

Department for Work and Pensions

Research Report No 607

A test for racial discrimination in recruitment practice in British cities

Martin Wood, Jon Hales, Susan Purdon, Tanja Sejersen and Oliver Hayllar

A report of research carried out by National Centre for Social Research on behalf of the Department for Work and Pensions

© Crown Copyright 2009. Published for the Department for Work and Pensions under licence from the Controller of Her Majesty's Stationery Office.

Application for reproduction should be made in writing to The Copyright Unit, Her Majesty's Stationery Office, St Clements House, 2-16 Colegate, Norwich NR3 1BQ.

First Published 2009.

ISBN 978 1 84712 645 0

Views expressed in this report are not necessarily those of the Department for Work and Pensions or any other Government Department.

Contents

Acknowledgements	v
The Authors.....	vi
Glossary.....	vii
Summary	1
1 Background	7
1.1 Introduction.....	7
1.2 Ethnic minority penalties in the labour market	7
1.3 Policy measures to reduce inequality	9
1.4 Recruitment practices and discrimination in employment	11
1.5 Field experiment approaches: actors and correspondence tests	12
2 Test design.....	15
2.1 A correspondence test	15
2.2 Number of applications per set	16
2.3 Conveying racial identity.....	16
2.4 Cities	19
2.5 Occupations	19
2.6 Identifying job adverts for the study.....	20
2.7 Developing applications	21
2.8 Assessing response	23
2.8.1 <i>Addresses</i>	23
2.8.2 <i>Email and telephone details</i>	24

2.9	Sample of vacancies.....	24
2.9.1	Size of sample achieved.....	24
2.9.2	Occupations.....	25
2.9.3	Locations.....	26
2.9.4	Market sector.....	27
2.9.5	Size of organisation.....	28
2.9.6	Gender.....	28
2.9.7	Application process variables.....	29
3	Results.....	31
3.1	Overall racial discrimination	31
3.2	Alternative presentations of the level of discrimination.....	33
3.3	Discrimination for individual ethnic groups.....	35
3.4	Occupation and sector.....	38
3.5	Size of employer	40
3.6	Area and gender.....	41
3.7	Variation in the application process.....	42
4	Conclusions	47
Appendix A	Technical appendix.....	49
Appendix B	Procedures document for team producing applications	51
Appendix C	Occupation descriptions used to identify eligible vacancies.....	61

List of tables

Table 2.1	Results of testing of name recognition	18
Table 2.2	Names used in study.....	19
Table 2.3	Locations in sample	26
Table 2.4	Market sector and industry classification of employers in sample.....	27
Table 2.5	Number of employees at site	28
Table 2.6	Gender of applications.....	28
Table 2.7	Occupation of applications by gender	29
Table 2.8	Application process for sample of vacancies.....	30
Table 3.1	Overall racial discrimination	32
Table 3.2	Treatment within sets of applications	33

Table 3.3	Success rates and an alternative presentation of discrimination ...	34
Table 3.4	Discrimination for individual ethnic groups.....	36
Table 3.5	Success rates for individual ethnic groups	37
Table 3.6	Discrimination by occupation	39
Table 3.7	Discrimination by employment sector of employer	39
Table 3.8	Type of application for public and private sector.....	40
Table 3.9	Discrimination by number of employees at site	41
Table 3.10	Discrimination by location of employer	41
Table 3.11	Racial discrimination by gender.....	42
Table 3.12	Discrimination and recruitment process variables	43
Table 3.13	Number of employees at site by type of application	44
Table 3.14	Format of application by mode of despatch	44

List of figures

Figure 2.1	Occupations in sample.....	26
References	67

Acknowledgements

The National Centre for Social Research (NatCen) was commissioned by the Department for Work and Pensions (DWP) to carry out this study of discrimination. The authors would like to thank Pauline Heather, Del Jenkins and David Johnson at DWP for their identification of the need for such an approach and their support and guidance throughout the study.

Special thanks to the operations team at NatCen's Brentwood office who developed the thousands of applications sent during the study: Neil Barton, Ed Garstin, Sarah Allcock, Becky Aldridge, Debbie Bagheri, Pete Baker, Alexis Bassett, Carol Bell, Bryan Mason, Kalpna Moore, Chris Shaw and Elise Yarrow. Thanks too to Christianah Iyaniwura and Yachien Huang.

Sir Roger Jowell and Professor Anthony Heath acted as advisors to the project, and our thanks to them for their valuable guidance.

The Authors

Martin Wood is a Research Director in the Employment, Welfare and Crime quantitative research group at the National Centre for Social Research (NatCen).

Jon Hales is head of the Employment, Welfare and Crime quantitative research group at NatCen.

Susan Purdon is a Quantitative Methods Advisor in the Survey Methods Unit at NatCen.

Tanja Sejersen is a researcher in the Employment, Welfare and Crime quantitative research group at NatCen.

Oliver Hayllar is a senior researcher in the Employment, Welfare and Crime quantitative research group at NatCen.

Glossary

BME	Black and Minority Ethnic
Correspondence testing	The sending of multiple matched written applications to real job vacancies with the variable of interest (ethnicity in our case) randomly assigned.
CV	Curriculum Vitae (or résumé)
Ethnic penalties	In the labour market outcome literature, a term used to refer to the poorer labour market outcomes observed for ethnic minorities, even where factors such as educational attainment and age are taken into account.
Net discrimination	In our analysis, the number of instances of discrimination against a particular ethnic group that exceeds the number of instances of discrimination in its favour.
Statistical discrimination	Process by which discriminatory outcomes occur as a result of employers making decisions based on perceptions that race is correlated with job-relevant factors, such as communication skills and motivation. In this way it is different to preference-based discrimination.

Summary

Background

This report shows the findings from a field experiment that involved submitting matched job applications from white and ethnic minority applicants to estimate the extent of racial discrimination in different areas of the British labour market. The Department for Work and Pensions (DWP) commissioned the National Centre for Social Research (NatCen) to carry out the study to collect factual evidence to test the assertion that discrimination is a significant factor affecting labour market outcomes for members of ethnic minorities.

That there are ethnic penalties in employment in Britain is a well-established fact. Among the studies that identify them is an authoritative study carried out for DWP by Professor Anthony Heath and Dr Sin Yi Cheung (2006). They describe poorer outcomes for ethnic minority groups in terms of rates of unemployment, the level of work attained and rates of pay. They demonstrate that these poorer outcomes remain even after controlling for differences in characteristics of the various ethnic groups, such as age profiles and levels of education. The size of the 'net ethnic penalties' identified was shown to vary across different ethnic groups as well as for men and women. Those ethnic minority members born and educated in Britain, so-called 'second generation migrants', experience ethnic penalties in a similar way to the first generation.

Although studies of this type are strongly suggestive of the role of discrimination, there are other plausible factors that may contribute to the gap in labour market outcomes (for instance a lack of established contacts with potential employers among ethnic minority groups). In order to establish that discrimination is operating and to estimate the size of its contribution to ethnic penalties, different types of study that actually test recruitment procedures are needed.

Test approach

It is in this context that 'field experiments' have been developed to test recruitment practice. Initially carried out in the United Kingdom (UK) and United States (US), studies with similar methods have now been carried out in many countries. Some have used an approach whereby actors attend interviews, while others have focused on the written application stage of the process, but the central principle in each study has been for applications to be made from candidates who are matched, except with respect to their ethnic background. Differences in treatment from employers are then attributed to discrimination.

The approach adopted for the study described in this report was that of a correspondence test where written applications were submitted for advertised vacancies. While this approach is focused on the first part of the recruitment process, it avoids the problems associated with tests that involve actors (principally that it cannot be proven that all relevant differences between actors, including motivation, have been matched successfully). The random assignment of ethnicity to written applications in a correspondence test allows us to be confident that the test is valid.

The key elements of our approach were as follows:

- 1 Formally advertised job vacancies were identified in seven major British cities for a set of nine occupations: IT Support, IT Technician, Accountant, Accounts Clerk, Human Resources Manager, Teaching Assistant, Care Assistant, Sales Assistant and Office Assistant.
- 2 A set of three applications was developed in response to these adverts that were closely matched in terms of their education, skills and work history.
- 3 Ethnic identity was conveyed using names found to be widely associated with the ethnic groups included in the study (black African, black Caribbean, Chinese, Indian, Pakistani/Bangladeshi, white). These names were randomly assigned to each application (one of the three was white, with the other two from different minority ethnic groups).
- 4 Responses from employers were monitored, with the key positive outcome being a call-back for an interview.
- 5 Discrimination was measured as differential treatment at an aggregate level between the ethnic groups in the study (the fact that applications were sent for the same vacancies provided the control).

The ethical dimensions of the study were considered by the researchers in their review of the literature on field experiments and by an internal ethics committee. The view formed was that the burden for employers of considering an additional three applications while engaged in a public recruitment process was minimal, and that a speedy response to decline offers of interviews would minimise problems. This report is careful not to identify the organisations included in the sample.

Between November 2008 and May 2009 a total of 2,961 applications were sent to 987 advertised job vacancies. This period coincided with the sharpest recession in 50 years in the UK and is likely to have had a significant effect on the study in terms of reducing the number of applications resulting in positive responses from employers. One or more of the three applications to a particular vacancy received a positive response from an employer in 155 of the sets (or 16 per cent).

Results

Overall racial discrimination

We adopt a **net** measure for describing the level of discrimination that is based on the 155 sets of applications where one or more positive response was received. This is calculated by subtracting the proportion of the ethnic minority applications that received a positive response from employers (39 per cent) from the proportion for white applications (68 per cent). So, the net discrimination in favour of white names over equivalent applications from ethnic minority candidates was 29 per cent. This level is both high and statistically significantly different from zero.

The advantage of this measure is that it is not affected by the level of success that the research team had in achieving the required quality of applications. However, an alternative and perhaps more intuitive way of expressing the same result is to look at the percentage of 'successes' for different groups based on **all** sets of applications. Of the 987 applications with a white name, 10.7 per cent received a positive response. This compared to 6.2 per cent of the 1,974 applications with an ethnic minority name – a net difference of 4.6 percentage points. Put another way, 16 applications from ethnic minority applicants had to be sent for a successful outcome in our test compared with nine white. That is, 74 per cent more applications from ethnic minority candidates needed to be sent for the same level of success.

The figures in the remainder of this summary refer to the preferred net discrimination measure based on the 155 sets of applications for which one or more positive responses were received.

Discrimination for individual ethnic groups

The test design allows us to look at discrimination for each of the individual ethnic minority groups. This was of particular interest, as studies (for instance Heath and Cheung, 2006) have shown there to be considerable variation **between** ethnic minority groups in the severity of the ethnic penalties observable in labour market outcomes.

The level of racial discrimination was found to be high across **all** ethnic groups. Although there was some variation in the level, ranging from 21 per cent for Pakistani/Bangladeshi names to 32 per cent for Indian, Chinese and black Caribbean names, the differences between the groups were not statistically significant.

It should be noted that the names used to convey ethnicity were more successful for some ethnic groups than others (the 'black Caribbean' names were not as well attributed to that group as the 'Indian' names for instance). However, on this evidence, it does **not** appear that differences in labour outcomes **between** minority ethnic groups are the result of differences in the level of discrimination in the application phase of the recruitment process.

Gender and area

Although the number of tests in the sample is relatively small, we can look at the level of discrimination for various subgroups relating to the type of applicant, the nature of the role, the nature of the employer and the process for applying for the work.

There was a high level of racial discrimination for applications of both genders. The level of discrimination was somewhat higher among male applicants (32 compared to 26 per cent), but this was not statistically significant.

Similarly, there was little to suggest that racial discrimination was a problem confined to particular cities in Great Britain. The numbers of useable sets of applications in each of the seven cities included in the test were too small for differences between them to be statistically significant, but the results suggest high levels of discrimination across the board.

Nature of employer and occupation

The range of occupations included in the study aimed to provide a mix of higher and lower skilled jobs. The occupations in our test can be grouped together simply into 'higher level' (IT Technician, Accountant, Human Resources Manager, Teaching Assistant) and 'lower level' (IT Support, Accounts Clerk, Office Assistant, Care Assistant). There was some suggestion that racial discrimination was lower for higher level vacancies (23 per cent compared to 33 per cent), although this was not a statistically significant difference.

The Civil Service and other public sector organisations are required by law to promote equality and make efforts to reduce racial and other discrimination. Public sector employers in our test were considerably less likely to have discriminated on the grounds of race than those in the private sector (four per cent compared to 35 per cent). The difference between them was statistically significant.

It might be supposed that organisations with larger workforces would be more likely to have a dedicated human resources function and have documented procedures for recruitment. The number of employees at the site of the organisation could be obtained for around half of the cases in our sample. The results are only suggestive due to the small base sizes, but larger employers were found to discriminate less in our test.

Application process

There was virtually no net discrimination (one per cent) for sets of applications where the employer's own form had been used. This compared to 38 per cent where a CV had been sent. This difference was statistically significant. This result may relate to employer forms often being designed so that the section containing personal details (including name) can be detached before the sifting process. This is in addition to the standardisation of applications in favour of characteristics pertinent to the job. Further, these measures may be associated with organisations with dedicated human resources functions and well-developed procedures.

