Data Privacy

Our Latest Research

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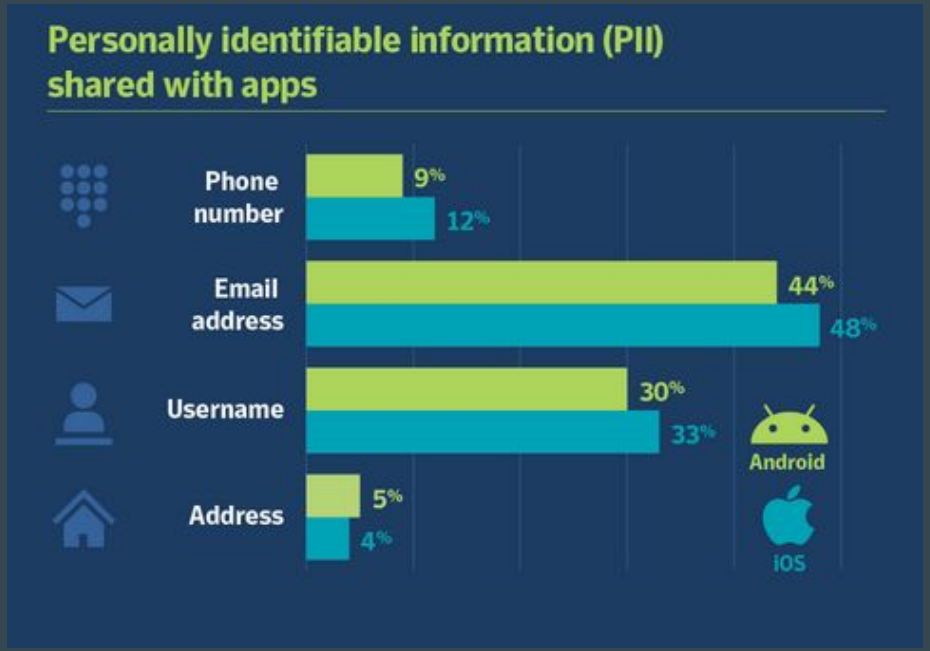
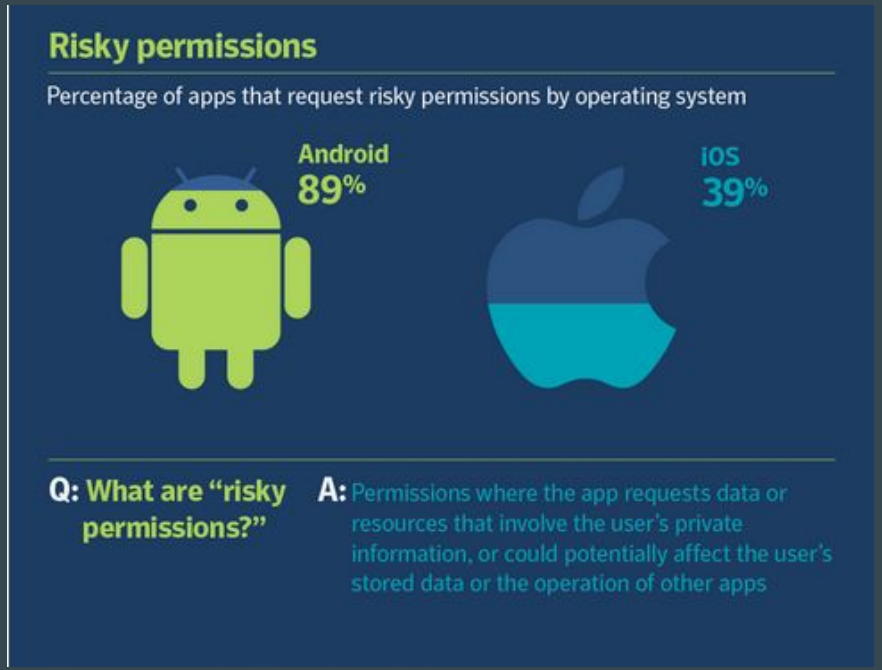
App Collection

- Apps have access to IMEI and MAC address
- Between apps, what is collected depends on mobile OS and App Store
- Social Media logins on app acts as third-parties - Social Media Integration
- Android apps using Graph API use certificate pinning -It's a security precaution that helps prevent attackers intercepting supposedly secure communications
- Risky Permissions - user's location, contacts, messages, phone logs, camera, calendar
- Not all risky permissions are bad, despite the name

Gillian Cleary. 2018. Mobile Privacy: What Do your Apps Know About You? (Aug 2018) Retrieved July 28, 2019 from https://www.symantec.com/threat-intelligence/mobile-privacy-apps





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Browser vs App

Which is better protecting your data? Well, it depends!

