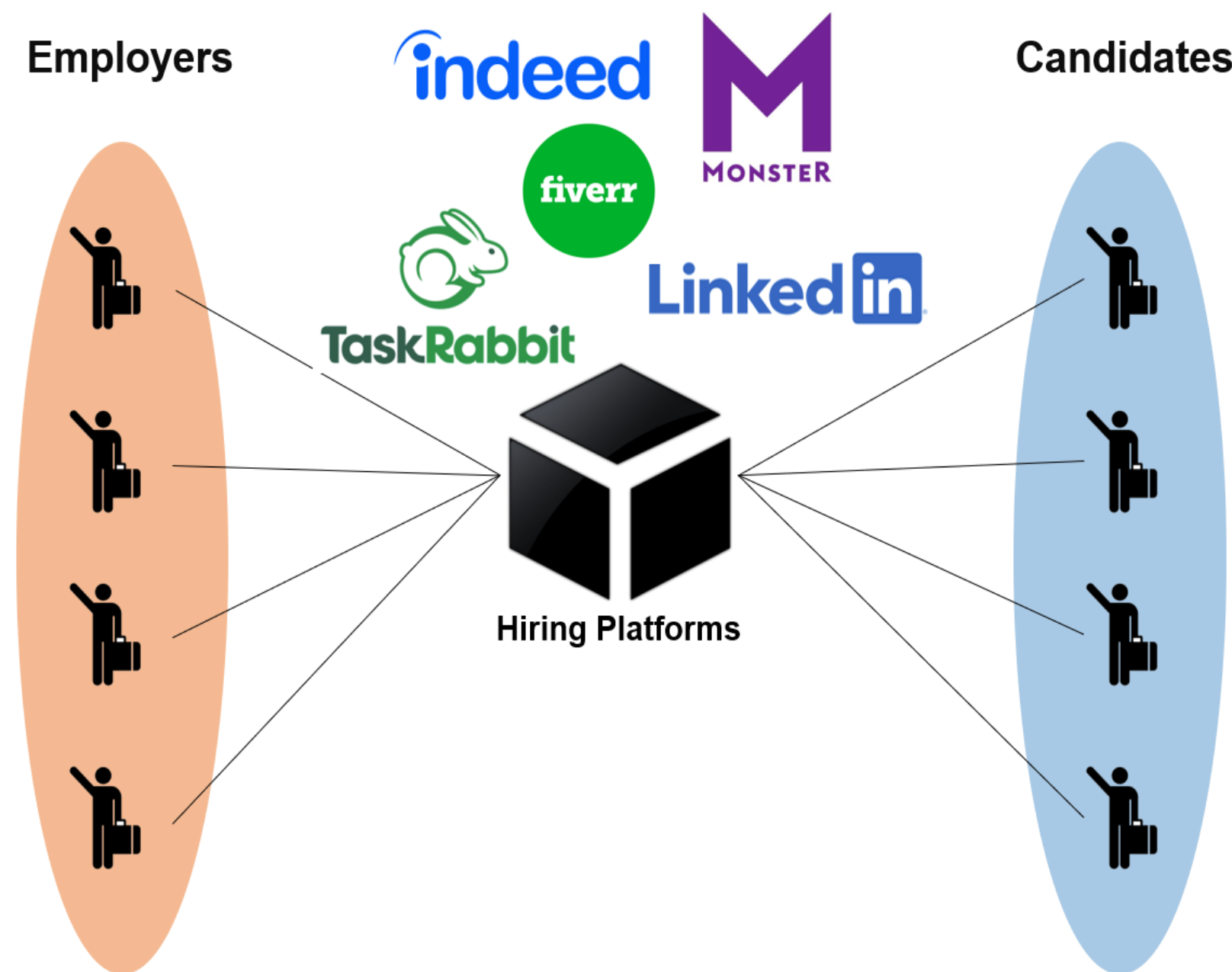


Does Fair Ranking Improve Minority Outcomes? Understanding the Interplay of Human and Algorithmic Biases in Online Hiring

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ARTIFICIAL INTELLIGENCE,
ETHICS, AND SOCIETY



Hiring platforms affect people's livelihood

- Hiring platforms connect employers and job candidates
- Prior research demonstrated undesirable algorithmic and behavioral biases
- Fair ranking algorithms were proposed to mitigate those biases
- Evaluation of fair ranking by websearch based clickmodels

But does fair ranking improve the actual outcome of underrepresented groups on hiring platforms?

