

# Examining Hiring Discrimination through Direct Signalling: A Correspondence Study in the Thai Labour Market

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## Abstract

This study revisits Bertrand and Mullainathan (2004) and explores how correspondence studies have become a common method for examining hiring discrimination, especially in countries with visible minority populations. Although Thailand is relatively homogenous with fewer visible minorities, religious discrimination remains a concern due to the visibility of religious affiliation on national ID cards. To assess the impact of religious identity on hiring in Thailand, the study incorporated direct signals of religious affiliation in resume-based trials. Given that Muslims are the largest religious minority in Thailand, the resumes explicitly indicated "being Muslim" in the personal information section to evaluate potential hiring discrimination. Additionally, the study explored whether cultural assimilation—such as changing surnames and participating in Thai cultural clubs (TCC)—could reduce discrimination. The experiment involved sending 3,129 resumes to 1,043 employers in the Bangkok Metropolitan Region, with each employer receiving three resumes representing different treatment groups: Buddhist with a Thai full name, Muslim with a Thai full name, and Muslim with a Thai first name and an Arabic surname. After addressing critiques by Heckman and Siegelman (1993), the results revealed that Muslim applicants were less likely to receive interview invitations than their Buddhist counterparts. Moreover, cultural assimilation, such as participation in TCC, had only a minor impact on the likelihood of receiving an invitation. Surprisingly, Muslim applicants with Arabic surnames were more likely to receive callbacks than those with Thai surnames.

JEL Classification: J7, J4, K2

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Twenty years after the study by Bertrand and Mullainathan in 2004, several correspondence studies (Carlsson and Rooth, 2007; Banerjee et al., 2009; Oreopoulos, 2011; Pierné, 2013; Drydakis, 2014; Lee and Khalid, 2016; Agan and Starr, 2018; Valfort, 2017, 2020) have investigated hiring discrimination in various countries, particularly in those with visible minorities. Although Thailand is relatively more homogeneous with fewer visible minorities, it is still possible to identify minorities such as ethnicity and religious affiliation through official documents like the house registration booklet and the national ID card (Ministerial Regulations No. 4 (B.E. 2530) issued under the National Identification Card Act B.E. 2526; Civil Registration Act B.E. 2534). Employers are required to collect and register their employees' records, including making photocopies of employees' national ID cards and submitting these documents to the authorities after the selection process. It is also common for employers to check applicants' ID cards at the beginning of the hiring process. Hence, employers can learn the religious affiliations of applicants/employees at any stage of the hiring process. Therefore, these minorities can experience discrimination during such a process. Given that Muslims make up the largest religious minority in Thailand, this study investigates the impact of being a religious minority on the likelihood of experiencing hiring discrimination in the Thai labour market. We utilised direct signalling, specifically being Muslim, as part of our resume-based trials to examine hiring discrimination in the Thai labour market. We also explore whether cultural assimilation, such as changing surnames and participating in Thai cultural clubs, can reduce hiring discrimination. Finally, in August 2018, we sent 3,129 resumes to 1,043 employers, each receiving three identical-quality resumes representing three treatment groups: Buddhist with a Thai full name, Muslim with a Thai full name, and Muslim with a Thai first name and Arabic surname.

Understanding Thailand's historical context is crucial to grasping the societal factors that may influence hiring discrimination. During the Cold War, Thailand was a frontline nation and experienced a surge in migrants and refugees from neighbouring countries (Chantavanich and Rabe, 1990; Zipple, 2014). The government, driven by concerns about national security, began collecting detailed demographic and personal information from its populace, including information on ethnicity and religious beliefs (Ministerial Regulations No. 4 (B.E. 2530) issued under the National Identification Card Act B.E. 2526). Interestingly, while official identification documents such as the house registration booklet and the national ID card contained information about ethnicity, they did not include religious affiliation (Ministerial Regulations No. 4 (B.E. 2530) issued under the National Identification Card Act B.E. 2526; Civil Registration Act B.E. 2534). However, in the early 2000s, religious affiliation details started to be included on the national ID card (Ministerial Regulations No. 18 (B.E. 2542) issued under the National Identification Card Act B.E. 2526), coinciding with the civil unrest in the Muslim-majority southern provinces of Thailand (Chalk, 2008). This inclusion of religious affiliation on the ID card poses a risk of fostering discrimination against Muslims, especially in the labour market.

Several correspondence studies have explored hiring discrimination against job applicants from different religious backgrounds in various contexts, using different methods to indicate the applicant's religious affiliation. Depending on the cultural setting and circumstances, some studies have utilised Muslim-sounding names (Banerjee et al., 2009; Adida et al., 2010), while others have utilised volunteer experiences in religious associations

(Adida et al., 2010; Pierné, 2013; Koopmans et al., 2019; Yemane, 2020). Additionally, some studies have considered student experiences, such as involvement in student organisations (Wright et al., 2013) and scout associations (Valfort, 2020). Some have even suggested a more direct approach, like indicating an applicant's religion on a social network profile (Acquisti and Fong, 2020). In the context of Thailand, employers must inspect applicants' national ID cards to verify their rights to work (Labour Protection Act B.E. 2541). As a result, we have exploited these facts and have decided to openly disclose the religious affiliation of applicants on resumes as a direct and clear signal to employers.

In addition to examining the likelihood of Muslim applicants receiving interview invitations, we investigated the impact of cultural assimilation on hiring discrimination. Our study compared the callback rates for Muslims with Thai surnames to those with Arabic surnames. We also looked at the callback rates for Muslims who did and did not participate in Thai cultural clubs during their studies. We hypothesised that integrating into Thai culture by adopting Thai surnames or participating in Thai cultural activities might mitigate discrimination against Muslims, akin to the experience of the Thai Chinese community after World War II (Skinner, 1957; Auethavornpipat, 2011). Muslim applicants who exhibit cultural assimilation to Thai norms could have an advantage over those who do not highlight their assimilation. This idea of cultural assimilation aligns with the statistical discrimination theory established by Arrow (1973) and Phelps (1972), which suggests that employers might treat different groups differently based on stereotypes or statistical data about the group's behaviour.