- Locations and names leaks more often on browsers, passwords leaks
- Apps leak specific device information and unique identifiers
- Websites contact more domains (advertisers)
- Education and Weather apps contact more domains while Entertainment apps contact the least
- The types of PII leaked by Web- and app-based versions of the same service share nothing in common more than half of the time
- https://recon.meddle.mobi/appvsweb/

David Choffnes. 2016. Should You Use The App For That? Comparing the Privacy Implications of App- and Web-based Online Service (2016)
https://david.choffnes.com/pubs/AppVsWeb-IMC16.pdf

A&A Domain	# of Services: App	∩	Web	Avg. Leaks: App	Web	Leaked Identifiers: App	∩	Web
amobee	1	1	1	517.0	314.0	3	2	2
moatads	9	7	12	61.4	0.2	1	1	1
vrvm	2	0	0	136.0	0.0	3	0	0
google-analytics	35	32	41	1.8	2.5	1	1	2
groceryserver	1	1	1	154.0	0.0	1	0	0
serving-sys	10	4	6	15.3	0.0	1	0	0
facebook	38	36	41	3.7	0.3	2	0	1
googlesyndication	16	14	23	7.0	0.8	1	1	1
thebrighttag	4	2	4	29.5	0.0	2	0	0
tiqcdn	5	5	9	16.0	3.1	1	1	1
marinsm	1	1	3	96.0	1.0	1	0	1
criteo	7	6	22	8.9	1.1	2	1	2
2mdn	14	9	17	5.8	0.0	1	0	0
monetate	1	1	2	74.0	0.0	1	0	0
247realmedia	1	1	2	48.0	12.0	1	0	1
krxd	7	6	13	8.3	0.0	3	0	0
doubleverify	3	2	7	19.3	0.0	1	0	0
cloudinary	1	1	1	0.0	58.0	0	0	1
webtrends	1	1	1	56.0	0.0	1	0	0
liftoff	1	0	0	54.0	0.0	2	0	0

Table 2: Top-20 A&A domains, sorted by total leaks.

David Choffnes. 2016. Should You Use The App For That? Comparing the Privacy Implications of App- and Web-based Online Service (2016)
https://david.choffnes.com/pubs/AppVsWeb-IMC16.pdf

PII	# of Services: App	∩	Web	Avg. Leaks: App	Web	Domains Leaked To: App	∩	Web
Location	31	21	26	356.0	295.2	84	37	76
Name	9	8	16	77.1	138.2	11	7	26
Unique ID	39	0	0	40.0	0.0	64	0	0
Username	3	1	4	23.0	100.2	4	2	9
Gender	4	1	8	3.0	25.0	4	1	11
Phone #	3	1	2	12.7	60.5	3	1	2
Email	10	2	7	2.3	17.6	10	1	7
Device Name	15	0	0	2.7	0.0	13	0	0
Password	3	1	2	3.0	2.0	3	1	1
Birthday	1	0	1	1.0	3.0	1	0	2

Table 3: PII, sorted by total leaks.

