

# **Méthodes de révélation des préférences et application à la question de la qualité de l'offre de soins de premier recours**

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***Case study 2: What do UK medical students value most in their careers? A discrete choice experiment***

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# Published study



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Career Choice

## What do UK medical students value most in their careers? A discrete choice experiment

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# Context

- ▶ Topic: Medical workforce supply
- ▶ Start with medical school for 2 years
- ▶ Then apply for a Foundation Programme (FP) (via allocation system in which students rank specific programmes)

Year	Current ( <b>Modernising Medical Careers</b> )	
1	<b>Foundation doctor</b> (FY1 and FY2), 2 years	
2		
3	<b>Specialty registrar,</b> general practice (GPST), 3 years	<b>Specialty registrar,</b> hospital speciality (SpR), minimum 6 years
4		
5		
6–8	<b>General practitioner,</b> 5 years total time in training	<b>Consultant,</b> minimum 8 years total time in training
9		

# Context

- ▶ ~98% of medical students completed the FP
- ▶ % of FPY2 doctors continuing straight into the 1<sup>st</sup> year of core/speciality training declined over the time: 71.6% (2011) to 52% (2015)
- ▶ **Why do nearly one in two medical graduates leave the training pipeline at the first opportunity to do so?**
- ▶ Important to understand what is important in the early careers decision making to enhance the attractiveness of medical training
- ▶ Previous studies are mainly descriptive and did not investigate the relative importance of different factors (What is the “most important”?)

# Identifying attributes & levels

- ▶ 3-step process:
  - ▶ Systematic review of the literature
  - ▶ Interviews with medical students
  - ▶ Piloting with medical students (to check wording + range of levels)
- ▶ Monetary attribute (Earning) as a metric for comparison

# List of attributes & levels

Characteristic	Description given to respondents	Possible levels
Familiarity with hospital/unit	This refers to how familiar you are with the hospital or unit, whether you have rotated around it previously or have other knowledge of it	Unfamiliar Quite familiar Very familiar
Geographical location	This refers to the geographical location of the training position, including the amenities on offer and the proximity to your family/friends	Desirable Not so desirable
Opportunities for partner/spouse	How much does the location offer employment/training opportunities for your partner/spouse (if you have one)?	Limited opportunities Good opportunities
Potential earnings	This refers to how your potential earnings compare against average career earnings in your chosen specialty after completing training	Average earnings 5% above average 10% above average 20% above average
Clinical/academic reputation	This refers to the prestige/status associated with the hospital / unit / programme	Indifferent reputation Good reputation Excellent reputation
Working conditions	This refers to working conditions, such as rotas, amount of on-call, time off, staffing levels, etc.	Poor Good Excellent

# Designing the experiment

- ▶  $3 \times 2 \times 2 \times 4 \times 3 \times 3 = 432$  options
- ▶ Pairwise comparison:  $432 \times (432-1) / 2 = 93,096$  choice sets
- ▶ D-Efficient design with null priors => 18 choice sets
- ▶ Blocking: 2 versions of 9 choice sets each
- ▶ 9+1 tasks per participant (1 quality check)
- ▶ No opt-out option



# Choice set illustration

Choice 1 of 9: Which position would you prefer?

	Position A	Position B
Geographical location	Not so desirable location	Desirable location
Familiarity with hospital/unit	Unfamiliar	Quite familiar
Opportunities for partner/spouse	Good opportunities	Limited opportunities
Potential earnings	Average earnings	20% above average
Working conditions	Poor conditions	Excellent conditions
Clinical/academic reputation	Indifferent reputation	Good reputation
Please tick one box	<input type="checkbox"/>	<input type="checkbox"/>

# Sampling

- ▶ Final (2<sup>nd</sup>) year students at medical school
- ▶ 6 UK medical schools (Peninsula, Keele, Aberdeen, Dundee, Glasgow, Southampton)
- ▶ Paper-based questionnaire
- ▶ Part of teaching (Shortly after students applied for FP training)
- ▶ Exhaustive sampling (n=1,124)
- ▶ Min needed for DCE:  $n \geq 430$
- ▶ Ethics: Univ of Aberdeen (CERB ref. 2013/4/903)

