The Online Laboratory
Taking Experimental Social Science onto the Internet

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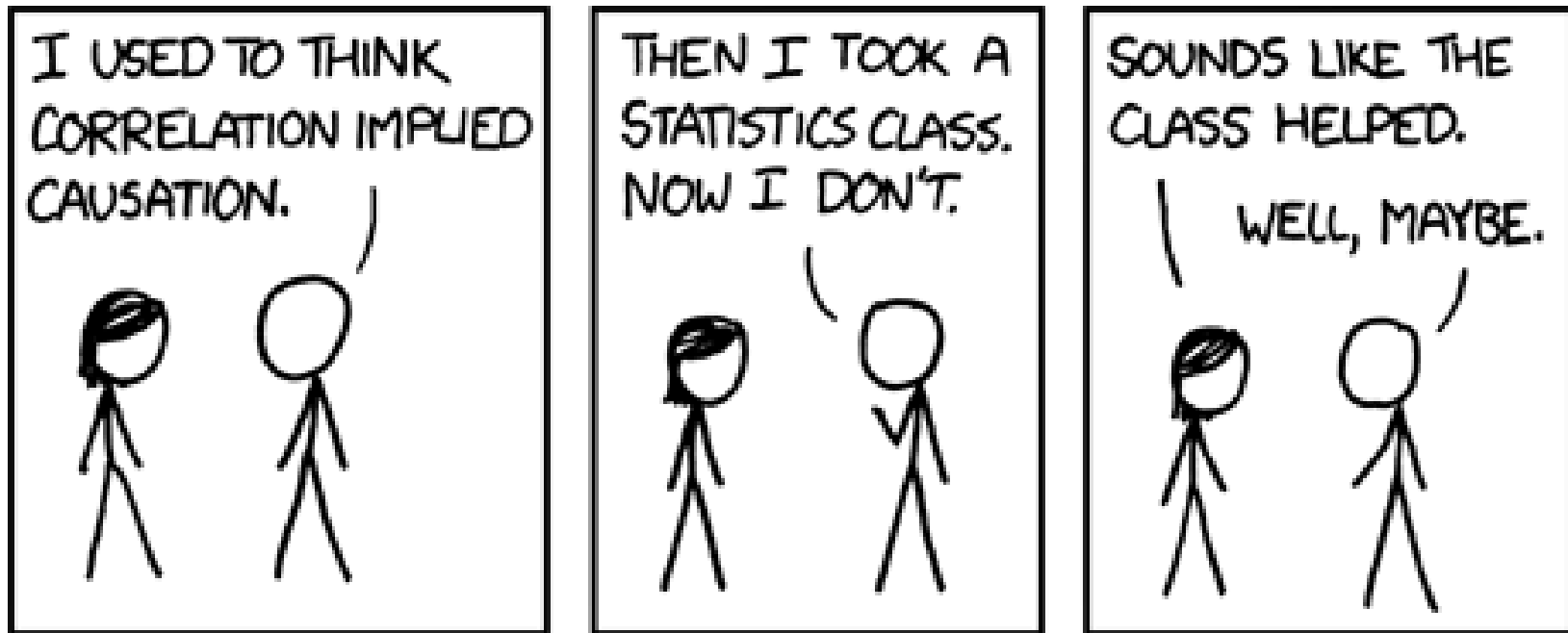"The Online Laboratory: Conducting Experiments in a Real Labor Market"

John Horton, David Rand & Richard Zeckhauser

National Bureau of Economic Research Working Paper Series No. 15961

http://people.fas.harvard.edu/~drand/horton_rand_zeckhauser_2010.pdf

www.DaveRand.org

Why do experiments?

http://xkcd.com/552/

What do you need?

Subjects

Time & Money

Reliable reporting

→ Smart tricks (social psychology)

→ Monetary incentives (exp economics)

→ Surprise (field studies)

How does the internet help?
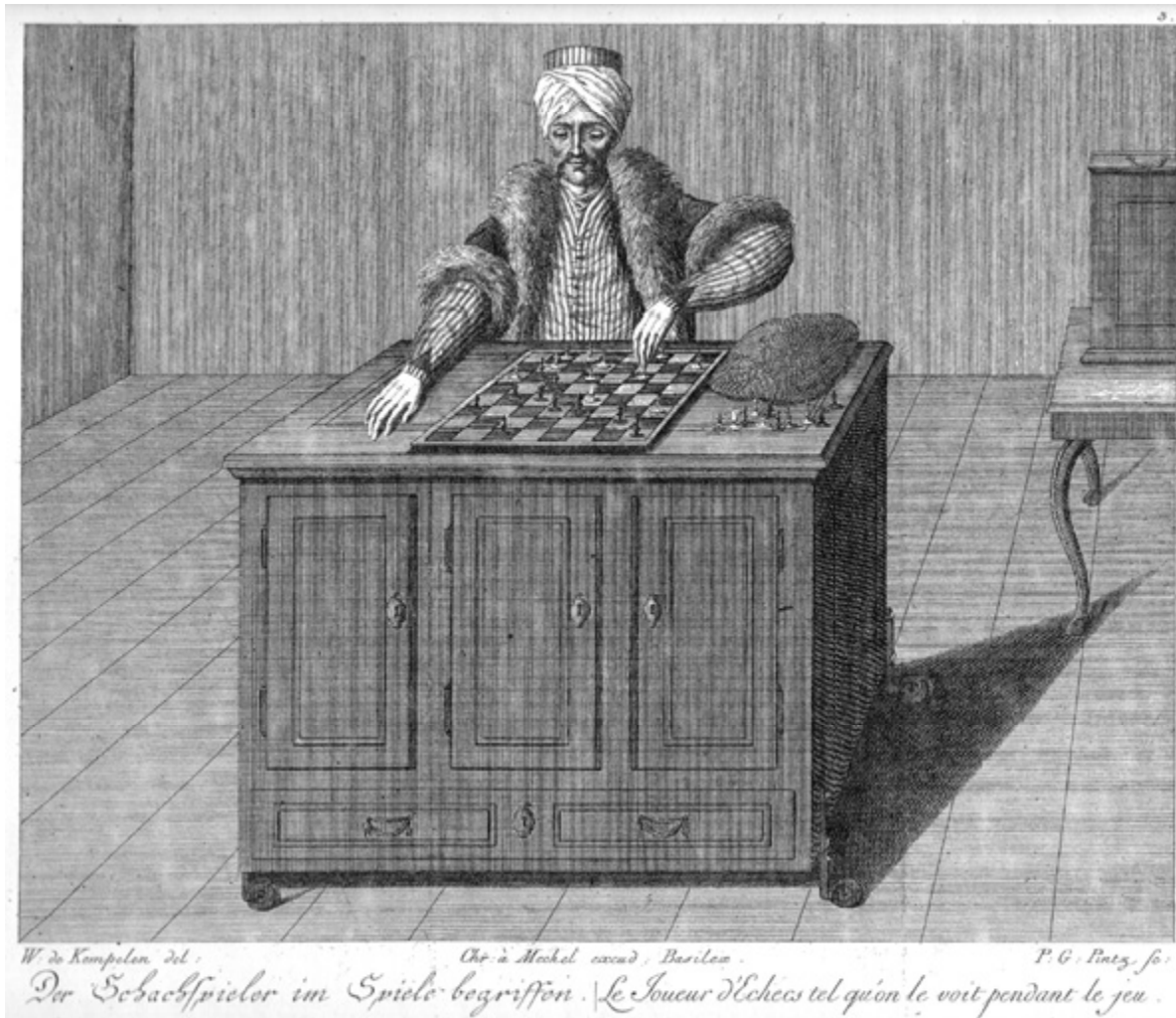
Easy recruitment, many subjects, little effort

