



## How clicks on a job platform can reveal bias

**Scientists at ETH Zurich have leveraged big data from recruitment platforms and machine learning to study hiring discrimination. They show that discrimination against immigrants depends, among other things, on the time of day; and that both men and women face discrimination.**

Education, professional skills and experience are the essential criteria for filling a position – or at least that is the expectation. The reality often looks different, as numerous studies have shown<sup>1</sup>. When deciding whether to hire a candidate or not, gender, origin or ethnicity sometimes also play an important role; factors that say little about a candidate's suitability for a job.

This type of discrimination violates the principle of equal opportunities. For those affected, this may have long-term disadvantages, such as longer unemployment or lower wages. This is why it is crucial to understand who is discriminated against, and why.

The research team collaborated with the State Secretariat for Economic Affairs (SECO) to gain access to anonymized data from Job-Room, one of the largest recruitment platforms in Switzerland. Job-Room contains profiles of more than 150,000 job seekers. Recruiters hiring on Job-Room specify the criteria required for a particular job. They then receive a list of suitable candidates and can view their profiles. Among other things, the profiles contain information on expertise, gender, nationality and language skills of candidates.

<sup>1</sup> For an overview about discrimination in recruiting processes see also: Altonji J. G, Blank R. M: Race and gender in the labor market. Handbook of Labor Economics 1999, 3: 3143–3259.  
Bertrand M, Duflo E: Field experiments on discrimination. Handbook of Economic Field Experiments 2017, 1: 309–393

If recruiters are interested in particular candidates, they can contact them with just one click and invite them to a job interview.

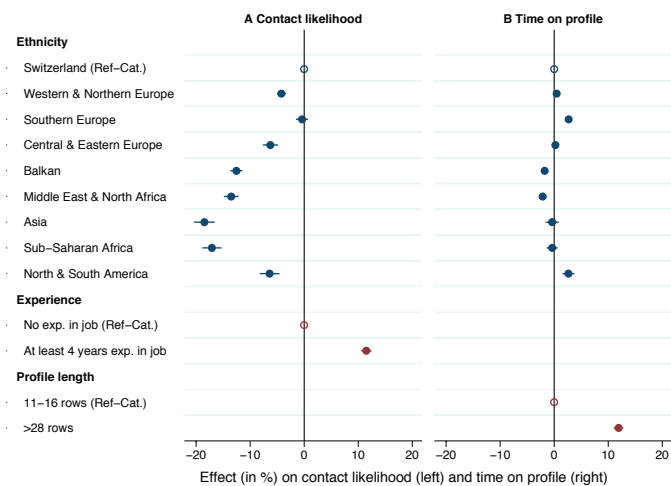
### Observing millions of decisions

The researchers analysed over ten months which candidates were contacted for an interview, and how recruiters made their selection. Their novel approach – which has significant advantages over conventional methods of studying discrimination – enabled them to determine how the origin or gender of a candidate influenced the likelihood of being contacted.

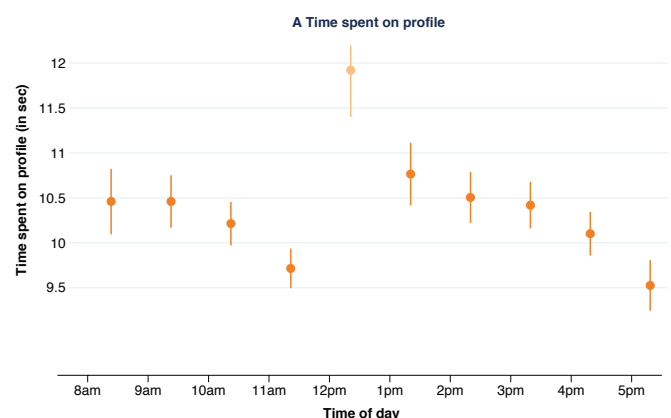
Previous research has mainly used correspondence studies to shed light on discrimination. In these studies, researchers send HR managers fictitious CVs that are identical except for the characteristic of interest, e.g. the applicant's ethnicity. The researchers then record which applicants are invited to an interview. This is a costly and, because of its interference in actual hiring processes, not unproblematic procedure. Furthermore, correspondence studies are typically limited to few applications and occupations. "By contrast, our method allows us to study discrimination across different professions and points in time, and to analyse the entire search process on the platform. We know which candidates are displayed to recruiters, when and for how long recruiters view a profile, if they click on the contact button – and we observe millions of such decisions," says co-author Daniel Kopp.

## Discrimination is larger towards the end of the workday

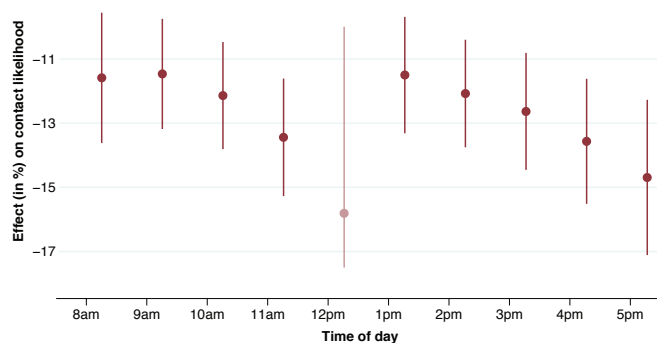
The research team found that on average immigrant job-seekers were 6.5 percent less likely to be contacted than Swiss jobseekers with otherwise identical characteristics. This discrimination was particularly pronounced for migrants from the Balkans, Africa, the Middle East and Asia, who are often faced with prejudices in everyday life.



The researchers were able to show that a foreign origin has a stronger negative impact towards noon and in the evening – when recruiters review CVs faster. So the same recruiter makes different decisions depending on the time of day. “This result suggests that unconscious biases, such as stereotypes about minorities, also contribute to discrimination,” says Dominik Hangartner, professor at ETH Zurich. These unconscious biases might play a larger role when we are tired or want to leave work.



B Non-European minorities relative to natives



The study also found that both men and women face discrimination. Given equal qualifications, women are mainly discriminated against in typical male professions and men in typical female professions. In the five professions with the lowest proportion of women, women are 7 percent less likely to be contacted. In the five occupations with the highest proportion of women, they are 13 percent more likely to be contacted. According to co-author Michael Siegenthaler, some recruiters still seem to think that women are more suited to certain professions than men, and vice versa. “As a result, occupational segregation persists or is even increased.”

## Does digitisation lead to more discrimination?

Online platforms such as Job-Room are becoming an increasingly important tool for recruitment. Does that mean discrimination in the job search is growing? The researchers do not expect this to be the case. There is no evidence of more discrimination on online platforms than in traditional recruitment processes. According to Daniel Kopp, discrimination is rather a structural and societal problem that is reflected across the entire labour market. “But in the case of online portals, we can use the existing data to study hiring discrimination in detail and, based on the results, develop strategies to increase equal hiring opportunities.”

For details see “Monitoring hiring discrimination through online recruiting platforms”, Dominik Hangartner, Daniel Kopp and Michael Siegenthaler, *Nature* (2021).

This research project was supported by the Swiss National Science Foundation (SNF)

Illustration: Fruzsina Korondi