Google

UX Schweiz Last Thursday Talks
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# Tips for Good Metrics

## How to think like a Quant UXR

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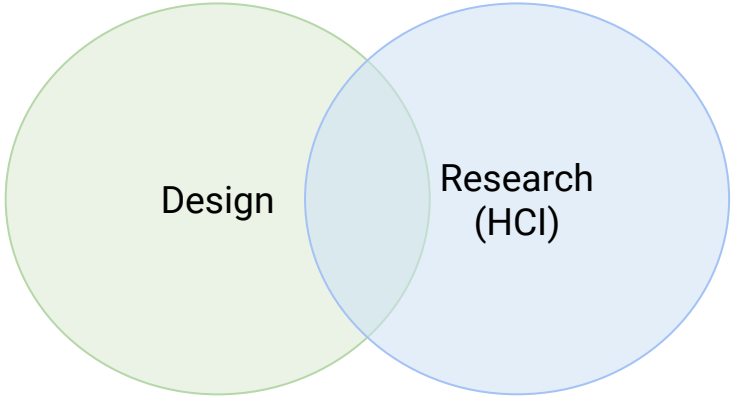
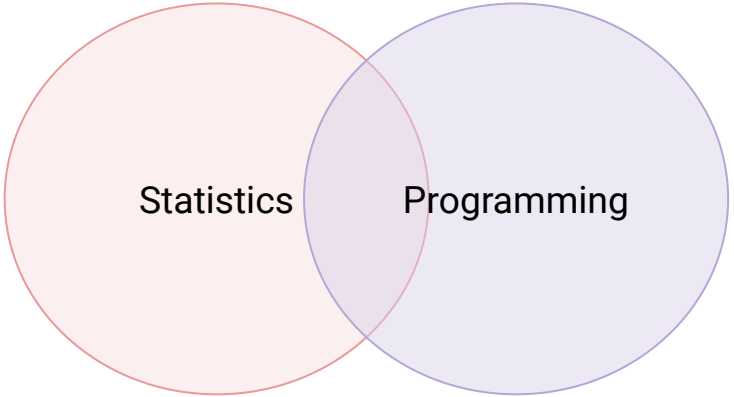
# UX and Data Science




User Experience (at Google)

1. Research: Understand the user
2. Design: Make user-friendly interfaces

*Sometimes lacks measurement expertise.*

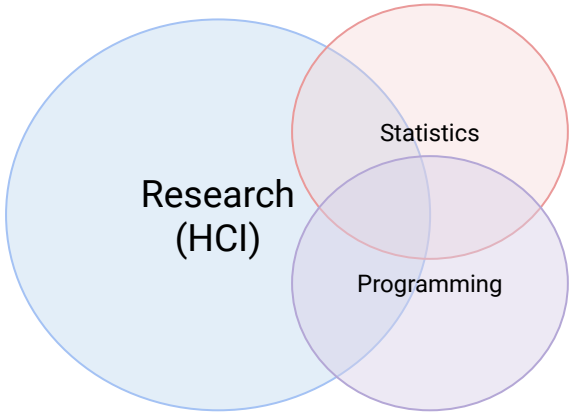



Data Science

1. Statistics: Understand data changes
2. Programming: Process data

*Sometimes lacks user-centered methods expertise.*

# UX with Metrics: Quant UXR




Quantitative User Experience Researchers:

1. Understand user behaviors at scale
2. Evaluate different user interfaces
3. Show the impact of UX on the product

Quant UXR Methods:

1. Logs Analysis (A/B studies, correlations)
2. Surveys (satisfaction, intent)
3. Large-scale usability testing (crowdsourcing)

# Caveat: Metrics != Truth

1. **Truth is not directly measurable**. We only have evidence of truth.
2. **Triangulate** with multiple metrics **and other research**.
3. Some metrics are **closer to the underlying concept**; prioritize these.
4. **Your story is about the underlying phenomenon**, told through the metrics.

## Goodhart's Law

*"When a measure becomes a target, it ceases to be a good measure."*

# Tips for Good Metrics

1. Use Clarifying Frameworks
2. Aim for Understandable Metrics
3. Find Meaningful Time Periods
4. Connect with Leading Indicators
5. Plan with Extrapolated Goals

*This talk covers how to define metrics, which is one piece of the larger process*

# Clarifying Frameworks

Challenge: Which perspective is right?

