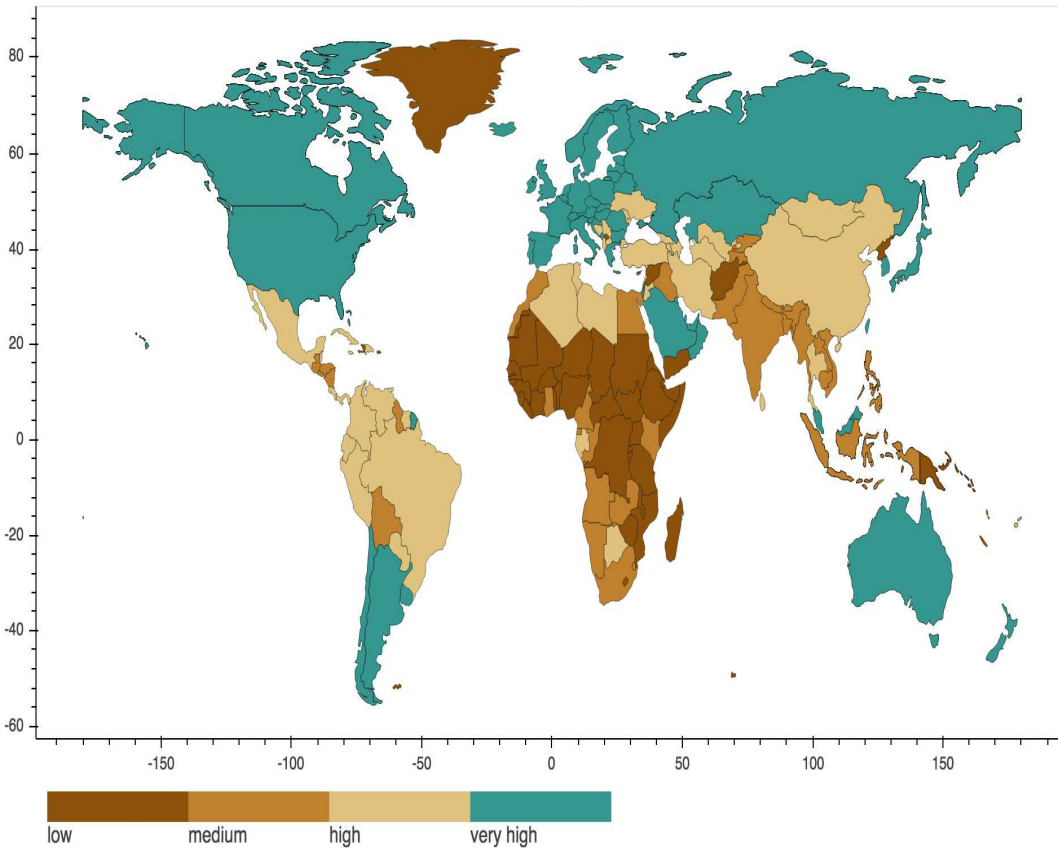


Analysis of Gendered publication patterns by Development Level

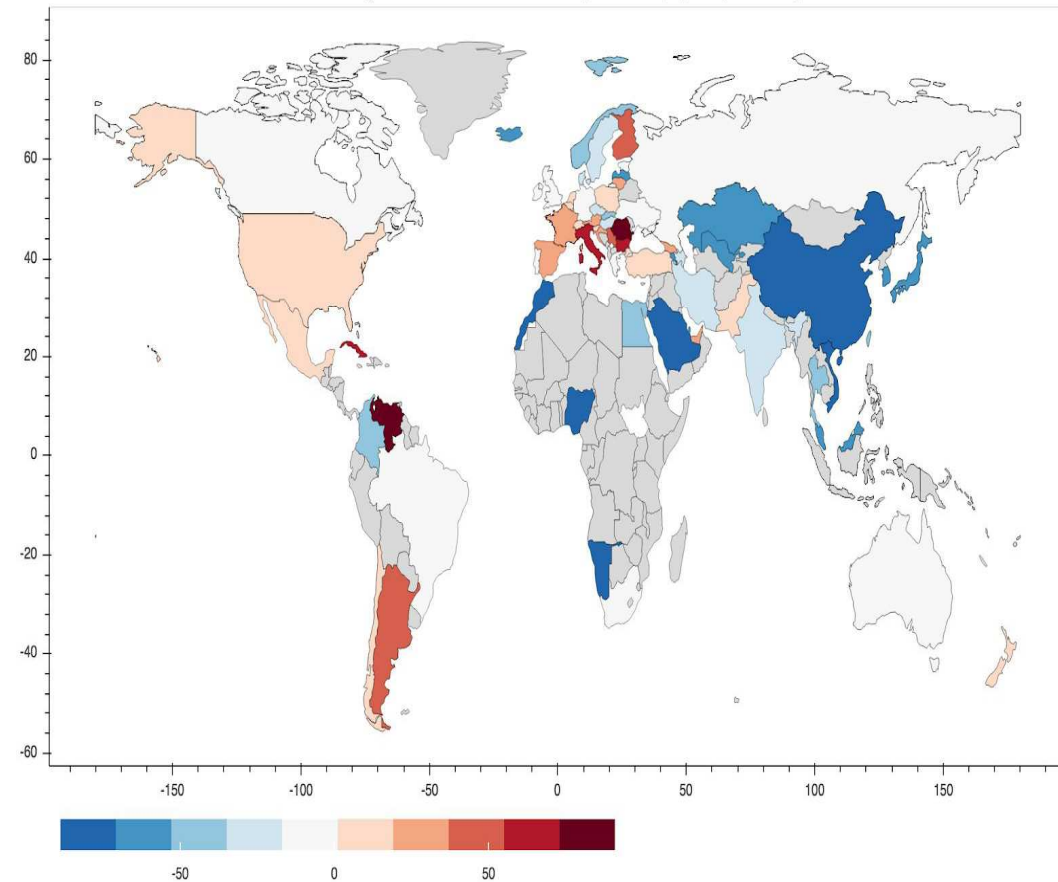
Comparison between the deviation and the HDI



