Does having a LinkedIn profile picture yield a higher rate of acceptance when networking?

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Hypothesis

We expect the presence of profile pictures significantly impact connection acceptance rates when networking on LinkedIn. Specifically, we anticipate LinkedIn profiles **with profile pictures** receive **higher** connection acceptance rates than those LinkedIn profiles without profile pictures.

A profile picture could help enhance the perceived credibility and trustworthiness of the user, positively influencing the likelihood of connection acceptance.

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Study Significance

- LinkedIn is a tool for personal branding, career development, and job hunting
- This study could help users optimize their profiles for better visibility and networking opportunities.
- Provides understanding of how visual elements influence connection requests, which could have impacts on potential job opportunities

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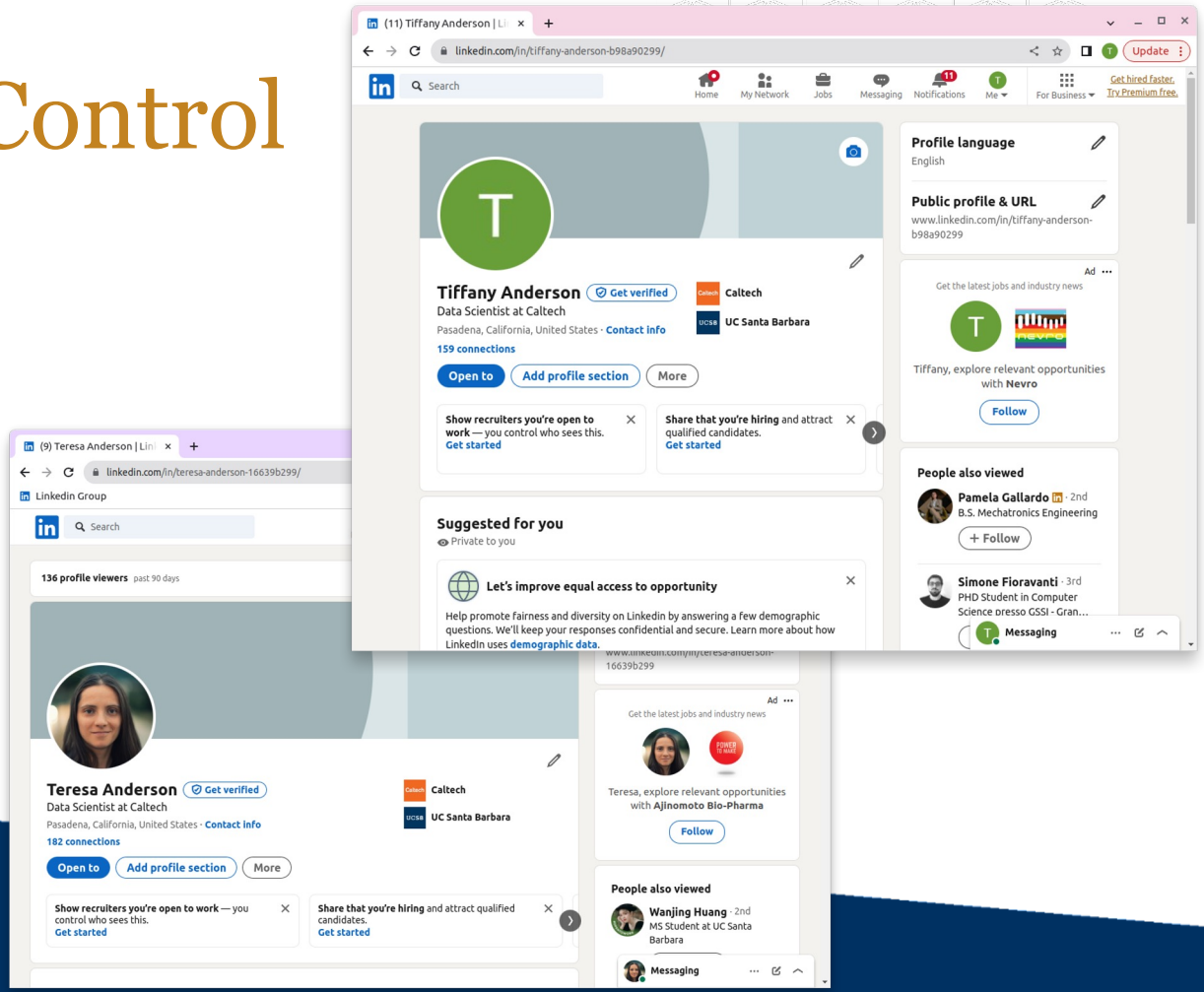
Treatment / Control

Similar LinkedIn profiles with a picture as treatment or no picture as control.