Online studies not new for psychologists
But few economists → no incentives

Online labor markets fix this problem
→ And allow easy, cheap recruitment

Amazon's Mechanical Turk

http://upload.wikimedia.org/wikipedia/commons/2/25/Turk-engraving5.jpg

Amazon's Mechanical Turk

Your Account	HITs	Qualifications

Introduction | Dashboard | Status | Account Settings

Mechanical Turk is a marketplace for work.
We give businesses and developers access to an on-demand, scalable workforce.
Workers select from thousands of tasks and work whenever it's convenient.

97,491 HITs available. View them now.

Make Money
by working on HITs

HITs - *Human Intelligence Tasks* - are individual tasks that you work on. Find HITs now.

As a Mechanical Turk Worker you:

- Can work from home
- Choose your own work hours
- Get paid for doing good work

Find an interesting task → **Work** → **Earn money**

TASKS

$

Find HITs Now

or learn more about being a **Worker**

Get Results
from Mechanical Turk Workers

Ask workers to complete HITs - *Human Intelligence Tasks* - and get results using Mechanical Turk. Register Now

As a Mechanical Turk Requester you:

- Have access to a global, on-demand, 24 x 7 workforce
- Get thousands of HITs completed in minutes
- Pay only when you're satisfied with the results

Fund your account → **Load your tasks** → **Get results**

Get Started

https://www.mturk.com/mturk/welcome

Amazon's Mechanical Turk

Small amounts of money for short tasks

"Human Intelligence Tasks" (HITs)

Image labeling, text/audio transcription, collecting data on websites, surveys

Base rate + possible bonus payment

How does it work?

Put money in your account

Create HIT description

Redirect workers to your favorite survey site

Send workers back to Turk w confirmation code

Match turk file with survey file, calculate bonus

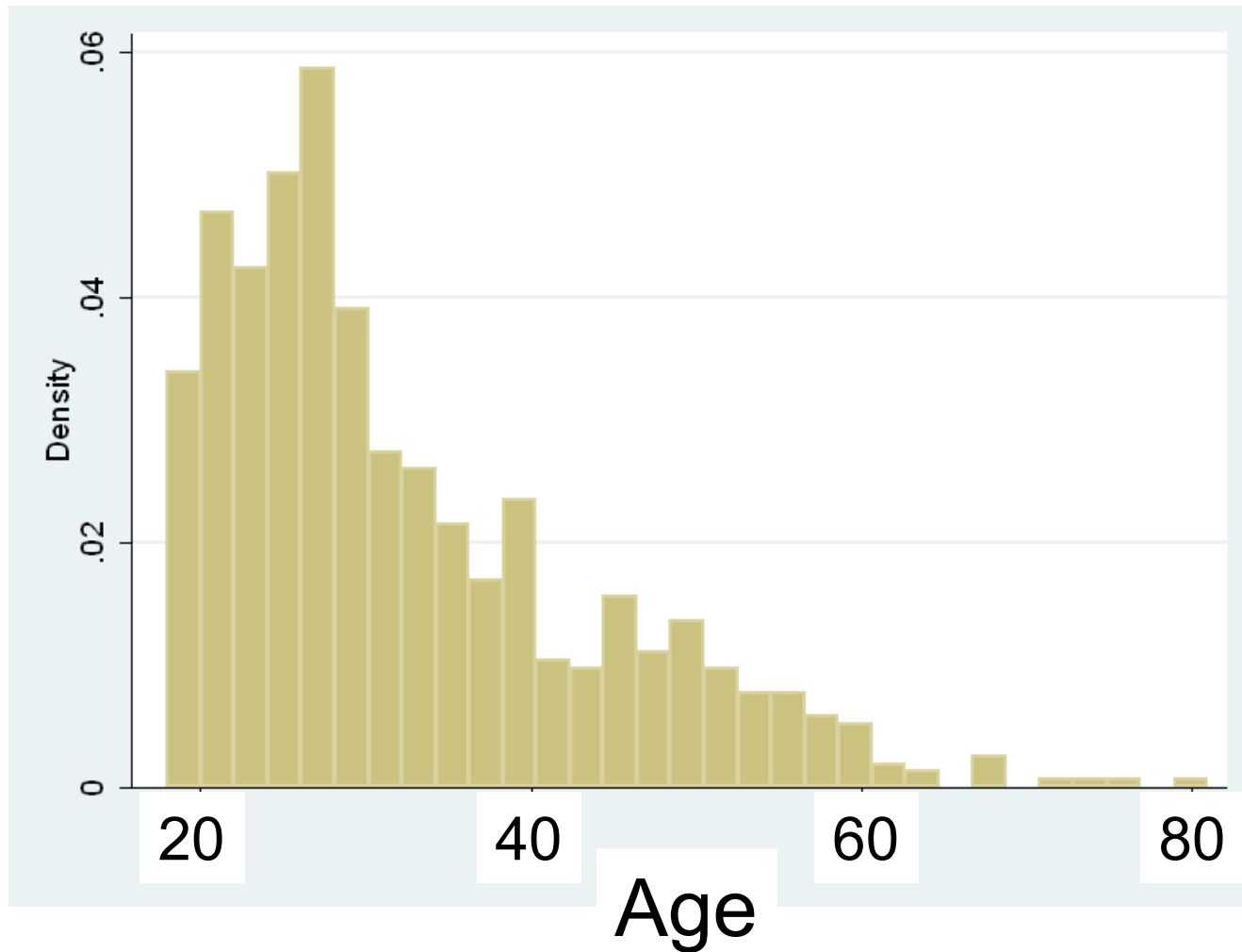Upload csv with approve/reject & bonus info

