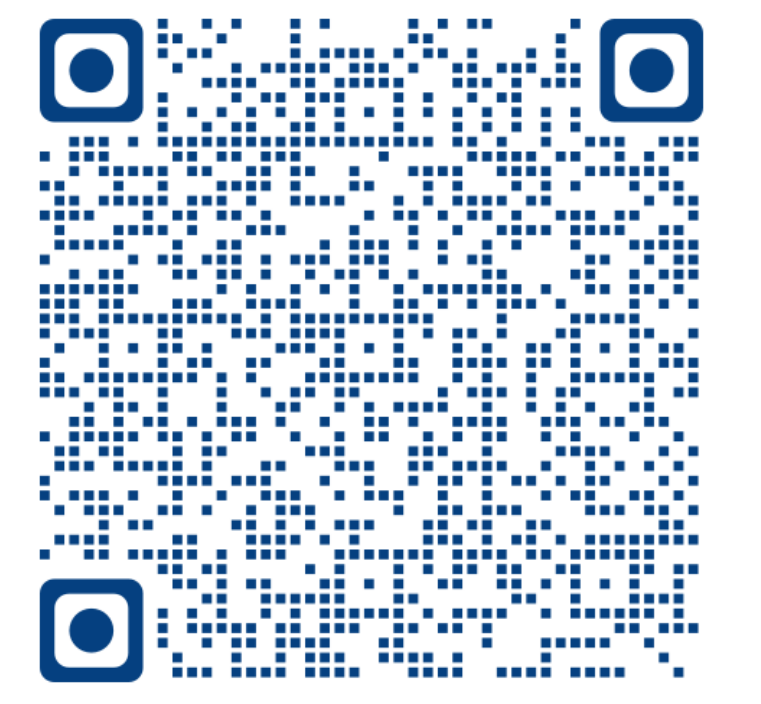


# Do Women Need to Provide More Skill Signals to Advance Their Careers?



## This Paper in a Nutshell

This paper shows a new channel - the provision of easily observable and verifiable skill signals by female applicants - through which gender gaps in leadership and compensation can be mitigated.

We show that signals of higher education and professional experience increase female directors' probability to enter a leadership position by 6.8pp more than that of male directors. Female directors' compensation increases by 13.3pp (\$521,550) more than male directors' compensation.

In all analysis, the baseline probability of female directors remains significantly negative. The provision of observable skill signals mitigates, but does not eliminate, the gender gap in leadership positions and compensation.

Our results seem to be driven by screening discrimination: Male employers find it easier to judge on male applicants' unobservable skill set. Female applicants can make up for this hiring disadvantage by providing more observable skill signals.

