

GENDER DIFFERENCES IN EARLY OCCUPATIONAL  
CHOICES: EVIDENCE FROM MEDICAL SPECIALTY  
SELECTION

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# Motivation (I)

- ◇ Empirical evidence shows that men and women hold different types of occupations
- ◇ Most important factor sustaining recent gender wage differences (Blau and Kahn, 2017)
- ◇ Obtain evidence on the reasons for gender based occupational segregation.

## Motivation (II)

- ◇ Answering this question with observational data is not easy.
  
- ◇ Occupation is an equilibrium outcome simultaneously determined by:
  - Demand and supply side factors.
  - Search and matching frictions.
  
- ◇ Standard datasets, with realized labour market outcomes, do not measure all relevant factors.

## In this paper

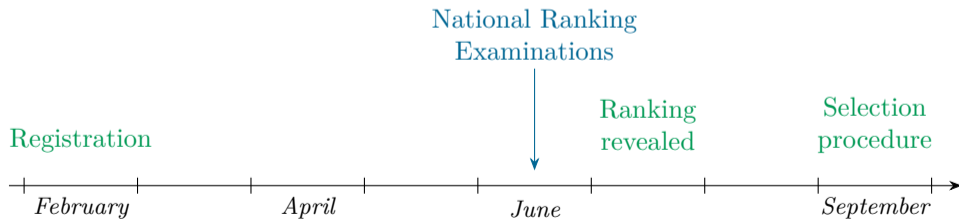
- ◇ Document gender differences in very early career choices of highly skilled individuals.
- ◇ Unique labour market setting allowing us to focus exclusively on supply side factors.
- ◇ Characterise the occupations using a variety of data sources.
- ◇ Administer a survey to obtain mechanisms.

# Medical residency in France

- ◇ Specialization period (3-5 years) for last-year medical students (age 24-25).
  
- ◇ Choose a specialty-location pair for their residency.
  
- ◇ Why this setting?
  1. Very relevant career choice:
    - Determines eligibility for future jobs (quasi-absorbing state)
    - Normally first occupational decision
  2. Highly skilled and homogeneous group (same credentials)
  3. Large set of occupations (specialties) varying in pecuniary and non-pecuniary dimensions
  4. Allocation mechanism of students into residency positions

# Allocation mechanism

- ◇ Students take the National Ranking Examinations (NRE) & are ranked according to their performance ▶ **Distribution**
- ◇ Choose a residency position first ranked, first served (sequential dictator: **strategy-proof**)
- ◇ A position is available until all its vacancies are filled ▶ **Process**



# Implications

- ◇ One-sided matching job market with no search and matching frictions:
  - No direct discrimination: employers cannot select job seekers.
  - Perfectly known choice set (and observable to us).
- Frictionless job market: no bargaining; requires low search and application effort.

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- ◇ Top candidates make unconstrained choices.

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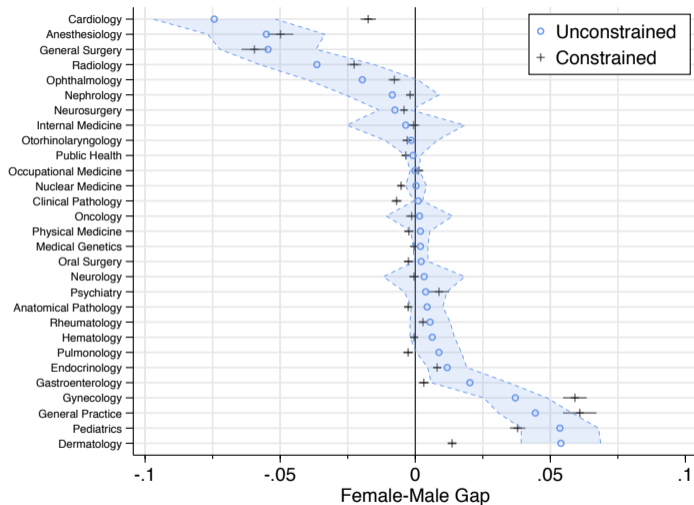
⇒ Contribution 2: **Sure to observe individuals' top preferred position**

