

# Data Driven Decisions in Testing



@heather\_reiduff



HeatherReiduff.com



HeatherReiduff.bsky.social





Alt text: leafy green vegetables growing in soil.



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# Cows?



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Alt text: a person kneeling next to a sheep

**How do we avoid ending up in other pastures?**



# 01

## Where do you get that data?

# Firestore

Device	Users
(other)	552406
iPhone 11	113100
iPhone 13	85164
iPhone 12	75864



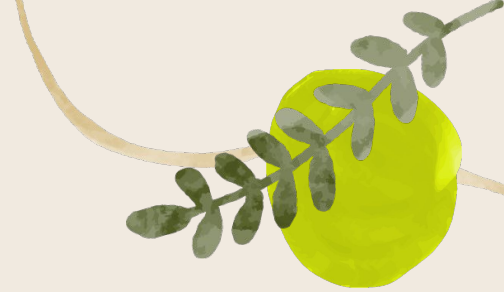
# Firestore

Platform	Users
iOS	807855
Android	253849



# Firestore

OS with version	Users
iOS 16.....	801467
iOS 15.6.1	88875
Android 12	75057
Android 11	32673
Android 13	117104





02

# How do we use that data?



Find important problems quickly!



**Good testing!**

# Making decisions

## Reversible

- Easier to mitigate risk
- Get something out quickly

## Not reversible

- Evaluate more carefully
- Assess the risk in more detail

# Where do I test?

- Use the data
- Range of operating systems
- Different screen sizes
- Pick a subset of devices
- Cover highest risk





# Close old bugs!

“User on Android 8 can’t do...”

# “App crashing on Huawei”

## Problem

Huawei devices experienced the app crashing regularly - logged in 2020

## Solution

Firestore - 0 people using our app with that device in 2022

# Eliminate noise

- Focus on what we need to from a quality perspective
- Improves morale in team



03

**How are we going  
to use this to drive  
improvements?**

# Build data into your routine

- Know it's reliable
- Be familiar with the tools
- Use it proactively rather than reactively
- Uncover the risks

Classes ▾

Today

15

Sun

16

Mon

17

Tue

18

Wed

19

Thu

20

Fri



### Abs

1hr • John Shoe • Main  
Mushroom • All Levels

08:00

### 戰繩燃脂訓練 LP Battle Rope Elite - with Chubby Dragon [TEST]

1hr • 2 trainer Mobile • Heather  
Test Facility • All Levels

08:00



Timetable



Bookings



Memberships



Community



Store

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Classes ▾

Today 12 13 14 15 16 17 18 19 20 21 22 23 24

Thu Fri Sat Sun Mon Tue Wed Thu Fri Sat Sun Mon Tue

**Abs**  
1hr · John Shoe · Main Mushroom · All Levels  
08:00

**戰繩燃脂訓練 LP Battle Rope Elite - with Chubby Dragon [TEST]**  
1hr · 2 trainer Mobile · Heather Test Facility · All Levels  
08:00

Timetable icon Bookings icon Memberships icon Community icon Store icon

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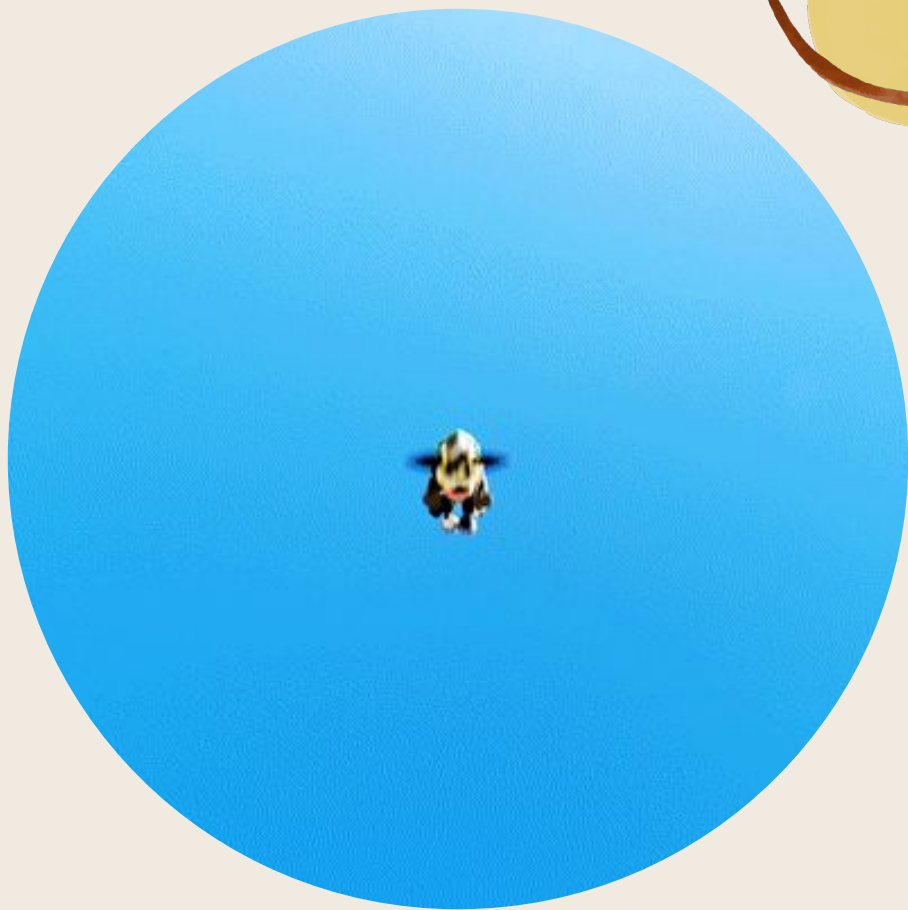
# Devs testing