In August 2018, we conducted a correspondence study investigating hiring discrimination in the Bangkok Metropolitan Region (Bangkok and its adjacent provinces). We sent 3,129 resumes to 1,043 employers. Each employer received three identical-quality resumes representing three male treatment groups: Buddhist applicants, Muslim applicants with Thai names, and Muslim applicants with Thai first names and Arabic surnames. To further explore the impact of cultural assimilation on hiring bias, half of the resumes stated that the applicants had participated in Thai cultural clubs. Due to resource constraints, the study did not address the gender aspect, and thus, only male applicants were included in the resumes sent. Despite the limited resources, this study has made several contributions. This study has made several significant contributions to the field. It is one of the first correspondence studies to utilise a direct signal in an experiment. Additionally, it is among the first natural experimental studies on hiring discrimination against religious minorities in the Thai and Southeast Asian labour market. Moreover, it explored the impact of cultural assimilation in the Thai context by investigating the effects of adopting Thai surnames and engaging in Thai cultural clubs. Lastly, the study has implicated the drawbacks of the current design of the national ID card.

This paper comprises five sections, starting with an introduction, followed by the experiment procedure in Section 1, results in Section 2, discussion in Section 3, and conclusion in Section 4.

## 1. Experimental Procedure

### 1.1. Mining and managing job advertisement data

We randomly selected 1,043 employers/managers in Bangkok who advertised for a “salesperson” position from June to July 2018 on job advertisement websites. To avoid detection, we did not collect more than one job advertisement from each employer/manager. Since our research focuses on discrimination against Muslim men, we excluded job advertisements that did not specify male applicants. As a result, we have 1,043 job advertisements. Summary statistics are provided in Table 1.

**TABLE 1**  
**DESCRIPTIVE STATISTICS OF JOB ADVERTISEMENT CHARACTERISTICS**

VARIABLES	MEAN
<b>Salary detail:</b>	
Not provide salary detail	0.50 (0.50)
<b>Vacancy detail:</b>	
Not mention the number of opening vacancies	0.14 (0.34)
<b>Job requirements:</b>	
Male	0.07 (0.26)
Some certain age	0.81 (0.39)
Some education	0.83 (0.37)
Matthayom 3 diploma (or Grade 9 diploma)	0.04 (0.20)
Matthayom 6 diploma (or High school diploma)	0.14 (0.35)
College diploma	0.12 (0.32)
Advanced college diploma	0.16 (0.37)
Bachelor’s degree	0.37 (0.48)
Some specific degree/diploma	0.15 (0.35)
Business	0.09 (0.28)
Engineering	0.02 (0.14)
Science	0.03 (0.18)
Social Science	0.01 (0.08)
Some experience	0.59 (0.49)
English language skill	0.17 (0.38)
Other language skill	0.03 (0.17)
Computer skill	0.31 (0.46)
Communication skill	0.60 (0.49)
Driving skill	0.35 (0.48)
<i>N</i>	1,043

NOTE. —These variables are dummy variables. If the job advertisement has certain characteristics, it will be recorded as 1. Standard deviations are in parentheses.

Overall, half of the employers were opaque regarding the pay package, and 86 per cent did not specify the number of available positions. In terms of discrimination, we found that 7 per cent of employers explicitly accepted male applicants, thus discriminating against women and transgender individuals. Additionally, 81 per cent of employers specified a desired age range, indicating age discrimination.

We found that 83 per cent of employers required applicants to have some level of education: 4 per cent required a Matthayom 3 diploma (Grade 9 diploma), 14 per cent required a Matthayom 6 diploma (high school diploma), 12 per cent required a college diploma, 16 per cent required an advanced college diploma, and 37 per cent required a bachelor’s degree. Moreover, 15 per cent of employers also specified a degree/diploma in a specific field, with approximately 60 per cent of these requiring a business degree/diploma.

Regarding other requirements, almost 60 per cent of employers required applicants to have some experience. Many (60 per cent) also required good communication skills, while others required driving skills (35 per cent), computer skills (31 per cent), and English language skills (17 per cent).

**TABLE 2**  
**CATEGORISATION OF EMPLOYERS**

<b>GROUP</b>	<b>REQUIRED EDUCATION LEVEL</b>	<b>FIELD OF STUDY</b>	<b>REQUIRED</b>
1	Advanced College Diploma	Business	No
2	Advanced College Diploma	Business	Yes
3	Advanced College Diploma	Engineering	No
4	Advanced College Diploma	Engineering	Yes
5	Bachelor's Degree	Business	No
6	Bachelor's Degree	Business	Yes
7	Bachelor's Degree	Engineering	No
8	Bachelor's Degree	Engineering	Yes
9	Bachelor's Degree	Science	No
10	Bachelor's Degree	Science	Yes
11	Bachelor's Degree	Social Science	No
12	Bachelor's Degree	Social Science	Yes
13	College Diploma	Business	No
14	College Diploma	Business	Yes
15	College Diploma	Engineering	No
16	College Diploma	Engineering	Yes
17	Matthayom 6 Diploma	Science and Maths	No
18	Matthayom 6 Diploma	Science and Maths	Yes

NOTE. —There are 18 groups of job advertisements. Each group has a different required education level, different types of education, different required fields of study, and different required experience. Matthayom 6 Diploma is a high school diploma in Thailand. For example, a job advertisement in group 1 required applicants to have an advanced college diploma in Business. Meanwhile, these job advertisements in group 1 did not require applicants to have any experience.