# Related work

- ◇ Earnings gender gap and differences in occupations:
  - Groshen (1991), Macpherson and Hirsch (1995), Altonji and Blank (1999), Blau et al. (2009), Goldin (2014), Blau and Kahn (2016), Fluchtmann et al. (2021)
  - Earnings gender gap within occupations: Bertrand et al. (2010), Goldin and Katz (2016)
  
- ◇ Valuations of non-pecuniary job attributes:
  - Choice experiments: Wiswall and Zafar (2017), Mas and Pallais (2017), Maestas et al. (2018)
  - Incentivized elicitation: Le Barbanchon et al. (2020)
  - Natural experiments: Wasserman (2017)
  
- ◇ Personality and psychological traits:
  - Risk aversion and overconfidence: Cortés et al. (2021)
  - Self-fulfilling discrimination: Coate and Loury (1993), Glover et al. (2017)

# Sorting into Specialties

# Gender gaps in specialty selection







→ No employer discrimination, no bargaining, same credentials and educational attainment, low effort to search and apply. ▶ Full support

# Interpretation

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- ◇ Striking gender differences in sorting into specialties
- ◇ In this setting imply that **supply side factors** play a crucial role in gender based occupational segregation.
- ◇ What can this occupational sorting tell us about the **gender wage gap**?
  - Women select specialties with lower expected earnings  **Figure**
- ◇ What are the **factors** behind this sorting behaviour?
  - Suggestive evidence on differences in valuations of non-pecuniary job attributes
    -  **Night shifts**
    -  **Hours**
    -  **Other**

# Taking stock

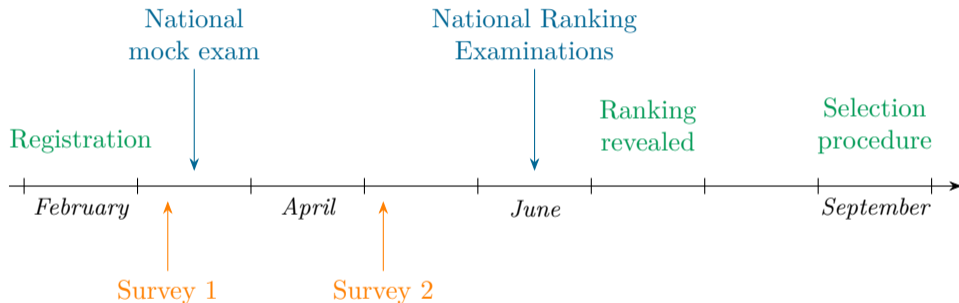
- ◇ When facing the **same choice set** men and women choose different occupations.
- ◇ Specialties with higher gender difference are in the upper and lower-middle parts of the earnings and amenities distributions.
- ◇ Hinting towards **preferences** for job characteristics playing an important role in explaining gender based occupational segregation.
- ◇ Next: try to pin down the mechanisms.



# Survey

# Timeline

- ◇ Sample of the 2022 NRE candidates via an online survey.



- ◇ Link respondents with their actual residency choices (revealed preference)

