A Mixed-Methods Study of Mobile Users' Data Usage Practices in South Africa

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University of Maryland, College Park

Globally, mobile broadband penetration reaches **47%** in 2015 and mobile traffic is predicted to **increase tenfold** by 2019!

Source: ITU ICT Facts and Figures 2015, Cisco Visual Networking Index: Global Mobile Data Forecast Update 2014-2019

Africa has **35** times as many **mobile Internet subscriptions** per 100 inhabitants vs **fixed-line broadband subscriptions**

Source: ITU ICT Facts and Figures 2015

Buffet Open All You Can Eat- Jeremy Brooks (https://www.flickr.com/photos/jeremybrooks/3450585089)

Mind the Cap- Carolyn Nicander Mohr (http://www.wonderoftech.com/wp-content/uploads/2011/04/blogmindthecap.jpg

You have used all of your 1 GB high speed data monthly data plan and will get slower speeds until your next billing cycle starts.

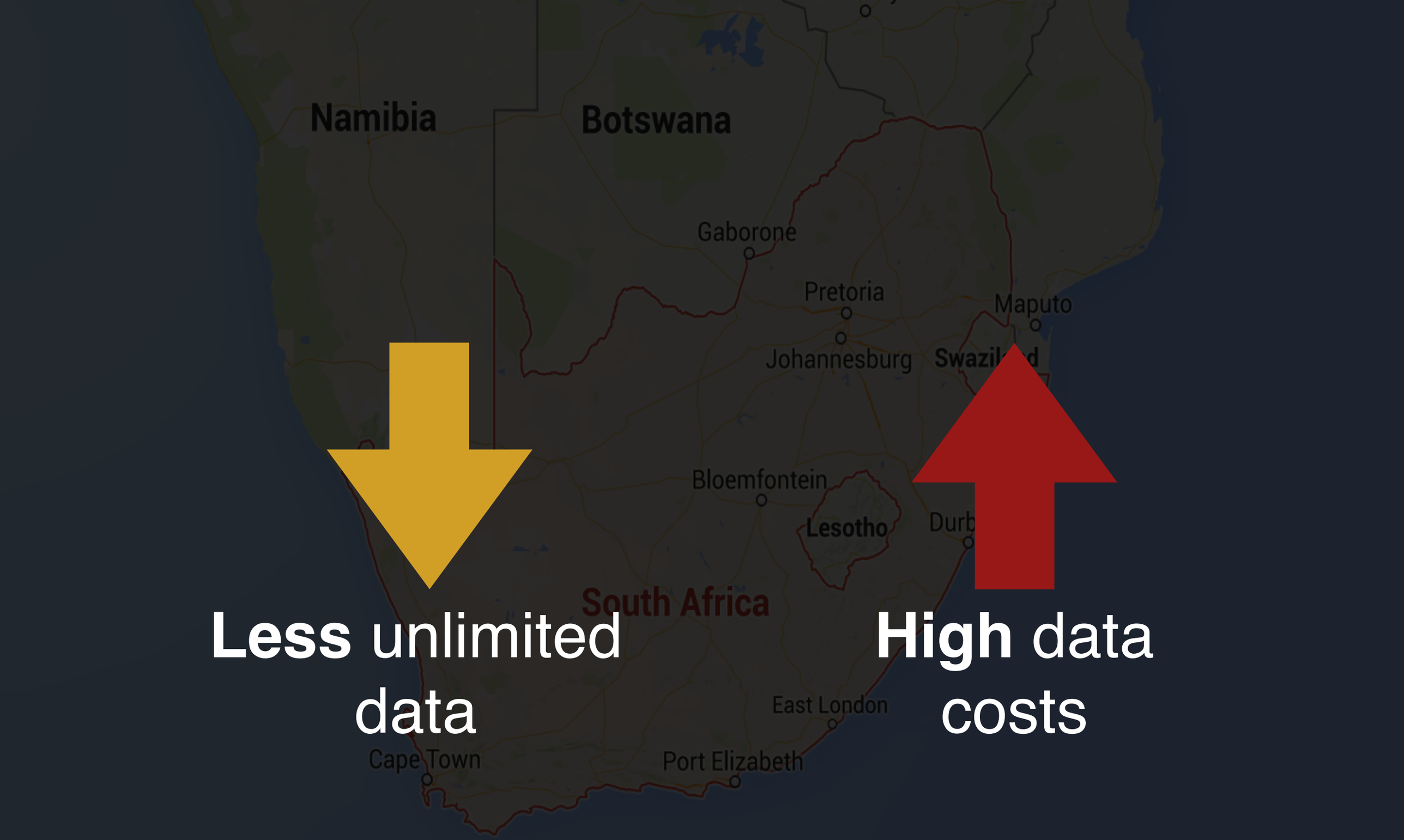
Research Goals

1. Determine how users **manage** and **control** different aspects of **mobile** data

2. Find **design implications** for mobile applications and data monitoring tools

Namibia
Botswana
Gaborone
Pretoria
Maputo
Johannesburg
Swaziland
Bloemfontein
Lesotho
Durban
South Africa
East London
Cape Town
Port Elizabeth

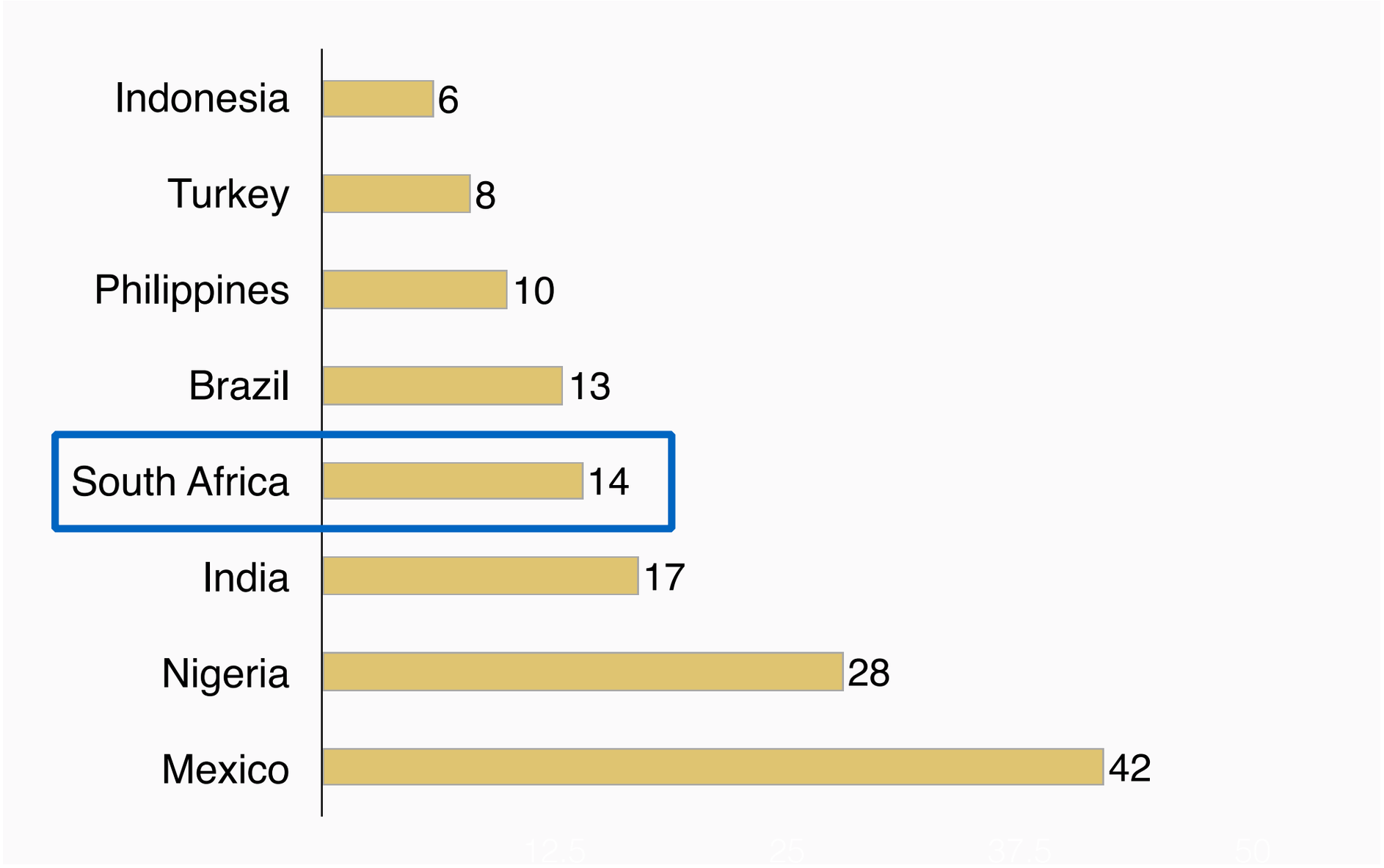
Less unlimited data



Less unlimited data

High data costs

Hours of minimum wage work needed to pay for a 500 MB mobile data plan



Data: Jana; ITU; International Labor Organization
blog.jana.com

Research Questions

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Q1: How does the **cost** of mobile data affect usage?

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Q2: How **knowledgeable** are users about various apps' data consumption on their mobile phones?