Since education and experience were the main requirements for most jobs in this dataset, we categorised the employers or job advertisements using the following steps. First, we separated the job advertisements into five groups based on education requirements: undergraduate, advanced college, college, Matthayom 6, and Matthayom 3. Second, we further divided these advertisements within each education requirement category based on the required field of study. Advertisements requiring a university degree were separated into four groups based on the following fields of study: science, social science, business administration, and engineering. Similarly, advertisements requiring an advanced or a college diploma were separated into two groups: business administration and engineering. For advertisements requiring a Matthayom 6 diploma or a Matthayom 3 diploma, we did not categorise them into smaller groups since none of them specified a particular field of study. Third, we categorised these advertisements within the smaller groups based on the requirement for experience. As a result, we separated the advertisements into 20 groups. Any job advertisements that did not require any specific education or field of study were randomised into other groups. Finally, since only 4 per cent of job advertisements required a Matthayom 3 diploma, we randomised these associated advertisements into other groups at the last stage. In total, we have 18 groups of job advertisements, as illustrated in Table 2.

## 1.2. Creating fictitious identities and resumes

We created 108 fictitious resumes, with 36 resumes belonging to each treatment group. The following outlines the process we took to create these resumes:

### 1.2.1 Personal information and Contact information

The study utilised first names from [th.theasianparent.com](http://th.theasianparent.com) and Arabic surnames from [flugzentrale.de](http://flugzentrale.de) and [familyeducation.com](http://familyeducation.com), creating a substantial database of names for the research. Unlike Western names, Thai names are relatively rare and distinctive. This means that, as long as the names appear Thai, they are less likely to be flagged by employers. Furthermore, Thai surnames were sourced from a local news agency, which listed the top 20 most common surnames in Nakhon Ratchasima, Thailand's second most populous province.

However, the specific list of Thai surnames used cannot be disclosed due to the Person Name Act B.E. 2505, which requires that each surname be distinct. In Thai culture, each surname is linked to a specific family, and revealing this information could negatively affect individuals using these surnames, particularly in job applications, where employers might be reluctant to reach out for fear of surveillance or monitoring.

54 first names, 6 Thai surnames, and 3 Arabic surnames were carefully selected. Ultimately, the study derived 54 full names by randomly pairing first names with surnames. After creating names for fictional applicants, the study randomly assigned addresses and birthdays to the fictitious resumes. The address district was randomly chosen from 27 of the 50 districts within Bangkok. Birthdays were randomly selected to ensure that the applicants would appear to be either 22 or 25 years old when submitting their resumes in August 2018.

The study employed direct and subtle approaches to send employers religious and cultural assimilation signals. It explicitly stated the religion of fictitious applicants on the resume, differing from the subtle approaches commonly used in correspondence studies. Additionally, the study used Thai last names in Treatment 1 and 2 and Arabic last names in Treatment 3, alongside activities to convey cultural assimilation signals. Communication with employers utilised registered Thai mobile numbers and email addresses, with one phone number and one email addresses assigned to each treatment.

### 1.2.2 Education information

We randomly selected three highly competitive public schools in Bangkok from the Office of the Basic Education Commission's list of highly competitive schools for the 2018 academic year. Each selected public school was randomly assigned to one of the treatments. Simultaneously, we randomly selected three public commercial colleges and three public technical colleges from the 2018 list of colleges under the supervision of the Institute of Vocational Education in Bangkok. Similar to the assignment of public schools, one commercial college and one technical college were randomly assigned to each treatment

Since each university might send different signals to employers (e.g., one university might be perceived as more prestigious than another), we could not assign universities to each treatment in the same way we assigned public schools and colleges. Instead, we selected three major universities in the Bangkok Metropolitan region that offer bachelor's degrees in business, engineering, science, and social science. As a result of random assignment, each treatment was assigned to different universities at different proportions, as illustrated in Table

3. University A was more likely to be randomly assigned to treatment 1. University B was more likely to be randomly assigned to treatment 3. University C was more likely to be randomly assigned to treatment 2.

**TABLE 3**  
**DESCRIPTIVE STATISTICS OF UNIVERSITY ASSIGNMENT IN THE EXPERIMENT**

<b>University</b>	<b>All treatments</b>	<b>Treatment 1</b>	<b>Treatment 2</b>	<b>Treatment 3</b>
University A	501 (100%)	224 (44.68%)	106 (21.25%)	171 (34.04%)
University B	501 (100%)	106 (21.25%)	171 (34.04%)	224 (44.68%)
University C	501 (100%)	171 (34.04%)	224 (44.68%)	106 (21.25%)
Number of observations	1503	501 (100%)	501 (100%)	501 (100%)

### 1.2.3 Activities characteristics

We obtained the list of clubs from selected public schools and universities. We then classified these clubs into two categories: Thai cultural club (TCC) and other. Subsequently, we randomly assigned clubs to each resume while ensuring equal assignment. As a result, among the 36 resumes in each treatment group, 18 represented fictitious applicants who had joined a Thai cultural club during their studies, while the other 18 represented fictitious applicants who had joined other clubs during their studies. Simultaneously, we randomly assigned club positions—vice president, publicist, treasurer, and secretary—to resumes in each treatment. This approach minimised the likelihood that employers would receive three resumes with the same club and position details, thereby reducing the chance of detection by employers.

### 1.2.4 Experience information

We randomly selected names of past job positions from our job advertisement dataset and created fictitious company names for all positions. This study also controlled for years of experience and months of experience to be identical across each treatment. However, the experiment could not have all fictitious applicants starting or quitting jobs in the same month to prevent detection. Therefore, we randomised the months that fictitious applicants started or quit their jobs. After randomisation, we verified that each treatment had approximately 2.65 years of experience or about 30 months of experience.

### 1.2.5 Resume characteristics

This study designed three resume templates from scratch. Each template used different fonts, a different order of sections, and somewhat similar levels of academic performance. Template 1 indicated that fictitious applicants had a basic education GPA of 3.26, a higher education GPA of 3.14, and a TOEIC (Test of English for International Communication, popular in Thailand) score of 525. Template 2 indicated a basic education GPA of 3.37, a higher education GPA of 3.15, and a TOEIC score of 540. Template 3 indicated a basic education GPA of 3.39, a higher education GPA of 3.09, and a TOEIC score of 550.