Part of the explanation for the absence of net discrimination among public sector employers may be the widespread use of standard application forms. Forms were used in 79 per cent of public sector applications compared to six per cent of those to private sector employers.

Conclusions

The random assignment of names to convey ethnicity in applications in this correspondence test mean there are no plausible explanations for the difference in treatment found between white and ethnic minority names other than racial discrimination.

High levels of name-based net discrimination were found in favour of white applicants. This is consistent with the high levels of discrimination found in studies in other countries in recent years. This relates only to the early stage of the recruitment process, and there are limitations with the approach in terms of the occupations and vacancies that it was possible to cover. Nevertheless, candidates were denied access to a range of jobs in a range of sectors across British cities as a result of having a name associated with an ethnic minority background.

The level of discrimination was consistent across the ethnic minority groups included in the study, suggesting that it accounts for a proportion of ethnic penalties for **all** ethnic groups. However, it does not appear to account for the difference **between** minority groups.

The findings point to the potential effectiveness of a practical lever for tackling the problem. No discrimination at the first stage of recruitment was found where employers were using their own forms for the process (as opposed to CVs).

1 Background

1.1 Introduction

This report shows the findings from a field experiment to estimate the extent of racial discrimination in key areas of the British labour market. The task of this study was to collect factual evidence to test the assertion that discrimination is a significant factor affecting labour market outcomes for members of ethnic minorities.

The Department for Work and Pensions (DWP) commissioned the National Centre for Social Research (NatCen) to carry out this study in a context of continued policy focus on how best to promote equal opportunities. The research was commissioned after the employer-led Business Commission on Race Equality recommended 'matched CV' testing to measure progress towards eliminating the ethnic minority employment gap. The Chancellor of the Exchequer accepted the recommendation on 'matched CV' testing and asked the Ethnic Minority Employment Task Force to oversee delivery and report back to him in writing by December 2009. The Equality Bill was before Parliament at the time of writing, and we hope that the findings in this report represent a useful addition to the evidence to inform debate.

1.2 Ethnic minority penalties in the labour market

That there are ethnic penalties in employment in Britain is a well-established fact. A recent study by Professor Anthony Heath and Professor Yaojun Li looked at differences in labour market attainment for males belonging to different ethnic groups during the period 1972 to 2005 (Li and Heath, 2008). The study assessed ethnic penalties after controlling for measures of human capital, predominantly education. Heath and Li found that black and Pakistani/Bangladeshi men became more likely to be unemployed during the period. While Indian men's labour market status improved over the period, the situation of black Caribbean, black African and Pakistani/Bangladeshi men worsened (Li and Heath, 2008).

Another authoritative study is the report for DWP by Professor Anthony Heath and Dr Sin Yi Cheung of Oxford University (2006, DWP Research Report No, 341). They make an important distinction between the overall or 'gross' level of inequality and the 'net patterns' that remain after controlling for differences in characteristics of the various ethnic minority groups, such as the age profiles and levels of education of members. The way in which these differences are controlled is through multivariate statistical analysis. While the net differences are smaller than the overall gap, there remains evidence of a 'net ethnic penalty' in employment. The size of the penalty was shown to vary across different ethnic groups as well as for men and women. Those ethnic minority members born and educated in Britain, so-called 'second generation migrants', experience ethnic penalties in a similar way to the first generation.

Heath and Cheung are careful to emphasise that the ethnic penalty may arise for a number of reasons and that their evidence does not identify the causal processes. They identify the following factors as plausible contributors to the gap:

- lack of information about job opportunities;
- lack of contacts with potential employers;
- difficulties of transport to areas where job vacancies are located.

They make it clear that their research method is suggestive of the role of discrimination, but is not able to demonstrate the extent to which it contributes to the ethnic penalties.

Carmichael and Woods came to a similar conclusion in 2000 when they argued that the ethnic penalties experienced by minority workers were not fully explained by differences in human capital endowments and personal characteristics. They attributed at least some of this difference to discriminatory selection practices among employers (Carmichael and Woods, 2000).

According to this study:

'Discrimination in selection practices is [therefore] consistent with lower occupational status as well as higher unemployment and lower average earnings for ethnic minorities.'

(Carmichael and Woods, 2000 pg 73)

However, the evidence of ethnic minority penalties has been challenged. For example, the eminent US economist, Professor James Heckman, summarised considerable literature on the US situation in these terms (1998 Heckman):

'Most of the disparity in earnings between blacks and whites in the labor market of the 1990s is due to the differences in skills they bring to the market, and not to discrimination within the labor market.'

(1998: 101)

Heckman went on to describe discrimination as 'the problem of a previous era'.

Employers are interested in the productivity or employability of their workforce. These can be seen as synonyms for the term 'skills' used by Heckman. It is by no means clear that the statistical approach used by Heath and Cheung, being limited to the characteristics recorded on major surveys, is able to approximate to these characteristics of employees or potential employees.

An alternative view of some significant causes of ethnic penalties is that they may arise through a process known as 'statistical discrimination'. As described by Pager and Karafin (2009) much of the discussion on the causes of discrimination focuses on the rationality of employer decision making. Information is scarce when employers are making recruitment decisions. Knowing about the age and education of an applicant may be insufficient, given that the employer is also interested in other factors that influence productivity, such as motivation and social skills. In this situation, employers may rely on observable characteristics that they believe are correlated with the unobserved characteristics. The implication of this view is that employers are behaving in a manner that may appear rational (albeit what they are doing contravenes legislation on equal opportunities), rather than being motivated by 'preference-based' discrimination, when they make decisions that result in ethnic penalties.

Discriminatory outcomes may also result from processes that are not consciously intended to be discriminatory but which nevertheless have that effect. Roberts and Campbell (2006) find no evidence of overt discrimination in their analysis of interviews for low-skilled jobs, but identify penalties for first generation migrants who are not familiar with the conventions of British job interview question style and organisational culture.

Another aspect of this more indirect discrimination would be where recruiters do not apply strictly job-related criteria in their recruitment process, and instead base choices on how personable they themselves find a candidate to be. In some cases this may have the effect that they recruit people from their own ethnic and socio-demographic group.

1.3 Policy measures to reduce inequality

Heath and Cheung (2006) provide a useful discussion of potential policy measures that may address the ethnic penalties in employment. Among the policy measures they discuss are:

- addressing educational inequalities;
- active labour market policies (not necessarily targeted at ethnic minorities, but towards residents in deprived areas);
- improved careers services at further education colleges and universities;

- extending the Race Relations (Amendment) Act 2000 to cover the private sector, perhaps with monitoring and enforcement arrangements;
- as an alternative to legislation, to develop voluntary schemes for ethnic minority monitoring.

The latter point is supported by the comment that:

'It may well be that a great deal of the ethnic disadvantage in the private sector is unintentional and unrecognised by senior management. Monitoring schemes may well...encourage responsible employers to address the weaknesses identified'.

(2006: 69)

However, they are also clear that:

'One implication of our research is that more work needs to be done on the causal issues, perhaps through careful monitoring of pilot policy interventions or through field experiments on racial discrimination'.

(2006: 66).

The National Audit Office (NAO) reported on DWP's role in increasing employment rates for ethnic minorities (NAO, 2008). This report notes that the Department has used mainstream employment services as the principal instrument. While this approach has achieved a reduction in the employment gap, there is more that can be done (2008: 8). The NAO makes six recommendations:

- all future City Strategies for areas with significant ethnic minority populations should include targets for ethnic minority employment as a condition of funding;¹
- in more flexible New Deal programmes, changes should be made to meet the needs of ethnic minority customers, such as in the length, content and format of training courses;
- Jobcentre Plus should increase awareness among ethnic minorities of reporting arrangements where discrimination has been perceived to occur;
- Jobcentre Plus Districts should identify services local organisations can provide to ethnic minority customers;
- Jobcentre Plus should bring good practice in ethnic minority employment to the attention of personal advisers;
- the Department and Jobcentre Plus should conduct a further customer survey of ethnic minorities to identify trends since the last survey in 2005.

¹ However, the report notes that *'the Department does not accept this recommendation on the grounds that power has been delegated to the local level and targets can be included through negotiation between the Department and local organisations'* (2008: 9).

An EU report published in 2007 (Makonnen, *Measuring Discrimination, Data Collection and EU Equality Law*, European Commission) drew attention to the importance of data in ensuring protection from unequal treatment. As well as national statistical sources, this was concerned with quantitative monitoring by employing organisations.

1.4 Recruitment practices and discrimination in employment

It is difficult to know whether discrimination in recruitment is decreasing over time. For the US, on the basis of surveys conducted over a number of years, Holzer reported that:

'Discrimination became less pervasive in the tight labor markets of the late 1990s, as employers could no longer find alternative job applicants'.

(2006: 4)

This illustrates one of the ways in which ethnic penalties may be related to the state of labour markets. The scope for discrimination is possibly greater where there is a high rate of unemployment and in those jobs where it is more common for recruits to have been unemployed.

An analysis of recruitment behaviour showed considerable differences related to the level of skill of the job vacancy (Pelizzari, 2005)². Where the skill level was low, an employer could provide training in a very short period, and whether or not a recruit had acquired the skills needed would be apparent very quickly. The evidence showed that in this situation, employers invested little in selection and relied on a policy of 'hire and fire' once they had been able to observe which recruits were working at an appropriate level of performance³. In contrast, with

² This study, drawing on a 1992 survey of those responsible for recruitment in a large sample of British establishments (Hales, 1993), is notable for drawing attention to the recruitment behaviour of employing organisations, whereas there is a much greater literature on the behaviour of individuals in seeking jobs. The 1992 survey included questions on equal opportunities and the measures respondents wished to adopt to improve opportunities for groups such as disabled people, the long-term unemployed and ethnic minority group members.

³ Another perspective on the same phenomenon comes from sociological discussion of networks: if people are networked with others who face similar levels of disadvantage in the labour market, then they will tend to work in low-quality jobs with high instability, since these are the jobs that their contacts give them leads about (Granovetter, 1995). An alternative 'information-based' theory would be that people applying for jobs through formal channels know little about the jobs they will be doing, and lack the existing ties to someone in the workforce to help with the settling-in time at the beginning, and this makes them likely to quit if they are not dismissed.

high skilled jobs, employers invested much more resources in selection. While they might use an application form for the initial short-listing of applicants, they would use psychometric testing or aptitude tests to confirm the conclusions of interviews. The consequence of this greater investment was that higher skill jobs attracted higher wages, lasted longer and led to more satisfaction with the person recruited. It is worth noting that the analysis by Pelizzari appears to contradict the information given by around two-thirds (69 per cent) of respondents, who had said their establishment used a standardised recruitment procedure for all vacancies.

Drawing their evidence from the employee element of the 1998 Workplace Employee Relations Survey, Noon and Hoque (2001) identified less favourable treatment of ethnic minorities in the workplace in several key respects. The analysis was based on almost 24,000 employee responses⁴, and covered four topics that employees might have discussed in the past year with a supervisor: how they were getting on with their job, their chances of promotion, their training needs and their pay. Summarising their findings, the analysis showed:

- ethnic minority men were less likely than white men to have held discussions with a supervisor on their job and pay;
- ethnic minority women received poorer treatment than white women in all respects;
- workplaces with positive action measures and monitoring of equal opportunities policies had equal treatment of both men and women;
- unionised workplaces showed greater inequality in treatment, while there was more equal treatment in non-unionised workplaces (although ethnic minorities may benefit from collective bargaining on pay in unionised workplaces).

1.5 Field experiment approaches: actors and correspondence tests

The method of 'field experiments' has been developed to estimate the prevalence of discrimination in recruitment. Initially, in both the UK and the US, this was based on actors who presented themselves as applicants for housing or job vacancies. This approach has been extensively applied in a range of settings, notably in testing for discrimination in access to housing, and similarly in access to financial arrangements and in retailing of cars. Where the negotiation of access occurs face to face, it is difficult to see an alternative. A recent discussion of this approach is provided in National Research Council (edited by Blank *et al.*, 2008), where this is presented as the usual approach to field experiments.

Riach and Rich (2002) examined the existing studies on ethnic discrimination and came to the conclusion that experiments involving personal approaches have

⁴ The sample included 328 ethnic minority men and 364 ethnic minority women.

been widely criticised due to problems with motivation and matching of testers and the possibility of unobserved differences between the actors (see Ward 1969 and Heckman, 1997). Riach and Rich recommended the written test or the 'CV testing approach' as a solution (2002, 509).

The 'CV testing approach' was developed by Jowell and Prescott-Clarke (1970) for measuring discrimination in recruitment. They considered and rejected two other approaches:

- a survey of the actual employment situation...would contribute little in the way of concrete evidence;
- the PEP (now PSI) approach of sending 'actor applicants' is costly and 'the inherent drawbacks of the technique are simply not capable of validation'. The authors highlighted the issue of the actors' motivation, noting suggestions there may be a conscious or unconscious motive to prove discrimination. They point out this argument is tenuous, but motivation differences are unprovable.

