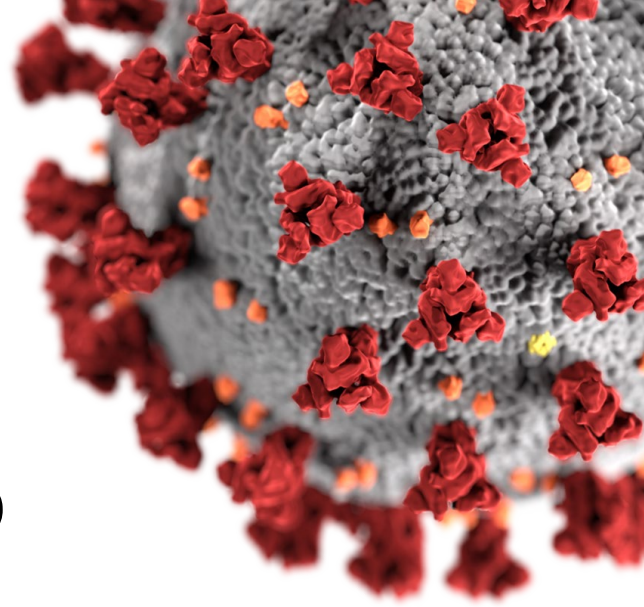


# The responsible use of Geo

after the COVID-19 outbreak



**Ed Parsons**  
Geospatial Technologist  
eparsons@google.com  
@edparsons



The views expressed during this presentation are entirely my own and should in no way be attributed to anyone else or as the opinion of any organisation.

**Agree and continue**

**Decline**





Image : 28 Days Later - DNA Films / UK Film Council




# Data ?



# Mobility Reports



# ambient location

/ˈambɪənt/ ˌlæ(ʊ)ˈkeɪʃ(ə)n/ 


*adjective*

adjective: **ambient location**






*denoting or relating to a knowledge of location that is continuously accessible.*

"A smartphone provides the user with an ambient location service"


Teddington





Teddington


4.0      (25)


Train station

 Directions

 Save


 Nearby


 Send to your phone


 Share


Verify info with this place


Hours or services may differ due to COVID-19

 You visited in February

 Teddington TW11 0AZ

 CMF8+PW Teddington

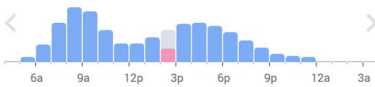
 Add a label


 Suggest an edit


Popular times Fr Fridays

LIVE

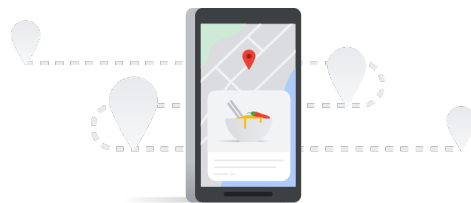
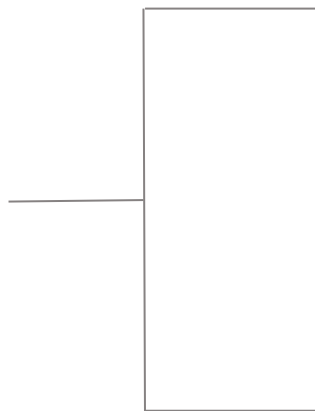
Not busy