After creating the templates, we randomly assigned them to each treatment group equally. For job advertisements in categories 1 to 6, Treatment 1 used resume Template 1, Treatment 2 used Template 2, and Treatment 3 used Template 3. For job advertisements in categories 7 to 12, Treatment 1 used Template 2, Treatment 2 used Template 3, and Treatment 3 used Template 1. For job advertisements in categories 13 to 18, Treatment 1 used Template 3, Treatment 2 used Template 1, and Treatment 3 used Template 2. This technique helped reduce the chance of detection because employers saw three different styles of resumes across the study.

**TABLE 4**  
**DESCRIPTIVE STATISTICS OF RESUME TEMPLATES**

Variables	All treatments	Treatment 1	Treatment 2	Treatment 3
<b>Resume characteristics:</b>				
Template 1	0.33 (0.47)	0.36 (0.48)	0.33 (0.47)	0.31 (0.46)
Template 2	0.33 (0.47)	0.31 (0.46)	0.36 (0.48)	0.33 (0.47)
Template 3	0.33 (0.47)	0.33 (0.47)	0.31 (0.46)	0.36 (0.48)
Number of observations	3,129	1,043	1,043	1,043

NOTE. —Standard deviation is in parentheses. These variables are dummy variables. “Template 1” means resume used template 1. “Template 2” means resume used template 2. “Template 3” means resume used template 3.

Unfortunately, some job advertisement categories contain more listings than others, leading to uneven distribution of resume templates across treatments, as illustrated in Table 4. According to Table 4, 36 per cent of treatment 1 were assigned resume template 1, 31 per cent were assigned resume template 2, and 33 per cent were assigned resume template 3. For treatment 2, 33 per cent of them were assigned resume template 1, 36 per cent were assigned resume template 2, and 31 per cent were assigned resume template 3. Finally, 31 per cent of treatment 1 were assigned resume template 1, 33 per cent were assigned resume template 2, and 36 per cent were assigned resume template 3.

### 1.3. Data collection process

After creating 108 resumes by generating 36 resumes for each treatment in response to different categories of job advertisements, we submitted these resumes to employers from August 6th to August 14th, 2018. Each employer received three resumes with similar educational qualifications and similar experience. Then, we recorded responses from August 7th to August 30th, 2018. The study used callbacks and email replies from employers as the measurement. Once employers contacted us, we contacted them a few days later to decline the invitation to an interview.



## 2. Results

Our study found significant disparities in response rates among different applicant groups, as detailed in Table 5. Notably, Buddhist applicants with Thai names (Treatment 1) received more interview invitations than Muslim applicants. The disparity was particularly pronounced when comparing Buddhist applicants with Thai-named Muslim applicants, with the former receiving approximately 46 per cent more invitations. Similarly, Buddhist applicants outperformed Arabic-named Muslim applicants by around 27 per cent. Interestingly, only Thai-named Muslim applicants (Treatment 2) with basic education qualifications received a similar level of invitations as their Buddhist counterparts. Among Muslim applicants, we found that Arabic-named Muslims (Treatment 3) generally outperformed Thai-named Muslims (Treatment 2) by 14 per cent. However, Thai-named Muslims with experience in participating in a Thai cultural club and those with only basic education qualifications received a higher response rate than their Arabic-named counterparts, suggesting potential biases in the hiring process.

**TABLE 5**  
**AVERAGE RESPONSE RATE BY TREATMENTS**

	Treatment 1	Treatment 2	Treatment 3
<b>Sample:</b>			
<b>All sent resumes</b>	<b>11.60</b>	<b>7.96</b>	<b>9.11</b>
Number of observations	1043	1043	1043
Standard deviation	0.32	0.27	0.29
<b>Resumes with:</b>			
<b>Thai cultural clubs</b>	<b>10.69</b>	<b>8.83</b>	<b>8.41</b>
Number of observations	525	521	523
Standard deviation	0.31	0.28	0.28
<b>Other clubs</b>	<b>12.52</b>	<b>7.09</b>	<b>9.81</b>
Number of observations	519	522	520
Standard deviation	0.33	0.26	0.30
<b>Higher education</b>	<b>11.82</b>	<b>6.41</b>	<b>8.69</b>
Number of observations	702	702	702
Standard deviation	0.32	0.25	0.28
<b>Basic education</b>	<b>11.14</b>	<b>11.14</b>	<b>9.97</b>
Number of observations	341	341	341
Standard deviation	0.32	0.32	0.30

NOTE. —This table shows the response rates for all resumes sent and their subsamples. “Response” refers to callbacks or email replies from employers. The response is indicated by a dummy variable, where a response from an employer is marked as 1. “Thai cultural club” indicates resumes that mention experience in running Thai cultural clubs, while “Other clubs” indicates resumes that mention experience in running clubs other than Thai cultural clubs.

Upon reviewing Table 6, we discovered that employers with equal treatment account for 89.74 per cent of all employers. 5.45 per cent of these employers responded to all applicants. The ratio of employers who showed a preference for Buddhist applicants to those who showed a preference for Muslim applicants is approximately 1.89, with the former accounting for 6.7 per cent. However, there is a noticeable inconsistency within this group. While the majority of employers who preferred Buddhist applicants (64.33 per cent) only responded to Buddhist applicants, some also responded to either Thai-named Muslim or Arabic-named Muslim applicants. Lastly, we found that 3.54 per cent of all employers preferred Muslim applicants, with 37.85 per cent of this group responding to Muslim applicants regardless of the name used.

Importantly, some employers show a clear preference for one type of Muslim applicant over another.

