Harmless Science Project

Test Scenarios
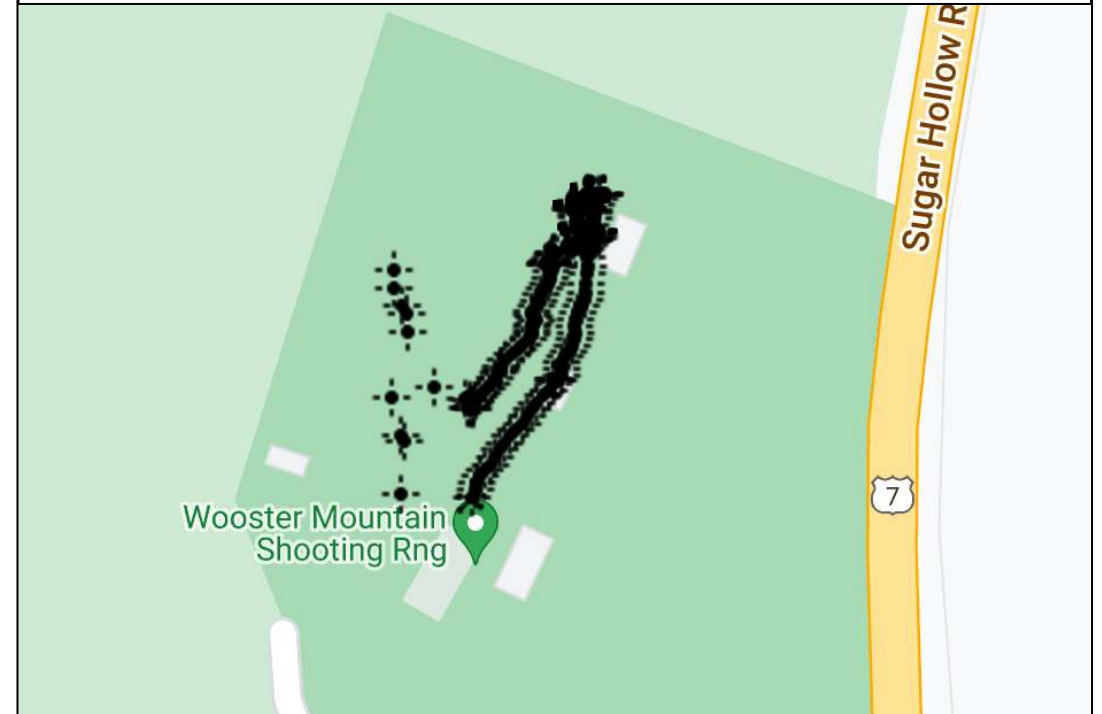
Location Collection: Shooting Range

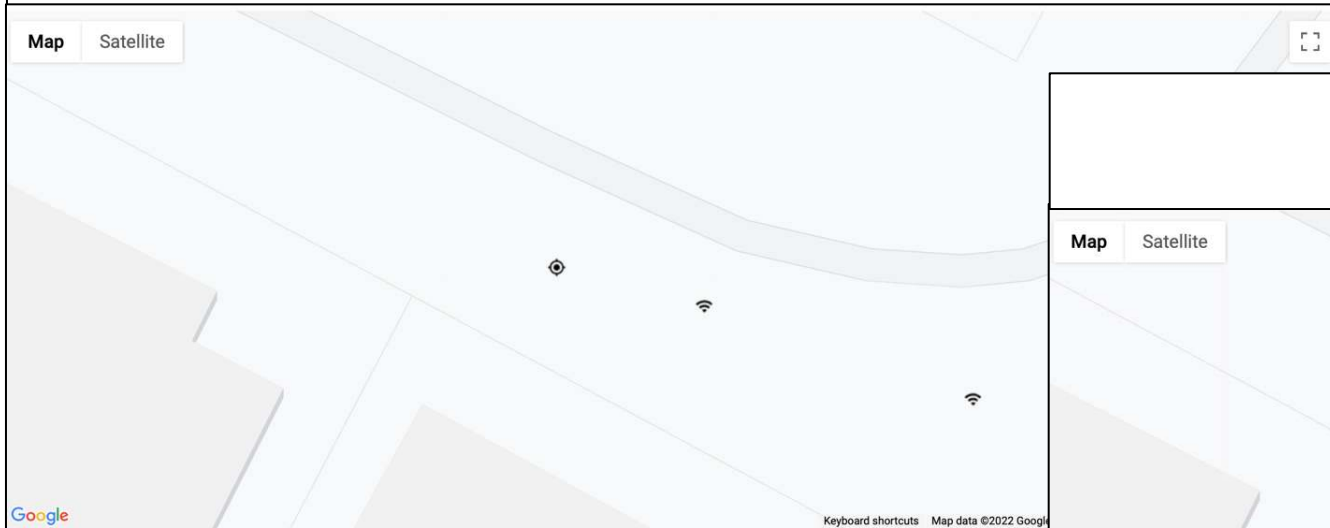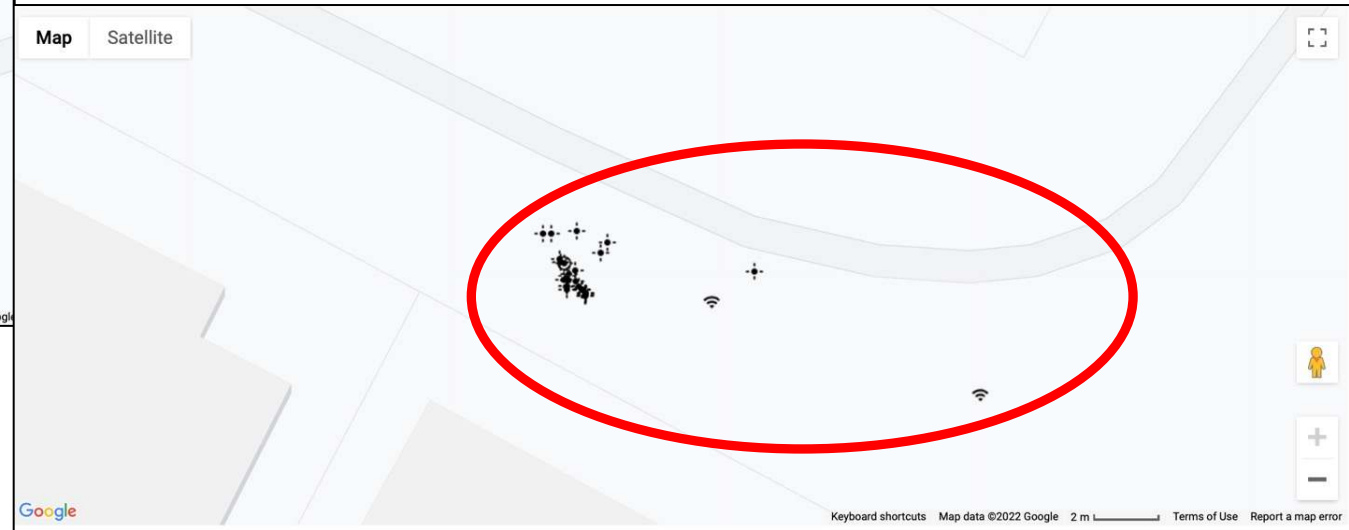# Location Collection: Planned Parenthood

"Your Data"

What Google Takes

Location Collection: Child Under 13

"Your Data"

What Google Takes
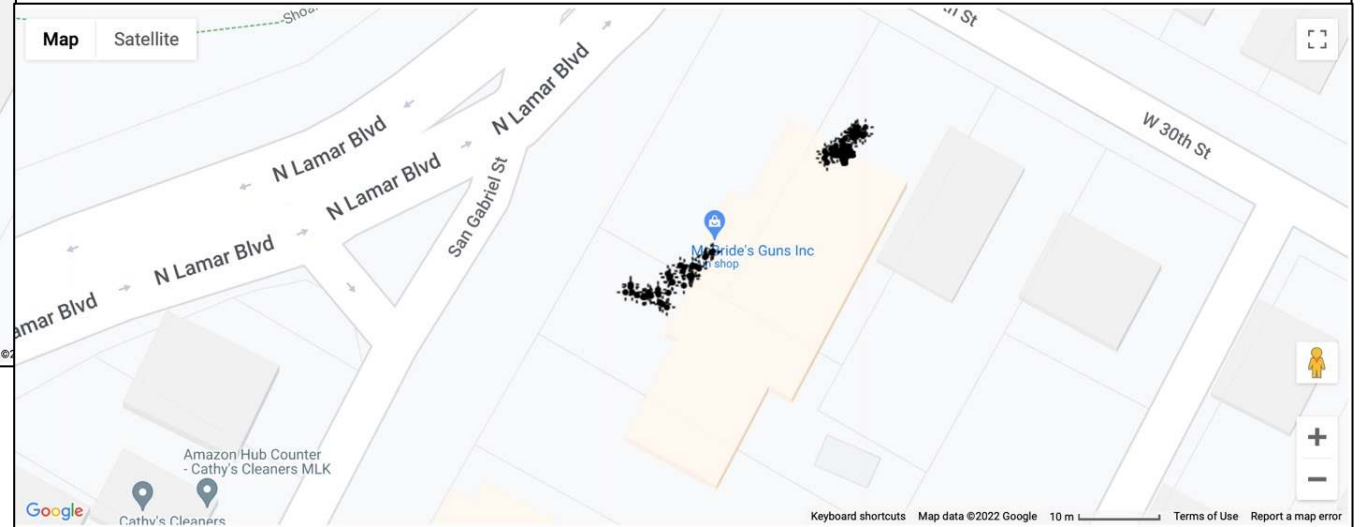
Sunday Morning

3 minutes

37,262 motion sensor readings

778 barometer readings

154 location readings

February 21 2021, 11:30 AM
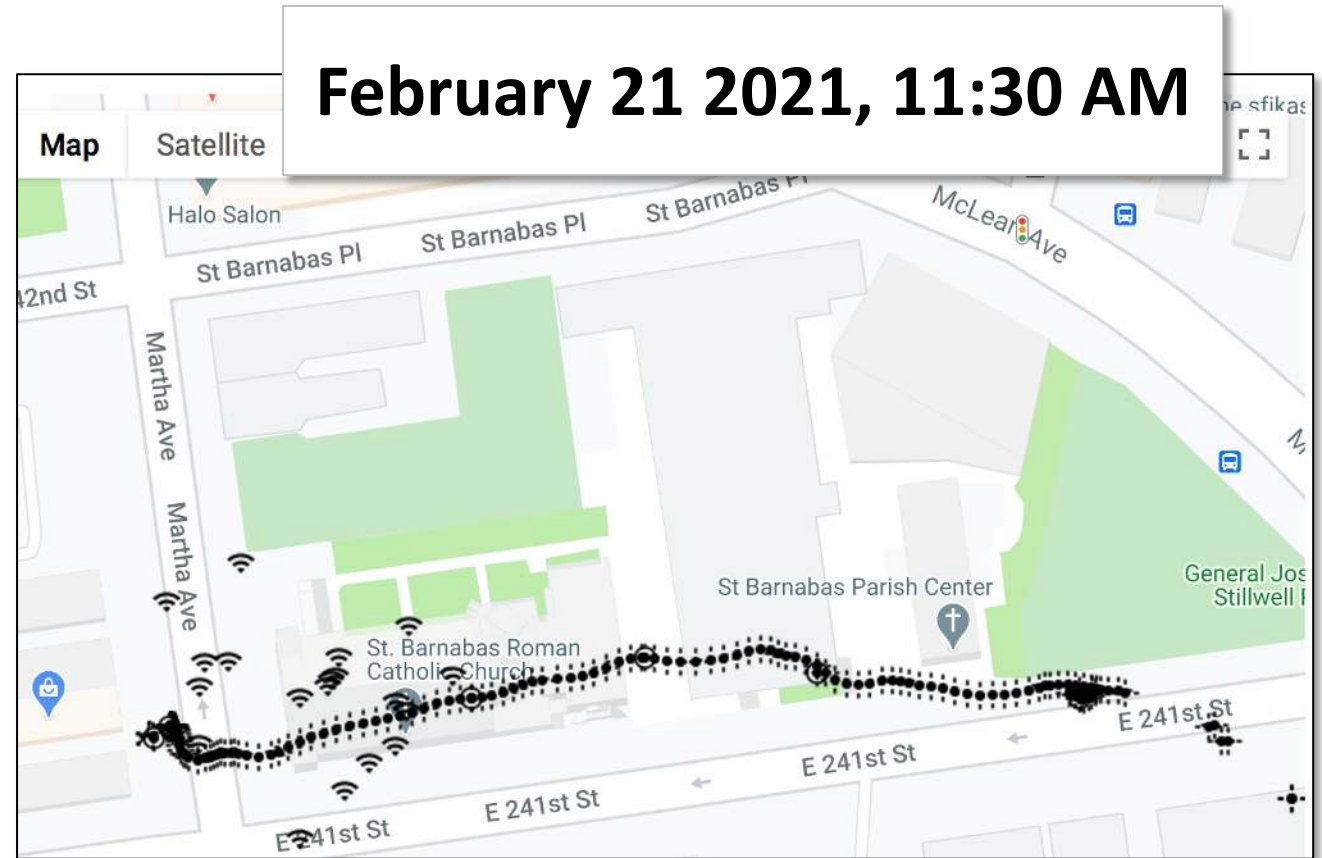
Reality: Digital Tithing

POST https://android-context-data.googleapis.com/google.internal.android.location.kollektomat.v1.KollektomatService/Offer HTTP/2.0
:authority: android-context-data.googleapis.com:443
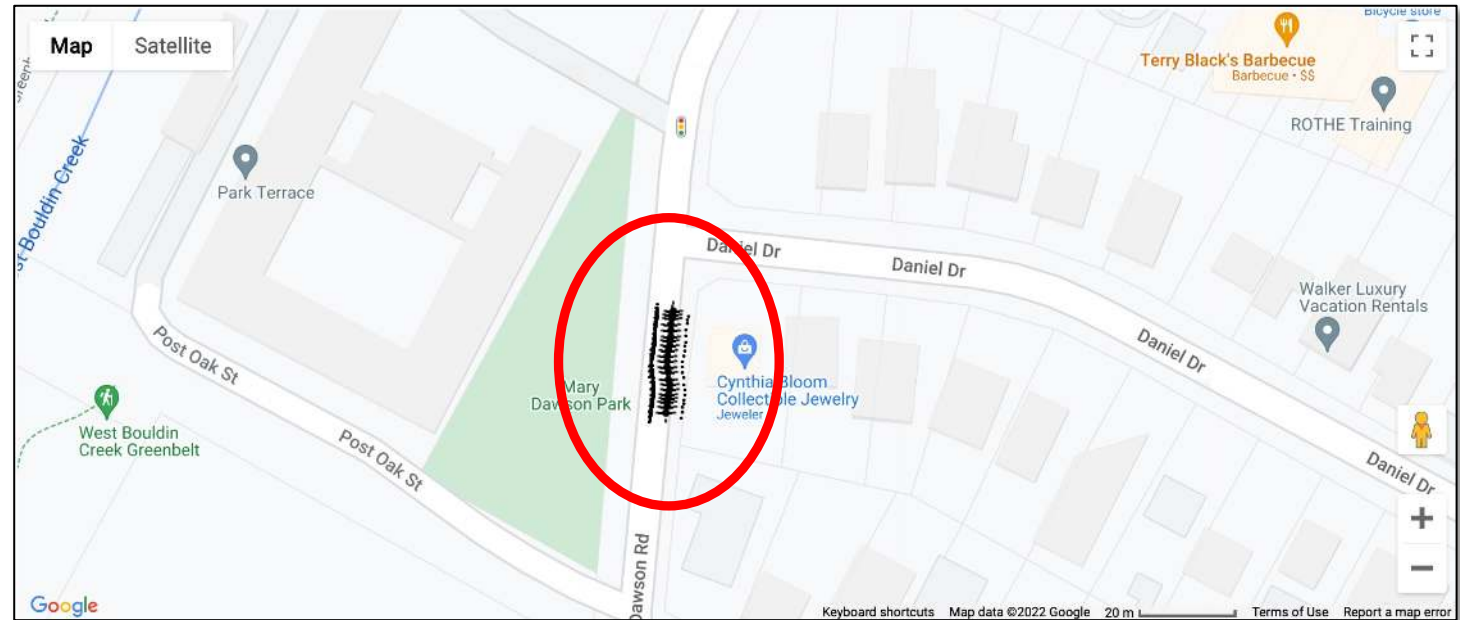
November 2022

LOCATION DATA ELEMENT	COLLECTED BY GOOGLE?	TIED TO UNIQUE IDENTIFIER?	TYPE OF UNIQUE IDENTIFIER	IN "DOWNLOAD YOUR DATA"?
PRECISE LATITUDE + LONGITUDE				
AS COLLECTED BY USER LOCATION REPORTING SERVICE	YES	YES	ANDROID ID	YES
AS COLLECTED BY 57 OTHER GOOGLE SERVICES	YES	YES	VARIOUS	NO
ACCURACY OF LATITUDE + LONGITUDE				
AS COLLECTED BY USER LOCATION REPORTING SERVICE	YES	YES	ANDROID ID	YES
AS COLLECTED BY KOLLEKTOMAT SERVICE	YES	YES	ANDROID ID	NO
ALTITUDE	YES	YES	ANDROID ID	YES
ACTIVITY READINGS + CONFIDENCE LEVEL	YES	YES	ANDROID ID	YES
WI-FI SCANS (MAC ADDRESSES, SIGNAL STRENGTH + FREQUENCY)				
AS COLLECTED BY USER LOCATION REPORTING SERVICE	YES	YES	ANDROID ID	YES
AS COLLECTED BY KOLLEKTOMAT SERVICE	YES	YES	ANDROID ID	NO
CONNECTION TO WI-FI ACCESS POINT IN A WI-FI SCAN	YES	YES	ANDROID ID	YES
WI-FI SSIDS	YES	YES	ANDROID ID	NO
CELL TOWER READINGS	YES	YES	ANDROID ID	NO
ACCELEROMETER READINGS	YES	YES	ANDROID ID	NO
MAGNETOMETER READINGS	YES	YES	ANDROID ID	NO
GYROSCOPE READINGS	YES	YES	ANDROID ID	NO
BAROMETRIC PRESSURE READINGS	YES	YES	ANDROID ID	NO
VISIBLE SATELLITE READINGS	YES	YES	ANDROID ID	NO
SOURCE OF LOCATION READING (CELL OR WI-FI)	YES	YES	ANDROID ID	YES
CONNECTS + DISCONNECTS FROM A WI-FI ACCESS POINT	YES	YES	ANDROID ID	NO
IP ADDRESS*	YES	YES	VARIOUS*	NO
PLACE IDS	YES	YES	AUTHENTICATION TOKEN	NO
RATE + CHANGE IN RATE OF COLLECTION	YES	YES	ANDROID ID	NO

* IP addresses assigned by ISPs or Wireless Carriers to subscribers' devices. The address groups vary geographically; IP addresses can be used to estimate a device's location.