How much does it cost?

Reservation wages are approximately log normally distributed, with a median wage of $1.38/hour

Horton & Chilton 2010 "The Labor Economics of Paid Crowdsourcing"
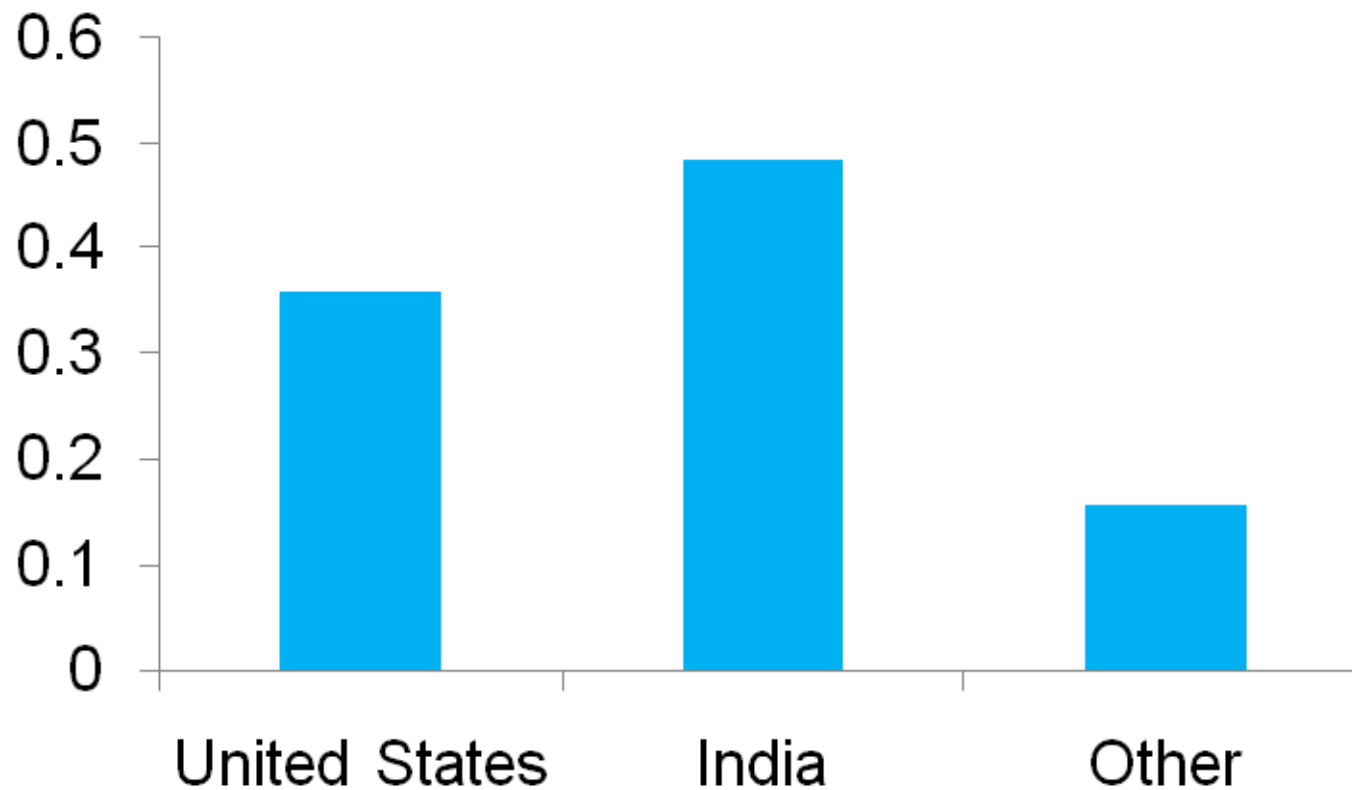
Depends how quickly you want workers...