We created a hiring simulation



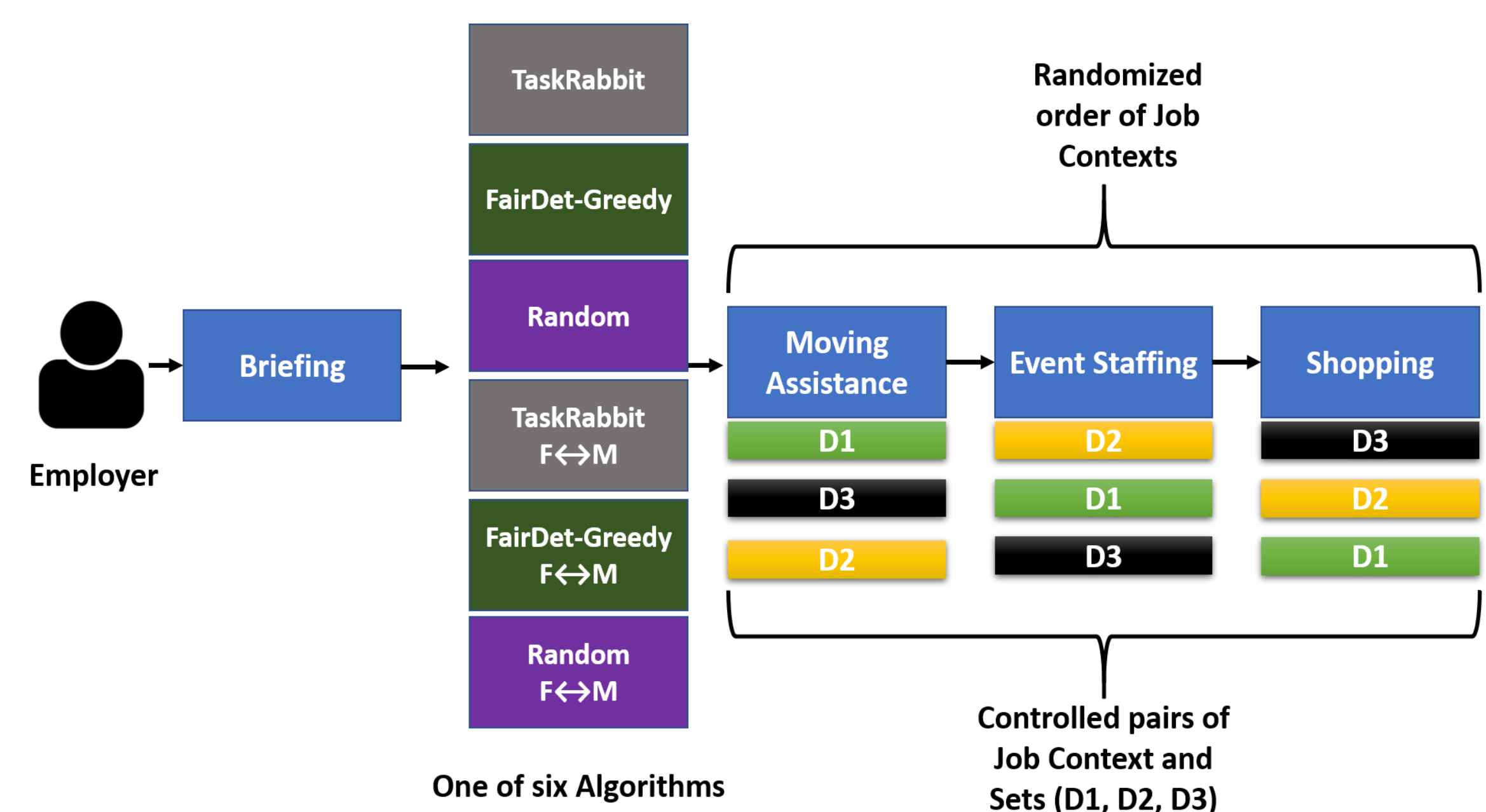
- We gathered three datasets from TaskRabbit
- Each dataset consisted of 3 female and 7 male candidates
- We used TaskRabbit's ranking, LinkedIn's Fair Det-Greedy and a random ranking to sort the job candidates
- We tested all algorithms in three different job context