Some Data Remains Hidden

USER ACTIVITY READINGS	COLLECTED BY GOOGLE	DOCUMENTED FOR DEVELOPERS
IN_VEHICLE	YES	YES
ON_BICYCLE	YES	YES
ON_FOOT	YES	YES
RUNNING	YES	YES
STILL	YES	YES
TILTING	YES	YES
UNKNOWN	YES	YES
WALKING	YES	YES
IN_ROAD_VEHICLE	YES	NO
IN_RAIL_VEHICLE	YES	NO
EXITING_VEHICLE	YES	NO

Google collects data when you use third-party apps on Android.
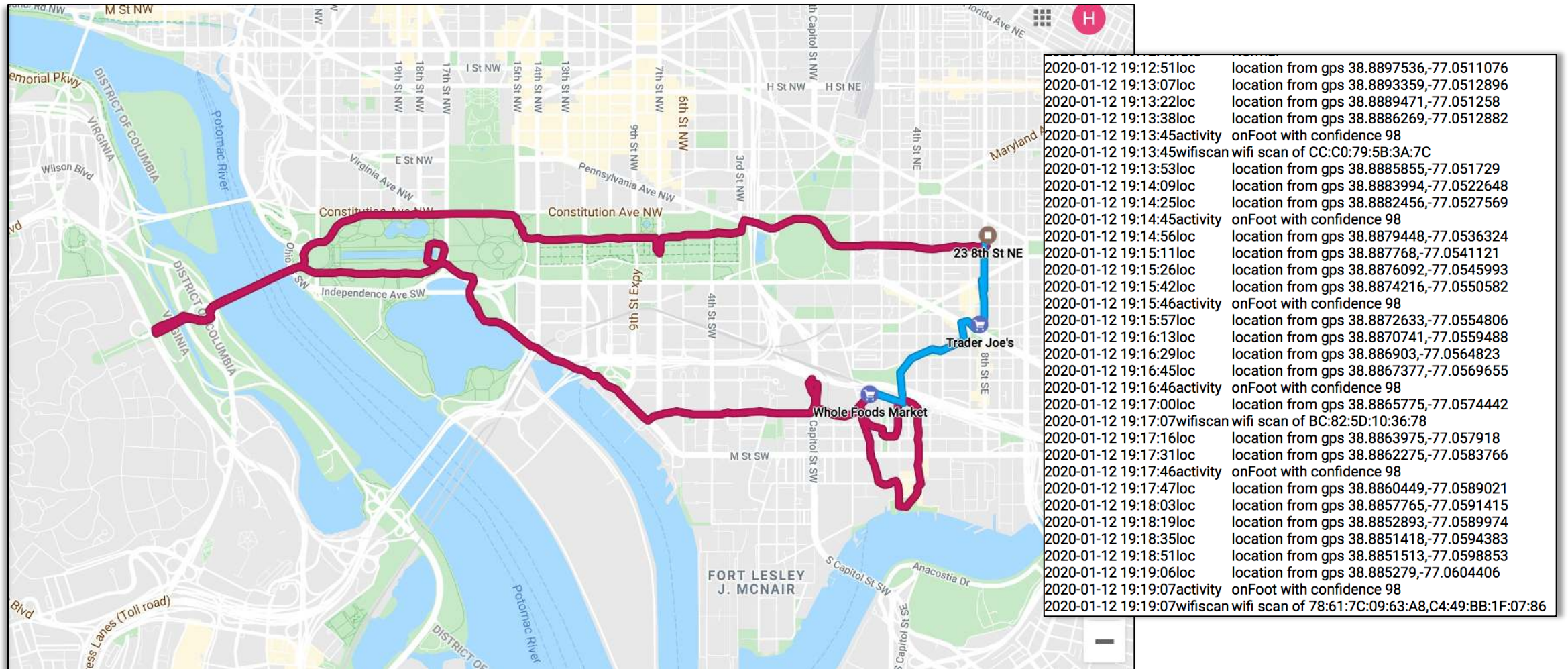
Using a fitness app?

MI	**DURATION**	**AVERAGE PACE**	**CALORIES BURNED**
10.19	1:34:39	9:17	1,213
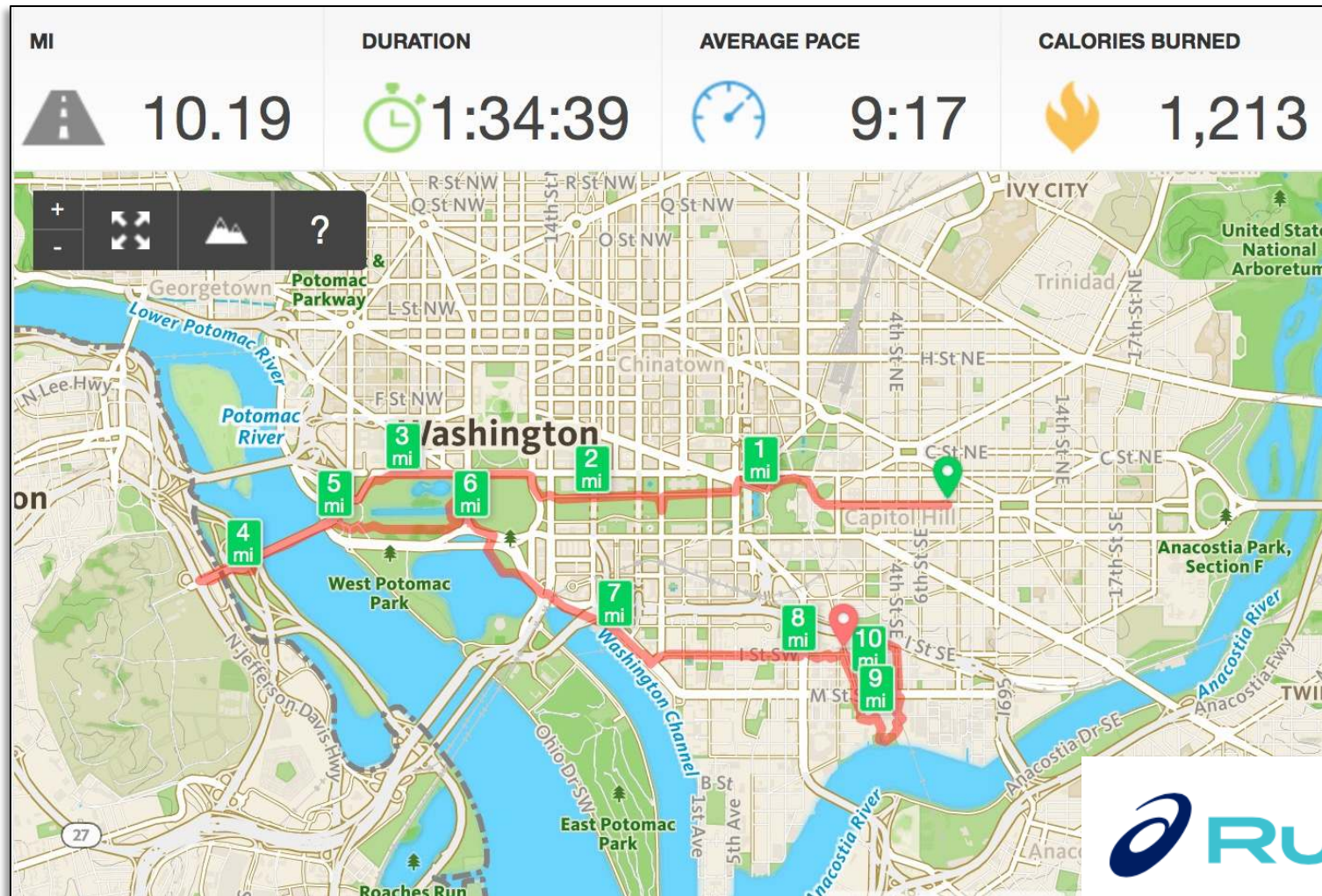
Splits

NAME	PACE	CLIMB
1 mi	9:08	-67
2 mi	9:30	14
3 mi	9:12	-7
4 mi	9:00	9
5 mi	9:15	-4
6 mi	9:33	-19
7 mi	9:55	7
8 mi	8:57	1
9 mi	8:55	-2
10 mi	8:56	7
11 mi	11:33	8

Runkeeper™

Your run, Google's data …

Location and Activity readings (598!) taken by Google while using RunKeeper

Google collects Bing search queries.

Search

```
GET https://www.bing.com/search?
    q=magnus+carlsen &
    form=MSN159 &
    refig=24a7e91e3fd24d28b50d76f5d901a481 &
    mkt=en-us &
    sp=1 &
    qs=LS &
    pq=magnus+ca &
    sk=PRES1 &
    sc=8-9 &
    cvid=24a7e91e3fd24d28b50d76f5d901a481 HTTP/2.0
sec-ch-ua: "Google Chrome";v="105", "Not)A;Brand";v="8", "Chromium";v="105"
sec-c      -mobile: ?
```

intent info	
09-13 19:44:05 (CDT)	search - magnus carlsen

Traffic at
Time of Search

09-13 19:44:06 (CDT)	1.0k	148.9k	2067238	www.bing.com	search
09-13 19:44:06 (CDT)	830	932	2067232	...zationguide-pa.googleapis.com	v1:GetHints
09-13 19:44:07 (CDT)	1.3k	1.5k	2067264	www.bing.com	rp/Dk3a1MCqZWagkaHtj3WDf-MyCw8.svg
09-13 19:44:07 (CDT)	1.3k	1.9k	2067266	www.bing.com	rp/3UWcYsrY0B3CBXJvkhkx1aMKNrl.svg
09-13 19:44:07 (CDT)	1.3k	7.2k	2067268	www.bing.com	rp/N93HIIKrFKBD4kl2RWQ7JmBOBbU.png
09-13 19:44:07 (CDT)	1.3k	4.6k	2067274	www.bing.com	rp/STusdSn-T6WCaX2mhBbpuWWRBHs.svg
09-13 19:44:07 (CDT)	1.5k	366	2067286	www.bing.com	fd/ls/l

12

Google: ~~Making~~ Taking Copies

09-13 19:44:06 (CDT)   1.0k   148.9k 2067228   www.bing.com   search
09-13 19:44:06 (CDT)   850   932 2067232   ...zationguide-pa.googleapis.com   v1:GetHints
09-13 19:44:07 (CDT)   1.3k   1.5k 2067264   www.bing.com   rp/Bk3aTMCqZWagkaHtj3WDf-MyCw8.svg
09-13 19:44:07 (CDT)   1.3k   1.9k 2067266   www.bing.com   rp/3UWcYsrY0B3CBXJvkhkx1aMKNrl.svg
09-13 19:44:07 (CDT)   1.3k   7.2k 2067268   www.bing.com   rp/N93HIIKrFKBD4kl2RWQ7JmBOBbU.png
09-13 19:44:07 (CDT)   1.3k   4.6k 2067274   www.bing.com   rp/STusdSn-T6WCaX2mhBbpuWWRBHs.svg
09-13 19:44:07 (CDT)   1.5k   366 2067286   www.bing.com   fd/ls/l

POST https://optimizationguide-pa.googleapis.com/v1:GetHints?
    key=AIzaSyBOti4mM-6x9WDnZIjIeyEU21OpBXqWBgw HTTP/2.0
content-length: 230
content-type: application/x-protobuf
x-client-data: CIe2yQEIorbJAQipncoBCMD1ygEIlqHLAQjVoswBCL6qzAEI,
x-client-data_contents [headdecode encode(base64) format(protobu
sec-fetch-site: none
sec-fetch-mode: no-cors
sec-fetch-dest: empty
user-agent: Mozilla/5.0 (Linux; Android 12; Pixel 5a) AppleWebK:
accept-encoding: gzip, deflate, br
accept-language: en-US,en;q=0.9

[/req_head]

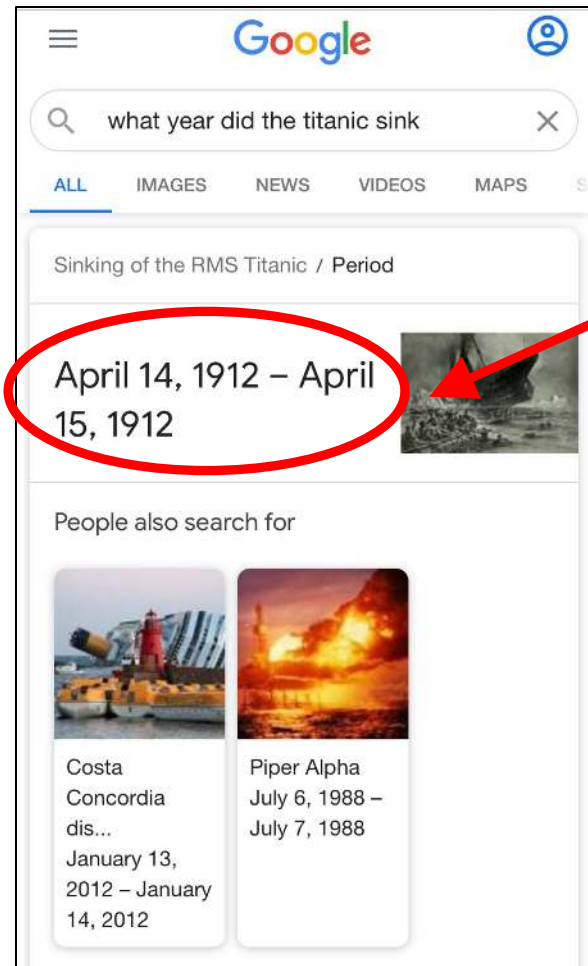[req_data content="data" type="protobuf" encode="none" size="230/1024" process="pr

    },
    "4": {
        "1": "https://www.bing.com/search?q=magnus+carlsen&form=MSN

13
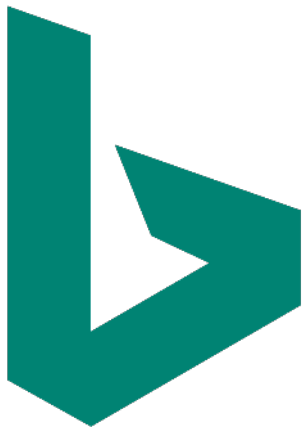
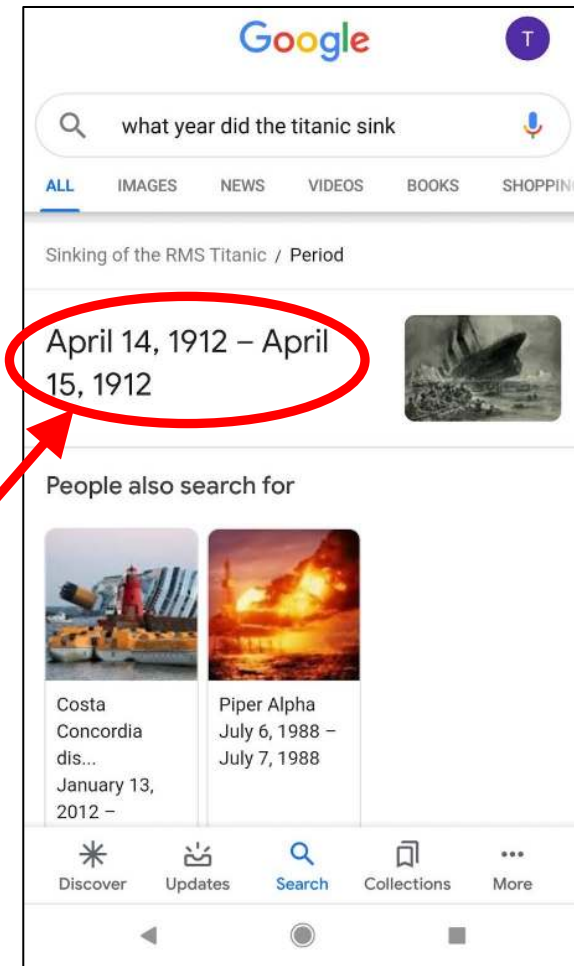# What about the iPhone?

