

Using artificial intelligence to evaluate inclusive recruitment strategies in hospital settings

Kerri-Ann Barnett
Head of Recruitment, Imperial College
Healthcare NHS Trust

Sarindi Aryasinghe
Head of Implementation, NHS Race and
Health Observatory



#RHORoadshows

Inclusive recruitment programme

- Leadership diversity remains a challenge across the NHS and at Imperial.
- Structural barriers continue to limit access to senior roles for minoritised groups.
- Workforce data, WRES, and staff surveys consistently reflect these disparities.
- In response, the Trust launched the Inclusive Recruitment programme in September 2021 to diversify senior appointments.
- Key components:
 - Diverse interview panels (ethnicity and gender)
 - Hiring managers submit decision letters to the CEO - 'Dear Tim' letters



Imperial College Healthcare
NHS Trust

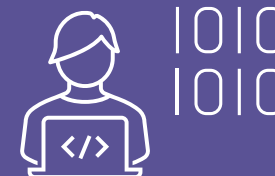


What is natural language processing?

- 80-90% of the data in any organisation is unstructured.
- Healthcare data systems are only as good as the information that is inputted and asking healthcare professionals to continually enter structured data can be challenging because of workflow issues, time, etc.
- NLP is a type of artificial intelligence that transforms unstructured text into a structured format.
- Unstructured data is an **untapped opportunity** – NLP is starting to recognise value of this data.



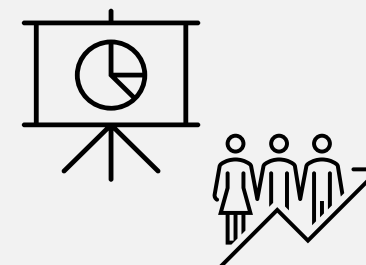
1. Use raw data
Convert Dear Tim letters into machine-encoded texts.



2. Build NLP model
Cleaning, standardising and transforming free-text to understand the vocabulary being used.



3. Triangulated data
Model extracts data and converts it into useful information complementing other relevant data sources.



4. Insights
Robust dataset to tell a story.

Assessing outcomes of the inclusive recruitment programme

Analysis of structured recruitment data to understand trends in diversity of candidates through the recruitment stages



Natural language processing of anonymised Letters to the CEO to derive thematic trends in hiring managers' candidate assessments



Objectives:

- 1. Outcomes of Inclusive Recruitment programme:** understand before/after trends in recruitment by candidate characteristics and banding.
- 2. Panel influence:** explore how panel composition affects appointment decisions.
- 3. Assessment dynamics:** analyse how candidate and panel profile shape assessment language and sentiment

Data extracted from Letters to Tim



St Mary's Hospital
6th Floor, Salton House
London
W2 1NY

Professor Tim Orchard
St Mary's Hospital
Praed Street
London W2 1NY

Dear Tim

RE: Interview outcome from the Chair of the Interview Panel

Directorate/department	Job title and Reference Number	Interview date

In line with the Trust's commitment to improve transparency and fairness in the recruitment process, I am writing to provide an overview of the interview and selection process for the above post so that you can be assured that the process we have undertaken has been truly inclusive.

Overall observations and comments

The ethnicity and gender of the panel was compliant with our policy to have gender and ethnicity diverse interview panels.

Following the interview, the panel discussed and agreed on the most suitable candidate. There was consensus on the preferred candidate(s).

As panel chair, I have provided initial feedback to all candidates, with appointments for detailed feedback arranged within the working week.

Should you have any questions or concerns on this recruitment episode, please contact me at

Yours sincerely

Please complete the rest of the report below and send this to your Recruitment Officer and to tim_orchard@nhs.net within 2 working days of the interview date.

Data triangulation with IR spreadsheet

Report from the Chair of the Interview Panel

Advertisement

Selection process

Selection Panel members

The interview panel consisted of the following people.

Role	Name and job title	Gender	Ethnicity *Note 1	Grade	Internal/external	Involved in shortlisting?	Inclusive recruitment trained?
Chair		M	W				Yes
Panel member		M			Internal	No	
Panel member			B	8A	Internal		

Characteristics of the panel

Shortlisting involvement

Inclusive recruitment training

Candidates Interviewed

Candidate First name and Surname	TRAC ID	Appointable	Interview score (out of total)	Summary of assessment – areas of strengths and weaknesses	Date feedback provided	Internal / external	Ethnicity *Note 1
		YES	30/40	<p>The following examples of their knowledge, skills and experience were evidenced:</p> <p>Strengths</p> <p>The following elements of the person specification were not evidenced, or were not as strong as the successful candidate:</p> <p>Weaknesses</p> <p>The reasons this candidate was considered appointable was:</p>		External	
				<p>The following examples of their knowledge, skills and experience were evidenced:</p>			W