Devs offer to pick up testing.

I investigate how urgent this is to fix.


# Get me the data

Device model	Users
SM-N975F	6 (0.0003%)



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“Reproduced the issue on a  
Samsung Galaxy Z Fold - Android  
11 App Version 8.2.9 v176.”

**—Customer Support**



# When risk does not pay off?

It can feel like you are caught in the middle of a stampede.

# Notifications everywhere

## Customer Support

The app is essentially down

## Sales & Marketing

Basically the app is down

## Account Executives

Everyone is getting kicked out of the app


# Notifications everywhere

**DMs**

What's happening  
in the apps?

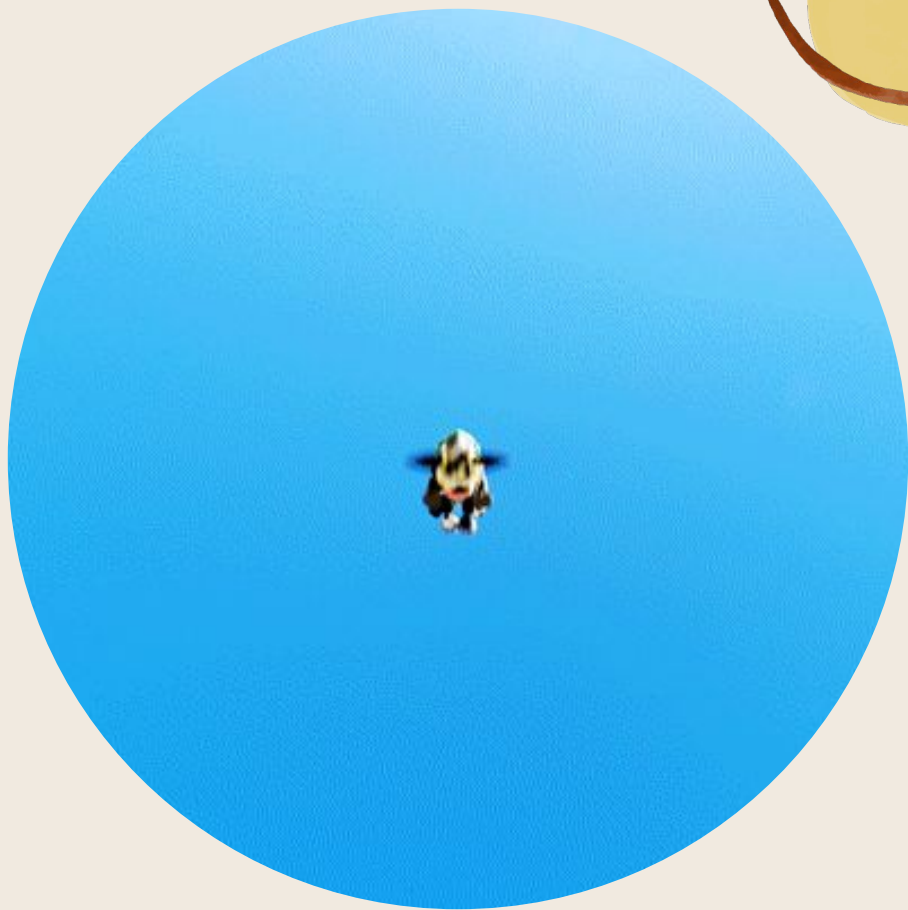
**Slack**

@mobile-eng  
@heather



I've told everyone to uninstall and  
reinstall the app but it is not  
working!

