# Lessons in VCR Repair: Compliance of Android App Developers with the California Consumer Privacy Act (CCPA)

The 23rd Privacy Enhancing Technologies Symposium (PETS 23)

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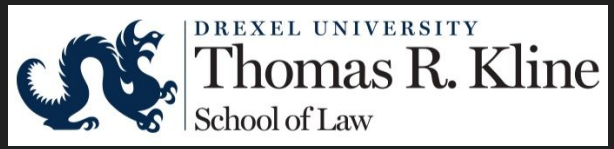
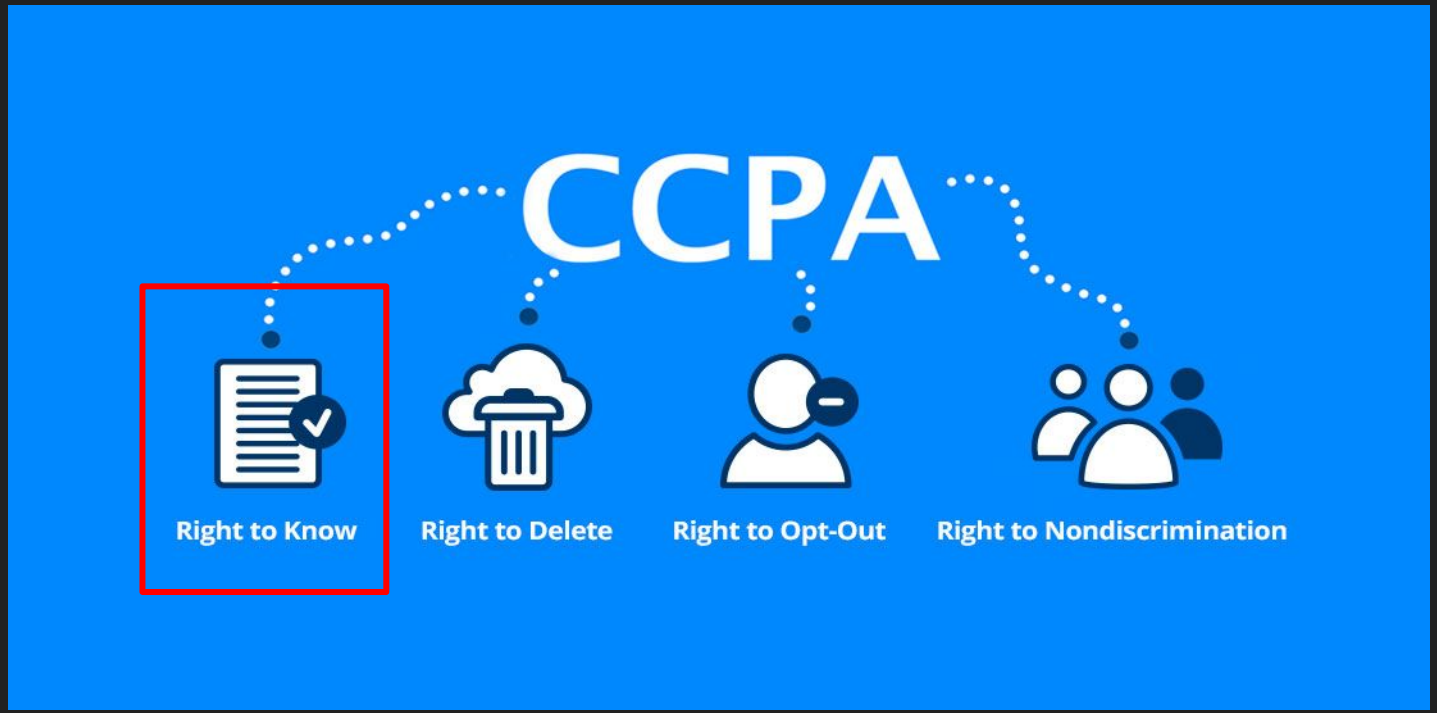


# California Consumer Privacy Act (CCPA)



# How does the CCPA compare to EU's GDPR?

## CCPA

- Applies only to for-profit businesses subject to additional criteria
- Right to know requires companies to provide data "in a portable [...] format"
- Consumers can request *specific* identifiable data collected about them
- Privacy policies only specify categories

## GDPR

- Applies broadly to entities that process Europeans' personal information
- Rights of access and portability are two distinct rights
- Consumers can request *specific* identifiable data collected about them
- Privacy policies only specify categories

# Why is the “right to know” so important to consumers?

- Enables other privacy rights
- May prompt consumers to change their privacy behavior
- Hold companies accountable to their stated information practices