- Same School
- Same Job History
- Different Names
- 10 profiles



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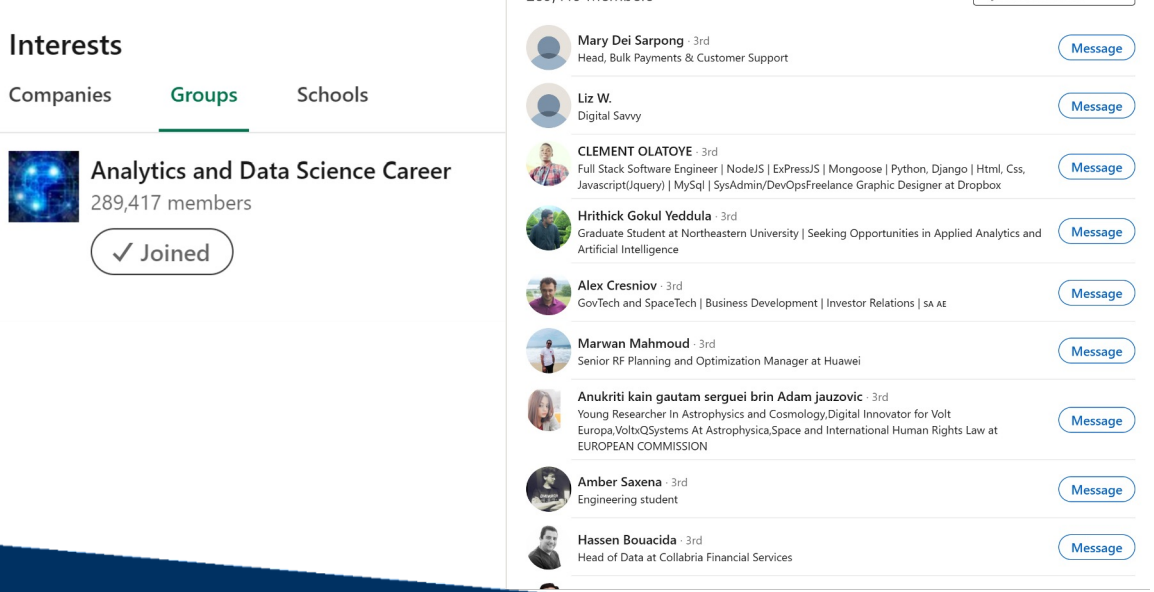
Measurement Design



Target Population:
LinkedIn Group

Design:
Treatment and Control profiles randomly assigned to request a connection to a member

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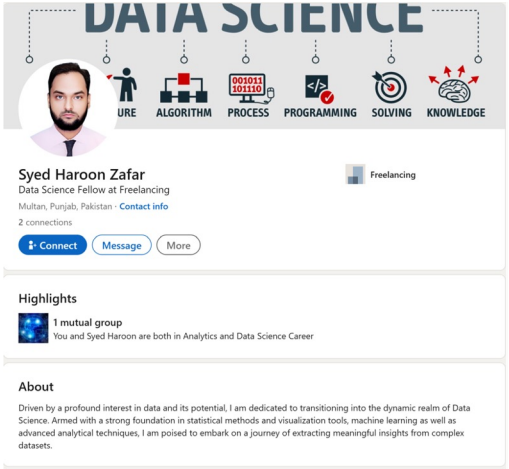
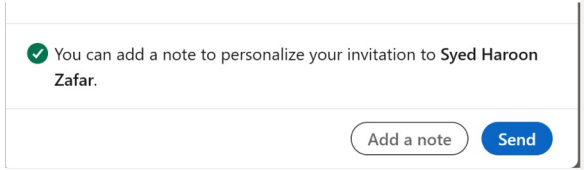
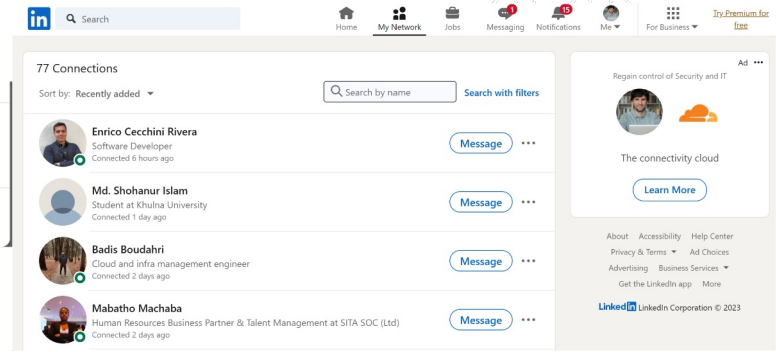
Connection Process