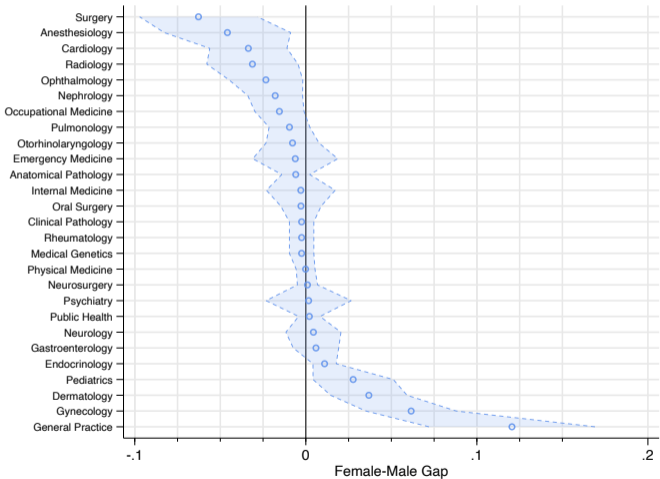
# Sample & Population Characteristics

	1st survey		National Mock	2nd survey		National Exam
	Contacted	Respondents		Contacted	Respondents	
Females	5026 (62.5)	2384 (67.6)	5642 (62.2)	1755 (67.8)	945 (68.4)	5559 (59.9)
Males	3015 (37.5)	1141 (32.4)	3429 (37.8)	833 (32.2)	437 (31.6)	3375 (36.4)
<i>NRE 2022 rank</i>						
Exam take-up rate	97.2	98.2	96.9	98.3	98.5	100.0
1st quartile	26.1	27.3	25.2	27.7	29.3	25.0
2nd quartile	22.5	21.9	23.3	21.4	20.0	25.0
3rd quartile	21.3	19.8	22.5	19.5	17.4	25.0
4th quartile	23.6	20.3	25.1	20.1	18.6	25.0
Contact and response rates	88.7%	43.8%		73.4%	53.4%	
Total	8043	3525	9072	2588	1382	9284

Notes: The recruitment of medical students was performed under the MEDSPE research project headed by Professor Magali Dumontet and financed by the French National Research Agency (ANR JCJC).

# Stated Preferences for Specialties

◇ Similar gender differences in stated preferences for specialties




# Reasons for the Specialty Choice

Gender difference in:

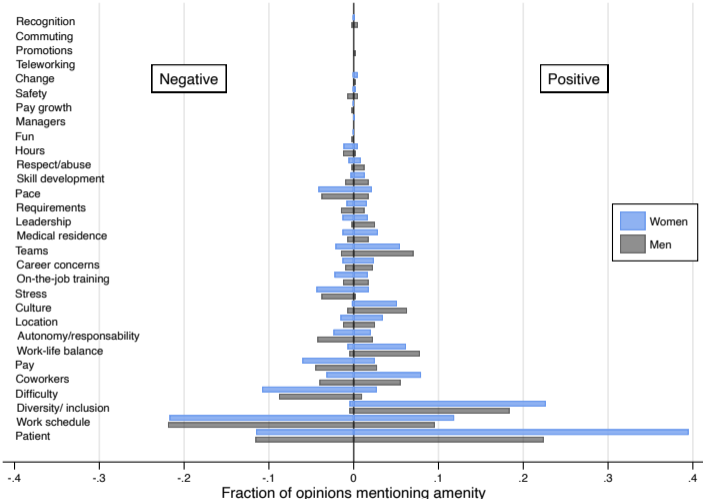
- ◇ Knowledge about specific job characteristics
  
- ◇ Valuations for workplace characteristics:
  - Free-text entries with ‘Pros’ and ‘Cons’ on preferred specialty
  - Discrete choice experiment with hypothetical job choice
  
- ◇ Social norms perceptions and discrimination expectations

## 'Pros' and 'Cons' on preferred specialty

- *What are the features that make [s] your preferred specialty?*
- *And what are its disadvantages?*

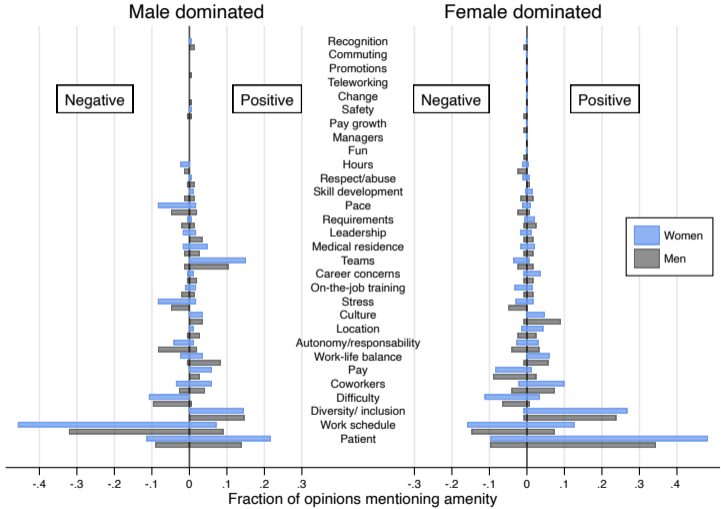
- ◇ Respondents can freely mention amenities related to their *preferred* specialty
- ◇ Identify sentiment of each amenity
- ◇ 30 amenities adapted to French medical context from Sockin (2021)
- ◇ Search for words to identify each amenity 