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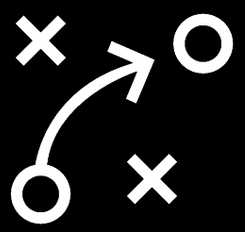

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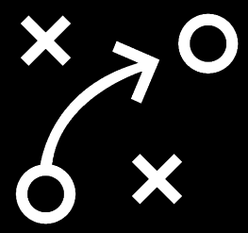

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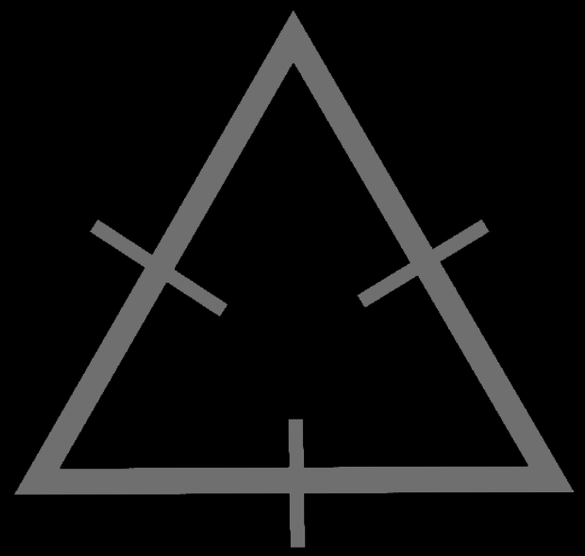

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(N = 339)

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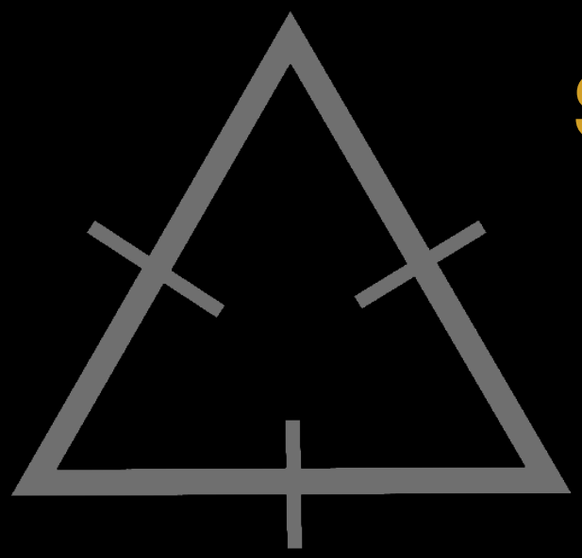

Semi-structured
Interviews
(N = 43)

Research Method

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Semi-structured
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MySpeedTest
(N = 121)

My Speed Test

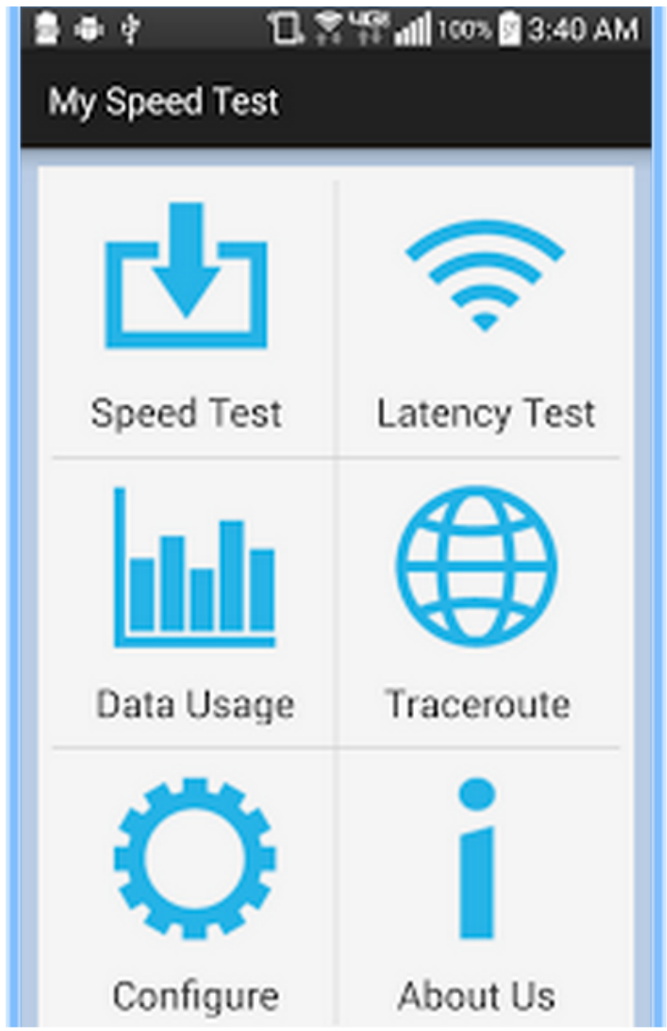
GTNoise **Tools**

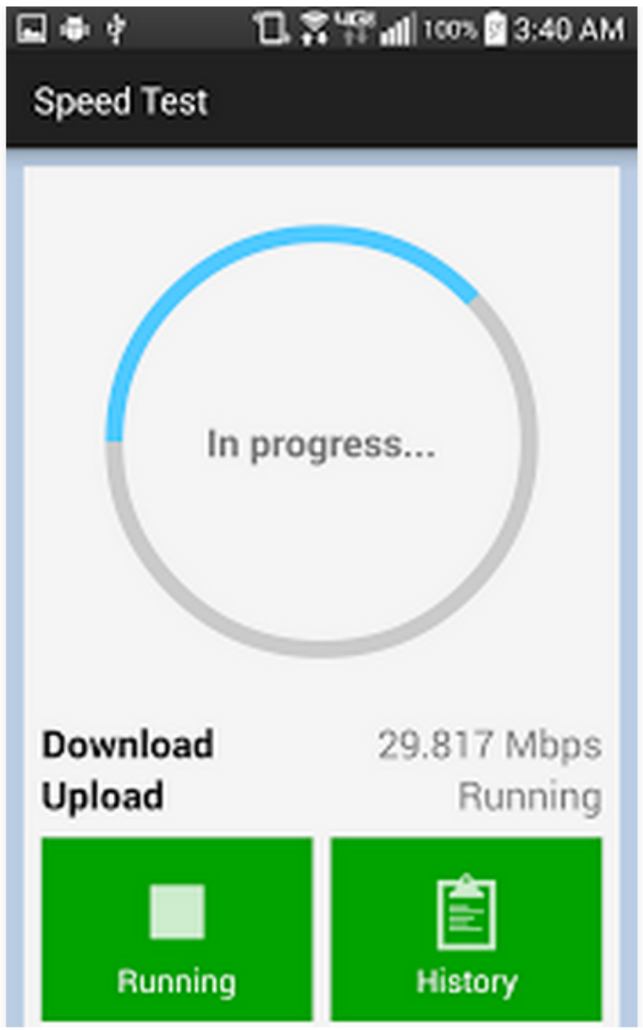
★★★★☆ 145

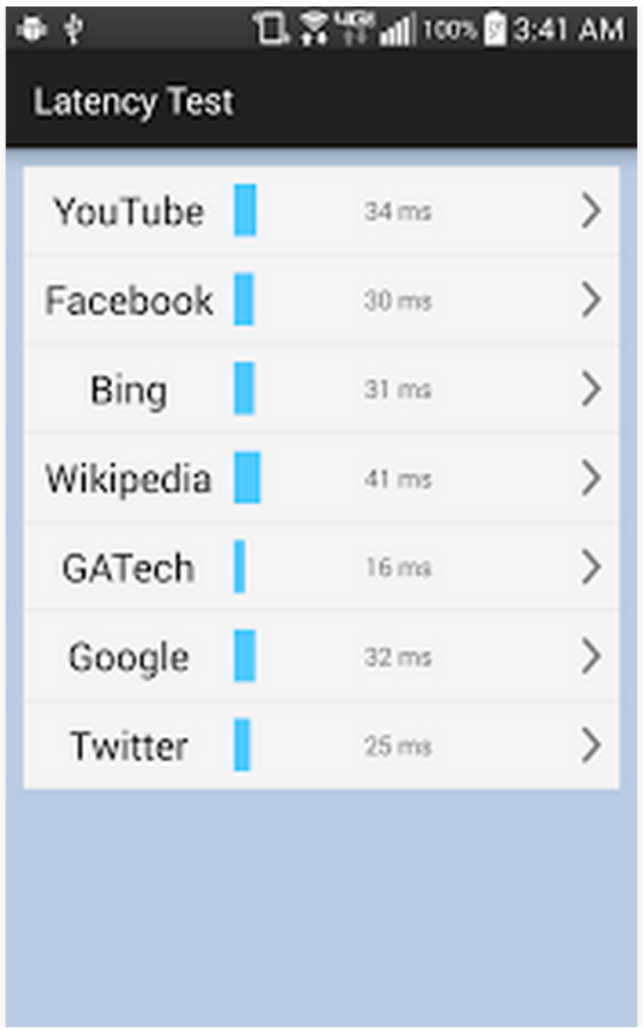
Unrated

This app is compatible with all of your devices.