I want to know the business is successful. Focus on revenue and growth metrics.

We're spinning up the product now so latency and errors are critical to track and improve.

We should capture the user's successes and failures, and know if they are happy with us.

# Clarifying Frameworks

Challenge: Which perspective is right?

*None of these are right. They all focus on the metrics solution. Instead, focus on the product objectives, and collaboratively build metrics that capture those objectives.*

I want to know the business is successful. Focus on revenue and growth metrics.

We're spinning up the product now so latency and errors are critical to track and improve.

We should capture the user's successes and failures, and know if they are happy with us.

# Clarifying Frameworks: Goals - Signals - Metrics

## Goal

What is a user-centered objective for your product?

## Signal

What user behaviors indicate progress toward goal?

## Metric

Which formulas (based on the signal) measure success?

Rodden, Hutchinson & Fu (2010), https://goo.gl/4eva1w

# Clarifying Frameworks: Goals - Signals - Metrics

## Google Search

### Goal

What is a user-centered objective for your product?

*Users quickly find what they need*

### Signal

What user behaviors indicate progress toward goal?

*Length of time before returning to Search after clicking a result*

### Metric

Which formulas (based on the signal) measure success?

Long-Result Click

```
Clicks++
if next_return_time > 5_minutes:
  LRC++
```

Rodden, Hutchinson & Fu (2010), https://goo.gl/4eva1w

# Clarifying Frameworks: Goals - Signals - Metrics

## Android

### Goal

What is a user-centered objective for your product?

*Users keep using the platform*

### Signal

What user behaviors indicate progress toward goal?

*Percent of phones online, before and after*

### Metric

Which formulas (based on the signal) measure success?

1-21-7 Retention

```
COUNT(phones_day21-28)
/ COUNT(phones_day1)
```

Rodden, Hutchinson & Fu (2010), https://goo.gl/4eva1w

# Clarifying Frameworks: HEART and Categories

## **HEART** Metrics

Happiness: People enjoy your product

Engagement: People often use your product

Adoption: People are starting to use your product

Retention: People keep using your product

Task success: People complete what they want to do

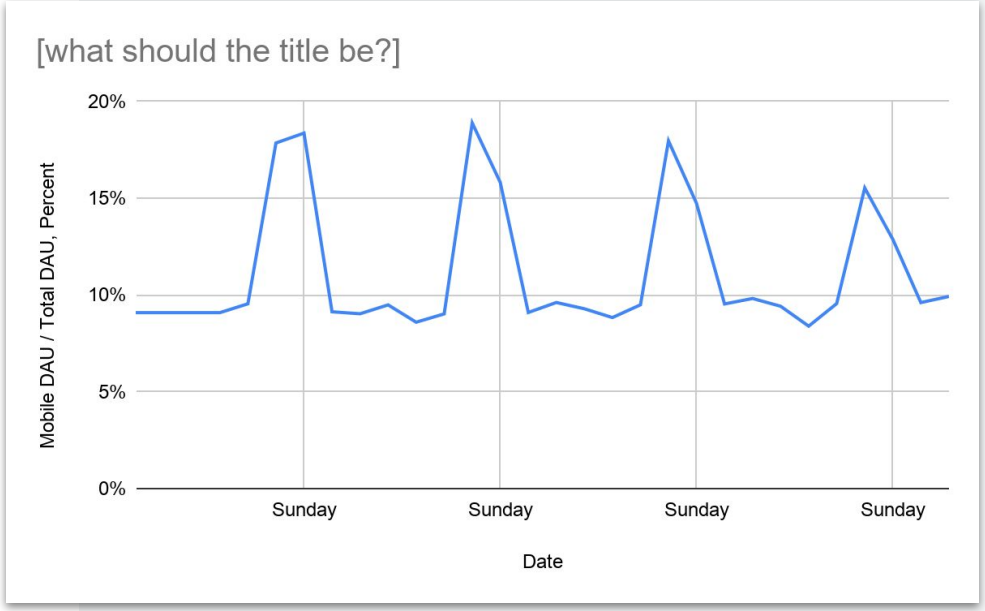
Rodden, Hutchinson & Fu (2010), https://goo.gl/4eva1w

# Understandable Metrics

It is not easy to interpret metrics.

Challenge: What does this metric show?

What happens on the weekend?