What the Consumer Gets from Google

iPhone

Android

What Google Takes from the Consumer

iPhone

```
GET https://www.google.com/search?
    q=what+year+did+the+titanic+sink &
    ie=UTF-8 &
    oe=UTF-8 &
    hl=en-us &
    client=safari HTTP/2.0
```

Android

```
GET https://www.google.com/search?
    oe=utf-8 &
    gcc=us &
    ctzn=America%2FNew_York &
    ctf=0 &
    v=12.3.12.23.arm64 &
    ntyp=1 &
    ram_mb=3762 &
    action=devloc &
    gs_lp=EhNxc2ItYW5kcm9pZC1hc2JsXB.
    source=and.gsa.launcher.icon &
    q=what+year+did+the+titanic+sink
```

phone info	phone info page	+

os	iOS
android_ver	14.3
brand	Apple
model	iPhone
browser	Mobile Safari

loc info	loc info page

02-11 13:34:43 (EST)	xgeo 40.8781484 , -73.916659

phone info	phone info page	+

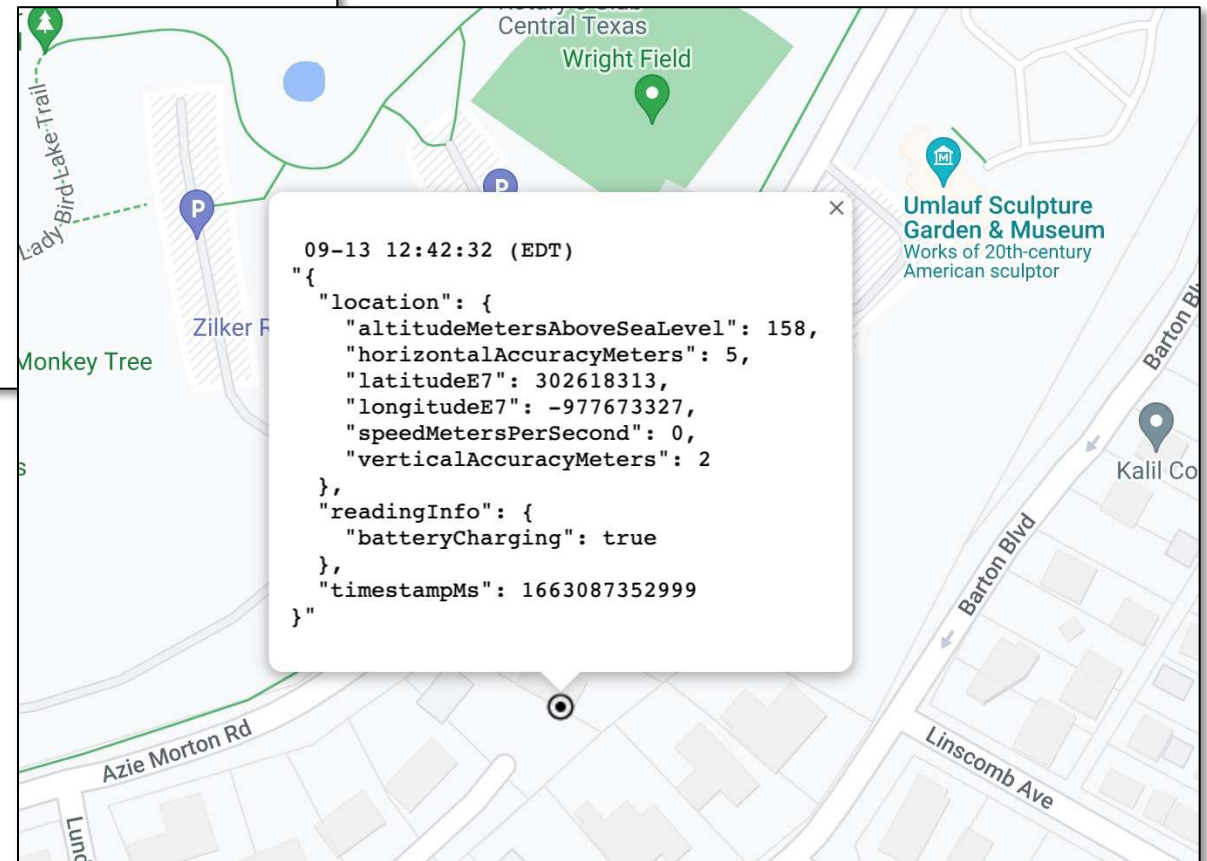| os	Android
android_ver	8.1.0
brand	Google
model	Pixel
browser	Google Search App
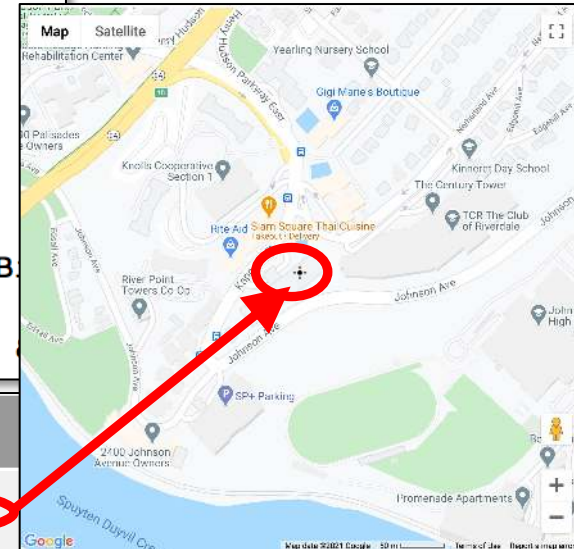
**Google
tries to replicate its data
collection on the iPhone.**

iPhone with Google Apps


```
POST https://www.googleapis.com/userlocation/v1/reports/1039827604?
    countryCode=us &
    device=iPhone12%2C8 &
    devicePrettyName=Pink%E2%80%99s%20iPhone &
    deviceRestriction=noRestriction &
    iosVersion=14.5.1 &
    mobileCountryCode=310 &
    mobileNetworkCode=410 &
    nlpVersion=81 &
    platformType=ios &
    prettyPrint=false &
    previousServerLegalCountryCode=us HTTP/2.0
```

09-13 12:42:32 (EDT)
"{
    "location": {
        "altitudeMetersAboveSeaLevel": 158,
        "horizontalAccuracyMeters": 5,
        "latitudeE7": 302618313,
        "longitudeE7": -977673327,
        "speedMetersPerSecond": 0,
        "verticalAccuracyMeters": 2
    },
    "readingInfo": {
        "batteryCharging": true
    },
    "timestampMs": 1663087352999
}"

What about Apple's collection?

Data Going to Apple

Data Coming from Apple


```
POST https://gs-loc.apple.com/clls/wloc HTTP/1.1
Host: gs-loc.apple.com
Content-Type: application/x-www-form-urlencoded
User-Agent: locationd/2245.16.14 CFNetwork/978.0.7 Darwin/18.7.0
Accept: */*
Accept-Language: en-us
Content-Length: 77
Accept-Encoding: br, gzip, deflate
Connection: keep-alive
```

wifi info	
09-14 21:20:26 (EDT) 09-14 21:20:26 (EDT)	28:bd:89:22:de:9d - - wifi scan of 2 APs

09-14 21:20:26 (EDT)
conv 2147406 — loc — apple_cllswloc_resp 30.2455196,-97.7797470
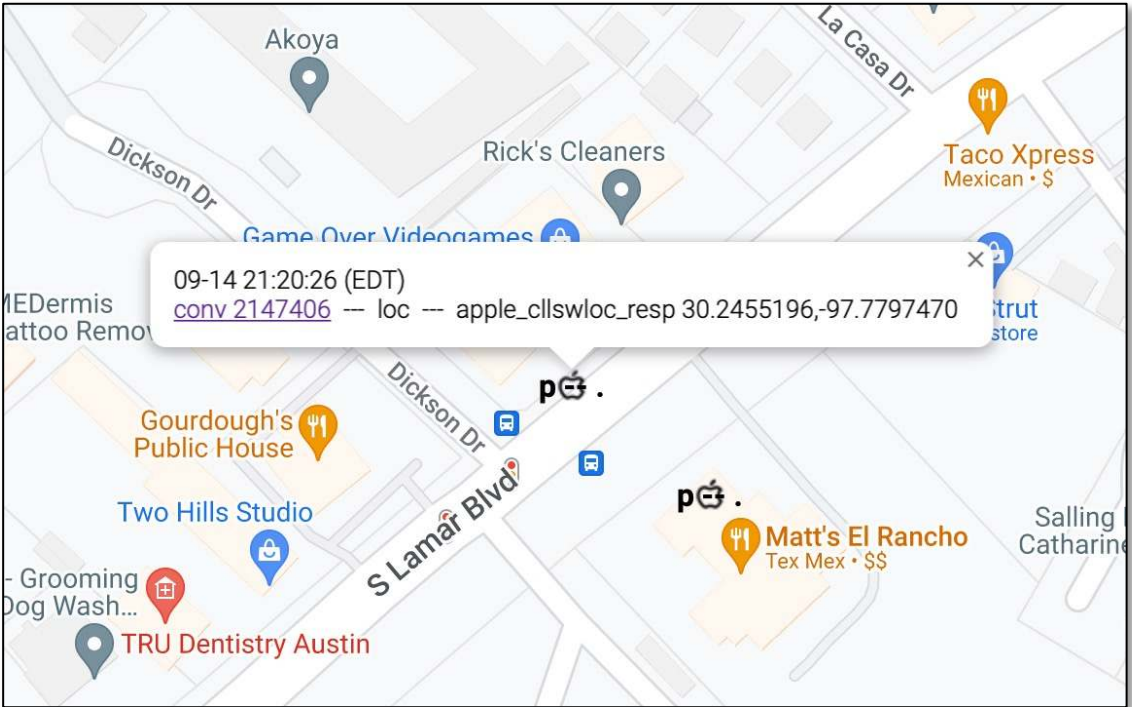
Google
does not give consumers
control.

Google claims consumer is in control.
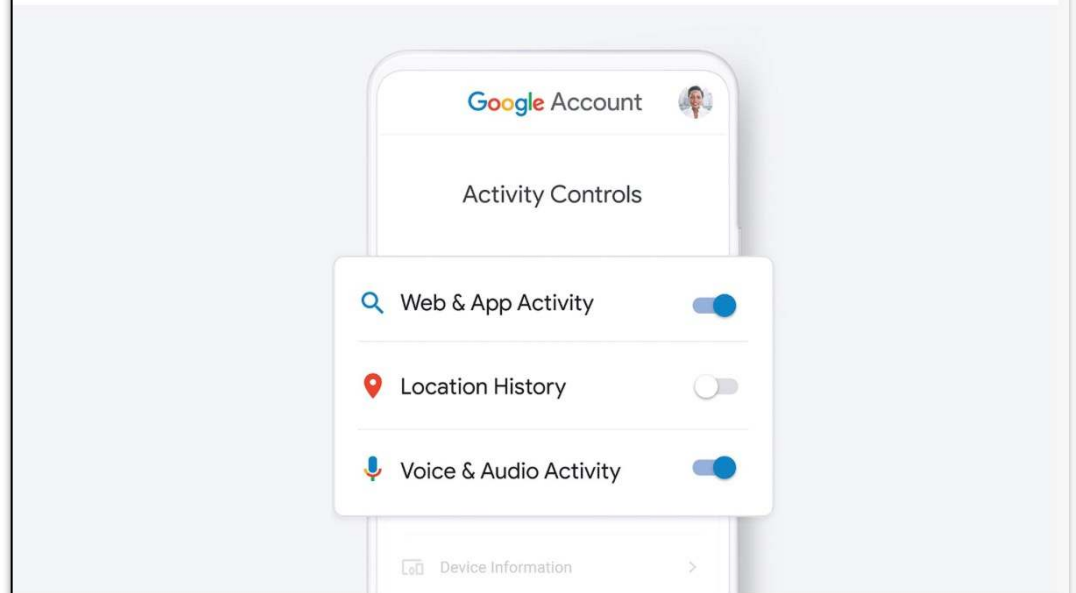
Google Ads in Axios AM Newsletter from 4- September 2019 (left) and 22-November 2019 (right)

Change Settings? Google Collects Data

Wi-Fi Information

Latitude + Longitude

Cell Tower Information

loc info - 12 files - loc info page

07-24 13:56:46	locmapi 48.8532916 , 2.3369909
07-24 14:52:39	locmapi 48.8592738 , 2.3300806
07-24 23:24:11	locmapi 48.8591861 , 2.3300793
07-24 10:50:28	locmapi 48.8707184 , 2.3159863
07-24 14:43:38	locmapi 48.8590063 , 2.3302343
07-24 13:42:55	locmapi 48.8532931 , 2.3369919
07-24 10:48:13	locmapi 48.8712168 , 2.31735
07-24 14:58:54	locmapi 48.859256 , 2.3300791
07-24 09:50:53	locmapi 48.8606068 , 2.3255901
07-24 09:50:29	locmapi 48.8602259 , 2.3268741
07-24 14:58:53	locmapi 48.859256 , 2.3300791
07-24 10:48:49	locmapi 48.8711589 , 2.3165754
07-24 10:49:09	locmapi 48.8712404 , 2.3162773
07-24 10:53:41	locmapi 48.8690011 , 2.3145119
07-24 11:01:23	locmapi 48.8695082 , 2.3094549
07-24 10:50:19	locmapi 48.8708239 , 2.3160646
07-24 14:44:09	locmapi 48.8591496 , 2.3300341
07-24 10:47:54	locmapi 48.8712682 , 2.3176809
07-24 10:48:19	locmapi 48.8712136 , 2.3172804
07-24 14:17:55	locmapi 48.8534931 , 2.3368809
07-24 10:53:46	locmapi 48.8689822 , 2.3144944
07-24 14:35:17	locmapi 48.8588088 , 2.3323056
07-24 10:48:29	locmapi 48.8711979 , 2.3170908
07-24 10:48:34	locmapi 48.8711922 , 2.3169664
07-24 10:51:05	locmapi 48.8703662 , 2.3155496
07-24 09:50:41	locmapi 48.860391 , 2.3262271
07-24 10:37:13	locmapi 48.8720237 , 2.3194449
07-24 16:55:10	locmapi 48.8591873 , 2.3300802
07-24 15:10:02	locmapi 48.8592612 , 2.3300586
07-24 10:49:27	locmapi 48.8711514 , 2.3161824
07-24 14:42:54	locmapi 48.8589574 , 2.3301976
07-24 11:00:37	locmapi 48.8696287 , 2.3101217
07-24 11:00:36	locmapi 48.8696226 , 2.3101318
07-24 13:34:58	locmapi 48.8532958 , 2.3370055

cell info - 30 files - cell info page

|	
07-24 06:54:12	GSM cell tower - 5:1:208:50368:24389640
07-24 09:23:50	GSM cell tower - 5:1:208:50368:24389634
07-24 09:23:50	GSM cell tower - 5:1:208:50368:24389640
07-24 09:34:27	GSM cell tower - 5:1:208:50369:24636930
07-24 09:39:09	LTE cell tower - 6:1:208:-1:24029192
07-24 09:46:45	GSM cell tower - 5:1:208:1028:1028743
07-24 09:46:45	GSM cell tower - 5:1:208:1028:983383
07-24 09:46:45	GSM cell tower - 5:1:208:50336:24029192
07-24 09:46:45	GSM cell tower - 5:1:208:50368:24007429
07-24 09:46:45	GSM cell tower - 5:1:208:50368:24389634
07-24 09:46:45	LTE cell tower - 6:1:208:-1:24007429
07-24 09:46:45	LTE cell tower - 6:1:208:-1:24020743
07-24 09:46:45	LTE cell tower - 6:1:208:-1:24029192
07-24 09:46:45	LTE cell tower - 6:1:208:-1:24636930
07-24 09:52:49	GSM cell tower - 5:1:208:50369:24020743
07-24 10:36:59	LTE cell tower - 6:1:208:-1:23984129
07-24 10:39:34	GSM cell tower - 5:1:208:50368:23984129
07-24 10:45:45	GSM cell tower - 5:1:208:50368:23984129
07-24 10:45:45	GSM cell tower - 5:1:208:52224:24299528
07-24 10:45:45	LTE cell tower - 6:1:208:-1:23981323
07-24 10:45:45	LTE cell tower - 6:1:208:-1:23984129
07-24 10:45:45	LTE cell tower - 6:1:208:-1:23984135
07-24 11:02:54	GSM cell tower - 5:1:208:50368:23984129
07-24 11:02:54	LTE cell tower - 6:1:208:-1:23981323
07-24 11:02:54	LTE cell tower - 6:1:208:-1:23984135
07-24 11:02:54	LTE cell tower - 6:1:208:-1:23984136
07-24 11:02:54	LTE cell tower - 6:1:208:-1:24636931

wifi info - 45 files - wifi info page

07-24 00:42:26	wifi scan of 6 APs
07-24 06:54:12	19:70:82:9A:0E - Livebox-fa35
07-24 06:54:12	74:9D:79:9F:81:82 - Livebox-8182
07-24 06:54:12	74:9D:79:9F:81:87 - Livebox-8182
07-24 06:54:12	24:D4:63:93:0A - FreeWifi_secure
07-24 06:54:12	B0:B2:8F:76:AD:E8 - Livebox-ADE8
07-24 06:54:12	16:CE:1C:AD:7A - -----
07-24 00:52:42	wifi scan of 7 APs
07-24 06:54:12	5C:A3:9D:CF:88:58 - Bbox-A7B2209A
07-24 06:54:12	19:70:82:9A:0E - Livebox-fa35
07-24 06:54:12	74:9D:79:9F:81:82 - Livebox-8182
07-24 06:54:12	74:9D:79:9F:81:87 - Livebox-8182

