



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

**Group HAAMM:**

Hope, Andrew, Abraham, Mark, Mahmoud



Hope



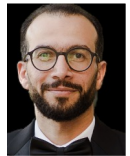
Andrew



Abraham



Mark



Mahmoud



# 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.



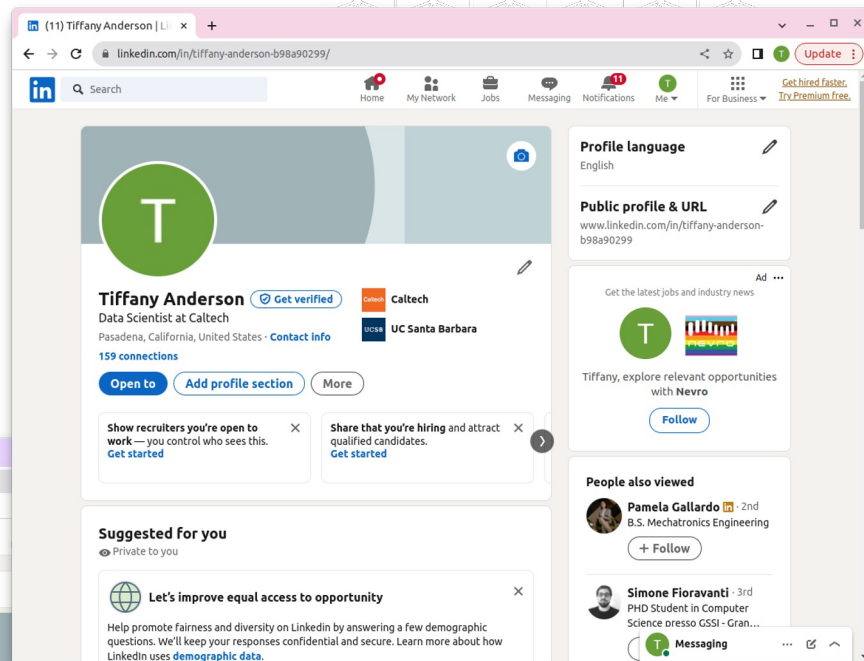
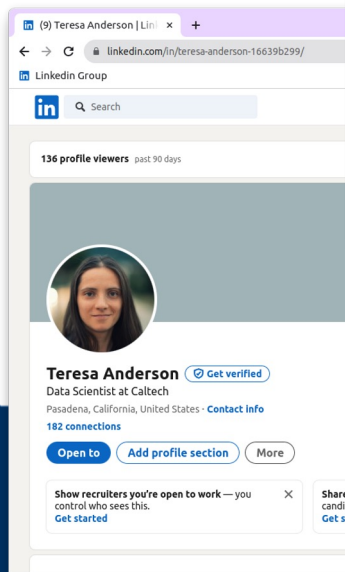
# Study Significance

- 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

# Treatment / Control

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

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



# Measurement Design

## Interests

Companies

**Groups**

Schools



**Analytics and Data Science Career**

289,417 members

✓ Joined

← Analytics and Data Science Career

289,419 Members

Search members



**Mary Dei Sarpong** · 3rd  
Head, Bulk Payments & Customer Support

Message



**Liz W.**  
Digital Savvy

Message



**CLEMENT OLATOYE** · 3rd  
Full Stack Software Engineer | NodeJS | ExpressJS | Mongoose | Python, Django | Html, Css, Javascript(Query) | MySQL | SysAdmin/DevOpsFreelance Graphic Designer at Dropbox

Message



**Hrithick Gokul Yeddula** · 3rd  
Graduate Student at Northeastern University | Seeking Opportunities in Applied Analytics and Artificial Intelligence

Message



**Alex Cresnirov** · 3rd  
GovTech and SpaceTech | Business Development | Investor Relations | SA AE

Message



**Marwan Mahmoud** · 3rd  
Senior RF Planning and Optimization Manager at Huawei

Message



**Anukriti kain gautam serguei brin Adam jauzovic** · 3rd  
Young Researcher In Astrophysics and Cosmology,Digital Innovator for Volt Europa,VoltxQSystems At Astrophysica,Space and International Human Rights Law at EUROPEAN COMMISSION

