

Designing Informative Rating Systems | Nikhil Garg & Ramesh Johari

Evidence from an Online Labor Market

Ratings are terribly inflated

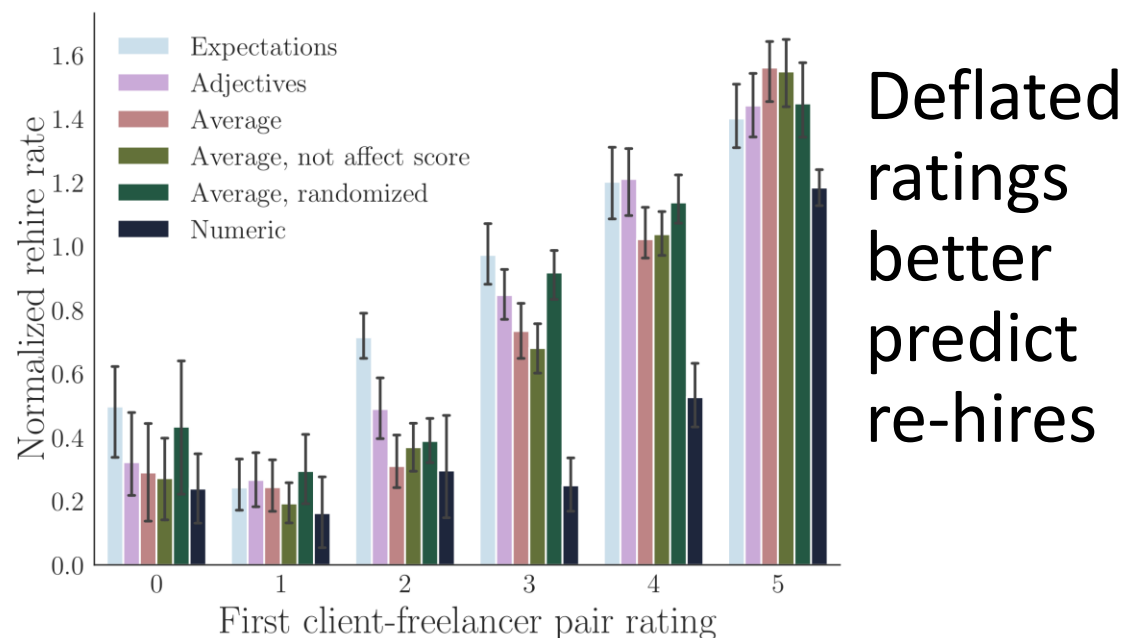
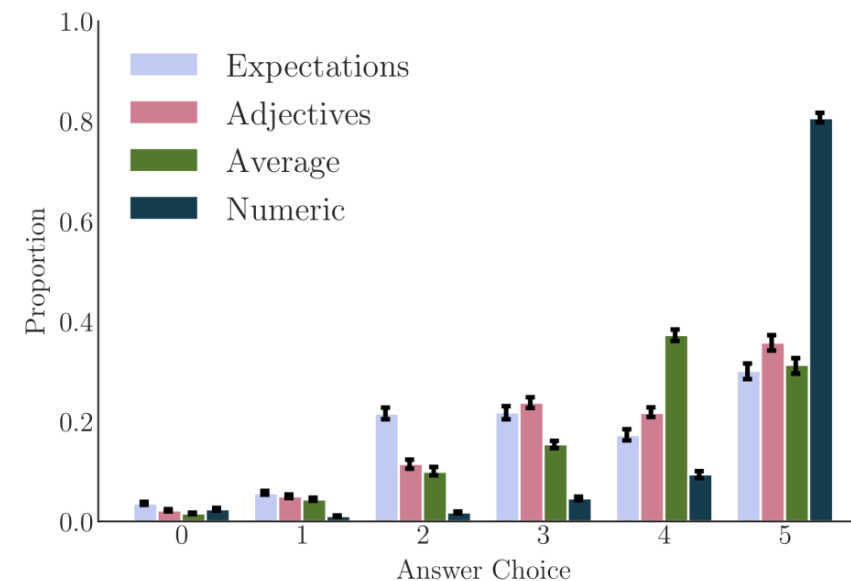
We show that a simple intervention in the rating system design deflates ratings

We develop a theoretical framework to design rating systems

Treatment	Answer choices
Standard Scale	0 stars – 5 stars
Verbal, positive-skewed scale	Terrible Mediocre Good Great Phenomenal Best possible freelancer!