DAU = Daily Active Users

# Understandable Metrics

It is not easy to interpret metrics.

Challenge: What does this metric show?

What happens on the weekend?

*NOT: a higher number use mobile*


DAU = Daily Active Users

# Understandable Metrics

It is not easy to interpret metrics.

Challenge: What does this metric show?

*The proportion of Mobile DAU from Total DAU*

1. *It changes when Mobile DAU changes*
2. *It changes when Total DAU changes*

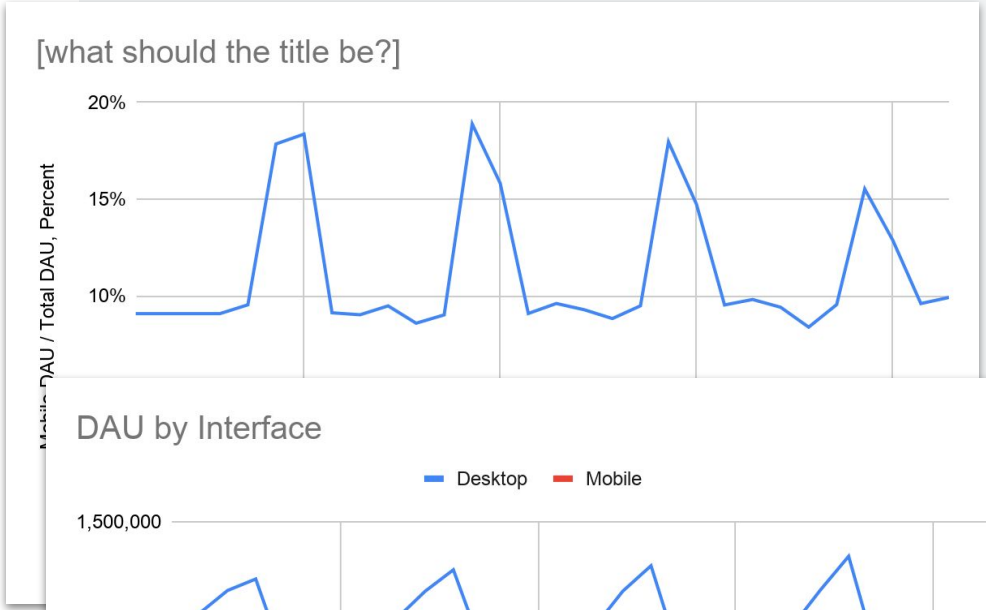
What happens on the weekend?

*A higher proportion use mobile*

*NOT: a higher number use mobile*

## Simpson's Paradox

*The direction of a measurement is opposite of its component parts.*



# Understandable Metrics


## Simple Total

A count, sum, or percentile of an activity

*Daily Active Users*

*Satisfied Users*

## Ratios

A proportion between two Simple metrics.

*Mobile Users %DAU*

*% Satisfied*

## Other Math

Sophisticated calculations, or not directly mapped to users.