I usually pay between $0.20 and $0.40 flat rate plus bonus of up to $1.00 for ~5 minute task
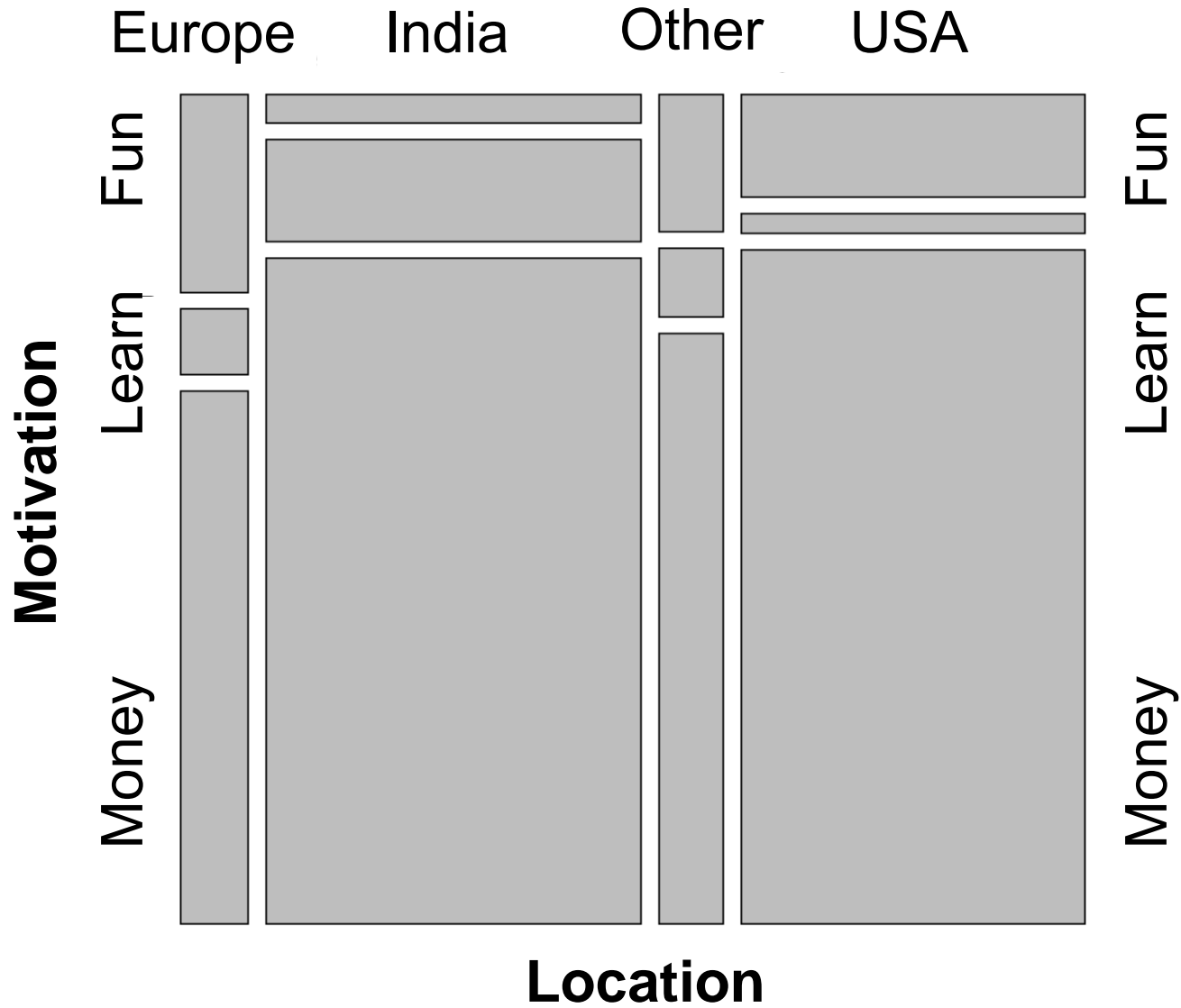
Who are the "Turkers"?
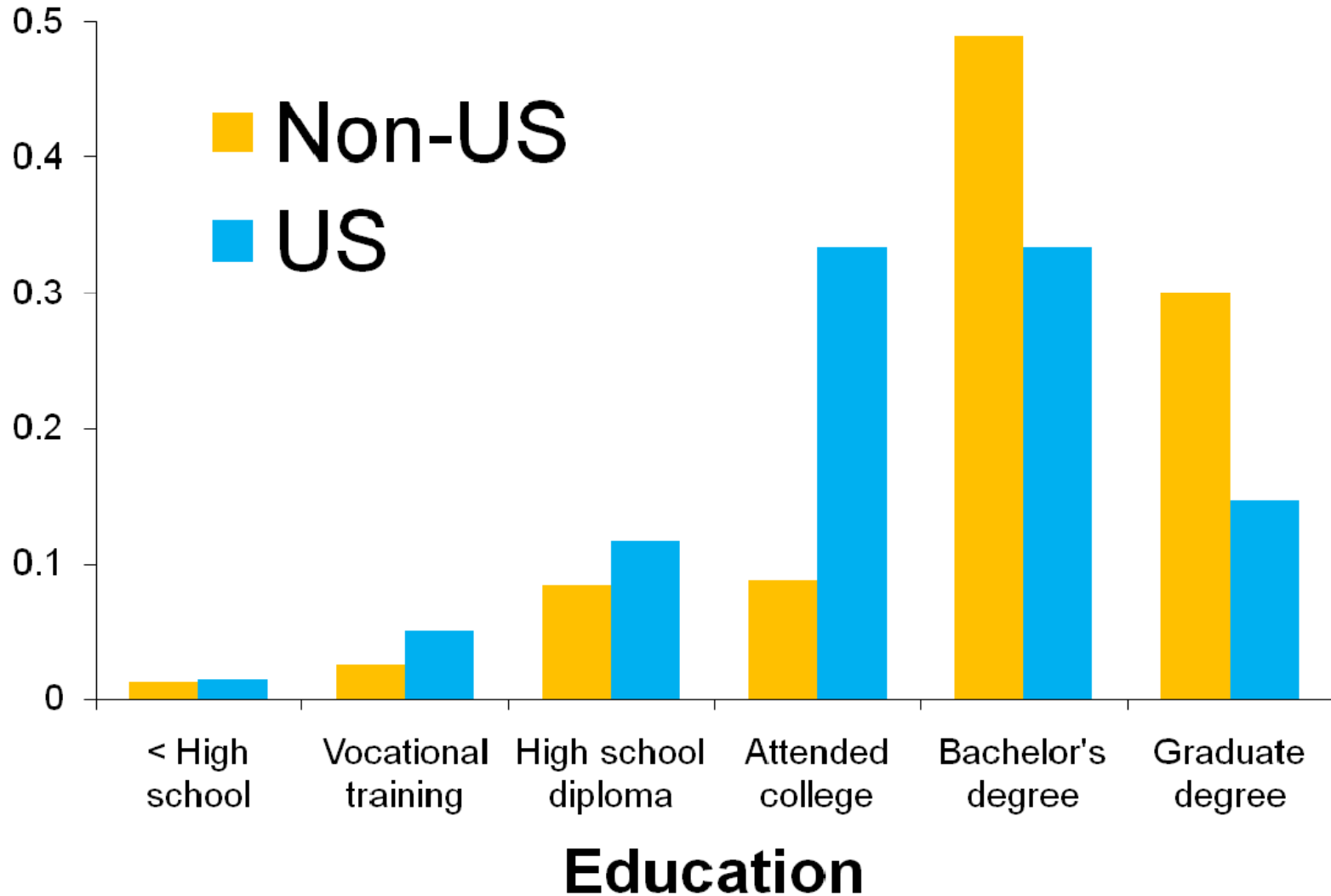