Installed







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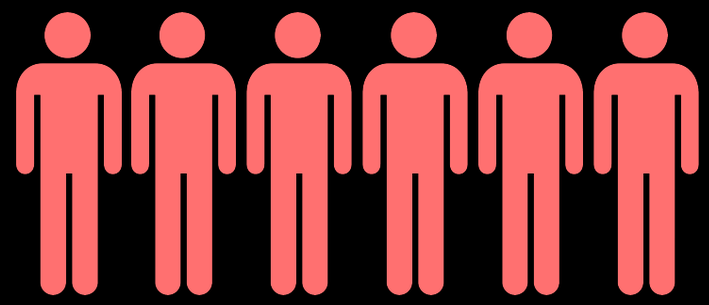


Semi-structured
Interviews
(N = 43)

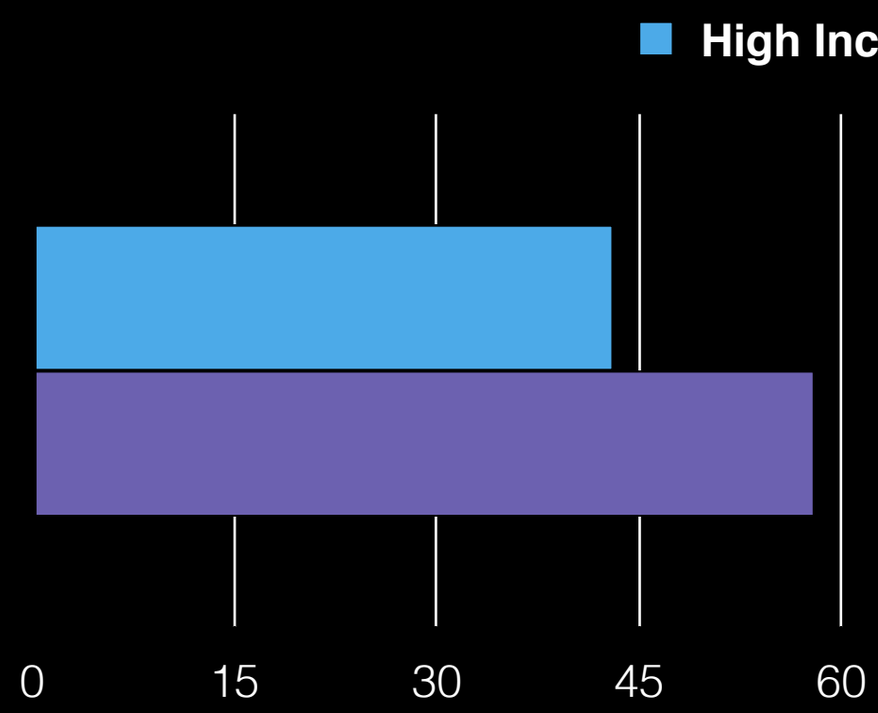
MySpeedTest
(N = 121)

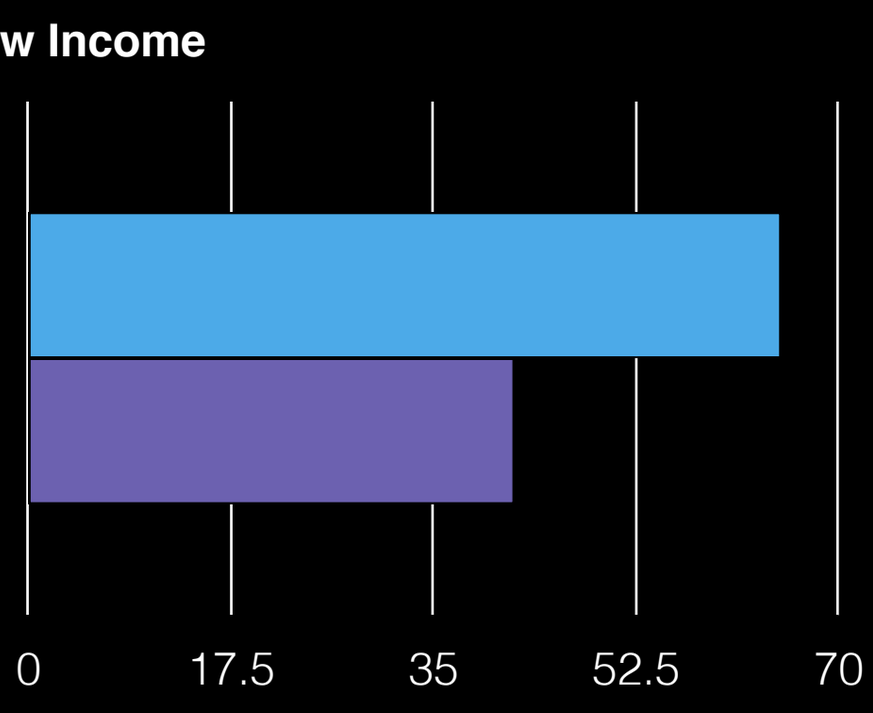
Demographics: Survey + Interview

1. **Age:** 40% between 25-34 years old

2. **Gender:** 81% Male

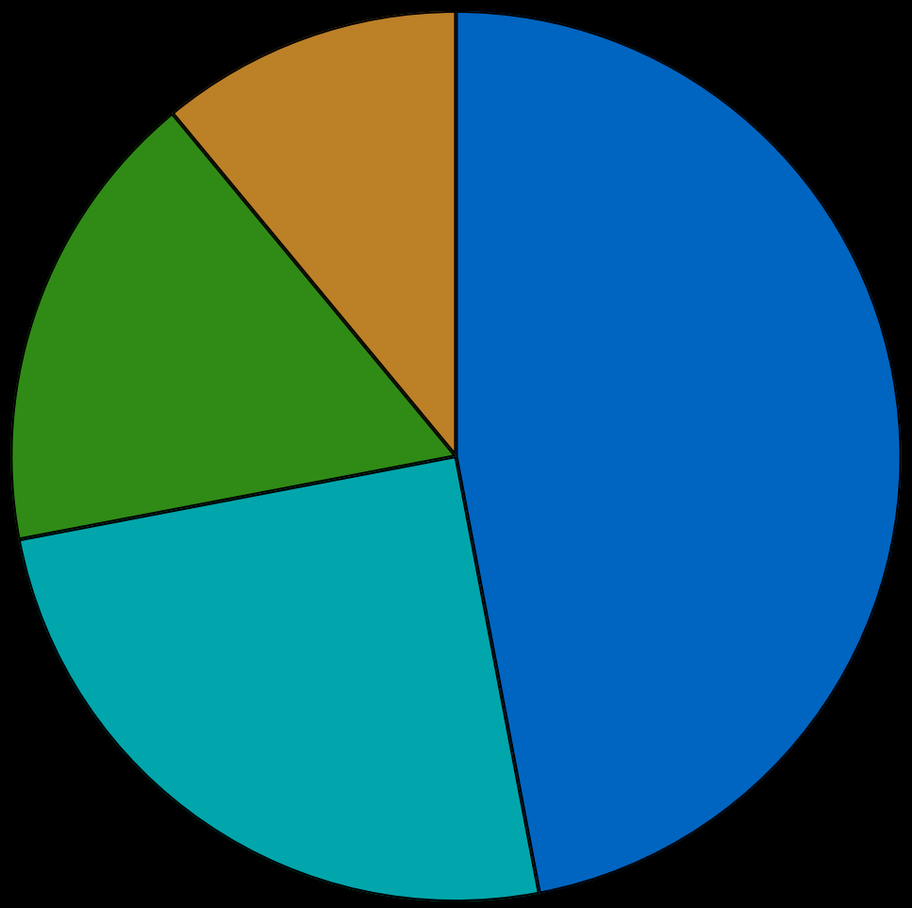
3. **Split** participants into **low** (119) and **high** income (165)



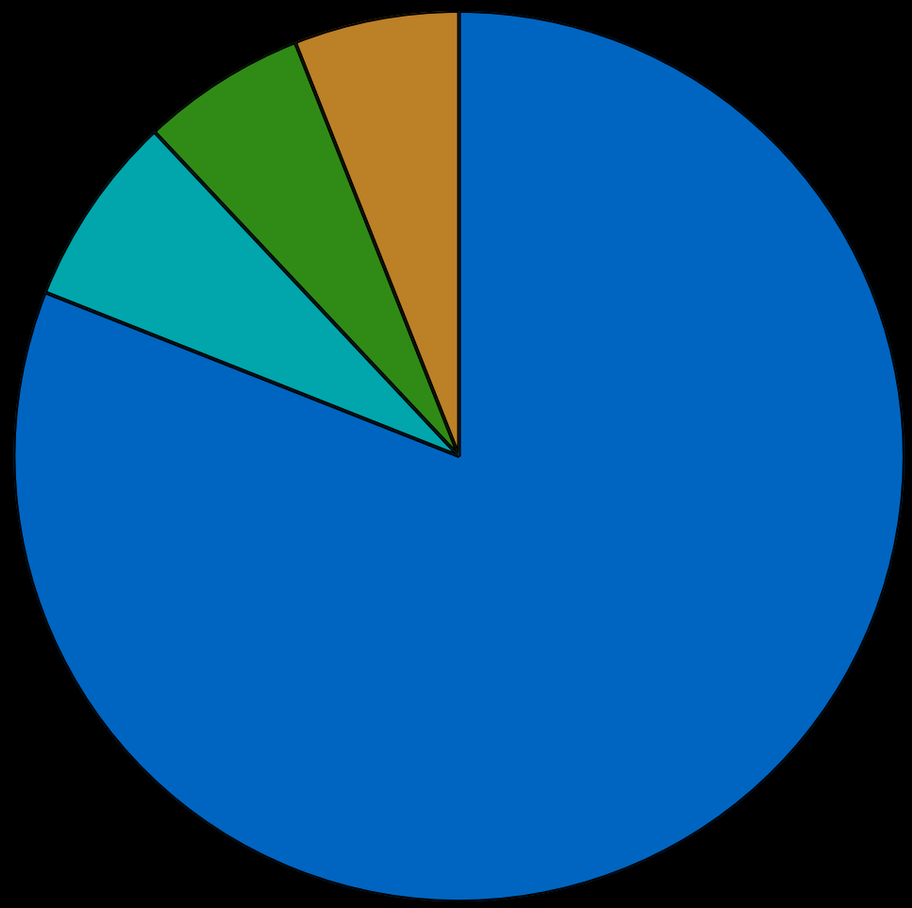


Demographics: MySpeedTest

Network Provider



Phone Manufacturer



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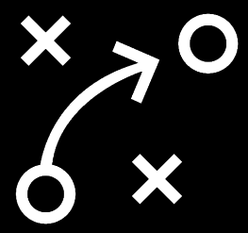

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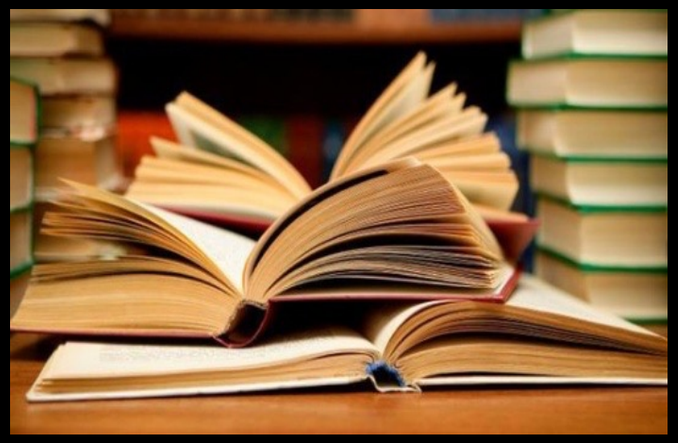
Mobile data is a **high-value asset** and costs **dictate** users' choice of Internet plans (prepaid vs contract)

Median spend on mobile data per month ($13.5 vs $16.5)

Optus Prepaid- *Zachary Phua* (*https://www.flickr.com/photos/54775905@N04/6363092169*)

Low-income users ranked mobile data higher than:



Education

Health

Clothing

I cut down on my hair products; I wash my hair once every two weeks to save money for data.

