Wearing Your Religion: Labor Market Consequences in Indonesia*

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Abstract

We study the effects of displaying gendered religious identity –headscarf for women and Islamic beard for men– on labor market outcomes in Indonesia. In collaboration with a large job portal we implement a series of experiments with a pool of over 1,200 employers and 1,800 job seekers. Using a modified version of the Incentivized Resume Rating (IRR) method, we find that displaying religious identity reduces the rating received from employers and the probability of being interviewed. The penalties for candidates with headscarf and beard are generally similar in magnitude, and do not vary across job levels, or contact with customers. Administrative data from the job portal confirm the existence of a penalty for profiles wearing religious symbols, measured in terms of download rates of candidates' files. In a belief elicitation exercise with employers, we find that candidates with a headscarf or a beard are ranked lower in a number of personality traits potentially important in the workplace. Finally, we elicit beliefs of job seekers and find that they are largely unaware of the penalties associated with displaying religious identity.

Keywords: veiling, IRR, discrimination, religion, Indonesia
JEL codes: J01, J16, J71, Z12, Z13

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1 Introduction

In recent decades, some of the most populous countries in the world have seen an increase in the share of the population wearing religious symbols. The most striking example is the growing prevalence of headscarf wearing among Muslim women in Turkey, Egypt, Indonesia, Malaysia and northern Nigeria.[1] Also in countries where Muslims are a minority, visible display of religious symbols has gained prominence in certain communities, often as an affirmation of religious or political identity (e.g., in France, Germany or the UK).

While these choices stem from a variety of motives, they can have important economic consequences, including on access to employment and labor market outcomes. Existing research has primarily studied these effects in countries where Muslims are a minority –and labor market penalties for women wearing headscarves have been documented in these settings. However, we know very little about economic consequences in countries where Muslims are a majority. In these settings, one would not expect the display of Muslim identity to be penalized due to its association with an 'outgroup' status.

This paper studies the labor market consequences of the display of religious identity in the country with the largest Muslim population in the world, Indonesia. Importantly, this is a country where the share of women wearing headscarves was negligible until the early 1980s, and steadily increased until nowadays, when more than 70% of Indonesian Muslim women declare to wear a headscarf (Fossati *et al.*, 2017).

We combine a series of field experiments with administrative data to investigate both the existence of labor market penalties (or premia) to wearing headscarves for women and Islamic beards for men, and the potential *reasons* for such penalties or premia. In addition, we assess whether candidates are aware of these consequences.

We collaborate with one of the largest job portals in Indonesia to elicit the preferences and beliefs of more than 1,200 employers. First, we implement a modified version of the Incentivized Resume Rating (IRR) experiment, originally developed by Kessler *et al.* (2019), to elicit employers' preferences. We randomize the picture of applicants in the hypothetical resumes rated by a sample of employers who have a vacant position in the job portal. Pictures in the 'treatment' group display a headscarf (if female) or a beard (if male), while 'control' group pictures display exactly the same faces but without religious attributes. Notice that it is customary for CVs in Indonesia to include a picture, hence our manipulation is very 'natural' in the setting where we operate. We also randomly vary candidate attributes such as marital status, education and job experience.

Second, we conduct a separate belief elicitation survey with a different group of employers from the same job portal, in which we elicit their perceptions on the association of religious symbols with various job competencies and personality traits. This is done by

[1] The phenomenon is not limited to women: in some countries also men have adopted more overt display of religious symbols, e.g., prayer beads in Iran or Islamic beards in Indonesia.

showing employers the same candidate pictures used in the IRR experiment and asking them to rate each picture along those traits. The goal of this exercise is to gain insights on *why* employers in the IRR may rate candidates with headscarves or beards differently.

Third, we compare the results of the IRR experiment with metrics derived from the portal's own administrative data. In particular, we have access to the *real* CVs and pictures of the job seekers who applied to the jobs posted by the employers in our sample, and for each candidate we know whether the employer viewed and downloaded the candidate's file. (Note that the portal automatically shows the picture of a candidate next to their name). We are thus able to test whether an employer's preference or dislike for candidates with headscarves/beards in IRR ratings correlates with that employer's differential viewing/downloading rates in real world job screenings.

Finally, we investigate whether job applicants are aware of the labor market consequences of wearing religious symbols. We administer a survey to more than 1,800 candidates who registered in the job portal and who expressed an interest in job categories corresponding to those posted by the employers in our sample. In this survey, we incentivize respondents to guess how employers rated the profiles they were shown in the experiment (which include the pictures of the hypothetical candidates). We also ask some questions about job seekers' own perceptions around those candidates. This part of the analysis complements the evidence from employers with data on applicants' beliefs and preferences.

Our results can be summarized as follows. First, displaying religious symbols has a negative and significant effect on hiring outcomes. The same candidate, when presented wearing religious attributes, consistently receives lower evaluations. For female candidates wearing a headscarf, the likelihood of being hired decreases by 0.074 standard deviations, the probability of receiving an interview falls by 3.2 percentage points, and the offered salary is 2 percent lower. These effects are meaningful in size: the penalty associated with the headscarf in terms of hiring interest and interview probability is roughly equivalent to half the premium associated with holding a bachelor's degree.

Interestingly, the magnitude of the penalty is similar for male and female candidates, with no statistically significant gender differences for most outcomes. The one exception is salary, where veiled women are penalized but bearded men are not. We also find limited heterogeneity in the effects across job types (blue- vs. white-collar), job levels (entry- vs. mid/senior-level) and employer roles (company owners/CEOs vs. HR managers).

The display of religious symbols also affects the amount of *attention* employers devote during the screening process. Compared to unveiled women, veiled candidates are 30 percent more likely to be skimmed in under 10 seconds. The effect is similar for male candidates displaying a religious beard. This suggests that the disadvantage of candidates displaying religious symbols may be associated with a heuristic process that is spontaneous, low-effort, and fast (Kahneman *et al.*, 2002; Bartoš *et al.*, 2016).

An original contribution of our paper is to complement the experimental IRR evidence with administrative data on the same employers' *actual* screening behavior. We find that the presence of a penalty for wearing religious symbols is corroborated in the administrative records: veiled female candidates are 3.7 percentage points less likely to have their CV viewed or downloaded, while male candidates with beards face a penalty of about 2 percentage points. When employers are split according to their experimentally elicited preferences, the administrative penalties align closely with the IRR estimates: veiling has no significant effect among employers with below-median 'IRR penalties', whereas veiled candidates are about 6 percentage points less likely to have their CV viewed or downloaded among employers with above-median 'IRR penalties'. This validation using high-stakes administrative data strengthens our experimental findings and underscores the external validity of the IRR methodology.

With regard to the *mechanisms* underlying the penalties we observe in the IRR, our findings suggest that 'instrumental' considerations are unlikely to be the key explanatory factor. We find no significant difference in effects between remote and in-person jobs –a pattern we would expect to observe if employers were concerned about clients disliking interaction with visibly religious employees. Similarly, we find no meaningful heterogeneity in the penalty across jobs with different educational requirements, which would be expected if the mechanism were related to perceptions of human capital accumulation.

To further investigate, we turn to our original belief elicitation survey to examine whether religious symbols influence employers' perceptions of candidates' qualities and personal traits. Several noteworthy patterns emerge. First, candidates wearing a headscarf or beard are perceived to be significantly more religious than their counterparts without these markers –as expected. Importantly, these candidates receive systematically lower ratings on a range of characteristics and personal traits, including attractiveness, flexibility, agreeableness, extroversion, and openness to experience.[2] These findings suggest that the penalties imposed by employers may be driven by shifts in perceived candidate qualities that are likely to play a critical role in hiring decisions.

Why do job candidates display religious symbols if there is a labor market penalty for doing so? This is a big question with many potential answers. For example, one possibility is that candidates are aware of the penalty but their religiosity induces them to disregard it. Another possibility is that they do not anticipate any penalty. While we cannot test all possible explanations, evidence from our job seeker survey indicates that most job seekers using the portal are largely *unaware* of the penalties associated with displaying religious attributes. Based on job seekers' beliefs, the estimated effects of wearing a headscarf or displaying a beard are considerably smaller than the actual effects observed among employers (and not statistically significant). Using the administrative data we

[2]Displaying religious identity does not significantly affect employer perceptions of conscientiousness or emotional stability.

have from the job portal, we can test whether beliefs differ between survey participants who displayed religious symbols in the photo attached to their CV and those who did not. For women, we find a marked difference: job seekers who did not wear a headscarf were significantly more accurate in predicting employer penalties associated with veiling. In contrast, those who included a veiled photo tend to predict a zero penalty. Interestingly, we find no significant differences in beliefs about beard-related penalties between male job seekers with and without a beard in their CV photo.

Another possible reason that we investigate for why candidates may display religious symbols despite the associated labor market penalties is that they trade off these penalties against other benefits of displaying religiosity. Our job seeker survey reveals that job seekers believe that wearing a headscarf reduces the likelihood of women receiving unwanted attention in the workplace (e.g., from clients or colleagues). This belief does not vary by gender or by whether the respondent wears a headscarf herself.

Overall, our findings point to negative and significant labor market consequences for wearing religious symbols in a context where a large fraction of the population chooses to do so, and where these consequences are not fully anticipated by job applicants.

Our paper relates to several strands of literature. The first includes correspondence studies to measure discrimination in the labor market (e.g., Bertrand and Mullainathan, 2004) and, more recently, IRR experiments (Kessler *et al.*, 2019; Macchi, 2023; Macchi and Raisaro, 2025).[3] Methodologically, we contribute to this literature in two main ways. One is that we augment the IRR design with a complementary survey rating exercise where the same profiles are evaluated on dimensions that can help us understand *why* candidates with certain traits are penalized. In our case, these dimensions include flexibility on the job, fit with the work environment, and various personality traits. Another contribution is that we are able to 'validate' the experimental choices made by employers on hypothetical candidates in the IRR using real, high stake choices made on the job platform, thanks to the availability of administrative data from the platform itself. Additionally, while IRR studies typically focus on eliciting employers' preferences, in the last part of the paper we use the same hypothetical profiles shown to employers to elicit *job applicants' beliefs* about employers' preferences. This feature is an additional advantage of the IRR methodology relative to traditional correspondence studies, which –to the best of our knowledge– has not yet been exploited.

The second strand of literature to which our paper relates investigates the link between religious identity and labor market discrimination. While religiosity may correlate with traits that are relevant for productivity, such as work ethic (Guiso *et al.*, 2003) and education (Dahl *et al.*, 2021), recent experimental studies have tried to isolate the effect of religious identity holding constant other worker characteristics. Among them, Valfort

[3]The experimental literature on labor market discrimination is too large to do justice to it here. For comprehensive reviews, see Bertrand and Duflo (2017) and Neumark (2018).

(2020) finds that Muslims who are religious receive lower callback rates than non-religious Muslims or Christians in France. Leckcivilize and Straub (2018) and Weichselbaumer (2020) find penalties for Turkish women wearing headscarves in Germany, and Fernández-Reino *et al.* (2022) document penalties against veiled Muslim women in Germany and the Netherlands, but not in Spain. Our work differs from this literature in three respects. First, and most important, all of the above studies are conducted in Western countries, where Muslims are a minority and where the practice of veiling may be interpreted as a signal on one's reluctance to integrate.[4] In contrast, our study takes place in Indonesia, the country with the largest Muslim population in the world and where a majority of women wear headscarves. Second, while the existing literature focuses on veiling, we examine the effect of displaying religious identity for both men and women, by comparing the effects of the headscarf and the Islamic beard. Finally, the above papers on veiling are either correspondence studies or lab experiments with fictitious employers, while we implement an IRR exercise with real employers from a large job platform.

Our paper also contributes to the literature on the economic returns to physical appearance. Since the early contributions by Hamermesh and Biddle (1994) and Mobius and Rosenblat (1994), who documented significant earnings premia on beauty in the US, recent work has studied the signaling value of appearance in lower income settings. In particular, Macchi (2023) experimentally manipulates pictures of loan applicants in Uganda and finds a premium to obesity in the credit market.[5] Thanks to an original survey rating exercise that we administered to employers, we are able to show that candidates wearing a headscarf or an Islamic beard are rated as less attractive, but also ranked lower on a range of personality traits.