Gender of the candidates

Characteristics of the candidates

Interview outcome

Interview Scoring

Volume of data analysed

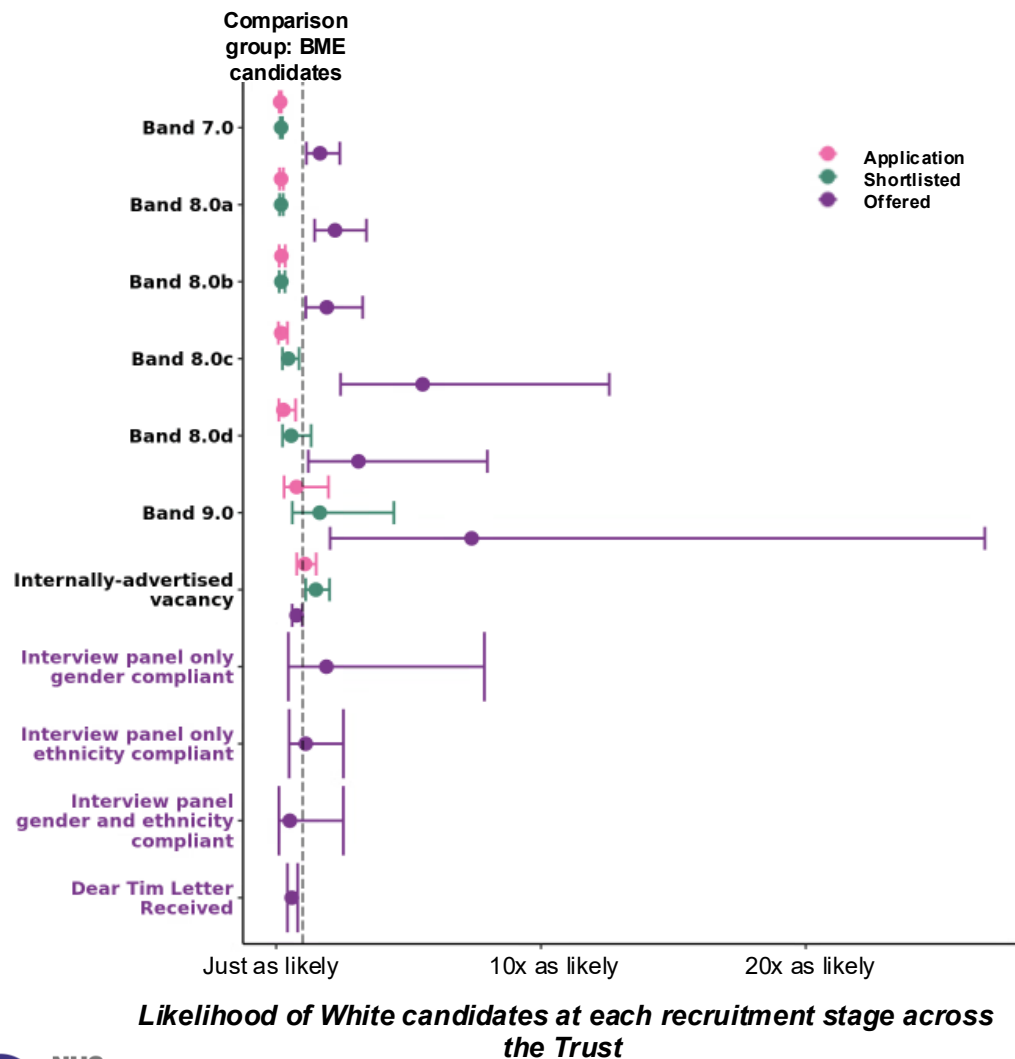
Division	No. of interview campaigns	No. of applications	No. of shortlisted candidates	No. of candidates offered a role	Letters to the CEO included in analysis*	Triangulated Letters to the CEO **
Corporate	369	5452	1037	343	273	204
Women's Cardiac, Clinical Support and Sexual Health (WCCS)	423	3858	1002	407	514	281
Surgery and Cancer (SC)	431	3555	1017	428	366	266
Medicine and Integrated Care (MIC)	404	2786	671	365	392	249
Pathology	89	922	332	85	0	70
TOTAL	1716	16573	4059	1628	1545	1070

*The Dear Tim letters became mandatory from June 2022.

