

Product Analytics

Course Slides

Part 1: Introduction

Part 2: What Should I Build?

Part 3: How is it Performing?

Part 4: Who Should I Build For?

Part 5: How Should I Build It?

Part 1: Introduction

Lecture #2: What is Product Analytics?

Idea Validation ≠ Product Analytics



Notes:

What is Product Analytics?

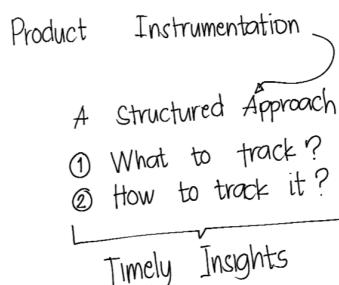
- Actual Product Usage
- Cold Hard Facts

DATA!

01001
10110
01001

Summary

Notes:



Notes:

Notes:

4 Questions Answered

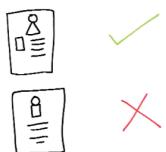
① What to build?

Feature 1 ✓
Feature 2 ✗

② Who to build for?

👤 ✓
🔒 ✗

③ How to build it?



④ How is it Performing?



Sammy

Lecture #7: Product Analytics Building Blocks

Notes:

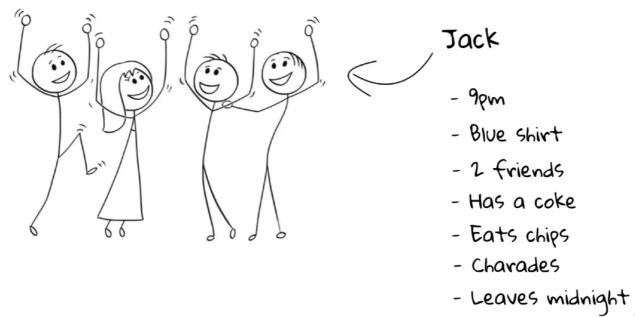
Analytics Building Blocks

Party checklist:

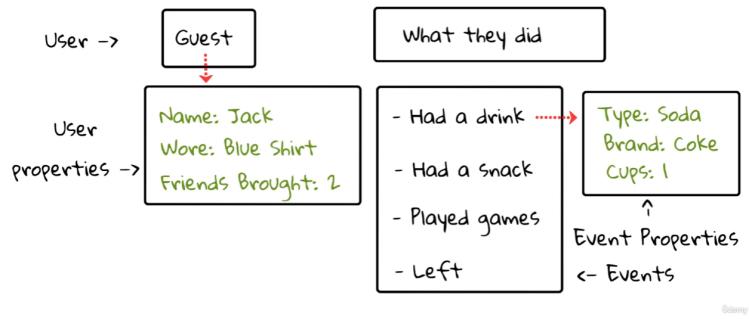
- Friends ✓
- Snacks ✓
- Drinks ✓
- Games ✓



Notes:



Party Analytics



Notes:

We can figure out...

- 1) How much Soda should I buy next time?
- 2) How many games should I plan next time?
- 3) How many friends did each person bring on average?
- 4) Differences between person who had fun and who did not?

What should i track? → What do you want to achieve?

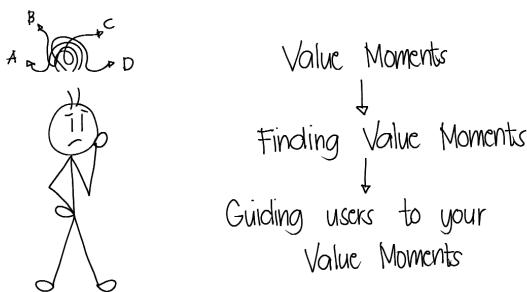
Important: Set your priorities first



Notes:

Part 2: What Should I Build?

Lecture #8: Section Introduction



Notes:

Lecture #9: How Does Your Product Deliver Value?

Notes:

↗ Start by defining your products value

Product Value 😍

New Products ✓

Existing Products ✓

Galaxy

Notes:



Looking for motivation

Galaxy

Notes:



Looking for entertainment

Galaxy

Notes:



Looking for support

Scumby

Notes:

What is at the core of my product?