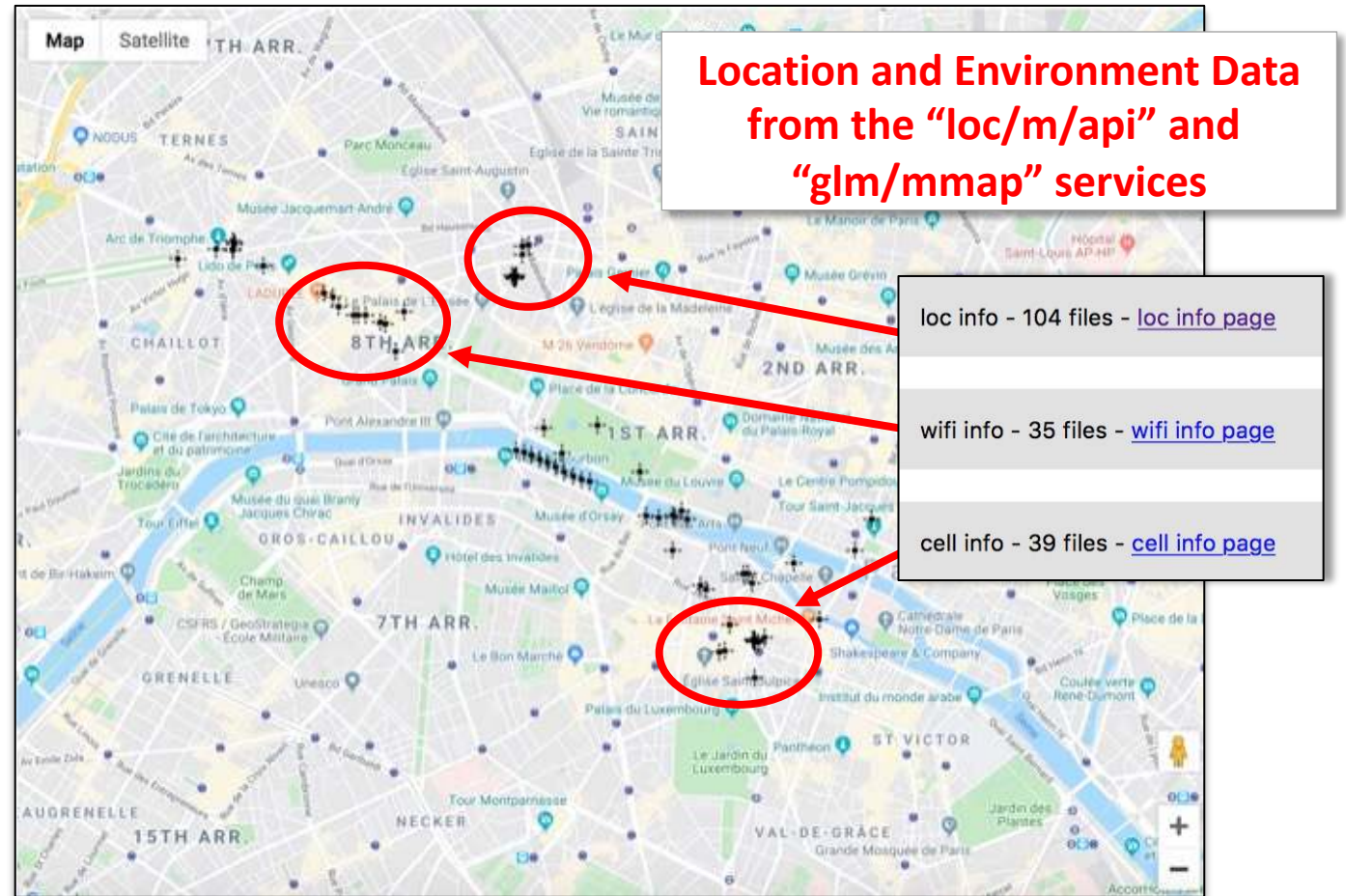**Actual data sent to Google from an Android smartphone with all activity controls "paused."**

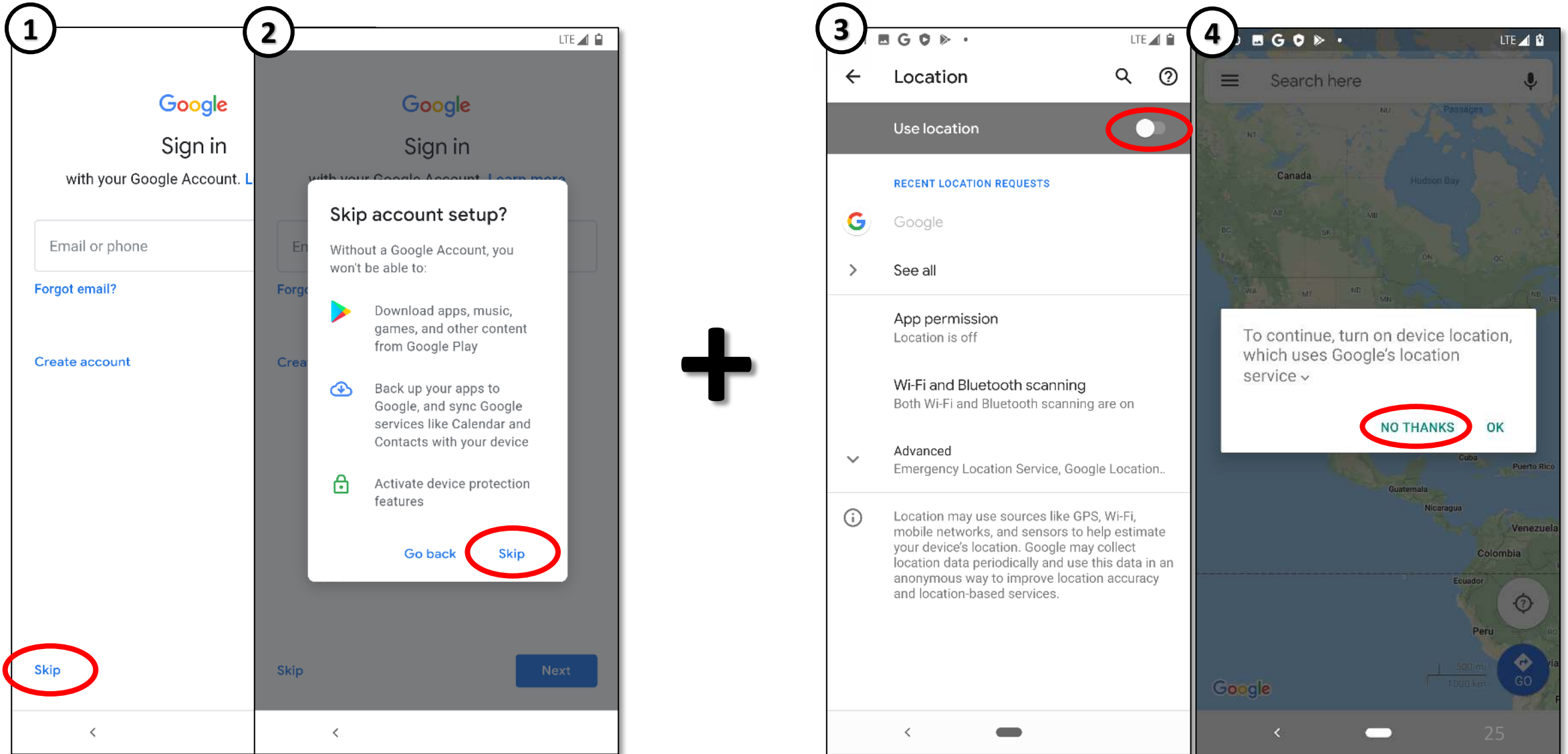# Test: Phone Without Google Account
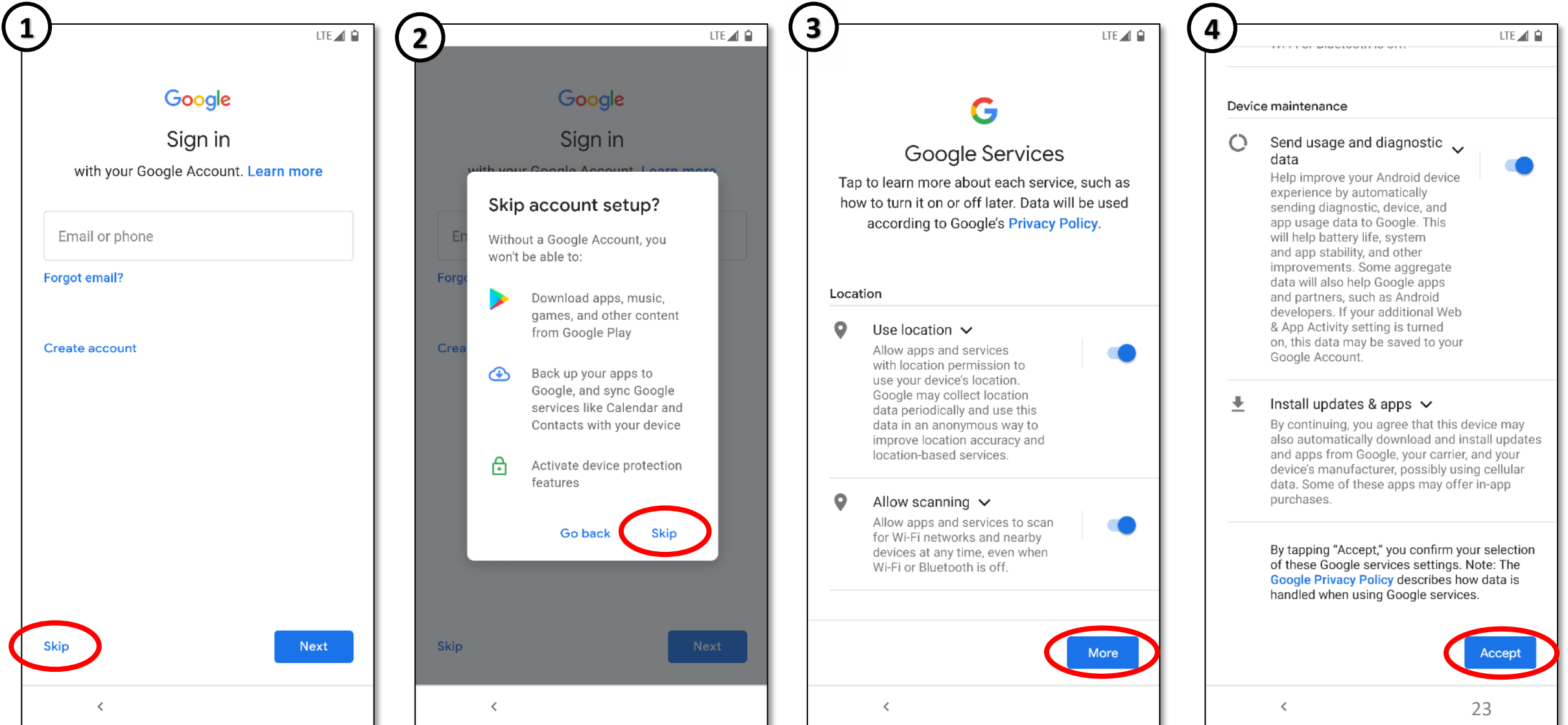
Result: Google tracks your location.

test name	NGA_journ
phone imei	353627072826566
phone name	Nexus 5X Kopa
host	android.clients.google.com
api	checkin
source file	20190724T114825Z-10.8.0.101,48138-216.58.209.238,443.log
Text version	show text
HTML version	show page
Raw version	show raw
Unzipped version	show unzipped
Conv Metadata	show ...
Metadata json	jso...
Text version	text file
Request Header	text headup
Request Data (binary)	binary bodyup
Request Data unzipped (binary)	binary bodyup unzipped
Response Header	text headdn
Response Data (binary)	binary bodydn
Response Data unzipped (binary)	binary bodydn unzipped

id info id info page   +

android_id	31790281d5d14b4b
wifi_mac	64bc0c6ac493

phone info phone info page   +

|	
device	bullhead
model	Nexus 5X
fingerprint	google/bullhead/bullhead:6.0.1/MTC20K/3142008:user/release-keys

User Identifying Information

Location and Environment Data from the "loc/m/api" and "glm/mmap" services

loc info - 104 files - loc info page

wifi info - 35 files - wifi info page

cell info - 39 files - cell info page

Actual data sent to Google from an Android smartphone configured without a Google account.

24

Test: No Account, Location Services Off

Result: Google tracks your location.

User Identifying Information

Location and Environment Data from the "loc/m/api" and "glm/mmap" services

loc info - 23 files - loc info page

wifi info - 5 files - wifi info page

cell info - 4 files - cell info page

Actual data sent to Google from an Android smartphone configured without a Google account and all device location services disabled.
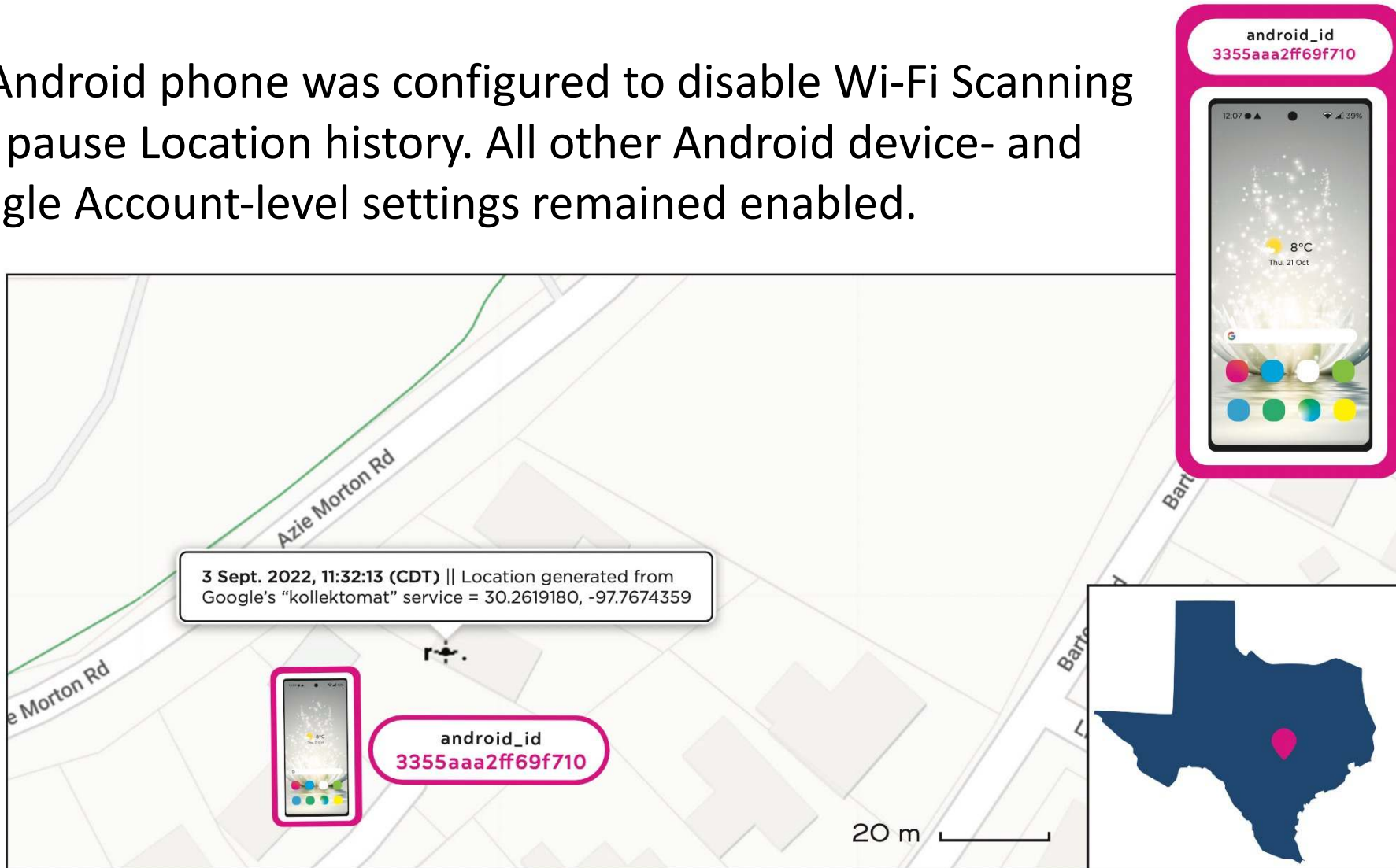
Data linked to you is *not* anonymous.