- P21

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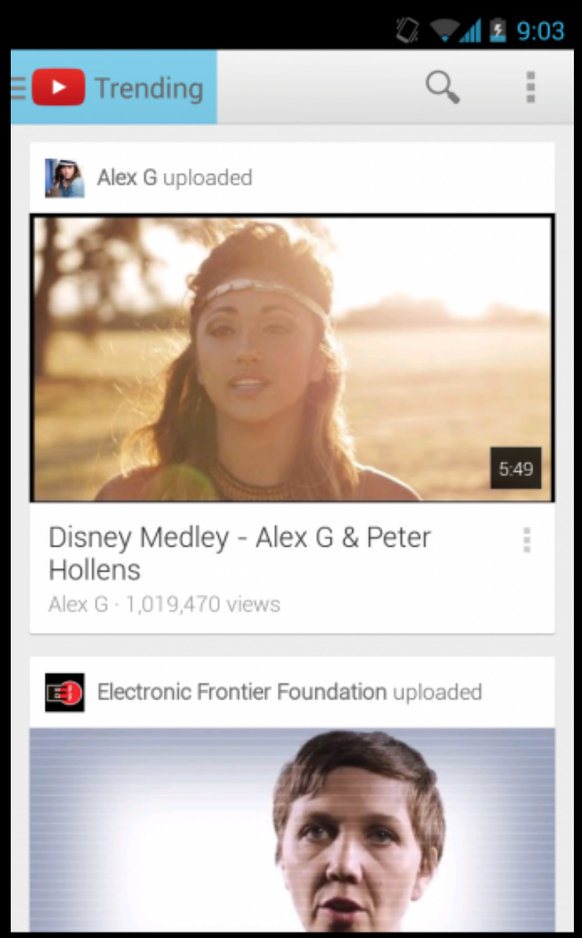
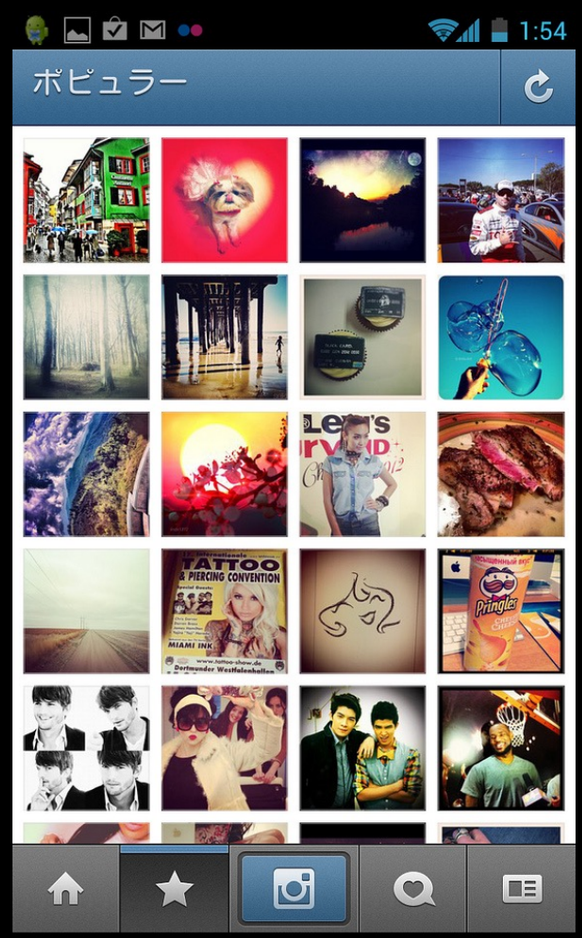
84% knew watching a 10 minute video consumed more data than using social media or reading text article for same amount of time

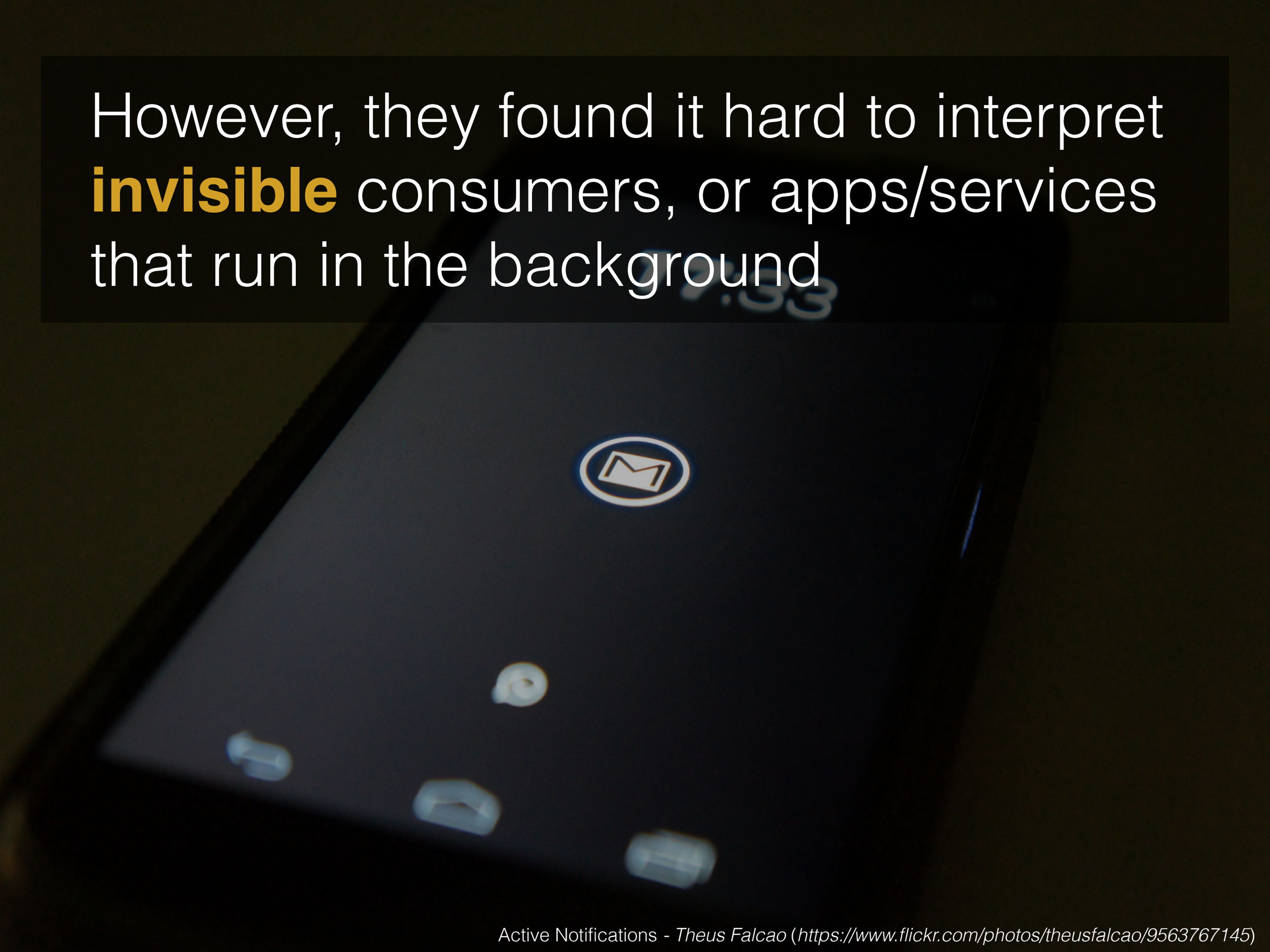




“When it comes to streaming of things from YouTube, stuff like that, I know that takes a lot of data.

-P14”

However, they found it hard to interpret **invisible** consumers, or apps/services that run in the background



Active Notifications - *Theus Falcao* (*https://www.flickr.com/photos/theusfalcao/9563767145*)

I don’t understand how Facebook Messenger works. I think it’s off and then all of a sudden you just notice the chat comes on.