Roughly equal male / female (varies by study)
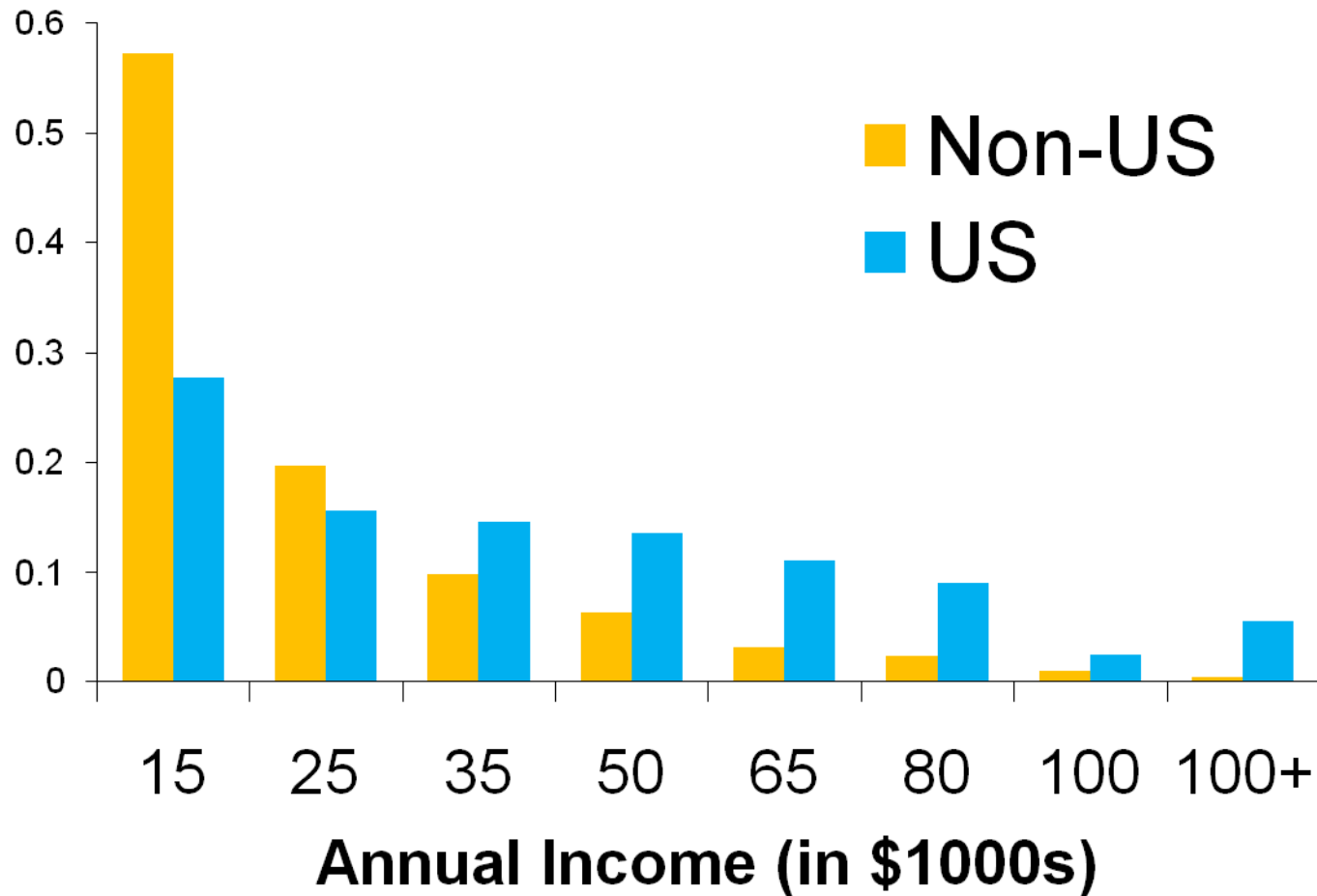
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Favorite HITs

Classify this advertiser

Write a paragraph about a scary situation you
    had been in

Type phrases in search engine and record hits

Playing a cooperative game with other workers
    where you had to explore a map

Pay a fair (not third world) hourly wage

Transcription rating- the work is so interesting

What's so great about it?

Fast, cheap, low effort

Incentive compatible

Cross-cultural

Great potential for field studies

But isn't it a biased sample?

Like college undergrads aren't?