Reviewed a profile for gender and activity

A connection request with no note was sent

Each team member then checked their profiles count of connections

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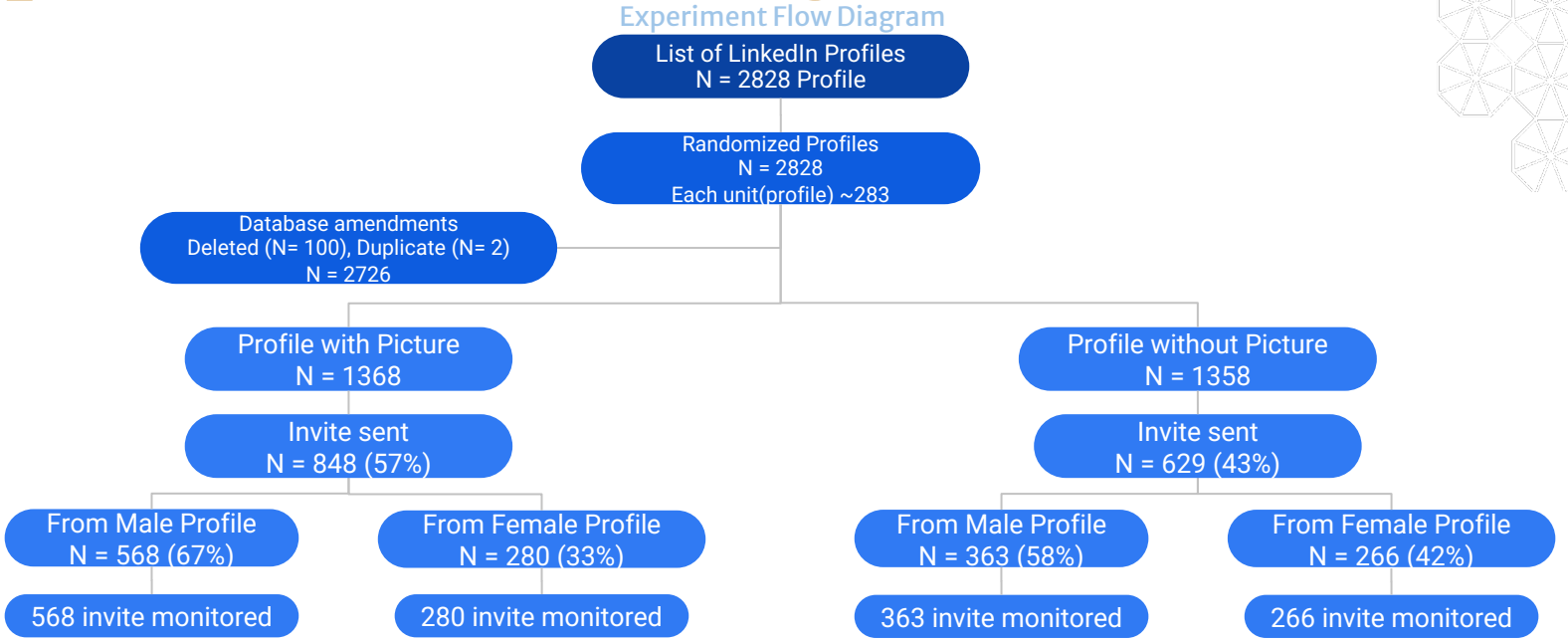
Randomization

1) LinkedIn restriction of information to the latest 2,500 members of the group *Analytics and Data Science Career* (i.e., unable to randomly sample our Power Analysis requirement of 2,400 recipients from the 250,000+ group members)
2) Manually scraped the information of these 2,500 members to obtain names and links to their LinkedIn profiles
3) Assigned random integer to each of the 2,500 scraped data points, sorted the random values in ascending order, and assigned blocks of 500 recipients to each team member
4) Each team member with either male or female fake requestor profiles, with and without a profile picture
5) Repeated process for additional 328 members as they appeared in the new members queue