- P29

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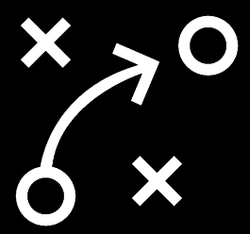

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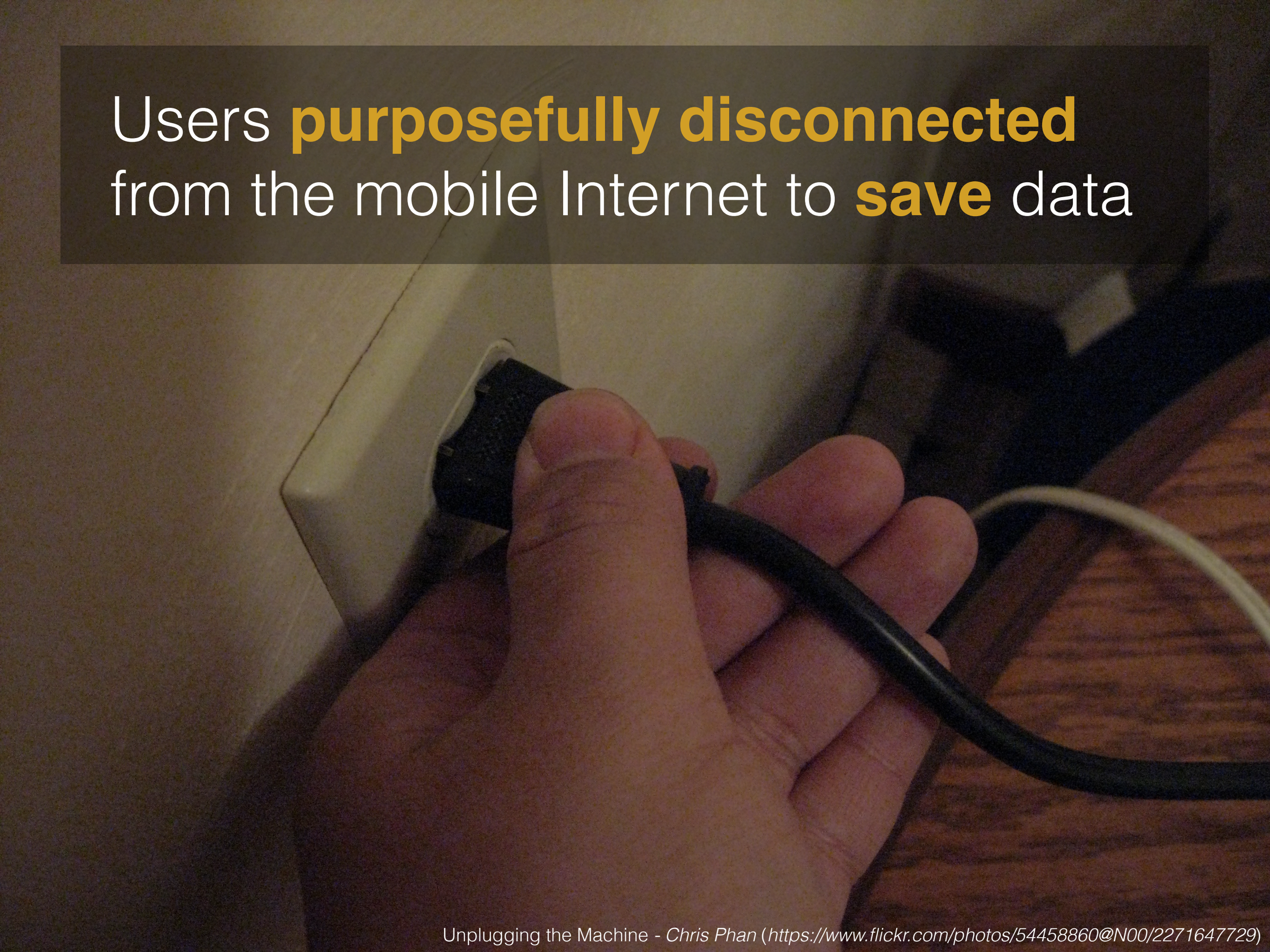
Users **purposefully disconnected** from the mobile Internet to **save** data

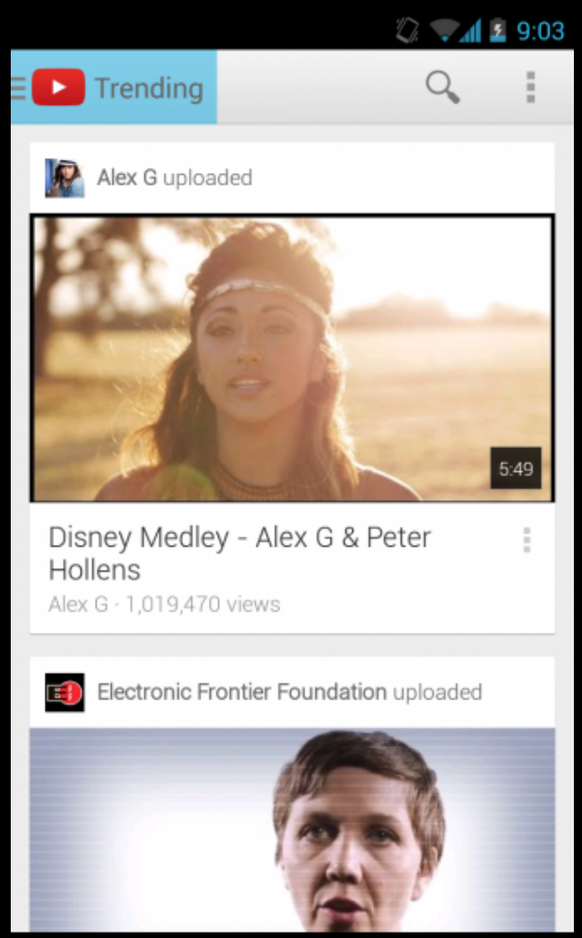


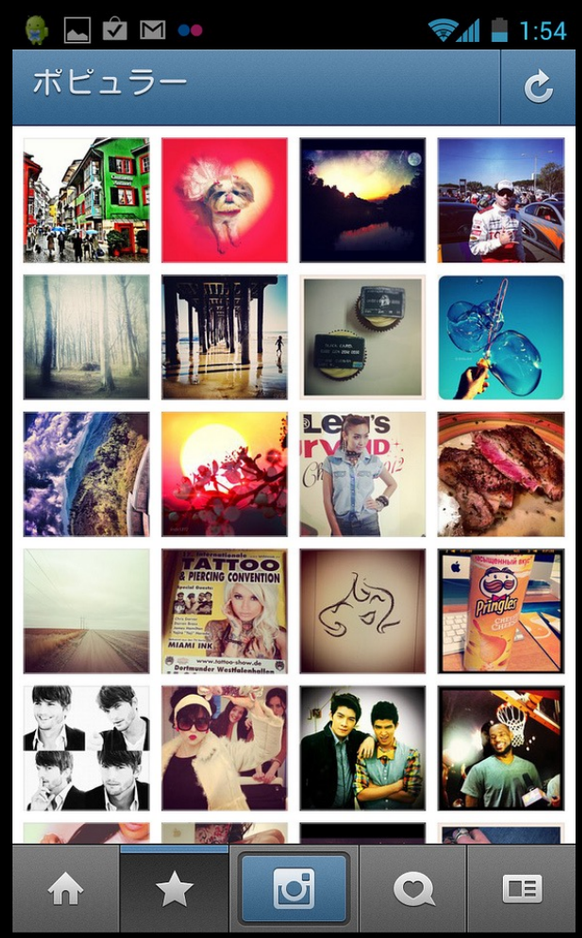
Unplugging the Machine - *Chris Phan* (*https://www.flickr.com/photos/54458860@N00/2271647729*)

I keep my data connection on when I’m chatting or messaging, but when I’m busy, I put it off.