Location Information

Unique Identifiers
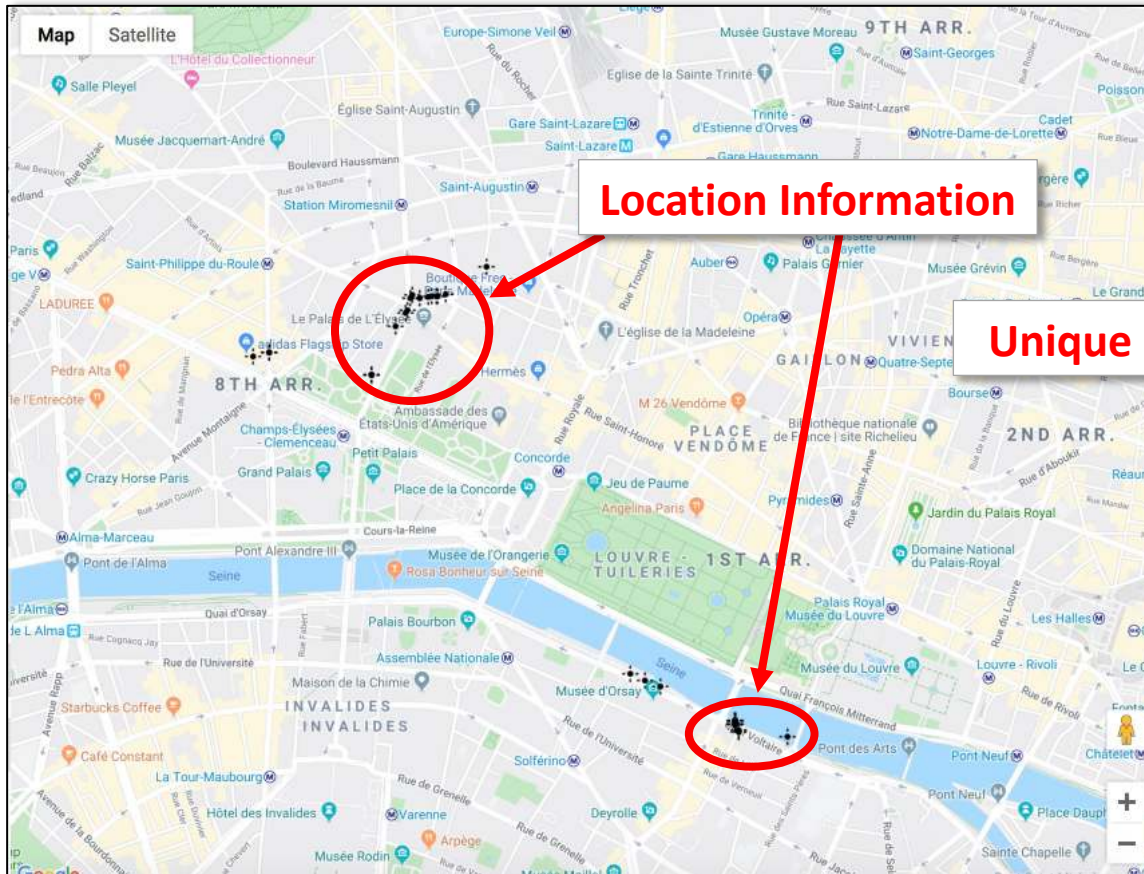
Actual data sent to Google from an Android smartphone with all activity controls "paused."

id info - 46 files - id info page

wifi_mac	88074be6ae25
android_id	3f627eb435f83822
play_id	ICrt_XL61NBE_S0rhk8RpG0k65e0XwQVdDlvB6kxiQ8
client_sig	38918a453d07199354f8b19af05ec6562ced5788

ad info - 1 files - ad info page

ad_token	bb663f9f-1ca8-4ac8-b49a-37ec0729f81f

info - 6 files - wifi info page

07-25 08:46:25	['Livebox-8182', 'N9UF_TEL9COM', 'Livebox-fa35',
07-25 09:15:27	['Livebox-ADE8', 'Livebox-fa35', 'N9UF_TEL9COM',
07-25 14:36:37	['Livebox-8182', 'Livebox-fa35', 'N9UF_TEL9COM',
07-25 17:02:58	['XXXX-8b84', 'Livebox-ADE8', 'XXXX-8b84', 'Live
07-25 17:34:25	['XXXX-8b84', 'Livebox-ADE8', 'Livebox-fa35', 'N
07-25 18:10:58	['Livebox-fa35', 'Livebox-ADE8']

email info - 29 files - email info page

email	cantona.x.tester@gmail.com

phone info - 21 files - phone info page

manufacturer	LGE
model	Nexus 5X
osver	6.0.1
hardware	bullhead
brand	google
fingerprint	google/bullhead/bullhead:6.0.1/MMB29K/2419427:user/release-keys
device	bullhead

Test: Location History + Wi-Fi Scanning

An Android phone was configured to disable Wi-Fi Scanning and pause Location history. All other Android device- and Google Account-level settings remained enabled.
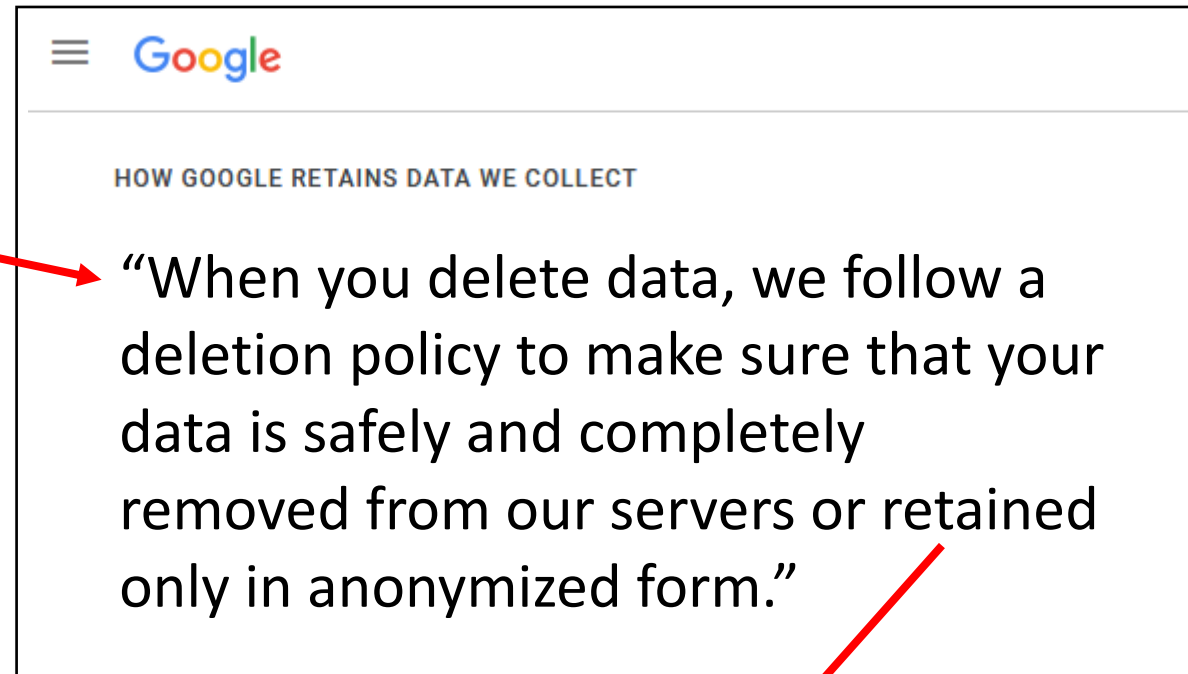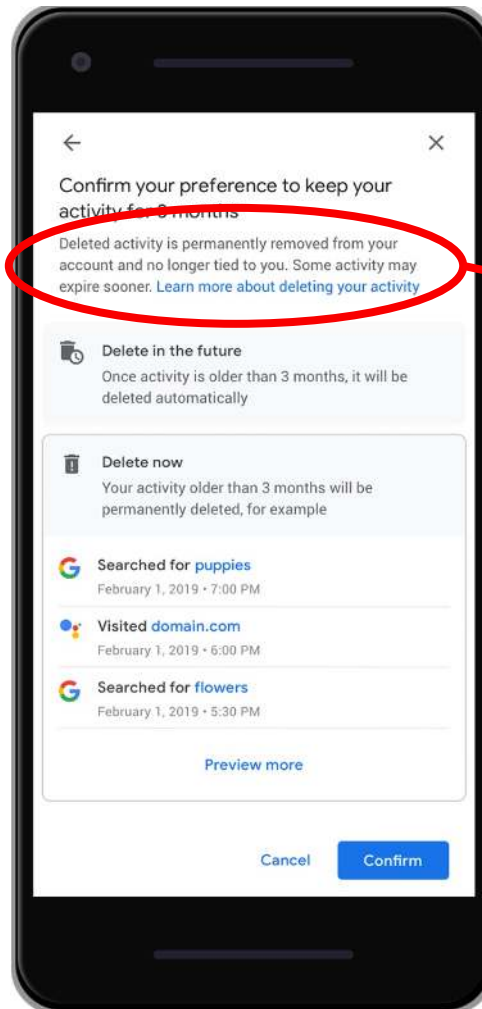

android_id
3355aaa2ff69f710

3 Sept. 2022, 11:32:13 (CDT) || Location generated from Google's "kollektomat" service = 30.2619180, -97.7674359

android_id
3355aaa2ff69f710

Azie Morton Rd

20 m

Result: SSIDs and MACs Aplenty

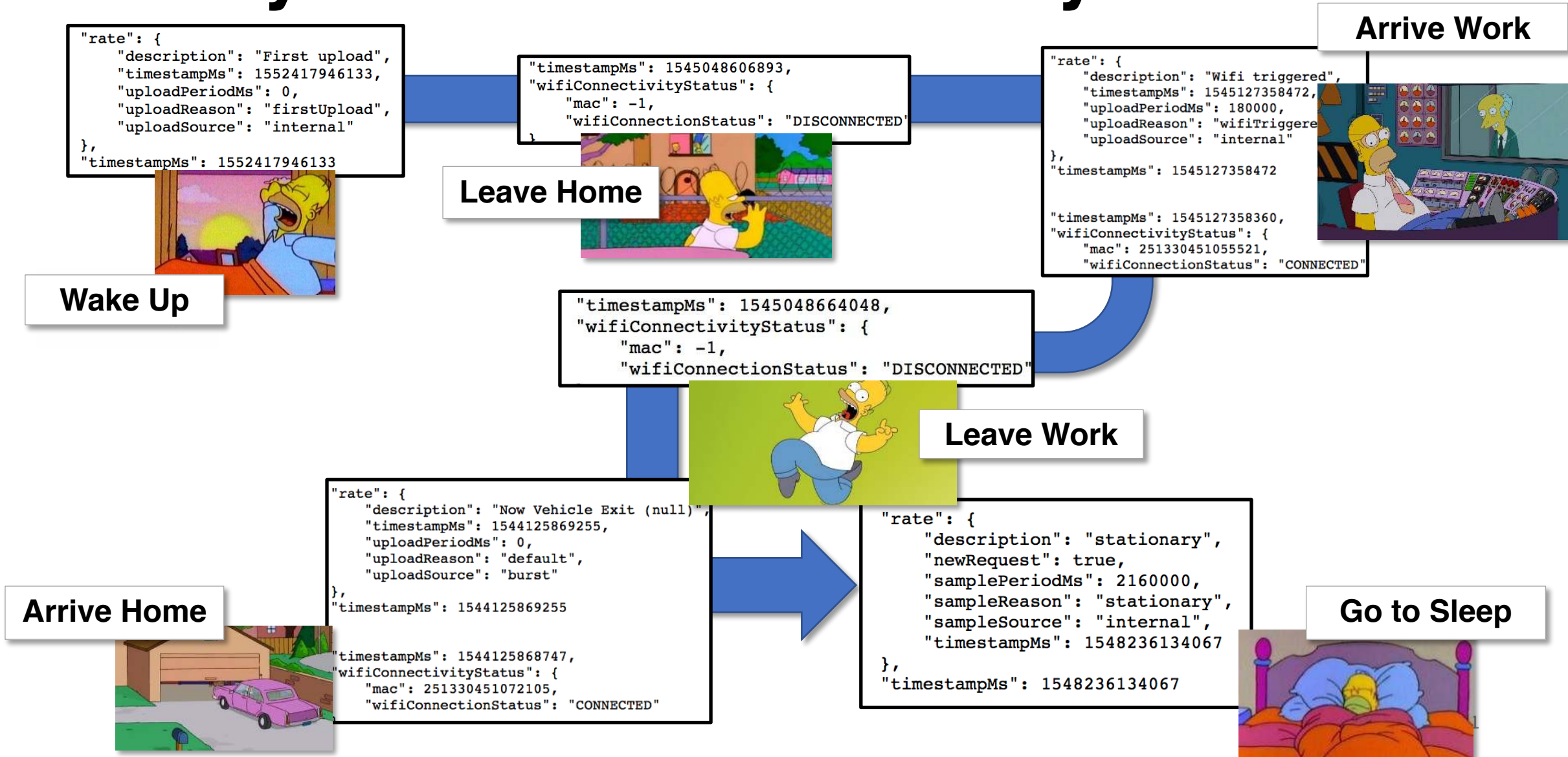| id info	1 unique found
android_id:	3355aaa2ff69f710
loc info	09-13 11:32:13 (CDT) | kollektomat 30.261918,-97.7674359
wifi info	8 unique MACs in 1 scans at 1 locations **09-13 11:32:12 (CDT)** wifi scan of 8 APs @ 30.261918,-97.7674359 **09-13 11:32:12 (CDT)** B6:08:B9:E0:29:04 – Name%E2%80%99s%20iPhone **09-13 11:32:12 (CDT)** BA:8D:53:6E:56:E5 – Name%27s%20iPhone **09-13 11:32:12 (CDT)** E4:95:6E:43:7F:77 – bulbasaur **09-13 11:32:12 (CDT)** 18:60:24:35:1A:53 – DIRECT-52-HP%20ENVY%204520%20series **09-13 11:32:12 (CDT)** 28:BD:89:25:4E:DD – Longhorn%20Camp **09-13 11:32:12 (CDT)** 28:BD:89:3C:6D:3C – Azie **09-13 11:32:12 (CDT)** 28:BD:89:3C:6D:40 – Azie **09-13 11:32:12 (CDT)** 28:BD:89:40:2B:AB – AziePazie
activ info	1 Wi-Fi access point scan
phone info	browser | grpc-java-okhttp

Location and Wi-Fi scanning data collected and associated with a user's unique Android ID, even when Location History is paused and Wi-Fi scanning is Off.
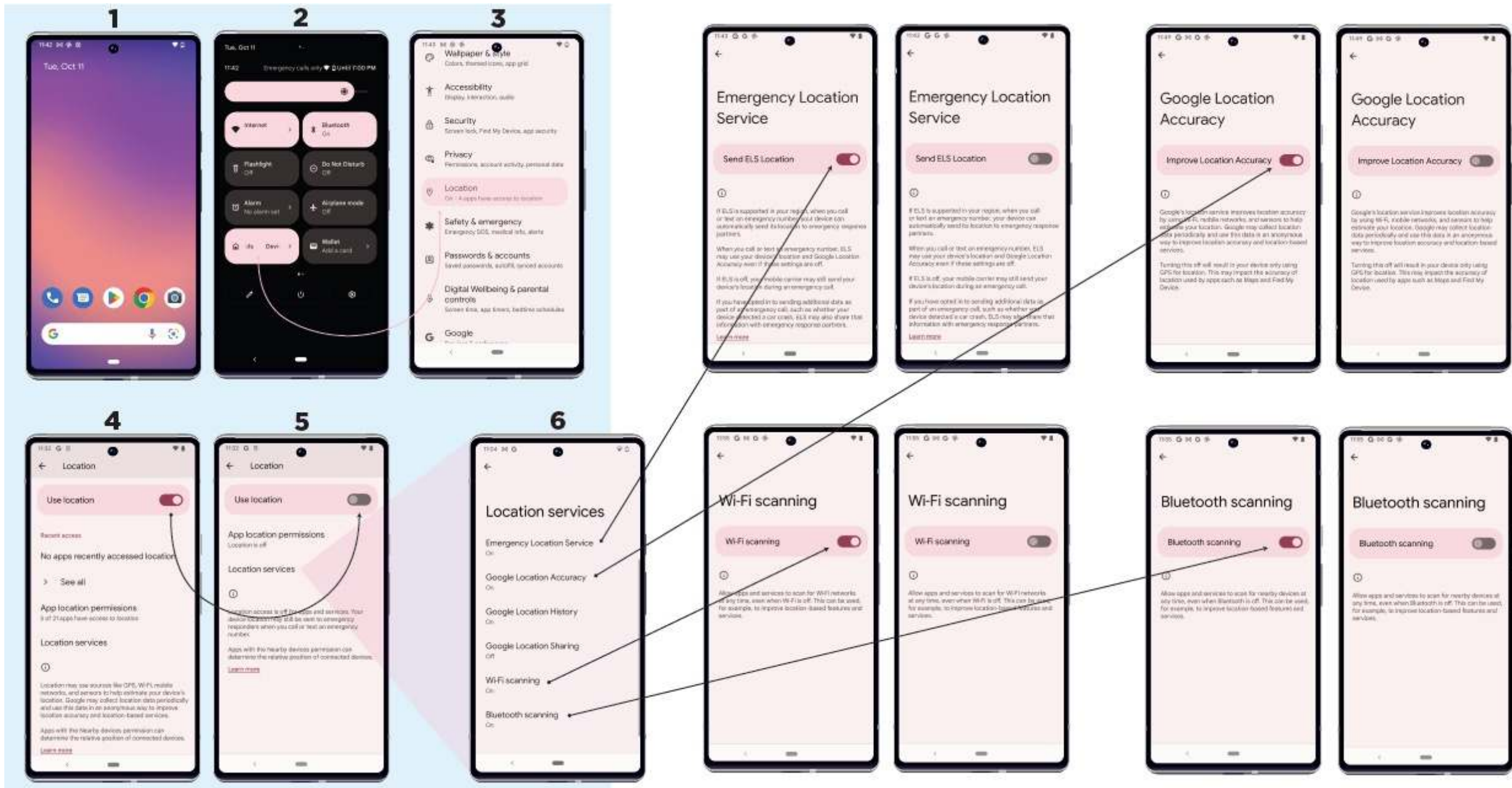
What about the data you "auto-delete"?

"When you delete data, we follow a deletion policy to make sure that your data is safely and completely removed from our servers or retained only in anonymized form."

Retained data is the *opposite* of deleted data.

Anonymous data? Not really ...

```
"rate": {
    "description": "First upload",
    "timestampMs": 1552417946133,
    "uploadPeriodMs": 0,
    "uploadReason": "firstUpload",
    "uploadSource": "internal"
},
"timestampMs": 1552417946133
```

Wake Up

```
"timestampMs": 1545048606893,
"wifiConnectivityStatus": {
    "mac": -1,
    "wifiConnectionStatus": "DISCONNECTED"
}
```

Leave Home

Arrive Work

```
"rate": {
    "description": "Wifi triggered",
    "timestampMs": 1545127358472,
    "uploadPeriodMs": 180000,
    "uploadReason": "wifiTriggere
    "uploadSource": "internal"
},
"timestampMs": 1545127358472

"timestampMs": 1545127358360,
"wifiConnectivityStatus": {
    "mac": 251330451055521,
    "wifiConnectionStatus": "CONNECTED"
```

```
"timestampMs": 1545048664048,
"wifiConnectivityStatus": {
    "mac": -1,
    "wifiConnectionStatus": "DISCONNECTED"
```

Leave Work

Arrive Home

```
"rate": {
    "description": "Now Vehicle Exit (null)",
    "timestampMs": 1544125869255,
    "uploadPeriodMs": 0,
    "uploadReason": "default",
    "uploadSource": "burst"
},
"timestampMs": 1544125869255

"timestampMs": 1544125868747,
"wifiConnectivityStatus": {
    "mac": 251330451072105,
    "wifiConnectionStatus": "CONNECTED"
```

```
"rate": {
    "description": "stationary",
    "newRequest": true,
    "samplePeriodMs": 2160000,
    "sampleReason": "stationary",
    "sampleSource": "internal",
    "timestampMs": 1548236134067
},
"timestampMs": 1548236134067
```

Go to Sleep

I can opt-out... Right?