Experiment Flow Diagram



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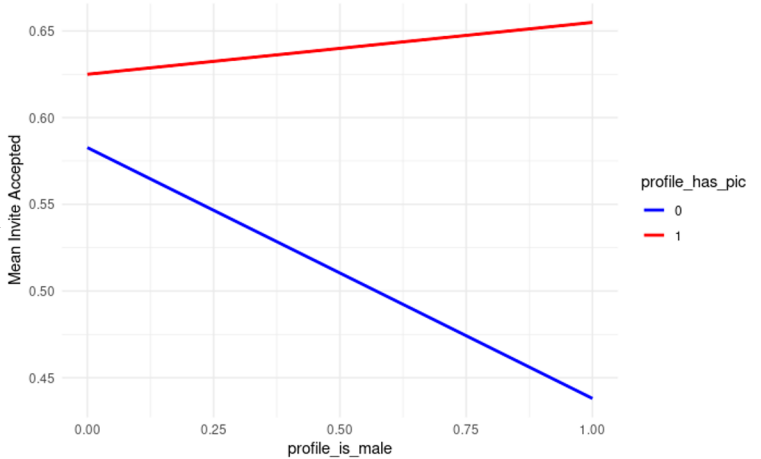
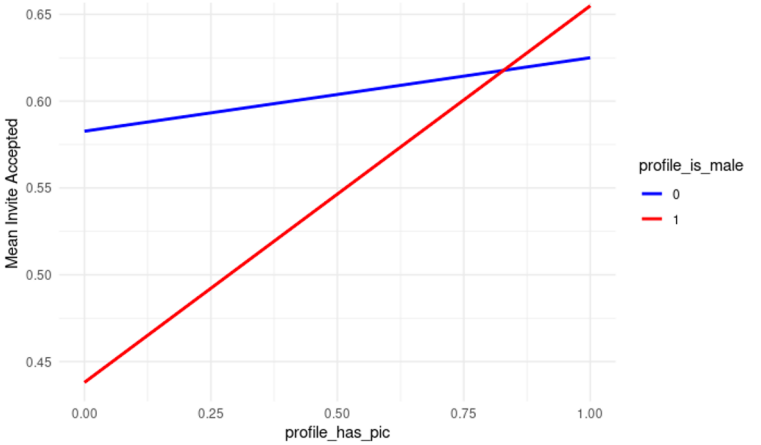
Interaction Effects

Treatment	Female	Male	
Picture	175	372	273.5
No Picture	155	159	157
	165	265.5	

Experimental group	R X O
Control group	R - O





- **2 x 2 factorial design** table shows Gender and Picture influence on invitation acceptance.
- **Interaction graph** highlights performance of male users with profile pictures.
- **Cross over** interaction graph emphasizing the nuanced nature of the interaction effect of Gender and Picture in the result.

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Limitations

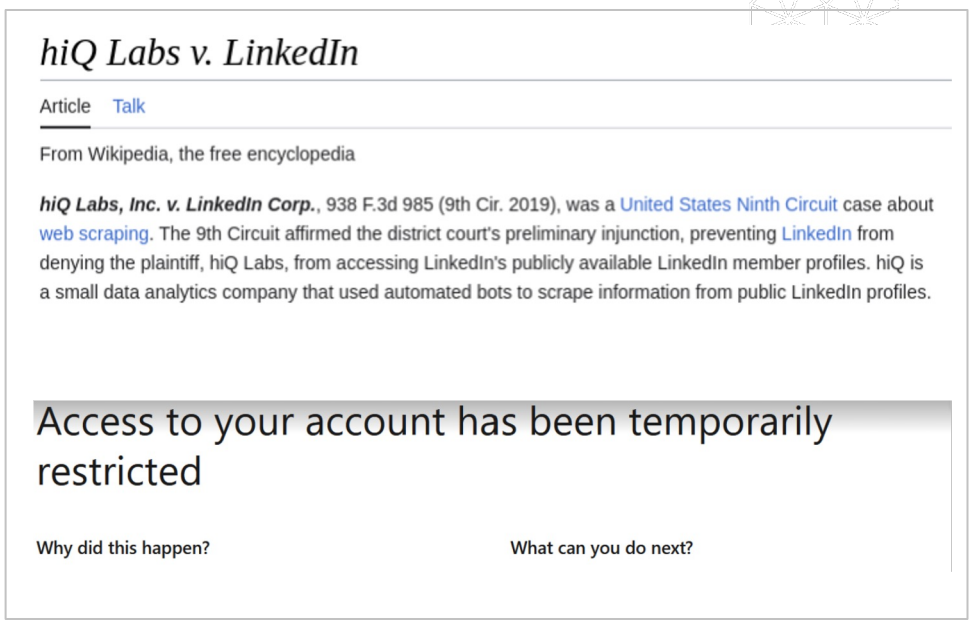
Aggressive LinkedIn bot prevention

- Sued hiQ Labs for scraping LinkedIn data
- Went to the US Supreme Court

Tactics used to avoid bans

- New gmail account for each LinkedIn profile
- Register account with real phone number
  - Limit 2 accounts per number
- Limit number of invites sent per day/week
- Two profiles per team member
- Use Cal VPN