# Mentioned Amenities



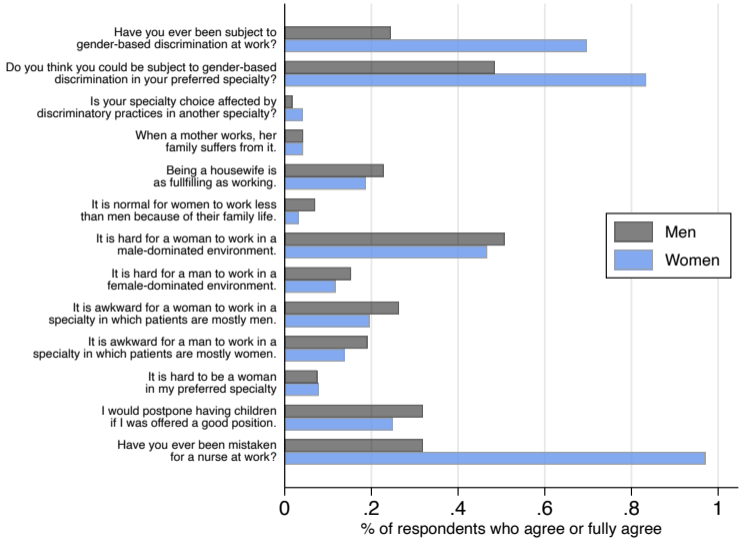
Notes: Fraction of times each amenity was identified.

# By Dominant Gender in Preferred Specialty





# Discrimination



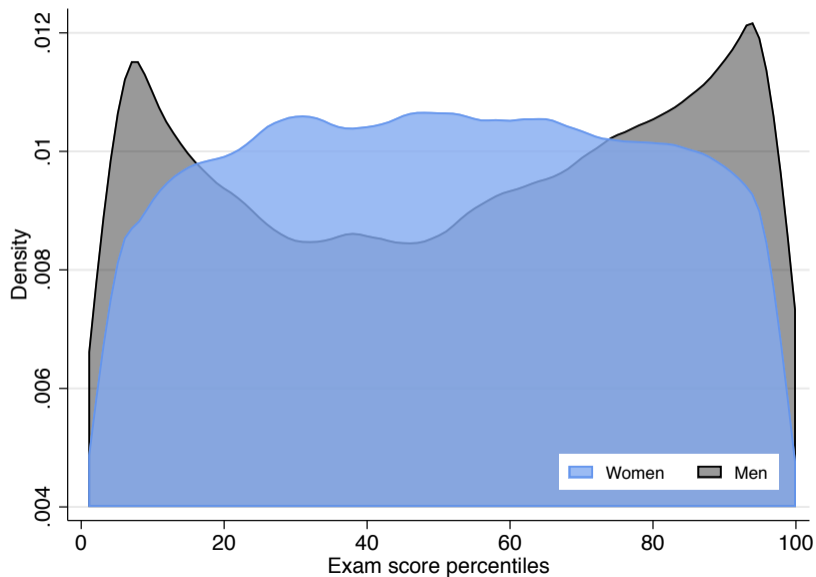
# Conclusion

- ◇ Study gender differences in early career choices and how preferences for certain occupational attributes drive them
- ◇ Even when facing the same choice set, men and women choose different occupations.
- ◇ Preliminary survey results suggest that gender preferences for certain workplace attributes play an important role

Thank You!

Feel free to email us at [josep.amer@eui.eu](mailto:josep.amer@eui.eu) and [agnes.charpin@gmail.com](mailto:agnes.charpin@gmail.com)

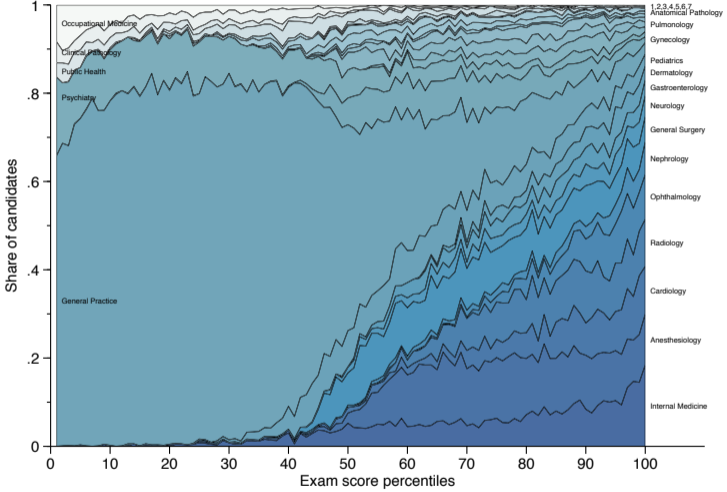
# Exam score probability densities by gender