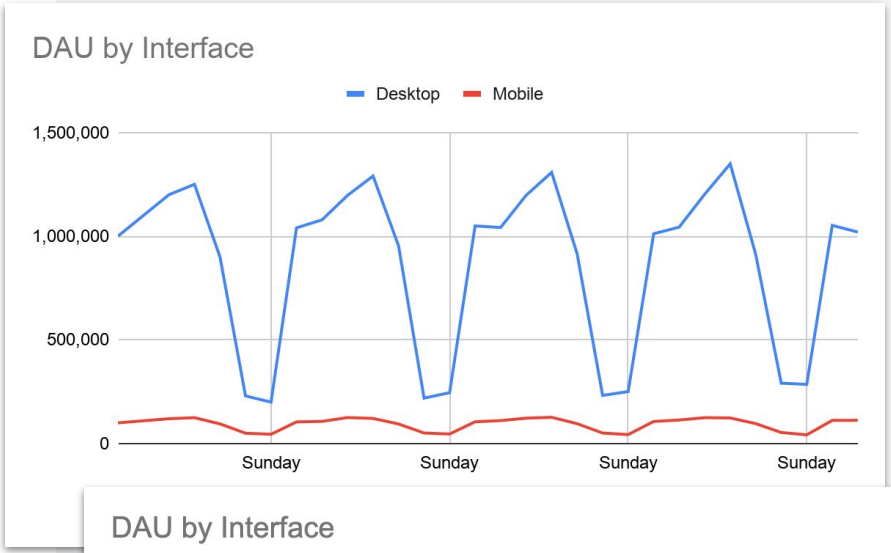
*Enterprise Users*

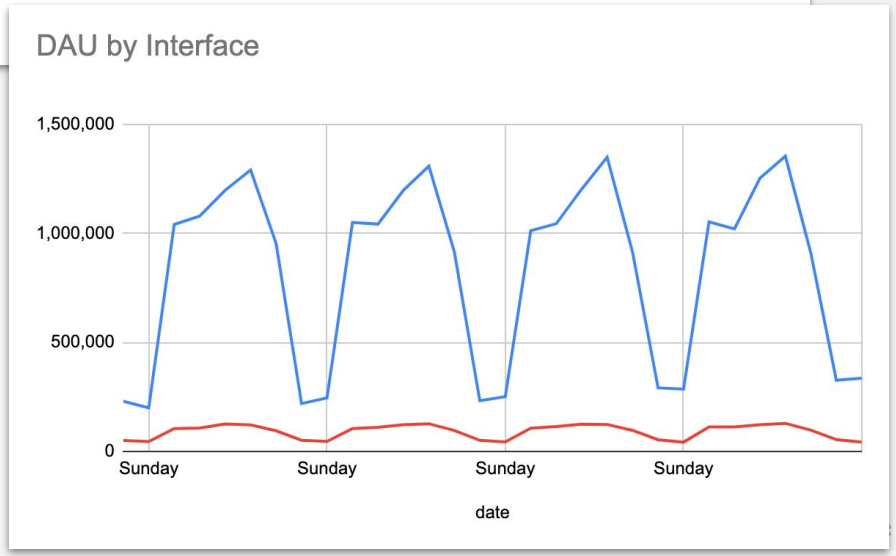
*Average Satisfaction, Net Promoter Score*

# Meaningful Time Periods

30-day actives (30DA): accounts with activity any day within 30 consecutive days.

Challenge:
What is the approximate Desktop 30DA?
Assume users come once per 30 days.



# Meaningful Time Periods

30-day actives (30DA): accounts with activity any day within 30 consecutive days.

Challenge:

What is the approximate Desktop 30DA?

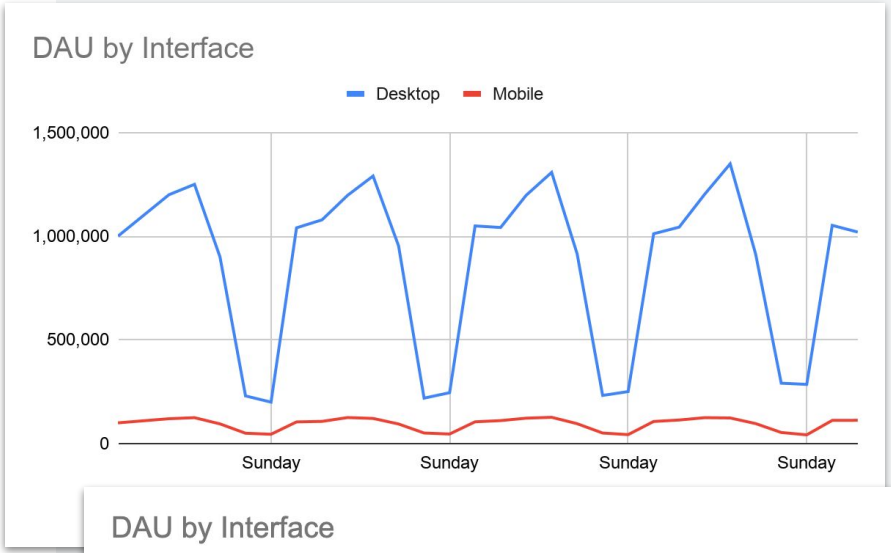
Assume users come once per 30 days.