Message



**Amber Saxena** · 3rd  
Engineering student

Message



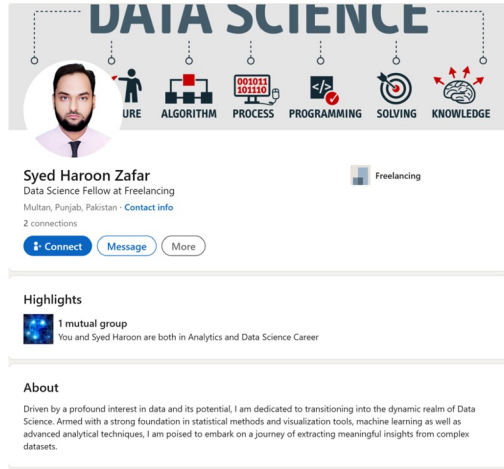
**Hassen Bouacida** · 3rd  
Head of Data at Collabria Financial Services

Message

Target Population:  
LinkedIn Group

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

# Connection Process



**DATA SCIENCE**

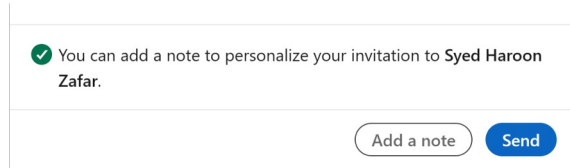
URE ALGORITHM PROCESS PROGRAMMING SOLVING KNOWLEDGE

**Syed Haroon Zafar**  
Data Science Fellow at Freelancing  
Multan, Punjab, Pakistan · [Contact info](#)  
2 connections  
[Connect](#) [Message](#) [More](#)

**Highlights**  
1 mutual group  
You and Syed Haroon are both in Analytics and Data Science Career

**About**  
Driven by a profound interest in data and its potential, I am dedicated to transitioning into the dynamic realm of Data Science. Armed with a strong foundation in statistical methods and visualization tools, machine learning as well as advanced analytical techniques, I am poised to embark on a journey of extracting meaningful insights from complex datasets.

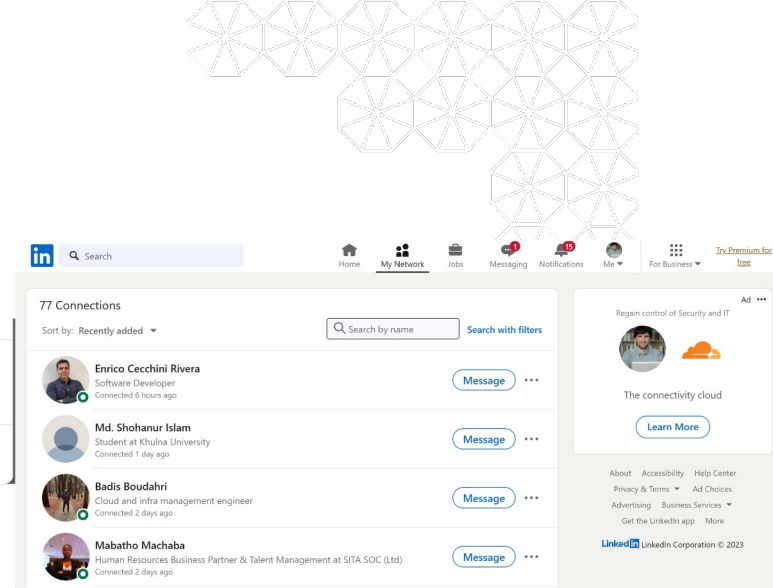
Reviewed a profile for  
gender and activity



✓ You can add a note to personalize your invitation to Syed Haroon Zafar.

[Add a note](#) [Send](#)

A connection request  
with no note was sent



77 Connections

Sort by: Recently added

Search by name Search with filters

Profile	Details	Action
	<b>Enrico Cecchini Rivera</b> Software Developer Connected 6 hours ago	<a href="#">Message</a> ...
	<b>Md. Shohanur Islam</b> Student at Khulna University Connected 1 day ago	<a href="#">Message</a> ...
	<b>Badis Boudahri</b> Cloud and infra management engineer Connected 2 days ago	<a href="#">Message</a> ...
	<b>Mabatho Machaba</b> Human Resources Business Partner & Talent Management at SITA SOC (Ltd) Connected 2 days ago	<a href="#">Message</a> ...