**Bad Advice**



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# Bugsnag



# What is happening?

## Perception

All 2.3 million users were logged out of the app and could not log back in.

## Reality

~ 6000 people logged out.

# What is happening?

## Expectation

User is logged out. User logs back in. All returns to normal.

## Reality

1402 users receive generic error about an invalid reset token.

# How do users behave?

## Expectation

User requests password reset, clicks link in email, resets password.

## Reality

One user hit the reset password API 190 times!



# Where is the gold?

# In Bugsnag

## **We could see**

How expired each authorisation token was.

## **We learned**

There was an underlying issue in our system.



## AUTH\_ERROR

Token expired at "Wed, 12 Oct 2022 14:24:39 +0000"

2 hours ago · Nov 8th, 07:17:46 CET

## AUTH\_ERROR

Token expired at "Mon, 18 Jan 2021 19:56:57 +0000"

2 hours ago · Nov 8th, 07:17:30 CET

## AUTH\_ERROR

Token expired at "Sun, 25 Sep 2022 20:01:29 +0000"

2 hours ago · Nov 8th, 07:17:12 CET



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# Considerations

## Time

How long did a user have between request and expiry?

## Patience

What happened if the user requested a password reset several times?

# More Questions

## Reset password link

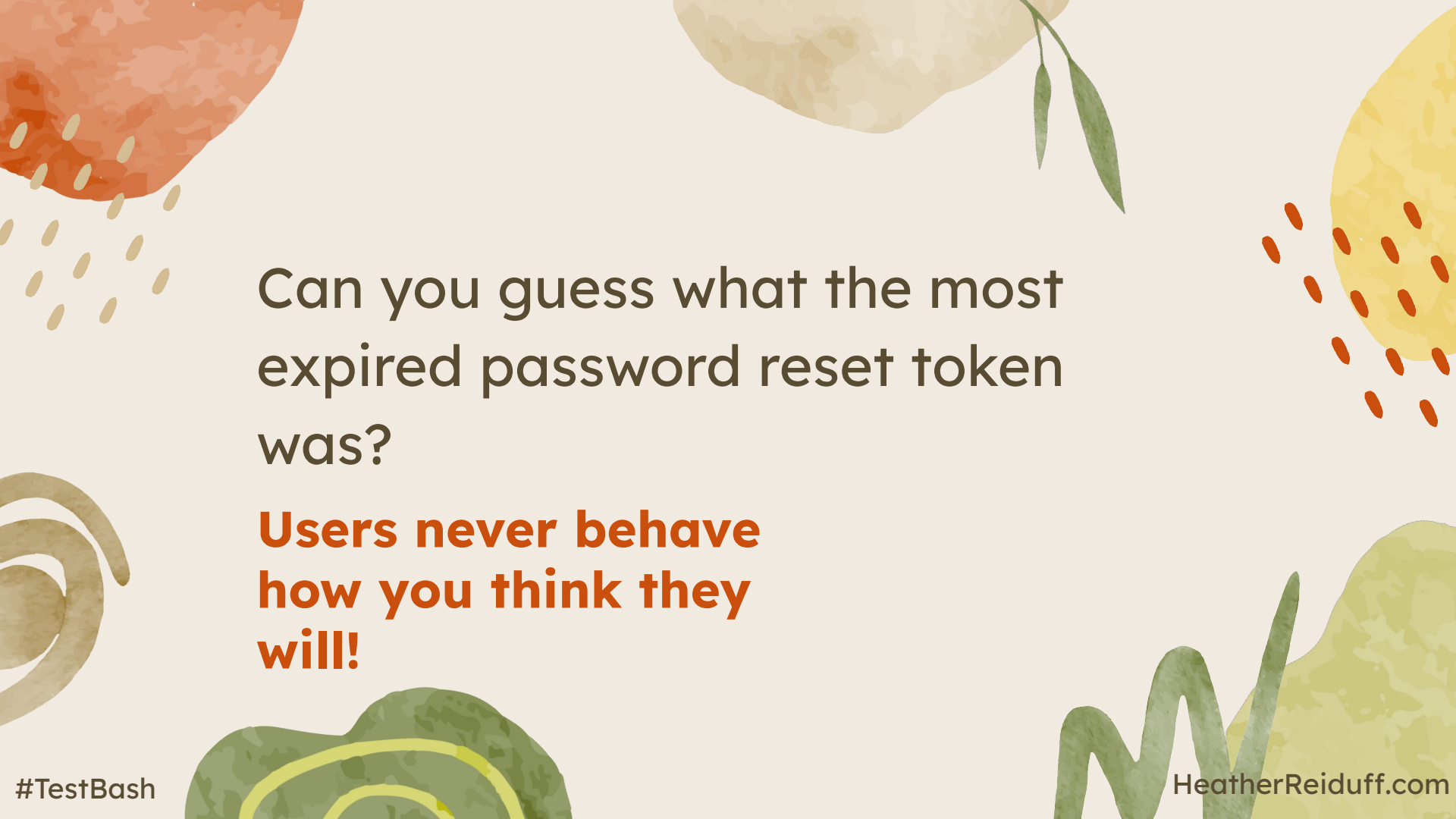
What happened if you requested a password reset several times?