Even with all of these techniques, rate limits and bans still impacted our experiment!



hiQ Labs v. LinkedIn

Article Talk

From Wikipedia, the free encyclopedia

hiQ Labs, Inc. v. LinkedIn Corp., 938 F.3d 985 (9th Cir. 2019), was a United States Ninth Circuit case about web scraping. The 9th Circuit affirmed the district court's preliminary injunction, preventing LinkedIn from denying the plaintiff, hiQ Labs, from accessing LinkedIn's publicly available LinkedIn member profiles. hiQ is a small data analytics company that used automated bots to scrape information from public LinkedIn profiles.

Access to your account has been temporarily restricted

Why did this happen?

What can you do next?

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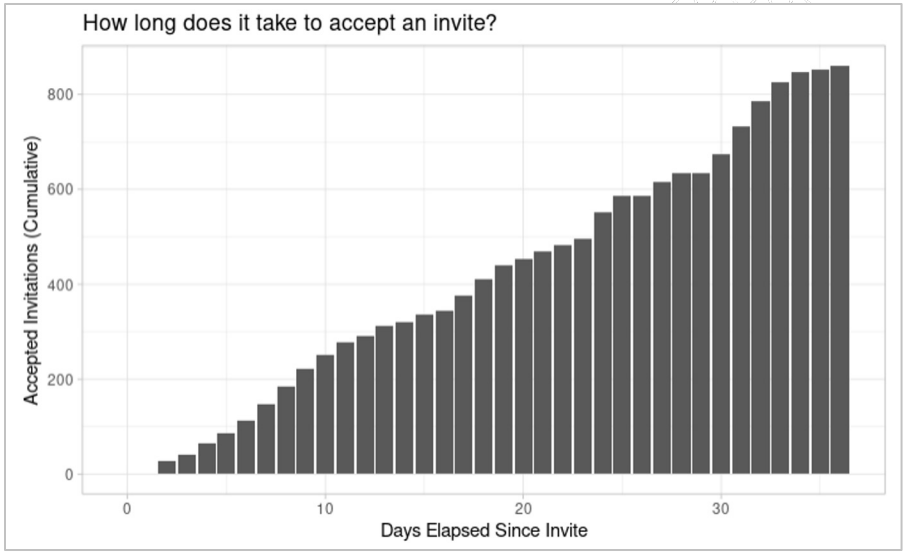
Outcome Measures

- **Binary** variable:
  - *Did they accept the invite?*
  - Invites accepted divided by invites sent
- Baseline acceptance rate of 45% based on previous study
- Because invites are sent over time, controlled for **days elapsed after sending**



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Results

Model 1: single factor.
Model 2: multi factor.
Model 3: add covariates.
Model 4: check for HTEs.

Concerns:

- *We think treatment effect for male is surprising.*
- *Non-compliance? (~7% but covariates are balanced)*

Table 1: LinkedIn Experiment Results

	Dependent variable:			
	Invite Accepted			
	(1)	(2)	(3)	(4)
Treat Picture	0.146***	0.042	0.138***	0.166***
	(0.026)	(0.042)	(0.025)	(0.049)
Treat Male		−0.145***		
		(0.040)		
Treat Picture:Treat Male		0.175***		
		(0.053)		
Inactive 6 Mos			−0.107***	−0.076**
			(0.027)	(0.030)
Invite Duration (Days)			0.008***	0.009***
			(0.001)	(0.001)
Recipient Male				0.027
				(0.045)
Treat Picture:Recipient Male				0.018
				(0.059)
Constant	0.499***	0.583***	0.387***	0.337***
	(0.020)	(0.030)	(0.029)	(0.045)
Observations	1,477	1,477	1,477	1,270
R^2	0.021	0.031	0.061	0.072
Adjusted R^2	0.021	0.029	0.059	0.068
Residual Std. Error	0.488 (df = 1475)	0.486 (df = 1473)	0.478 (df = 1473)	0.475 (df = 1264)
Note:				*p<0.1; **p<0.05; ***p<0.01
				All standard errors are robust standard errors.

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Questions