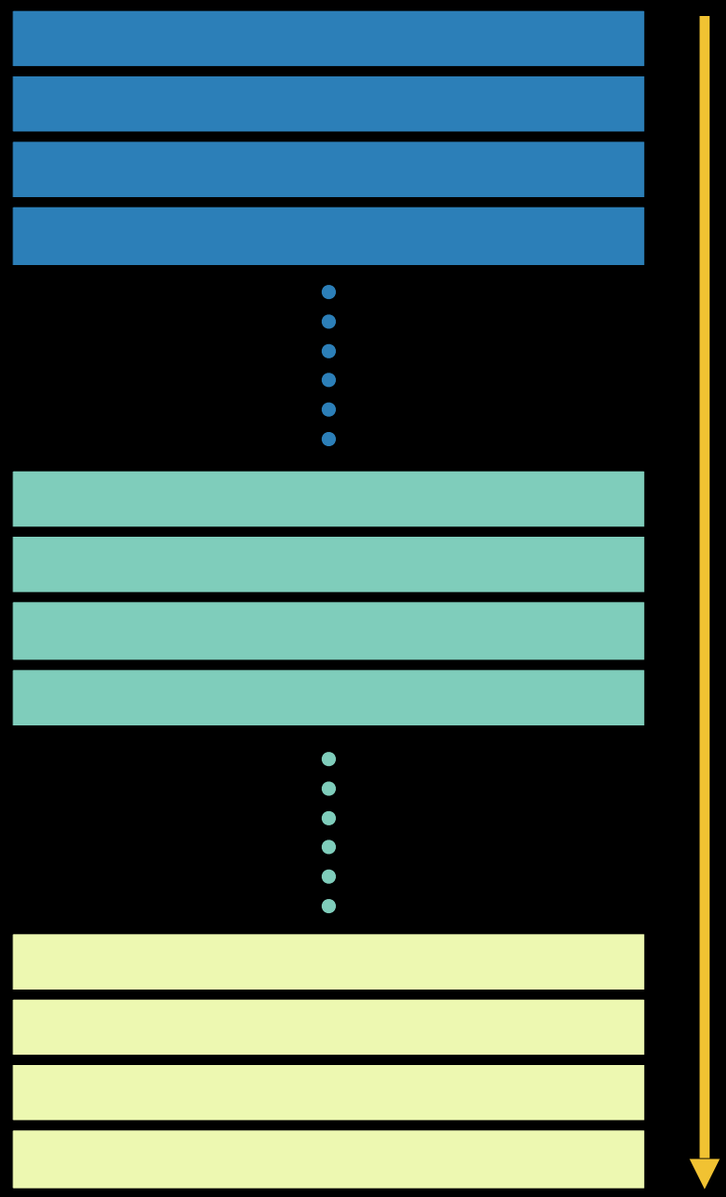
- P10

Because of their knowledge, users **avoided** using data intensive apps



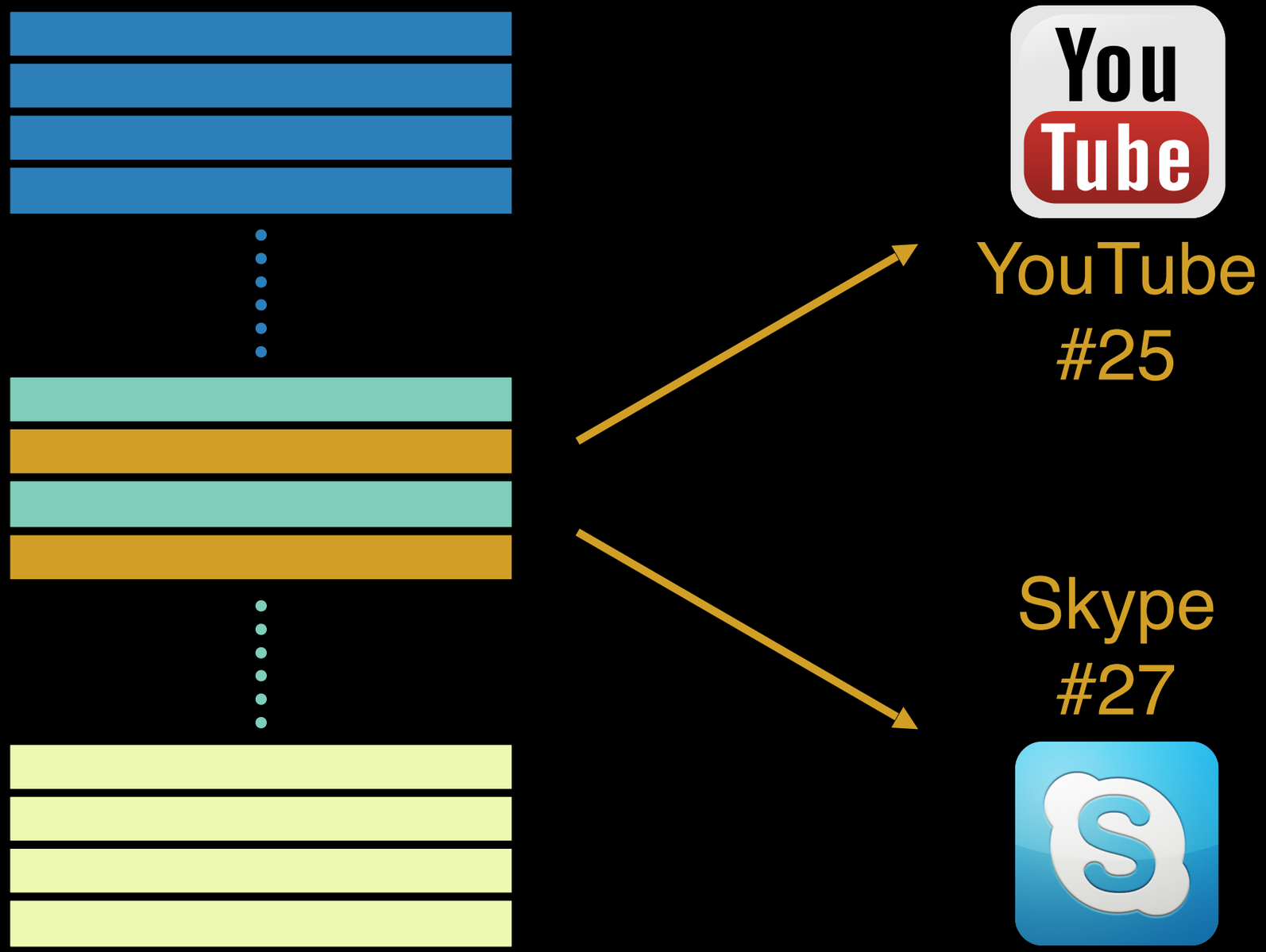


My Speed Test

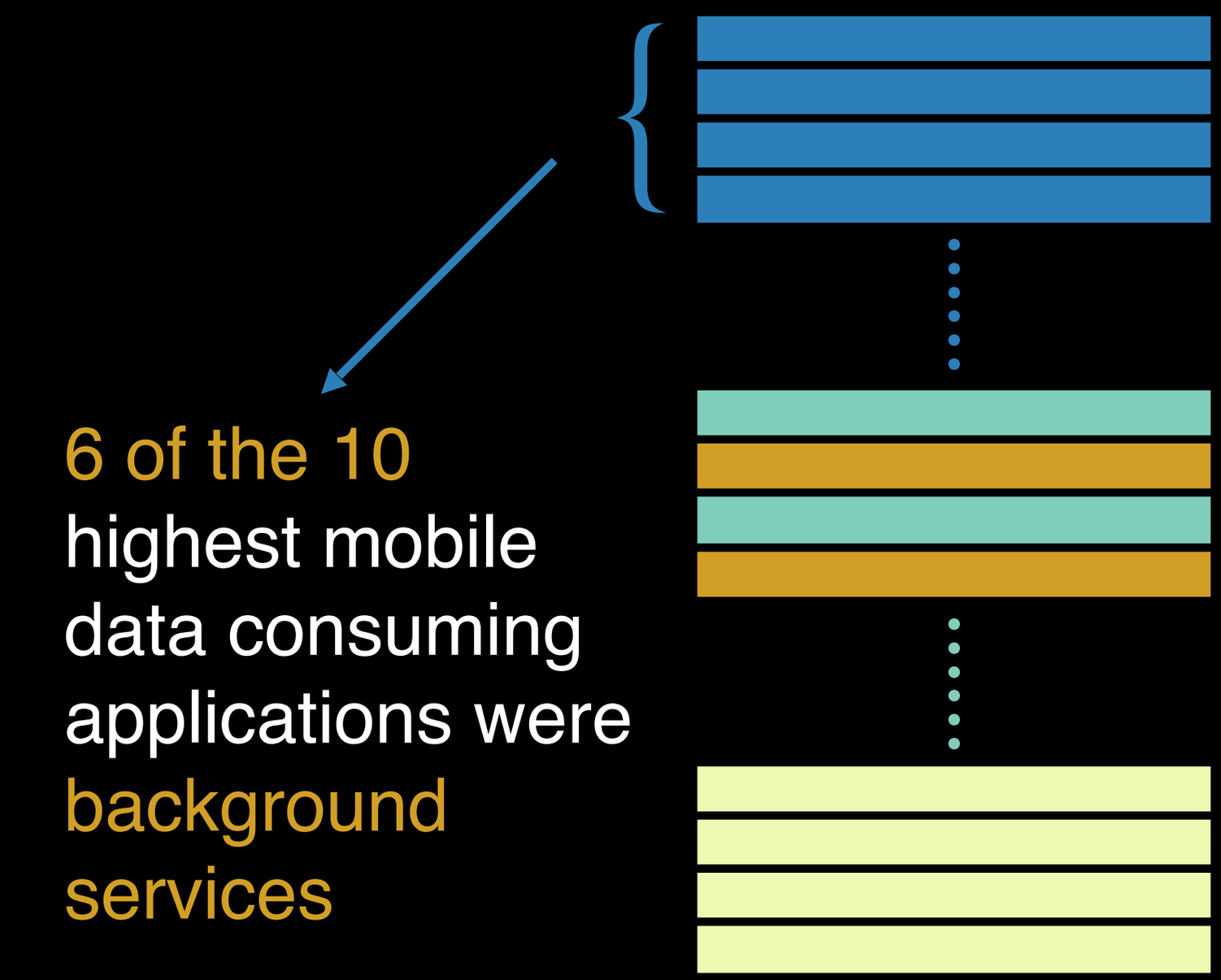


Decreasing order of median daily data usage

My Speed Test: Overall Usage



My Speed Test: Mobile Data



6 of the 10 highest mobile data consuming applications were background services