Screenshots of the 14 steps to opt-out from a smartphone running Android 12.0

Test: Turn it all off!
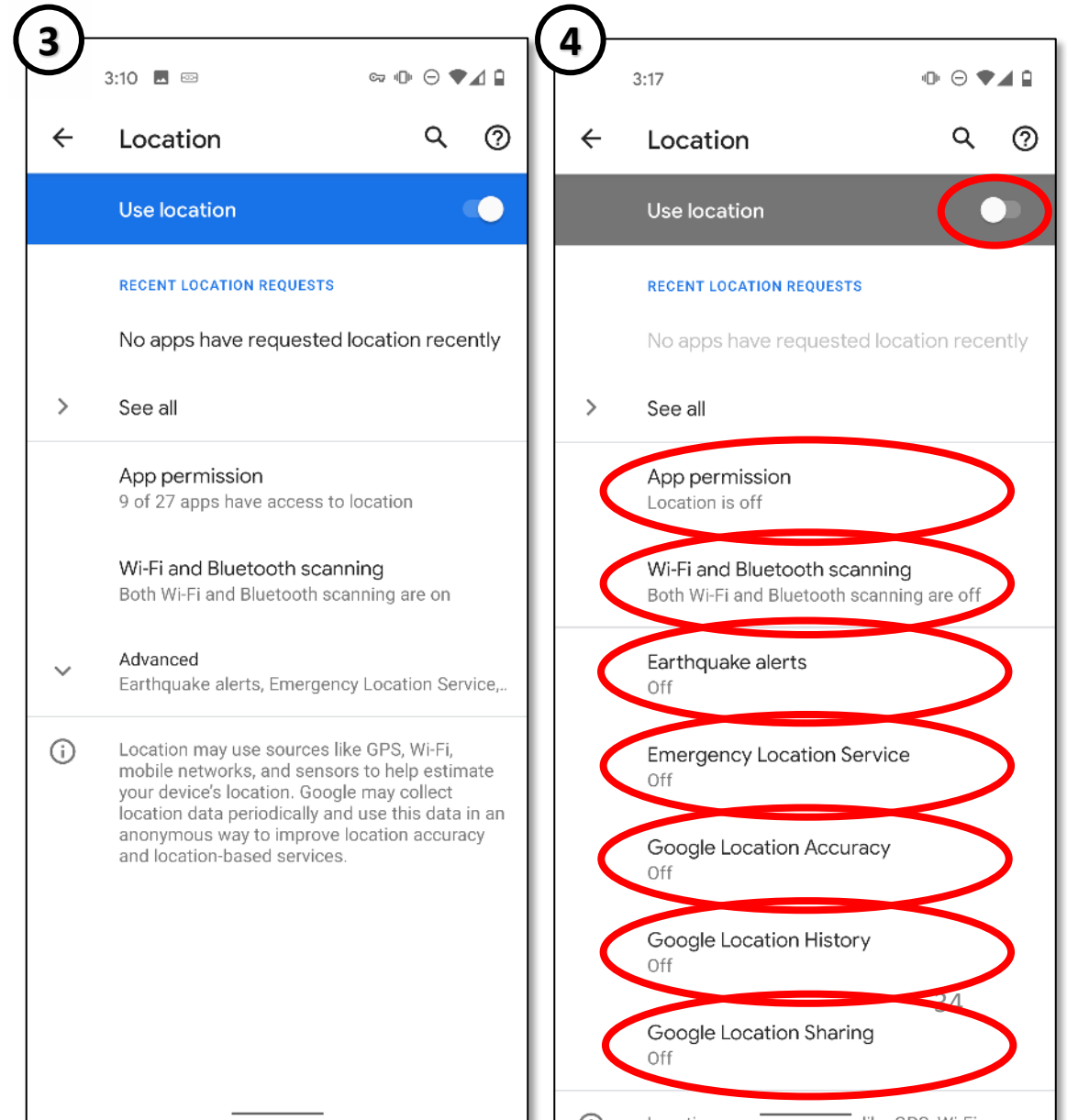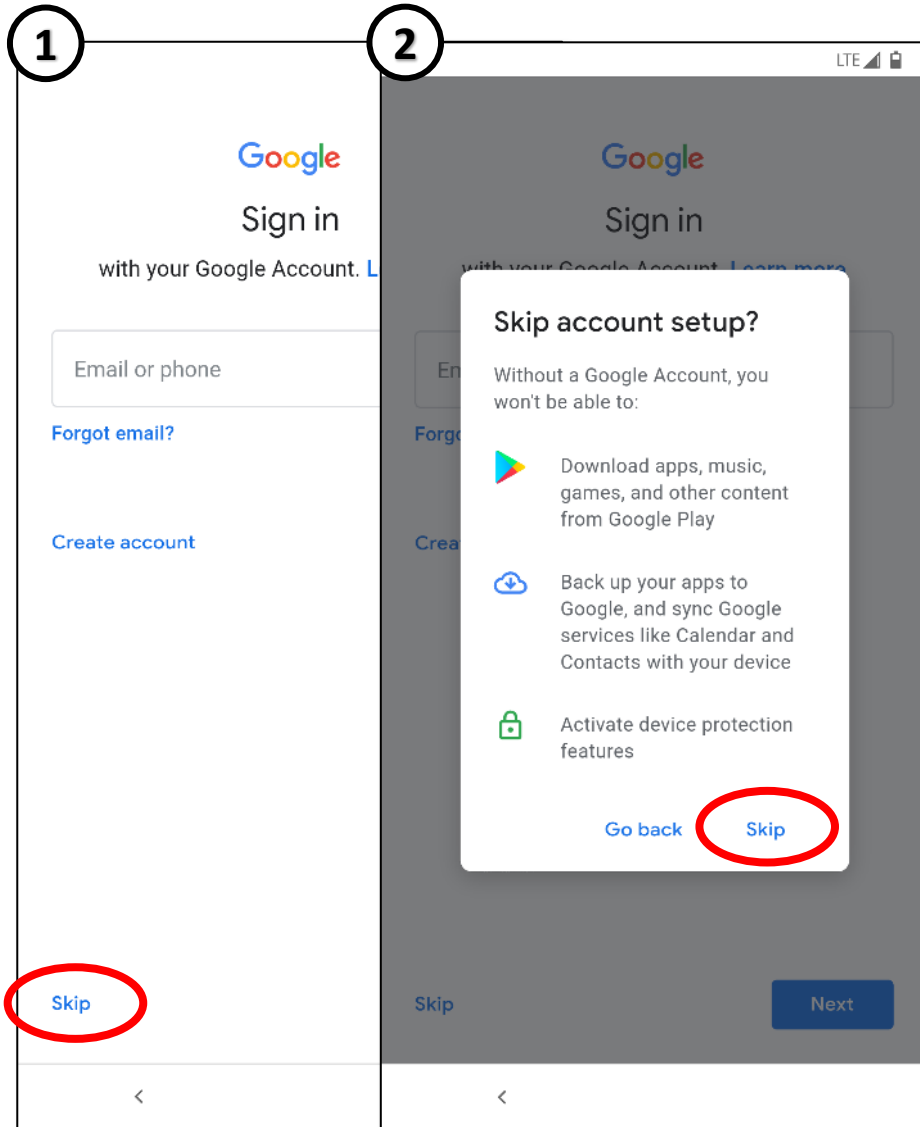
Result: Your settings don't matter.

Susan Molinari
Vice President, Public Policy and Government Relations Americas Google

"... Google's ad products may receive or infer information about a user's location from a variety of sources. For example, **Google may use a user's IP address to identify their general location**; receive precise location from a mobile device; or infer a user's location from search queries. In addition, websites or apps a user is using may send information about their location to us. **Google uses location information in our ads products to infer demographic information**, to improve the relevance of the ads users see, to measure ad performance, and to report aggregate statistics to advertisers. "

https://www.blumenthal.senate.gov/imo/media/doc/05.11.2018%20-%20FTC%20-%20Google%20Location%20History.pdf (Attachment 2, Page 5, Paragraph 3)

They *really* don't matter.
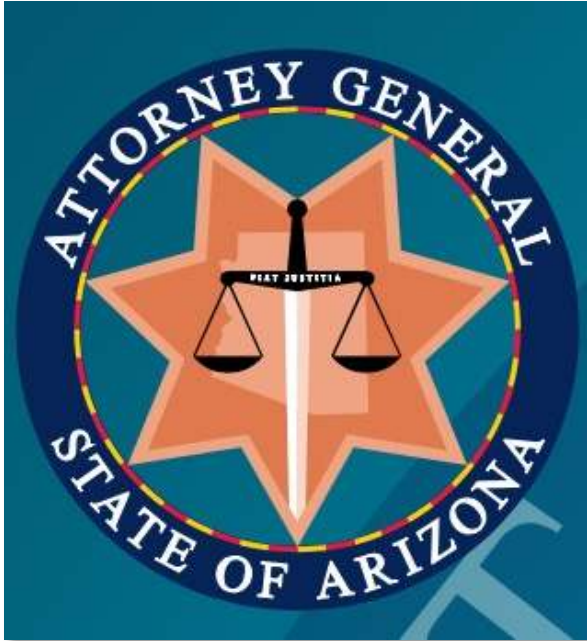
"The documents also detail a Google tool called "IPGeo" which, according to a 2009 presentation obtained by the attorney general, is designed to "predict users' locations from their IP addresses by improving ways of exploiting available data, and to provide this knowledge to all Google products."

""…the level of accuracy of our IP Geo system is far beyond anything achievable based solely on the location information inherent in IP Addresses. I believe that we are deceiving users by telling them they can turn off location and then spending millions of dollars to infer their location through other means…""

"incredibly confidential"
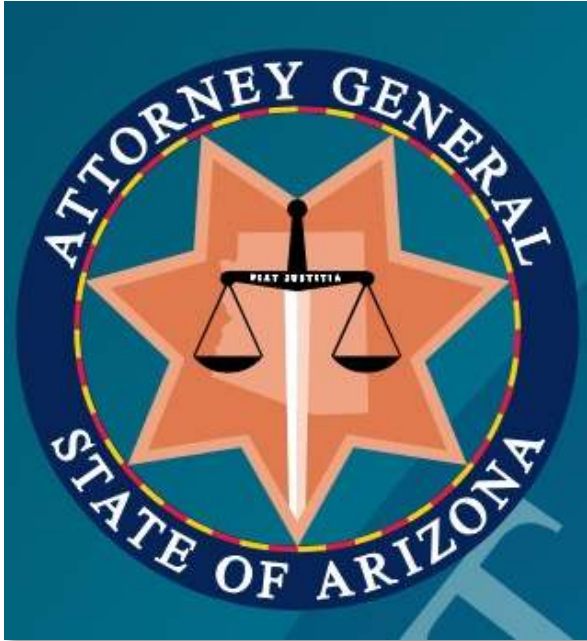
> "The attorney general's office also found a confidentiality notice attached to the presentation about the tool. "

"You have no idea how incredibly confidential this one is," the notice said. "My my, is this confidential. I kid you not. Imagine an article titled 'Google knows where you live, because it spies on you' in the NYT. You've been warned."

Testing Account Settings and Ad Targeting

Google Monetizes Sensitive Topics

Choose topics to target many webpages, apps, and videos about a certain subject

- "Alzheimer's Disease"
- "Sexually Transmitted Diseases"
- "Drug and Alcohol Treatment"
- "Depression"
- "Lesbian, Gay, Bisexual, and Transgender"
- "Arabs and Middle Easterners"
- "Disabled and Special Needs"
- "Places of Worship"
- "Discrimination and Identity Relations"
- "Immigration Policy and Border Issues"
- "Unions and Labor Movement"

DoubleClick cookies are associated with more than 1.6 million websites.

Google Analytics is used by ~75% of the top 100,000 most visited websites.

Sources: https://trends.builtwith.com/analytics/Google-Analytics
https://digitalcontentnext.org/wp-content/uploads/2018/08/DCN-Google-Data-Collection-Paper.pdf

Ads Personalization Off
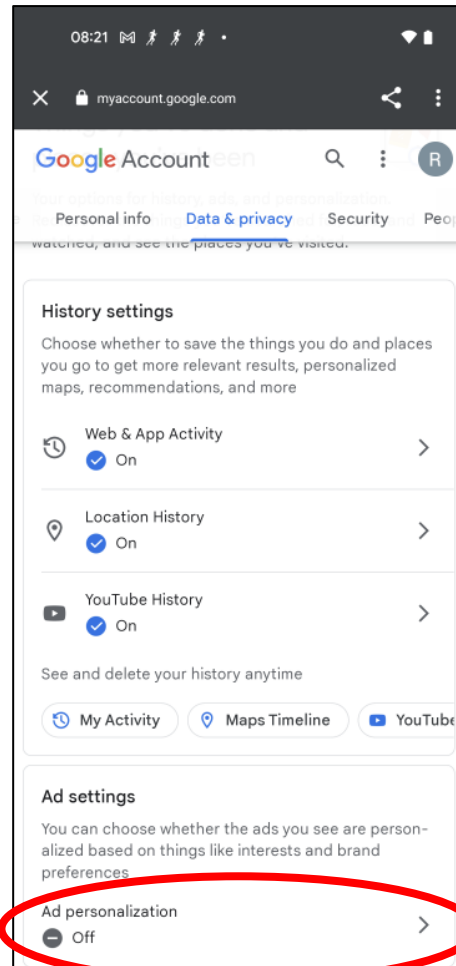
User and Ad IDs

id info

x-client-data	apMcH4sIAAAAAAAAAF3VW9ATVZ4A8GKnq2Z2p2pr92HOzrOPW5WqdJJOOlXrQ...
Secure-3PSID	PQixSqS8sxhRjqPLr0IEXCSAoXagvnHvrUIMTaNzjg4O0m9cFMzO_OvEwnyZn...
SSID	ABG8TQZGkGWhMX2c4
SAPISID	Xhia3TScoymnTLQo/AKP_M-WQ0cMPRHWZ-
SID	PQixSqS8sxhRjqPLr0IEXCSAoXagvnHvrUIMTaNzjg4O0m9cGfgjswl8gt4oG...
HSID	Avmru59xqVdby8PcL
APISID	S3bdB9Hw7s9PPPhT/ADbOHhV2P31aNUpyB
NID	u0N33ZmhPD55lbzNYTFVsG_dnnmgtT7ti2FsaHhXbhRmAOACEFZofAIQT4zdC...

ad info

ad_id	43e2b253-e8c0-4014-b132-9a8500dc32ab

loc info

10-13 06:58:19 (CDT)	xgeo 30.2627435,-97.7412414

intent info

10-13 06:58:19 (CDT)	search - sunscreen for kids

Device Running Android 12
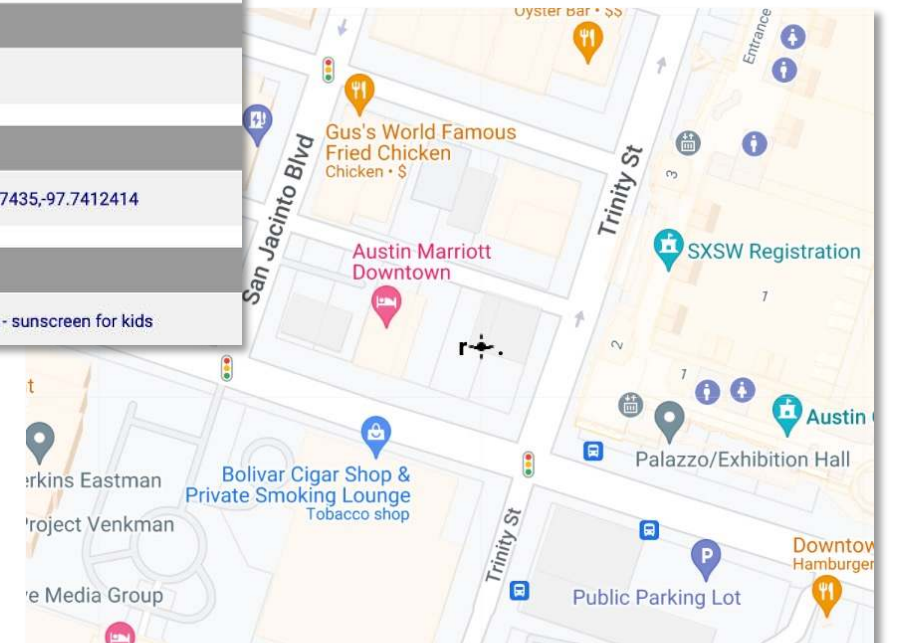
Location at Time of Search

Does Google Respect Your Choice?

Ad · www.lobsterpoutinefanclub.com

Best Poutine Spots | Lobster Poutine Fa...

Get Updates on Recipes, Hot Spots, Revi...
Lobster Poutine Is Obviously Our Favorit...