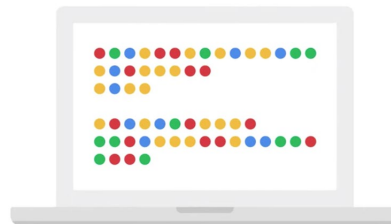




# Privacy first



**Location  
History**

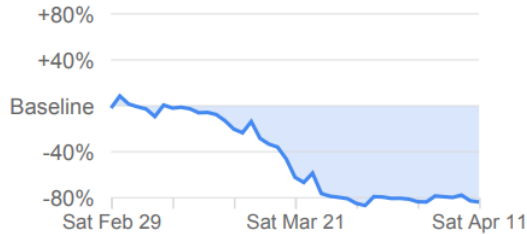


**Differential  
privacy**

# Greater London

## Retail & recreation

**-84%** compared to baseline



## Transit stations

**-77%** compared to baseline



## Grocery & pharmacy

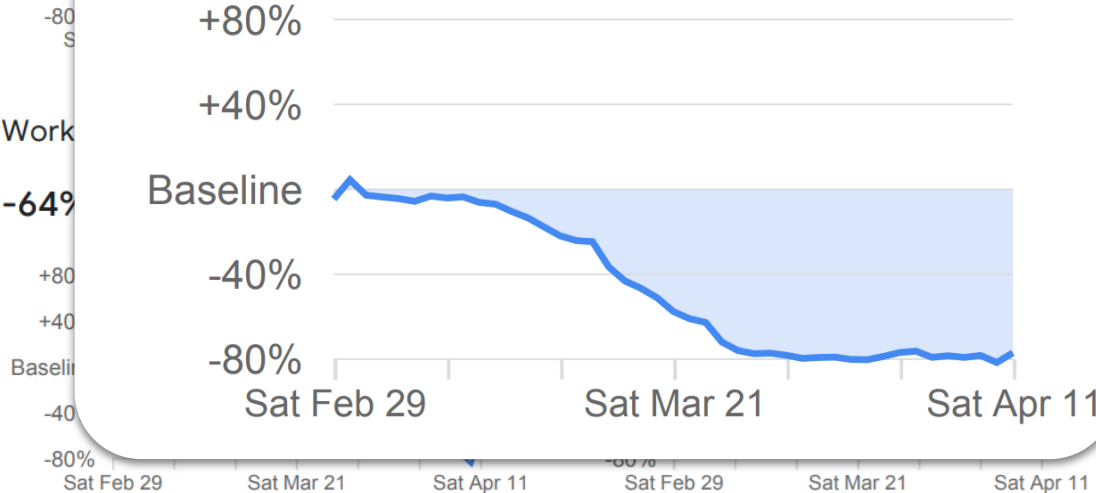
**-36%**



## Parks

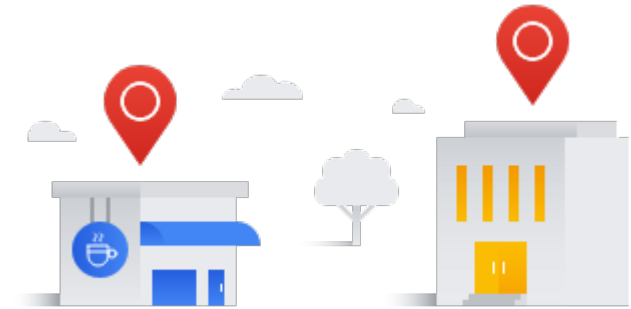
## Transit stations

**-77%** compared to baseline

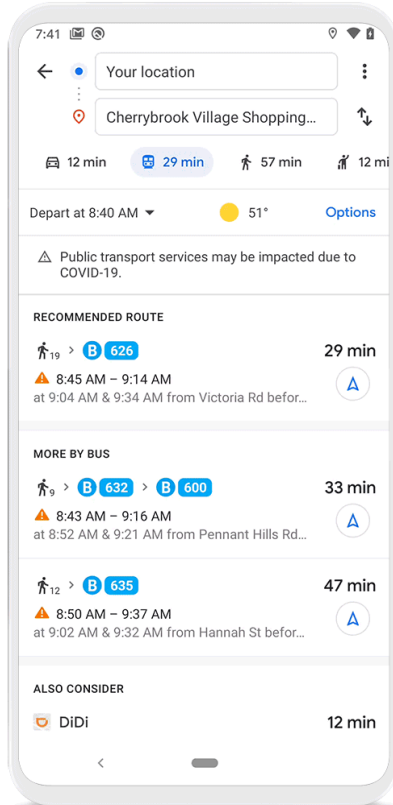


# Privacy Considerations ?

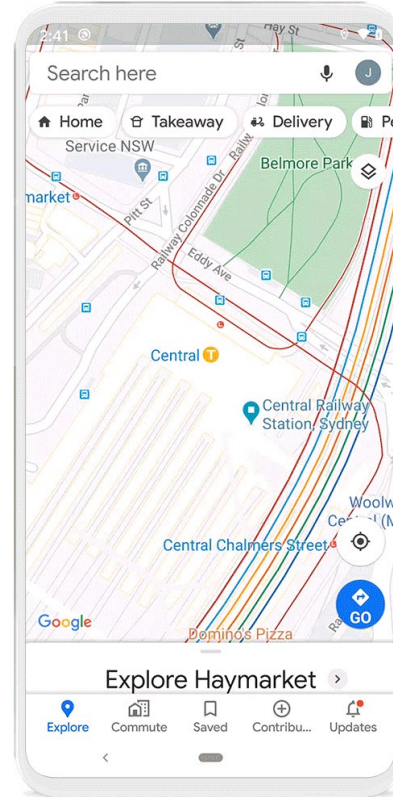
1. What is the right use of **Location History** ?
2. How to avoid **misleading insights** ?
3. What is the appropriate level of **granularity** ?
4. **Who** should have access to the information ?
5. How long should it be **available** ?



# The “new”normal ?



**Crowdsourcing  
Crowdedness**



**Transit System  
Busyness**



# Exposure notification..







Apple | Google



**Opt-in !**

**No Identity !**

**No Location !**

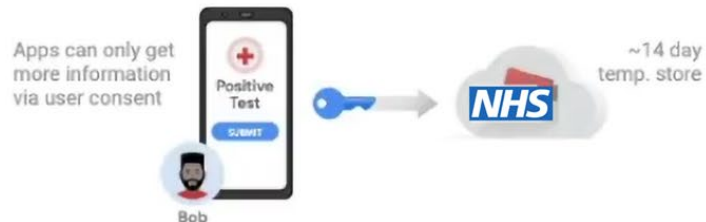
1

Phones in close proximity exchange anonymous identifier beacons (which change frequently)



2

With user consent, a phone uploads the last 14 days of broadcast beacon keys to the cloud.



