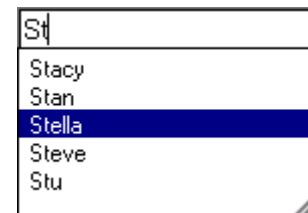
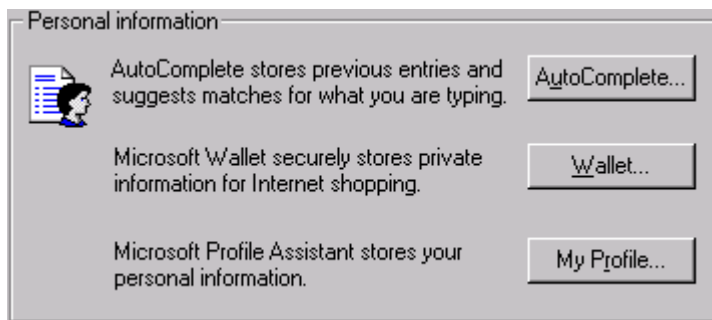


# The privacy economics of voluntary over-disclosure in Web forms

Sören Preibusch, Kat Krol, Alastair R. Beresford

# Web forms: ubiquitous, versatile, est. 1995

- Primary mechanism for **explicit data collection**
- Considered a **nuisance** (time, effort, distraction)  
Inconclusive user experience advice
- Technical **easing of form-filling**



# Online questionnaires vs. transactional Web forms

16. If someone offered you an appropriate position right now, could you start working within the next two weeks?

Yes .....  No .....

17. Have you actively looked for work within the last four weeks?

Yes .....  No .....  [Skip to question T9!](#)

18. Have you received a voucher „Vermittlungsgutschein“, and if so what was the value?

Yes .....  value:  euros  
 No .....

19. There are different reasons for being employed. Which is for you the main reason: to earn money or are other reasons important?

Earn money .....   
 Other reasons .....   
 Both about the same .....

20. Would you like to work in your current / past profession or in the area of your education / training, or would you rather do something new? Or does it not matter to you?

In my current/past profession or area of education/training .....   
 Something new .....  Does not apply, do not have a job (yet) .....   
 Doesn't matter .....

21. How likely is it that one or more of the following occupational changes will take place in your life within the next two years?

*Please estimate the probability of such a change according to a scale from 0 to 100. 0 means that such a change will definitely not take place. 100 means that such a change definitely will take place. All the values in between can be used for differentiation.*

Definitely not Definitely

— Start paid work .....  0  10  20  30  40  50  60  70  80  90  100

— Become self-employed or work on a free-lance basis .....  0  10  20  30  40  50  60  70  80  90  100

— Receive further education or training by means of courses or seminars .....  0  10  20  30  40  50  60  70  80  90  100

[Skip to question T3!](#)

07

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# Object of assessment and methodology



Users' **behaviour** when providing **optional personal information** on a **Web form**

- Field experiment on **mTurk**: 1500 participants (US)
- Web form with **10 optional + 2 check** questions
- No input checks; participants always paid

# Apparatus, treatments, sample size

## About yourself

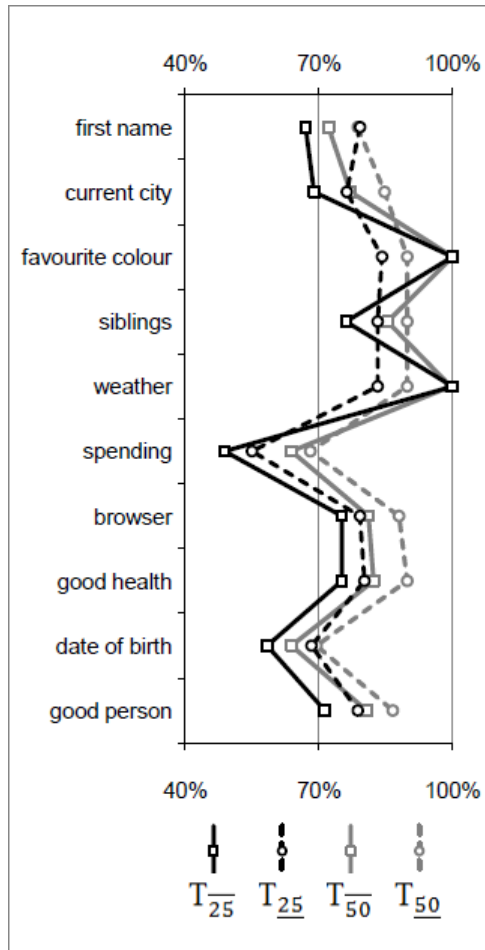
Please provide some information about yourself. Questions 5 and 6 are mandatory. All other fields are optional. There is no bonus for this HIT.