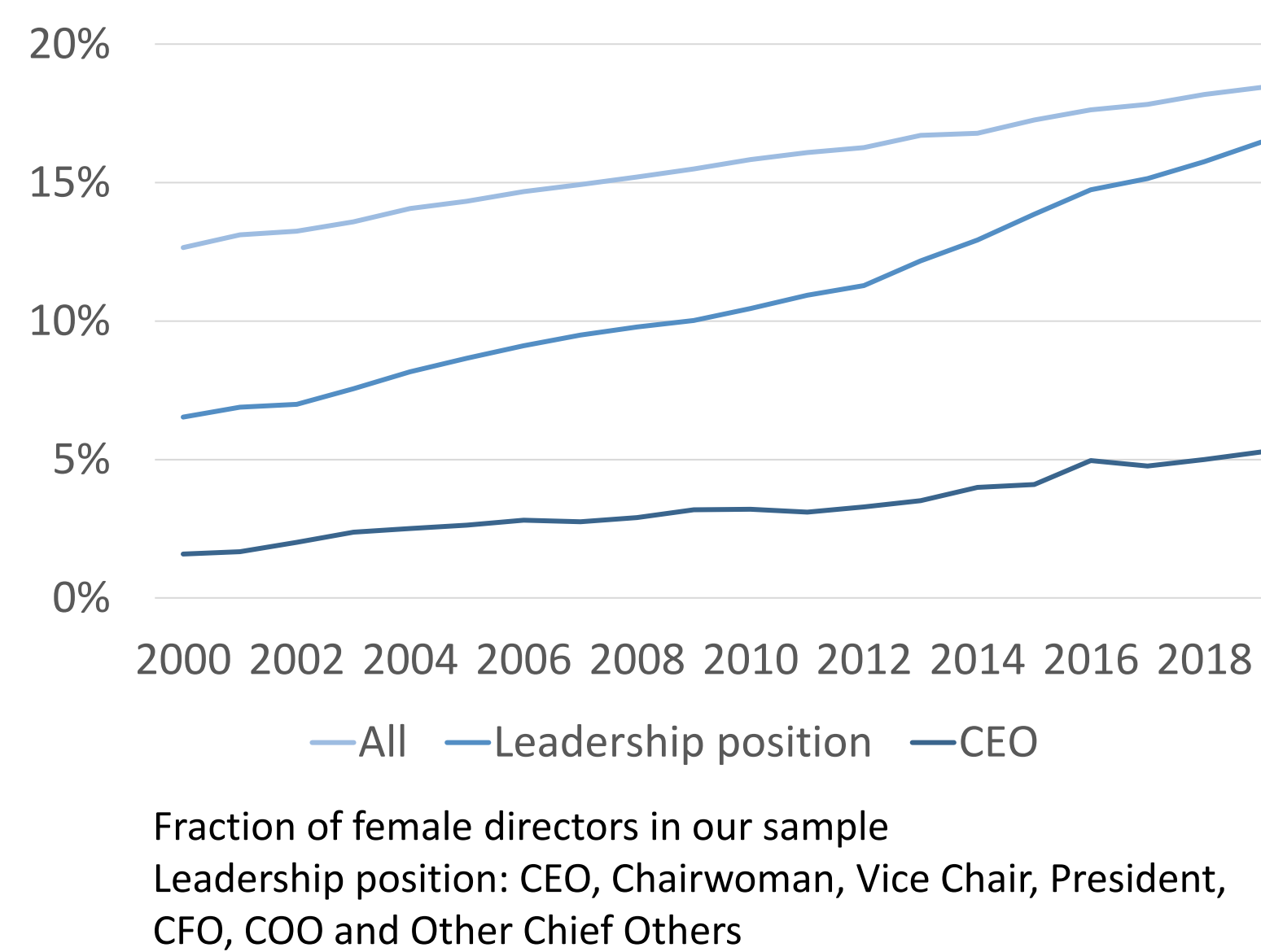
In line with this view, we find that our results are stronger for firms with all-male nomination committees, for firms located in gender-conservative states, and for outside hires where information asymmetries are larger.

## Research Question

Do women need to provide more skill signals to advance their careers?

## Data

- Starting Point: BoardEx from 2000 - 2019
- Merge with CRSP/Compustat company information
- Identify all directors in merged company database based on Bertrand and Hallock (2001)
- 107,165 unique directors – 16,424 female (15%)
- 7,323 unique companies



## Skill Signals

Two types of labor market signals that have been shown to increase the probability to enter a leadership position and to receive higher compensation:

- Signals of higher education (e.g. Useem and Karabel, 1986; Graham et al., 2012)
  - Education Score (1=Bachelor, 2=Master, 3=PhD, else zero)
  - Top50 ranked college according to Forbes America's Top Colleges List (Dummy variable)
- Signals of professional experience (e.g. Murphy and Zabajnik, 2004; Custódio et al., 2013)
  - Generalist index based on Custódio et al. (2013)
    - Number of Positions, Firms and Industries
    - CEO Experience
    - Conglomerate Experience
  - Same Industry Experience (Dummy variable)

→ Signals are always measured based on experience before current employment.

## Methodology

Regressions at the director-firm-year level including firm and year or firm-year fixed effects:

$$Leadership_{d,c,t} = \beta_1 Skill\ Signal_{d,c,t-1} + \beta_2 Skill\ Signal_{d,c,t-1} \times Female\ Director_d + \beta_3 Female\ Director + \beta_4 Directors' Age_{d,t} + \beta_5 Director's\ Age\ Squared_{d,t} + \beta_6 Total\ Assets_{c,t-1} + \beta_7 Market\ to\ Book_{c,t-1} + \beta_8 Return_{c,t-1} + \beta_9 Volatility_{c,t-1} + \alpha_t + \alpha_c + \epsilon_{d,t}$$

Standard errors clustered by firm-year (robust to variations).