Identify value behaviors ✓

Identify when it happens ✓

Clear the path to value



Scumby

Lecture #10: What Is A Value Moment?

Notes:

Can Value be Measured?

YES!

e.g. Measuring fun? → Videos Watched
Time Spent

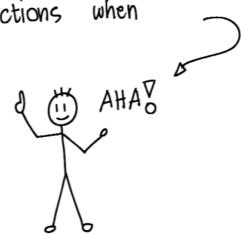
Measuring Anxiety? → Completion Rates
Return Users

Scumby

Notes:

Defining "Value Moments"

- Event / Series of Actions when



Summary

Notes:

Facebook (2008)

Value Moments → 7 Friends → Monthly Active Users
in 10 Days

Experiment to improve this

e.g. People you may know feature



Summary

Notes:

Finding Value Moments

① Study Loyal Users



- What actions did they take?

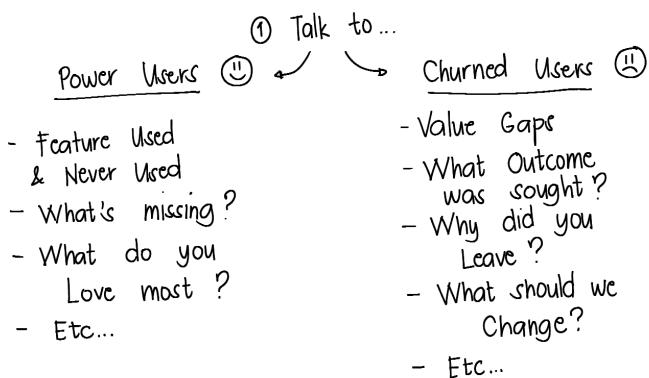
Good Value Moment = Simple

Summary

Notes:

Finding Value Moments

Notes:



Notes:

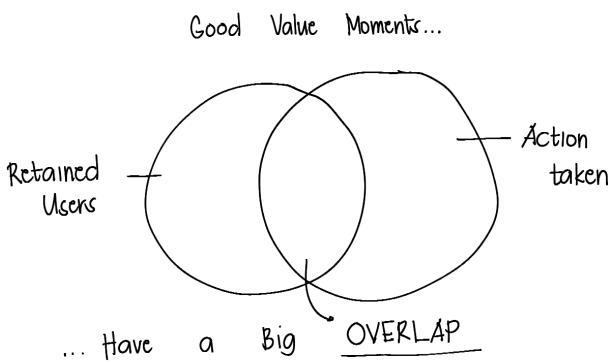
② Check Analytics

① Brainstorm 10-20 Value Moments

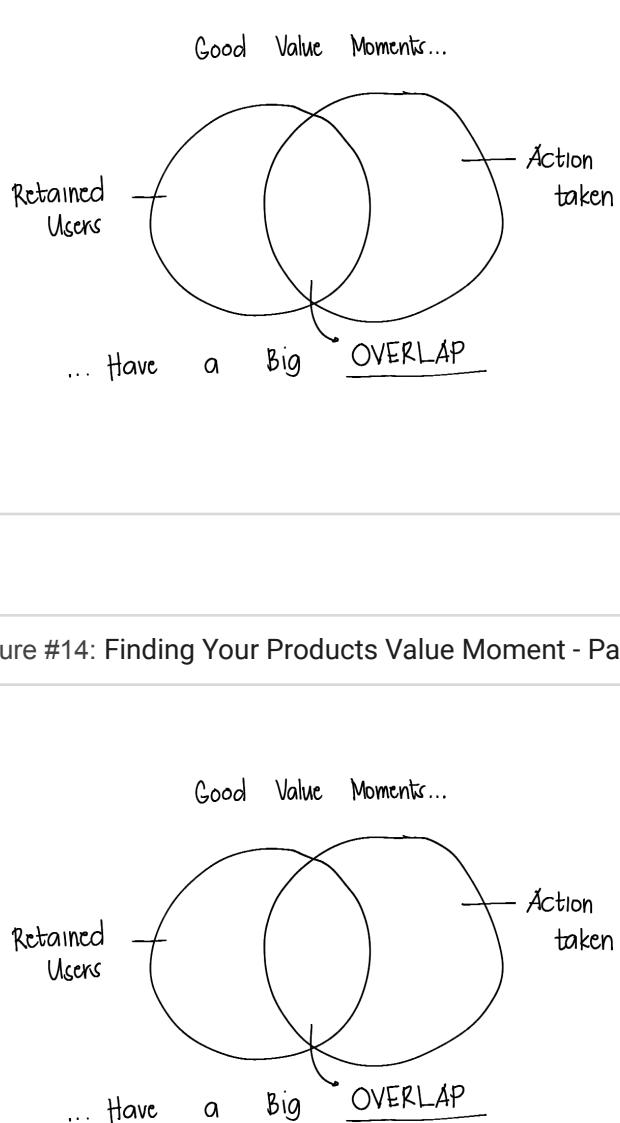
Evaluating Value Moments

if behavior shown by

Most Retained	+	Most Churned	X
Few Retained	+	Few Churned	X
Most Retained	+	Few Churned	✓



Notes:



Notes:

Retention is...

% of Users who Continue
to use product over time.

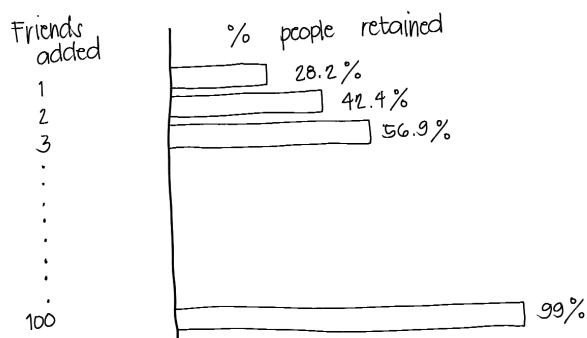
Notes:

4 Step Process

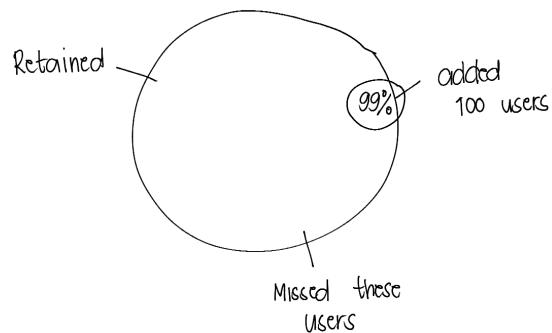
- 1) Find Important Actions ✓
- 2) See if retention changes as usage changes.

Notes:

Facebook - Friends added



Notes:

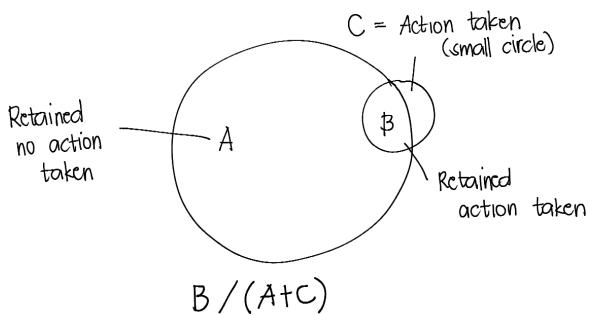


Notes:

4 Step Process

- 1) Find Important Actions ✓
- 2) See if retention changes as usage changes.
- 3) Find ideal frequency of actions

Notes:



Notes:

# Friends Added	Number of users who			Total Users	% Overlap
	Retained but didn't add at least X friends	Retained and added at least X friends	Added at least X friends		
	A	B	C		
At least 1 Friend	192	308	954	1146	27%
At least 2 Friends	223	277	540	763	36%
At least 3 Friends	238	262	402	640	41%
At least 4 Friends	272	228	310	582	39%
At least 5 Friends	291	209	278	569	37%
At least 6 Friends	344	156	202	546	29%
At least 7 Friends	363	137	160	523	26%
At least 8 Friends	416	84	92	508	17%
At least 9 Friends	448	52	57	505	10%
At least 10 Friends	459	41	44	503	8%

Notes:

4 Step Process

- 1) Find Important Actions ✓
- 2) See if retention changes as usage changes.
- 3) Find ideal frequency of actions
- 4) Determine causation

Notes:

Run A/B tests

Examples

- 1) Suggest to add friends.
- 2) make "add people" more prominent.
- 3) Add Tooltips.

Notes:

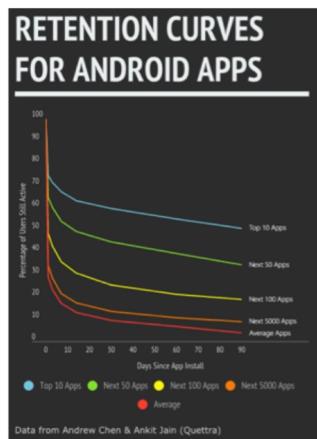
Lecture #15: Guiding Users To Their Value Moment

Guiding Users To Value Moments

What's your retention rate?



Notes:



Notes:

Cohorts = A group with shared characteristics

- e.g. - users who own ios devices
- users who signed up today

Notes:

Why should we look at cohorts?

- Your user base is changing
- DAU and MAU affected by user growth
e.g. bad retention but growth makes DAU look good
- Can separate growth metrics from engagement

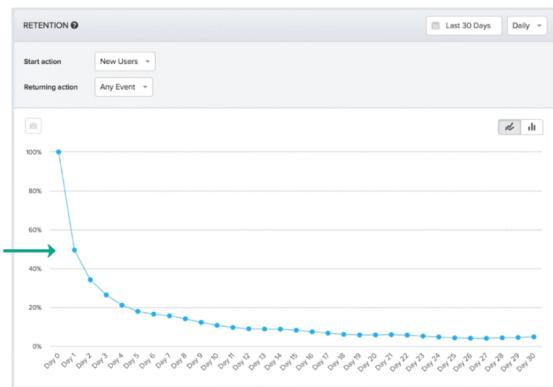
Notes:

Notes:

A screenshot of a retention analysis interface. At the top, there's a header with 'RETENTION' and a search bar. Below it is a table with columns for Segment, Users, and Days 0 through Day 10. The table shows data for 'All users' across various dates from Nov 03 to Oct 26. The data includes raw numbers and percentages, with some values highlighted in blue or red. A 'Export CSV' button is at the top right.

SEGMENT	USERS	DAY 0	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	DAY 8	DAY 9	DAY 10
All users	322,902	100.0%	49.8%	34.7%	26.7%	21.3%	18.0%	16.6%	15.8%	14.3%	12.5%	10.9%
Nov 03	13,462	100.0%	57.2%	39.9%	*34.3%							
Nov 02	9,470	100.0%	61.7%	42.5%	31.6%	*27.9%						
Nov 01	6,462	100.0%	42.7%	41.6%	33.2%	25.6%	*23.3%					
Oct 31	7,495	100.0%	28.8%	29.4%	31.4%	24.2%	19.4%	*18.0%				
Oct 30	12,466	100.0%	33.1%	20.4%	22.5%	25.1%	20.4%	16.7%	*16.0%			
Oct 29	11,478	100.0%	58.1%	24.5%	16.2%	19.8%	23.4%	19.9%	16.5%	*15.8%		
Oct 28	12,467	100.0%	53.6%	41.8%	21.0%	14.0%	18.4%	21.9%	18.7%	15.7%	*15.4%	
Oct 27	13,473	100.0%	57.9%	39.6%	33.6%	16.4%	11.9%	15.8%	19.9%	16.6%	13.9%	*14.1%
Oct 26	9,465	100.0%	61.8%	43.0%	32.3%	28.4%	13.6%	10.0%	13.7%	18.1%	15.6%	13.0%

↳



Notes:

Notes:

What actions affect retention rates?

