Exploring Privacy Negotiation Strategies for Camera-Equipped Smart Home Devices in Airbnb

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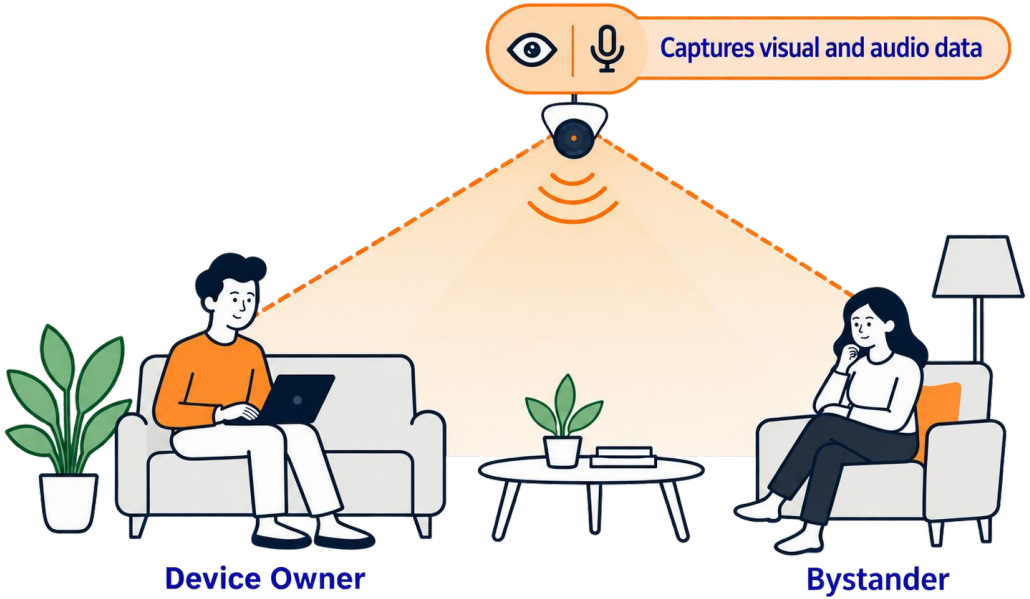
Bystanders in Smart Homes



Opaque to bystanders

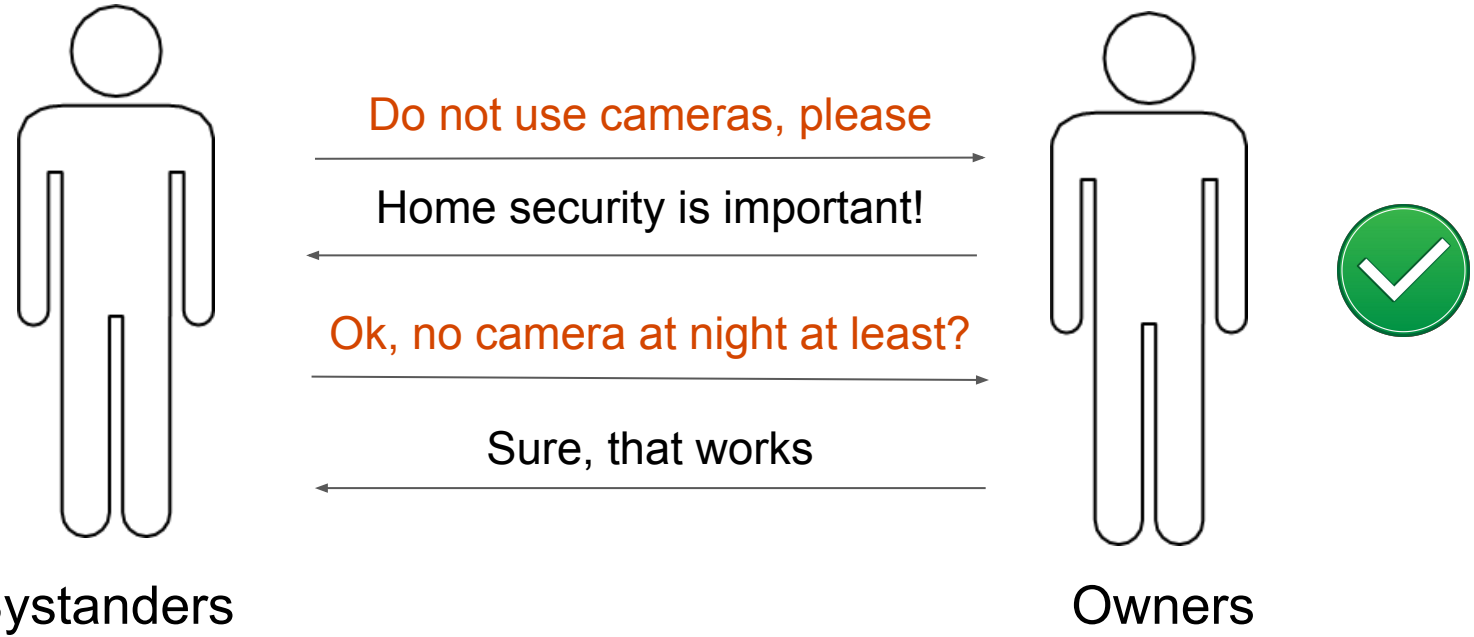
What is it collecting?
How can I protect myself?