The last strand of literature to which our paper indirectly contributes is the burgeoning literature on the economics of identity (e.g., Akerlof and Kranton, 2000). Recent work by Oh (2023) shows that workers forego significant payments in order to take jobs that are consistent with their caste identity in India. While we do not aim to study the choice of wearing the veil or the Islamic beard, we speak to the question of whether job candidates are *aware of the potential consequences* of displaying religious identity in terms of employers' rating. Shedding light such beliefs can be important in the face of increasing take-up of veiling, as manifested in Indonesian society over the past decades.

The remainder paper is organized as follows. Section 2 provides some background on the context for our analysis. The details of the methodology and experimental design are presented in section 3. Section 4 discusses the results of the experiment, section 5 explores possible mechanisms and section 6 contains results on job seekers' beliefs. Finally, section 7 concludes.

[4] An exception in terms of location is Banerjee *et al.* (2009), who implement a correspondence study in Delhi and find some discrimination by caste, but no discrimination against Muslims.

[5] In contrast, Rooth (2009) find a penalty in hiring for obese profiles in Sweden.

2 Background

With roughly 87 percent of its 270 million population professing the religion of Islam, Indonesia is currently the most populous Muslim country in the world.[6] Following the post-independence upheaval, the economy has displayed a steady growth in the past decades, with improvements in education levels and an expansion of the formal labor market. At the same time, this period has seen an increase in the display of religious symbols, especially in the use of religious headscarves (Brenner, 1996). For instance, Smith-Hefner (2007) documents that the fraction of female university students wearing a headscarf was less than 3 percent in the early 1970s and increased to around 60 percent in the 2000s. Based on recent surveys, nowadays about 70 percent of Indonesian women declare to wear a religious headscarf (Fossati *et al.*, 2017).

The trend in veiling in Indonesia is the opposite of what has been observed in other countries, with the process of secularization accompanying economic growth. The reasons underlying this trend have been discussed in the literature, with recent work suggesting that wearing a headscarf may be a way to signal compliance with traditional norms while at the same time taking advantage of increasingly attractive educational and labor market opportunities (Carvalho, 2013; Shofia, 2022). Given this setting, it is particularly interesting to study how employers react to the display of religious symbols by job applicants, as many of the signaling aspects present in Western societies or in countries where the prevalence of veiling is decreasing are not at play.

To this end, we conducted our empirical study in collaboration with one of the largest online job portal companies in Indonesia. The portal provides services for both employers opening a position at their companies and job seekers who are looking for employment. At the time of the study (2022-2024), more than 148,000 employers from various sectors and more than 2.8 million job seekers were registered with the portal. The main features of the portal are as follows.

Employers have a choice of subscribing to various packages offered by the portal, with different fees corresponding to different lengths of subscription (1 to 12 months), different numbers of job postings (5 to 50) and different auxiliary services provided by the portal. Jobseekers can upload their CVs and apply to job postings without paying a subscription. Once the employers post a job vacancy, they are able to see, sort and download the CVs of potential candidates, and can then contact them directly or via the portal to arrange an interview. Despite the encouragement from the job portal, the majority of employers do not record the various steps of their recruitment process via the portal and instead follow up independently with the candidates. Therefore, for the majority of job openings, we do not have information on which candidate was eventually hired. However, for each

[6] It is a requirement in Indonesia to list one's religion in the national ID card, which allows one to calculate the number of people professing different religions. Of course, this does not necessarily translate into practicing those religions.

job posting we do have information on all the candidates who applied and we know which profiles were viewed and downloaded by the employers. We will use these administrative data to generate complementary evidence to our IRR experiment.

An important feature of the portal –and of the Indonesian labor market in general– is that it is standard practice to include a headshot in one's resume. This has two key advantages for us. The first is that the main treatment in our experiments (where we randomize the pictures of hypothetical job applicants) is very natural for the participants, thus reducing potential Hawthorne effects. The second key benefit is that we are able to exploit administrative data from the portal itself, coding the resume of real job applicants to classify them as wearing religious symbols (headscarf or beard) or not. We provide more details on this procedure in section 3.2.

3 Methodology and Data

We conducted three distinct survey experiments, complemented by an analysis of administrative data, in collaboration with a major online job portal in Indonesia. Overall, the experiments involved over 1,200 employers. Two of the experiments targeted active employers on the platform, while the third focused on job seekers. The first experiment explores how employers respond to candidates who display religious markers —such as a veil or beard— on their CVs. The analysis of administrative data complements this experimental evidence by examining how the same markers influence employers' actual screening behavior on the platform. The second experiment investigates whether employers associate religious markers with a broader set of candidate qualities that typically influence hiring decisions. The third experiment assesses whether job seekers hold accurate beliefs about employer preferences. Each experiment is discussed in detail in the sub-sections that follow.

3.1 Incentivized Resume Rating (IRR) experiment

The job portal advertised our survey as a "new feature" in their services and invited employers with open vacancies to participate. The employers were incentivized by offering a free subscription package that included free additional job postings.[7]

Each employer participating in the survey was asked to evalute 30 CVs of hypothetical candidates. A key feature of the IRR method is that we informed the participants that the resumes they were rating were not of real candidates, but we incentivized them to disclose their true preferences because their ratings of these candidates would then be used to recommend 10 real job applicants who best suited their stated preferences. As

[7] As explained below, we also attracted them to participate by informing them that their participation in the survey would enable us to propose suitable candidates for their position via the new feature developed by the job portal (in line with the incentive structure in Kessler *et al.*, 2019).

dicussed in Kessler *et al.* (2019), there are at least two advantages of using IRR compared to traditional resume audit studies. First, since we inform the participants that the candidates in the CV are not real, we avoid deception. Second, the design allows us to elicit a rich set of response variables (outcomes) beyond the simple call-back rate used in typical resume audit studies.

Creation of the CV. Since we informed the participants that the candidates in the CV were hypothetical, we had full control of cross-randomizing the characteristics of the candidates. This allows us to estimate the effect of a broad range of candidate attributes on our outcomes of interest. We randomized the following candidates' characteristics: gender, marital status, age, education history, work experience, and -importantly- whether the picture of the candidate displayed a religious attribute (headscarf for women, Islamic beard for men).[8]

Outcomes. We asked employers to rate each hypothetical candidate to measure a number of labor market outcomes:

(i) Interest in hiring the candidate (on a scale of 0-10, with 0 representing "Not at all interested" and 10 "Extremely interested")[9]
(ii) Likelihood of the candidate accepting the job (on a scale of 0-10, with 0 representing "Reject for sure" and 10 "Accept for sure")
(iii) Willingness to invite the candidate for an interview (Yes/No)
(iv) Salary offer to the candidate (in Indonesian Rupiah)[10]
(v) Candidate's fit in the work environment of the employer's company/organization, with other workers and/or customers (on a scale of 0-10, with 0 representing "Not fit at all" and 10 "Fit extremely well")

Summary statistics on these outcomes are reported in Appendix Table A.1. The average rating for 'Interest in hiring' is 4.8, and the average interview probability is 0.46, indicating that our hypothetical CVs had a reasonably good chance of attracting employer interest. The mean salary offer is about 3 million rupiah (slightly above most regional minimum wages in Java).

In addition to these outcomes, we use some auxiliary features of the IRR survey to test for attention discrimination. In the Qualtrics interface, we are able to track how many clicks employers make and how much time they spend on each candidate's

[8]Moreover, since we had information about the job opening prior to administering the survey, we customized the mix of CVs displayed to employers based on their job requirements (e.g. education or gender requirements, type of experience, etc.). This ensured that the exercise was relevant and realistic for the employer.

[9]In order to avoid strategic answers by employers, we stated that when they rated the candidate they could assume that the candidate would definitely be interested in the job offer, so the respondents only needed to consider their own preferences.

[10]In the case where the employer stated that they were not interested in interviewing the candidate, we altered the question by asking the amount of salary the respondent thought that the candidate would be offered by other employers interested in interviewing the candidate.

profile when completing the IRR survey. This allows us to examine whether the display of religious symbols affects the amount of attention devoted to evaluating a candidate. This analysis is inspired by the framework of Bartoš et al. (2016), who emphasize that discrimination can arise not only in employers' final evaluations, but already at the stage of information acquisition, when decision-makers choose how much effort to devote to reading an application.

Shortlist. In our implementation of the IRR method, we added an extra step to mimic standard screening processes. Once the evaluation of the 30 hypothetical CVs was completed, employers were presented with a shortlist of the five candidates who had received the highest ratings according to their own responses. Employers were then asked to rank these five candidates from most to least preferred. This additional step allows us to test whether the criteria employers apply in the initial screening of a relatively large pool of applicants are the same as those they use when making a second-stage selection among a smaller set. This analysis will provide a richer picture of employer preferences, enabling us to distinguish between attributes that influence broad screening decisions and those that matter more when employers face finer trade-offs between otherwise high-scoring candidates.

Finally, after employers completed the task, we provided them with a list of 10 predicted 'best real candidates' for the job they themselves had posted, using a machine learning algorithm.[11]

Sample. In total, 650 employers participated in our IRR experiment. The sample consisted of employers that advertised at least one vacancy on the portal. Employers could participate more than once, but only with different vacancies: of the 650 employers, 580 participated once, while 140 participated twice (for two different vacancies), for a total of 720 vacancies.[12] These vacancies are predominantly lower-end positions, including those targeting fresh graduates and entry-level staff. Appendix Table A.2 reports descriptive statistics on the types of vacancies posted by employers in our IRR sample and on other vacancies in the portal. On average, fewer than 10% of the advertised positions are for managerial or supervisory roles. This pattern broadly mirrors the composition of the overall job portal vacancy pool, although our sample contains a slightly higher share of fresh graduate positions and a slightly lower share of entry-level staff. Finally, the three largest job categories advertised on the platform are sales/marketing (22%), administration (11%), and accounting and finance (10%). Our sample slightly oversamples sales/marketing (27%) and slightly undersamples administration (7.8%). In terms of gender requirements and provincial distribution, our sample closely resembles

[11] In the creation of the list, we did not include variables such as gender and the wearing of religious symbols in the processing of the algorithm, in order not to embed potential discrimination in our recommendations.

[12] In case of repeated responses for the same employer–vacancy pair, we retained the first response only and dropped the others.

the overall job portal.[13]

3.2 Administrative data

We complement our experimental approach with evidence from administrative data from the same job portal. Specifically, we have data on more than 6,600 employers who collectively processed over 700,000 applications from more than 100,000 job seekers. When employers normally access the job platform we collaborate with, they are presented with a list of all applicants to their open vacancies. Crucially for our analysis, this page displays the applicant's picture, together with their name, province, year of birth, marital status, education level, and work experience.[14]

Using an AI-based image recognition algorithm, we classify whether the profile picture of each applicant displays a headscarf or an Islamic beard. We classified images using GPT-4.1 with prompts tuned on a holdout validation set. All classifications were binary: detecting headshots, identifying whether women wear head/face coverings, whether men have facial hair, and whether these features have elements commonly seen in Muslim Indonesians. On the women's test set, classification accuracy is 98.2% for any covering, and 99.8% for Muslim-style covering. For men's facial hair detection, it is 80.9%, and for Muslim-style facial hair, it is 94%. See Appendix B for more details on the classification.

Using these administrative data, we can analyze employers' 'first-stage' screening decisions —namely, whether to view (or download) the full CV of a given applicant. Because we observe the exact same information available to employers at this screening stage, our analysis avoids the usual omitted-variable concerns that affect similar standard regression-based approaches. We conduct this analysis both for the broad set of more than 16,000 vacancies for which we have administrative data and for the subset of 636 vacancies linked to our IRR experiment. For the latter, we exploit the fact that we can compare employers' revealed preferences in the administrative data with their experimentally-elicited preferences.

3.3 Belief elicitation experiment with employers

In addition to the IRR experiment, we conducted a distinct, separate survey of employers. The main purpose of this survey was to elicit employers' association of the religious symbols we displayed in the IRR experiment with candidates' work competencies and

[13] A few deviations are worth noting: while approximately 60% of vacancies on the portal require only a high school qualification, the share in our sample is lower, at about 40%. This discrepancy does not materially affect our findings, as we show that treatment effects do not differ systematically across job requirements.

[14] Education level is classified into: high school, diploma, bachelor's, master's, or doctorate. Work experience is categorized as: none, less than 1 year, 1–2 years, 2–5 years, 5–10 years, or more than 10 years.

personality traits. This allows us to test, for instance, whether job candidates displaying a religious symbol are perceived to be equally competent in performing the job offered by the employer.