- Churned Users Interviewed 😞

Qn: What did they try to do?

Qn: where did they get stuck?

Notes:

Notes:

2 Reasons users leave:

1) Friction:

- Find moments of friction
- Experiment with potential improvements

Scrumy

Notes:

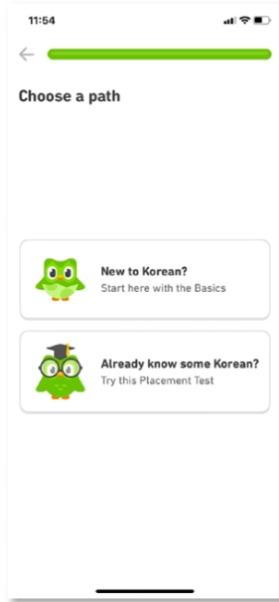
2 Reasons users leave:

2) Onboarding does not work for them

- Consider tailored onboarding
- More personalized journey

Scrumy

Notes:



2 Approaches to onboarding customization

1) Programmatically group users e.g. via Clearbit

2) Users self select their category

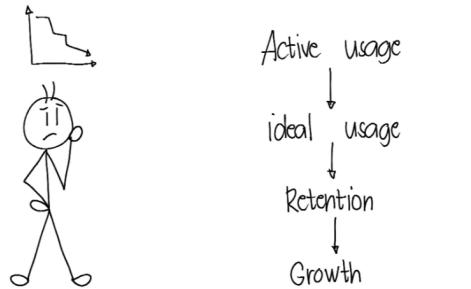
Notes:

The screenshot shows a Twilio console interface. At the top, there's a navigation bar with the Twilio logo, 'CONSOLE', 'DOCS', and a dropdown for 'Bob Test'. Below the navigation, a red message box displays the text: '<Message>Welcome! Let's customize your experience! </Message>'. Underneath the message box, there's a horizontal progress bar consisting of three dots connected by dashed lines. Below the progress bar, the text 'Do you write code?' is displayed. Two rectangular buttons are present: one labeled 'Yes' and another labeled 'No'.

Notes:

Part 3: How is it Performing?

Lecture #17: Section Introduction



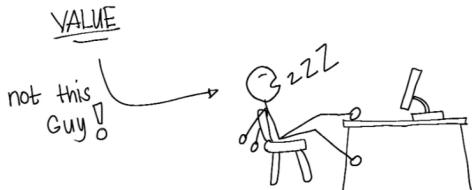
Notes:

Lecture #18: Defining "Active" Usage

Notes:

Defining "Active" Users

- Don't define too loosely
- Only look at users who find



Source

Notes:

Facebook Definition

Active Users...

- Liking ✓
- Sharing ✓
- Commenting ✓
- Clicking ✓
- ... through a link

Source

Notes:

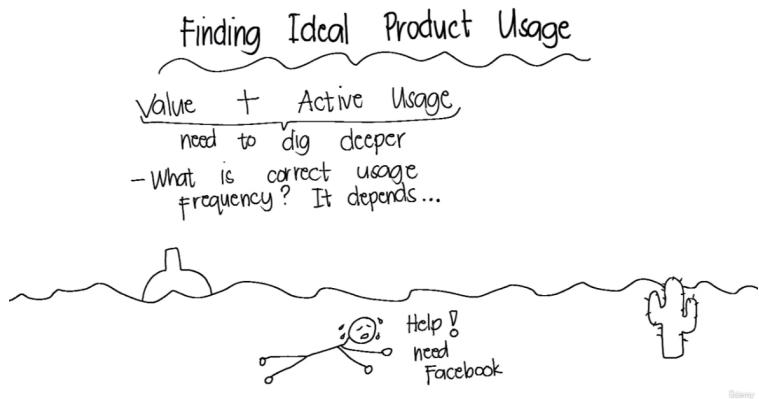
Active usage ≠ Value Moment

- A value exchange moment
- \$\$ activity
e.g. Twitter
 - accessed twitter on page
 - that can show ads

Source

Lecture #20: What Is Your "Ideal" Product Usage?