Social confrontation

Bystanders may hesitate to speak up about their concerns

Multi-user privacy is not only a technical issue but also a social one.

Privacy Negotiation



Research Question

RQ1

Which modes of privacy negotiation do tenants prefer in short-term rentals?

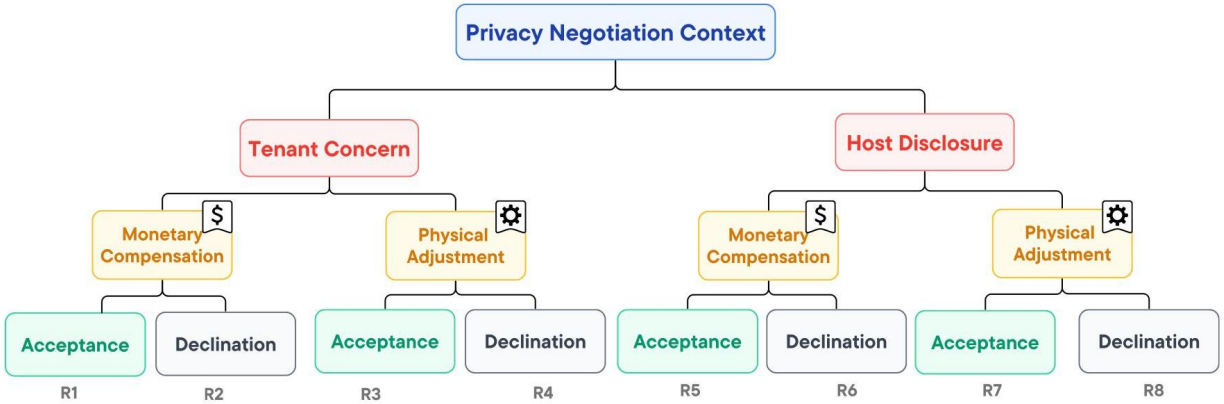
RQ2

Which strategies are perceived as most suitable in privacy negotiation?