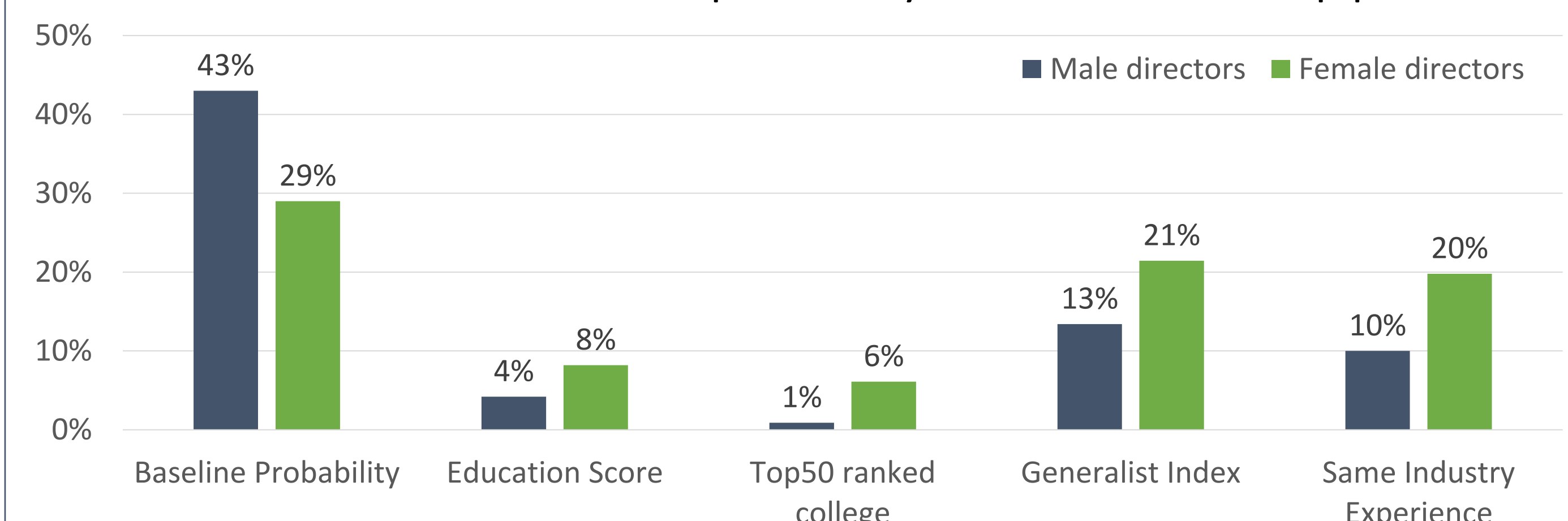
Leadership is defined as being CEO, Chairwoman, Vice Chair, President, CFO, COO, or Other Chief Officers (Bertrand and Hallock, 2001).

## Main Results

Skill signals are more important for female directors' probability to enter a leadership position compared to male directors' probability to enter a leadership position.

	(1)	(2)	(3)	(4)
Education Score <sub>t-1</sub>	0.018*** (24.98)			
Education Score <sub>t-1</sub> × Female dummy	0.006*** (4.01)			
Top50 ranked college <sub>t-1</sub>		0.006*** (3.63)		
Top50 ranked college <sub>t-1</sub> × Female dummy		0.014*** (3.74)		
Generalist Index <sub>t</sub>			0.057*** (81.16)	
Generalist Index <sub>t</sub> × Female dummy			0.006*** (3.86)	
Same Industry Experience <sub>t</sub>				0.043*** (26.33)
Same Industry Experience <sub>t</sub> × Female dummy				0.008*** (7.19)
Female dummy	-0.186*** (7.38)	-0.195*** (7.73)	-0.151*** (6.01)	-0.174*** (6.95)
Controls	Yes	Yes	Yes	Yes
Controls × Female dummy	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.161	0.161	0.172	0.162
Observations	747512	747512	749724	749724

Effect sizes relative to the baseline probability to enter a leadership position.