Notes:



Notes:

Tik Tok

Value Moments = Watch Video + ❤
Frequency = 10/20/30 times daily

Medical Booking App

➡️ active once in 6 months

➡️ active once a week

Savvy

Notes:

High Frequency → messaging ✓
music ✓
Fitness trackers ✓

Low Frequency → Finance ✓
Shopping ✓

Savvy

Lecture #21: Calculating Your Ideal Product Usage

Notes:

Calculating Ideal Usage Interval

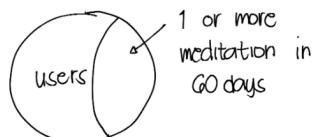
Summary

Notes:

Example = Wellness app

active = completes meditation session

Step 1:

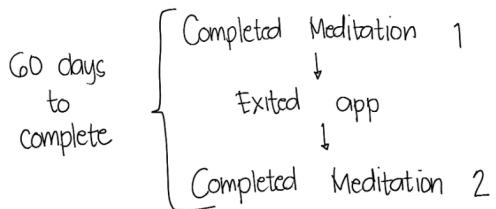


note: exclude new users

Summary

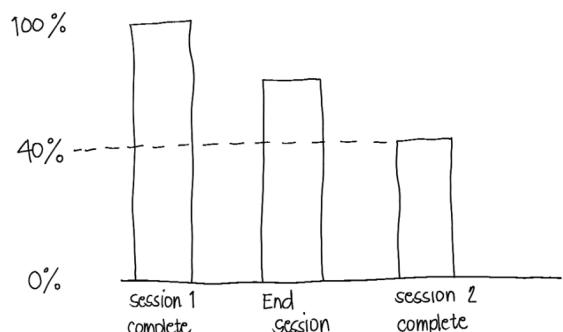
Notes:

Funnel Analysis



Summary

Notes:



Summary

Notes:

Step 2: Check time taken between session 1 and session 2

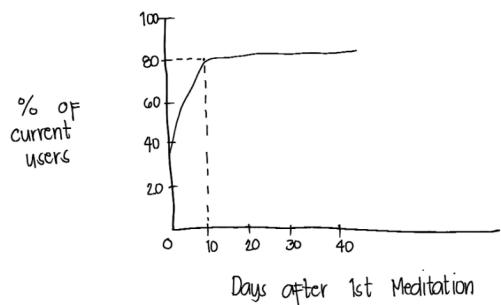
one approach

- multiple funnels - 60 days
- 45
- 30
- 15
- 7
- 2
- 1 day

Summary

Notes:

Step 3: Time to 2nd Meditation



Summary

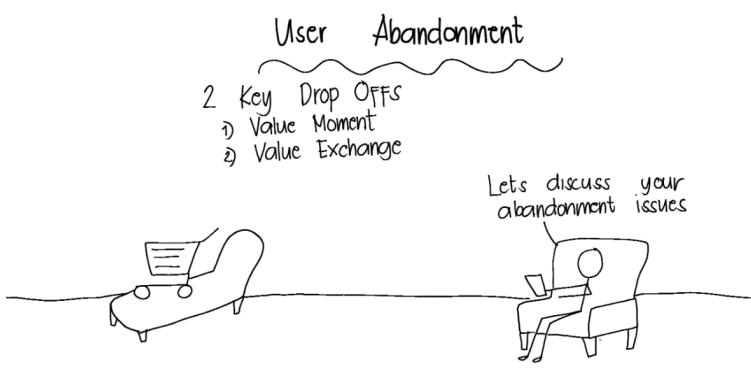
Wellness app
ideal use = one meditation
or more in
10 days

Notes:

Galaxy

Lecture #22: Where Are Your Users Dropping Off?