# Geographical unit for residency selection



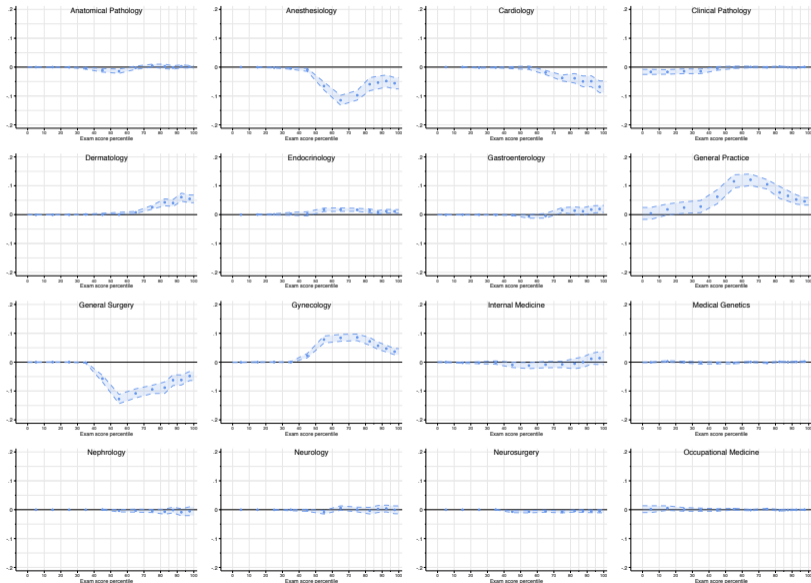
# Share of candidates selecting each specialty



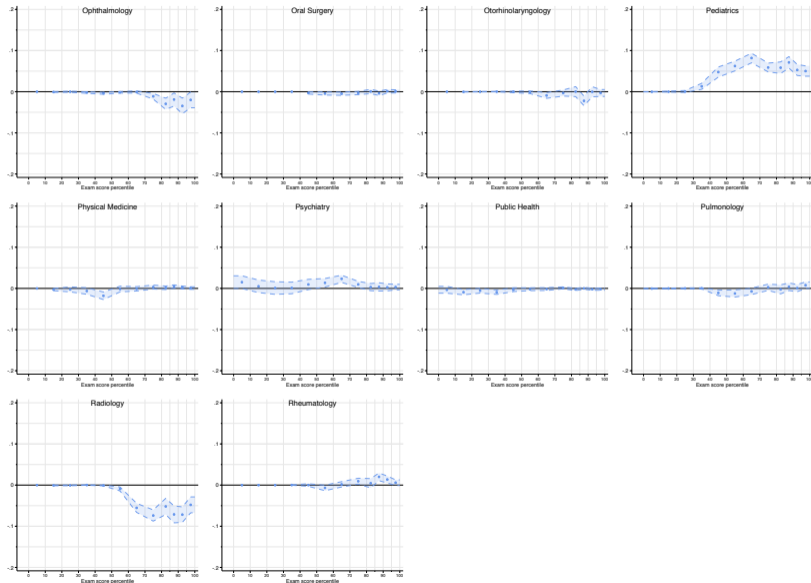
Note: 1: Otorhinolaryngology; 2: Rheumatology; 3: Neurosurgery; 4: Endocrinology; 5: Medical Genetics; 6: Oral Surgery; 7: Physical Medicine

Notes: Share of candidates selecting each specialty in each percentile of the exam score distribution.