D1	D2	D3
TaskRabbit	FairDet-Greedy	Random
Moving Assistance	Event Staffing	Shopping
TaskRabbit F↔M	FairDet-Greedy F↔M	Random F↔M

Is fair ranking equally effective in all job contexts and candidate pools?
Is the effectiveness of fair ranking dependent on which group is underrepresented?

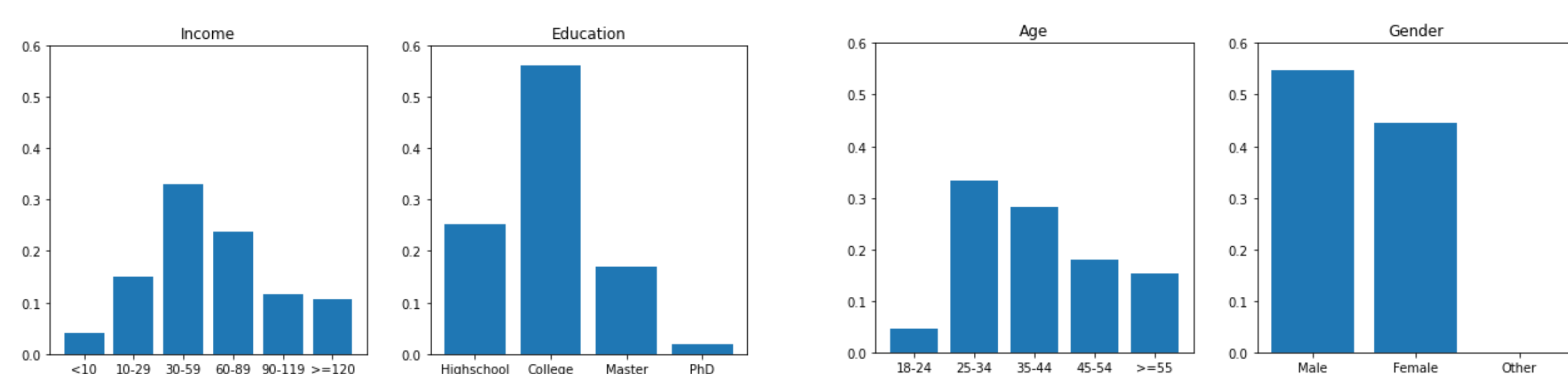
Controlling for job context, algorithm and data

- Participants were briefed and matched to one algorithm
- Latin-square design for job-context and candidate pool distribution
- Each candidate had to select her four top candidates for each task
- Free text field after the hiring task to describe decision making