Their solution was to send matched written applications (soliciting an application form or invitation to interview), and to confine the measurement to one key stage in the recruitment process: testing whether the applicants would be allowed to apply or invited for interview. The technique was viewed as being only applicable to 'white collar' jobs. It is this approach, as developed through subsequent 'field experiments' in various countries that is the basis for the research design set out in this report.

The method of using feedback to written job applications, to test for differences between the response rates for different groups, has become known as correspondence testing. Riach and Rich showed in their 2002 article: *Field experiments of discrimination in the market place* how the CV testing approach has been used in various countries since the Jowell and Prescott-Clarke study. The method has been used to identify discrimination based on ethnicity, gender, age, physical appearance, disability and caste (for examples see Bertrand and Mullainathan, 2004; Booth *et al.*, 2007; Carlsson and Rooth, 2007; Galster, 1990).

The studies have used varied numbers of applications per job and several studies have added other levels of analysis such as résumé quality, firm size, type of occupation or even gender of the recruiter. One example is a Swedish study from 2007 which sent two applications to 1,552 job advertisements. It was found that the callback rate of applications with a Swedish-sounding male name was 50 per cent higher than for the ones with a Middle Eastern-sounding male name. (Carlsson and Rooth, 2007). The relative callback rate for Swedish-sounding named applications was higher in lower level occupations than in higher level occupations. Further, regression analysis showed that the ethnic difference in callbacks was related to the sex of the recruiter and to the number of employees at the workplace. Another Swedish study by Arai and Thoursie (2009) showed that individuals who had changed their name from a Asian/African/Slavic sounding name to a Swedish sounding name had significant increases in their annual earnings after the name change.

In Bertrand and Mullainathan's US study from 2004, applications were made to over 1,300 employment advertisements in the sales, administrative support, clerical and customer services job categories and nearly 5,000 résumés were sent. They found that applicants with white names needed to send about ten résumés to get one call back whereas applicants with African American names needed to send about 15 résumés (Bertrand and Mullainathan, 2004).

A more recent study from Australia conducted by Booth, Leigh and Vaganova (2009) sent over 5,000 résumés to respond to job advertisements. All of the jobs applied for were entry level positions and the result showed discrimination against all non-Anglo-Saxon named Australian applicants.

A similarly named-based discrimination study has recently been conducted in Delhi, India where the focus of the study was to study the role of caste and religion in India's new economy sectors. Three thousand, one hundred and sixty fictitious résumés were sent in response to 371 job openings. The study found no evidence of discrimination against non-upper-caste applicants for software jobs, but large and significant differences between call back rates for upper-castes in the case of call-centre jobs. There was no evidence of discrimination against Muslims for either of the two kinds of jobs (Banerjee *et al.*, 2009).

2 Test design

2.1 A correspondence test

Of the approaches described in the previous section, the one settled upon for this study was that of a correspondence test. While its focus is more limited than tests involving actors, in the sense that it can only deal with the early part of the recruitment process, it avoids the problems with those approaches. Tests involving actors are particularly difficult to implement successfully due to the requirement to match candidates across all characteristics relevant to an employer (with the exception of race). It is questionable whether this can be achieved and the objection has been raised that it cannot be known whether there are motivational differences between actors of different ethnic backgrounds who are aware of the nature of the test. By contrast, the feature of the random assignment of ethnicity to applications allows us to be confident that the test is valid.

The key elements of the approach were as follows:

- formally advertised job vacancies were identified across a particular set of occupations and areas over a specified period;
- a matched set of three plausible applications was developed in response to these adverts;
- ethnic identity was randomly assigned to each application using names widely associated with the required ethnic group (one of the three was white, with the other two from different minority ethnic groups);
- responses from employers were monitored;
- discrimination was measured as differential treatment at an aggregate level between the ethnic groups in the study (the fact that applications were sent for the same vacancies provides the control).

The ethical dimensions of the study were considered by the researchers in their review of the literature on field experiments⁵ and by an internal ethics committee. The view formed was that the burden for employers of considering an additional three applications while engaged in a public recruitment process was minimal and that a speedy response to decline offers of interviews would minimise problems. Sending fictitious applications in itself raises ethical questions, but justification is provided by the lack of alternatives to this design and the value of the subject. This report is careful not to identify the organisations included in the sample.

The following sections describe the study in some detail – interpretation of the results will benefit from an appreciation of the strengths and limitations of the test.

2.2 Number of applications per set

Three applications were sent for each vacancy in our test, one with a white name and the other two with different minority ethnic group names. In deciding on this number, considerations included the research questions to be addressed, statistical efficiency and practical limitations. In consultation with the Department for Work and Pensions (DWP) and the steering group for the project, it was decided that for the current study, being able to test for differential rates of discrimination across a number of ethnic groups was more desirable than being able to test for factors such as application quality.⁶ By sending two ethnic minority applications to the same vacancy, differences between rates of discrimination for ethnic minority groups could be assessed from a position of looking at the **same** employers and vacancies.

In principle, for a given number of vacancies, the more applications sent per vacancy the greater the statistical power of the study, but there are some practical limits. Certainly, if too many forms were to be sent after each vacancy then some employers might suspect they were part of an experiment, with the risk that all the forms are rejected. There is also the question of whether sending more than three or four applications is too great a burden on smaller organisations in particular.

2.3 Conveying racial identity

The mechanism for conveying racial identity in our study was the name of the applicant. No other markers of ethnicity were used. It is therefore vital to the success of the test that the names used are widely recognised as belonging to the intended ethnic groups. Poorly associated names would result in any actual discrimination present being understated in the results.

⁵ See Bovenkerk (1992), Riach and Rich (2004) and Wrench and Modood (2000) for discussions of the ethical considerations. Each concluded that the ethical case for the approach had been made.

⁶ Four applications were sent to each vacancy in the case of Bertrand and Mullainathan's study (2004) that looked at résumé quality.

The selected names were developed in stages. An initial long-list of names was drawn up based on those found in survey data held at the National Centre for Social Research (NatCen) to be both common within particular ethnic groups and relatively exclusive to them. Testing was carried out internally, with staff at a number of locations, to establish whether these were generally recognised as being from the anticipated ethnic group, of the anticipated gender, and whether they were neutral with regard to age and social class.

Based on this initial work, names were shortlisted and a quantitative assessment of their association with ethnic groups was carried out using an on-line omnibus panel. Each name was tested with a minimum of 650 adults of working age in Great Britain. Chinese names were not included in the quantitative study as the internal testing revealed very high levels of 'correct' association (in the sense that they associated them with the intended ethnic group when presented with a list). The results are presented in Table 2.1 for the best performing two names (one male, one female) in each of the ethnic groups tested.

Four-fifths of respondents categorised the white names correctly. This rose to over 95 per cent where 'not sure' responses were excluded. The early testing suggested that some respondents would pick the 'not sure' category as a protest against the nature of the task. The assumption in excluding them is that their recognition of names was actually similar to that of other respondents on average.

Black African names were also widely recognised, with 62 per cent correctly attributing the ethnic group for the female name, rising to 76 per cent excluding 'not sure'.

The Indian, Pakistani and Bangladeshi names had a reasonable level of association, but there was some misattribution of names between the groups. If we look at the proportion assigning the names to **either** Indian **or** Pakistani/Bangladeshi, the correct assignment of Indian names rises above 95 per cent. For Pakistani names, recognition rises to 80 per cent. This attribution to a general 'South Asian' category should be considered when interpreting results, particular as these two groups experience different levels of success in labour market outcomes.

A potential problem for the name-based approach lies with black Caribbean names. Even excluding 'not sure' responses (which accounted for a quarter of respondents for these names), only around half the sample correctly attributed the names. This seems likely to reflect the point that black Caribbean names often have white European roots. Even allowing for attribution of either black African or black Caribbean, correct recognition for the Caribbean male name was 57 per cent. The danger for the experiment is that discrimination for this group would be under-recorded.

Table 2.1 Results of testing of name recognition

Correct group	Gender	Correct attribution	Correct excluding 'not sure'	Attribution to either black group/ either South Asian group	<i>Base (n)</i>
Black African	Female	62	76	88	723
Black African	Male	53	69	85	691
Black Caribbean	Female	38	50	72	649
Black Caribbean	Male	36	48	57	705
Indian	Female	52	61	95	695
Indian	Male	57	65	97	669
Pakistani or Bangladeshi	Female	47	58	80	678
Pakistani or Bangladeshi	Male	53	63	79	663
White British	Female	81	97		754
White British	Male	82	96		660

Base: Great Britain adults aged 16-64.

Consideration was given to including other markers of ethnicity in the applications, such as mother tongue language skills or membership of particular cultural or religious groups. This option was rejected to keep the test as pure as possible and maintain a clarity of interpretation. There was a concern that to provide such attributes may imbalance the sets of applications in terms of their quality (an equivalent 'white' activity or interest would need to be identified), and may confuse the test of racial discrimination with, for instance, questions about religion or degree of integration. For similar reasons, applications were sent from British nationals educated in the UK to avoid potential statistical discrimination on the basis of assumptions about language or qualification comparability.

What the tests suggest is that four minority ethnic groups, Chinese, black African, Indian, and Pakistani/Bangladeshi could certainly be covered by the study, although inevitably some employers will not interpret names in such specific ways. (For example, faced with a Muslim Pakistani name, employers will recognise it as probably Muslim, possibly Indian or Hindu, but are unlikely to be more specific than that. And Chinese names are unlikely to be pinpointed more closely than East Asian.) It was decided that the importance of trying to explain some of the 'ethnic penalties' in the labour market faced by black Caribbean groups made it worth including names from this group in applications despite lower levels of recognition. Care would be needed in the interpretation of results.

The primary list of names used in the study is provided in Table 2.2. A further set of 12 names was developed for occasions where more than one job was applied for with the same employer.

Table 2.2 Names used in study

Name	Ethnic group	Sex
Mariam Namagembe	Black African	F
Anthony Olukayode	Black African	M
Latoya Williams	Black Caribbean	F
Erroll Griffiths	Black Caribbean	M
Grace Wang	Chinese	F
Cho Xiang	Chinese	M
Sunita Kumar	Indian	F
Sukjunder Singh	Indian	M
Nazia Mahmood	Pakistani/Bangladeshi	F
Muhammed Kahlid	Pakistani/Bangladeshi	M
Alison Taylor	White British	F
Andrew Clarke	White British	M

2.4 Cities

The cities selected for inclusion in the test were Birmingham, Bradford, Bristol, Glasgow, Leeds, London and Manchester. The rationale for the selection was that these were centres with major mixed populations. The argument put forward in a report from the Business Commission of the National Employment Panel (2007) was that these are key cities in which policies need to be applied effectively if the aim of eradicating the national ethnic minority employment gap is to be achieved.

There were a number of practical reasons for restricting the sample to a small range of geographical areas rather than being nationally representative. The main constraint was that vacancies were to be partly identified from local sources, particularly local newspapers. These were obtained via NatCen's interviewers working in local areas. Secondly, plausible local addresses and work experience needed to be produced for applications, and this could only be manageable with a small number of locations.

2.5 Occupations

The occupations included in the study were IT user support, IT Technician, Care Assistant, Teaching Assistant, Accountant, Accounts Clerk, Sales Assistant, Office Assistant and Human Resources Manager.

Decisions about which occupations to include in the study were driven more by practical constraints than theoretical ones. In principle, all occupations should be in scope for the study to get a representative view of levels of discrimination. However, the nature of the approach imposed certain requirements.

Firstly, only those occupations could be included that would be open to a formal written application process. In practice, this excluded most routine manual jobs.

A second requirement for inclusion was that it should be feasible to develop convincing applications. More senior positions would require a significant amount of specific work history to be developed and a sophisticated understanding of the work involved. The large scale of the study did not allow this. Thirdly, the number of occupations selected would need to be sufficiently small so that applications could be adequately researched and histories developed. Fourthly, with a limited number of occupations to be selected, there would need to be a sufficient flow of vacancies across the cities considered for the target numbers of applications to be reached. Within these constraints, the list of occupations represents a spread across several of the Standard Occupational Classifications. The number of occupations selected is in line with, or greater than, the studies described earlier.

2.6 Identifying job adverts for the study

Included in the test are those jobs which are formally advertised. Vacancies that are not advertised publicly or that are filled through word of mouth or speculative applications are not represented. Analysis of Labour Force Survey (LFS) data suggested that among recent job entrants, a third got their job through an advertised application procedure (this includes using Jobcentre Plus).⁷ In a further 23 per cent of cases there was a speculative application – at least some of these jobs would have been advertised.

Certain advertised jobs were excluded from the study. This included those where it was not possible to apply for the job directly, perhaps because a phone call needed to be made to the employer as a first step or where an application had to be posted. Jobs advertised by agents acting on behalf of employers were also excluded. It would not be clear whether any discrimination found was on the part of the agent or the eventual employer, and in any case registration with the agent would usually entail an interview. The LFS data on job starts suggested that 11 per cent of new starters got their jobs through agents, but that this varied by occupation. Agents were commonly operating in the IT and accountancy labour markets.