** Triangulated with Inclusive Recruitment structured data.



Factors affecting presence of White candidates at offering stage across ICHT



To understand the immediate outcomes of the inclusive recruitment programme, we reviewed the data from September 2021 to May 2022 (before) and June 2022 to March 2023 (after).

Application

- A White applicant has significantly **less** odds than BME candidates to apply for a Band 7 and 8 role, but this increased with seniority.

Shortlisted

- A White candidate had **less** odds than a BME candidate to be shortlisted for Bands 7 and 8 roles ($p < 0.05$), but this increases with seniority.
- For internally-advertised vacancies, a White candidate has 1.5 times ($p < 0.05$) **higher odds** of being shortlisted for the role compared to BME candidates.

Offer

- Across all bands, BME candidates have significantly **less** odds of being offered a role at ICHT than their White counterparts.
- Where a Dear Tim letter is written, a BME candidate **has 1.7 times the odds** ($p < 0.05$) of being offered a role than a White candidate.

Impact on interview scoring

We used the Dear Tim letters to assess the impact of compliant panels on interview scoring across the Trust, normalising interview scores between 0-100 for fair comparison across interviews.

Candidate interview scores by banding

Candidate	Average Interview Score (Band 7)	Average Interview Score (Band 8 and 9)
White women	62 (p<0.05)	61
BME women	57 (p<0.05)	57
White men	57	59 (p<0.05)
BME men	54	53 (p<0.05)

- The average interview score was **5% lower for BME women than White women**, (p<0.05) for band 7 roles.
- For male candidates, the average interview score was **6% lower for BME men than White men**, (p<0.05) for Band 8 and 9 roles.



Sentiment analysis of candidate assessments

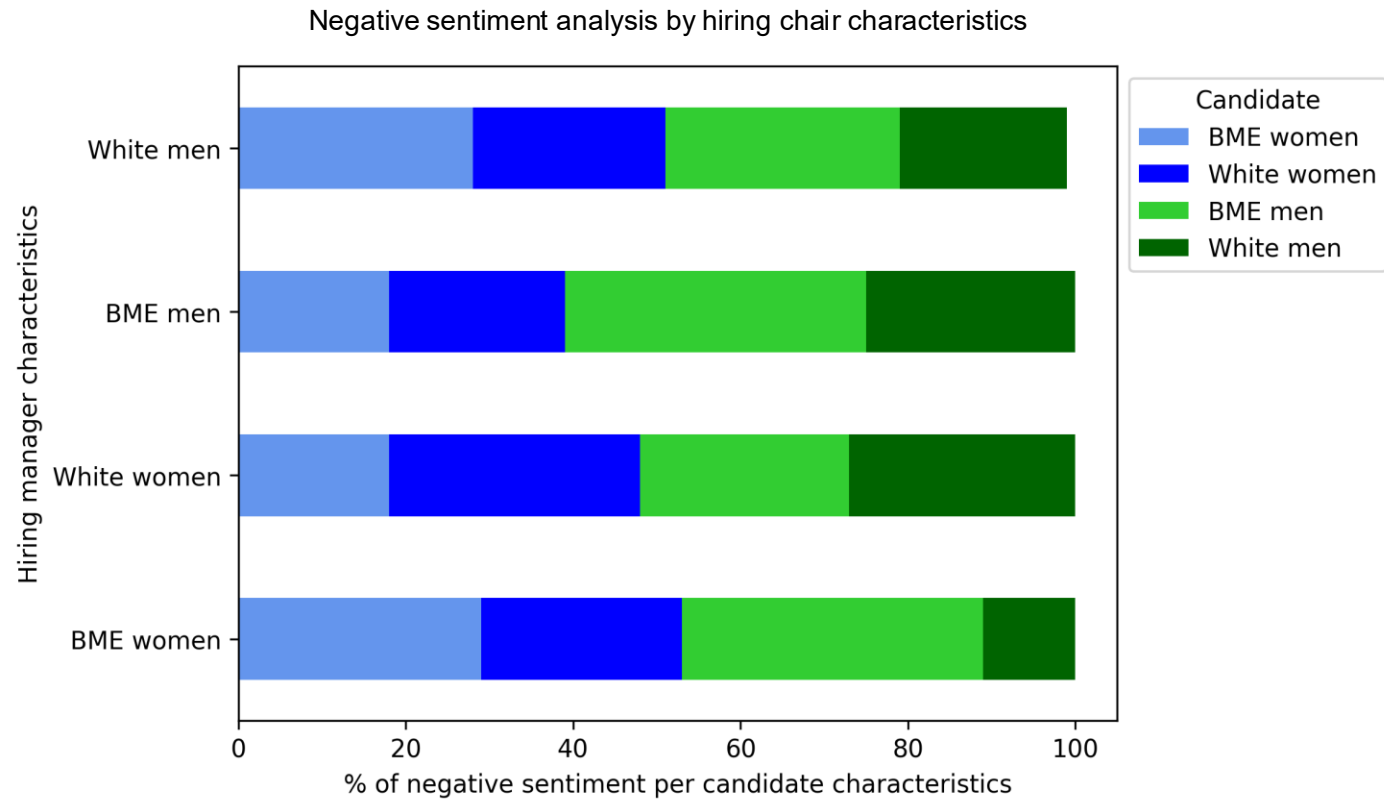
The sentiment of candidate assessments was classified between **Positive**, **Neutral** and **Negative**.