**TABLE 6**  
**DISTRIBUTION OF RESPONSES BY JOB ADVERTISEMENTS**

Types of Employers	Responses (Received response = 1)			N (1043)	Percentage (100)
	Treatment 1	Treatment 2	Treatment 3		
<b>Equal Treatment:</b>				<b>936</b>	<b>89.74</b>
	0	0	0	885	84.85
	1	1	1	51	4.89
<b>Buddhist Favoured:</b>				<b>70</b>	<b>6.7</b>
	1	0	0	45	4.31
	1	0	1	16	1.53
	1	1	0	9	0.86
<b>Muslim Favoured:</b>				<b>37</b>	<b>3.54</b>
	0	1	0	9	0.86
	0	0	1	14	1.34
	0	1	1	14	1.34

NOTE. —This table illustrates the distribution of responses by job advertisements. If employers responded to a particular treatment, the response column for that treatment is marked as 1; otherwise, it is marked as 0. Employers who responded to all treatments or none are categorised as “equal treatment employers.” Employers who responded only to Treatment 1 but not to Treatments 2 and 3 are categorised as “Buddhist favoured employers.” Employers who responded to Treatment 1 and either Treatment 2 or Treatment 3 are also categorised as “Buddhist favoured.” Employers who did not respond to Treatment 1 but responded to either Treatment 2 or Treatment 3 are categorised as “Muslim favoured.”

This study used a probit regression to examine whether the effect of being Muslim will affect the likelihood of receiving an interview invitation. The results are provided in Table 7. According to Table 7, being Muslim decreases the likelihood of receiving an invitation. We found that the estimates and their marginal effects are robust and consistent with the add-drop variables method. That is, being Muslim decreases the probability of receiving an invitation by 5.4 to 5.7 per cent compared to being Buddhist. These results suggest that Muslim minorities may face hiring discrimination in the Thai labour market.

Within the same table (Table 7), we provided the effect of assimilation, such as having a Thai surname and participating in a Thai cultural club on an interview invitation. We found that having an Arabic surname increases the likelihood of receiving a callback, which contradicts our assimilation hypothesis that adopting a Thai surname may increase the likelihood of receiving a callback to an interview. We also found a negative impact of participating in Thai cultural clubs among those with an Arabic surname. However, the results are not robust. Finally, we found a small positive impact of participating in Thai cultural clubs among Muslim applicants. This finding supports our later assimilation hypothesis that participating in Thai cultural clubs may succeed in sending the assimilation signal to employers.

Regardless, the design of the field experiment could be biased even though the studies are designed to create systematically identical applications between Buddhists and Muslims. Heckman and Siegelman (1993) and Heckman (1998) raise a compelling critique, arguing that study designs might lead to biased estimates of discrimination due to unequal variances in unobserved applicant characteristics across groups.

To illustrate the impact of variance on estimates, let us assume employers select applicants based on their productivity. Productivity is comprised of observable and

unobservable components. By design, the observable characteristics are the same between the groups. However, employers do not have further information on their productivity. If these unobservable characteristics have the same expected value across groups, employers might base decisions on the variance of these characteristics. In other words, they would favour the group that is more likely to possess high productivity.

Consider two groups with different variances in unobservable productivity: a low-variance and a high-variance group. If the actual population of applicants has generally low productivity, employers might favour the high-variance group due to the increased chance of finding productive applicants. Conversely, employers would prefer the low-variance group to ensure a consistently high-quality applicant pool if the actual population has high productivity. Therefore, the estimated results could be biased due to this unequal variance. Specifically, when the variances of unobservable characteristics are comparable between the groups, the estimated results remain robust (Baert, 2015). Unfortunately, there is no information on the actual applicant population's productivity, making it impossible to determine the true level of productivity relative to the study resumes.

Neumark and Rich (2017) propose the heteroskedastic probit model to address the bias arising from unequal variances in unobserved characteristics. This model offers a significant advantage by separating the effects of variance in unobservable characteristics from the impact of discrimination. However, the model relies on the presence of variation in qualification levels among applicants. In this study, we vary GPA, English proficiency scores, educational background, and employment history. This variation in qualifications aims to create matched pairs of applicants with differing levels of qualifications to study how these differences impact hiring outcomes. This approach allows for a more robust analysis of hiring discrimination.

We controlled the variance in unobservable productivity of Muslim and provided the results of such analysis in Table 8. We found that Muslim applicants may have somewhat similar callback probability to Buddhist applicants. However, once we controlled advertisement characteristics and job requirements, we found that Muslim applicants were still less likely to receive an interview invitation. Being Muslim decreases the probability of receiving an invitation by 5.3 to 5.7 per cent compared to being Buddhist. Simultaneously, we found that an applicant with an Arabic surname also received a somewhat similar level of callback compared to those with a Thai surname (Table 8). However, once we controlled advertisement characteristics and job requirements, the estimates and their marginal effects became statistically significant. Having an Arabic surname increases the likelihood of a callback by 3.8 to 4.1 per cent compared to those with a Thai surname (Table 8). The sudden increases in statistical power may indicate the mismatch in the labour market. Besides that, we found the small positive effects of being Muslim and participating in TCC (Table 8). Although these estimates are not statistically significant, they are consistent. Lastly, we controlled the variance in unobservable productivity of being Muslim, having an Arabic surname and having participated in TCC. We provided the results in Table 9. Despite additional controls in the variances, we still reached a similar conclusion to those found in Table 8.

