"Assertive driver, I can imagine that": Interpretations of Inferences from Driving Data

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Background

RQ: How do people react to and make sense of inferences made from their driving data?

- An **inference** is new data derived by processing existing data about someone or something
- Adequate privacy requires sufficient understanding of proposed data processing and uses, including inferences
- To improve transparency, we need to understand how people make sense of how their data are processed and used in real life

Method

- Collected 3 months of driving data using an OBD-II adapter (below)

- Generated and showed individualized reports to 28 participants (57% women, average age 45)
- Presented visualizations of driving data and inference about driving style, calculated by ranking participants using speeding, braking, and accelerating data:

Assertive (9 participants)
Normal (8 participants)
Defensive (9 participants)

- ~90 min interviews reacting to report; iterative inductive qualitative analysis to identify themes in transcripts

Findings

15 participants indicated the driving style inference aligned with their perception of their own driving; 4 indicated it contradicted in some way

Rationalizations used to interpret driving style inference

Moral correctness
Inference is related to safety or avoiding accidents; not being reckless or aggressive

"I'm able to make conscious decisions, speed up, slow down, get to where I need to go without causing an accident or jeopardizing people's lives."
– P34 (24F, assertive)

Social comparisons
Inference is related to the perceived behavior of other drivers

"There should be another level up than the assertive, I think. [...] I think I drive assertive but [...] and I've seen people driving more faster than me like it's normal."
- P16 (31M, assertive)

Norms of driving
Inference is related to beliefs about commonly accepted driving behavior

"I've driven a lot in Boston and DC, and they're aggressive drivers. You've got to make your way through, so I learned that."
- P35 (68M, assertive)

Individual attributes
Inference is related to personal preferences, qualities or characteristics

"Assertive driver, I can imagine that. [...] I mean, when I'm driving, I want to get from point A to point B quicker than slower I guess."
–P29 (31M, assertive)

Supporting Rationalizations with Driving Information

Participants selectively referred to driving data from the report to contextualize driving style

"So [defensive] means, for example, it says that hard brakes events have been very frequent. So I'm trying to, I've been trying to protect myself."
- P13 (30F, defensive)

Discussion

Participants employed various frames and data points to interpret their inferred driving style as a (mostly positive) reflection of themselves.

- Abstraction of participant reactions to their driving style:

"I'm a safe *[moral]*, typical *[social comparisons]* driver that follows the unwritten rules *[norms]*, except when I don't, and that's because of something I already know about myself *[individual attributes]*"

- A person's understanding of inferences may be unrelated to the platform's, and **disconnected** from potential uses and consequences of those inferences
- Transparency about what an inference is does little to help people understand what an inference means and therefore does not provide required knowledge for informed privacy decisions and consent
- To empower informed choices about allowable data usage, consent processes must communicate intended purposes/uses of inferences

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