# Gender gaps over exam score

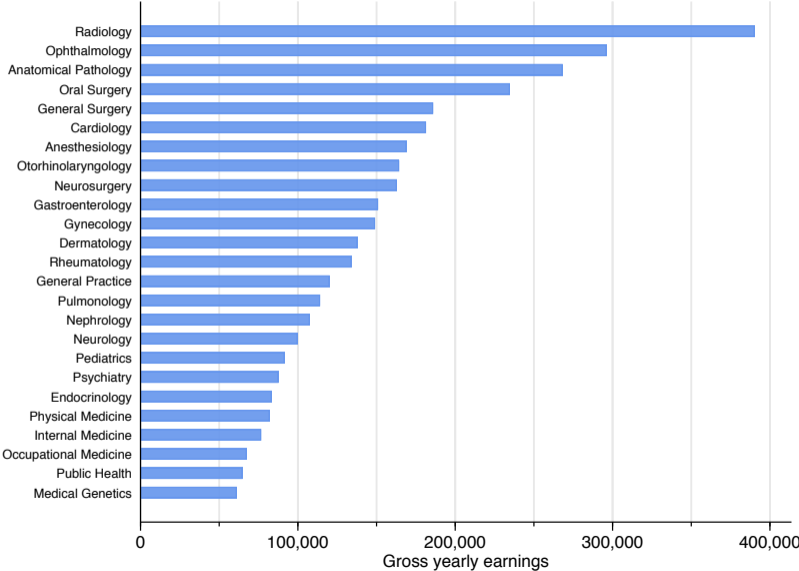


# Gender gaps over exam score (cont)

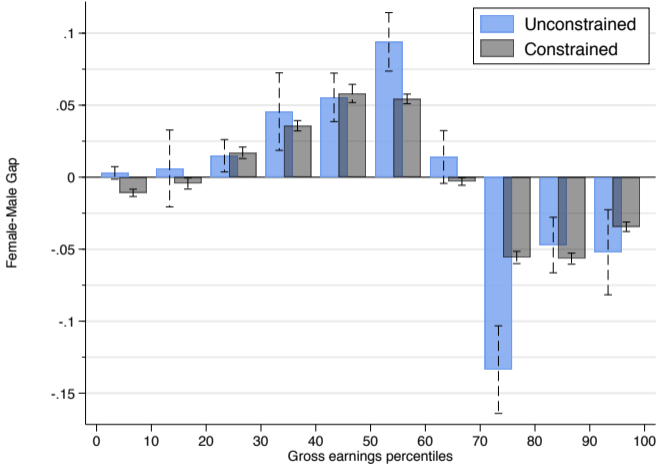




# Gross annual earnings by specialty

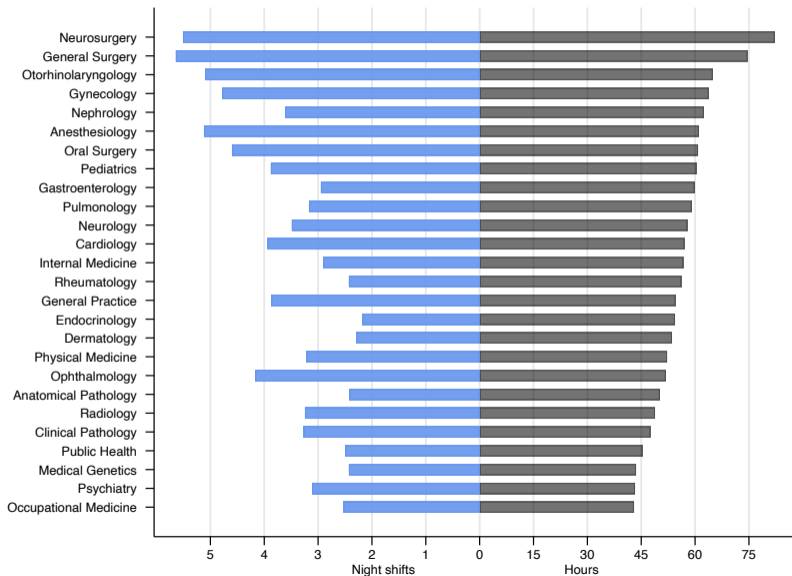


# Gender gap in selection on expected gross earnings

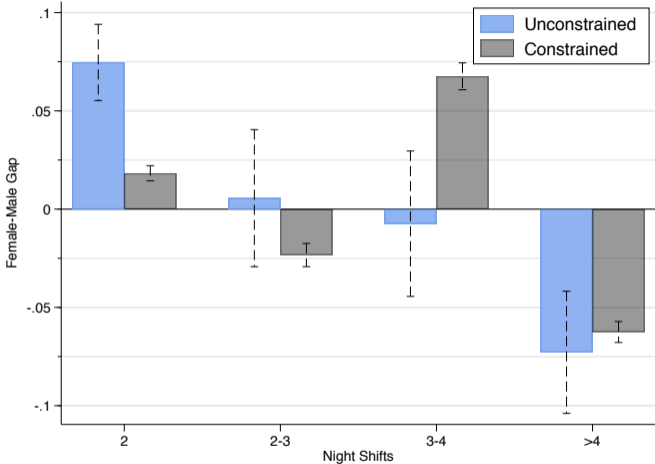


Notes: Expected earnings is defined as the weighted average of earnings in the private and hospital sectors, by specialty. Individuals choosing their specialty when 99% or more of the residency positions where still vacant are labeled as unconstrained, while the rest as constrained. All gender gaps are estimated using OLS and include choice set fixed effects defined as groups of 5 individuals with consecutive exam scores. 95% confidence intervals using heteroskedastic robust standard errors.

# Night shifts & hours worked by specialty

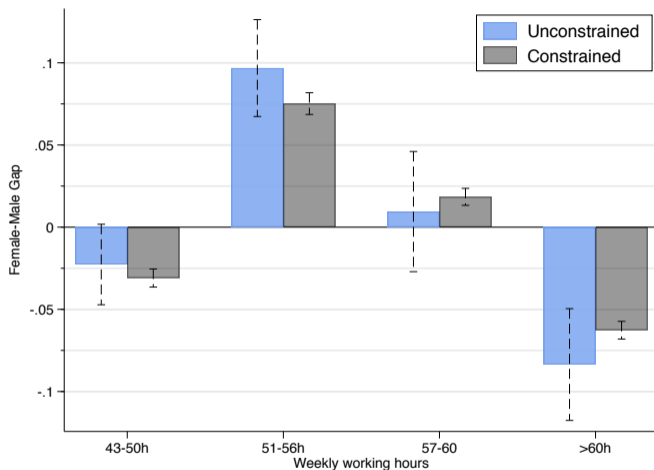


# Gender gap in selection on night shifts



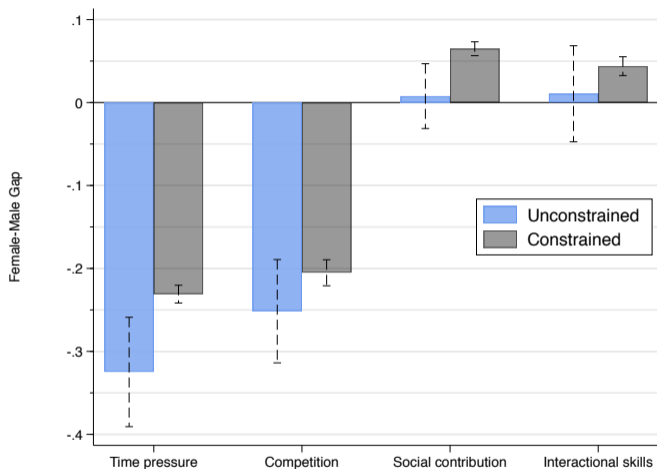
Notes: This figure plots gender gaps in the probability of females selecting a specialty that falls in each quartile of the monthly night shifts distribution, separately for the so called unconstrained and constrained individuals. All gender gaps are estimated using OLS and include choice set fixed effects defined as groups of 5 individuals with consecutive exam scores. 95% confidence intervals using heteroskedastic robust standard errors.

# Gender gap selection on working hours



Notes: Gender gaps in the probability of females selecting a specialty that falls in each quartile of the weekly hours distribution, separately for the so called unconstrained and constrained individuals. All gender gaps are estimated using OLS and include choice set fixed effects defined as groups of 5 individuals with consecutive exam scores. 95% confidence intervals using heteroskedastic robust standard errors.

# Gender gap selection on other attributes



Notes: Gender gaps in the probability of selecting a specialty with a higher value in the relevant O\*NET attribute, separately for the so called unconstrained and constrained individuals. All gender gaps are estimated using OLS and include choice set fixed effects defined as groups of 5 individuals with consecutive exam scores. 95% confidence intervals using heteroskedastic robust standard errors.