Development levels according to the Human Development Index (HDI)



Deviation from mean of women's share in single-author articles in astronomy and astrophysics (2009-2018)



Analysis of Gendered publication patterns by Development Level



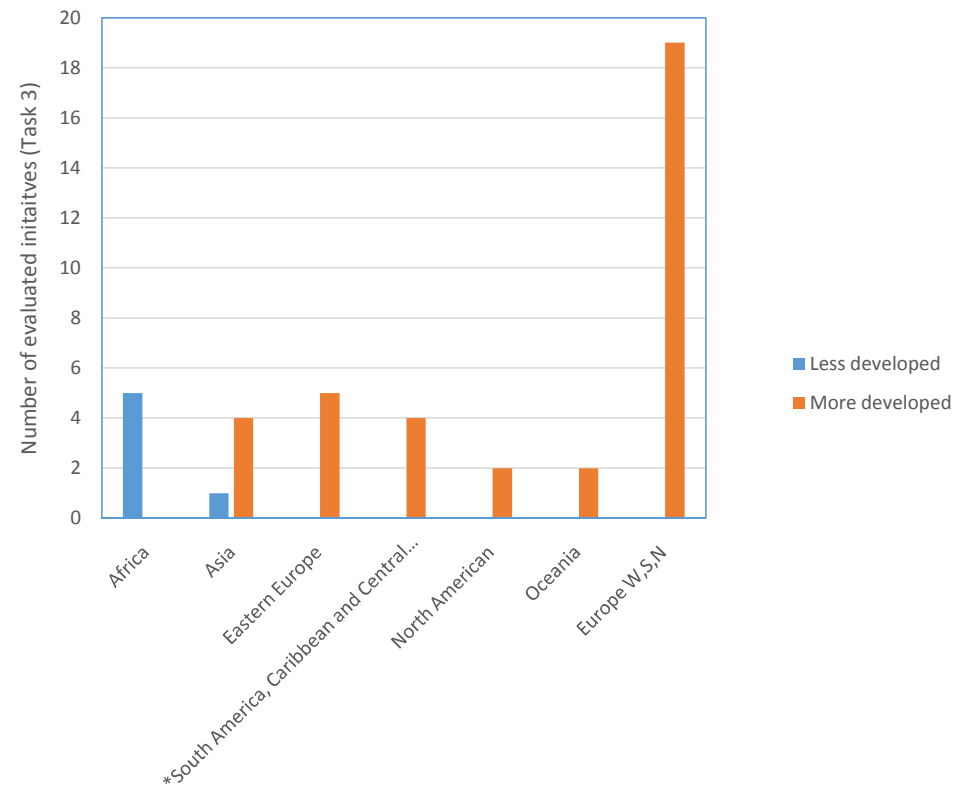
- Task 2 results are accessible to all of us through the database.
- We will learn how to use the tools in the Computer Session, TODAY, Tuesday, 4 November at 18:00.
- Venue: Computer Room on this floor. Please bring your computer if you have one (there are 50 computers in the Computer Room.)
- A possible mini-project is to compare the bibliometric data across less and more developed countries.

Analysis of database of good practices by Development Level



- A total of 42 initiatives
- 6 initiatives from less developed countries
- 36 initiatives from more developed countries
- The largest number of accessible and evaluated initiatives was found in Western Europe (22).

Initiatives evaluated in less and more developed countries



Conclusion



The main conclusion is that there is a Gender Gap in Science both for more developed and less developed countries.

- It is not the case that the Gender Gap in Science disappears with economical or even human development (as defined by the Human Development Index (HDI)).
- In some instances, a higher level of development is even correlated with a worse experience for respondents:
 - graduate program quality
 - relationship with one's graduate advisor
 - being personally harassed.

спасибо
danke 謝謝
ngiyabonga
teşekkür ederim
tapadh leat
moichchakkeram
go raibh maith agat
arigatō
takk
dakujem
merci
ευχαριστώ
grazie
kop khun krap
sukriya
sagolun
dziękuję
hvala
mauruu
bedankt
obrigado
terima kasih
감사합니다
thank you
gracias
merci