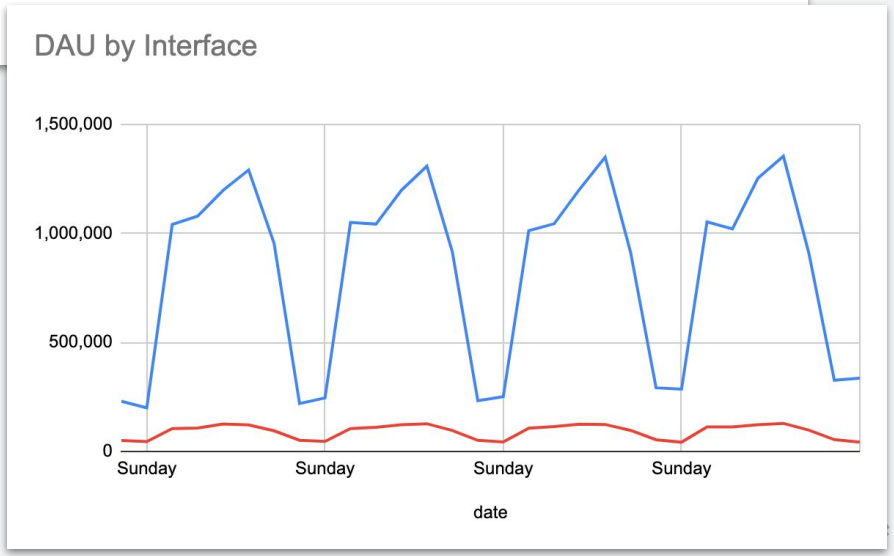
*5.5M per week * 4 weeks ~ 22M; +2 weekdays = 24M, +2 weekends = 22.5M*

*Desktop 30DA varies by 7% based on having 4 or 5 weekends.*

*This is due to a strong day-of-week effect.*

*Most products have a day-of-week effect.*



# Meaningful Time Periods

## Base Time Unit

The core unit of time used to aggregate your data.

*1 Day*

*Quickest to see changes*

## Time Cycle

The number of time units to match the cycle.

*7 Days*

*Immune to effects of the cycle (day-of-week)*

## Cycle Multiples

Multiples of the time cycle that are meaningful to the team.

*28 Days (= 7 x 4)*

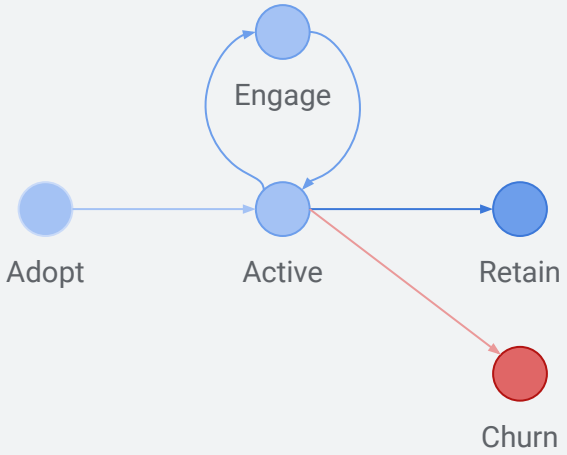
*Capture longer periods meaningful to the team.*

*Other time periods: time of day, day of month, on/off holidays, season of year, multi-year*

# Connect with Leading Indicators

Challenge: What can happen when focusing on metrics at the end of the product cycle?

E.g. Retention or Revenue

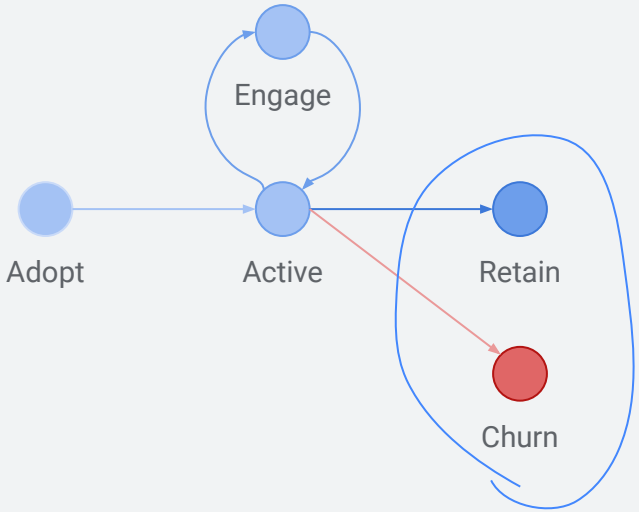


# Connect with Leading Indicators

Challenge: What can happen when focusing on metrics at the end of the product cycle?
E.g. Retention or Revenue

*Churn happens at the end of the use of the product. Problems with the product happen earlier and may build up over time.*