# Participation

- ▶ 810 respondents (Response rate: 72.1%)
  - ▶ 49 further excluded (too many missing values)
  - ▶ 761 respondents providing 6,830 observations
- ▶ “Good” data quality
  - ▶ 0.4% serial non-participants (Always choose A/B)
  - ▶ 4.5% failed quality check
- ▶ Representative of UK med student population

Question	Respondents	
	<i>n</i>	(%)
<i>Did you intercalate?</i>		
No	535	(73.2%)
Yes	196	(26.8%)
<i>Do you intend to apply, or have you already applied, for an academic FP?</i>		
No	598	(81.8%)
Yes	133	(18.2%)
<i>How old are you?</i>		
> 25 years	101	(13.8%)
21–25 years	630	(86.2%)
<i>Are you?</i>		
Female	419	(57.3%)
Male	312	(42.7%)
<i>Are you currently?</i>		
Married/in a long-term relationship	329	(45.0%)
Single	402	(55.0%)
<i>Where were you born?</i>		
Scotland	214	(29.3%)
England	307	(42.0%)
Elsewhere	210	(28.7%)
<i>In which country would you like to do your FY1/FP?</i>		
Scotland	301	(41.2%)
England	378	(51.7%)
Elsewhere	52	(7.1%)

# Data analysis

- ▶ Logistic regression: Conditional logit model with individual-level errors

$$V_j = \alpha + \beta_1 \text{Location: Desirable} + \beta_2 \text{Opportunities: Good} + \beta_3 \text{Reputation: Good} \\ + \beta_4 \text{Reputation: Excellent} + \beta_5 \text{Conditions: Good} + \beta_6 \text{Conditions: Excellent} \\ + \beta_7 \text{Familiarity: Quite} + \beta_8 \text{Familiarity: Very} + \beta_9 \text{Earnings}$$

- ▶ **Willingness-to-pay/accept** (Average expected earnings change needed to compensate for a deterioration in the quality of the training position)
- ▶ **Preferences heterogeneity** (Least Absolute Shrinkage and Selection Operator, LASSO)

Job characteristic	$\beta$ -value (SE)
<i>Model parameters</i>	
Option: A	0.34 (0.051)*
Option: B	– 0.34
Location: Not desirable (Ref)	– 0.455
Location: Desirable	0.455 (0.02)*
Opportunities for partner: Limited (Ref)	– 0.433
Opportunities for partner: Good	0.433 (0.018)*
Familiarity: Unfamiliar (Ref)	– 0.124
Familiarity: Quite familiar	– 0.019 (0.035)
Familiarity: Very familiar	0.142 (0.029)*
Working conditions: Poor (Ref)	– 0.911
Working conditions: Good	0.25 (0.03)*
Working conditions: Excellent	0.662 (0.032)*
Reputation: Indifferent (Ref)	– 0.493
Reputation: Good	0.161 (0.03)*
Reputation: Excellent	0.332 (0.026)*
Income: Linear	0.036 (0.003)*

95% CI = 95% confidence interval; SE = standard error.

Significance: \* $p < 0.01$

# WTP results

Attribute	Best	Worst	Range	Rank	Ratio
Working conditions	18.36	-25.32	43.68	1	1.00
Location	12.62	-12.62	25.24	2	1.73
Opportunities	12.03	-12.03	24.06	2	1.82
Reputation	9.19	-13.69	22.88	2	1.91
Familiarity	3.9	-3.39	7.29	3	5.99

# Pref heterogeneity results

- ▶ 81 possible interaction effects
- ▶ 28 remained in the model after LASSO
- ▶ 11 (39%) reached significance at 95% confidence level

Main effects		$\beta$	SE	p-value
Location (Desirable)	Gender (Female)	0.059	0.019	< 0.01
Opportunity (Good)	Gender (Female)	0.048	0.018	< 0.01
Conditions (Good)	Gender (Female)	0.021	0.029	
Conditions (Excellent)	Gender (Female)	0.078	0.030	< 0.01
Earning	Gender (Female)	- 0.004	0.003	

FP = Foundation Programme; FP1 = Foundation Programme Year 1; SE = standard error.



# Conclusion

- ▶ First study to investigate relative importance of career decision making factors for medical students
- ▶ One attribute stands out: **Working conditions**
- ▶ Limited evidence of preferences heterogeneity
- ▶ But female students appear to take into account more non-work related factors than male students