Similar to the IRR experiment, we invited employers listed in the job portal to participate in this survey and incentivized their participation by offering a free package of subscription to the portal, with the same features as the package offered to IRR participants. A total of 743 employers participated in this survey.

We showed each employer 15 randomly selected pictures of candidates from the pool of pictures used in the IRR experiment.[15] We asked employers to rank these hypothetical candidates on five different traits, randomly allocated across participants from a list of 11 traits. These traits –which are meant to capture personal qualities, perceived work competencies, and the widely used 'big five'– include: attractiveness, religiousness, cleverness, competence, moral uprightness, flexibility, agreeableness, extroversion, conscientiousness, emotional stability, and openness to experience. Appendix Table A.3 reports the way in which each of these traits was described to respondents.

3.4 Belief elicitation experiment with job seekers

We invited a sample of job seekers who were active on the job portal to participate in a survey about employers' preferences. Participants received a small monetary reward, distributed by our survey partner in the form of e-money. In order to elicit truthful beliefs from job seekers, we incentivized them by saying that they would receive a higher reward if their answers were close to the real answers of employers. A total of 1,881 job seekers participated in this survey.[16]

Appendix Table A.4 shows that job seekers participating in our survey are relatively young, with an average age of 27; 42 percent are female, around 22 percent are married, and educational attainment is evenly split between secondary and tertiary (university and above). The veiling rate among women is 74 percent, while approximately 11 percent of male job seekers display an Islamic beard.[17] As shown in Appendix Table A.5, our sample closely resembles the pool of randomly invited job seekers active on the portal, with any deviations being negligible in magnitude.

Participants in the job seekers survey were shown the profile of the employers who previously participated in the IRR experiments, as well as 15 randomly chosen profiles of candidates who had been shown to employers to rate. Participants were told that

[15]Unlike the IRR experiment, where we included a complete CV with information on educational credentials and experience, in this experiment we only showed the candidate's picture.

[16]The survey take-up rate was 13.5 percent. As we discuss below, the sample does not seem to be selected along relevant dimensions for us.

[17]These magnitudes—especially the prevalence of headscarf use—are highly consistent with figures from national survey data (e.g., Fossati *et al.*, 2017). This alleviates concerns about selection bias in our sample.

employers had rated these hypothetical candidates. After providing this information, for each profile shown we asked the following questions:

(i) *Put yourself in the shoes of the employer. How did the employer answer the question: "How interested would you be in hiring [Candidate name]?"* (on a scale of 0-10, with 0 representing "Not at all interested" and 10 "Extremely interested")

(ii) *Put yourself in the shoes of the employer. How did the employer answer the question: "Would you invite [Candidate name] for an interview?"* (Yes/No)

In addition to these belief elicitation questions, we asked two additional questions regarding job seekers' own opinion about the candidate. These captured:

(iii) Job seekers' belief about the length of time that the candidate would stay at the job once hired for the advertised position;

(iv) The likelihood of the candidate in the hypothetical profile to receive unwanted attention while working, either from the employer or from other workers or from customers (on a scale of 0-10).

Finally, we elicited the respondent's *own* interest in working for the employer, depending on the hiring choice the employer had made. To do so, we showed the respondent a candidate's picture (randomly chosen) and asked them to imagine that this candidate had been selected for the job by a given employer. We asked how interested the respondent was in working for that employer in a similar position (on a scale of 0-10, with 0 representing "Not interested at all" and 10 representing "Extremely interested").

4 Results

4.1 Main IRR experiment

Table 1 presents the main results of our IRR experiment. We report the estimated OLS coefficients, standard errors clustered at the employer and hypothetical candidate level in parenthesis, as well as Anderson q-values in square brackets and FWER-adjusted p-values in double square brackets –to adjust for multiple hypothesis testing. The overall message is that displaying a religious symbol has a negative and statistically significant effect on hiring outcomes: the same candidate, when the picture attached to their CV has religious attributes, receives consistently lower evaluations across all outcomes, compared to the version without religious symbols.

For female candidates wearing a headscarf, the employer's interest in hiring them decreases by 0.074 standard deviations (outcome variable 'Rating' in column 1), the probability of receiving an interview invitation falls by 3.2 percentage points (column 2), and the hypothetical salary offered is 2 percent lower (column 4), relative to female

TABLE 1 – IRR Estimates of Employer Preferences

	Rating (std)	Interview (dummy)	Likelihood of acceptance (std)	(Log) salary (Rp)
	(1)	(2)	(3)	(4)
Veil	-0.074***	-0.032***	-0.058***	-0.020***
	(0.018)	(0.009)	(0.013)	(0.005)
	[0.001]	[0.001]	[0.001]	[0.001]
	[[0.003]]	[[0.005]]	[[0.003]]	[[0.003]]
Beard	-0.121***	-0.061***	-0.085***	0.013
	(0.035)	(0.017)	(0.029)	(0.009)
	[0.001]	[0.001]	[0.002]	[0.023]
	[[0.005]]	[[0.005]]	[[0.009]]	[[0.118]]
Married	-0.074***	-0.033***	-0.049***	-0.005
	(0.014)	(0.007)	(0.012)	(0.003)
Diploma	0.113***	0.047***	-0.014	0.067***
	(0.023)	(0.012)	(0.020)	(0.007)
Bachelor	0.174***	0.070***	0.003	0.096***
	(0.025)	(0.013)	(0.022)	(0.009)
GPA	0.119***	0.062***	0.032*	0.022***
	(0.017)	(0.009)	(0.016)	(0.007)
Experience				
Internship only	0.131***	0.053***	0.047***	0.024***
	(0.013)	(0.006)	(0.011)	(0.003)
1 year	0.271***	0.115***	0.111***	0.056***
	(0.018)	(0.010)	(0.015)	(0.005)
3 years	0.370***	0.164***	0.154***	0.095***
	(0.023)	(0.011)	(0.019)	(0.007)
5 years	0.468***	0.261***	0.235***	0.131***
	(0.050)	(0.040)	(0.036)	(0.020)
7 years	0.537***	0.284***	0.260***	0.144***
	(0.065)	(0.050)	(0.046)	(0.031)
9 years	0.511***	0.280***	0.274***	0.172***
	(0.068)	(0.047)	(0.052)	(0.037)
Mean contr. (Fem - No Veil)	0.068	0.493	0.042	14.907
Mean contr. (Male - No Beard)	-0.077	0.428	-0.034	14.898
Veil=Beard (p-val)	0.225	0.144	0.402	0.003
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	21600	21600	21600	21600
R^2	0.483	0.364	0.570	0.813

Notes: The excluded reference group consists of job seekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. Standard errors, clustered at the employer and hypothetical candidate level, are reported in parentheses. Anderson FDR-adjusted q-values are shown in square brackets, and Romano–Wolf FWER-adjusted p-values are reported in double square brackets. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

candidates without a headscarf. In addition, employers believe that veiled women would be 0.058 standard deviations less likely to accept the job (column 3).[18]

For male candidates whose picture displays an Islamic beard, the employer's rating falls by 0.12 SD, the likelihood of hiring is 0.06 pp lower, and the perceived likelihood of accepting the job is 0.085 pp lower. There is no detectable penalty in terms of salary. It is interesting that the magnitude of the penalty associated with religious symbols is not statistically different for male and female candidates (see p-values at the bottom of Table 1), with the exception of salary –where the negative effect applies only to women wearing a headscarf.

To contextualize the magnitude of these effects, the penalty for wearing a headscarf in terms of hiring interest and interview probability is almost one half the premium associated with holding a bachelor's degree –an investment that typically reflects four years of tertiary education in Indonesia. Moreover, the magnitude of the veil penalty is comparable to that of being married.

Table 1 also reports the coefficients of other randomized CV attributes. The estimated effects are intuitive and broadly consistent with findings in the existing literature, suggesting that our experimental design captures employers' preferences in a reliable manner. Notably, being married has a negative impact on all hiring outcomes, except for salary.[19] Educational attainment also plays a significant role: relative to to those with only a high school education, candidates with a diploma or bachelor's degree receive a higher rating from employers (by 0.11 and 0.13 SD, respectively), are more likely to be interviewed (by 4.7 and 7 pp), and are offered higher salaries (by about 7 and 10 percent). Academic performance (GPA) and prior work experience are similarly associated with improved hiring prospects. One year of work experience –relative to no experience– increases employers' interest in hiring the candidate by 0.27 SD, the likelihood of being invited for interview by 11.5 pp, and the salary offered by about 6 percent. These effects appear to be nonlinear, reaching a plateau after five years of experience.

We conduct heterogeneity analysis along several dimensions, but find limited variation in the effect of displaying religious symbols across those. Appendix Table A.7 shows that the impact of religious attributes on employers' rating and likelihood of interviewing does not differ meaningfully when the candidate is being considered for a blue-collar or white-collar job.[20] Similarly, in Table A.8 we find no substantial difference in the pattern of penalties imposed by company owners/CEOs compared to HR managers. The effects are

[18]This effect does not survive the inclusion of controls for the employer's interest in hiring the candidate (see Appendix Table A.6). On the other hand, the effects of education, GPA and experience remain significant when controlling for employer's interest in hiring.

[19]Further analysis (not shown) reveals that marriage penalty is driven by female candidates; no significant penalty is found among male candidates.

[20]The effects on salary and perceived likelihood of acceptance are a bit larger for blu collar jobs.

also very similar across job levels, with both entry-level and mid/senior-level positions exhibiting similar penalties (Table A.9).[21] Interestingly, Table A.10 reveals that both male and female employers penalize candidates who display religious symbols. However, the penalty appears to be slightly more pronounced among female employers, particularly in terms of the probability of being invited for an interview.

4.2 Attention discrimination and implicit bias

We next analyze whether the display of religious symbols affects the level of attention employers devote to evaluating candidate profiles. This exercise aims to understand whether potential discrimination against candidates displaying religious symbols may involve a heuristic process that is spontaneous, intuitive, low-effort, and fast (Kahneman *et al.*, 2002; Bartoš *et al.*, 2016). We measure attention using two measures from our IRR platform: the "number of clicks" and the "response time", which capture the extent of interaction with a candidate's page. Our results are reported in Table 2.

Compared to unveiled women, female candidates wearing a headscarf receive about 0.10 fewer clicks (column 1) and 0.7 seconds less viewing time (column 2) –a 2.3 percent reduction relative to the average viewing time for unveiled candidates, which is 30 seconds. Veiled candidates are also 30 percent more likely to be skimmed in fewer than 10 seconds (column 3). Column 4 reports results on the IRR task where employers were presented again with the CVs of their top five candidates (based on their own ratings) and asked to rank them. In this exercise, veiled female candidates were ranked on average 0.27 positions lower than unveiled ones.[22]

Results for male candidates with beards closely mirror those for veiled women. Compared to male candidates without the Islamic beard, bearded candidates receive fewer clicks and are more likely to be skimmed in under 10 seconds. They are also ranked lower on average in the top-5 shortlist, even though this effect is not statistically significant at conventional levels. For all outcomes, we fail to reject the null that the penalties associated with religious symbols are the same across genders.

Taken together, the findings indicate that the penalties against candidates displaying religious symbols already materialize at a very early stage of evaluation, when employers decide how much effort to devote to reviewing a profile. Crucially, such penalties are not limited to the initial screening stage, where reviewers are constrained by having to skim through a large pool of CVs and where quick dismissals may be common. They also persist in our 'second-stage' exercise, where employers rank a small set of relatively strong candidates who have already received high ratings from the employers themselves.

[21] The estimates for mid/senior-level positions tend to lose statistical significance, likely due to limited statistical power stemming from fewer observations at higher job levels.

[22] To ease interpretation, the ranking variable is multiplied by –1, so that lower values correspond to worse positions.