**TABLE 7**  
**PROBIT REGRESSION ESTIMATES AND THEIR MARGINAL EFFECTS**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin
<b>Main variables</b>												
Muslim	-0.339*** (0.111)	-0.0566*** (0.0186)	-0.343*** (0.112)	-0.0562*** (0.0184)	-0.328*** (0.112)	-0.0547*** (0.0187)	-0.331*** (0.113)	-0.0543*** (0.0186)	-0.330*** (0.112)	-0.0550*** (0.0187)	-0.335*** (0.113)	-0.0546*** (0.0184)
Arabic name	0.268* (0.138)	0.0448* (0.0230)	0.257* (0.139)	0.0421* (0.0227)	0.271** (0.138)	0.0452** (0.0231)	0.259* (0.139)	0.0424* (0.0228)	0.258* (0.138)	0.0430* (0.0230)	0.246* (0.139)	0.0400* (0.0227)
Thai cultural club (TCC)	-0.0371 (0.119)	-0.00621 (0.0198)	-0.0672 (0.119)	-0.0110 (0.0194)	-0.0301 (0.119)	-0.00503 (0.0198)	-0.0606 (0.119)	-0.00993 (0.0194)	-0.0407 (0.119)	-0.00677 (0.0198)	-0.0713 (0.119)	-0.0116 (0.0194)
Muslim x TCC	0.234 (0.154)	0.0392 (0.0258)	0.241 (0.156)	0.0395 (0.0255)	0.229 (0.155)	0.0383 (0.0258)	0.237 (0.156)	0.0388 (0.0255)	0.230 (0.155)	0.0382 (0.0258)	0.236 (0.156)	0.0384 (0.0255)
Arabic x TCC	-0.358* (0.214)	-0.0599* (0.0358)	-0.333 (0.216)	-0.0546 (0.0354)	-0.356* (0.214)	-0.0595* (0.0358)	-0.331 (0.216)	-0.0542 (0.0354)	-0.336 (0.215)	-0.0559 (0.0357)	-0.310 (0.217)	-0.0505 (0.0353)
<b>Control variables</b>												
Field of study	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Education level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
University char.	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Experience	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Club position	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CV format	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advertisement char.	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Requirements	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Observation	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129
Log-likelihood	-970.6		-950.8		-970.0		-950.3		-966.1		-945.0	
Chi-squared	32.39		74.57		33.17		76.11		39.22		85.97	

NOTE. —This table presents estimates and their marginal effects from a probit regression analysis on the effect of being Muslim, having an Arabic name, and participating in a Thai cultural club (TCC) on receiving an interview invitation. It also provides results on the estimated effects of interactions between being Muslim/having an Arabic name and participating in a TCC. Additionally, this table includes results from different model specifications to illustrate the robustness of the findings. Each model incorporates different groups of control variables. Field of study includes the effects of having a diploma or degree in Business, Engineering, Science, and Social Science. Education level refers to the effects of having a high school diploma, college diploma, advanced college diploma, and bachelor's degree. University characteristics include the effects of receiving a degree from specific prestigious universities in Bangkok. Experience includes the effects of job experiences and the duration of unemployment. Club position refers to the effects of the positions held by applicants when running clubs in school/college/university, such as vice-president, secretary, publicist, and treasurer. Advertisement characteristics include whether employers provided income ranges or performed gender and age discrimination. Job requirements include specific degree requirements, English proficiency, communication skills, and a driving license. Standard errors in parentheses. \* indicates statistical significance at the 90% confidence level, \*\* at the 95% confidence level, and \*\*\* at the 99% confidence level.

**TABLE 8**

**ESTIMATES AND THEIR MARGINAL EFFECTS FROM HETEROSKEDASTIC PROBIT REGRESSION CONTROLLING UNOBSERVED MUSLIM CHARACTERISTICS**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin
<b>Main variables</b>												
Muslim	0.871 (0.537)	0.176 (0.842)	-0.220 (0.558)	-0.0564*** (0.0183)	0.999 (0.646)	0.568 (3.952)	-0.0734 (0.509)	-0.0538*** (0.0192)	0.334 (0.626)	-0.0445 (0.0455)	-0.215 (0.425)	-0.0546*** (0.0185)
Arabic name	0.0359 (0.0885)	0.0222 (0.0225)	0.235 (0.168)	0.0407* (0.0238)	0.0177 (0.0862)	0.0187 (0.0230)	0.212 (0.155)	0.0393* (0.0233)	0.130 (0.157)	0.0326 (0.0254)	0.225 (0.153)	0.0387* (0.0232)
Thai cultural club (TCC)	-0.0964 (0.103)	-0.0597 (0.121)	-0.0713 (0.120)	-0.0124 (0.0218)	-0.0936 (0.102)	-0.0990 (0.403)	-0.0691 (0.118)	-0.0128 (0.0228)	-0.0759 (0.118)	-0.0190 (0.0351)	-0.0749 (0.119)	-0.0129 (0.0210)
Muslim * TCC	0.119 (0.119)	0.0740 (0.111)	0.229 (0.158)	0.0397 (0.0257)	0.105 (0.118)	0.111 (0.391)	0.211 (0.151)	0.0392 (0.0261)	0.170 (0.136)	0.0425 (0.0314)	0.225 (0.155)	0.0387 (0.0257)
Arabic * TCC	-0.0387 (0.114)	-0.0240 (0.0375)	-0.303 (0.253)	-0.0525 (0.0372)	-0.0179 (0.0959)	-0.0189 (0.0363)	-0.267 (0.236)	-0.0495 (0.0369)	-0.161 (0.229)	-0.0402 (0.0406)	-0.282 (0.230)	-0.0486 (0.0360)
<b>Control variables</b>												
Field of study	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Education level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
University char.	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Experience	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Club position	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CV format	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advertisement char.	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Requirements	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Observation	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129
Log-likelihood	-969.4		-950.8		-968.2		-950.1		-965.5		-944.9	
Chi-squared	283.3		60.28		433.4		69.05		65.74		68.75	

NOTE. —This table presents estimates and their marginal effects from a heteroskedastic probit regression analysis on the effect of being Muslim, having an Arabic name, and participating in a Thai cultural club (TCC) on receiving an interview invitation. The analysis controls for the heterogeneity of unobserved characteristics of being Muslim. It also provides results on the estimated effects of interactions between being Muslim/having an Arabic name and participating in a TCC. Additionally, this table includes results from different model specifications to illustrate the robustness of the findings. Each model incorporates different groups of control variables. Field of study includes the effects of having a diploma or degree in Business, Engineering, Science, and Social Science. Education level refers to the effects of having a high school diploma, college diploma, advanced college diploma, and bachelor’s degree. University characteristics include the effects of receiving a degree from specific prestigious universities in Bangkok. Experience includes the effects of job experiences and the duration of unemployment. Club position refers to the effects of the positions held by applicants when running clubs in school/college/university, such as vice-president, secretary, publicist, and treasurer. Advertisement characteristics include whether employers provided income ranges or performed gender and age discrimination. Job requirements include specific degree requirements, English proficiency, communication skills, and a driving license. Standard errors in parentheses. \* indicates statistical significance at the 90% confidence level, \*\* at the 95% confidence level, and \*\*\* at the 99% confidence level.