Sentiment	Examples
Positive	<ul style="list-style-type: none">• "Demonstrated good understanding of..."• "Candidate considered to be a good addition to the team"• "Excellent knowledge"• "Candidate was able to describe teaching methods in a greater depth"
Neutral	<ul style="list-style-type: none">• "Ability to communicate"• "Didn't meet all criteria"• "Understood requirements of the job"
Negative	<ul style="list-style-type: none">• "Clearly was not able to demonstrate knowledge"• "Very poor interview"• "Lacks confidence"• "Did not show any ability to..."



Sentiment analysis of candidate assessments

- Overall, majority of candidate assessments were positive, but BME women candidates were 1.6 times more likely to receive **negative** feedback than White women candidates.

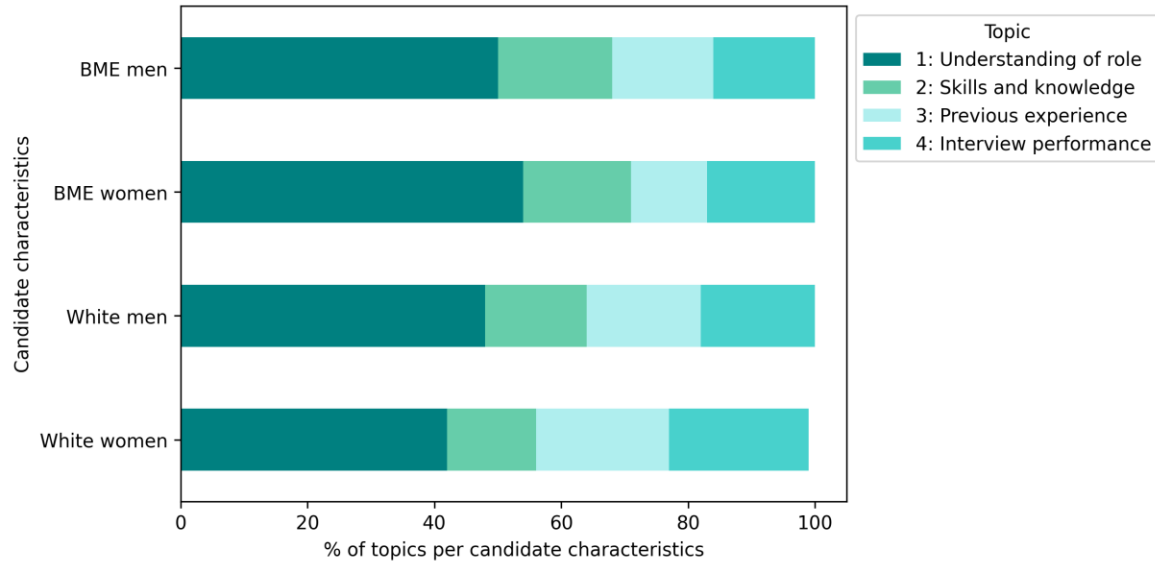


- White men hiring managers provide more negative feedback to BME candidates, regardless of gender.
- BME women hiring managers provide less negative feedback to White candidates than their BME counterparts.