# Research Questions

To what extent do Android app developers comply with the provisions of the California Consumer Privacy Act (CCPA) that require them to…

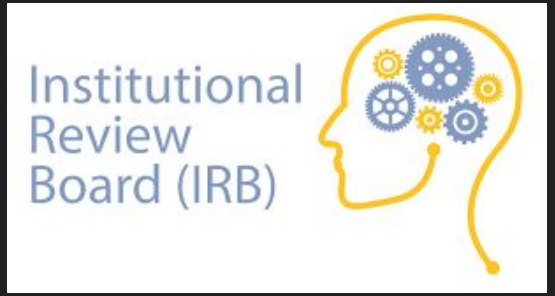
- respond to verifiable consumer requests (VCRs) by **accurately disclosing personal information** that they collected and shared about them?
- maintain **accurate privacy notices**?

# On ethical research conduct

We examined ethical issues surfaced by other work and shared our study methodology with the IRB* office at UC Berkeley

Our main objectives were:

- Determining which developers are subject to the CCPA
- Submitting requests to know that are legally valid




*This is not “human subjects research” and therefore beyond the purview of an IRB!

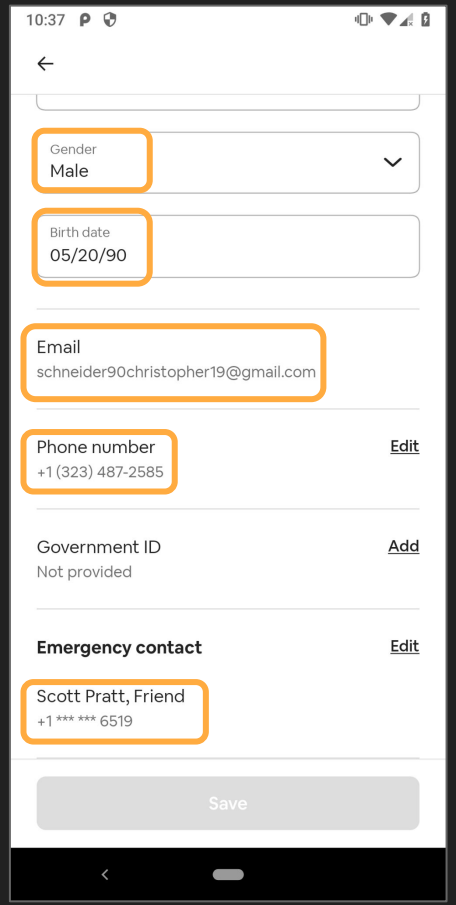
# CCPA has **threshold requirements** that are not easily publicly knowable

At the same time, **Sec. 5 of the FTC Act** prohibits "**deceptive acts or practices**," which include material representations that are likely to mislead consumers

We initially selected **160** top-ranked Android apps across 20 categories

We then narrowed down this dataset to **109** apps with **CCPA disclosures** in their privacy policies, which we also analyzed to determine each app's **information practices**

We then ran these apps and collected their **network traffic**



# We submitted verifiable consumer requests (VCR) using each app's prescribed procedures for submitting VCRs

**Initial Request**

[Subject] CCPA Request to Know Personal Information

Dear Privacy Compliance Officer,

My name is [*name*]. I live in California and I am exercising my data access rights under the California Consumer Privacy Act (CCPA) to obtain a copy of the categories and the specific pieces of personal information that [*company*] has collected about me.

# Pseudonyms

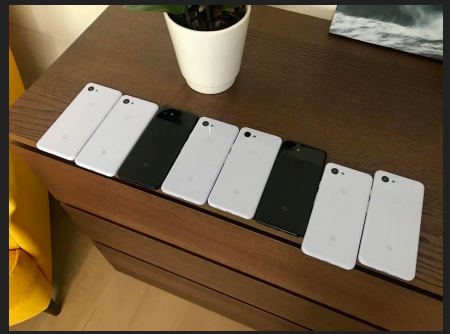
Mitigate two **confounding** variables

CCPA grants the right to know to California consumers, “a natural person who is a California resident [...], **however identified, including by any unique identifier**”

Our requests were **valid** because:

- They were only sent by researchers who are California residents
- Researchers testing the apps and submitting the requests were always identifiable by a unique identifier

# Finally, we compared the **disclosed** and **actual** data practices



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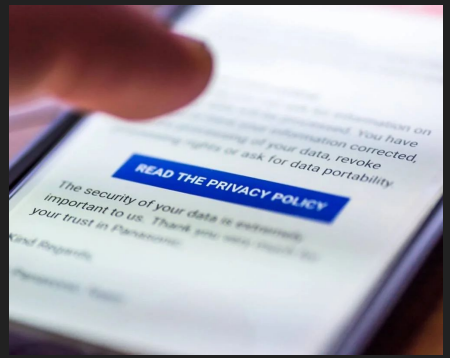