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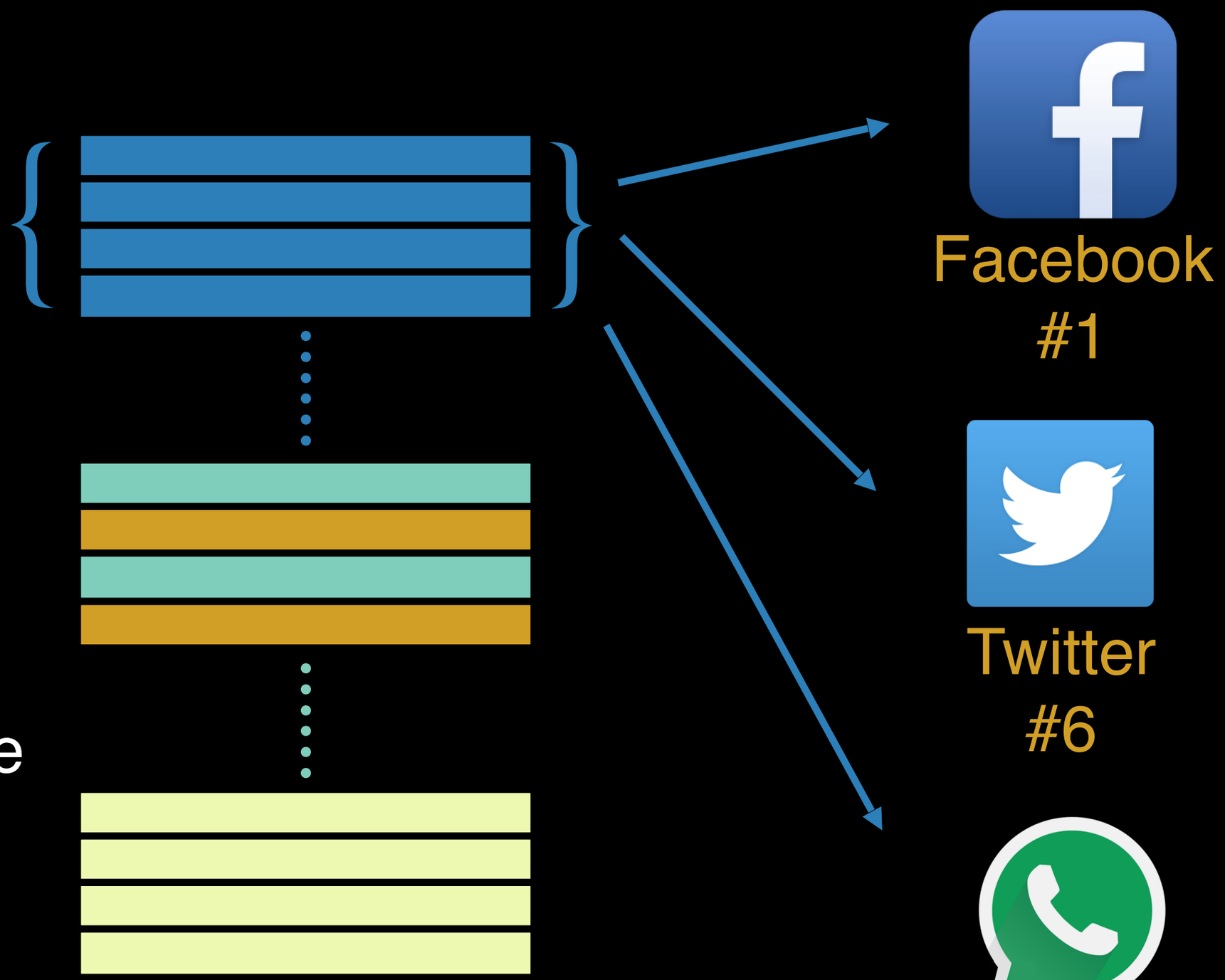

Facebook
#1

Twitter
#6

WhatsApp
#10

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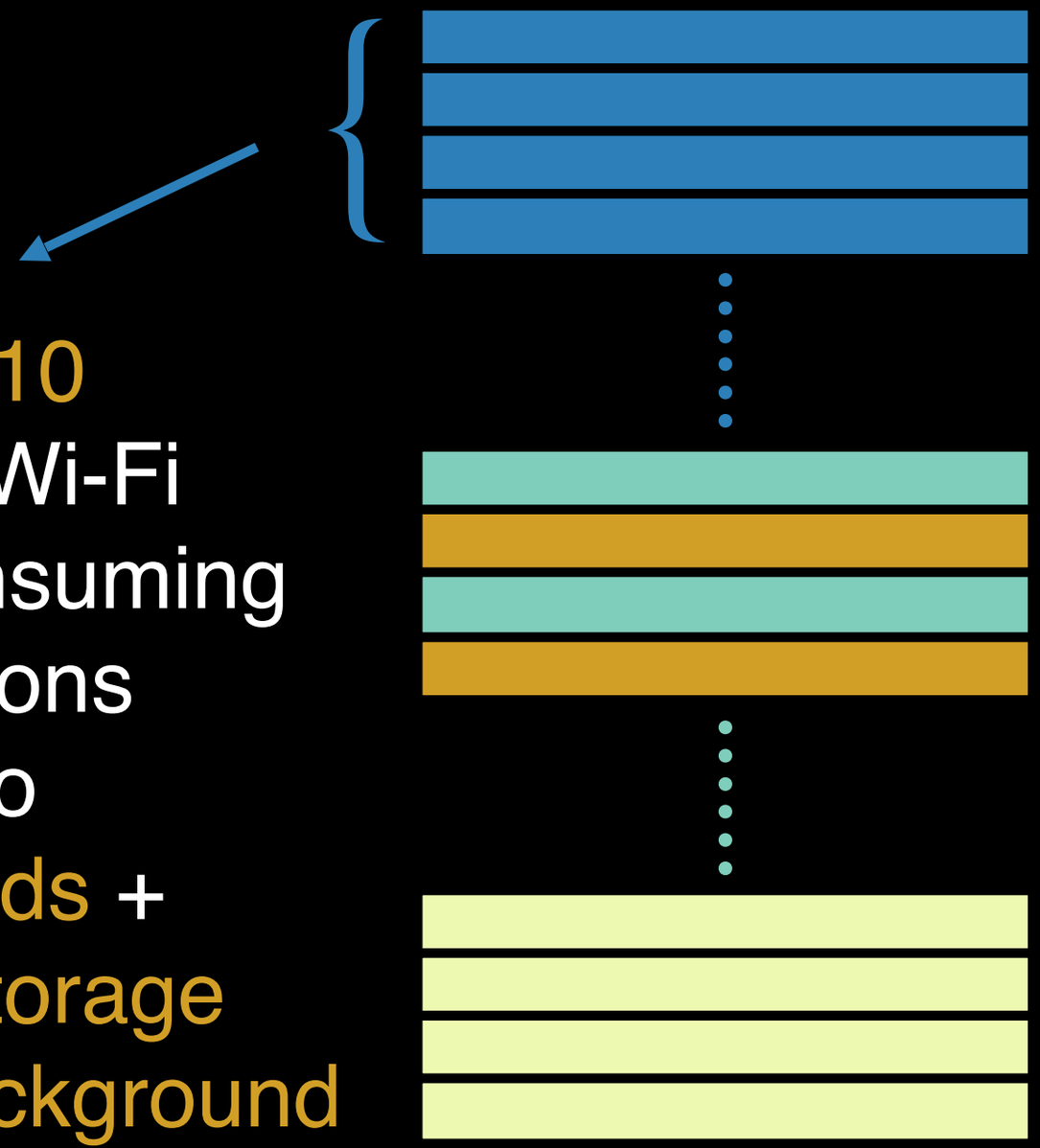
My Speed Test: Wi-Fi

5 of the 10 highest Wi-Fi data consuming applications related to downloads + media storage (also background services)



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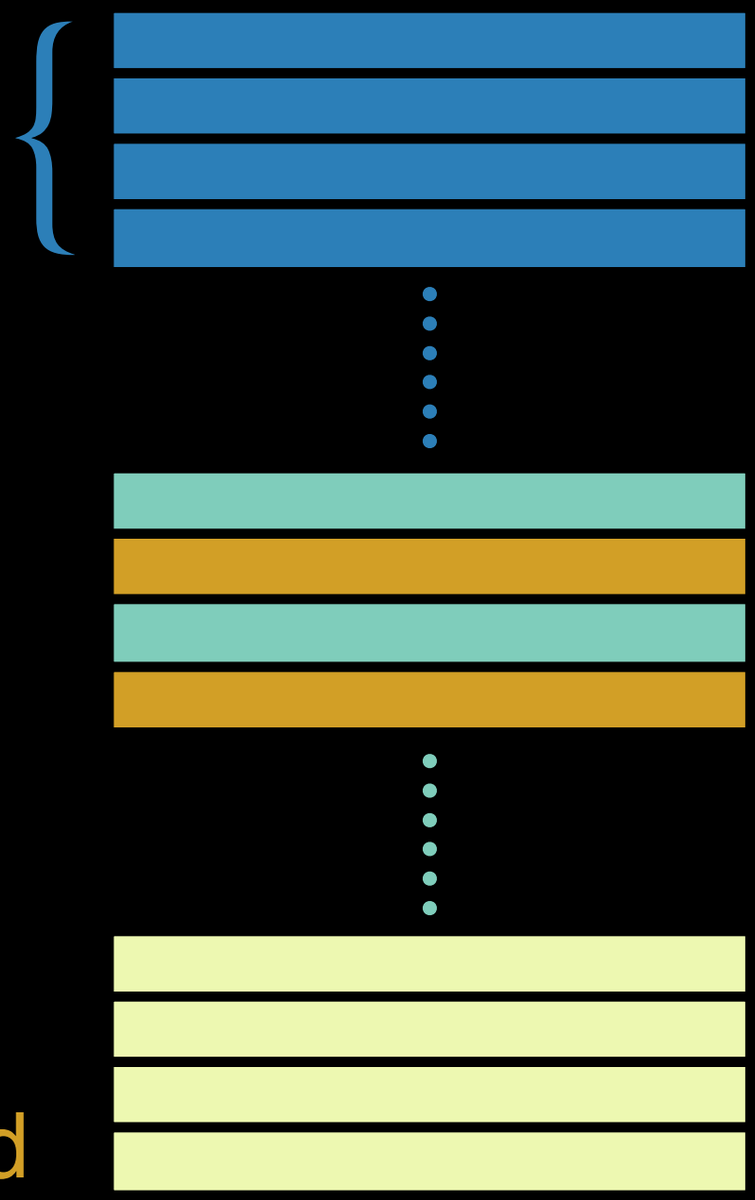