**TABLE 9**  
**ESTIMATES AND THEIR MARGINAL EFFECTS FROM HETEROSKEDASTIC PROBIT REGRESSION CONTROLLING UNOBSERVED MUSLIM, ARABIC NAME, AND THAI CULTURAL CLUB CHARACTERISTICS**

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin	Estimate	Margin
<b>Main variables</b>												
Muslim	0.997 (0.855)	0.533 (5.999)	-0.0487 (0.507)	-0.0552*** (0.0188)	0.934 (1.916)	0.140 (4.118)	0.108 (0.473)	-0.0559*** (0.0199)	0.699* (0.421)	-0.0808 (0.0536)	0.00382 (0.409)	-0.0540*** (0.0180)
Arabic name	-0.0527 (0.361)	0.0389 (0.0764)	-0.0979 (0.529)	0.0403* (0.0216)	-0.0380 (0.350)	0.0436 (0.127)	0.00959 (0.400)	0.0399* (0.0224)	-0.821 (1.387)	0.0484 (0.100)	-0.189 (0.528)	0.0386* (0.0219)
Thai cultural club (TCC)	0.202 (1.669)	0.149 (2.577)	-0.267 (0.610)	-0.0123 (0.0271)	-0.442 (6.261)	-0.208 (0.789)	-0.530 (0.868)	-0.0226 (0.0495)	-0.370 (0.796)	-0.0485 (0.105)	-0.306 (0.523)	-0.0133 (0.0250)
Muslim * TCC	-0.159 (1.727)	-0.164 (2.755)	0.244 (0.184)	0.0395 (0.0308)	0.407 (5.030)	0.241 (1.033)	0.313 (0.319)	0.0523 (0.0561)	0.332 (0.566)	0.0832 (0.146)	0.249 (0.188)	0.0398 (0.0301)
Arabic * TCC	-0.00358 (0.156)	-0.00369 (0.140)	-0.362 (0.333)	-0.0585 (0.0433)	-0.0580 (0.787)	-0.0343 (0.168)	-0.336 (0.326)	-0.0563 (0.0450)	-0.364 (0.699)	-0.0911 (0.157)	-0.364 (0.321)	-0.0582 (0.0442)
<b>Control variables</b>												
Field of study	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
Education level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
University char.	No	No	No	No	Yes	Yes	Yes	Yes	No	No	No	No
Experience	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Club position	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CV format	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Advertisement char.	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Requirements	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Observation	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129	3129
Log-likelihood	-969.0		-950.4		-968.0		-949.5		-964.0		-944.2	
Chi-squared	408.5		54.23		206.3		59.51		107.2		62.53	

NOTE. —This table presents estimates and their marginal effects from a heteroskedastic probit regression analysis on the effect of being Muslim, having an Arabic name, and participating in a Thai cultural club (TCC) on receiving an interview invitation. The analysis controls for the heterogeneity of unobserved characteristics of being Muslim, having an Arabic name, and having participated in TCC. It also provides results on the estimated effects of interactions between being Muslim/having an Arabic name and participating in a TCC. Additionally, this table includes results from different model specifications to illustrate the robustness of the findings. Each model incorporates different groups of control variables. Field of study includes the effects of having a diploma or degree in Business, Engineering, Science, and Social Science. Education level refers to the effects of having a high school diploma, college diploma, advanced college diploma, and bachelor's degree. University characteristics include the effects of receiving a degree from specific prestigious universities in Bangkok. Experience includes the effects of job experiences and the duration of unemployment. Club position refers to the effects of the positions held by applicants when running clubs in school/college/university, such as vice-president, secretary, publicist, and treasurer. Advertisement characteristics include whether employers provided income ranges or performed gender and age discrimination. Job requirements include specific degree requirements, English proficiency, communication skills, and a driving license. Standard errors in parentheses. \* indicates statistical significance at the 90% confidence level, \*\* at the 95% confidence level, and \*\*\* at the 99% confidence level.

### 3. Discussion

The shift in the statistical power of the estimates for being Muslim, observed when comparing models with and without controls for advertisement characteristics and job requirements, suggests the presence of matching within the labour market. Once this matching is accounted for, our findings reveal significant discrimination against Muslim men. This discrimination may stem from the Thaification policies implemented in the 1930s, which, while aiming to create a unified national identity by promoting Thai culture, language, and Buddhism (Skinner, 1957; Chalk, 2008; Auethavornpipat, 2011), marginalized many Muslims, particularly in the three southernmost provinces (Chalk, 2008). This marginalization heightened tensions between the Muslim and Buddhist populations and fostered deep-seated distrust among Muslims towards Thai authorities (Chalk, 2008). The resulting tensions and mistrust contributed to the rise of separatist insurgencies in these provinces in 2001 (Chalk, 2008). These insurgencies, coupled with the global rise in terrorism after 2010s (Commonwealth of Australia, 2015), may have perpetuated prejudice against the Muslim minority, sustaining discrimination over time.

Hiring discrimination can be explained by two main economic theories: taste-based discrimination and statistical discrimination. We attempted to differentiate between these by examining the interactions between treatments and assimilation activities, such as participation in the Thai Cultural Club (TCC). Unfortunately, signalling assimilation traits such as participating in the TCC did not alleviate the observed discrimination. These findings suggest that taste-based discrimination may significantly affect hiring practices in Thailand. Alternatively, our assimilation signal may be too weak to influence employer behaviour. Hence, future studies may explore further assimilation signals in detail.

Our study suggests that overt information on the national ID card has allowed prejudice to manifest as discrimination. Despite the option for Thai citizens to exclude religious affiliation from their ID cards under the National Identification Card Act B.E. 2526, scrutiny persists. Additionally, asking about religious affiliation remains a common practice on many company job application forms. To address this issue, the government should remove religious affiliation information from the ID card and enact laws prohibiting employers from inquiring about an applicant's religion. Furthermore, the government should seek to understand the underlying prejudices driving this discrimination and consider implementing policies that promote diversity and inclusion. Specifically, it may be beneficial to explore integration policies that foster societal harmony without marginalizing minority groups.