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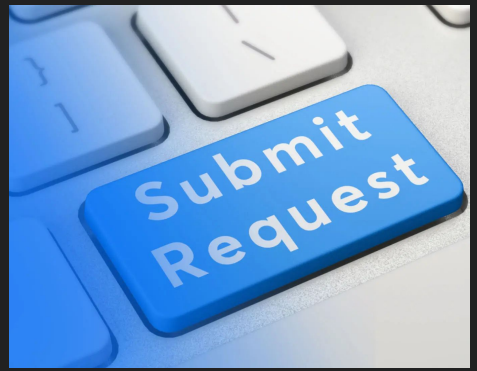


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# What did we learn from submitting requests?

- **Two-thirds** of app developers provided **two or more** methods to submit requests (e.g., 65% = email; 39% = dedicated portal)
- In most cases, we were asked to provide **basic information** but some developers also requested **technical identifiers**
- Only **7** app vendors explicitly requested proof of California residency

# What did we learn from developer responses?

- Out of 109 requests, we received a material response from **80 developers** (21 = no reply, 5 = refused to verify, 3 = could not verify)
- Out of these 80 responses, we received our data in **69 cases** (8 = no data collected, 3 = check account profile)
- While **68** developers provided specific pieces of PI, only **25** named the categories of third parties to whom our information was sold or disclosed
- Only **6** companies presented the same data using two different formats for usability and portability purposes

# What did we learn from analyzing these responses?

- **8 developers** claimed not to collect any personal information, but **only one** appeared to not actually collect any data
- **68 developers** provided specific pieces of personal information, but **only 9** fully disclosed the extent of their data collection practices
- In their privacy policies, **25 (31%)** did not fully disclose the collection and **17 (21%)** did not fully disclose the sharing of information with third parties

# To summarize the compliance with the CCPA

Out of 109 companies:

- **34%** did not provide multiple means to submit requests
- **24%** did not respond to our request

Out of 69 companies responding with our data:

- **91%** did not provide data in a usable and a portable format
- **87%** did not fully disclose the personal information collected about us
- **64%** did not provide the categories of third parties

# Recommendations

## For developers:

- If possible, use existing authentication mechanisms to confirm the identity of the requester
- Secure access to and transmission of consumers' personal information
- Provide information in several formats (i.e., both human readable and portable)

## For regulators:

- Educate developers on what constitutes personal information
- Provide more guidance on the contents and the format of VCR responses

Thank you! Please reach out: nsamarin@berkeley.edu | @nsamarin | linkedin.com/in/nikitasamarin/

# Our work holds important implications:

For consumers:

- Determining the applicability of the CCPA is not trivial
- VCR responses lack uniformity across responses from different organizations

For developers:

- If possible, use existing authentication mechanisms to confirm the identity of the requester
- Secure access to and transmission of consumers' personal information (e.g., use 2FA, download links with time expiration, password-protected files)

For regulators:

- Educate developers on what constitutes personal information
- Provide more guidance on the contents and the format of VCR responses

# Summary

- The “right to know” enables informed decision-making and exercising privacy rights
- We analyzed the network traffic, privacy policies, and responses to VCRs for 109 top-rated Android apps featuring CCPA-specific disclosures
- While developers provided specific pieces of personal information in VCR responses, many have omitted information associated with identifiers, geolocation, and sensory data
- Regulators should provide guidance to developers regarding the contents and format of VCR responses