Regain control of Security and IT  
The connectivity cloud  
[Learn More](#)

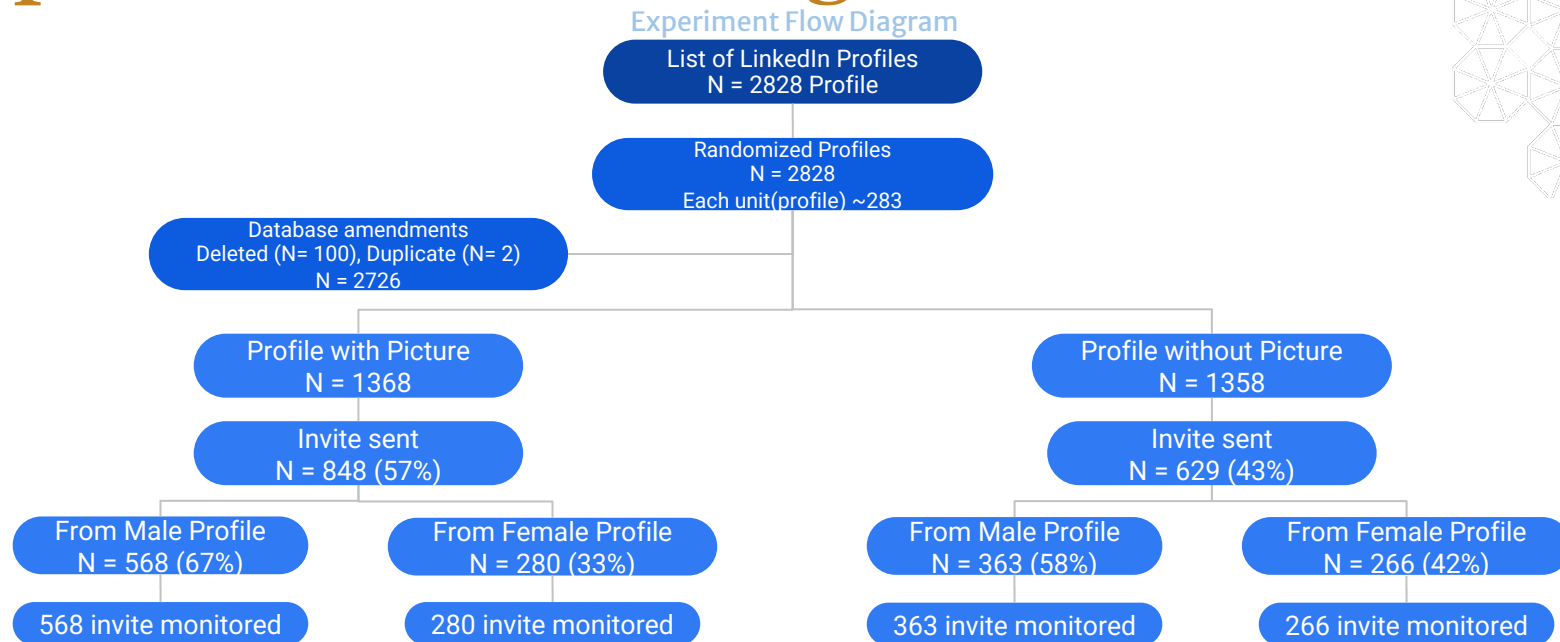
About Accessibility Help Center  
Privacy & Terms Ad Choices  
Advertising Business Services  
Get the LinkedIn app More  
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Each team member  
then checked their  
profiles count of  
connections