Local newspapers in each city in the study were scanned for relevant job adverts each week (these were sent to the team developing the applications by field interviewers located in those areas). The major source of adverts, however, was job-search websites. In both cases, eligible vacancies were defined using job descriptions that included possible job titles, roles and level of seniority. An additional requirement was that the employer was based in one of the cities of interest (defined by postcode districts).

Search protocols were developed for the websites that listed the particular sites to be focused on following a pilot phase. Some websites were found to not be usable as they would have required registration under the fictitious names. It is possible that the pattern of multiple applications for several different occupations

⁷ Quarterly Labour Force Survey, January to March 2008.

may have aroused suspicion, and avoiding detection was a key requirement for the study. For those sites selected, lists of search terms to use and recommendations for searching strategies were provided for different occupations and websites.

Despite the recession in the UK that accompanied the timing of our study, a sufficient flow of job adverts was found (albeit over a longer period than originally intended). Vacancies were selected at random from the available pool for applications to be developed.

2.7 Developing applications

Three template applications (one for each application in a set) were developed for each of the occupations in the study. These templates were then adapted to the specific requirements of the advert and the application procedure. This approach was essential to the efficiency of sending out a large number of applications. It also had the benefit of ensuring more consistency between and within sets of applications. Some principles were laid down for their development as set out below.

Competitive quality applicants/applications

- To maximise the number of cases for analysis, the applications should represent candidates of a level of 'employability' sufficient to minimise nil returns (where none of the applications sent in response to an advert result in a positive response to be further involved in the recruitment process). They should aim to be of higher than the average quality for the type of vacancy, while avoiding being conspicuously good or putting the application out of contention by being over-qualified.

Plausibility

- Each application should be convincing in its own right and should represent a plausible candidate for the vacancy.
- The design and content of the applications within a set should be sufficiently different for it to be unlikely that they would arouse suspicion.

Comparability

- The set of applications sent in response to an advert should be as similar as possible in the level of candidate that they represent.
- There should be random assignment of names at the end of the development process to ensure any differences between templates did not affect the validity of the test.

The templates were constructed using material from the CVs of people looking for the required type of work (a source of anonymised CVs was identified for this) together with example adverts that provided the requirements employers

were looking for and advice from people working in the relevant occupations. Considerable research went into the development of appropriate and comparable schools, qualifications and employment history. Schools needed to have been operating at the time of the stated experience and needed to be of a similar performance to one another.

Qualifications had to be closely matched between the templates, but also sufficiently different to avoid suspicion. For instance, efforts were made to understand the structure of professional accounting qualifications and to ensure that different awarding bodies were similarly regarded.

Constructing work histories was the most complex element. Real organisations that could be verified by employers were listed, although these were generally based outside the local area in case the recruiter knew about them. Years of experience were kept similar between templates, as were the types of organisation and roles carried out.

The issue for the template approach is that within an occupation there may be very varied roles. Where adverts contained requirements for specific experience or qualifications, applications were tailored to meet these. In the case of the Care Assistant template, substitute work experience was developed as part of the template depending on whether the vacancy was for work with older people, children and so on.

The most labour intensive tailoring occurred where the requirement was for the employer's own application form to be filled out rather than the team being able to send a CV. Despite the additional work involved in responding to specific questions, it was felt that this group had to be included in the sample as it was likely that some of these forms were designed with removal of personal details ready for a sifting process in mind. To omit them would overstate the level of discrimination.

Characteristics other than race that might be subject to confounding discrimination were held constant within the sets of applications. In relation to age, candidates were given similar ages in the templates (IT Support candidates were 22, 23 and 24 years old for instance). Candidates were relatively young across all the templates with the oldest being a 34 year old Accountant. Creating plausible work histories for older candidates would have been very challenging.

The gender of applicants was always the same between the three applications. Where there was reasonable representation of both genders among those working in the occupation based on LFS data, the gender of the set was assigned at random. In occupations where it is heavily dominated by a particular gender, receiving three applications from the other gender may arouse suspicions or lead to discriminatory non-response. To avoid these possibilities, in the case of Care Assistant, all applications sent were for female candidates.

A further variable that we aimed to hold constant was that of social class. This may be communicated by particular names or by residence in particular local areas. The names issue was addressed to a degree in the testing process, and postcode sectors for candidates' home addresses were checked to ensure they were all relatively mixed in ethnic profile and neutral in socio-economic profile.

As noted earlier, all applicants were stated to be of British nationality and listed British education and work histories to avoid the results being confounded with judgements made by employers about language or comparability of qualifications and skills.

A final point to make about the production of applications relates to the assignment of the names to indicate ethnic identity. To avoid any unconscious bias in the construction of the applications for or against particular ethnic groups, it was important to ensure that those constructing the applications were kept blind as to the ethnic group of the applications until a late stage. They should not know, *or be able to predict*, which group each application will be assigned to. A computerised procedure was developed to assign ethnicity as the final stage of the process.

2.8 Assessing response

A technical challenge for the study was to create fictitious personal details that were convincing and allowed employers to make contact.

2.8.1 Addresses

The first challenge was to provide an address for the applicants. One option that was considered was to ask members of NatCen's national field interviewer panel based in appropriate locations across the UK if we could use their home addresses. However, ethical considerations precluded this due to the checks (including credit checks) that employers may carry out as part of their processes. Other options, such as temporarily renting accommodation were beyond the budget for the study. Instead, fictitious addresses were created in ethnically diverse areas of the cities in the study. Census data on ethnicity was used to select a set of mixed postcode sectors. These were then used to identify postcodes and street names. Finally, a house or flat number was selected that was higher than the highest number in the selected street, providing a valid postcode and plausible address that nevertheless was not traceable.

The use of fictitious addresses raises the problem of not being able to receive postal responses from employers. It was considered to be more likely that an employer who wanted to contact an applicant to arrange a further stage in the application would choose the more immediate methods of phone or email. To encourage this, templates stated that email was the preferred means of contact. Rejections may be more likely to be sent by post, but the experiment does not rely on the researchers receiving these as different treatment is established by the absence or presence of **positive** responses.

2.82 Email and telephone details

The preferred means of contact was via email. Individual accounts were set up for each of the applicant names used in the study using internet-based providers Google, Hotmail and Live. The email addresses chosen were personalised to the name of the applicant, to provide some reassurance to the employer that this was a personal account to which correspondence about job applications could be sent. We anticipated this mode of communication to be very common in the recruitment process in most organisations. For our study, the advantage of email is that it provides the opportunity for employers to leave a detailed message about whether a next stage has been reached in the recruitment process, and it also clearly identifies the employer.

The other means of contact provided on all applications was that of mobile telephone. Twelve numbers were available for the pilot study – one for males and females within each ethnic group included.

These channels were monitored regularly and any invitations to interviews were swiftly and politely declined.

2.9 Sample of vacancies

2.9.1 Size of sample achieved

The study consisted of a small team sending three applications to each of 987 advertised job vacancies, giving a total of 2,961 applications. These were developed and sent during the period November 2008 to May 2009, coinciding with the sharpest recession in 50 years in the UK. This is likely to have had a significant effect on the study in terms of reducing the number of applications resulting in positive responses from employers. The increased competition for jobs is illustrated by a report by the Office for National Statistics (ONS) that indicated that in the first quarter of 2009 – the main period for applications in our study – vacancies in the UK were around a third down on the level in the same quarter in 2008.⁸ The vacancy rate had fallen to 1.8 per 100 employee jobs compared with 2.6 a year earlier. In the same quarter, unemployment rose 12 per cent and the Jobseeker's Allowance (JSA) claimant count by 28 per cent from the preceding quarter. It is possible that this situation may influence the level of discrimination, with some employers able to pick and choose applicants to a greater degree.

The test of racial discrimination at the heart of our study is differential treatment by employers to applications that are equivalent, on average, except with respect to the name of the candidate. The test of differential treatment in this context primarily relates to being called back for an interview. In 130 cases of our 987, one or more of the three applicants was invited to an interview. However, other forms of positive response short of an invitation to an interview were also evident.

⁸ ONS (May 2009). *The impact of the recession on the labour market*.

Where the employer responded in some other positive way, such as by asking for information about wage expectations, this was taken to be evidence of positive consideration of the application. In this way, for a further 25 cases, one or more application received a positive response, bringing the total to 155 sets of applications (or 16 per cent of the total sent).⁹

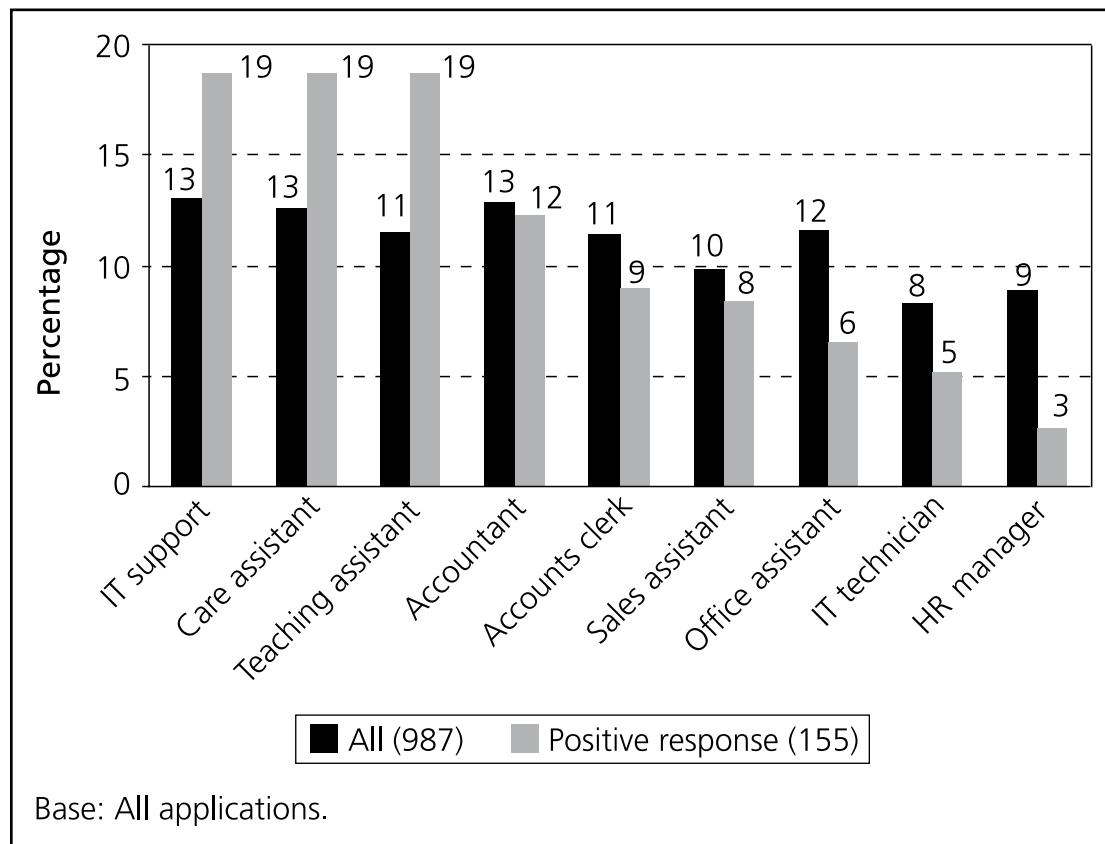
We argue in the results section of this report that the most appropriate measure of discrimination uses, as its base, those vacancies for which a positive response was received for one or more of the three applications sent. In our view, this constitutes evidence that the applications have met the minimum standard for the part of the recruitment process in which we are engaged. Rejection of all of the applications for a particular vacancy should not be viewed as evidence of equal treatment in relation to race – this is simply a failure of the test. The rest of this section looks at the characteristics of the employers, vacancies and sets of applications for both the 987 vacancies applied to and the 155 where positive responses were received for one or more of the set.

2.9.2 Occupations

The share of the vacancies provided by each occupation is displayed in Figure 2.1 for both all the vacancies applied to (987) and the sub-set for which a positive response was received for one or more of the set of applications (155). Broad quotas on the numbers of vacancies to include in the study were set, and this is reflected in the similar levels sent for each occupation (variation is partly explained by differing flows of vacancies available). However, there was considerable variation in the proportion of each occupation in the sample with positive responses. The data suggest that we were much more successful at developing applications of the required standard for IT Support, Care Assistant and Teaching Assistant roles than for other occupations. Part of the explanation in these cases may be that the qualifications required were relatively well-defined and relevant work history easier to develop. Looking at Sales Assistants and Office Assistants, the relatively lower level of positive response may be related to these being jobs suited to younger, less well qualified candidates where there will be considerable competition. In the case of the more senior IT Technicians and Human Resources Managers, the poorer result may relate to these being more challenging applications to write. However, there was a relatively good level of response for Accountants.

Logistic regression results confirmed that of the variables considered in this section (including location of employer, market sector, gender and variables relating to the process of making the application), occupation was the factor most strongly associated with one or more of the applications in a set receiving a positive response.