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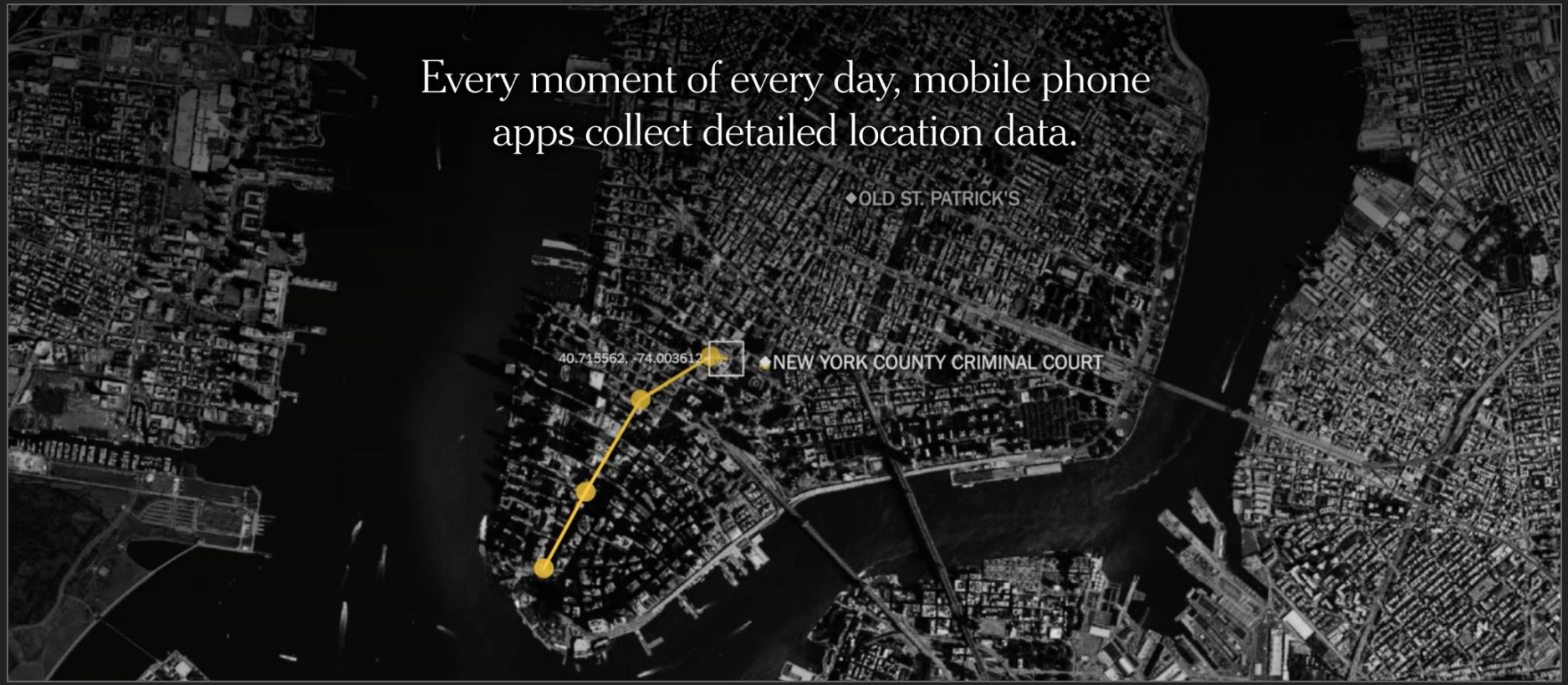
Every moment of every day, mobile phone apps collect detailed location data.
OLD ST. PATRICK'S
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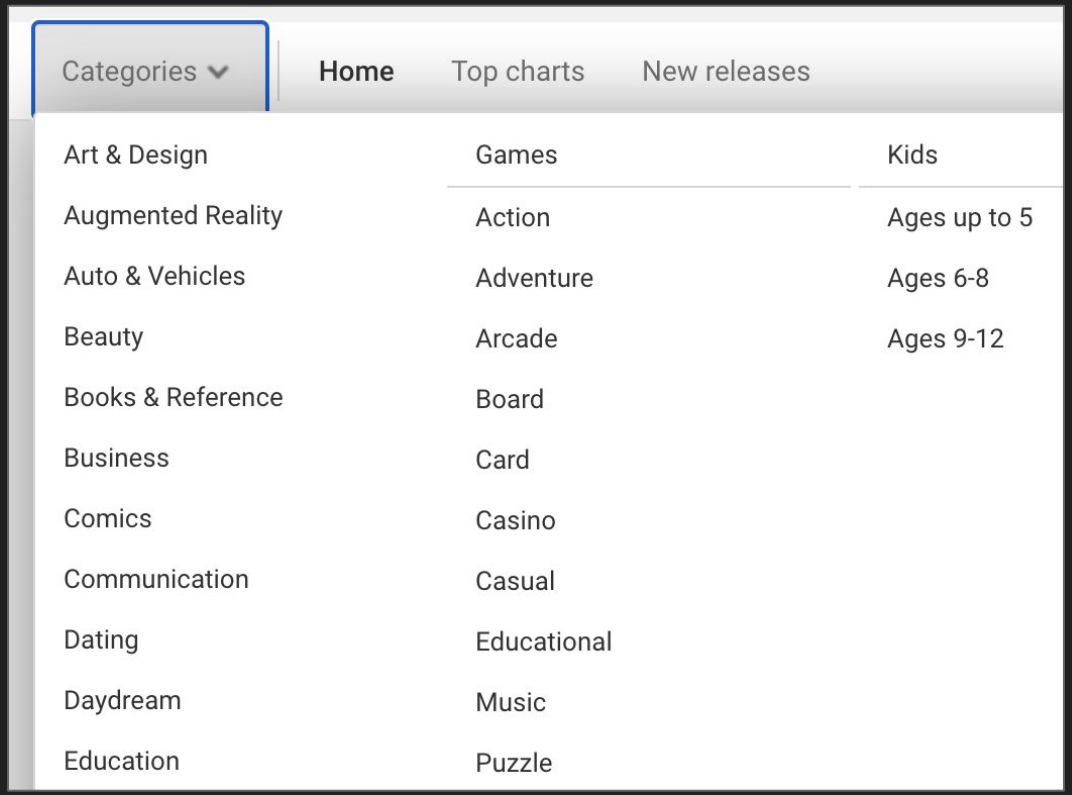
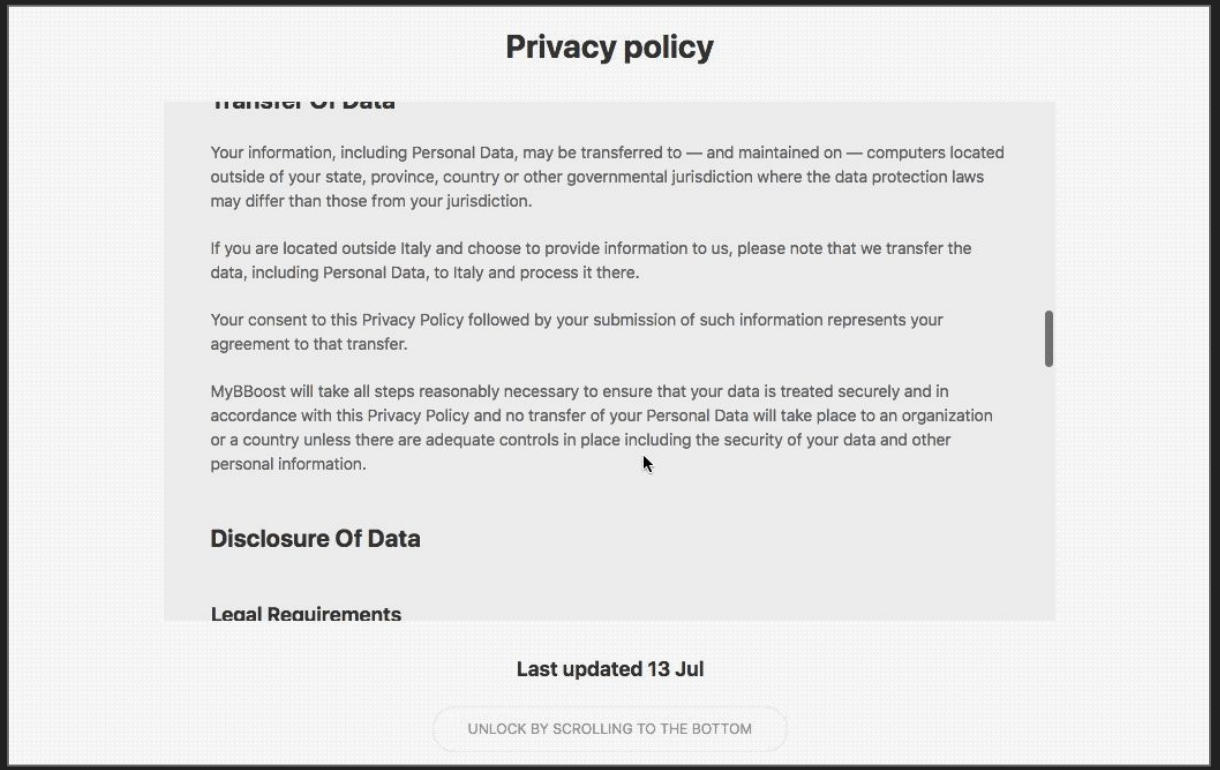
NEW YORK COUNTY CRIMINAL COURT

# Initially, we selected **160 top-ranked** Android mobile apps



# And analyzed practices disclosed in privacy policies



Out of 80 (73%) companies that successfully responded to our VCRs:

- 69 (86%) provided data in response to our request, and only one of them did not provide specific pieces of personal information
  - However, compliance with other provisions of the “right to know” was less uniform
- Only 9 (11%) fully disclosed the extent of their data collection in reply to VCR
  - e.g., 21 apps did not disclose the collection of geolocation data
- In their privacy policies:
  - 25 (31%) did not fully disclose the collection of personal information
  - 17 (21%) did not fully disclose the sharing of information with third parties