Example ad

Ad group   Ad group 2

Type   Standard

Keywords   Curds, Fries, Lobster, Lobster Poutine, Motor
                  Bike, Motorcross, Motorcross Race + 3 more

Assets   None

Our Google Ads Campaign

Google Ads

○ Location   ○ Radius

☐ Add locations in bulk

Enter a location to target or exclude

For example, a country, city, region, or postal code

Targeted locations (1)   Reach ⓘ ⊗

2 mi around 703 Azie Morton Road... radius   — ⊗

Cancel   Save

Show all areas ▾

2 mi around 703 Azie Morton Road, Austin, Texas

Target   Remove

ⓘ Highlighted areas represent places advertisers can target or exclude with Google Ads
location targeting. Learn more

LOBSTER POUTINE
♥ FAN CLUB ♥

One in a Million (or 965,872)
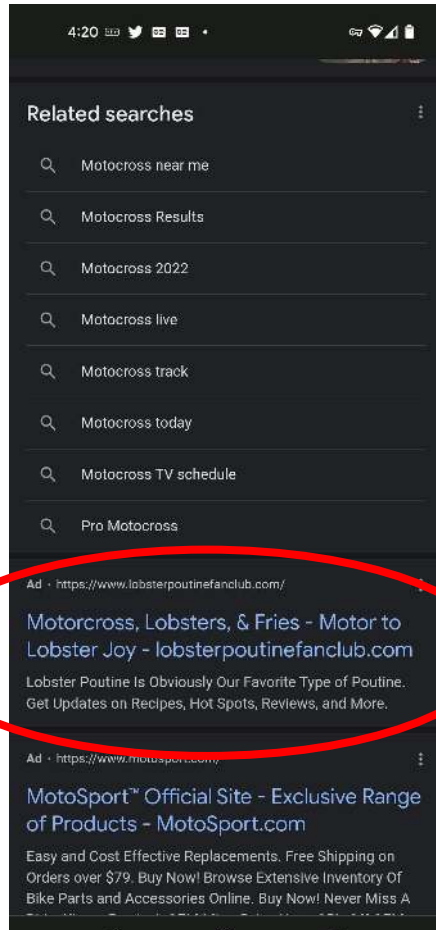
Device Running Android 12 with History and Ad Settings Paused / Off
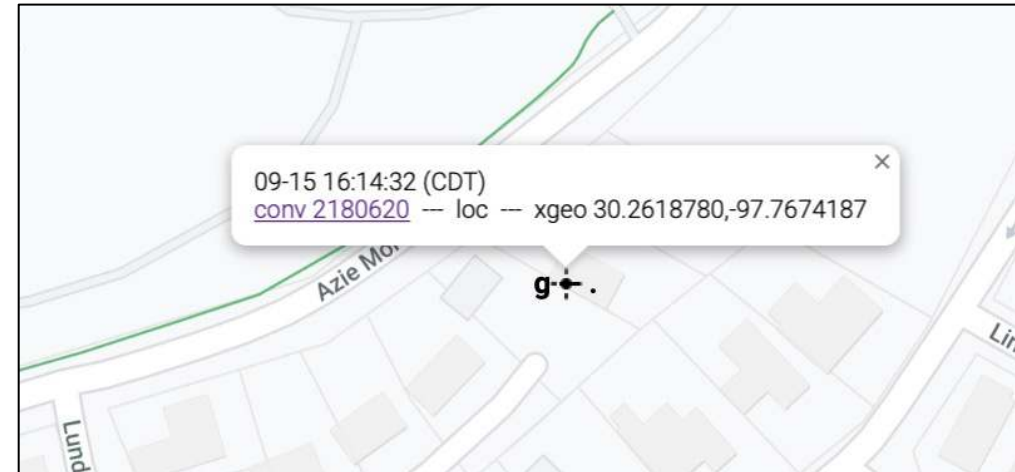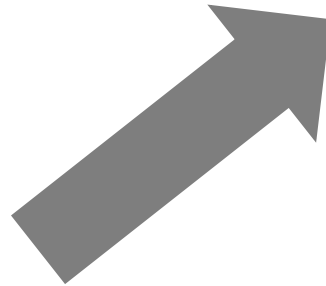
What about (the) Children?

Android Setup for a Child

Google continues to collect data ...

10-13 12:52:01 (EDT)	loc 21 readings
10-13 12:52:03 (EDT)	baro 114 readings
10-13 12:52:22 (EDT)	loc 21 readings
10-13 12:52:01 (EDT)	gyro 1133 readings
10-13 12:52:01 (EDT)	accel 1133 readings
10-13 12:52:24 (EDT)	baro 104 readings
10-13 12:52:01 (EDT)	mag 1144 readings
10-13 12:52:22 (EDT)	gyro 1029 readings
10-13 12:52:22 (EDT)	accel 1031 readings
10-13 12:52:22 (EDT)	mag 1038 readings
10-13 12:52:43 (EDT)	loc 21 readings
10-13 12:52:45 (EDT)	baro 105 readings
10-13 12:53:03 (EDT)	loc 21 readings
10-13 12:52:43 (EDT)	gyro 1043 readings
10-13 12:52:43 (EDT)	accel 1043 readings
10-13 12:52:43 (EDT)	mag 1051 readings
10-13 12:53:05 (EDT)	baro 103 readings
10-13 12:53:03 (EDT)	gyro 1021 readings
10-13 12:53:03 (EDT)	accel 1021 readings
10-13 12:53:03 (EDT)	mag 1029 readings
10-13 12:53:31 (EDT)	loc 20 readings
10-13 12:53:34 (EDT)	baro 140 readings
10-13 12:53:31 (EDT)	gyro 1387 readings
10-13 12:53:31 (EDT)	accel 1387 readings
10-13 12:53:31 (EDT)	mag 1399 readings
10-13 12:54:14 (EDT)	baro 198 readings
10-13 12:54:10 (EDT)	accel 1925 readings
10-13 12:54:10 (EDT)	gyro 1926 readings
10-13 12:54:10 (EDT)	mag 1942 readings
10-13 12:54:52 (EDT)	baro 200 readings
10-13 12:54:48 (EDT)	gyro 1898 readings
10-13 12:54:48 (EDT)	accel 1898 readings
10-13 12:54:48 (EDT)	mag 1914 readings
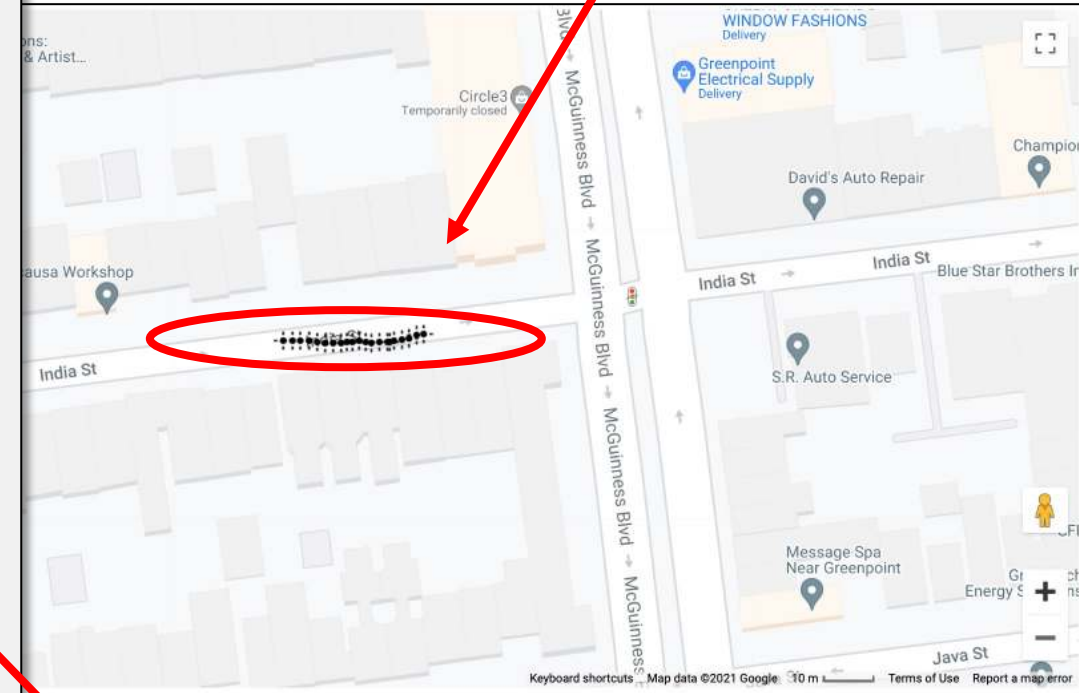
Device Location

29460 Sensor Readings

Tracking Children

```
10-13 09:47:50 (EDT)    LTE cell tower - 6:310:410:-1:207951112
10-13 09:47:50 (EDT)    LTE cell tower - 6:310:410:-1:208774152
10-13 09:47:50 (EDT)    LTE cell tower - 6:310:410:-1:28684040
10-13 09:47:50 (EDT)    LTE cell tower - 6:310:410:-1:28840201
```

Extra Curriculars

```
10-13 13:28:13 (EDT)    wifi scan of 17 APs
10-13 13:28:13 (EDT)    60:B7:6E:C6:80:74 - SuperTorres
10-13 13:28:13 (EDT)    62:45:B1:A7:46:D9 -
10-13 13:28:13 (EDT)    68:FF:7B:F5:3C:81 - beepboop
10-13 13:28:13 (EDT)    70:F2:20:A0:42:41 - Stackwood
10-13 13:28:13 (EDT)    A4:97:33:6E:72:09 - SpectrumSetup-0B
10-13 13:28:13 (EDT)    B8:F8:53:EA:E4:7A - Fios-RhLD2
10-13 13:28:13 (EDT)    B8:F8:53:F0:84:82 - Fios-Tz8Sc
10-13 13:28:13 (EDT)    D8:47:32:21:2E:95 - FiOS-4H9T0-5G_EXT
10-13 13:28:13 (EDT)    18:78:D4:0C:9C:8A - FebrezeBrothers
10-13 13:28:13 (EDT)    18:78:D4:0C:9C:8C - FebrezeBrothers
10-13 13:28:13 (EDT)    1A:78:D4:0C:9C:8D - FebrezeBrothers-g
10-13 13:28:13 (EDT)    30:FD:38:E0:E2:F5 - pineapplefuntime
10-13 13:28:13 (EDT)    38:94:ED:5E:10:7C - NETGEAR77
10-13 13:28:13 (EDT)    3C:BD:C5:09:B7:FA - Fios-9JBq9
10-13 13:28:13 (EDT)    48:5D:36:11:19:4E - FiOS-4H9T0-5G
10-13 13:28:13 (EDT)    48:5D:36:11:19:50 - FiOS-4H9T0
10-13 13:28:13 (EDT)    58:2F:F7:77:D7:36 — Hello
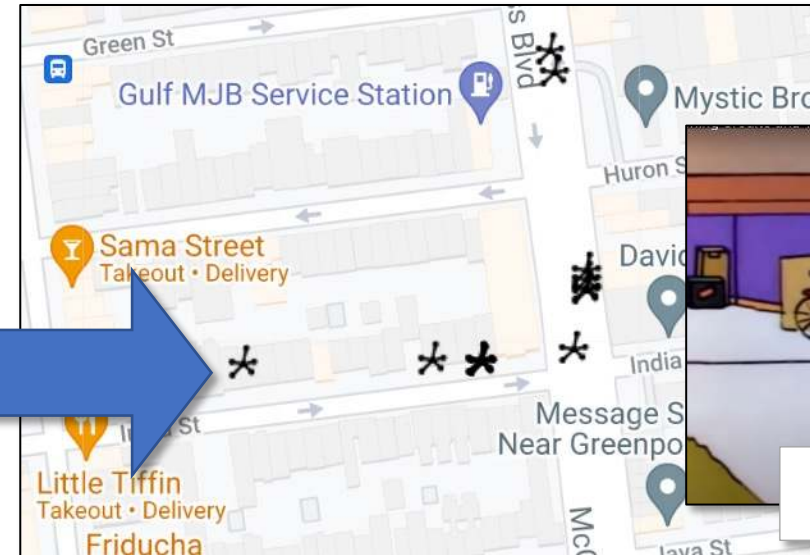```

**Arrive School**