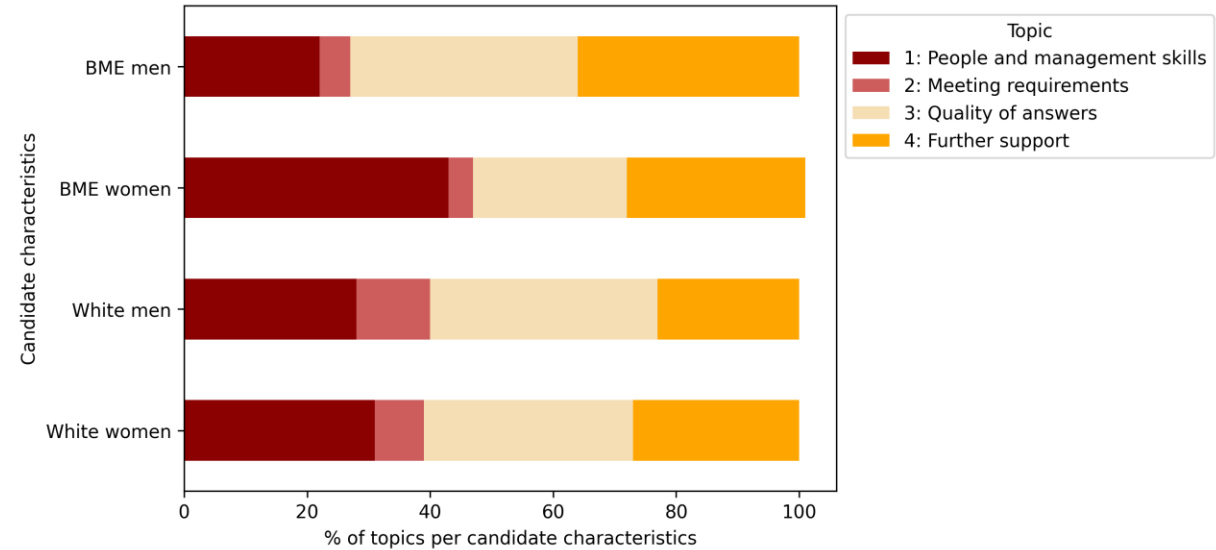


Candidate assessment topics - by candidate characteristics

Strengths



Weaknesses



- **79%** of all candidate assessments included candidate strengths.
- Interview performance is highlighted as a strength for White women candidates.
- For BME women, their previous experiences is less highlighted as a strength compared to other candidates.

- **65%** of all candidate assessments included candidate weaknesses.
- White candidates have greater instances of not meeting role requirements.
- White men candidates have less instances of requiring further support.
- People and management skills is most highlighted as a weakness for BME women candidates.

Key learnings from the research

- Using AI approaches, such as NLP, in recruitment and workforce diversity initiatives remain under-explored.
- **Improving data quality to avoid ‘rubbish in, rubbish out’**
 - Establishing a baseline to measure progress
 - Capture standardised disaggregated ethnicity categories for candidates and panel members at each recruitment stage to identify more targeted areas for improvement.
 - Supporting hiring managers to complete letters with higher quality feedback
- **Future opportunities:**
 - Data triangulation (internal recruitment data, WRES data, staff engagement survey, other qualitative insights)

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Human Resources for Health

RESEARCH

Open Access



Increasing the ethnic diversity of senior leadership within the English National Health Service: using an artificial intelligence approach to evaluate inclusive recruitment strategies in hospital settings

Sarindi Aryasinghe^{1,2*}, Catalina Careno^{1,2}, Kerri-Ann Barnett³, Rabia Khalid³, Koya Greenaway-Harvey³, Colleen Sherlock³, Louise Clark^{3*}, Kevin Croft³, Tim Orchard³ and Erik Mayer^{1,2}



Read our published paper for more information and details.

Impact of the inclusive recruitment programme

Data shows that our inclusive recruitment programme has helped to boost the representation of staff from Black and Minority Ethnic groups in senior roles from **38%** in 2021 to **45%** in 2024 and **47%** in 2025.

The Programme has delivered meaningful progress in improving the diversity of our senior leadership. **We are seeing more varied representation at the top levels of our organisation**, which reflects the positive impact of inclusive hiring practices.

However, the recent research also highlights that **systemic barriers continue to hinder equitable access to leadership opportunities**. This serves as a reminder that sustained, evidence-based action is essential if we are to dismantle these barriers and create lasting change.

We remain firmly committed to building a leadership team that is not only inclusive but is truly representative of the rich diversity within our workforce and the communities we serve.



Our next steps

Strengthen digital capabilities

We will continue to enhance our digital capabilities and improve the quality of recruitment data. This will enable us to generate meaningful insights and guide our priorities with accuracy and transparency.

Embed inclusive practices across the recruitment journey

Insights from our inclusive recruitment research are shaping how we embed inclusive principles and best practices throughout the recruitment process. We are equipping hiring managers with the tools and training needed to apply these consistently and confidently.

Expand programme scope to drive broader impact

We are committed to broadening the reach of our Inclusive Recruitment Programme. This includes extending its focus to cover a wider range of roles and additional protected characteristics, ensuring our leadership reflects the full diversity of our workforce and the communities we serve.



Video

CLCH AHP (Allied Health Professional) Summer School

<https://www.youtube.com/watch?v=mdYFvmFcqdA>