Method: Full-Factorial Vignette Study

- **3** Device Type
- **2** Initiator
- **2** Strategy
- **2** Outcome





2 × 2 × 2 = 8 negotiation routes per device × 3 devices = 24 storyboards

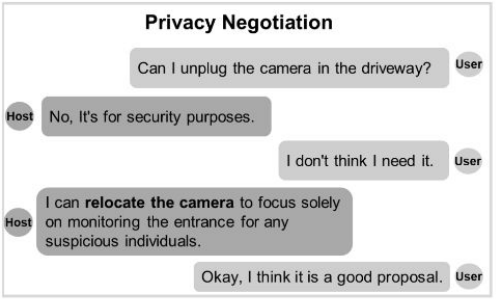
Method: Storyboard Example



Jane is a privacy-conscious person. When she arrives at her Airbnb rental, she notices a smart camera installed in the driveway. She is concerned about her privacy being infringed by it.



Jane contacts the host and expresses her concerns about the camera. She wants it to be disabled during her stay for her privacy.



During the conversation, the host explains that the camera is installed for security purposes. As a compromise, the host proposes relocating the camera to only monitor the entrance for any suspicious individuals and/or activities.



Jane thinks that relocating the camera angle or position would adequately address her concerns while still maintaining the security of the property. She accepts host's offer.

*Negotiation Route 3: Tenant-initiated → **Host proposes physical adjustment** → Accepted*

Method: Study procedure

400 participants · recent Airbnb tenants · recruited on Prolific

Recruit

Participants recruited on Prolific

Screen

US-based adults who recently stayed in an Airbnb

View

Three storyboards each, one per device

Rate

Three ratings plus three open-ended questions

Method: Measures and analysis

Measures (4-point scales)

Effectiveness

Very effective (1) → Very ineffective (4)

Practicality

Very practical (1) → Very impractical (4)

Willingness to use

Very likely (1) → Very unlikely (4)

Open-ended questions

1. Would you negotiate similarly? Why or why not?
2. How could the negotiation be improved?
3. How satisfied are you with the negotiation outcome?

