Responsible data use beyond privacy
Using descriptive ethics approaches to respect user preferences in COVID19 tech

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Computational problems require constant decision-making

Which features are fair to use?

What data should be used & which features prioritized?
Typically: experts set best practices

Which features are fair to use?

What data should be used & which features prioritized?
Experts trade off costs and benefits

Expert’s Normative Decision

Risk to individuals

Unfairness

Benefit to public health

classifier accuracy

Realm of possibility
Users and experts often disagree on tradeoffs

Graph showing tradeoffs between classifier accuracy and benefit to public health vs. risk to individuals and unfairness.

- **User’s Preference**
  - Blue line

- **Expert’s Normative Decision**
  - White line

**Realm of possibility**
This disagreement is a classic tension in moral philosophy.
Descriptive ethics approaches to developing technology

Identify ideal / acceptable functionality from citizen preferences & norms

Contact tracing
Benefit of contact tracing apps scales quadratically with the number of users

Adoption matters

https://www.research.ox.ac.uk/Article/2020-04-16-digital-contact-tracing-can-slow-or-even-stop-coronavirus-transmission-and-ease-us-out-of-lockdown
Experts focused on ensuring apps protected user privacy
But what considerations are most important to users? We found out using carefully constructed online surveys.

Closed-answer questions regarding willingness to install

Open-answer descriptions of reasoning for install intent

Panel-based online surveys quota sampled to ensure respondent demographics match those of the U.S. census on age, race, gender, education & income.
Many possible inputs to COVID19 adoption decisions; privacy is necessary, but may not be sufficient

- Benefits
- Provider
- Privacy
- Mobile costs
- Accuracy
- Architecture: Security & Agency

Redmiles, E.M. User Concerns & Tradeoffs in Technology-Facilitated Contact Tracing. ACM Digital Government 2020
Which of these considerations matter most?

- Benefits
- Provider
- Privacy
- Mobile costs
- Accuracy
- Architecture: Security & Agency

See: User Concerns & Tradeoffs in Technology - Facilitated Contact Tracing
We used conjoint analyses to identify the most important considerations in COVID-19 app adoption intent.

Imagine that there is a mobile phone app intended to help combat the coronavirus in the U.S. Different apps have different benefits and risks and may collect different types of information about you.

<table>
<thead>
<tr>
<th>App accuracy</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile data</td>
<td>Detects 90 out of 100 exposures to Coronavirus</td>
<td>Detects 99 out of 100 exposures to Coronavirus</td>
</tr>
<tr>
<td>Battery life</td>
<td>Uses 300 MB (0.3GB) of your data plan every month</td>
<td>Doesn’t use mobile data</td>
</tr>
<tr>
<td>Information that could be revealed</td>
<td>Phone battery lasts 1 hour shorter than usual</td>
<td>Doesn’t drain phone’s battery</td>
</tr>
<tr>
<td>What information is collected</td>
<td>No risks</td>
<td>Someone could know where you’ve been</td>
</tr>
<tr>
<td>Benefits</td>
<td>No information is collected</td>
<td>Information about your location</td>
</tr>
<tr>
<td>Where information is stored</td>
<td>Reduce the number of people infected with coronavirus</td>
<td>Alert you if you have been exposed to someone who has coronavirus, without revealing your or their identity</td>
</tr>
<tr>
<td></td>
<td>No information is collected</td>
<td>Only on your device</td>
</tr>
</tbody>
</table>

None: I wouldn’t choose any of these.
Accuracy & privacy among the most important factors in American’s intent to install COVID19 apps

For the average American surveyed, intent to install COVID19 app depends on:

- **29%** Privacy / Data Use considerations
- **29%** Accuracy considerations
- **16%** Mobile data use considerations
- **14%** App benefits considerations
- **11%** Battery life considerations

Work in collaboration with Dana Turjeman (Univ. Michigan).
But, everyone does not value these attributes equally.

Democrats focus on accuracy; Republicans on privacy.

Younger adults: benefits & accuracy; Older adults: privacy & mobile costs.


More knowledgeable about COVID19 more focus on accuracy.
We’re putting these results into practice to tailor marketing of COVID19 apps in multiple countries / states.

Survey Results → Experimentation → Measurement → Advertising field studies to improve COVID19 app adoption
Responsible data use is not just about privacy, it's about providing tech that respects user preferences

elissaredmiles.com/covid