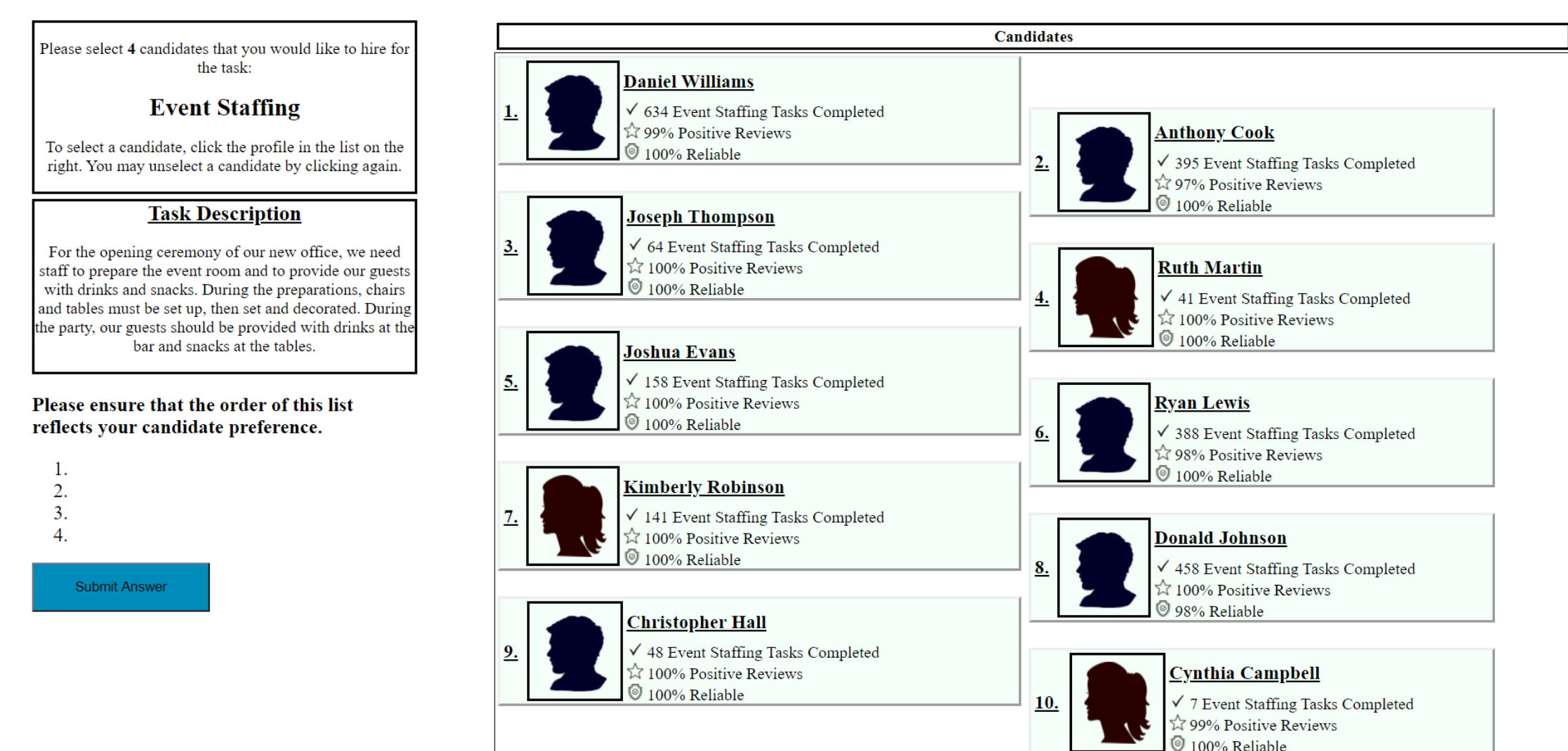


Recruiting study participants

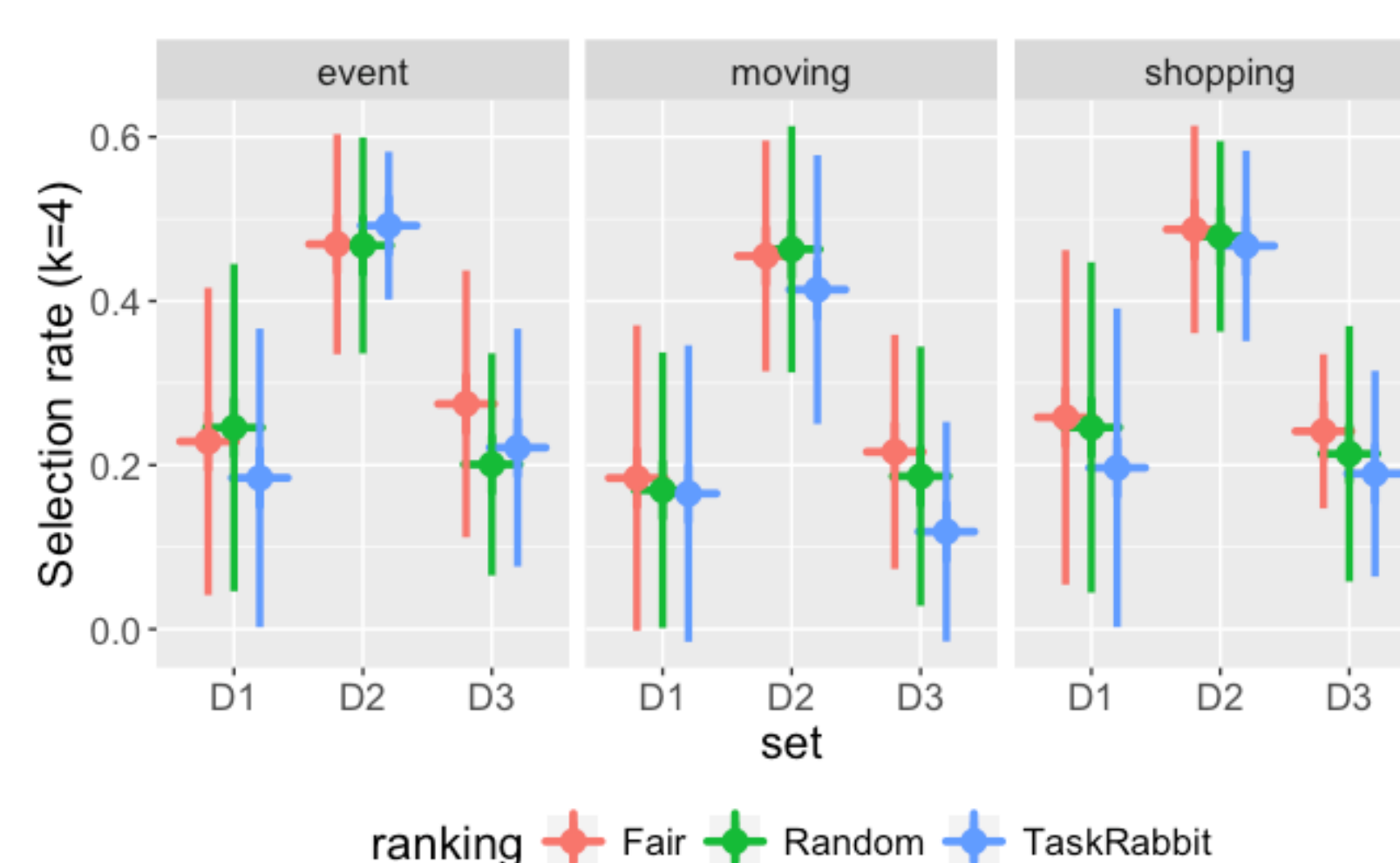
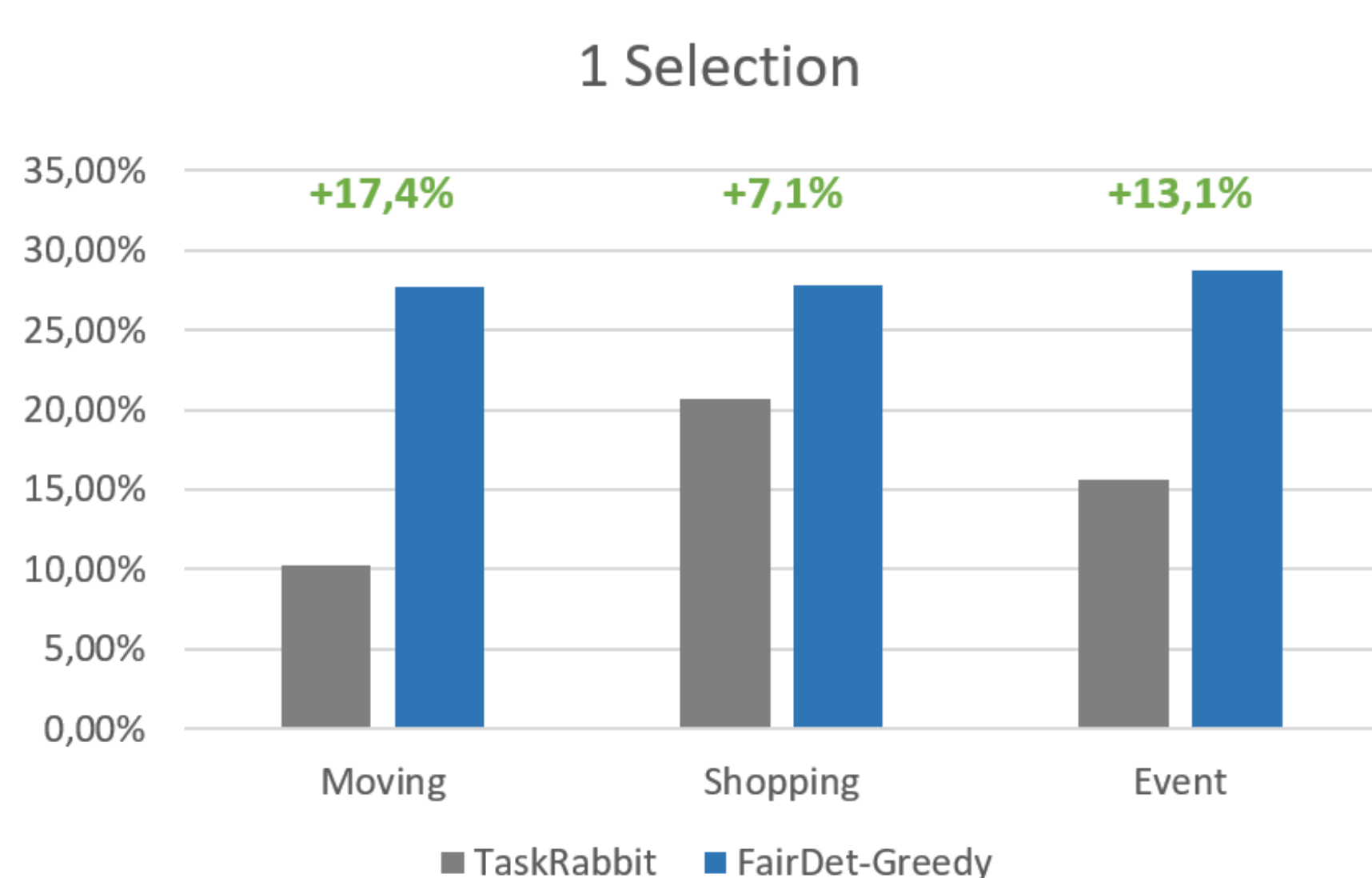
- We recruited 1079 participants from Amazon MTurk
- All participants were recruited in the US with at least 5000 approved tasks and 95% approval rate