Analysis

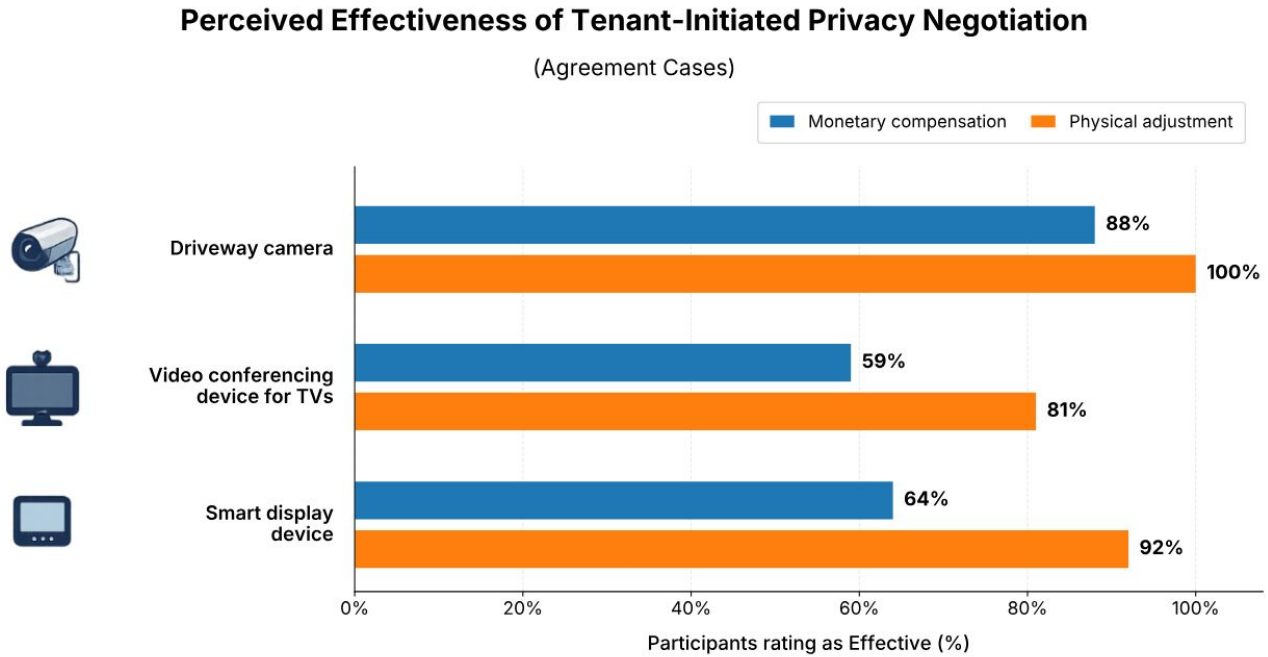
Cumulative Link Mixed Models

Ordinal ratings
Random intercepts for participants
Post hoc: EMMs with Tukey correction

Thematic analysis

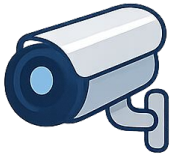
3,600 open-ended responses

Results: Device-centric negotiation strategy preferred over compensation-centric strategy



Tenant-initiated, accepted negotiations only: physical adjustment (R3) vs monetary compensation (R1). Perceived effectiveness, top 2 boxes, from Figure 2. N = 400.

Results: Driveway camera negotiations were rated more favorably



Driveway camera

clear purpose



Video conferencing device for TVs

embedded



Smart display device

embedded

primary surveillance (explicit, expected) → **embedded surveillance** (less predictable, intrusive)

41% acceptable outdoor from concerning indoor surveillance

"If it's outside, I wouldn't feel my privacy was infringed. If there are cameras inside, I wouldn't book it in the first place." P127

Covering the camera isn't enough

13% still raised audio-monitoring concerns when the camera was covered

Implications

Device-Centric First



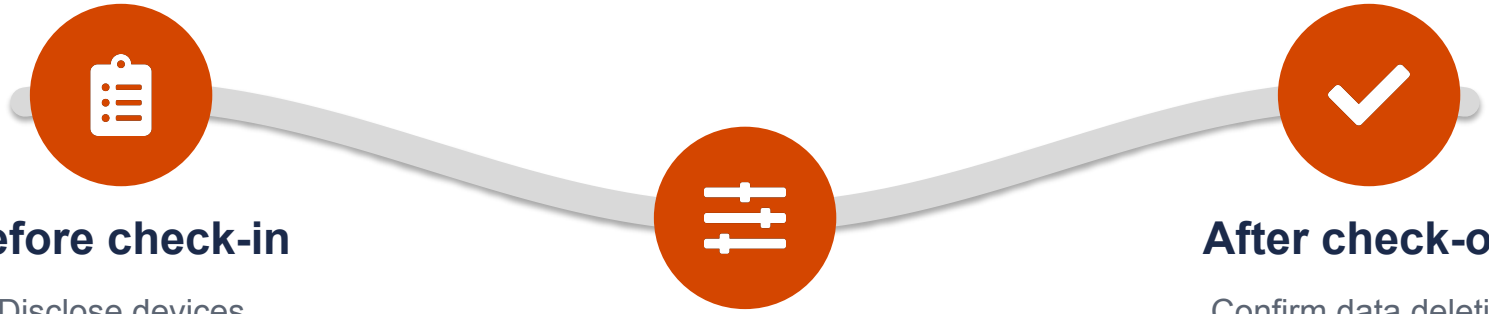
- Directly address the privacy concern
- Compensation only as a fallback

Make Control Verifiable



- Control the device's full sensing surface
- Verifiable to tenants, with clear indicators

Implications



Before check-in

Disclose devices
Provide negotiation templates

During the stay

Give guests direct controls
Allow reversible changes

After check-out

Confirm data deletion

Key Takeaways



Device-centric negotiation strategies were preferred over compensation-centric strategies.



Device context mattered: explicit outdoor cameras were evaluated more favorably than embedded indoor devices.



Control should address the device's full sensing surface and be verifiable.

Scan for full paper





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