1. *Churn doesn't give a direct cause*
2. *Causes can be detached in time from the final churn*




*Churn happens at the end of the lifecycle.*

# Connect with Leading Indicators

**Leading** indicators show adoption and usage.

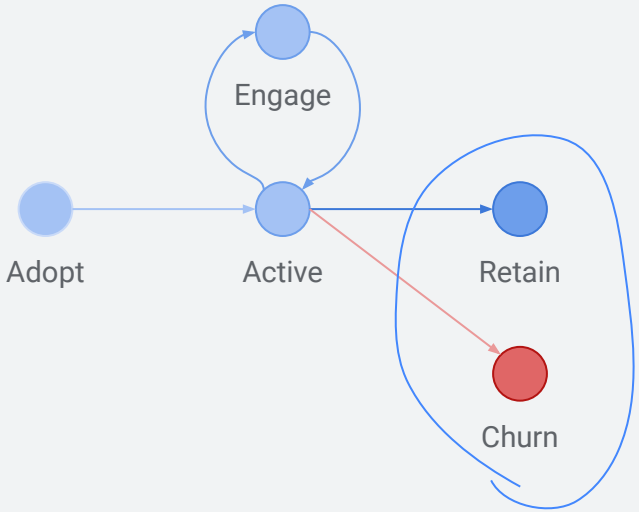
**Lagging** indicators often show final effects.

Tie Leading indicators to Lagging indicators, by telling a story:

1,000 new users

50,000 28DA; 10,000 heavily engaged

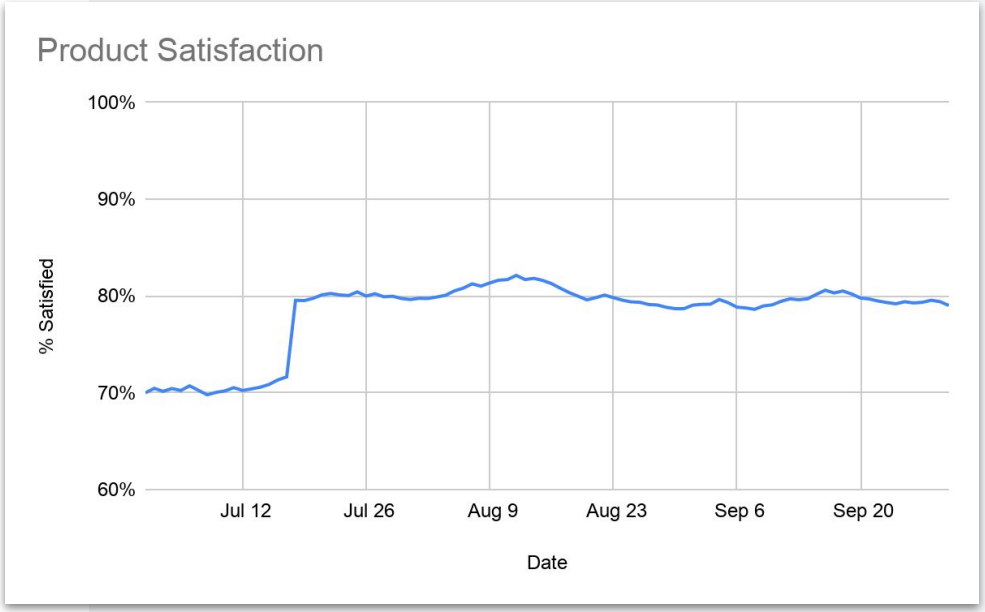
800 churned users, 80% from new




*Churn happens at the end of the lifecycle.*

# Extrapolated Goals

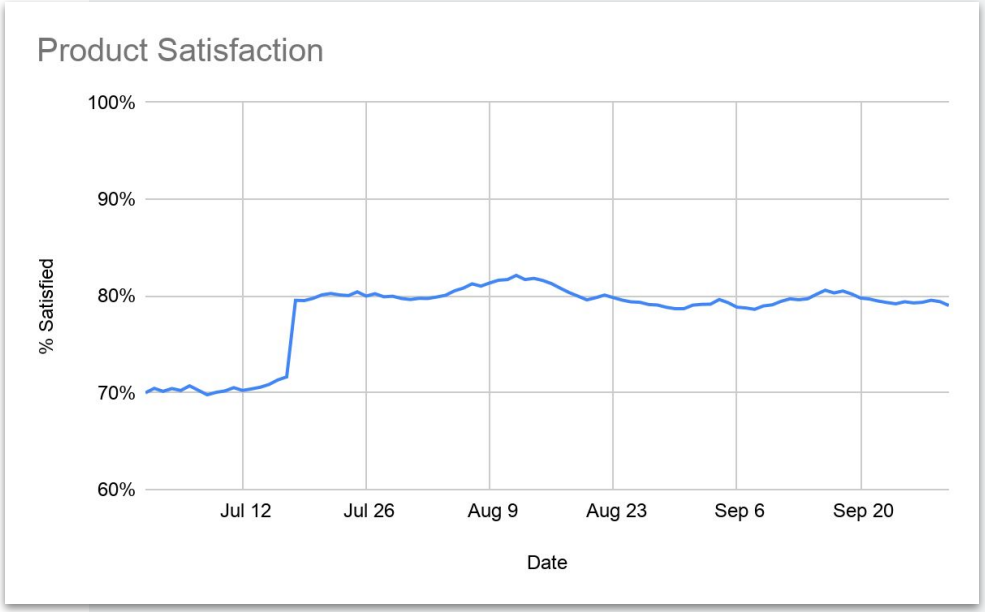
What should we target for satisfaction in Q4?



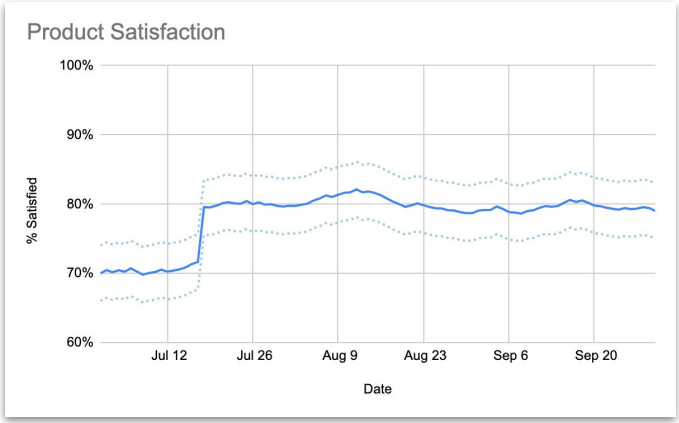
# Extrapolated Goals

What should we target for satisfaction in Q4?

*We don't know enough about the data.*



# Extrapolated Goals




## What is Start?

Where your data is beginning

*80% Satisfied*

*End of Q3*

## What is Effect?

The measured size of impact

*+8% Satisfaction*

*Based off Q3 previous launch,*
*and a Q4 planned launch at the same size.*

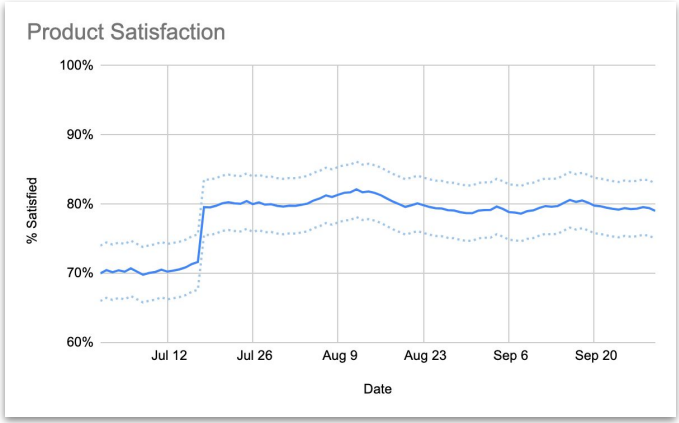
## What is Noise?

Statistical uncertainty, e.g. sampling

*+/- 5%*

*Capture longer periods meaningful to the team.*

# Extrapolated Goals

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*and a Q4 planned launch at the same size.*

## What is Noise?

Statistical uncertainty, e.g. sampling

*+/- 5%*

*Capture longer periods meaningful to the team.*

*Target: at least 83% satisfaction*
*(80% + 8% +/- 5%)*

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# Think like a Quant

1. Mindset: You are an authority
2. Metrics development is iterative
3. Know your objectives for UX
4. Goal: Shape your team's metrics
5. Know high-level metrics trade-offs
6. Understand metrics inter-relationships

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