1. What is your first name?
2. Which city are you in now?
3. What is your favorite color?
4. Do you have any siblings?
5. Which of these questions are mandatory?
6. Do you expect a bonus for this HIT?
7. Is it sunny outside?
8. When did you last spend more than \$100?
9. Which browser are you using?
10. Are you in good health?
11. What is your date of birth?
12. Are you a good person?

finish and submit HIT

	compensation	
data req.	\$ .25	\$ .50
low chk	202	216
high chk, col, sun	209	445
bonus chk, [col, sun]		181

# Revelation ratios by data item and treatment



- **Date of birth** disclosed least often: **57%** (partial DOB: 68%)
- **Weather, favourite colour** disclosed most: **87%**
- **Most recent browser used**: **66%**
- **Browser correctly named**: **96%**

# Significant prevalence of voluntary over-disclosure

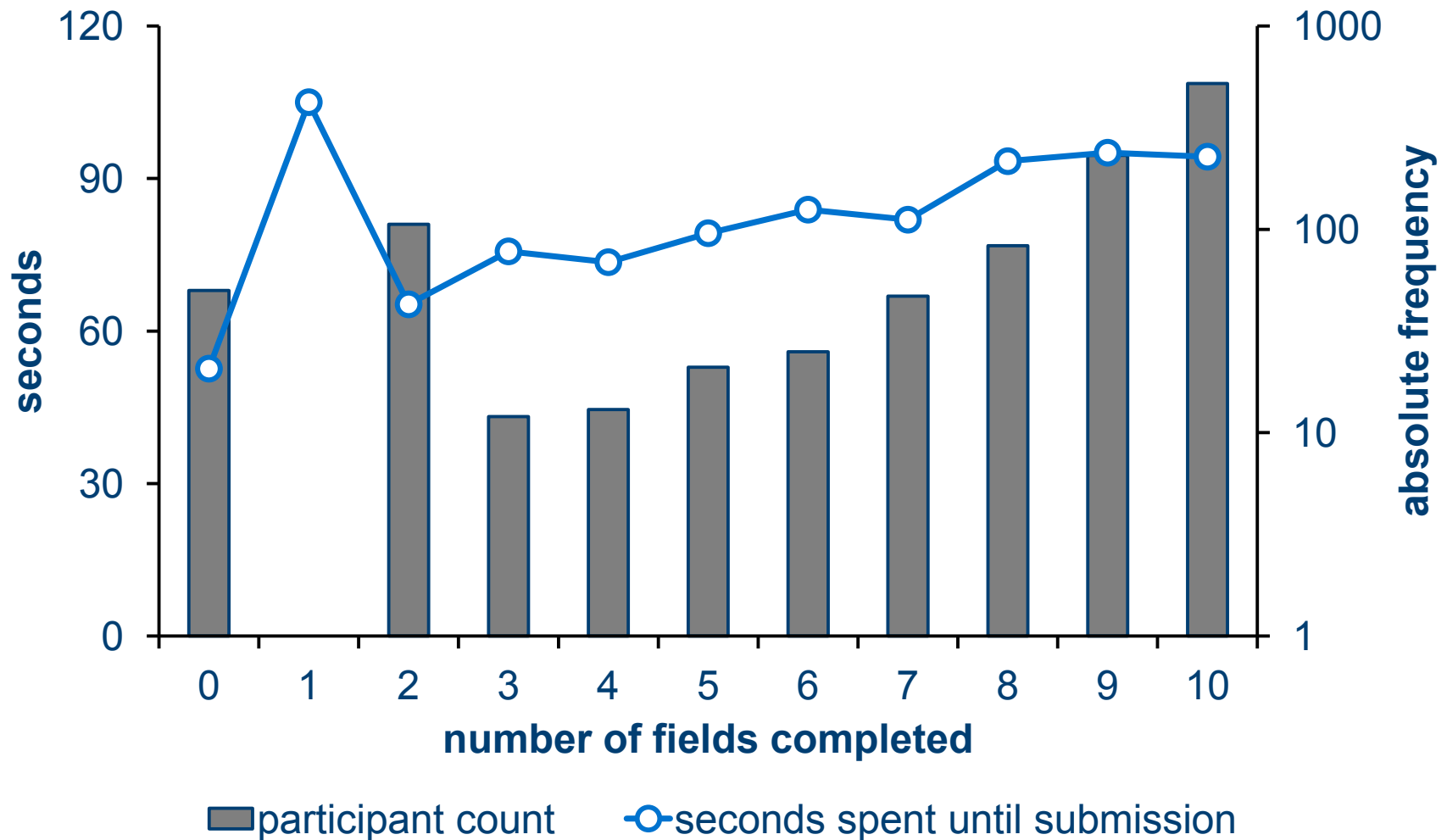
- **Mandatory / optional response drop ( $p < 0.0001$ )**
- **Wide-spread **voluntary over-disclosure** ( $p < 0.0001$ )**
  - ▬ All vs. none optional fields: 10× as often
- **Significantly **over-detailed responses****
  - ▬ 6% give weather details  
“No. It's currently cloudy and rainy”
  - ▬ 14% give purpose of spending (on top of date)  
“4 days ago getting groceries”