# Data on further job attributes: O\*NET

Index	Measure	Question	Scale
Time pressure	Time pressure	“How often does your current job require you to meet strict deadlines?”	From never, to every day.
-----	-----	-----	-----
Competition	Competition	“How competitive is your current job?”	From not at all, to extremely.
-----	-----	-----	-----
	Concern for others	“How important is concern for others to the performance of your current job?”	From not at all, to extremely.
Social Contribution	Assisting and caring	“How important is assisting and caring for others to the performance of your current job?”	From not at all, to extremely.
	Social orientation	“How important is social orientation to the performance of your current job?”	From not at all, to extremely.
-----	-----	-----	-----
	Contact with others	“How much contact with others is required to perform your current job?”	From no contact, to constant contact.
	Work with a group or team	“How important are interactions that require you to work with or contribute to a work group or team to perform your current job?”	From not at all, to extremely.
Interactional Skills	Interpersonal relationships	“How important is establishing and maintaining interpersonal relationships to the performance of your current job?”	From not at all, to extremely.

# Classification and identification of amenities (1)

#	Category	Amenity	Searched words
1	Pay	Pay	pay, salary, base, base pay, money
2	Pay	Pay growth	raise, annual raise, salary increase, pay raise, raise base
3	Working conditions	Work-life balance	work life balance, work life, quality [of] life
4	Working conditions	Hours	hours, full time, part time
5	Working conditions	Work schedule	hours, night shift, shift, schedule, flex time
6	Working conditions	Commuting	commute, parking, bus, drive
7	Working conditions	Teleworking	telecommute, telework, work hom
8	Working conditions	Location	city, location, metro
9	Working conditions	Autonomy/responsability	autonomy, independence, responsibility
10	Working conditions	Respect/abuse	respect, dignity, abuse, harass, hostile
11	Working conditions	Difficulty	challenge, difficult, easy
12	Working conditions	Requirements	require, requirement, mandatory, optional
13	Working conditions	Stress	stress, pressure, high stress, high pressure
14	Working conditions	Pace	pace, fast pace, speed
15	Working conditions	Safety	injury, dangerous, safety, conditions, workplace

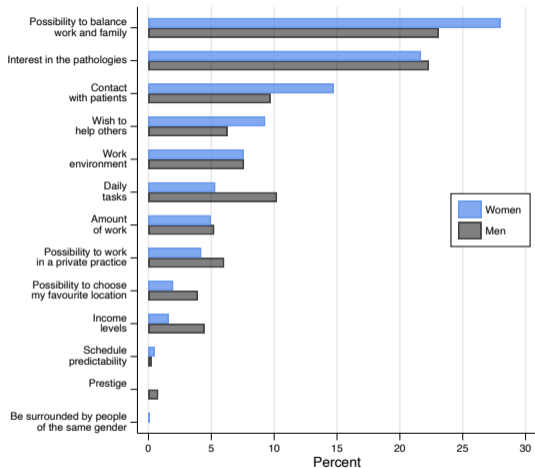


## Classification and identification of amenities (2)

#	Category	Amenity	Searched words
16	Working conditions	Recognition	hard work, effort, reward, prestige
17	Working conditions	Fun	fun, boring, mundane, tedious
18	Working conditions	Culture	culture, values, environment, society, mission, human, human
19	Working conditions	Diversity/ inclusion	diversity, ethnic, multicultural, inclusive, lgbtq, inclusion, equality, diverse
20	Working conditions	Leadership	leadership, management
21	Working conditions	Change	change
22	Human capital	Career concerns	career, grow, improve, growth
23	Human capital	Promotions	promotion, promote, job title
24	Human capital	Skill development	develop, skill
25	Human capital	On-the-job training	train, training
26	Human capital	Medical residence	intern, internship
27	Relationships	Managers	boss, manager
28	Relationships	Coworkers	coworker, person, friend, family, colleague
29	Relationships	Teams	team, teamwork, collaborative
30	Relationships	Patient	patient, follow

Notes: This table lists the words used to identify each of the amenities in the free-text responses.

# Most important factor for specialty choice



Notes: Share of respondents who selected each of the presented features as the most important factor for choosing their preferred specialty.