## Security vs Usability

Could we increment the expiry time if another request was processed before the link expired?



**We need  
data!**



Can you guess what the most expired password reset token was?

**Users never behave  
how you think they  
will!**

AVG(auth.pwd\_token\_expired\_seconds) ▼

1,579,515.59736

**18.3 days**

From the  
Honeycomb  
instrumentation



# 650

Individuals had problem  
resetting password

# Breakdown of errors



**Expired**

Reset  
token

**Used**

Already to  
reset the  
password.

**Old**

Email link.

# Where was the risk?

- Relied too much on the data
- Assumed user behaviours
- Assumed we had better instrumentation!
- Wanting to avoid huge support queues over Christmas





04

**What if I could do  
it all again?**

# How would I test differently?

## Personas

- Impatient
- Forgetful

## Full flow

- What happens when I do....

# New release plan


- Release on Monday!
- Don't wait until password reset flow is fixed - it was already a known bug!
- Ask SRE to add instrumentation for errors





05

**How you can use  
data to make  
decisions**



# Don't worry about perfection

We're just looking for better  
decisions

# Ask your team

- How do we make decisions?
- How could we improve how we make decisions?
- How can we introduce a more data informed approach to decision making?

# Get familiar with the data

**What is  
good?**

Use your tester  
mindset

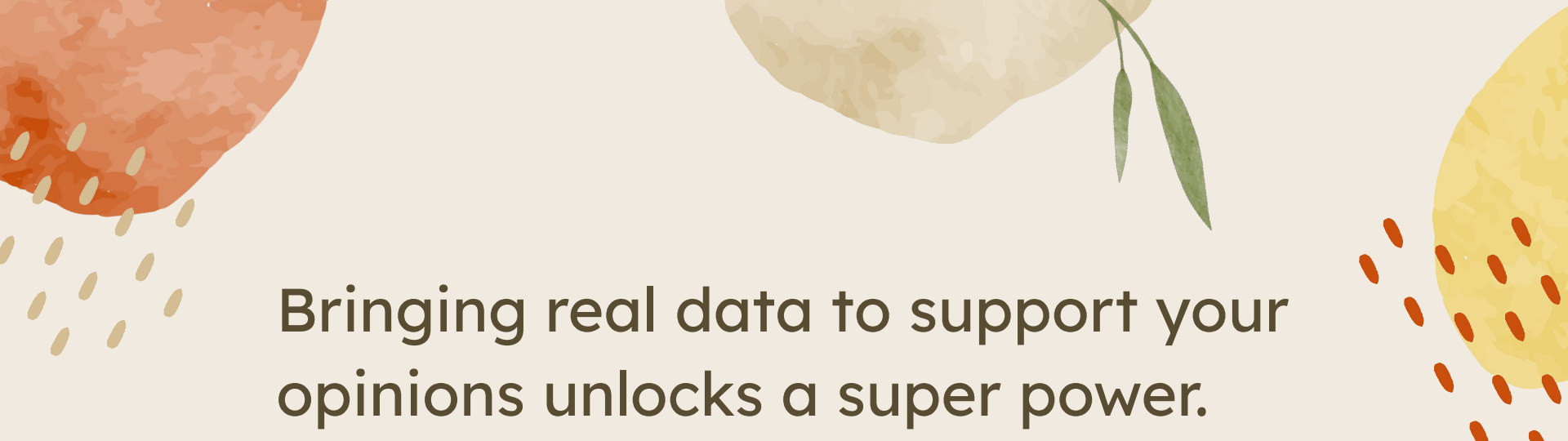
**What is  
bad?**

Ask questions

# Facilitate conversations

- Talk people through the data
- Explain the decision making process





Bringing real data to support your  
opinions unlocks a super power.



# Learn!





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**Thank  
You**

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