# Over-disclosure by accident – but not only!

- **O/D more prevalent when instructions not read**
  - ≡ Date of birth: 67% vs. 87%,  $p < 0.0001$
  - ≡ Good person: 81% vs. 90%,  $p = 0.0001$
  - ≡ 93% recalled that questions optional
- **Retrospectively personal information**
  - ≡ Personal data: 62%
  - ≡ Personal and sensitive: 8% (who disclosed DOB,  $p < 0.05$ )
- **Privacy costs of over-disclosure**



# Non-privacy costs of over-disclosure



# Chilling effects of mandating fields

- **Weather and favourite colour (least sensitive fields) made mandatory: disclosing behaviour reduced**
  - ▬ for remaining medium sensitivity  
good person  $\searrow$  ( $p < 0.04$ )
  - ▬ for remaining high sensitivity  
date of birth  $\searrow$  ( $p < 0.02$ )
- **Even if mandatory items were provided anyway**
  - ▬ average 1.3 fields less provided ( $p < 0.0001$ )
  - ▬ date of birth  $\searrow$  ( $p < 0.0001$ )

# Higher base reward may increase disclosure ratio

- **Comparing treatments with high vs. low reward**
- **Effect of higher rewards by data item sensitivity:**
  - ▬ Low sensitivity: weather ↗, fav. colour ↗ (p = 0.001)
  - ▬ Medium sensitivity: good person ↗ (p = 0.003)
  - ▬ High sensitivity: date of birth: no effect (not significant)
- **No moderating effect of reciprocal personality**

# Crowding-in of incentivised disclosure

- **Extra \$ .25** for disclosing weather and fav. colour
- **Highly effective** for increasing disclosure  
( $p < 0.0001$ ; as effective as mandatoriness)
- **Spillover** to non-incentivised data items
  - = good person ↗ ( $p = 0.002$ )
  - = date of birth ↗ ( $p < 0.001$ )

# Motivation to participate

- **For the money: 54%**
- **Looked easy: 30%**
- **Joy: 15%**
  - =" It looked interesting, fun and easy to do"
- **Help research: 8%**
  - =" Any help I can be for research, I am glad to do"
- **Interesting: 25%**
- **Articulate opinions: 3%**
  - =" my information goes towards creating a change in something"
  - =" the opportunity to present an underrepresented demographic (conservatives, mothers) in surveys"

# Plausible motives for voluntary over-disclosure

- **By accident** ✓
- **Limit disclosure too costly**
- **Personality**
  - ▬ Reciprocity ✗
  - ▬ Benevolence
  - ▬ Extroversion
  - ▬ Completionist ✓
- **Speculating on return**
  - ▬ Social capital build-up ✓
  - ▬ Monetary bonus ✓
  - ▬ Non-monetary returns (e.g., personalisation)
  - ▬ Infrastructure improvements ✓
  - ▬ Opinion shaping ✓

# Take-home messages



- Web users incur costs from **highly prevalent, voluntary over-disclosure**: time, effort, privacy loss.
- **Incentives** create positive spillover towards higher disclosure.
- **Mandating** some fields reduces voluntary disclosure for the remaining.