TABLE 2 – Employer's attention: IRR Experiment

	No. of clicks (1)	Response time (2)	< 10 seconds (3)	Rank in shortlist (4)
Veil	-0.095**	-0.701**	0.015***	-0.271***
	(0.039)	(0.295)	(0.003)	(0.073)
	[0.030]	[0.030]	[0.001]	[0.002]
	[[0.058]]	[[0.058]]	[[0.003]]	[[0.006]]
Beard	-0.127*	0.222	0.012**	-0.223
	(0.069)	(0.846)	(0.005)	(0.179)
	[0.048]	[0.248]	[0.036]	[0.101]
	[[0.106]]	[[0.740]]	[[0.058]]	[[0.242]]
Mean contr. (Fem - No Veil)	7.722	30.273	0.048	-2.890
Mean contr. (Male - No Beard)	7.442	29.730	0.057	-2.972
Veil = Beard (p-val)	0.694	0.301	0.616	0.803
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
Controls	YES	YES	YES	YES
Observations	21600	21600	21600	3425
R^2	0.599	0.241	0.385	0.145

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. Each specification includes the controls listed in Table 1. Standard errors, clustered at the employer and hypothetical candidate level, are reported in parentheses. Anderson FDR-adjusted q-values are shown in square brackets, and Romano–Wolf FWER-adjusted p-values are reported in double square brackets. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

One may conjecture that the penalties documented in Tables 1 and 2 may be attributed to implicit bias. To shed light on this question, we test whether these penalties vary with the position of the candidate profile within the sequence of resumes. The rationale for this test follows Kessler *et al.* (2019) in observing that implicit bias is more likely to emerge when decision makers are fatigued, so one can compare whether discrimination grows in the later stages of the IRR experiment. Appendix Table A.11 shows that employers spend substantially less time and make fewer clicks in the second half of the study and in the latter half of each block of CVs, consistent with fatigue. However, the penalties associated with displaying religious symbols are already statistically significant both within the first half of each block (Table A.12) and in the first half of the study (Table A.13). This suggests that implicit bias induced by fatigue is not the main explanation for our results.

4.3 Evidence from administrative data

One of the contributions of our paper is that we validate the findings from the IRR experiment using employers' actual, high-stakes choices recorded in the portal's administrative

data. As explained in section 3.2, when employers log into the portal as part of their regular screening process, they see a list of applicants that includes their pictures and a few basic items of the resume. Then can then decide whether to view and download the full package of a candidate. Table 3 shows how the decision to view/download the profile varies with the display of religious symbols in the picture (as well as with other sociodemographic characteristics observable to the employer in the short form).

Columns 1 and 2 report results for the subset of vacancies linked to the IRR experiment, that is, vacancies that we used to elicit employers' ratings of hypothetical applicants. In this sample, veiled women are 3.7 percentage points less likely to have their full CV viewed or downloaded, while men with beards face a penalty of 1.9 pp (column 1). These estimates remain virtually unchanged after controlling for demographics, education and experience (column 2). In columns 3 and 4 of Table 3 we extend the analysis to the set of all vacancies posted by *all* employers on the portal during the period of our study. We find penalties of comparable magnitude. Female applicants wearing a headscarf are 4.4 percentage points less likely to have their CVs viewed or downloaded –an 8 percent reduction relative to unveiled women–, while bearded men face a penalty of about 0.5 percentage points. The estimates are virtually identical across specifications with and without controls.[23]

In Table 4 we split employers according to their experimentally elicited preferences. Specifically, we start by estimating employer-specific coefficients of the effect of religious symbols on ratings of hypothetical candidates in the IRR experiment (a modified version of column (1) of Table 1, where the coefficients on 'Veil' and 'Beard' are employer-specific). We then split the sample of employers into those who display above-median versus below-median estimated penalties, and we run separate regressions with the administrative data for these subgroups. This allows us to test whether the experimentally measured preferences map into differential viewing and downloading behavior in real-world screening choices.

We find that the penalties observed in the administrative data align closely with the IRR estimates. Among employers who exhibited a below-median veil penalty in the IRR experiment (columns 1-2 of Table 4), veiling has a small and insignificant effect on real screening outcomes. By contrast, among those with above-median IRR veil penalty, veiled female candidates are about 6 percentage points less likely (and male bearded candidates are 2.3 pp less likely) to have their CV viewed or downloaded .[24]

[23]The smaller effect of the beard relative to the veil in these results may partly reflect attenuation bias due to measurement error, with beards being more difficult to distinguish from non-religious facial hair, compared to Muslim headscarves versus no covering or hats. Note that measurement error concerns do not apply to our classification of the images in the IRR experiment, where we manipulated candidate pictures ourselves, making sure that the beards were unequivocally Muslim-style.

[24]Appendix Table A.14 reports analogous results when splitting employers by their IRR-estimated beard penalty. Among those with below-median beard penalty in the IRR, the estimated beard effect in the administrative data is small, positive, and statistically insignificant. In contrast, among employers

TABLE 3 – Estimates of Employer Preferences in the Administrative Data

	Viewed/downloaded CV			
	IRR vacancies		All vacancies	
	(1)	(2)	(3)	(4)
Veil	-0.037**	-0.037**	-0.044***	-0.044***
	(0.015)	(0.015)	(0.004)	(0.004)
Beard	-0.019*	-0.017*	-0.006***	-0.005***
	(0.010)	(0.010)	(0.002)	(0.002)
Female	0.070***	0.069***	0.067***	0.066***
	(0.023)	(0.023)	(0.007)	(0.007)
Age		-0.001		-0.000**
		(0.001)		(0.000)
Married		-0.019**		-0.011***
		(0.008)		(0.002)
Diploma		0.007		0.002
		(0.010)		(0.002)
Bachelor		0.011		0.004***
		(0.009)		(0.002)
Master/PhD		0.016		0.010*
		(0.020)		(0.006)
<1 yr experience		0.005		0.000
		(0.007)		(0.002)
1-2 yrs experience		0.017***		0.005***
		(0.006)		(0.002)
2-5 yrs experience		0.019**		0.006***
		(0.008)		(0.002)
5-10 yrs experience		0.036***		0.012***
		(0.010)		(0.002)
>10 yrs experience		0.018		0.012***
		(0.015)		(0.004)
Mean contr. (Fem - No Veil)	0.658	0.658	0.555	0.555
Mean contr. (Male - No Beard)	0.586	0.586	0.513	0.513
Veil=Beard (p-val)	0.309	0.292	0.000	0.000
Vacancy FE	YES	YES	YES	YES
N	34102	34089	781322	781132
R^2	0.339	0.339	0.346	0.346

Notes: The excluded reference group consists of male jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. Standard errors, clustered at the employer level, are reported in parentheses. * p-value < 10%, ** p-value < 5%, *** p-value < 1%.

TABLE 4 – Estimates of Employer Preferences in the Administrative Data: Low vs High IRR veil penalty

	Viewed/downloaded CV			
	Low IRR veil penalty		High IRR veil penalty	
	(1)	(2)	(3)	(4)
Veil	-0.026	-0.027	-0.062**	-0.059**
	(0.020)	(0.020)	(0.025)	(0.025)
Beard	-0.018	-0.015	-0.023*	-0.023*
	(0.015)	(0.015)	(0.013)	(0.013)
Mean contr. (Fem - No Veil)	0.685	0.685	0.677	0.677
Mean contr. (Male - No Beard)	0.612	0.612	0.583	0.583
Veil=Beard (p-val)	0.728	0.627	0.184	0.221
Vacancy FE	YES	YES	YES	YES
Controls	NO	YES	NO	YES
N	17276	17270	16080	16073
R^2	0.306	0.307	0.370	0.371

Notes: 'Low (High) IRR veil penalty' refers to employers with below- (above-) median estimated penalties in IRR regressions with employer-specific coefficients. The excluded reference group consists of male jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. Standard errors, clustered at the employer level, are reported in parentheses. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

5 Mechanisms

In this section we explore a number of possible mechanisms underlying the results presented earlier. In particular, we examine whether the penalties for displaying religious symbols are driven by employers' instrumental motives –e.g., anticipated productivity or efficacy of job delivery– or whether religious attributes may send a signal that affect employers' perception of candidates' qualities and personality traits.

In-person vs. remote jobs. We start by exploring whether employers treat candidates who display religious symbols differently for instrumental reasons. One such reason may be that the company's clients may prefer to interact with personnel who do not display religious attributes. If this is the case, headscarf or beard should only matter when the job requires in-person contact with customers. In Table 5 we split the sample depending on whether the vacancy requires remote (odd columns) or in-person (even column) interaction with customers, and we re-estimate our main IRR effects. We do not find meaningful differences in effects, suggesting that the internalization of customers' preferences may not be the mechanism driving our results.

with above-median IRR beard penalty, display of religiosity is penalized for both male and female candidates, with a 7 pp (12 pp) lower likelihood of one's CV being viewed/downloaded for bearded men (veiled women). These results should, however, be interpreted with caution given the relatively small sample size: due to the experimental design of the IRR exercise, the beard coefficient can only be estimated for a smaller subset of employers.

Low vs. High education requirements. Another potential interpretation of our results is that the penalty associated with religious symbols may be a form of statistical discrimination –for example, if employers associate the headscarf or Islamic beard with lower levels of human capital. In Table 6 we split the sample into vacancies that require only a high school diploma (odd columns) and vacancies that require tertiary education (even columns). If our results were due to statistical discrimination in terms of human capital, we should find stronger penalties for jobs requiring tertiary education. Instead, we find similar penalties, both in terms of magnitude and statistical significance, across the two types of jobs. This is not too surprising in the Indonesian context, where wearing a headscarf is common among highly educated women (Smith-Hefner, 2007).

Perceived quality and personality. The next channel we examine is whether displaying religious symbols signals 'personal' characteristics of the candidates that employers perceive as relevant. To investigate this, we draw on data from the beliefs elicitation experiment with employers previously described in section 3.3.

Figure 1 displays the estimated coefficients of the variables 'Veil' (dot symbol) and 'Beard' (triangle) from a series of regressions where the outcome variable is the employer's (standardized) rating of the candidate on the dimension listed along the vertical axis.

TABLE 5 – Employer Preferences: Remote vs. In-person job

	Rating (std)		Interview (dummy)	
	Remote (1)	In person (2)	Remote (3)	In person (4)
Veil	-0.072***	-0.078**	-0.034***	-0.029*
	(0.019)	(0.033)	(0.011)	(0.016)
Beard	-0.093**	-0.155***	-0.042*	-0.083***
	(0.045)	(0.052)	(0.022)	(0.028)
Mean contr. (Fem - No Veil)	0.056	0.090	0.478	0.519
Mean contr. (Male - No Beard)	-0.102	-0.037	0.399	0.474
Veil=Beard (p-val)	0.660	0.214	0.744	0.099
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	13440	8160	13440	8160
R^2	0.483	0.490	0.365	0.372

	Likelihood of acceptance (std)		(Log) salary (Rp)	
	Remote (1)	In person (2)	Remote (3)	In person (4)
Veil	-0.044***	-0.080***	-0.013***	-0.032***
	(0.016)	(0.023)	(0.005)	(0.009)
Beard	-0.059**	-0.117**	0.027**	-0.007
	(0.029)	(0.057)	(0.011)	(0.020)
Mean contr. (Fem - No Veil)	0.026	0.070	14.946	14.841
Mean contr. (Male - No Beard)	-0.031	-0.040	14.931	14.844
Veil=Beard (p-val)	0.667	0.552	0.002	0.261
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	13440	8160	13440	8160
R^2	0.581	0.564	0.816	0.811

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates. Standard errors, clustered at the employer level, are reported in parentheses. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

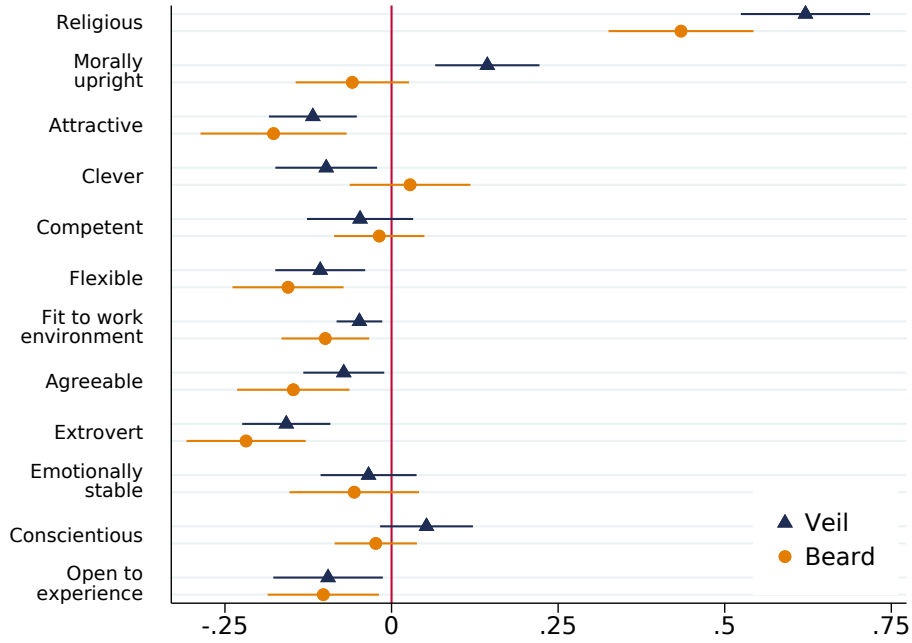
TABLE 6 – Employer Preferences: High vs. Low education requirement