```
10-13 17:07:16 (EDT)    loc 22 readings
10-13 17:07:18 (EDT)    baro 111 readings
10-13 17:07:16 (EDT)    gyro 1101 readings
10-13 17:07:16 (EDT)    accel 1101 readings
10-13 17:07:16 (EDT)    mag 1110 readings
```

Commute Home

Arrive Home

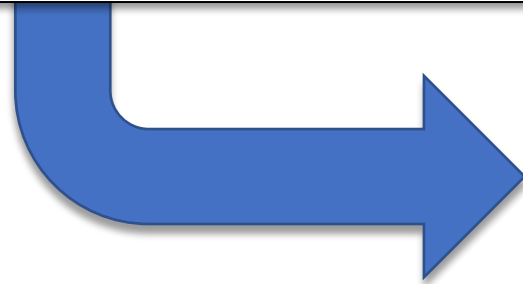| LOCATION DATA ELEMENT	COLLECTED BY GOOGLE?	TIED TO UNIQUE IDENTIFIER?	TYPE OF UNIQUE IDENTIFIER	COLLECTED UNDER THIRTEEN?	ACCESSIBLE TO PARENT?	IN "DOWNLOAD YOUR DATA?"
PRECISE LATITUDE + LONGITUDE						
UPON REQUEST IN REAL-TIME	YES	YES	Android ID	YES	YES*	NO
HISTORICAL	YES	YES	Android ID	YES	NO	NO
WI-FI SCANS	YES	YES	Android ID	YES	NO	NO
MAC ADDRESS	YES	YES	Android ID	YES	NO	NO
SIGNAL STRENGTH + FREQUENCY	YES	YES	Android ID	YES	NO	NO
SSIDS	YES	YES	Android ID	YES	NO	NO
CELL TOWER READINGS	YES	YES	Android ID	YES	NO	NO
BAROMETRIC PRESSURE READINGS	YES	YES	Android ID	YES	NO	NO
ACCELEROMETER READINGS	YES	YES	Android ID	YES	NO	NO
MAGNETOMETER READINGS	YES	YES	Android ID	YES	NO	NO
GYROSCOPE READINGS	YES	YES	Android ID	YES	NO	NO
VISIBLE SATELLITE READINGS	YES	YES	Android ID	YES	NO	NO
IP ADDRESS**	YES	YES	VARIOUS	YES	NO	NO

(AS OF NOVEMBER 2022)

* A parent can view their child's current location using the Family Link app.

** IP addresses are assigned by ISPs or Wireless Carriers to subscribers' devices. The address groups vary geographically, so an IP address can be used to estimate a device's location.

What else can we observe?

Live Monitoring of Search Traffic
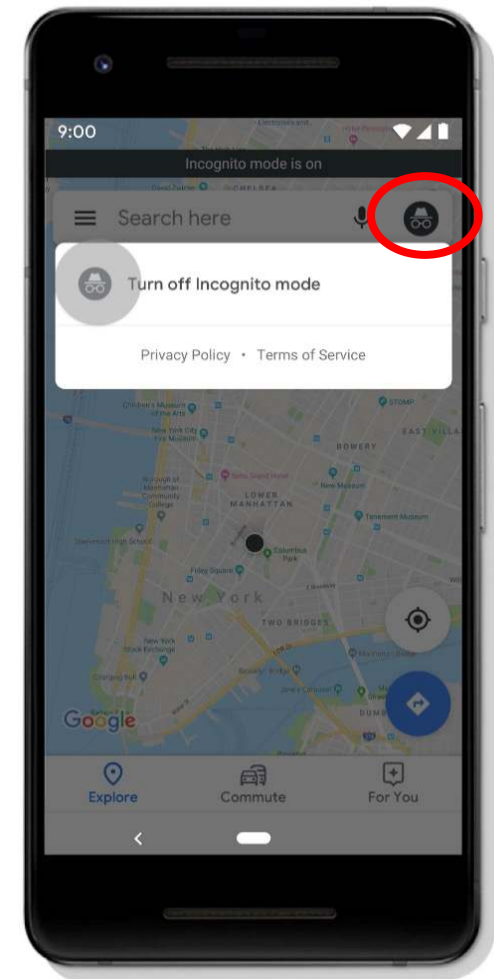
Claim: Incognito mode is private.

"We recently brought Incognito mode, the popular feature in Chrome that **lets you browse the web without linking any activity to you**, to YouTube."
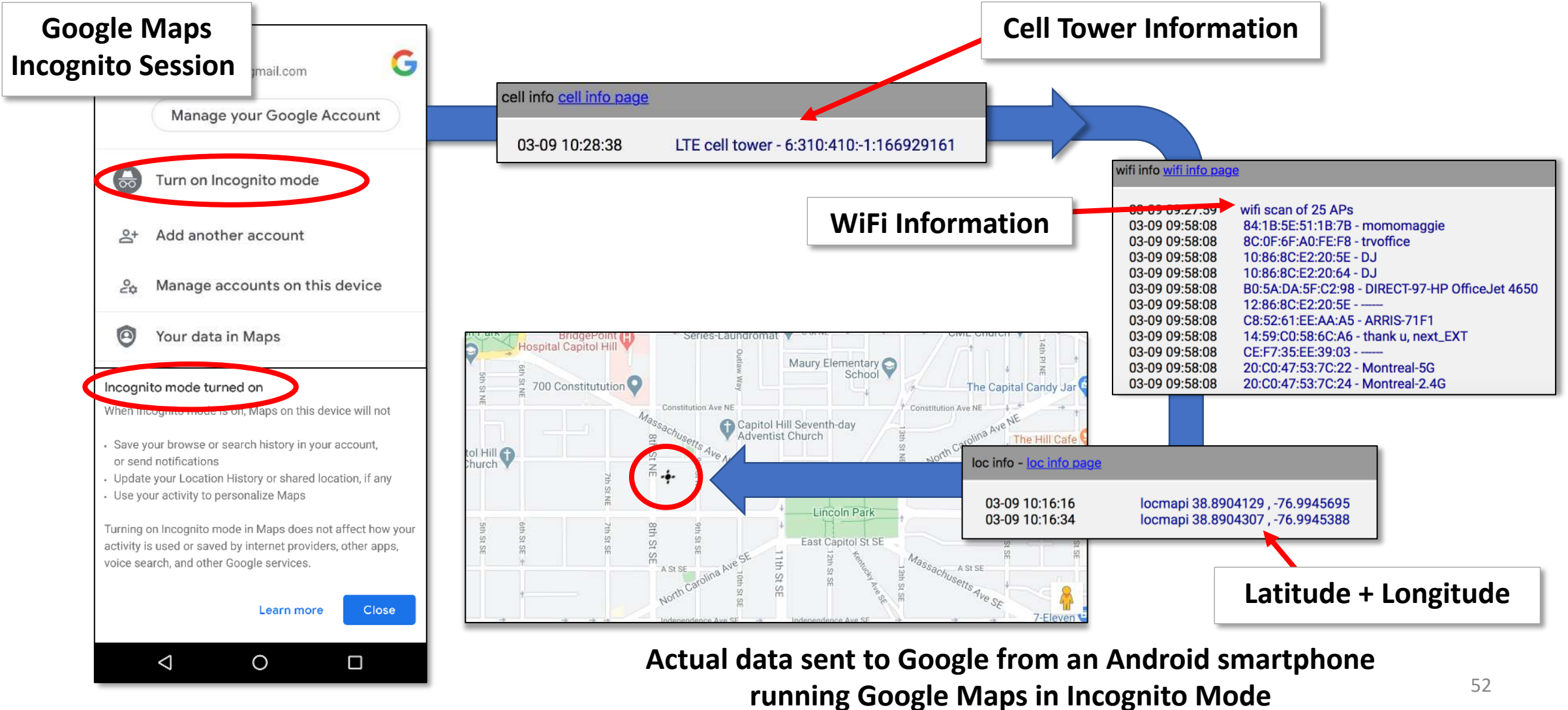
Sundar Pichai
Google CEO
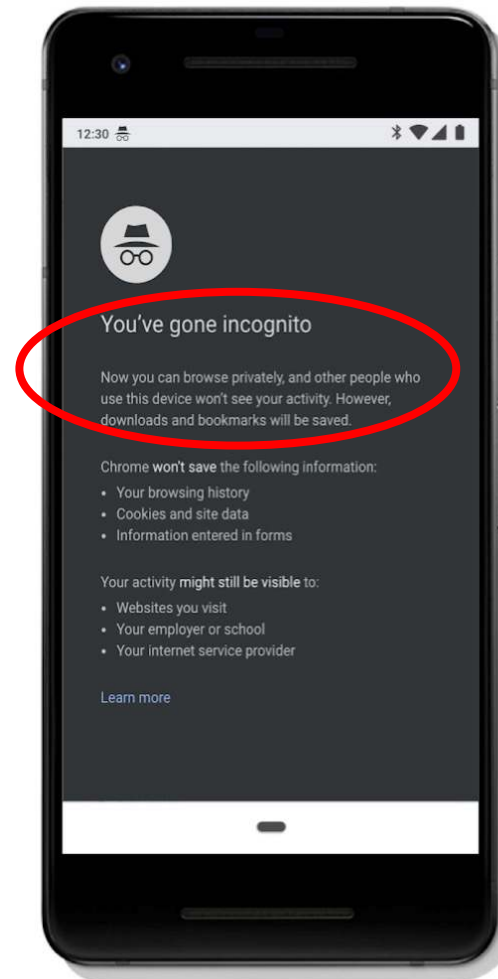
Google Chrome

Google Maps

Reality: Google tracks your location.

Google Maps Incognito Session

Cell Tower Information

cell info cell info page

03-09 10:28:38   LTE cell tower - 6:310:410:-1:166929161

Manage your Google Account

Turn on Incognito mode

Add another account

Manage accounts on this device

Your data in Maps

Incognito mode turned on

When Incognito mode is on, Maps on this device will not

• Save your browse or search history in your account, or send notifications
• Update your Location History or shared location, if any
• Use your activity to personalize Maps

Turning on Incognito mode in Maps does not affect how your activity is used or saved by internet providers, other apps, voice search, and other Google services.

Learn more   Close

WiFi Information

wifi info wifi info page

03-09 09:27:59   wifi scan of 25 APs
03-09 09:58:08   84:1B:5E:51:1B:7B - momomaggie
03-09 09:58:08   8C:0F:6F:A0:FE:F8 - trvoffice
03-09 09:58:08   10:86:8C:E2:20:5E - DJ
03-09 09:58:08   10:86:8C:E2:20:64 - DJ
03-09 09:58:08   B0:5A:DA:5F:C2:98 - DIRECT-97-HP OfficeJet 4650
03-09 09:58:08   12:86:8C:E2:20:5E - ------
03-09 09:58:08   C8:52:61:EE:AA:A5 - ARRIS-71F1
03-09 09:58:08   14:59:C0:58:6C:A6 - thank u, next_EXT
03-09 09:58:08   CE:F7:35:EE:39:03 - ------
03-09 09:58:08   20:C0:47:53:7C:22 - Montreal-5G
03-09 09:58:08   20:C0:47:53:7C:24 - Montreal-2.4G

loc info - loc info page

03-09 10:16:16   locmapi 38.8904129 , -76.9945695
03-09 10:16:34   locmapi 38.8904307 , -76.9945388

Latitude + Longitude

Actual data sent to Google from an Android smartphone running Google Maps in Incognito Mode

52

Reality: "Incognito" data used for ads.

Incognito Session

Google Tracking Cookie in Chrome Browser

Same Incognito Session With Targeted Ad

53

Incognito Mode = Illusion of Privacy

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

CHASOM BROWN, MARIA NGUYEN, and WILLIAM BYATT, individually and on behalf of all other similarly situated,

Plaintiffs,

v.

GOOGLE LLC and ALPHABET INC.,

Defendants.

Case No. 20-3664

Google's representations about how it does not track users under these conditions are **completely false**. Not only do consumers not know about what Google is doing to collect data on them, **they have no meaningful way of avoiding Google's data collection practices**, even if they are following Google's instructions to "browse the web privately."

August 2020: New "feature"

Source: https://www.theverge.com/2020/8/11/21362370/android-earthquake-detection-seismometer-epicenter-shakealert-google

Claim: Collection started in August 2020

The first step is ShakeAlert integration in California

By Dieter Bohn | @backlon | Aug 11, 2020, 9:00am EDT

Google is creating a worldwide, Android phone-powered earthquake alert system. The first part of that system is rolling out today. If you opt in, the accelerometer in your Android phone will become one data point for an algorithm designed to detect earthquakes. Eventually, that

Reality: Collection from October *2019*

Google Play services 19.5.30
By Google LLC

Uploaded October 23, 2019 at 6:10PM EDT

Inspect source code (decompile)

```
public static brux a(brux brux, brux brux2) {
    String str;
    String str2;
    brux brux3 = new brux(bgcw.B);
    brux brux4 = new brux(bgcw.w);
    int seismicDeviceTypePrecision = (int) cdra.a().seismicDeviceTypePrecision();
    if (seismicDeviceTypePrecision == 1) {
        str = Build.MANUFACTURER;
    } else if (seismicDeviceTypePrecision == 2) {
        String str3 = Build.BRAND;
        String str4 = Build.DEVICE;
        StringBuilder sb = new StringBuilder(String.valueOf(str3).length() + 1 +
String.valueOf(str4).length());
        sb.append(str3);
        sb.append("/");
        sb.append(str4);
        str = sb.toString();
    } else if (seismicDeviceTypePrecision != 3) {
        str = "";
    } else {
        str = Build.FINGERPRINT;
    }
```

Actual code assembling file of sensor data for transmission to Google

```
    brux5.b(4, currentTimeMillis);
    brux5.g(3, 0);
    String uuid = UUID.randomUUID().toString();
    if (cdra.i()) {
        String valueOf = String.valueOf(uuid);
        str2 = valueOf.length() == 0 ? new String("@debug.") :
"@debug.".concat(valueOf);
    } else {
        String valueOf2 = String.valueOf(uuid);
        str2 = valueOf2.length() == 0 ? new String("@") : "@".concat(valueOf2);
    }
    brux5.b(2, str2);
    brux3.a(6, brux5);
    brux brux6 = new brux(bgcw.x);
    brux6.b(1, "sqlclt/com.google.android.apps.location.quake");
    brux3.a(2, brux6);
    brux brux7 = new brux(bgcw.z);
    try {
        brux7.a(7, brux.b());
    } catch (IOException e) {
    }
    brux7.a(6, 6);
    if (brux2 != null) {
        brux7.b(9, brux2);
    }
    brux3.a(4, brux7);
    return brux3;
}
```

Sensor recordings without notice.

January 2020

sensor info sensor info page

01-15 13:23:29 (EST)   gyro -0.11891,0.5483

February 2020

sensor info sensor info page

02-01 14:05:48 (EST)   gyro -0.06032,-0.52463,0.59340

March 2020

sensor info sensor info page

03-02 11:14:12 (EST)   gyro 0.00845,-0.00385,-0.00703

April 2020

sensor info sensor info page

04-30 20:32:38 (EDT)   mag -25.29144,-28.54309,-159.57184

May 2020

sensor info sensor info page

05-05 19:47:26 (EDT)   mag -8.31604,3.97491,30.26733
05-05 19:47:26 (EDT)   gyro 0.54816,0.29872,-0.19022
05-05 19:47:26 (EDT)   baro 1016.91461
05-05 19:47:26 (EDT)   accel 2.15439,6.78670,0.24538
05-05 19:47:26 (EDT)   loc 37.53106,-122.26238

June 2020

sensor info sensor info page

06-17 21:42:38 (EDT)   gyro -0.71838,-0.04469,0.42200

July 2020

sensor info sensor info page

07-01 21:20:10 (EDT)   accel -0.16434,-0.08886,0.08587

August 2020

sensor info sensor info page

08-07 16:18:09 (EDT)   gyro -0.73602,-0.57620,0.15141
08-07 16:18:09 (EDT)   accel -4.30782,1.96848,8.91559
08-07 16:18:09 (EDT)   loc 37.42108,-122.32867
08-07 16:18:09 (EDT)   mag 58.63037,38.38348,-75.37079
08-0

Sensors capture up to 100 readings per second.

58

Claim: Data collection is opt-in.

"Stogaitis says that the information collected as part of this program is "de-identified" from users and that Google only needs "coarse" location information for it to work. Both the earthquake alerts and the detection system are opt-in, as well. "What we really need for this is just these little mini seismometers that are out there," Stogaitis says. "We don't need to know anything about the person itself that's sending it because that doesn't matter.""
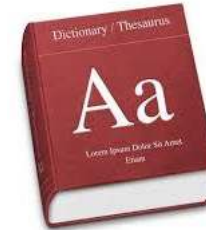
Marc Stogaitis
Principle Android Software Engineer at Google

Reality: No choice

Device without Earthquake Alert Setting
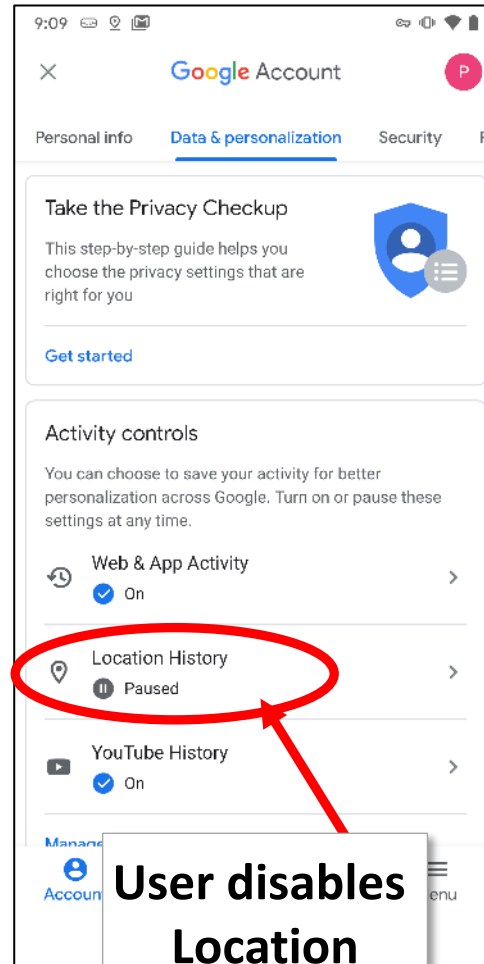
User disables Location History

Opt–in: to choose to do or be involved in something

sensor info sensor info page

```
09-02 21:17:25 (EDT)    gyro -0.00200,0.06302,0.09367
09-02 21:17:25 (EDT)    accel 1.10320,-9.95905,-1.21700
09-02 21:17:25 (EDT)    baro 1014.90149
09-02 21:17:25 (EDT)    mag 209.68018,264.13422,-176.62048
09-02 21:17:25 (EDT)    loc 37.50271,-122.21453
                        20,0.10431
                        0896,-1.15736
                        2.03461,-174.97101
                        686,0.06310
```

Device Sensor Readings

Location Readings

Source: https://vpn.fob1015.com/ic_menu?convid=356479

Even now, consumers do *not* opt-in.

Android 10 Default Location Settings

Fine Print: Only opt-out of *alerts*.
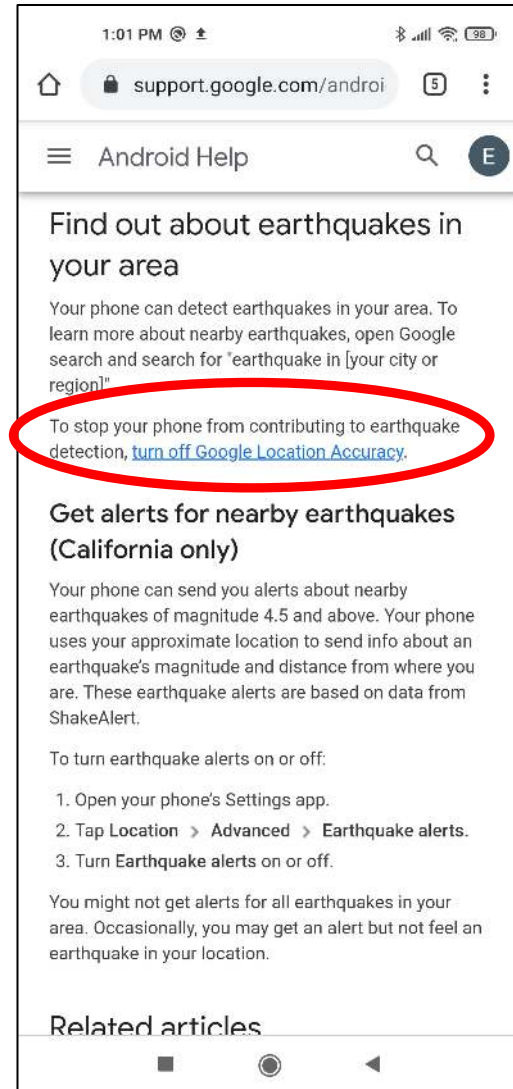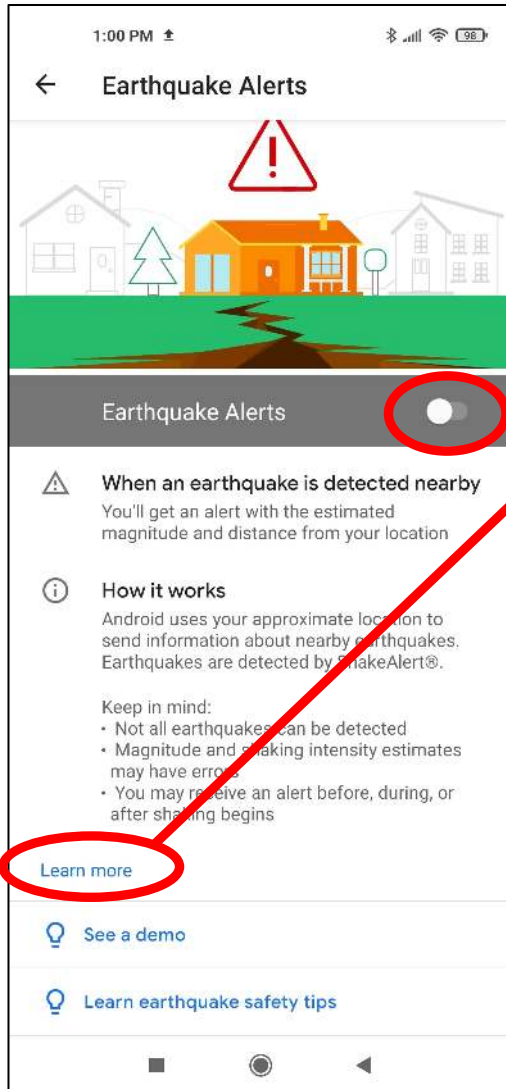
Interface only Disables Alerts, not Data Collection

This is not a choice.

Android Help

Find out about earthquakes in your area

Your phone can detect earthquakes in your area. To learn more about nearby earthquakes, open Google search and search for "earthquake in [your city or region]".

To stop your phone from contributing to earthquake detection, turn off Google Location Accuracy.

Help your phone get a more accurate location (Google Location Services a.k.a. Google Location Accuracy)

Turn your phone's location accuracy on or off

1. Swipe down from the top of the screen.
2. Touch and hold Location ⊙ .
3. Tap **Advanced** › **Google Location Accuracy**.
4. Turn **Improve Location Accuracy** on or off.

When Google Location Accuracy is on

When Google Location Accuracy is off

When Google Location Accuracy is off

When you turn off Google Location Accuracy, your phone uses only GPS to find location. GPS can be slower and less accurate than other sources.

Source: https://support.google.com/android/answer/9319337?p=android_earthquakealerts and https://support.google.com/android/answer/3467281#location_accuracy