#### 4. Conclusion

Even though Thailand is relatively more homogenous than many countries, religious minorities can still be distinguished through the national ID card. This explicit information may result in hiring discrimination. Drawing from Bertrand and Mullainathan's study (2004), we conducted a correspondence study by sending 3,129 applications to 1,043 employers in the Bangkok Metropolitan Region in 2018. Each employer received three identical-quality resumes representing three treatment groups: Buddhist with a Thai full name, Muslim with a Thai full name, and Muslim with a Thai first name and Arabic surname. Additionally, we investigated the potential impact of cultural assimilation, such as participation in Thai cultural clubs (TCC), on reducing hiring discrimination. After addressing Heckman and Siegelman's critique (1993), the study revealed that Muslim applicants are less likely to receive an interview invitation than their Buddhist counterparts. Upon disentangling taste-based discrimination and statistical discrimination, we found that taste-based discrimination is the primary source of hiring discrimination in Thailand. To address this issue in the short term, the government should exclude religious affiliation information from the ID card. The government should also prohibit potential employers from inquiring about the religious affiliation of job applicants. Finally, in the long run, the government may need to understand the biases behind the discrimination and consider policies to promote diversity and inclusion.



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## Appendix

Figure A1: Resume Template 1 (Translated from Thai)

<b>First-name Surname</b>	
Address: 125/6 Kamphaeng Phet Road 6 Chatuchak Sub-district Chatuchak District Bangkok 10900	
Phone number: ### ### ####	Email: xxxxxx@gmail.com
Birthday: 5 April 1993	Nationality: Thai
Religion: Buddhism	Marital Status: Single
<hr/>	
<b>Education</b>	
Bangna Commercial College Bangkok 2011-2013	Advanced College Diploma (Marketing) GPA 3.14
Bangna Commercial College Bangkok 2008-2011	College Diploma (Selling) GPA 3.26
<hr/>	
<b>Work Experience</b>	
Selling Officer (ATL Property)	June 2013 – July 2018
Main Duties:	
<ul style="list-style-type: none"><li>● Providing information to customer and selling the renting place</li><li>● Creating the campaign</li><li>● Drafting the contract</li><li>● Coordinating between property and potential customers</li></ul>	
<hr/>	
<b>Activities</b>	
Publicist (Boxing Club)	2011-2013
Main Duties:	
<ul style="list-style-type: none"><li>● Publicising the club</li><li>● Creating poster to introduce club and club's activities</li></ul>	
Staff (Boxing Club)	2008-2011
<hr/>	
<b>Skills</b>	
Communication: Debate and Negotiation	
Language: Thai and English (TOEIC 525)	
Computer: Microsoft Office, Photoshop, Illustrator, และ WordPress	
Driving: Motorcycle and Car	

**Figure A2: Resume Template 2 (Translated from Thai)**

<h2>First-name Surname</h2>	
Address: 294 Prachasongkroh Road Din-Daeng Bangkok 10400	
Email: xxxxx@gmail.com   Phone Number: ### ### ####	
Birthday: 19 June 1993   Nationality: Thai   Religion: Islam   Marital Status: Single	
<u>Work Experience</u>	
September 2015 - October 2017	Electrical Appliance Salesperson (Sirichai Electric, Bangkok)
	Duties: Sell electrical appliance and part of electrical appliance
	Create price offering document
	Take care of customers in showroom
November 2013 - September 2015	Salesperson (Coconut crazy, Bangkok)
	Duties: Record the transaction and Sell ice-cream
<u>Education</u>	
2011-2013	Advance College Diploma (Chetupon Commercial College, Bangkok)
	Marketing
	GPA 3.15
2008-2011	College Diploma (Chetupon Commercial College, Bangkok)
	Marketing
	GPA 3.37
<u>Extra-curriculum Activities</u>	
2011-2013	Vice-President (Table Tennis Club)
	Duties: Planning club's activities
2008-2011	Member (Table Tennis Club)
<u>Skills</u>	
Computer: adobe photoshop, microsoft word, microsoft excel, R	
Language: English (toeic 540)	
<u>Hobbies and Interests</u>	
Hobbies: Playing Guitar, Collecting Car Model, Photography	
Interests: Automobile, Folksong	

**Figure A3: Resume Template 3 (Translated from Thai)**

First-name Surname

**Personal Information**  
 Address: 13 Soi Prachasamran 3 Nong-Chok District Bangkok 10532  
 Mobile: ###-###-#### | Email: xxxxxxxx@gmail.com  
 Birthday: 2 April 1993 (Age 25) | Birthplace: Bangkok  
 Nationality: Thai | Ethnicity: Thai | Religion: Islam

**Education History**

Intrachai Commercial College	Bangkok
Advanced College Diploma	2011-2013
Marketing (GPA 3.09)	
Intrachai Commercial College	Bangkok
College Diploma	2008-2011
Selling (GPA 3.39)	

**Work History**

Salesperson: A.L. Car	February 2016 – March 2018
- Sell second-hand car	
- Create the campaign to sell more cars	
Salesperson: TA Fabric	June 2014 – February 2016
- Sell clothes	
- Deliver merchandises	
Salesperson: Golden Light Furniture	September 2013 -June 2014

**Activities History**

Treasurer: Shooting Sport Club	2011-2013
- Record the club's transaction	
- Create annual budget	
Member: Shooting Sport Club	2008-2011

**Skills**

<b>Language</b>	<b>Software</b>	<b>Sport</b>
Thai	Microsoft Word	Football
English (TOEIC 550)	Microsoft Excel	Table tennis
	Photoshop	Badminton
<b>Communication</b>	<b>Management</b>	<b>Driving</b>
Negotiation	Time Management	Car
Convincing	Planning	Motorbike