⁹ This was a lower level than was achieved in an earlier pilot phase before the UK recession, despite improvements made to the application templates.

Figure 2.1 Occupations in sample

2.9.3 Locations

London was the largest city in the sample, representing 40 per cent of vacancies applied to (Table 2.3). However, there was good representation across the cities, both in vacancies applied to and in the positive response samples.

Table 2.3 Locations in sample

	All sets of applications (%)	Positive response among set of three (%)
London	40	35
Manchester	17	20
Bradford and Leeds	10	15
Birmingham	16	12
Glasgow	6	8
Bristol	8	7
Other areas	3	3
<i>Base (n)</i>	987	155

2.9.4 Market sector

The level of success with public and private sector organisations was relatively similar and the representation of public sector organisations in the positive response sample was similar to that in the wider labour market (Table 2.4).

There was a good range of different employers in terms of their industry classification, although this will be driven by particular occupations (for instance Teaching Assistants in the education sector). Again, the differences in the profiles of the vacancies applied to and the positive response sample were relatively minor.

Table 2.4 Market sector and industry classification of employers in sample

	All sets of applications (%)	Positive response among set of three (%)
Sector		
Private sector	69	73
Public sector	29	25
Third sector	2	3
Industry classification (SIC 2007)		
Manufacturing	1	2
Electricity, gas, steam	1	1
Construction	1	2
Wholesale and retail, vehicle repair	17	13
Transportation and storage	1	1
Accommodation and food services	2	2
Information and communication	11	13
Financial and insurance	6	9
Real estate	1	0
Professional, scientific, technical	4	3
Administration and support services	2	3
Public administration and defence, social security	4	1
Education	18	23
Human health and social work	18	20
Arts, entertainment, recreation	2	1
Other service activities	12	8
<i>Base (n)</i>	<i>981</i>	<i>155</i>

2.9.5 Size of organisation

The number of employees at each employer site was available from a marketing data organisation for around half of the positive response sample (it was not clear whether there were systematic reasons for unmatched cases, and it could just relate to the precise organisation name and address not matching with the way the organisation was listed in the database). A good range of organisation sizes.

Table 2.5 Number of employees at site

	%
Up to 5 employees	18
6 to 10	14
11 to 20	7
21 to 50	31
51 to 100	15
101 to 200	8
201 to 350	7
351 to 500	1
More than 500 employees	0
<i>Base (n)</i>	<i>74</i>

Base: Vacancies where there was one or more positive responses and where employee number data available.

2.9.6 Gender

There was an even split in the proportion of the applications that were male and female (Table 2.6). This was the case for the total set of applications and also the sub-set of positive response cases.

Table 2.6 Gender of applications

	All sets of applications (%)	Positive response among set of three (%)
Male	49	48
Female	51	52
<i>Base (n)</i>	<i>986</i>	<i>155</i>

Table 2.7 displays the variation in gender by occupation. This was a deliberate strategy that aimed to take account of occupations that were heavily dominated by one particular gender so as not to appear unusual. Care Assistant applications were all assigned female gender, with IT occupations latterly assigned male.

Table 2.7 Occupation of applications by gender

	Male	Female	Row % Base (n)
IT technician	88	13	8
IT support	90	10	29
Accounts clerk	57	43	14
Office assistant	20	80	10
Care assistant	0	100	29
Sales assistant	54	46	13
Accountant	53	47	19
HR manager	25	75	4
Teaching assistant	48	52	29

Base: Vacancies where there was one or more positive response.

Note: All three applications to each vacancy were from the same gender.

2.9.7 Application process variables

Finally in this section, differences in the **process** of applying for vacancies are displayed in Table 2.8. We are able to look at the source of the original advert, type of application made and the mode of despatch. In each case, there was little difference in the proportions between the original and positive response samples.

Somewhat against expectation, only ten per cent of vacancies were sourced from the local press. Other studies have used this as the main or only source of vacancies, but any future study in the UK will clearly need to be based around web searches.

Employers' own forms were used in 26 per cent of applications (these were considerably more time-consuming to deal with). In about half of cases, applications were sent by post, with 29 per cent sent via websites and 23 per cent by email.

The variation on the measures presented in this section will be important to bear in mind when interpreting results from the analysis of discrimination.

Table 2.8 Application process for sample of vacancies

	All sets of applications (%)	Positive response among set of three (%)
Advert source		
Local press	9	10
Jobsearch website	84	86
Other	7	4
Type of application		
CV	74	74
Form	14	16
Web-based form	12	10
Mode of despatch to employer		
Email	23	23
Post	48	55
Web	29	23
<i>Base (n)</i>	<i>987</i>	<i>155</i>

3 Results

3.1 Overall racial discrimination

The discrimination testing literature has debated the most appropriate manner of presenting results of this type of study (see for example the review by Riach and Rich, 2002). The argument hinges on whether cases where none of the applications for a particular vacancy receive a positive response should be treated as evidence of equal treatment. In our view, discrimination on the grounds of race can only take place among a pool of applications that have reached the minimum standard in other respects during a sifting process.¹⁰ Where none of the applications in a set is assessed positively we take this to be a failure of the test (despite the possibility that a lack of response may reflect an element of randomness during a sift process). Alternative measures that include 'all rejected' scenarios as evidence of equal treatment will vary according to how good the applications were and fluctuations in labour market conditions.

The main results of our test for racial discrimination are presented in Table 3.1. The base for the calculation in column (a) is the 155 sets of applications (three applications in each set) for which one or more positive response was received. In each of these sets, one of the applications was for a white candidate, and of these 106 received a positive response (or 68 per cent – column c). The other two applications in each of the 155 sets were from ethnic minority candidates making 310 applications. Of these, 122 received a positive response, or 39 per cent (column e). The percentage point difference between the white and ethnic minority success percentages (column f) provides our measure of racial discrimination.

So, the level of favouring of applications with white names over equivalent applications from ethnic minority candidates was 29 per cent, with a 95% confidence interval of plus/minus 10 percentage points. This level is both high and statistically significantly different from zero ($p < 0.001$).

¹⁰ Our view on presenting results based on sets of applications where there was a positive result is in line with the approach recommended by the International Labour Organisation in their 1992 report.

Table 3.1 Overall racial discrimination

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME (%) ¹	Net discrimination (%) (c) – (e)
All vacancies	155	106	68	122	39	29

¹ Denominator for % calculation is twice the number in column (a) – two Black and Minority Ethnic (BME) applications sent in each set.

² Net discrimination percentage was statistically significantly different from zero ($p < 0.001$).

The measure of discrimination presented is an aggregate **net** figure (overall success of ethnic minority minus overall success of white) and as such allows us to deal with a considerable amount of what is in effect random variation in the test outcomes. Conceptually, this refers to the proportion of the test results where factors other than racial discrimination led to unequal treatment (for instance random selections by employers when faced with too many applications or some of our application templates being more attractive to employers than others, irrespective of the applicant's name). The random allocation of ethnicity in our test allows us to assume that the unequal outcomes resulting from non-relevant factors will affect white and ethnic minority applications equally when looking across the sample as a whole. Discrimination is counted as the remaining unequal treatment when the total number of outcomes in favour of ethnic minority applications is taken from the total number for white applications.

A further point to note on the net discrimination calculation is that it only represents instances of actual discrimination, where actual discrimination against one ethnic group **exceeds** that against another. Hypothetically, even if racial discrimination was rampant, if the number of employers in the sample who were discriminatory against white candidates equalled the number discriminatory against ethnic minority candidates the resulting net discrimination figure would be zero.

To provide a sense of the noise within the data, the outcomes based on the comparison of each pair of applications (the white and each of the two ethnic minority applications in each set) are provided in Table 3.2. Equal treatment (both rejected or both successful) for the white and ethnic minority applications was observed in 35 per cent of cases. In around a fifth (18 per cent) of cases, the ethnic minority candidate was favoured, while the white candidate was favoured in nearly half (47 per cent) of the tests. In our calculation of net discrimination, the 18 per cent of tests are treated as 'noise'.

What is clear is that over and above this noise, there was a high level of discrimination against applications with ethnic minority names (29 per cent of the total).

Table 3.2 Treatment within sets of applications

	%
Equal treatment	35
BME favoured	18
White favoured	47
<i>Base (n)</i>	<i>310</i>

Base: Pairs of cases where one or more of the set of three applications received a positive response.

Equal treatment is where both applications were rejected or both received a positive response.

3.2 Alternative presentations of the level of discrimination

Although our preferred measure of racial discrimination is that described in Table 3.1, other studies have presented measures that treat the 'all rejected' outcomes differently.¹¹ While these are affected by the success of the research team in generating sufficiently good applications, they provide intuitive measures and are based on the same relationships between outcomes as the preferred approach.

The 'success rate' presented in Table 3.3 for white and ethnic minority applications is simply the percentage of applications sent in our test that received a positive response. Of the 987 applications with a white name, 10.7 per cent received a positive response, compared to 6.2 per cent of the 1974 applications with an ethnic minority name. The difference between these figures provides us with a measure of net racial discrimination of 4.6 percentage points. Clearly this figure is considerably below the 29 per cent presented in Table 3.1 where the base for the analysis is those tests where the applications appeared to meet the sifting standard. The measure in Table 3.2 reflects the level of discrimination encountered in relation to a total number of applications sent of a particular standard, irrespective of whether they met the requirement (or whether the job was in fact available).

A further way of expressing the result is the ratio of success. A ratio of 1.74 was found in our test, which means that, for the standard of our applications in the particular labour market conditions at the time, 74 per cent more ethnic minority than white applications needed to be sent to get the same number of positive responses. To illustrate the point that the relationship between the measures presented is based on the same outcomes, if we divide the proportion of success for white applicants by that for ethnic minority applicants in Table 3.1 we get the same ratio of 1.74. We can also say that, within our test, we had to send nine applications from white candidates to get a successful response, compared with 16 applications for candidates from ethnic minorities.

¹¹ See, for example, the excellent study by Bertrand and Mullainathan (2004).

Table 3.3 Success rates and an alternative presentation of discrimination

	White applications sent (n)	BME applications sent (n)	Success rate: white ¹ (%)	Success rate: BME ¹ (%)	Net discrimination (%)	Success ratio: white to BME ²	Number of applications each success: White	Number of applications each success: BME
All vacancies	987	1,974	10.7	6.2	4.6	1.74	9.3	16.2

¹ Success rate is number of positive responses/number of applications sent.

3.3 Discrimination for individual ethnic groups

Labour market outcomes have been shown to vary considerably **between** minority ethnic groups. Heath and Cheung (2006) found that people from Chinese and Indian backgrounds were more likely to be employed and to attain higher levels of types of work than black Caribbean, black African, Pakistani and Bangladeshi groups. Pakistani and Bangladeshi women had particularly poor outcomes on these measures. Differences persist even when controlling for age and educational attainment.

Our test allows us to consider whether there are differences between individual ethnic minority groups in the level of discrimination found during the application process that might explain some of the variation in labour market outcomes. Applications from two different ethnic minority groups were sent to each vacancy alongside the white application. Table 3.4 compares responses for each ethnic group individually with those for the white applications. The level of racial discrimination is high and statistically significant across all the groups. Net discrimination ranges from 21 per cent for Pakistani/Bangladeshi names to 32 per cent for Indian, Chinese and black Caribbean names. However, although there was some variation, the levels of discrimination were not statistically significantly different between the ethnic minority groups ($p=0.932$).

It is worth recalling the variation in the level of name attribution between the ethnic groups here. In particular, the lower level of attribution of the 'black Caribbean' names suggests that with a more effective test the level of discrimination may have been even higher. In practice, however, the greater similarity between the names of black Caribbean and white populations may mean there is less name-based discrimination for this group than our test suggests (although of course there may be other markers of ethnic background in applications which mean that ethnicity is still conveyed).

The apparent difficulty that some people had in distinguishing between South Asian names makes it hard to explain the difference in the Indian and Pakistani/Bangladeshi applications and, as the lack of statistical significance suggests, this may not represent a real difference.

On this evidence, it does not appear that differences in labour outcomes between ethnic minority groups are the result of discrimination in the application phase of the recruitment process. This is not to discount discrimination as an explanation, as there are other points in the recruitment process and while in employment where discrimination could operate differently for particular groups.

Table 3.4 Discrimination for individual ethnic groups

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with at least one success ¹ (n)	Success: white (n)	Success: white (%)	Success: BME group (n)	Success: BME group (%)	Net discrimination (%) (c) – (e)
White and black African	71	51	72	31	44	28
White and black Caribbean	57	39	68	21	37	32
White and Chinese	60	41	68	22	37	32
White and Indian	66	44	67	23	35	32
White and Pakistani/Bangladeshi	56	37	66	25	45	21

¹ A positive response for any of the three applications is taken as evidence that the set should be included in the calculation.

² Net discrimination percentages not significantly different to one another ($p=0.932$).

We can again consider the alternative presentation of these results in terms of overall success rates (Table 3.5). The success rate for white applicants varies in each row as each base only includes those applications sent alongside the particular ethnic minority group analysed. In this way we control for variation between the employers.