	Rating (std)		Interview (dummy)	
	High school (1)	Vocational+ Bachelor (2)	High school (3)	Vocational+ Bachelor (4)
Veil	-0.064**	-0.080***	-0.025**	-0.037***
	(0.025)	(0.022)	(0.012)	(0.013)
Beard	-0.119	-0.114***	-0.090**	-0.048**
	(0.073)	(0.038)	(0.035)	(0.020)
Mean contr. (Fem - No Veil)	0.068	0.068	0.482	0.501
Mean contr. (Male - No Beard)	-0.068	-0.083	0.450	0.413
Veil=Beard (p-val)	0.467	0.421	0.080	0.654
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	8670	12930	8670	12930
R^2	0.499	0.482	0.418	0.342

	Likelihood of acceptance (std)		(Log) salary (Rp)	
	High school (1)	Vocational+ Bachelor (2)	High school (3)	Vocational+ Bachelor (4)
Veil	-0.060***	-0.053***	-0.018***	-0.021***
	(0.022)	(0.016)	(0.007)	(0.006)
Beard	-0.083*	-0.080**	0.023*	0.012
	(0.047)	(0.035)	(0.013)	(0.012)
Mean contr. (Fem - No Veil)	0.004	0.070	14.762	15.012
Mean contr. (Male - No Beard)	-0.066	-0.013	14.759	14.990
Veil=Beard (p-val)	0.658	0.493	0.008	0.015
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	8670	12930	8670	12930
R^2	0.588	0.563	0.749	0.826

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates. Standard errors, clustered at the employer level, are reported in parentheses. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

FIGURE 1 – Religious Markers and Worker Traits



Notes: The graph plots the effect of displaying religious markers on perceived traits of job seekers. The triangles and dots represent the estimated coefficient of Veil and Beard, respectively. The lines represent 95% confidence intervals. The detailed explanation of the traits presented to respondents is provided in Appendix Table A.3.

The results show that displaying religious identity alters employers' perceptions of several candidate traits. As expected, veiled women and bearded men are perceived to be much more religious than their counterparts without these markers, confirming the validity of our experimental design (i.e., that the headscarf and Islamic beard indeed signal higher religiosity). Beyond religiosity and morality, religious markers significantly affect a common set of personality-related traits across genders. Specifically, both the headscarf and the Islamic beard are associated with lower ratings of attractiveness, flexibility, agreeableness, extroversion, and openness to experience. By contrast, religious markers do not appear to affect perceived conscientiousness and emotional stability.

These findings connect to research documenting the labor-market premium to beauty (e.g., Hamermesh and Biddle, 1994; Mobius and Rosenblat, 1994): the perceived reduction in attractiveness may help explain the penalties documented in the previous section. Our findings also connect to a growing literature on the labor market returns to noncognitive and social skills (e.g., Heckman *et al.*, 2006; Deming, 2017): lower ratings on flexibility, agreeableness, extroversion, and openness suggest that such candidates may be viewed as contributing less positively to the social environment and collaborative dynamics of the workplace.

In sum, our analysis suggests that the penalty for displaying religious attributes is

driven primarily by employers' perceptions of candidates' noncognitive skills and personality traits associated with social aptitude, rather than by instrumental concerns about expected job performance.

6 Job seekers' beliefs about employers' preferences

In the last part of the paper we investigate whether job applicants are aware that including a picture with a headscarf or an Islamic beard may hurt a candidate's chances of being interviewed or selected for the job. To do so, we use data from the survey we implemented with a sample of job seekers active on the same platform where we recruited the employers for our IRR experiment (the job seekers survey is described in section 3.4).

Table 7 reports the results from this analysis. The dependent variable in column 1 is the job seeker's expectation about the rating that the employer who posted the vacancy would give to a given candidate; in column 2 it is the expected probability that the candidate would be invited for an interview by the employer. In columns 3 and 4 the dependent variables are the corresponding *actual* rating and interview choice of the employer who posted the vacancy –reported so that the magnitude of effects can be compared.[25]

In the job seekers sample, the estimated effects of wearing a headscarf or displaying a beard are not only much smaller than the effects among employers, but also statistically insignificant (columns 1-2 of Table 7). This suggests a sizeable *gap* between actual employer preferences and job seekers' *perceptions* of those preferences. One way of reading this results is that job seekers are over-optimistic about the potential consequences of displaying religious markers in job applications.

Job seekers are also over-optimistic about hiring outcomes in general, as evidenced by their average expected ratings for candidates without religious symbols (reported in the lower panel of Table 7). The mean of the dependent variables in columns 1-2 is much higher than in columns 3-4, indicating that job seekers overestimate both employers' interest in hiring candidates and the probability of being interviewed.[26]

While we find no compelling heterogeneity across different job types, education requirements, or gender of survey participants, an interesting source of heterogeneity emerges

[25]The rating outcome in columns 1-2 is standardized by the rating distribution of employers, making coefficients comparable across columns. Also, note that the coefficients for employers in columns 3-4 are estimated based on only the vacancy–profile pairs matched in the job seekers survey, where we only show 15 profiles instead of 30 (as in the original IRR experiment). This explains the lower number of observations in columns 3-4, relative to Table 1. Moreover, Appendix Table A.15 presents a balance test for vacancies eventually matched in the job seeker survey. The results show that the characteristics of the 677 matched vacancies are highly comparable to those of the 720 vacancies included in the IRR experiment.

[26]Incidentally, this implies that, compared to the actual employer preferences, job seekers' beliefs on the effects of displaying religious symbols are even smaller in magnitude relative to their mean ratings.

TABLE 7 – Job Seeker Beliefs vs. Employer Preferences

Sample:	Jobseekers		Matched Employers	
	Rating (std)	Interview (dummy)	Rating (std)	Interview (dummy)
	(1)	(2)	(3)	(4)
Veil	-0.018	-0.009	-0.078***	-0.026**
	(0.012)	(0.006)	(0.021)	(0.010)
Beard	-0.007	-0.007	-0.108**	-0.065***
	(0.028)	(0.015)	(0.044)	(0.024)
Mean contr. (Fem - No Veil)	0.544	0.692	0.068	0.492
Mean contr. (Male - No Beard)	0.519	0.678	-0.100	0.416
Veil = Beard (p-val)	0.717	0.902	0.528	0.123
Candidate FE	YES	YES	YES	YES
Respondent FE (jobseeker)	YES	YES		
Vacancy FE (employer)			YES	YES
N	28,163	28,215	10,155	10,155
R^2	0.483	0.339	0.499	0.386

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as in Table 1. The rating outcome in col. 1 is standardized by the rating distribution of employers, making coefficients comparable across job seeker and employer samples. Standard errors in parenthesis are clustered at job seeker and hypothetical candidate level in cols. 1-2, and at employer and hypothetical candidate level in cols. 3-4. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

TABLE 8 – Job Seeker Beliefs: Veiled vs. Non-veiled Job Seekers

Respondent:	Rating (std)		Interview (dummy)	
	Jobseeker w/no veil	Jobseeker w/ veil	Jobseeker w/no veil	Jobseeker w/ veil
	(1)	(2)	(3)	(4)
Veil	-0.065**	-0.009	-0.030*	-0.013
	(0.028)	(0.018)	(0.018)	(0.011)
Beard	-0.088	-0.025	-0.004	-0.031
	(0.097)	(0.040)	(0.060)	(0.021)
Mean contr. (Fem - No Veil)	0.547	0.529	0.727	0.692
Mean contr. (Male - No Beard)	0.476	0.528	0.721	0.684
Veil = Beard (p-val)	0.812	0.696	0.662	0.463
Respondent FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	2,878	8,076	2,880	8,085
R^2	0.529	0.505	0.366	0.340

Notes: The excluded reference group consists of job seekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates in Table 1. Standard errors, clustered at job seeker and hypothetical-candidate level, are reported in parentheses. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

when we consider respondents' *own* veiling status. Using administrative data from the job portal —which includes CVs submitted by our respondents, who are themselves job seekers— we identify whether our (female) survey participants included a veiled photograph in their application materials. Leveraging this information, we examine whether beliefs about employer preferences differ between respondents who submitted a veiled photo and those who did not.[27]

The results, presented in Table 8, reveal a substantial gap between these two groups. Job seekers who did *not* include a veiled photograph are more accurate in predicting the employer penalty associated with veiling: The estimated coefficients in columns 1 and 3 are negative and statistically significant, with a magnitude comparable to those obtained in the employer sample. In contrast, respondents who used a veiled image in their own job applications underestimate this penalty: the estimated coefficients in columns 2 and 4 are very small and insignificant. This contrasting pattern is consistent with the possibility that some job seekers may *strategically* omit the veil in the picture they attach to their CV, based on (accurate) beliefs about employer preferences.[28] Meanwhile, those who hold less accurate beliefs may remain unaware of this penalty and therefore may choose to display religious symbols in their application.[29] As shown in Appendix Table A.17, we find instead no significant differences in beliefs about beard-related penalties between male job seekers with and without a beard in their CV photo.

In addition to lack of awareness about the labor market penalties associated with veiling or with the Islamic beard, a potential reason for why candidates may choose to display religiosity is that they may trade off these penalties against other benefits of doing so. As part of our job seeker survey, we included a question assessing respondents' beliefs about the likelihood that a female candidate would receive 'unwanted attention' in the workplace, based on information in their CV (including the picture).

[27]Based on the analysis in Appendix Table A.16, the characteristics of jobs eekers who display a headscarf in their profile picture are largely similar to those who do not. The only notable differences are that veiled job seekers are, on average, about 1.5 years younger and 11 percent more likely to report having no work experience.

[28]Of course, there may be other explanations, including them choosing not to wear the veil generally in life.

[29]In results not shown, we find that this behavior does not appear to be driven by learning from past job market experiences. Specifically, the effect shows no meaningful heterogeneity with respect to the length of job seekers' prior experience.

TABLE 9 – Job Seeker Beliefs: Unwanted Attention

	Likelihood of receiving unwanted attention (0-10)				
Respondent:	Full sample	Male jobseeker	Female jobseeker	Jobseeker w/ no veil	Jobseeker w/veil
Veil	-0.385***	-0.374***	-0.424***	-0.401***	-0.446***
	(0.041)	(0.058)	(0.055)	(0.108)	(0.069)
Mean contr. (Fem - No Veil)	5.806	5.998	5.541	5.328	5.656
Respondent FE	YES	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES	YES
N	9,393	5,439	3,954	960	2,694
R^2	0.664	0.620	0.727	0.728	0.728

Notes: The question about unwanted attention is only asked for female profiles. The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as in Table 1. Standard errors in parenthesis are clustered at job seeker and hypothetical-candidate level. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

Table 9 shows that indeed job seekers perceive female candidates wearing a headscarf as significantly *less likely* to experience unwanted attention at their workplace. This effect holds in the full sample of respondents (column 1), and is similar in magnitude for male and female respondents (columns 2 and 3). Interestingly, the effect is also very similar in magnitude across female respondents who do not wear a veil and those who do (columns 5 and 6) –different from the expected employer rating penalties that were only anticipated by unveiled respondents.

The results in Table 9 point to a potential motive associated with headscarf use and is in line with some previous studies that highlight the role of veiling in facilitating women's access to new economic opportunities (e.g., Carvalho, 2013; Shofia, 2022).[30]

7 Conclusions

We examine the effect of overtly displaying gendered religious attributes –headscarf for female and religious beard for men– on various labor market outcomes in Indonesia. By combining experimental data with administrative records, we provide a comprehensive picture of employers' differential treatment of candidates displaying religious attributes. We find a significant penalty associated with wearing a headscarf for female candidates and a beard for male candidates, affecting employers' interest in hiring them, probability

[30]In addition to asking about the likelihood of receiving unwanted attention in the workplace, we also elicited respondents' interest in working for the company and the candidate's expected tenure at the given job. We find no statistically significant effect of the display of religious symbols on either of these outcomes.

of interviewing them, and the salary offered. The display of religious symbols also reduces employers' perceptions of candidates' likelihood of accepting a job offer. These penalties are robust and similar across job levels, job types, and the gender of employers. The differential treatment is also evident in employers' heuristic behavior: candidates displaying religious markers receive less attention, as measured by fewer clicks and shorter response times in our experiment. Importantly, we validate the IRR experimental results in a real-world setting, showing that CVs with religious attributes are significantly less likely to be viewed or downloaded in the job portal with which we collaborate for the IRR study.