# 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

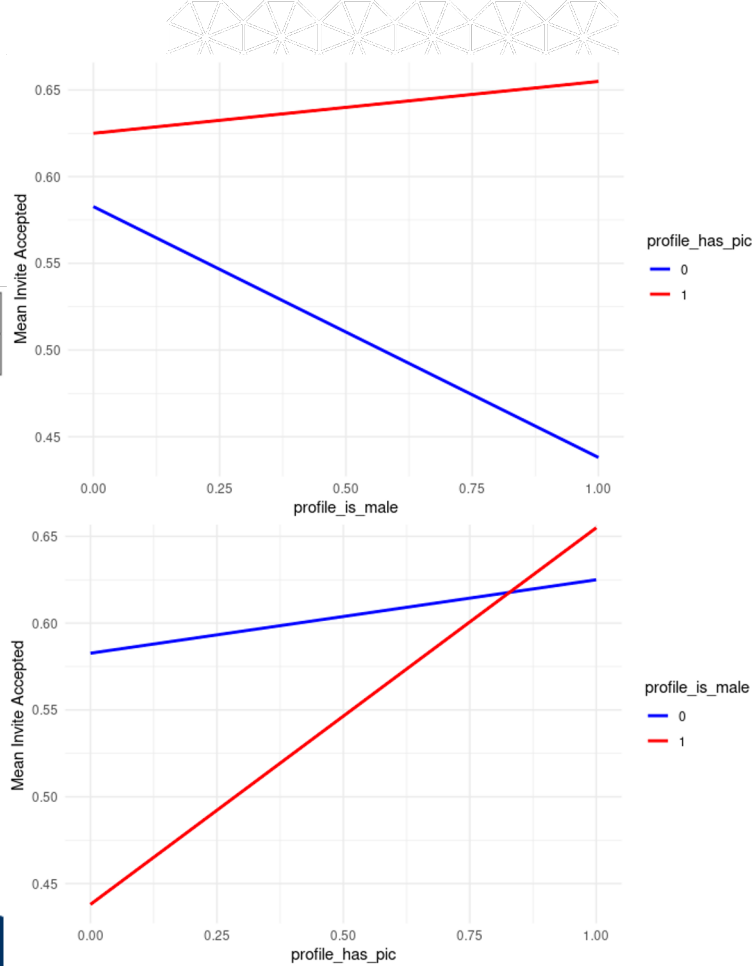




# Interaction Effects

Treatment	Female	Male		
Picture	175	372	273.5	Experimental group R X O
No Picture	155	159	157	Control group R - O
	165	265.5		

- **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.



# 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.

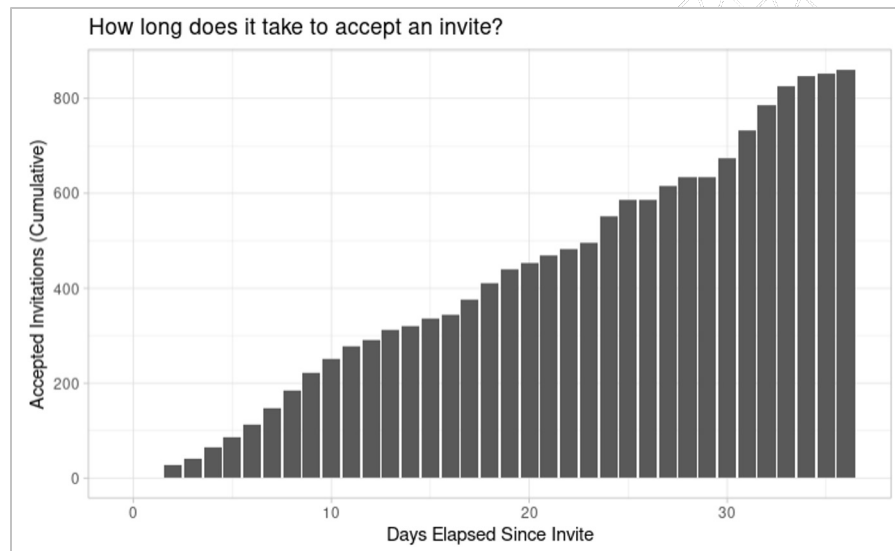
Access to your account has been temporarily restricted

Why did this happen?

What can you do next?

# 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**



# 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*** (0.026)	0.042 (0.042)	0.138*** (0.025)	0.166*** (0.049)
Treat Male		-0.145*** (0.040)		
Treat Picture:Treat Male		0.175*** (0.053)		
Inactive 6 Mos			-0.107*** (0.027)	-0.076** (0.030)
Invite Duration (Days)			0.008*** (0.001)	0.009*** (0.001)
Recipient Male				0.027 (0.045)
Treat Picture:Recipient Male				0.018 (0.059)
Constant	0.499*** (0.020)	0.583*** (0.030)	0.387*** (0.029)	0.337*** (0.045)
Observations	1,477	1,477	1,477	1,270
R <sup>2</sup>	0.021	0.031	0.061	0.072
Adjusted R <sup>2</sup>	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.

# Questions