Nearly twice as many Indian applications had to be sent for the same level of successful outcomes as for white applications. Mirroring the findings in Table 3.4, there was somewhat less net discrimination for the Pakistani/Bangladeshi applications, but in general the levels were similar across the individual ethnic minority groups and differences were not statistically significant.

Table 3.5 Success rates for individual ethnic groups

	Sets of applications with pairing (n)	Success rate: white ¹ (%)	Success rate: BME ¹ (%)	Net discrimination (%)	Success ratio: white to BME ²	Number of applications each success: White	Number of applications each success: BME
White and black African	400	12.8	7.8	5.0	1.65	7.8	12.9
White and black Caribbean	399	9.8	5.3	4.5	1.86	10.2	19.0
White and Chinese	393	10.4	5.6	4.8	1.86	9.6	17.9
White and Indian	393	11.2	5.9	5.3	1.91	8.9	17.1
White and Pakistani/Bangladeshi	389	9.5	6.4	3.1	1.48	10.5	15.6

¹ Success rate is number of positive responses/number of applications sent.

² Ratio = % white success/% BME success.

3.4 Occupation and sector

There was variation in the level of racial discrimination within different occupations, although net discrimination against ethnic minority groups was evident across them all (Table 3.6). The small base sizes within the occupations mean that the differences were not statistically significant. At the lower end of the range, the level of discrimination against ethnic minority names was 14 per cent, rising to 45 per cent for office assistants (although this estimate was based on only ten cases).

The range of occupations included in the study aimed to provide a mix of higher and lower skilled jobs. Any differences in treatment between these occupations might reflect smaller pools of candidates for some higher-skill occupations, differences in those carrying out the sifting process or a different profile in the group of employing organisations and their processes. The occupations in our test can be grouped together simply into 'higher level' (IT Technician, Accountant, HR Manager, Teaching Assistant) and 'lower level' (IT Support, Accounts Clerk, Office Assistant, Care Assistant). There was some suggestion that racial discrimination was lower for higher level vacancies (23 per cent compared to 33 per cent), although this was not a statistically significant difference. This relationship has also been found in other studies (for instance the Swedish study by Carlsson and Rooth, 2006).

The Civil Service and other public sector organisations are required by law to promote equality and make efforts to reduce racial and other discrimination. There have been various strategies for achieving these aims over recent years and the public sector has championed best practice for recruitment and sought to lead by example.¹²

Public sector employers in our test were considerably less likely to have discriminated on the grounds of race than those in the private sector (four per cent compared to 35 per cent) (Table 3.7). The difference between them was statistically significant ($p=0.007$). The low level of discrimination apparent among public sector employers was statistically not significantly different from zero.

¹² See for instance *Promoting Equality, Valuing Diversity: A Strategy for the Civil Service*, Cabinet Office, July 2008.

Table 3.6 Discrimination by occupation

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME ¹ (%)	Net discrimination (%) (c) – (e)
Teaching assistant	29	19	66	30	52	14
Sales assistant	13	8	62	11	42	19
Accountant	19	13	68	16	42	26
Care assistant	29	20	69	23	40	29
IT technician	8	5	63	5	31	31
IT user support	29	20	69	20	34	34
Accounts clerk	14	10	71	9	32	39
Office assistant	10	8	80	7	35	45
HR Manager	4	3	75	1	13	63
Higher level occupations ²	60	40	67	52	43	23
Lower level occupations ³	95	66	69	70	37	33

¹ Denominator for % calculation is twice the number in column (a) - two BME applications sent in each set.

² Higher = IT Technician, Accountant, HR Manager, Teaching assistant.

³ Lower = IT Support, Accounts clerk, Office assistant, Care assistant.

⁴ P-value for test of difference in discrimination by occupation = 0.864; p-value for difference in two category split = 0.396.

Table 3.7 Discrimination by employment sector of employer

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME (%) ¹	Net discrimination (%) (c) – (e)
Public sector	38	21	55	39	51	4
Private sector	113	81	72	82	36	35

¹ Denominator for % calculation is twice the number in column (a) – two BME applications sent in each set.

² P-value for difference is 0.007.

In interpreting this apparent gulf between private and public sector recruitment practice, the prevalence of Teaching Assistants in our test should be considered.

Of public sector vacancies in the sets with a positive response, 63 per cent were Teaching Assistants (compared to four per cent in the private sector). Nevertheless, the very low level of discrimination found overall suggests there was comparatively lower discrimination across the occupations included in the public sector sample.

Part of the explanation for the absence of net discrimination among public sector employers may be the widespread use of standard application forms rather than the acceptance of CVs. Forms were used in 79 per cent of public sector applications compared to six per cent of those to private sector employers (Table 3.8). Not only do forms have the effect of standardising comparisons between applicants, many forms produced by employers are designed to include personal details (including names) in a section that can then be detached from the rest of the application for the sifting process. This is particularly pertinent to the design of our test. We look at the association of these modes of application with racial discrimination in Section 3.7.

Table 3.8 Type of application for public and private sector

	Private sector (%)	Public sector (%)
CV	94	21
Employer's own form	6	79
<i>Base (n)</i>	112	38

Base: Vacancies where one or more of the set of applications received a positive response.

3.5 Size of employer

It might be supposed that organisations with larger workforces would be more likely to have a dedicated human resources function and have documented procedures for recruitment. These procedures may include the use of standard forms and rules surrounding sift criteria. More professional approaches to recruitment may result in a lower level of discrimination.

The number of employees at the site of the organisation could be obtained for around half the cases in our sample. Table 3.9 provides the level of discrimination separately for organisations with up to 50 employees and those with more than 50. The results are only suggestive due to the small base sizes, but larger employers were found to discriminate less.

Table 3.9 Discrimination by number of employees at site

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME (%) ¹	Net discrimination (%) (c) – (e)
Up to 50 employees	51	39	76	40	39	37
Over 50 employees	23	14	61	20	43	17

¹ Denominator for % calculation is twice the number in column (a) – two BME applications sent in each set.

² Base is vacancies for which employee number information available.

³ P-value for difference is 0.230.

3.6 Area and gender

There was little to suggest that racial discrimination was a problem confined to particular cities in Great Britain. The numbers of applications sent to employers in the cities listed in Table 3.10 are too small for differences between the cities to be statistically significant, but the results suggest high levels of discrimination across the board.

Table 3.10 Discrimination by location of employer

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME (%) ¹	Net discrimination (%) (c) – (e)
Bradford and Leeds	23	15	65	21	46	20
Glasgow	12	9	75	13	54	21
Bristol	11	7	64	8	36	27
London	55	38	69	45	41	28
Birmingham	18	12	67	13	36	31
Manchester	31	22	71	18	29	42
Other areas	5	3	60	4	40	20

¹ Denominator for % calculation is twice the number in column (a) – two BME applications sent in each set.

² P-value for difference by group = 0.927.

Similarly, there was a high level of racial discrimination for applications of both genders (Table 3.11). The level of discrimination was somewhat higher among male applicants (32 compared to 26 per cent), but this was not statistically significant. Other studies have also found levels of discrimination between male and female applicants to be similar.¹³

On a point of interpretation, although there were some differences between occupations in the profile of male and female applicants assigned in the sample (IT Support and IT Technicians predominantly male, Care Assistants exclusively female), there was a good range of occupations for each gender (see, Table 2.7).

Table 3.11 Racial discrimination by gender

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME (%) ¹	Net discrimination (%) (c) – (e)
Female	80	54	68	66	41	26
Male	75	52	69	56	37	32

¹ Denominator for % calculation is twice the number in column (a) – two BME applications sent in each set.

² P-value for difference = 0.729.

3.7 Variation in the application process

Discriminatory outcomes can be traced for some specific elements of the recruitment process – channels of advertising, types of application required by employers and the mode by which applications are received (Table 3.12). These elements of the recruitment process may be of particular interest to policy makers, who may feel they represent practical levers via which discrimination might be tackled.

¹³ See for instance Bertrand and Mullainathan (2004).

Table 3.12 Discrimination and recruitment process variables

	(a)	(b)	(c)	(d)	(e)	(f)
	Sets of applications with one or more success (n)	Success: white (n)	Success: white (%)	Success: BME (n)	Success: BME (%) ¹	Net discrimination (%) (c) – (e)
Source of advert						
Jobsearch website	133	91	68	104	39	29
Local press	16	13	81	13	41	41
Type of application						
Employer's own form	40	20	50	39	49	1
CV	114	85	75	83	36	38
Mode of despatch						
Web	34	18	53	30	44	9
Post	82	58	71	71	43	27
Email	34	26	76	19	28	49

¹ Denominator for % calculation is twice the number in column (a) – two BME applications sent in each set.

² P-value for differences by source of advert = 0.425; p-value for differences by type of application = 0.004; p-value for differences by mode of despatch = 0.117.

The very large difference in discrimination between types of application stands out. There was essentially no net discrimination (one per cent) for sets of applications where the employer's own form was used. This compared to 38 per cent where a CV had been sent. This difference was statistically significant ($p=0.004$). As noted earlier, this may well reflect the fact that employer forms are often designed so that the section containing personal details (including name) can be detached before the sifting process. This is in addition to the standardisation of applications in favour of characteristics pertinent to the job. Further, these measures may be associated with organisations with dedicated human resources functions and well-developed procedures. Clearly, the use by employers of standard forms does not in itself guarantee that good practice is followed and personal details are stripped out during sifting. However, on this evidence there appears to be a strong link between the use of employer forms and lower discrimination.

It was shown in Table 3.8 that there was a strong association between the use of employer forms and public sector vacancies in our sample. Three-quarters (75 per cent) of employer forms were for public sector vacancies, and a further eight per cent were for third sector organisations. Looking at occupations, half (50 per cent) of the employer form vacancies were for Teaching Assistant posts.

It was noted in section 3.5 above that larger employers may be more likely to have the need and resources to develop their own forms for recruitment. Table 3.13 confirms that this was the case in our sample, although the numbers are small. Over half (52 per cent) of organisations with more than 50 employees used their own forms, compared to a quarter (25 per cent) of those with 50 or fewer.

Table 3.13 Number of employees at site by type of application

	Up to 50 employees (%)	Over 50 employees (%)
CV	75	48
Employer's form	25	52
<i>Base (n)</i>	51	23

Base: Vacancies where employee numbers available.

There was some suggestion of differences in the level of discrimination according to where the vacancy was advertised (41 per cent for vacancies advertised in the local press compared to 29 per cent for those advertised on job search websites), but the relatively small number of press adverts means that conclusions cannot be drawn.

The mode by which applications were despatched also resulted in considerable variation, although differences here were not statistically significant. An explanation for the very high level of discrimination for emailed applications (49 per cent) may relate to the additional emphasis on the applicant's name that results from an email arriving in the employer's inbox with an address that is formed from the name of the applicant. However, some of the variation may be attributable to differences in the profile of types of application being sent via each mode (Table 3.12). There was a preponderance of CVs among the applications sent via email (85 per cent) although the level was also high for those despatched by post (77 per cent). There was a lower level for applications sent via a website.

Table 3.14 Format of application by mode of despatch

	Mode of despatch		
	Email (%)	Post (%)	Web (%)
CV	85	77	56
Employer's form	15	23	44
<i>Base (n)</i>	33	82	34

Base: Vacancies where one or more of the set of applications received a positive response.

Logistic regression was used to help unpick the relationships between market sector vacancies and types of application, and between modes of despatch and types of application. This analysis is an imperfect partner to the measures of discrimination presented above as it cannot focus on those cases that constitute 'net' discrimination. Instead, the dependent variable selected was **all** instances of unequal treatment **in favour of white applicants**. The results suggested that the factor most strongly associated with discrimination across pairs of tests was application by CV. In addition, sending applications by email was also found to be statistically significant for discrimination. The model included advert source, market sector (public or private), gender, ethnic minority group, occupation and area, but these factors were not found to be significant once the type of application and mode of despatch were controlled for.

4 Conclusions

The key strength of the correspondence test based on applications to vacancies described in this report is that there are no plausible explanations for the difference in treatment found between white and ethnic minority names other than racial discrimination. The reliance on names alone for conveying ethnic identity and their random assignment between sets of applications for the same vacancies ensure this.

High levels of name-based net discrimination were found in favour of white applicants (29 per cent). Sixteen applications from ethnic minority applicants had to be sent for a successful outcome in our test compared with nine white. This is consistent with the high levels of discrimination found in studies in other countries in recent years (see summaries in Riach and Rich, 2002 and Booth, Leigh and Varganova, 2009). This relates only to the early stage of the recruitment process, and we have described the limitations of the approach in terms of the occupations and vacancies that it was possible to cover. Nevertheless, candidates were denied access to a range of jobs in a range of sectors across British cities as a result of having a name associated with an ethnic minority background. It is therefore hard to avoid the conclusion that racial discrimination accounts for a proportion of the 'ethnic penalty' in labour market outcomes that ethnic minority groups have experienced over the years.

The level of discrimination was consistent across the ethnic minority groups included in the study, suggesting that it accounts for a proportion of ethnic penalties for **all** ethnic groups. However, it does **not** appear to account for the difference **between** minority groups.