The underlying mechanism appears to stem from shifts in employers' perceptions of candidates' qualities and personalities in response to the display of religiosity. Veiled and bearded candidates are perceived as less attractive and receive lower ratings for flexibility, agreeableness, extroversion, and openness to experience. By contrast, we find no meaningful heterogeneity by customer-contact intensity or educational requirements of the vacancy, suggesting that this differential treatment is not driven by instrumental concerns about expected job performance.

Based on an incentivized survey we conducted with job seekers, the latter are largely unaware of the penalty and tend to be overly optimistic about the consequences of displaying religious symbols in their job applications. Interestingly, job seekers who do not display religious symbols in their CVs (as recorded in the platform's database) predict the employer penalty more accurately, whereas those who upload veiled photos are entirely unaware of it. At the same time, all job seekers –regardless of veiling status or gender– believe that veiled female candidates are less likely to experience unwanted attention in the workplace, highlighting a perceived benefit of wearing the headscarf in the Indonesian context.

Our study contributes to open questions on labor market discrimination in developing country contexts. Whereas most prior research has examined the effects of veiling in settings where Muslims are a minority, our analysis offers a unique perspective on how overt displays of Muslim identity affect labor market outcomes in a majority-Muslim context. Also, unlike most studies, which focus primarily on women, we also examine outcomes for men and find that the effects do not differ systematically by gender.

Our findings contribute to the literature on female labor market outcomes and economic development in light of the rising popularity of headscarves among women across Muslim countries (e.g., Carvalho, 2013; Brenner, 1996; Smith-Hefner, 2007). While previous work has highlighted how this practice may help women navigate restrictive social norms, there is little evidence on its labor market consequences and hiring outcomes. Our study aims to contribute to fill this gap.

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A Appendix tables and figures

TABLE A.1 – Summary Statistics: IRR experiment

Variable	Mean	S.d.	Min.	Max.	Obs.
Rating (0–10)	4.765	2.890	0	10	21600
Rating (std)	0	1	–1.649	1.812	21600
Likelihood of accept. (0–10)	5.712	2.636	0	10	21600
Likelihood of accept. (std)	0	1	–2.167	1.627	21600
Interview (dummy)	0.462	0.499	0	1	21600
Interview (std)	0	1	–0.926	1.080	21600
(Log) salary (Rp)	14.904	0.521	11.513	19.807	21600
Salary (Rp, log, std)	0	1	–6.502	9.403	21600

Notes: The table reports summary statistics for the IRR experiment sample. The sample consists of 650 unique employers that advertised at least one vacancy. In total, there are 720 unique job vacancies.

TABLE A.2 – Vacancy characteristics

Variable	Share (IRR survey=No)	Share (IRR survey=Yes)	Share (difference)
Job level			
Job level: Staff	0.749	0.707	–0.042**
Job level: Fresh Graduate	0.174	0.209	0.035**
Job level: Supervisor/Coordinator	0.051	0.063	0.013
Job level: Manager/Assistant Manager	0.027	0.021	–0.006
Gender Requirement			
Gender req.: Req. M/F	0.529	0.543	0.014
Gender req.: Req. F	0.259	0.257	–0.002
Gender req.: Req. M	0.212	0.200	–0.012
Education Requirement			
Educ. req.: High-school	0.606	0.401	–0.204***
Educ. req.: Vocational educ.	0.231	0.279	0.048***
Educ. req.: Bachelor or above	0.163	0.319	0.156***
Job Category			
Sales / Marketing	0.221	0.268	0.047***
Administration	0.111	0.078	–0.033***
Accounting and Finance	0.105	0.096	–0.01
Education and Training	0.052	0.071	0.018**
Transportation and Logistics	0.050	0.043	–0.007
Restaurant	0.049	0.043	–0.005
Design	0.048	0.031	–0.017**
Customer Service	0.045	0.033	–0.011
Construction and Building	0.038	0.028	–0.01
Other (Inf. Technol., Internet and New Media , Factory and Manufacturing, ...)	0.281	0.310	0.029
Province			
Dki Jakarta	0.397	0.385	–0.012
Jawa Barat	0.201	0.203	0.002
Jawa Timur	0.129	0.118	–0.011
Banten	0.113	0.114	0.001
Jawa Tengah	0.045	0.049	0.003
Other (Yogyakarta, Bali, Sumatera Utara, ...)	0.116	0.132	0.016

Notes: The table reports descriptive statistics comparing employer-vacancies invited and not invited to the IRR experiment. The total employer pool consists of 4,571 employers with 5,768 vacancies. The final IRR sample includes 720 vacancies. Significance levels are denoted as * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

TABLE A.3 – Traits examined in the beliefs elicitation exercise

Traits	Definition in the survey
Attractive	Being beautiful or having a pleasant appearance.
Religious	Having faith in God and following a religion, e.g. by praying and/or by adhering to religious obligations.
Clever	Sharp and intelligent, being able to solve problems and to find solutions.
Competent	Having the skills or knowledge to perform one's work taks well and proficiently.
Morally upright	Having or showing a strong principle about right and wrong.
Flexible	Being able to adapt to different working hours, schedule, and circumstances based on the needs of the job.
Agreeable	Being cooperative, kind, warm, trusting, and tend to avoid conflict.
Extrovert	Being gregarious, sociable, assertive and active.
Conscientious	Having self-discipline, competency, and care in one's work or duties.
Emotionally stable	Being able to maintain one's emotional balance and being composed under stressful cricumstances.
Open to experience	Being adventurous, imaginative, and intellectually curious.

TABLE A.4 – Summary Statistics: Participant of the Jobseeker Survey

Variable	Mean	S.d.	Min.	Max.	Obs.
Age	26.668	6.504	19	57	1860
Female jobseeker	0.421	0.494	0	1	1881
Married	0.224	0.417	0	1	1881
Applicant education: High-school	0.508	0.500	0	1	1881
Applicant education: Vocational educ.	0.078	0.268	0	1	1881
Applicant education: Bachelor	0.404	0.491	0	1	1881
Applicant education: Master/PhD	0.010	0.100	0	1	1881
Applicant experience: 0 years exp.	0.313	0.464	0	1	1881
Applicant experience:< 1 year exp.	0.014	0.119	0	1	1881
Applicant experience: 1–2 years exp.	0.292	0.455	0	1	1881
Applicant experience: 2–5 years exp.	0.203	0.402	0	1	1881
Applicant experience: 5–10 years exp.	0.107	0.310	0	1	1881
Applicant experience:+ 10 years exp.	0.071	0.256	0	1	1881
Veil (jobseeker)	0.737	0.440	0	1	731
Muslim beard (jobseeker)	0.111	0.314	0	1	974

Notes: The table reports descriptive statistics for observations in the jobseeker survey. With the exception of the last two variables (veil and beard), which are based on a classification exercise conducted by the research team using profile pictures shared on the job portal, all other variables are sourced from administrative data provided directly by the job portal.

TABLE A.5 – Balance Test: Jobseeker Survey

Variable	Control mean (s.d.)	Has survey (1=yes) coeff. (s.e.)	P-value	Obs.
Age	25.94	0.73***	0.00	13717
	(6.45)	(0.16)		
Female jobseeker	0.48	–0.06***	0.00	13941
	(0.50)	(0.01)		
Married	0.20	0.02**	0.02	13941
	(0.40)	(0.01)		
Applicant education: High-school	0.50	0.01	0.38	13942
	(0.50)	(0.01)		
Applicant education: Vocational educ.	0.08	–0.00	0.85	13942
	(0.27)	(0.01)		
Applicant education: Bachelor	0.41	–0.01	0.47	13942
	(0.49)	(0.01)		
Applicant education: Master/PhD	0.01	–0.00	0.79	13942
	(0.10)	(0.00)		
Applicant experience: 0 years exp.	0.34	–0.03**	0.01	13942
	(0.47)	(0.01)		
Applicant experience:¡ 1 year exp.	0.01	0.01**	0.02	13942
	(0.09)	(0.00)		
Applicant experience: 1–2 years exp.	0.07	0.00	0.64	13942
	(0.25)	(0.01)		
Applicant experience: 2–5 years exp.	0.09	0.01*	0.06	13942
	(0.29)	(0.01)		
Applicant experience: 5–10 years exp.	0.30	–0.00	0.66	13942
	(0.46)	(0.01)		
Applicant experience:+ 10 years exp.	0.19	0.01	0.19	13942
	(0.39)	(0.01)		

Notes: The table reports the balance test for participants taking part in the jobseeker survey. Total number of jobseekers invited to participate is 13942, out of which 1881 (13.5%) eventually responded to the invitation. Significance levels are indicated by: * significant at 10%, ** significant at 5%, *** significant at 1%.

TABLE A.6 – Likelihood of Acceptance Controlling for Hiring Interest

	Likelihood of acceptance (std)			
	(1)	(2)	(3)	(4)
Veil			-0.015	-0.015
			(0.010)	(0.010)
Beard			-0.015	-0.016
			(0.021)	(0.021)
Rating (0-10)	0.199***		0.198***	
	(0.008)		(0.008)	
Married	-0.007	-0.006	-0.007	-0.006
	(0.009)	(0.009)	(0.009)	(0.009)
Diploma	-0.079***	-0.078***	-0.078***	-0.078***
	(0.013)	(0.013)	(0.013)	(0.013)
Bachelor	-0.098***	-0.097***	-0.097***	-0.097***
	(0.016)	(0.016)	(0.016)	(0.016)
GPA	-0.036**	-0.037***	-0.036**	-0.037***
	(0.014)	(0.014)	(0.014)	(0.014)
Internship only	-0.028***	-0.029***	-0.028***	-0.028***
	(0.007)	(0.007)	(0.007)	(0.007)
1 year	-0.045***	-0.045***	-0.044***	-0.045***
	(0.012)	(0.012)	(0.012)	(0.012)
3 years	-0.059***	-0.061***	-0.058***	-0.060***
	(0.013)	(0.013)	(0.013)	(0.013)
5 years	-0.032	-0.034	-0.033	-0.035
	(0.027)	(0.027)	(0.027)	(0.027)
7 years	-0.047	-0.049	-0.048	-0.049
	(0.036)	(0.036)	(0.036)	(0.036)
9 years	-0.017	-0.021	-0.019	-0.022
	(0.041)	(0.041)	(0.041)	(0.041)
Constant	-0.851***	0.096***	-0.844***	0.101***
	(0.039)	(0.012)	(0.039)	(0.012)
Mean contr. (Fem - No Veil)	0.042	0.042	0.042	0.042
Mean contr. (Male - No Beard)	-0.034	-0.034	-0.034	-0.034
Veil = Beard (p-val)			0.999	0.965
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
Rating FE	NO	YES	NO	YES
N	21600	21600	21600	21600
R^2	0.740	0.741	0.740	0.741

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. Standard errors, clustered at the employer and hypothetical candidate level, are reported in parentheses. * p-value $<$ 10%, ** p-value $<$ 5%, *** p-value $<$ 1%.

TABLE A.7 – Employer preferences: Blue- vs. White-collar Job

Sample:	Rating (std)		Interview (dummy)	
	White collar (1)	Blue collar (2)	White collar (3)	Blue collar (4)
Veil	-0.071***	-0.108**	-0.032***	-0.038*
	(0.019)	(0.044)	(0.010)	(0.021)
Beard	-0.098***	-0.216***	-0.048**	-0.108**
	(0.037)	(0.078)	(0.018)	(0.043)
Mean contr. (Fem - No Veil)	0.123	-0.216	0.510	0.404
Mean contr. (Male - No Beard)	-0.078	-0.074	0.414	0.479
Veil=Beard (p-val)	0.505	0.228	0.460	0.140
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	17790	3810	17790	3810
R^2	0.480	0.526	0.359	0.441
Sample:	Likelihood of acceptance (std)		(Log) salary (Rp)	
	White collar (1)	Blue collar (2)	White collar (3)	Blue collar (4)
Veil	-0.049***	-0.116***	-0.016***	-0.045**
	(0.015)	(0.036)	(0.004)	(0.020)
Beard	-0.077**	-0.120*	0.009	0.019
	(0.033)	(0.069)	(0.012)	(0.018)
Mean contr. (Fem - No Veil)	0.101	-0.265	14.944	14.713
Mean contr. (Male - No Beard)	-0.006	-0.138	14.945	14.721
Veil=Beard (p-val)	0.458	0.958	0.066	0.025
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	17790	3810	17790	3810
R^2	0.558	0.615	0.847	0.642

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates. Standard errors, clustered at the employer level, are reported in parentheses. * p-value $< 10\%$, ** p-value $< 5\%$, *** p-value $< 1\%$.