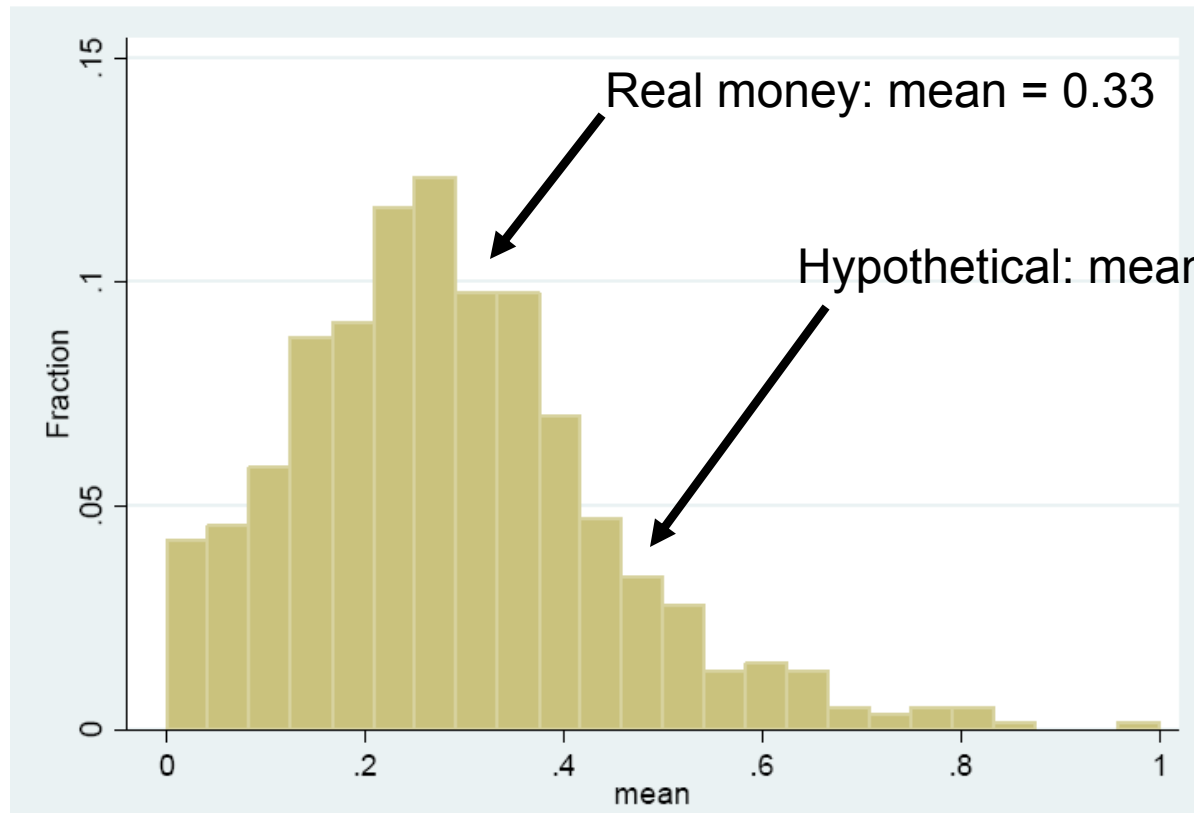Much more age, SES, geographic variation

A bit less "WEIRD"

To estimate levels, need representativeness

To compare changes across treatments, not as essential

But aren't the stakes too low?

Amir Gal Rand unpublished

Split $1 between you and another worker

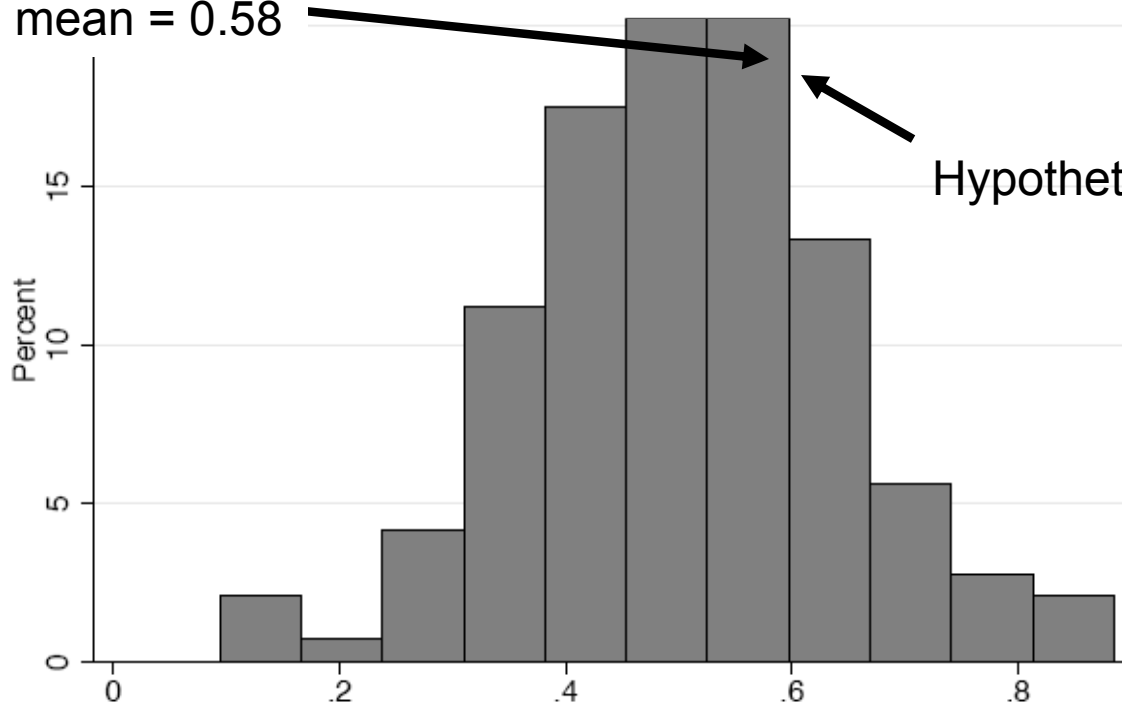Real money: mean = 0.33

Hypothetical: mean = 0.45

616 studies from Engel 2010

But aren't the stakes too low?

Trust game: P1 sends $ to P2, gets multiplied by 3, P2 chooses how much to return

Real money: mean = 0.58

Hypothetical: mean = 0.58

Percent

Fraction sent by P1

143 studies from Johnson & Mislin 2010

But aren't the stakes too low?

Trust game: P1 sends $ to P2, gets multiplied by 3, P2 chooses how much to return
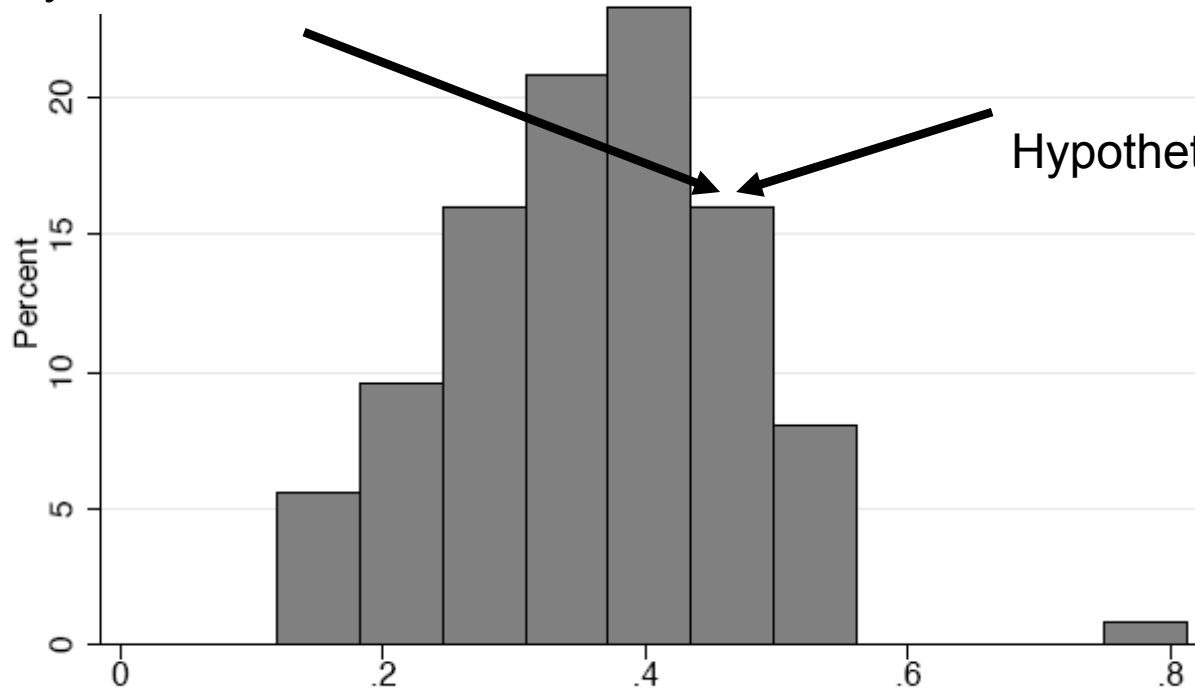