A question this study does not answer concerns the nature of the process of discrimination, including the degree to which it is conscious or unconscious and whether it relates to 'statistical' discrimination where race is perceived to be associated with negative factors not observable in application forms. However, the findings point to the effectiveness of a practical lever for tackling the problem. No discrimination at the first stage of recruitment was found where employers were using their own forms for the process (as opposed to CVs). In many cases these will have a detachable section that allows personal information to be removed during

a sifting process. These were common among the public sector employers in our sample and those organisations with larger workforces where there is likely to be a dedicated human resources function. This finding may provide policy makers with evidence to support an argument for some specific changes in recruitment practice.

Appendix A

Technical appendix

Significance testing

To establish whether the levels of discrimination found in the study are likely to be genuine, all the results were tested for statistical significance. For the overall rate of discrimination of 29 percentage points, the test was of whether the difference between white and ethnic minority applicants was significantly different to zero, on a two-sided test and with a significance level set at 0.05.

To take into account the fact that applications were made in triplicate, with each vacancy being applied for by one 'white' and two 'ethnic minority' candidates, a score was set up per vacancy equal to the number of positive responses for the white candidate minus half the number of positive responses for the two ethnic minority candidates. So the score would be 1 if the white candidate was successful and neither of the ethnic minority candidates were; -1 if the white candidate was not successful and both ethnic minority candidates were; 0.5 if the white candidate was successful and just one of the ethnic minority candidates was; and so on. The distribution of scores across the 155 vacancies was as follows:

Score	Number of vacancies
-1	6
-0.5	43
0	16
0.5	35
1	55

The mean of these scores across all vacancies gives the level of discrimination as a proportion (that is 0.29). A simple t-test can then be applied to this mean to establish whether it is significantly different to zero. In this instance the standard error of the mean was 0.053, the t-statistic was 5.46 and the associated p-value is less than 0.001. Note that the standard error of 0.053 suggests that the 95

per cent confidence interval around the overall estimate of 29 percentage point discrimination is (19pp, 39pp).

To establish whether there were significant differences in mean discrimination scores between groups (by say, gender, or occupation) ANOVA tests on the scores were used.

Procedures, data collection and processing

Detailed procedures were developed for the team carrying out the study in line with the principles of the approach described in Chapter 2. At the heart of these procedures was a Microsoft Access database that was developed to record the details of the process from identifying eligible job vacancies, through the development of the applications, to the record of employer responses. The randomisation of ethnicity was handled automatically within the database. The procedures that were provided to the team at the start of the main stage of the work (following piloting) are included in these appendices.

Data from the Access database were extracted into SPSS and cleaned. Analysis was carried out using SPSS.

Marketingfile provided the data on employee numbers at the site of the employing organisation's site. It was possible to match around half of the employers in our sample to their database.

Template CVs

The template CVs that were developed for the study are available as a separate document on the Department for Work and Pensions (DWP) website (<http://research.dwp.gov.uk/asd/asd5/rrs-index.asp>). This includes the three separate templates for each of the nine occupations. These formed the starting point for applications, but were tailored according to the specific job requirements and the mode of application (where employers' own forms had to be used there was significant tailoring of these documents). See Section 2.7 for a description of how the templates were constructed.

In addition to the templates themselves, provided in these appendices is the description of the occupations included in the study that was produced for those searching for appropriate vacancies. This gives a useful overview of the types of occupation and the level at which the templates were pitched.

Appendix B

Procedures document for team producing applications

P2800 Testing racial discrimination in
recruitment practice

Procedures for Operations
Main Study
October 2008

Contents

Logging vacancies.....	54
Find the vacancy	54
Check whether the employer is already listed	54
Log employer details	54
Log the vacancy	55
Selecting a vacancy to apply to	56
Make the selection.....	56
Check for previous applications to employer	56
Record the selection on the database	57
Creating applications	57
Sending applications.....	59
By Email.....	59
By Post.....	59
Handling responses to applications	60

LOGGING VACANCIES

Find the vacancy

1. Establish the occupation and areas of vacancies to be targeted with project lead.
2. Study the detailed **job descriptions** for each occupation and the **locations** where employers are to be based contained in the vacancy search document: 'Online Vacancies search Guide'.
3. Find vacancies in newspapers or online (see vacancy search document).
4. **Check** that the **location** of the employer is within the relevant postcode districts and that the **job title** or **job description** matches the occupation.
5. **Check** that the vacancy can be **applied for directly**. This requires that:
 - there **must** be a postal or email address;
 - there must **not** be a requirement to phone to speak to someone or provide an address for a form to be posted;
 - application must be directly to the employer and **not** through an **agency** (it may require some investigation to establish this – a list of agencies has been prepared to help with this).

Check whether the employer is already listed

6. **Before** logging vacancy in the database, check **list of existing employers** by running the '1 Employers currently recorded' Query (double click on the entry under 'Queries'). There may be entries for an employer at different locations (e.g. Selfridges in Leeds and Selfridges in London).
7. If you do **not** find the employer, proceed to step 9 to log the employer's details.
8. If you **do** find the employer and location in the list when you run the query, you need to check the vacancy you have found has **not already been logged**.

Run the query '**2 Check for duplicates**' by double clicking. Scroll down the list to find the employer and note the serial numbers of the vacancies. Find the details of the vacancies in the physical file and check against the one you have found. If it is a different vacancy, proceed to step 15 to log the vacancy.

Log employer details

9. Open the form '1 Employer Details'. Create a new record by clicking on the button at the bottom right corner with an arrow and a star.
10. Enter the details of the employer. Ensure the employer name is sufficient for it to identify them (for instance 'NHS' is not sufficient – 'NHS – Birmingham Head Office' would be more useful).

11. Ensure you enter both an email address and a mailing address if available, **but at least one or the other** (otherwise an application cannot be sent).
12. State whether the employer is in the **public, private or voluntary** sector at '**market sector**'. This information may be used to make selections for applications. Examples of public sector organisations include government departments, councils, NHS hospitals and schools (unless fees are charged). A voluntary sector organisation is one which is not public but is established for purposes other than financial gain (they may still employ paid staff).
13. Make an assessment of the industry in which the employer operates – this may require some investigation on the web.
14. **Save the record** by pressing the save button in the tool bar at the top of the screen. The employer will now be listed when you enter the vacancy details.

Log the vacancy

15. Open the form '2 Advert details'. Create a new record by clicking on the button at the bottom right corner with an arrow and a star.
16. Enter the details of the vacancy as set out in the table below – **no other** fields should be filled in at this stage.

Field name	What to enter/comments
Pilot or main?	Default is already set to 'Mainstage'
Occupation	Select from drop-down list (must be entered)
Area	Area employer located – select from drop-down list (must be entered)
Advert serial	Create a serial number after entering the information above by clicking the 'Create Serial' button – must be created
Advert source type	Select where vacancy found from drop-down list
Source name	Enter detail of newspaper (including date) or paste web link
Date ad posted	If available, enter the date the advert was posted
Date for application	If one is stated in the advert, record the closing date for applications
Job title	Record the job title used in the advert – this will be referred to in the applications
Employer	Select employer from drop down list (must be entered)
Comments	Enter any comments or concerns relevant to potential applications. May include reference numbers for locating advert on the web site.

17. **Save the record** by pressing the save button in the tool bar at the top of the screen.
18. **File a physical copy** of the vacancy advert (it is not enough to have a web link as these are likely to become out of date).

SELECTING A VACANCY TO APPLY TO

1. Establish vacancies to be targeted with project lead. This will generally just be by occupation, but the location may also be a consideration.

Make the selection

2. Run the query '3 Vacancies for selection' by double clicking. This will display the available vacancies on the database that have not yet been applied for. The list is ordered in occupation groups and includes the closing date for applications where one was recorded.
3. Make the selection of a vacancy from the query output. If there is a vacancy where the closing date is imminent, this should be prioritised. Otherwise, select one at random (use the 'Selection Maker' Excel spreadsheet).

Note: if you notice a vacancy for which the closing date has passed or one that was added to the database too long ago for it to be appropriate to apply (i.e. over a month), make a note of the serial number and uncheck the box '**Application allowed?**'. This vacancy will not appear in the list when the query is run in future.

4. When you have made the selection, make a note of the serial number (or highlight it and copy it) and exit the query.
5. Open the form '3 Advert Search'. Enter (or paste) the serial number into the form and click 'Open vacancy'. This will open the '2 Advert Details' form for this serial number and allow you to see the details.

Check for previous applications to employer

6. Check whether the employer has been applied to previously. We can apply to the same employer twice if the occupation is different (e.g. we could apply for an accountant and an HR Manager role at the same employer). Run the query '**4 Check for previous applications**'. If there has already been an application for the employer for the occupation then uncheck the box '**Application allowed?**' for this vacancy and select another.

Record the selection on the database

7. If you can proceed with the application following these checks, tick the box for ‘**Application started?**’ and insert the current date in the ‘**Date started**’ field. This will take the vacancy off the list of vacancies available to be applied to.
8. Save and close the form.

CREATING APPLICATIONS

1. Locate the vacancy in the file.
2. Locate the appropriate templates for the occupation.
3. Save them into a folder on the server within the appropriate occupation named with the serial number (the exception to this will be where a form needs to be printed out and filled in by hand).
4. These are then ready to be adapted in line with the requirements of the vacancy. This may include downloading the employer’s own application form.
5. Assign a gender to the applications. All three will have the **same** gender, and for some occupations this will be pre-determined – see table below.

Occupation	Male or female	Male only	Female only
Accountant	Yes		
Accounts Clerk	Yes		
Care Assistants			Yes
Human Resources Manager			Yes
IT Support		Yes	
IT Technician		Yes	
Office Assistant	Yes		
Retail Assistants	Yes		
Teaching Assistants	Yes		

Where the gender is not predetermined, and with the exception of retail assistants where gender may need to be in line with the type of retail outlet concerned, gender should be assigned randomly using the ‘Selection Maker’ spreadsheet.

6. Applications should be completed up to the point of adding the name and address. At this point, return to the database and find the relevant entry using the form ‘3 Advert Search’.
7. Record the **gender** of the set of applications.

8. Record the format of the applications (CV will always be the preference for efficiency).
9. Click the '**Assign Ethnic Group**' button in the upper pane of the form. This will assign a set of three ethnic groups to the vacancy.
10. Click on the '**Create application**' button on the lower pane. A serial number will be created and an ethnic group will be randomly assigned.
11. Using the mouse wheel while the cursor is within the 'Application Serial' on the lower pane, scroll to the next blank record. Click the '**Create application**' button again. Repeat a third time. You have now created the records for all of the applications.
12. The ethnic group assigned to each of the applications (A, B and C) will allow you to select the appropriate **name** from the drop-down list. This should be the first of the two options for the ethnic group and gender combination – indicated by a 1 in the final column. The second name would be used if this was a second application to the employer.
13. There are different email addresses and mobile numbers associated with each of the names on the list. You can view these in the **database table** 'ApplicantNamesMainStage'.
14. Fictitious addresses for the applications are contained in the dataset table 'MainStageAddresses'.

Randomly allocate an **address** relevant to the location of the employer for each application using the 'Selection Maker' spreadsheet. There are two sets of three addresses for each area – use the first set of addresses where applying to an employer for the first time.

Once the selection of the addresses has been made, record this on the database for each template.
15. Incorporate the contact details into the applications.
16. In Word, go to File/Properties/summary and make sure that the author name is the same as the applicant name and NatCen is not mentioned anywhere. Also make sure that the file is named CV and applicant name (NOT CV Template).
17. Provide to project lead for quality check.

SENDING APPLICATIONS

By Email

1. All three applications should be sent using the same method. The preferred way of sending applications is by email. Only if the application needs to be filled out by hand or if it is specifically mentioned in the advert should applications be sent using alternative methods.
2. When sending an application via email, first test a printout to make sure the applications are absolutely finished.
3. The three emails should be sent on different days using the email addresses tailored to the different names.
4. Transfer the three applications to your USB saved under serial number and advert. Load the application to the standalone laptop using the same filing system (serial number and advert).
5. Then send the applications using the standalone laptop. The applications should be sent over three days to reduce the risk of the study being uncovered.

By Post

6. If the applications can not be sent by email, they can be distributed via the interviewers in the locations of the study. In this case the applications need to be printed on three different types of paper, packed in three different envelopes, properly addressed and stamped.
7. The three applications should be packed together and the package should be sealed with a note detailing the number of letters in the package and the dates by which the letters should be posted. The template for the interviewer note is called 'Note for interviewers regarding posting of applications'. The local interviewer can be identified using the location overview document.
8. The applications will then be posted by the local interviewer following the instructions in the note. Whenever applications should be sent by post, these should be given higher priority to make sure deadlines are held etc.