TABLE A.8 – Employer Preferences: Owner vs. HR Manager

Sample:	Rating (std)		Interview (dummy)	
	Employer: Other (1)	Employer: Owner/CEO/ COO/CFO (2)	Employer: Other (3)	Employer: Owner/CEO/ COO/CFO (4)
Veil	-0.081***	-0.063**	-0.041***	-0.020
	(0.022)	(0.025)	(0.012)	(0.013)
Beard	-0.114***	-0.162**	-0.058***	-0.079**
	(0.041)	(0.066)	(0.021)	(0.034)
Mean contr. (Fem - No Veil)	0.101	0.022	0.498	0.486
Mean contr. (Male - No Beard)	0.026	-0.244	0.464	0.369
Veil=Beard (p-val)	0.465	0.166	0.475	0.100
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	12930	8670	12930	8670
R^2	0.512	0.451	0.381	0.350

Sample:	Likelihood of acceptance (std)		(Log) salary (Rp)	
	Employer: Other (1)	Employer: Owner/CEO/ COO/CFO (2)	Employer: Other (3)	Employer: Owner/CEO/ COO/CFO (4)
Veil	-0.071***	-0.040**	-0.017***	-0.023***
	(0.019)	(0.018)	(0.005)	(0.008)
Beard	-0.057*	-0.162**	0.031***	-0.031
	(0.033)	(0.069)	(0.009)	(0.020)
Mean contr. (Fem - No Veil)	0.027	0.063	14.958	14.836
Mean contr. (Male - No Beard)	0.012	-0.109	14.965	14.788
Veil=Beard (p-val)	0.713	0.101	0.000	0.703
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	12930	8670	12930	8670
R^2	0.602	0.537	0.836	0.764

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates. Standard errors, clustered at the employer level, are reported in parentheses. * p-value $< 10\%$, ** p-value $< 5\%$, *** p-value $< 1\%$.

TABLE A.9 – Employer preferences: Entry level vs. Managerial

Sample:	Rating (std)		Interview (dummy)	
	Entry (1)	Mid-Senior (2)	Entry (3)	Mid-Senior (4)
Veil	-0.072***	-0.110	-0.030***	-0.067**
	(0.019)	(0.067)	(0.010)	(0.031)
Beard	-0.109***	-0.083	-0.054***	-0.048
	(0.039)	(0.061)	(0.020)	(0.042)
Mean contr. (Fem - No Veil)	0.075	-0.022	0.494	0.480
Mean contr. (Male - No Beard)	-0.096	0.101	0.419	0.510
Veil=Beard (p-val)	0.383	0.759	0.251	0.732
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	19740	1860	19740	1860
R^2	0.486	0.479	0.371	0.320

Sample:	Likelihood of acceptance (std)		(Log) salary (Rp)	
	Entry (1)	Mid-Senior (2)	Entry (3)	Mid-Senior (4)
Veil	-0.055***	-0.097*	-0.018***	-0.045***
	(0.014)	(0.053)	(0.005)	(0.015)
Beard	-0.084***	-0.013	0.015	0.020
	(0.032)	(0.048)	(0.013)	(0.025)
Mean contr. (Fem - No Veil)	0.046	-0.003	14.882	15.242
Mean contr. (Male - No Beard)	-0.053	0.139	14.867	15.181
Veil=Beard (p-val)	0.399	0.281	0.016	0.061
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	19740	1860	19740	1860
R^2	0.571	0.581	0.817	0.703

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates. Standard errors, clustered at the employer level, are reported in parentheses. * p-value $< 10\%$, ** p-value $< 5\%$, *** p-value $< 1\%$.

TABLE A.10 – Employer Preferences: Male vs. Female Employer

	Rating (std)		Interview (dummy)	
	Male Employer (1)	Female Employer (2)	Male Employer (3)	Female Employer (4)
Veil	-0.058**	-0.096***	-0.024**	-0.043***
	(0.024)	(0.023)	(0.011)	(0.014)
Beard	-0.098**	-0.149***	-0.019	-0.120***
	(0.048)	(0.052)	(0.021)	(0.030)
Mean contr. (Fem - No Veil)	0.057	0.085	0.500	0.484
Mean contr. (Male - No Beard)	-0.077	-0.076	0.423	0.434
Veil=Beard (p-val)	0.441	0.356	0.827	0.023
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	12630	8970	12630	8970
R^2	0.475	0.504	0.375	0.360

	Likelihood of acceptance (std)		(Log) salary (Rp)	
	Male Employer (1)	Female Employer (2)	Male Employer (3)	Female Employer (4)
Veil	-0.052***	-0.067***	-0.018***	-0.022***
	(0.018)	(0.021)	(0.006)	(0.006)
Beard	-0.065	-0.103**	0.020	0.001
	(0.041)	(0.050)	(0.014)	(0.013)
Mean contr. (Fem - No Veil)	0.041	0.044	14.928	14.878
Mean contr. (Male - No Beard)	-0.002	-0.080	14.900	14.894
Veil=Beard (p-val)	0.763	0.509	0.022	0.123
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	12630	8970	12630	8970
R^2	0.570	0.579	0.786	0.840

Notes: The excluded reference group consists of jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates. Standard errors, clustered at the employer level, are reported in parentheses. * p-value $< 10\%$, ** p-value $< 5\%$, *** p-value $< 1\%$.

TABLE A.11 – Fatigue Effects

	N Clicks	N Clicks	Response Time	Response Time	< 10 Seconds	< 10 Seconds
	(1)	(2)	(3)	(4)	(5)	(6)
Veil	-0.092**	-0.094**	-0.647**	-0.678**	0.015***	0.015***
	(0.039)	(0.039)	(0.273)	(0.276)	(0.003)	(0.003)
Beard	-0.140**	-0.125*	-0.011	0.261	0.013**	0.012**
	(0.070)	(0.066)	(0.805)	(0.770)	(0.006)	(0.005)
Second Half of Study	-0.652***		-11.257***		0.049***	
	(0.058)		(0.364)		(0.005)	
Latter Half of Block		-0.530***		-9.428***		0.031***
		(0.055)		(0.271)		(0.003)
Mean contr. (Fem - No Veil)	7.722	7.722	30.273	30.273	0.048	0.048
Mean contr. (Male - No Beard)	7.442	7.442	29.730	29.730	0.057	0.057
Veil=Beard (p-val)	0.550	0.694	0.450	0.251	0.765	0.608
Employer/Vacancy FE	YES	YES	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES	YES	YES
N	21600	21600	21600	21600	21600	21600
R^2	0.605	0.603	0.298	0.281	0.397	0.390

Notes: The excluded groups are jobseekers without religious markers, unmarried, with only a high school degree, and with no work experience. Significance levels are indicated by: * significant at 10%, ** significant at 5%, *** significant at 1%.

TABLE A.12 – Implicit bias – Latter Half of Block

	Rating (std)	Likelihood of acceptance (std)	Interview (dummy)	(Log) salary (Rp)
	(1)	(2)	(3)	(4)
Veil	-0.051**	-0.047***	-0.018	-0.022***
	(0.021)	(0.017)	(0.011)	(0.006)
	[0.032]	[0.024]	[0.109]	[0.004]
	[[0.034]]	[[0.017]]	[[0.286]]	[[0.007]]
Beard	-0.107***	-0.092**	-0.068***	0.011
	(0.040)	(0.038)	(0.020)	(0.010)
	[0.026]	[0.032]	[0.005]	[0.278]
	[[0.022]]	[[0.034]]	[[0.010]]	[[0.737]]
Latter Half of Block	0.001	-0.049***	0.004	-0.024***
	(0.015)	(0.014)	(0.008)	(0.006)
	[0.710]	[0.005]	[0.425]	[0.003]
	[[0.937]]	[[0.009]]	[[0.858]]	[[0.004]]
× Veil	-0.046**	-0.021	-0.027**	0.006
	(0.020)	(0.019)	(0.011)	(0.007)
	[0.037]	[0.258]	[0.032]	[0.324]
	[[0.044]]	[[0.700]]	[[0.032]]	[[0.773]]
× Beard	-0.028	0.014	0.014	0.004
	(0.039)	(0.039)	(0.018)	(0.013)
	[0.359]	[0.543]	[0.342]	[0.543]
	[[0.798]]	[[0.937]]	[[0.785]]	[[0.937]]
Mean contr. (Fem - No Veil)	0.068	0.042	0.493	14.907
Mean contr. (Male - No Beard)	-0.077	-0.034	0.428	14.898
Veil = Beard (p-val)	0.214	0.276	0.032	0.007
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
Observations	21600	21600	21600	21600
R^2	0.483	0.571	0.364	0.813

Notes: The excluded groups are jobseekers without religious markers, unmarried, with only a high school degree, and with no work experience. Significance levels are indicated by: * significant at 10%, ** significant at 5%, *** significant at 1%.

TABLE A.13 – Implicit bias - Second Half of Study

	Rating (std)	Likelihood of acceptance (std)	Interview (dummy)	(Log) salary (Rp)
	(1)	(2)	(3)	(4)
Veil	-0.080***	-0.062***	-0.027**	-0.025***
	(0.020)	(0.016)	(0.011)	(0.006)
	[0.001]	[0.001]	[0.024]	[0.001]
	[[0.005]]	[[0.009]]	[[0.030]]	[[0.008]]
Beard	-0.124***	-0.108***	-0.067***	0.027
	(0.044)	(0.036)	(0.024)	(0.019)
	[0.012]	[0.009]	[0.012]	[0.187]
	[[0.016]]	[[0.012]]	[[0.016]]	[[0.319]]
Second Half of Study	-0.018	-0.068***	0.007	-0.028***
	(0.014)	(0.014)	(0.009)	(0.006)
	[0.216]	[0.001]	[0.385]	[0.001]
	[[0.386]]	[[0.001]]	[[0.753]]	[[0.003]]
× Veil	0.011	0.009	-0.009	0.011
	(0.019)	(0.018)	(0.013)	(0.007)
	[0.413]	[0.441]	[0.401]	[0.172]
	[[0.826]]	[[0.826]]	[[0.785]]	[[0.281]]
× Beard	0.005	0.044	0.012	-0.031
	(0.048)	(0.040)	(0.027)	(0.024)
	[0.477]	[0.276]	[0.441]	[0.216]
	[[0.884]]	[[0.498]]	[[0.826]]	[[0.398]]
Mean contr. (Fem - No Veil)	0.068	0.042	0.493	14.907
Mean contr. (Male - No Beard)	-0.077	-0.034	0.428	14.898
Veil = Beard (p-val)	0.362	0.237	0.132	0.016
Vacancy FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
Observations	21600	21600	21600	21600
R^2	0.483	0.571	0.364	0.814

Notes: The excluded groups are jobseekers without religious markers, unmarried, with only a high school degree, and with no work experience. Significance levels are indicated by: * significant at 10%, ** significant at 5%, *** significant at 1%.

TABLE A.14 – Estimates of Employer Preferences in the Administrative Data: Low vs High IRR beard penalty

	Viewed/downloaded CV			
	Low IRR beard penalty		High IRR beard penalty	
	(1)	(2)	(3)	(4)
Veil	-0.020	-0.016	-0.125**	-0.122**
	(0.079)	(0.082)	(0.060)	(0.058)
Beard	0.052	0.068	-0.072**	-0.070*
	(0.060)	(0.063)	(0.036)	(0.036)
Female	0.017	0.019	0.324***	0.323***
	(0.064)	(0.064)	(0.097)	(0.097)
Age		-0.000		0.002
		(0.003)		(0.003)
Diploma		-0.030		-0.019
		(0.040)		(0.048)
Bachelor		-0.005		0.004
		(0.031)		(0.027)
Master/PhD		0.038		0.225***
		(0.093)		(0.060)
<1 yr experience		-0.003		-0.010
		(0.034)		(0.035)
1-2 yrs experience		0.032		-0.027
		(0.032)		(0.021)
2-5 yrs experience		0.067*		-0.058***
		(0.034)		(0.018)
5-10 yrs experience		0.072		-0.022
		(0.044)		(0.041)
>10 yrs experience		0.043		-0.061
		(0.056)		(0.109)
Married		-0.025		-0.036
		(0.039)		(0.024)
Mean contr. (Fem - No Veil)	0.655	0.655	0.667	0.667
Mean contr. (Male - No Beard)	0.630	0.630	0.406	0.406
Veil=Beard (p-val)	0.449	0.401	0.442	0.449
Vacancy FE	YES	YES	YES	YES
Controls	NO	YES	NO	YES
Province FE	NO	YES	NO	YES
N	1943	1943	1656	1656
R^2	0.239	0.252	0.325	0.334

Notes: The excluded reference group consists of male jobseekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. Standard errors, clustered at the employer level, are reported in parentheses. * p-value < 10%, ** p-value < 5%, *** p-value < 1%.