Label points on the rating scale with *verbal, positive-skewed* phrases

Such scales deflate ratings



Deflated ratings better predict re-hires

Theoretical approach

Suppose we have estimated a joint distribution between seller quality and the ratings the receive,

$\hat{\rho}(y, \theta) = \widehat{\text{Pr}}(y|\hat{\theta})$, for each possible rating scale

Under our (stylized) model...

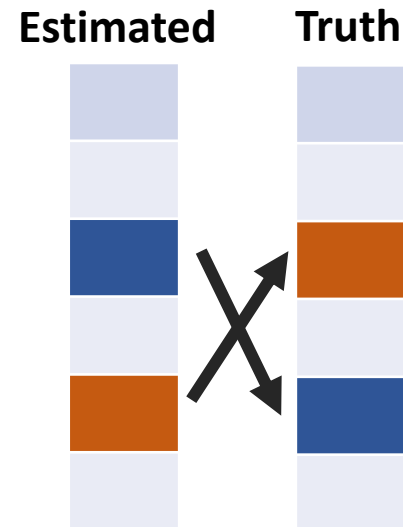
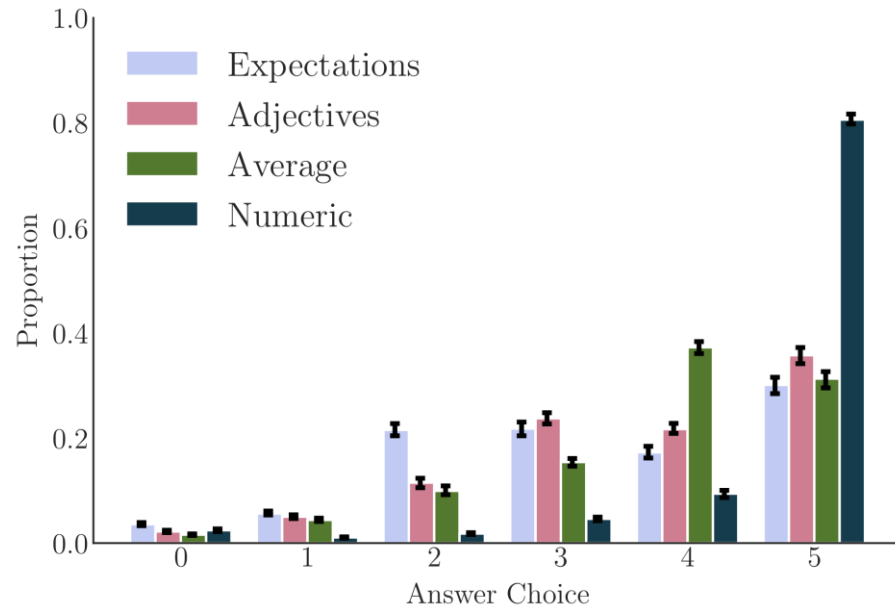
- Sellers accumulate ratings according to ρ
- Platform estimates ranking by empirical rating average
- Estimated ranking converges to true ranking, at a *large deviations rate* that depends on ρ

More generally, a framework for designing the information *received* from platform participants.



Experiment: How does platform design affect response distributions?

Theory: How does the response distribution affect learning?



$$\text{Error}_k \approx e^{-k\gamma(\text{design})}$$

Rate $\gamma(\text{design})$ at which platform recovers truth can be calculated after an experiment

Designing Informative Rating Systems: Evidence from an Online Labor Market [w/ R. Johari]

Designing Optimal Binary Rating Systems [w/ R. Johari]

Who is in Your Top Three? Optimizing Learning in Elections with Many Candidates [w/ L. Gelauff, S. Sakshuwong, A. Goel]

Optimal systems with various platform goals

Suppose a (commodity-heavy) marketplace primarily wants to separate the bottom 5% of sellers from everyone else.

What rating system should it use?

- In a follow-up paper in AISTATS*, we
 - Develop a non-convex optimization algorithm to find the optimal system
 - Show how information goals should be incorporated into design
- In the above example, *inflated ratings are optimal*

*Designing Optimal Binary Rating Systems