3

Phones periodically download broadcast beacon keys of everyone who's tested positive for COVID-19 in their region



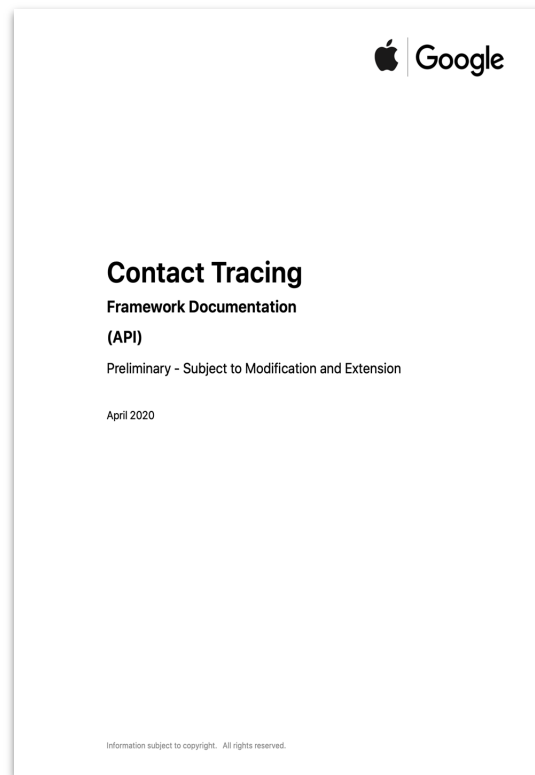
4

If there's a match, the phone receives a notification with info about what to do next

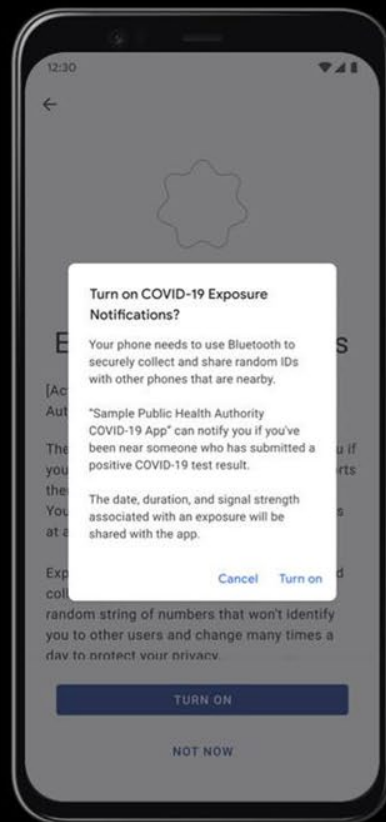
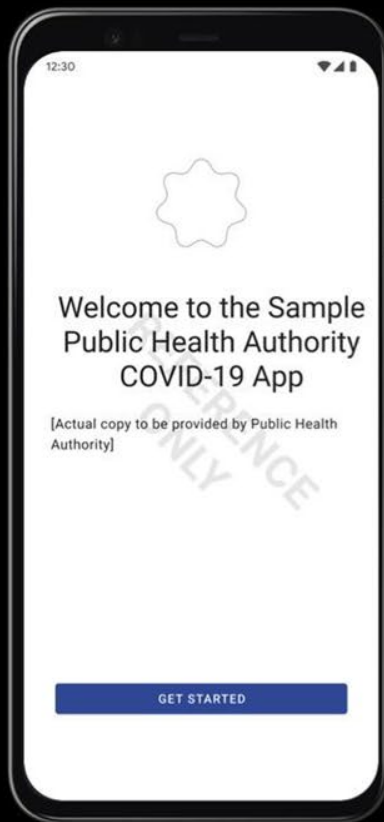


# Privacy preserving..

- Explicit user consent
- No User or Location Data collected
- Anonymous Keys remain on phone
- Positive test results not shared with other users, Google or Apple
- Only available to whitelisted Public Health agencies for the duration of the outbreak
- System can be disabled in OS when no longer required by Google or Apple



# Sample Public Health Authority App Onboarding





**When you break  
glass...**



**It stays broken !**

## Aarogya Setu Mobile App



An app that speaks your language



Available in 11 different languages

Scan to Download

# Aarogya Setu

App for iOS and Android





- ✓ 突擊檢查 Spot checks
- ✓ 提出檢控 Make a prosecution
- ✓ 發出通緝令 Issue wanted warrant

## WANTED - An Ethical Framework...





# Thank you..



**Ed Parsons**  
Geospatial Technologist  
[eparsons@google.com](mailto:eparsons@google.com)  
[@edparsons](https://twitter.com/edparsons)