Real money: mean = 0.47

Hypothetical: mean = 0.45

Percent

Fraction returned by P2

143 studies from Johnson & Mislin 2010

Evidence from replications

Framing: *Horton Rand Zeckhauser 2010*

A: 200 people saved

B: 1/3 chance 600 saved & 2/3 chance 0
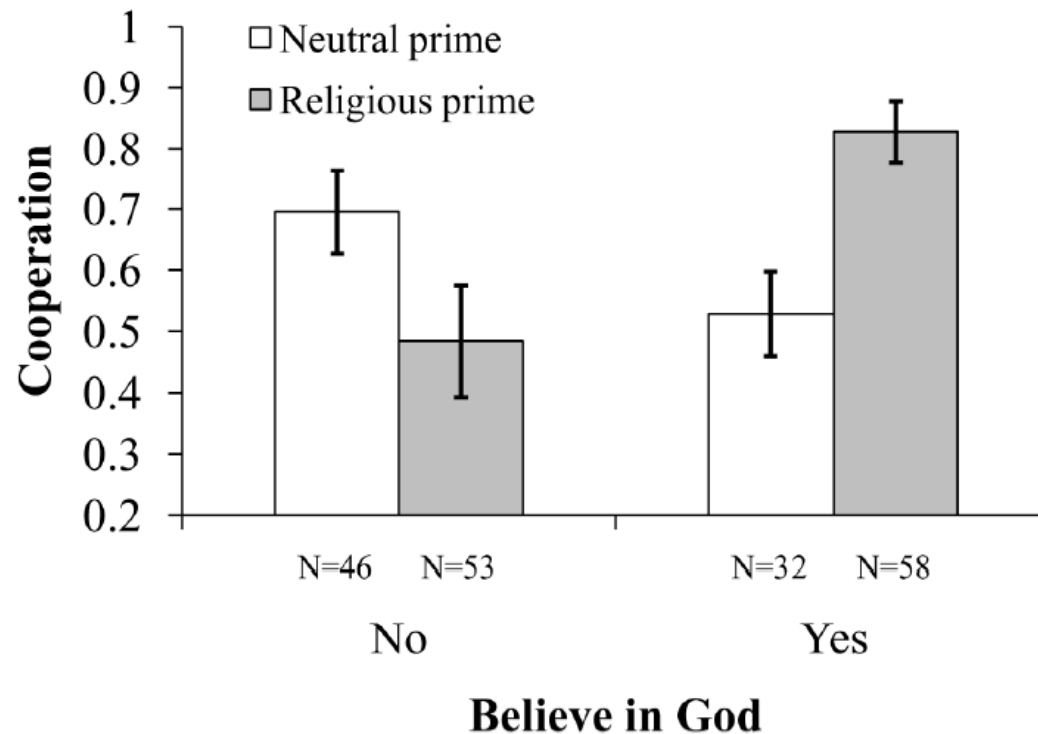
A: 400 people dead

B: 1/3 chance 0 dead & 2/3 600 dead

Preference reversal: 69% A vs 41% A

Evidence from replications

Priming: *Horton Rand Zeckhauser 2010*

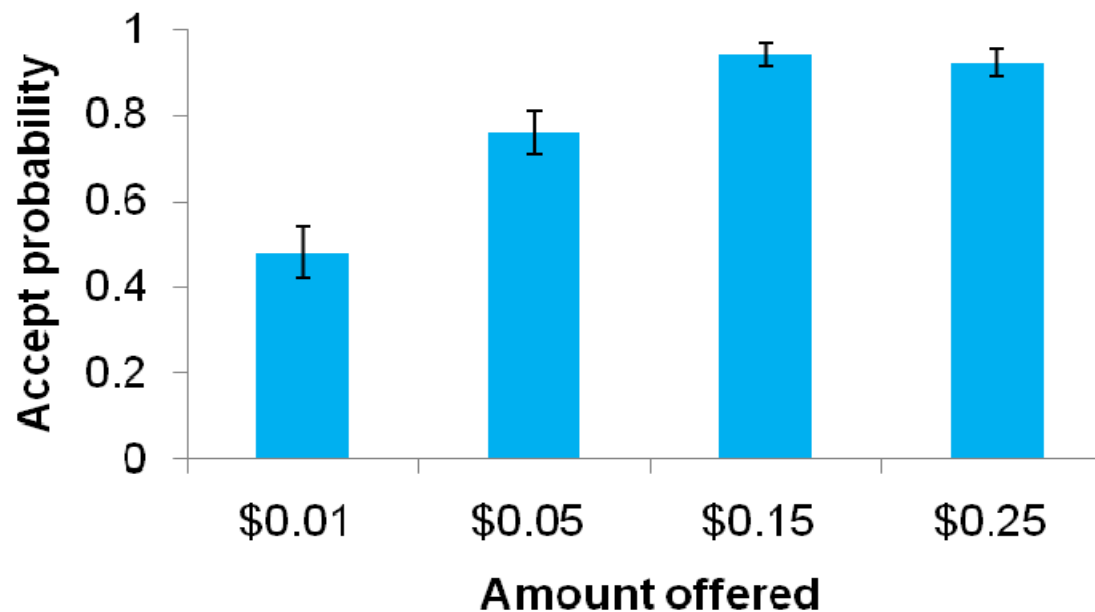Read religious or neutral passage, then play one-shot anonymous Prisoner's Dilemma