TABLE A.15 – Balance Test: Matched employers

Variable	Control mean (s.d.)	Matched employer (1=yes) coeff. (s.e.)	P-value	Obs.
Female employer	0.54	–0.13	0.10	720
	(0.50)	(0.08)		
Employer age: < 20 years-old	0.00	0.01	0.61	719
	(0.00)	(0.01)		
Employer age: 20–29 years-old	0.16	0.14*	0.05	719
	(0.37)	(0.07)		
Employer age: 30–39 years-old	0.35	–0.00	0.97	719
	(0.48)	(0.08)		
Employer age: 40–50 years-old	0.37	–0.09	0.18	719
	(0.49)	(0.07)		
Employer age: >50 years-old	0.12	–0.05	0.27	719
	(0.32)	(0.04)		
Employer education:< Highschool	0.00	0.00	0.80	720
	(0.00)	(0.01)		
Employer education:High-school	0.05	0.03	0.47	720
	(0.21)	(0.04)		
Education: Employer: Vocational educ.	0.12	–0.04	0.35	720
	(0.32)	(0.04)		
Employer education:Bachelor	0.65	0.05	0.46	720
	(0.48)	(0.07)		
Employer education:Master/PhD	0.19	–0.05	0.39	720
	(0.39)	(0.05)		
Employer education:Other	0.00	0.00	0.80	720
	(0.00)	(0.01)		
Employer position: Owner	0.23	0.02	0.74	720
	(0.43)	(0.07)		
Employer position: HR	0.30	0.14*	0.06	720
	(0.47)	(0.08)		
Employer position: Division manager	0.12	–0.04	0.42	720
	(0.32)	(0.04)		
Employer position: Secretary	0.02	–0.00	0.96	720
	(0.15)	(0.02)		
Employer position: Other	0.02	0.03	0.36	720
	(0.15)	(0.04)		
Employer position: CEO/COO/CFO	0.30	–0.17***	0.00	720
	(0.47)	(0.05)		
Educ. req.: High-school	0.33	0.08	0.30	720
	(0.47)	(0.08)		
Educ. req.: Vocational educ.	0.35	–0.07	0.29	720
	(0.48)	(0.07)		
Educ. req.: Bachelor/ Master	0.33	–0.01	0.93	720
	(0.47)	(0.07)		
Required education	0.67	–0.08	0.30	720
	(0.47)	(0.08)		
Gender req.: Req. M/F	0.65	–0.11	0.15	720
	(0.48)	(0.08)		
Gender req.: Req. M	0.16	0.04	0.54	720
	(0.37)	(0.06)		
Gender req.: Req. F	0.19	0.08	0.27	720
	(0.39)	(0.07)		

Notes: The table reports the balance test of vacancies in the IRR survey which eventually matched in the jobseeker survey. Total number of vacancies in the IRR survey is 720, out of which 677 are matched to the jobseeker survey: 677(94.00%). Significance levels are indicated by $*<.1$, $**<.05$, $***<.01$.

TABLE A.16 – Characteristics of Jobseeker with and without Headscarf

Variable	Control mean (s.d.)	Has veil (1=yes) coeff. (s.e.)	P-value	Obs.
Age	26.36	–1.53***	0.00	722
	(5.73)	(0.41)		
Married	0.15	–0.00	0.88	731
	(0.36)	(0.03)		
Applicant education: High-school	0.42	–0.04	0.38	731
	(0.49)	(0.04)		
Applicant education: Vocational educ.	0.08	0.01	0.54	731
	(0.28)	(0.03)		
Applicant education: Bachelor	0.50	0.02	0.62	731
	(0.50)	(0.04)		
Applicant education: Master/PhD	0.00	0.00	0.95	731
	(0.07)	(0.01)		
Applicant experience: 0 years exp.	0.32	0.11***	0.01	731
	(0.47)	(0.04)		
Applicant experience:< 1 year exp.	0.02	0.00	0.97	731
	(0.14)	(0.01)		
Applicant experience: 1–2 years exp.	0.32	–0.02	0.53	731
	(0.47)	(0.04)		
Applicant experience: 2–5 years exp.	0.21	–0.06*	0.06	731
	(0.41)	(0.03)		
Applicant experience: 5–10 years exp.	0.07	–0.01	0.70	731
	(0.26)	(0.02)		
Applicant experience:+ 10 years exp.	0.05	–0.02	0.19	731
	(0.22)	(0.02)		

Notes: The table reports the balance test for female participants taking part in the jobseeker survey, comparing those with headscarf to those without. Total number of female respondent in the jobseeker survey in 731, out of which 539 displays veil in their CV. Significance levels are indicated by: * significant at 10%, ** significant at 5%, *** significant at 1%.

TABLE A.17 – Job Seeker Beliefs: Bearded vs. Non-bearded Job Seekers

Sample:	Rating (std)		Interview (dummy)	
	Jobseeker w/no beard	Jobseeker w/ beard	Jobseeker w/no beard	Jobseeker w/ beard
	(1)	(2)	(3)	(4)
Veil	-0.019	0.004	-0.010	0.034
	(0.016)	(0.035)	(0.008)	(0.025)
Beard	0.003	0.026	0.003	-0.005
	(0.038)	(0.090)	(0.019)	(0.059)
Mean contr. (Fem - No Veil)	0.547	0.493	0.679	0.655
Mean contr. (Male - No Beard)	0.511	0.544	0.664	0.641
Veil = Beard (p-val)	0.585	0.817	0.502	0.547
Respondent FE	YES	YES	YES	YES
Candidate FE	YES	YES	YES	YES
N	12,960	1,620	12,990	1,620
R^2	0.470	0.528	0.345	0.402

Notes: The excluded reference group consists of job seekers with no religious markers, who are unmarried, hold only a high school degree, and have no prior work experience. All specifications include the same set of controls as the main estimates in Table 1. Standard errors, clustered at job seeker and hypothetical-candidate level, are reported in parentheses. * p-value < 0.10, ** p-value < 0.05, *** p-value < 0.01.

B Classification Appendix

B.1. Source of the validation/test data

Two Indonesian annotators independently classified the pictures of women with a headscarf. A third one checked the cases when they did not agree. The pictures of men were classified by three Indonesian annotators, who were instructed to say whether the pictures were of men with any facial hair, and then to decide if this was a Muslim-style beard. A fourth annotator looked at the cases where the three did not agree. This gives us 30,924 images for women and 1,018 human-labeled images for men.

Out of these, we randomly sample for the *validation* and *test* sets, respectively: men (520; 498) and women (560; 580), ensuring no overlap between the two.

B.2. Setup

We use **gpt-4.1-2025-04-14** via the OpenAI Responses API (other models were tried and rejected based on validation performance). We start with a deterministic schedule by setting the temperature to 0. To allow the model to be more "stochastic" if it fails to produce the expected output, we let the temperature rise by an increment of 0.1 after a failure, up to three times.

B.2.1. Task Definitions and Outputs

We run three closely related binary classifications on the images:

1. **Portrait detection** (`has_portrait`): Is the image a headshot/front portrait of a person (not a document)?
2. **Facial hair (men)** (`has_facial_hair`): Any facial hair (stubble, moustache, beard, goatee, chin strap) vs. clean shaven.
   (a) **Muslim-style facial hair (men)** (`has_muslim_style_beard`): Long/darker beard with short/no moustache; dark goatee with faint moustache; or similar patterns commonly seen among Indonesian Muslim men.
3. **Head covering (women)**:
   (a) `has_covering`: Any head/face covering.
   (b) `has_muslim_covering`: Whether the covering has features commonly seen in Muslim women's attire.

We use both a System Prompt and a User Prompt when needed. For each task, we selected the prompt–model pair that maximized *validation* accuracy on the relevant target(s). We then evaluate the chosen pair once on the *unseen* test set. Other models that we tried include GPT-5 mini, GPT-5 nano, GPT o4-mini, GPT 4.1 nano, and GPT 4.1-mini. The code can be made available on request.

B.2.2. Best Prompts

1. System prompts

```
Men:  Facial hair (any)
You are a careful local indonesian image annotator of men's facial hair.
You will be asked to observe the characteristics of facial hair of men
in an image.  Take careful notice of light moustache around the lips,
and light beards.
```

```
Men:  Muslim-style facial hair
You are a careful local Indonesian image annotator.  Use the local context
to tag images as instructed.  You will be asked to observe the characteristics
of facial hair of men in this image.  Other than what you may know from
indonesian society, recall that muslim men may have darker, longer beards
while keeping shorter/no moustache at the same time.  Examples of muslim
men's facial hair include having a goatee but no moustache.  Or a long
or dark beard and light moustache.  Or dark goatee and faint moustache.
```

Sometimes the picture may not be clear, and the images may be faint, but always make your best guess.

Women: Head/face covering
No separate system prompt required beyond the general instruction above.

2. User prompts

Men: Facial hair (any)
Is the image a headshot (or a front portrait) of a man (and not a document)? (reply in yes/no) Then, check if the man in the picture has ANY facial hair - all and any hair count - stubble, moustache, beard, goatee, chin strap - are all facial hair. (reply yes/no) Look very carefully, especially around the lips, for a light moustache - that counts as a 'yes' too. A light beard, goatee or chin strap is also a 'yes' Any hair on the face is facial hair. 'yes' Only fully clean shaven/hairless faces should be classified as 'no'. You have to return a comma separated list of these 2 yes/no responses (e.g. yes, yes) with your best guess.

Men: Muslim-style facial hair
Is the image a headshot (or a front portrait) of a man (and not a document)? (reply in yes/no) Does the man have facial hair features more commonly seen in indonesian muslim men? (reply yes/no). You have to return a comma-separated list of these 2 yes/no responses (e.g. yes, yes) with your best guess.

Women: Head/face covering
Is the image a headshot (or a front portrait) of a woman (and not a document)? (reply in yes/no) If so, does the image of this indonesian woman have ANY head or face covering? (reply in yes/no) If so, does the head or face covering have features more commonly seen in muslim women generally? (reply yes/no). You have to return a comma-separated list of these 3 yes/no responses (e.g., yes, yes, no) with your best guess.

B.3. Performance

TABLE B.18 – Validation Performance by Task

Task	N	Accuracy	Precision	Recall	F1
has_portrait (women)	560	0.942	—	—	—
has_portrait (men)	520	0.887	—	—	—
has_covering	543	0.987	0.984	0.997	0.990
has_muslim_covering	543	0.996	0.997	0.997	0.997
has_facial_hair	497	0.805	0.800	0.769	0.784
has_muslim_style_beard	497	0.938	0.702	0.741	0.721

Notes: Accuracy is computed on all images for *has_portrait*; For other tasks, the metrics are calculated (`has_portrait=yes`). Model/prompt pairs were selected by validation accuracy; no validation–test leakage. Model: GPT-4.1 (2025-04-14).

TABLE B.19 – Test Performance by Task

Task	N	Accuracy	Precision	Recall	F1
has_portrait (women)	580	0.939	—	—	—
has_portrait (men)	498	0.904	—	—	—
has_covering	567	0.982	0.976	1.000	0.987
has_muslim_covering	567	0.998	0.997	1.000	0.999
has_facial_hair	477	0.809	0.732	0.821	0.774
has_muslim_style_beard	477	0.941	0.741	0.741	0.741

Notes: Accuracy is computed on all images for *has_portrait*; For other tasks, the metrics are calculated (`has_portrait=yes`). Model/prompt pairs were selected by validation accuracy; no validation–test leakage. Model: GPT-4.1 (2025-04-14).