HANDLING RESPONSES TO APPLICATIONS

1. There are two ways in which responses can be identified: by email and by mobile phone message. We are not able to intercept postal responses (all addresses used are fictitious).
2. Email: Ops team scan the email addresses for responses from employers on a **daily basis**.
3. Phone: Ops team scan voice mail on all mobile phones for responses from employers on a **daily basis**.
4. The nature of the responses should be recorded on the database immediately. Applications identified through applicant name, employer, and email address/ phone number used. Possible responses to be recorded as either:
 - No response (default)
 - Acknowledgement only (for instance an email to say that the application has been received)
 - Rejection
 - Interview
 - Other further stage (for instance a request for more information, such as salary)
 - Other outcome (for instance where contact has been made but it is not clear whether this represents positive contact).

Where contact is made more than once, record the final outcome.

5. Respond to employer (by email preferably or by letter if an email address is not available) to decline further contact. The response is to be sent **on the day** of employer contact **or the following (working) day**. Use the templates from 'Responses to employers –templates' to reply to employers. Record the **mode** and **date** of the response to the employer on the database.

Appendix C

Occupation descriptions used to identify eligible vacancies

Occupations for main study

ID	SOC	SOC job title	Nature of the role	Possible skill/qualification requirements (advertises may mention these skills but are not required for the job to be eligible)	Level of responsibility	Likely salary
11	3131	IT operating technicians	Technical role relating to computer and IT systems. Could invoice their maintenance or development. Job titles may include the terms 'analyst', 'developer', 'systems', 'software', 'programmer' or 'IT professional'. This role could be a person responsible for all IT for a smaller company or working as part of a team in a medium or large sized company.	A-level and sometimes HND or degree. Specific IT experience e.g. – Windows – Network support experience (Cisco ASA/PIX Firewalls, Switches, TCP/IP – Backup routines and technology understanding – Experience of 2nd/3rd Line Support – MS SQL; MS Access (SQL, tables, queries, reports and VBA); Web Development (HTML, .NET, VB, C#, ASP); CRM systems; VPN, DHCP, VOIP, DNS and Oracle E-Business Suite	Little or no staff management. Junior technical role rather than strategic or managerial.	17-25K
12	3132	IT user support technicians	As IT operations technicians but likely to emphasise customer service role. Many mention 'helpdesk'. Likely titles include: Helpdesk support, Helpdesk analyst, Supporter, Helpdesk support analyst. These individuals will often work in a larger team.	See above and also – Knowledge of ITIL Methodology – IT helpdesk software – Skilled in Active Directory management 1st or 2nd line/level role.	Entry role.	12-19K

13	2421	Accountant	<p>Job titles may be accountant or management accountant. Chartered accountant, Finance Manager, Assistant group accountant, Divisional accountant or auditor and can be either temporary or permanent positions. Other roles may include the word accountant, but generally these will be more specialised jobs, which we should not be applying for.</p> <p>Accounting role for individuals who have qualified as a chartered accountant within the last five years. Accountants may be specialised within the areas of auditing, corporate or strategic finance, financial accounting or business recovery.</p> <p>Typical activities that auditors will carry out include risk analysis; getting to know the client's business; building relationships with the client, and checking the items that appear in the financial statements. A significant part of the checking process involves reviewing the organisation's systems to assess whether there are sufficient relevant controls (checks) in place to ensure that the accounting process operates correctly.</p> <p>Financial accounting is concerned with maintaining a set of accounting records of economic transactions by a business (bookkeeping) and preparing financial statements from those accounts. The emphasis of financial accounting is on providing accounting information to user groups other than management, for example the owners of the business and the Inland Revenue.</p>	<p>ACA, CIMA, and ACCA are the three major UK qualifications. An ACA is an associate member of the Institute of Chartered Accountants in England & Wales. (ICAEW). An ACCA will have passed the professional examinations required for membership of the Association of Chartered Certified Accountants. CIMA have passed the professional examinations required for membership of the qualified accountants and the Chartered Institute of Management Accountants respectively. The majority of individuals who become chartered accountants have a bachelor in either, Finance, Accounting, Business or another B.Sc. But it is possible to qualify without a university degree. Specific IT skills include Sage and probably highly developed h skills in Excel. These individuals will be chartered accounts. Advertised positions for partially qualified accountants will not be a high enough level.</p>	<p>Staff management common. Will often report to senior management.</p>	25-45K
----	------	------------	---	---	---	--------

14	4122	Accounts/wages clerks	Junior accountancy role involving recording of invoicing, payments, etc on accountancy software systems. Could include chasing debtors, managing budgets, wages.	May mention Purchase Ledger or Sage experience. No specific qualifications necessary. Mentions of AAT, ACCA, ACA qualifications or Sage or QBE are likely to mean the level is higher than we want.	No management responsibility. Not a strategic role. Would not include QBE or chartered accountants.	12-20K
16	4150	Office assistants	Very broad role – junior administrative. Does not include specific roles such as receptionist. Potential job titles include administrative assistant, administrative officer.	None required, although basic IT skills (Word, Excel) may be mentioned.	No staff management, entry level job.	10-15K
17	6115	Care assistants and home carers	Caring role for a range of clients (young people, disabled) in a range of settings (institutions, care homes, individuals' own homes). Could include personal care, advice on independent living, general support and advice. Would not include social workers or other roles with professional qualifications.	No qualifications required (but CRB checks may be mentioned).	No staff management, entry level job.	12-15K
18	7111	Sales and retail assistants (high street stores and department stores)	General customer assistant roles – assisting with customer enquiries, processing payments, stock control	None.	No staff management, entry level job.	10-15K

21	1135	Human Resource Manager	<p>The role differs depending on the size of the organisation. In larger organisations, the role may be called divisional Human Resource Manager or similar. Senior Human Resource Officer or Senior Human Resources Administrator may also be relevant in larger organisations. For small companies, HR director may be appropriate, but look at the salary range to check for these roles. We are looking for either Human Resource Managers in smaller companies or Senior HR Officers in larger companies. For very large companies HR officers may be appropriate.</p>	<p>CIPD Member of the Chartered Institute of Personnel and Development (CIPD). Levels of CIPD membership.</p> <ul style="list-style-type: none"> • Affiliate a basic level of membership not assessed against professional standards. • Associate awarded on completion of a support level certificate or relevant NVQ Level 3 and 4. • Licentiate awarded on completion of at least one of the first three fields of the Practitioner-level professional standards, and also on completion of relevant MBAs and NVQs (Level 5). • Graduate awarded on completion of all fields of the Practitioner-level professional standards, but where no significant HR experience is held. 	<p>Management of a team of HR assistants or officers common. A strategic role reporting to senior management. Can be a part of senior management team or referring to the Human Resource Director.</p>	30-45K
22	6124	Teaching Assistant	<p>Assistant teacher work with teachers in a classroom role. Can also be known as:</p> <ul style="list-style-type: none"> • Learning Support Assistants • Child Support Assistants • Special Needs Assistants (SEN) Special education needs 	<p>There are no set entry requirements. However, it is generally encouraged that applicants have nationally recognised qualifications. An understanding of English and maths is important in order to support classroom literacy and numeracy. People normally need to be at least 18 to begin training.</p> <p>The following are vocational qualifications suitable for teaching assistants with little experience or for those with no previous experience:</p> <ul style="list-style-type: none"> • CACHE Level 2 Certificate for Teaching Assistants • NCFE Level 2 Certificate • BTEC Level 2 Certificate • ABC Level 2 Certificate. <p>Individuals with previous experience in the area generally do not need further qualifications.</p>	<p>Entry level job, Higher level teaching assistants are not included.</p>	10-15K

References

Arai, M. and Thoursie P. (2009). Renouncing Personal Names: An Empirical Examination of Surname Change and Earnings. *Journal of Labor Economics*, vol. 27, no. 1, p 127-147.

Banerjee, A. *et al.* (2009). Labor market discrimination in Delhi: Evidence from a field experiment. *Journal of Comparative Economics*, 37, 14-27.

Bertrand and Mullainathan (2004). *Are Emily and Greg More Employable than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination*. Graduate School of Business Study, Discussion paper, University of Chicago.

Booth A. *et al.* (2009). *Does racial and ethnic discrimination vary across minority groups?* Evidence from three experiments accessed on 14 July 2009 from www.econrsss.anu.edu.au/~aleigh/

Bovenkerk, F. (1992). *Testing Discrimination in Natural Experiments. A Manual for International Comparative Research on Discrimination on the Grounds of 'Race' and Ethnic Origin*. International Labour Office, Geneva (92B09_369_engl).

Bursell, M. (2007). What's in a name? A field experiment test for the existence of ethnic discrimination in the hiring process. *Working Paper 2007:7*, The Stockholm University Linnaeus Center for Integration Studies (SULCIS) Sweden.

Cabinet Office (2003). *Ethnic Minorities and the Labour Market: Final report*. Strategy Unit. (www.strategy.gov.uk)

Carlsson, M. and Rooth, D. (2007). Evidence of ethnic discrimination in the Swedish labor market using experimental data. *Labour Economics* 14, 716-729.

Carmichael, F. and Woods, R. (2000). Ethnic penalties in unemployment and occupational attainment: evidence for Britain. *International Review of Applied Economics*, Vol. 14 No. 1, pp. 71-98.

Eriksson, S. and Lagerstrom, J. (2007). *Detecting discrimination in the hiring process: evidence from an Internet-based search channel*. Working Paper 2007:19, Institute for Labour Market Policy Evaluation (IFAU), Uppsala, Sweden.

- EU Report on 'Proving Discrimination' (2003). Report of the first experts' meeting, 14-15 January 2003. Edited by Janet Cormack, Migration Policy Group. Available on <http://www.supplierdiversityeurope.eu/multiattachments/2503/DocumentName/exp1e.pdf>
- Firth, M. (1981). Racial Discrimination in the British Labor Market. *Industrial and Labor Relations Review*. Vol. 34, No. 2 pp. 265-272.
- Galster, G. (1990). Racial discrimination in housing markets during the 1980s: a review of the audit evidence. *Journal of Planning Education and Research*, Vol 9 pp 165-75.
- Granovetter, M. (1974). *Getting a Job: A Study of Contacts and Careers*. Harvard University Press, Cambridge, Mass.
- Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *The American Journal of Sociology*, Vol. 91, No. 3, pp. 481-510.
- Hales, J. (1993). *Employers' Recruitment practices: The 1992 Survey*. Social and Community Planning Research. London.
- Heath, A. and Cheung, S. (2006). *Ethnic Penalties in the Labour Market: Employers and Discrimination*. DWP Research Report No. 341.
- Heckman, J. (1998). Detecting Discrimination. *Journal of Economic Perspectives* 12(2).
- Holzer, H. (2006). Statement by Harry J. Holzer, *Meeting of the Equal Employment Opportunity Commission*.
- Jowell, R. and Prescott-Clarke, P. (1970). Racial Discrimination and White-collar Workers in Britain. *Race and Class*, 11; 397.
- Li, Y. and Heath, A. (2008). Minority ethnic men in British labour market (1972-2005). *International Journal of Sociology and Social Policy* Vol. 28 No. 5/6, 2008 pp. 231-244.
- National Audit Office (2008). *Department for Work and Pensions: Increasing employment rates for ethnic minorities*. Report by the Comptroller and Auditor General HC 206 Session 2007-2008 1 February 2008.
- National Employment Panel (2007). 60/76 *The Business Commission on Race Equality in the Workplace*.
- National Research Council (2008). *Measuring Racial Discrimination Panel on Methods for Assessing Discrimination*. Edited by Rebecca M. Blank, Marilyn Dabady, and Constance F. Citro, National Academies Press. Available on <http://www.nap.edu/catalog/10887.html>

Noon, M. and Hoque, K. (2001). Ethnic Minorities and Equal Treatment: the impact of gender, equal opportunities and trade unions. *National Institute Economic Review*, 176; 105.

Pager, D. (2007). *The Use of Field Experiments for Studies of Employment Discrimination: Contributions, Critiques, and Directions for the Future*. ANNALS, AAPSS, 609, January 2007.

Pager, D. and Karafin, D. (2009). Bayesian Bigot? Statistical discrimination, Stereotypes, and Employer Decision Making. *The Annals of the American Academy of Political and Social Science* 621, 1, 70-73.

Pelizzari (2005). *Employers' Search and the Efficiency of Matching*. Discussion Paper No. 1862, Forschungsinstitut zur Zukunft der Arbeit, Bonn, Germany.

Riach, P. and Rich, J. (1991). Testing for racial discrimination in the labour market. *Cambridge Journal of Economics*, 15: 239-256.

Riach, P. A. and Rich, J. (2002). Field Experiments of Discrimination in the Market Place. *The Economic Journal*, 112, F480-518.

Riach, P. A. and Rich, J. (2004). Deceptive Field Experiments of Discrimination: Are they Ethical? *KYKLOS*, Vol. 57 – 2004 – Fasc. 3, 457-470.

Roberts, C. and Campbell, S. (2006). *Talk on Trial Report*. DWP Research Report No. 344, London.

Ward R. (1969). A Note on the Testing of Discrimination. *Race & Class* 1969 11: 218-223.

Wrench and Modood (2000). *The Effectiveness Of Employment Equality Policies In Relation To Immigrants And Ethnic Minorities In The UK*. Report commissioned by the International Labour Office, Geneva.