## Screening Discrimination (Cornell and Welch, 1996)

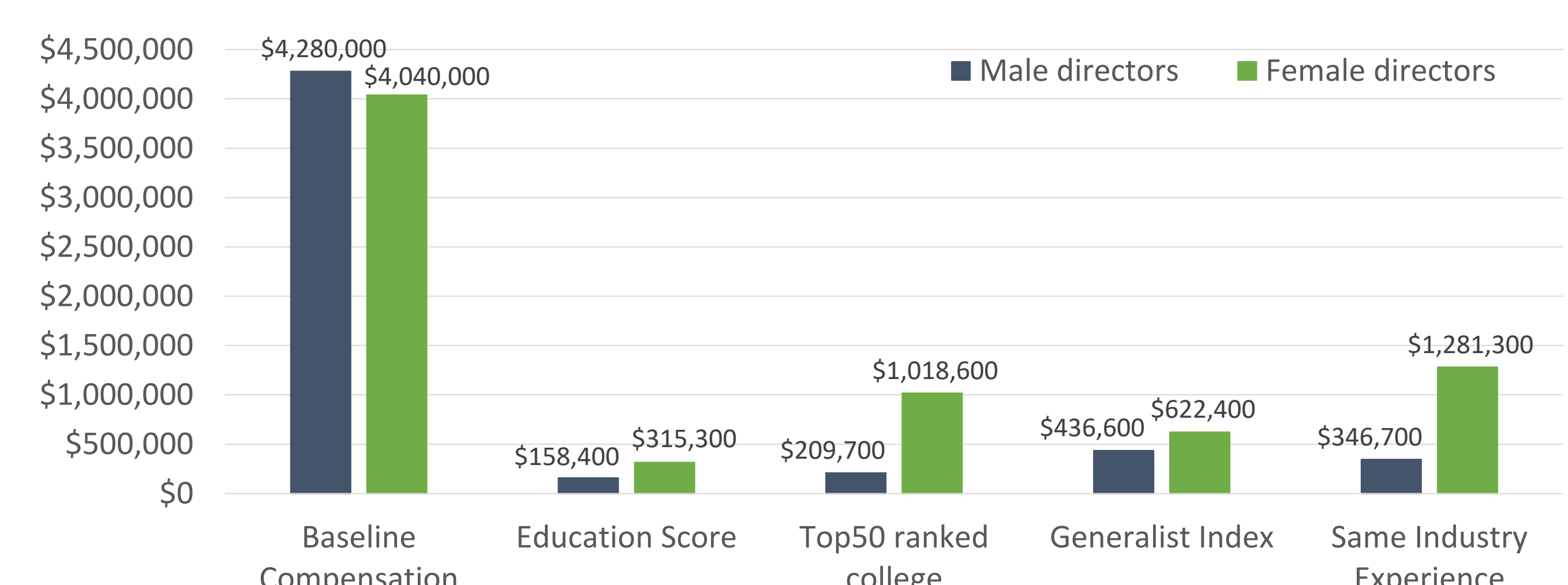
If hiring decisions are made by members of the majority group, these members may find it easier to judge on (unobservable) skills of applicants belonging to the majority group. Members of minority groups face a systematic hiring disadvantage, even if they are equally qualified. To reduce uncertainty about unobservable skills, members of the minority group have an incentive to collect more observable skill signals to offset the adverse effects from hiring discrimination. Implications for female directors:

- Women have an incentive to provide more observable skill signals to convince male members of the hiring committee that they are qualified.
  - We show that gender gaps are significantly smaller among female and male directors with more observable skill signals.
- Observable skill signals should be more important for female directors if the hiring decision is made by men only.
  - Our results are stronger for firms with an entirely male nomination committee.
- Observable skill signals should be more important for female directors with higher information asymmetries.
  - We show that skill signals are more important for female outside directors compared to female inside directors.
- "Think manager - Think male" paradigm may increase uncertainty among employers when judging on female candidates' leadership qualifications.
  - We find that skill signals are more important for female directors' probability entering a leadership position in a company headquartered in a gender conservative state.

## Compensation Results

Assuming that screening discrimination exists, male directors may also find it more difficult to determine the market value of a director belonging to a different group, i.e., female directors.

Impact of skill signals on female directors' compensation:



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