David Choffnes. 2016. Should You Use The App For That? Comparing the Privacy Implications of App- and Web-based Online Service (2016)
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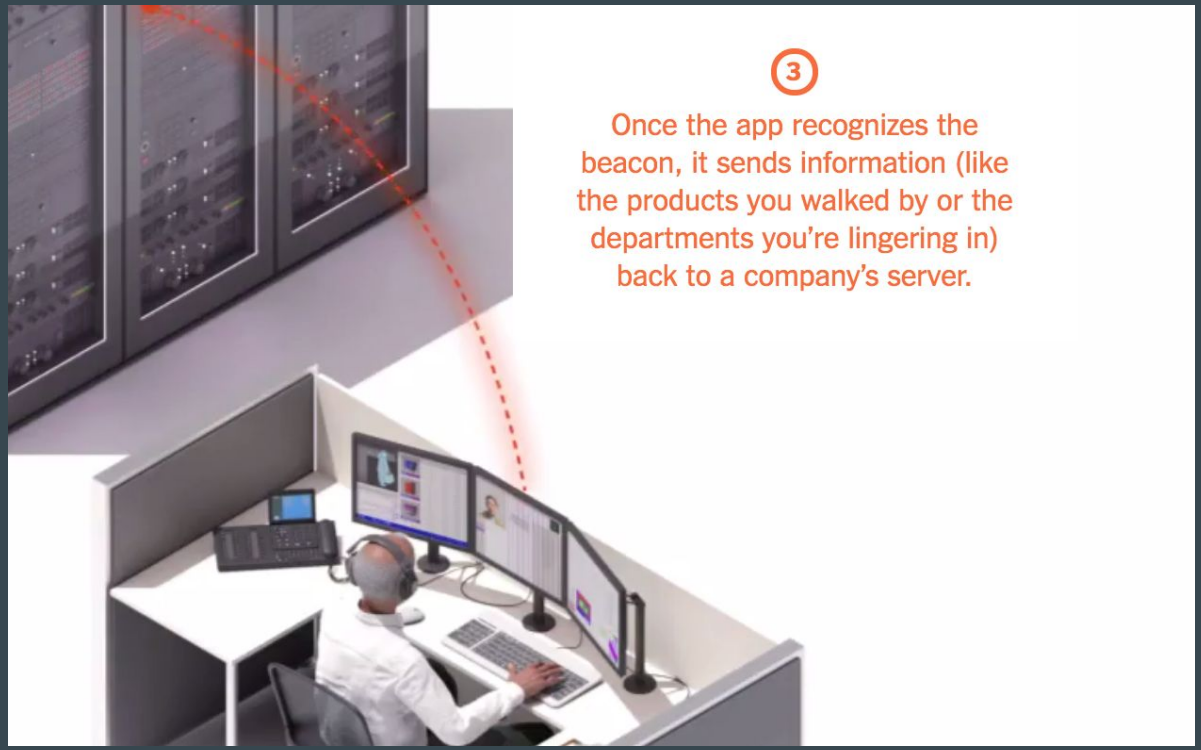
Retailer	Uses Face Recognition?
Wal-Mart Stores	Refused to answer
Costco	Refused to answer
Target	Refused to answer
McDonals's	Refused to answer
Lowe's Companies	YES
Best Buy	Refused to answer

Source: Bitar, Jenna, and Jay Stanley. "Are Stores You shop at Secretly Using Face Recognition on You?" *American Civil Liberties Union,* 26 Mar. 2018, www.aclu.org/blog/privacy-technology/surveillance-technologies/are-stores-you-shop-secretly-using-face.

Source: Kwet, Michael, "In Stores, Secret Bluetooth Surveillance Tracks Your Every Move." *The New York Times*, The New York Times, 14 June 2019, www.nytimes.com/interactive/2019/06/14/opinion/bluetooth-wireless-tracking-privacy.html.

Source: Kwet, Michael, "In Stores, Secret Bluetooth Surveillance Tracks Your Every Move." *The New York Times*, The New York Times, 14 June 2019, www.nytimes.com/interactive/2019/06/14/opinion/bluetooth-wireless-tracking-privacy.html.



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How much is your data worth?

Depends on which side your on - Customer vs. Business

How much is your data worth? - Customer Side

- Facebook - FTC fine = $5 billion
  - 200 million affected FB users
  - $25 per person ≃ Dinner Entree
- Equifax - FTC fine = $700 million
  - 147 million affected users
  - $5 per person ≃ Double Chalupa Box from Taco Bell
- Amazon Prime Day Blitz
  - Agree to let Amazon Assistant follow you on Internet
  - $10 off purchase of $50 ≃ Any pizza from Pizza Hut

Source: https://tinyurl.com/yy4pqwhq

How much is your data worth? - Business Side

- Facebook
  - Ad revenues 2019 Q2 = $16.9 billion revenue
  - $2 billion profit
  - Continue to sell our data
- Equifax
  - 2019 Q2 = $880 million
  - Continue to sell our data
- Amazon
  - Ad Revenue 2019 Q2 - $2 billion
  - Mastered data analytics through website
  - Continue to maximize sales from users

Sources: https://tinyurl.com/yy4pqwhq; https://tinyurl.com/y3n6bqvv

Financial Calculator - Volunteer?

https://ig.ft.com/how-much-is-your-personal-data-worth/

How much is your data worth? - Financial Calculator

Group Member	Data's Value
Aaron	$0.0137
Danniel	$0.363
Shengjia	$0.1763
Tom	$0.363

Sources: https://ig.ft.com/how-much-is-your-personal-data-worth/

Ramifications - Fortnite Champion “Swatted”

- 16-year-old Fortnite Champion Kyle “Bugha” Giersdorf “swatted” during live Twitch stream

- **Negative**
  - “Swatted” = Deceiving emergency service into sending a SWAT team

- **Positive**
  - Twitch video gaming streaming service
  - Highest Earner - Ninja - $560k/month

Sources: https://tinyurl.com/y2b5l25b; https://en.wikipedia.org/wiki/Swatting

Questions?