User Interface Design



Result summary



The effectiveness differs with job context and candidate profiles

Demographic Parity



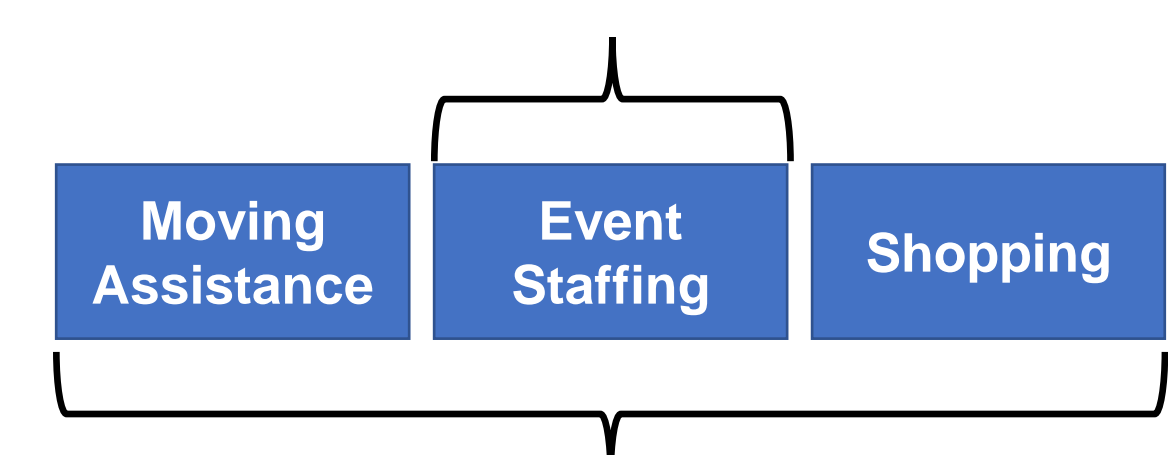
12.4%

Individual Fairness



35.0%

Within tasks



Between tasks

Employers enforce own notions of fairness

Fair ranking improves minority outcomes