Evidence from replications

Wages and labor supply

Horton Rand Zeckhauser 2010

→ First transcribe a paragraph for 30 cents

→ Then offered 2nd task for varying amount

Evidence from replications

Paolacci et al 2010 JDM

→ "Asian disease"

→ "Linda problem"

Which is more likely, that linda is a bank-teller or a feminist bank-teller?
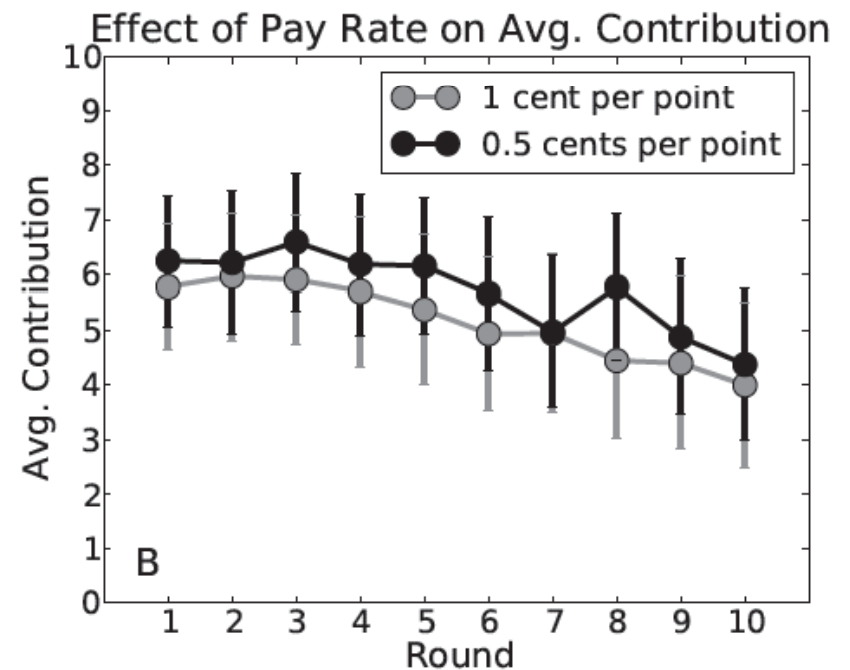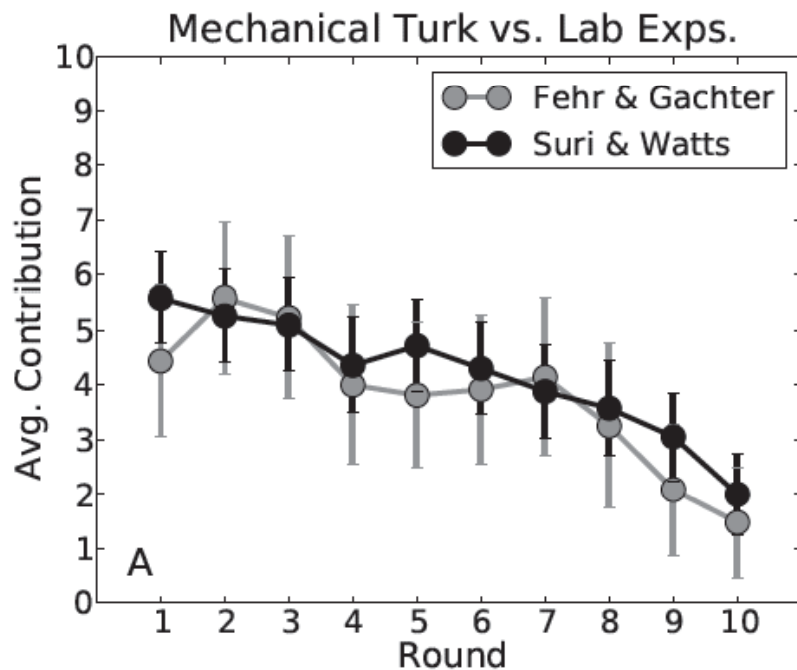
→ "Physician problem"

Outcome bias

Evidence from replications

Suri & Watts 2010 arXiv:1008.1276v1

Public goods game – choose how much to keep for yourself vs contribute to the group

Field studies

Subjects don't realize they are in an exp

Total external validity

Turk is great for this!

Horton 2010

Employer Expectations, Peer Effects and Productivity: Evidence from a Series of Field Experiments

Subjects label an image

Then are shown another worker's set of labels

Choose

→ Whether other's work should be accepted

→ How to split bonus with other worker

People punished low output, but only if they themselves were high output

→ Individual difference and manipulation

Chandler & Kapelner 2010
Breaking Monotony with Meaning: Motivation in Crowdsourcing Markets

Subjects label medical images

Either given *meaningful* prime or nothing

US subjects more likely to accept in *meaningful* condition, no effect on Indians

Conditional on accepting, no effect on quantity or quality of output for US or India

What are the pit-falls?

Turkers don't pay attention

→ Add 'attention checker' questions

Turkers don't understand instructions

→ Add comprehension questions

Non-random attrition

→ Check for it; use initial hook task

Turkers get mad if you block them

You are running a sweatshop?

A new era!

Transformative technology

Democratization of experimental social science

No lab, no budget, no effort!

Dramatic increase of research cycle

The future, today!

Collaborators

John Horton – KSG

Richard Zeckhauser - KSG

Xiaoqi Zhou – Harvard College

Ofra Amir – Ben-Gurion Univ

Kobi Gal – Ben-Gurion Univ

Yochai Benkler – HLS/Berkman

Nicholas Christakis – HMS/Soc

Sam Arbesman – HMS/Soc

Thomas Pfeiffer – SEAS/PED

<u>Another talk:</u>

Today, 2:30-4pm
Littauer M16

"Slow to anger &
fast to forgive"
w Drew Fudenberg
& Anna Dreber