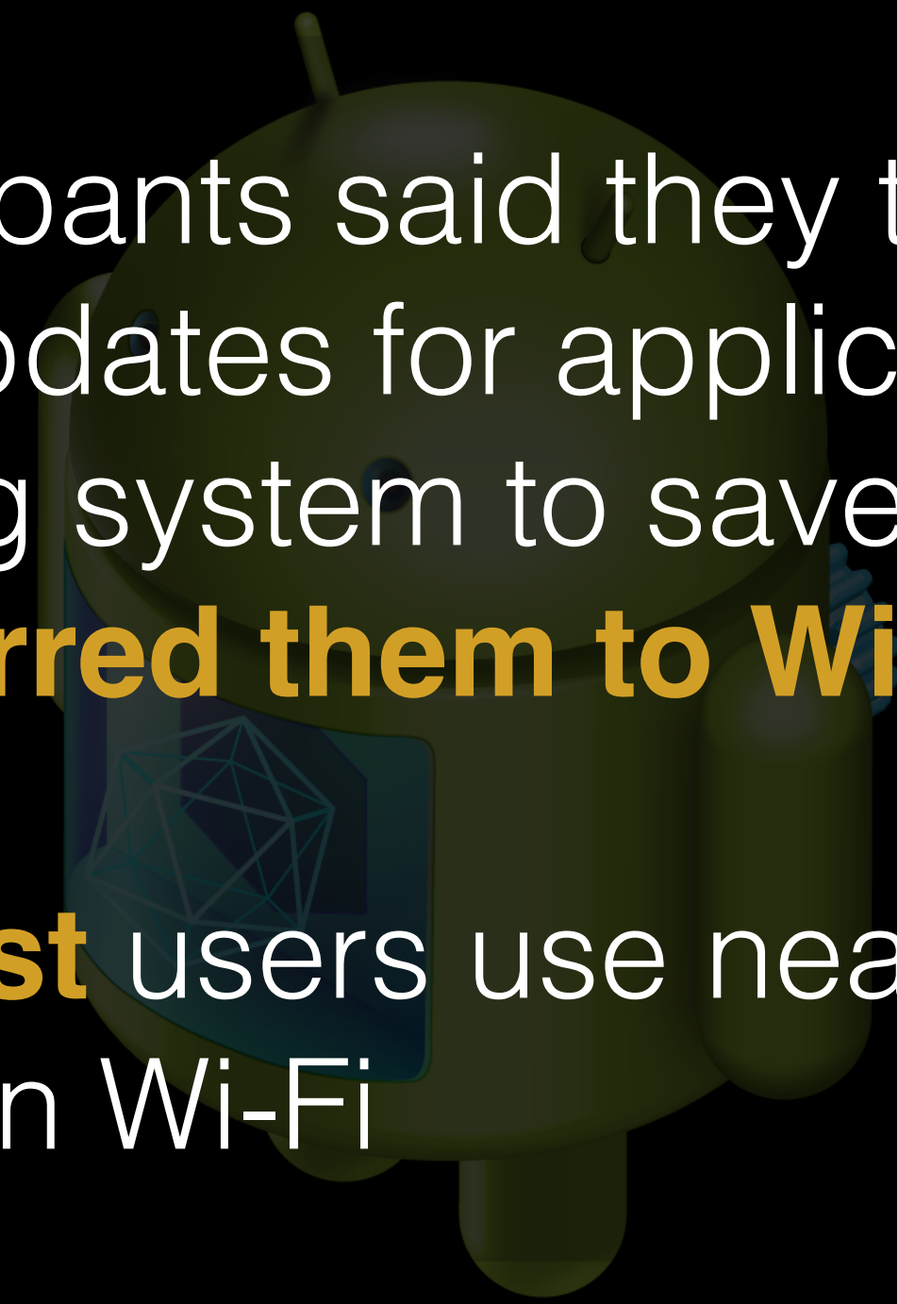
Facebook #6

Twitter #7

Google+ #10

Many participants said they they **disabled** automatic updates for applications and the operating system to save on mobile data or **deferred them to Wi-Fi**

MySpeedTest users use nearly **twice** as much data on Wi-Fi



> If you do change your settings correctly, your Android phone and tablet will update automatically, and I have noticed that my data sometimes drops.
>
> - P19

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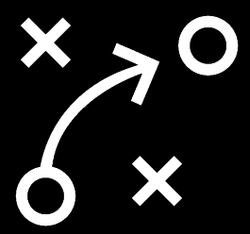

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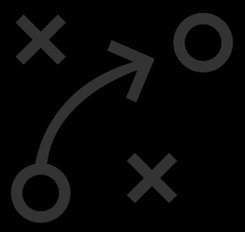

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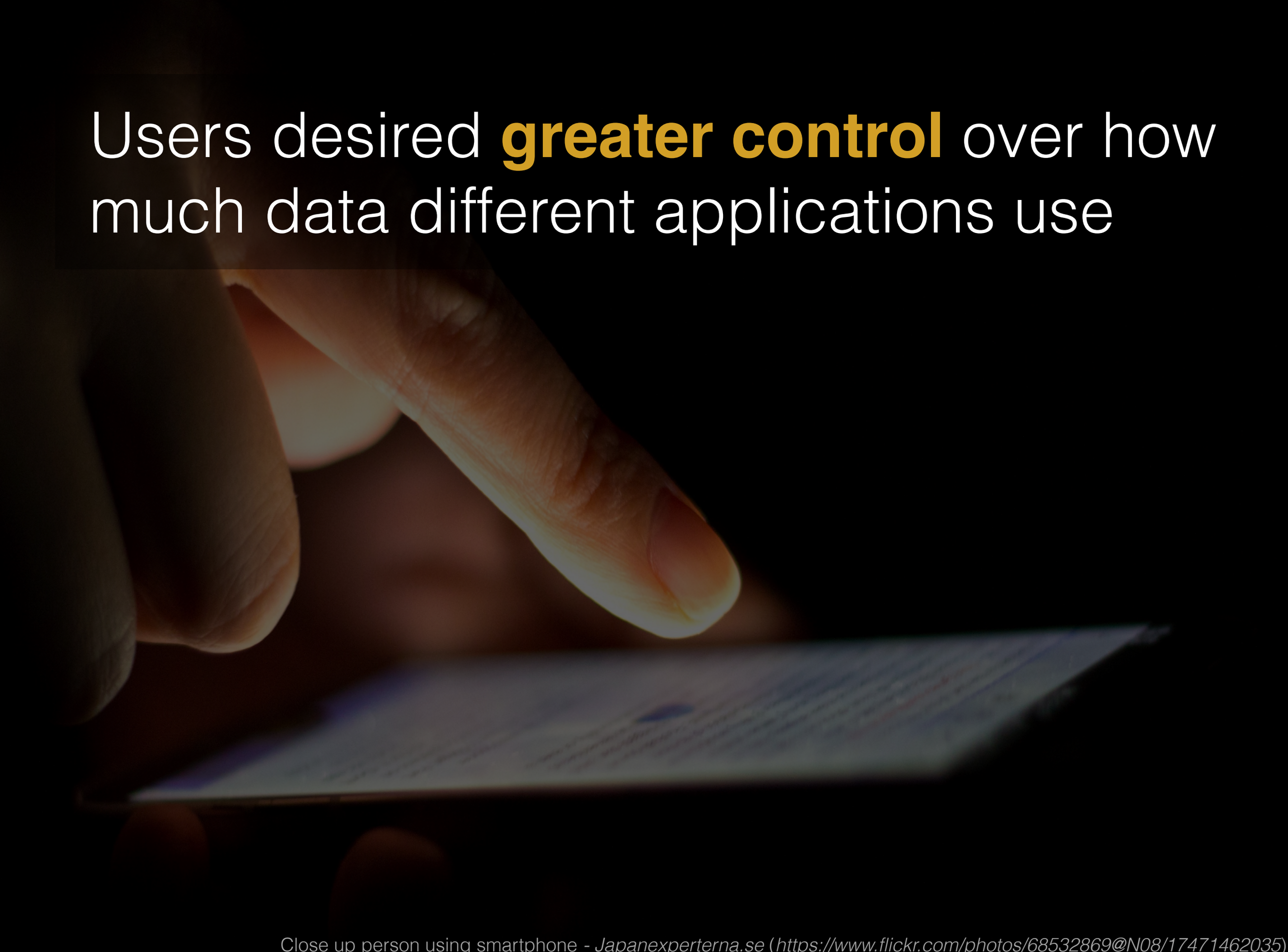
Most users tracked usage by **repeatedly viewing** their data balances (e.g., before and after a purposeful disconnection)

Only a few participants used third-party tracking tools

Tools - *Tontographer* (*https://www.flickr.com/photos/36247316@N00/3108399560*)

Users desired **greater control** over how much data different applications use



Close up person using smartphone - *Japanexperterna.se* (*https://www.flickr.com/photos/68532869@N08/17471462035*)

I want to be able to specify how much data I want a particular app to use in a particular month. So I want my WhatsApp application to be dedicated 20 MB worth of data every month.

- P13

Implications for Design

Costs influence **how** users get online and create **purposeful** disconnection

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Reduce costs using ‘**Slim**’ apps

Facebook

Launches a 252KB Android app titled

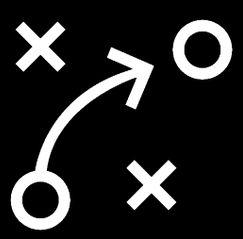
'Facebook Lite'

Implications for Design

Costs influence **how** users get online and create **purposeful** disconnection

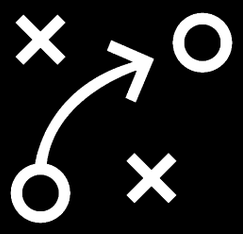
Reduce costs using **‘Slim’** apps and **Zero-rating**

Implications for Design



Users employ a variety of strategies to **reduce** data usage

Implications for Design



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Tools to help software developers measure apps' data usage under various network conditions

Implications for Design

Users seek **greater control** over data usage

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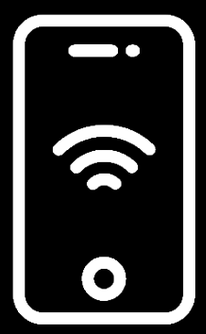

Options to set “Wi-Fi only” or “mobile-data only” and limit background usage during app installation

Questions?

Arunesh Mathur

@aruneshmathur

http://aruneshmathur.co.in

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Google

The Noun Project icons credits: Brennan Novak, Sarah Abraham, Emily Haasch, Scott Lewis, Julia Stoffer, Luis Prado, Jetro C Quirós, and Qing Li