Notes:



Galaxy

Notes:

Value Moment VS Value Exchange

- sometimes same e.g. shopping app
- often different e.g. fitness app

Focus on Value Moment

Galaxy

Lecture #23: Measuring Drop Off

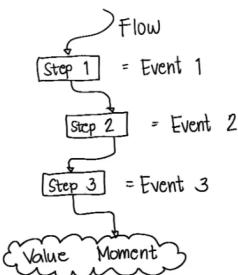
Notes:

Measuring Drop Off

Summary

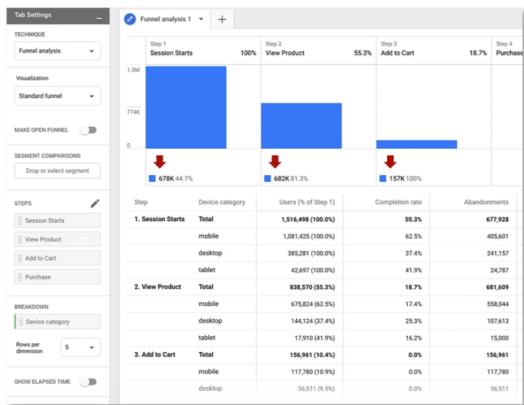
Notes:

Conversion Funnel



Summary

Notes:



Summary

Notes:

Funnel Analysis

- 1) Leaky part of funnel ?
- 2) Shared characteristics of converted users ?
- 3) Are loopbacks happening ?
- 4) Where are friction points ?

Goal = Drive more users to value moment

Summary

Notes:

Analytics Reveals

what, where and how many....

Qualitative Reveals

why... which is needed to optimize users journey

Summary

Lecture #24: Why you should measure retention

Notes:

Conversion Analysis



User journey



UX streamlined



Why measure Retention?

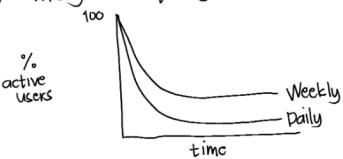
Does my product bring value...
... over and over again ?

Summary

Don't fix Churn...
... Fix your Product

Notes:

Summary

- Retention Mistakes
- 1) Focus on Revenue
 - 2) Wrong Frequency
 - 3) Not tying retention to revenue
- 

Notes:

Summary

Lecture #25: How should you measure growth?

Notes:

Measuring Growth

- Product → Create value
Growth → Find people who will benefit
- Growth teams should focus also on Value!
- Avoid unsustainable approaches.

Summary

Notes:

Product-led Growth

old approach → sales, demos
brochures etc.

product led growth →
- easy access to product
- user drives growth
- viral growth

Summary

Notes:

Metrics Used

- 1) Time to value is
"time taken to reach
aha moment"

Summary

Notes:

- 2) Product Qualified Leads (PQL)

"activated users on free trial
accounts"

Summary

Notes:

3) Feature adoption rate

"How many new users adopt feature?"

$$\frac{\# \text{ of feature users}}{\# \text{ of total users}} \times 100$$

Samey

Notes:

4) Expansion revenue

"Revenue from existing users"

- 2x cheaper to upsell

Samey

Notes:

5) Customer Lifetime Value (CLV)

"Revenue expected from customer over lifetime"

Samey

Notes:

6) Customer Satisfaction Score (CSAT)

"% of active users happy
with your product"

↳ Economy

Notes:

7) Virality and Network effects

↓ ↓
"users driven growth" "value grows as user base grows"

e.g. Uber Eats

more restaurants → more choices
for buyers

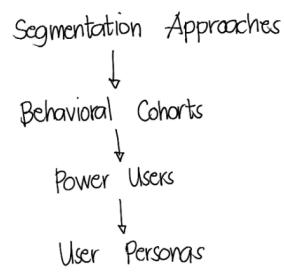
↳ Economy

Part 4: Who Should I Build For?

Lecture #26: Section Introduction

Notes:

Who should I build for?

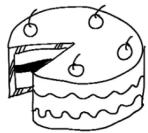


Lecture #27: Approaches to Segmentation

Notes:

Market Segmentation

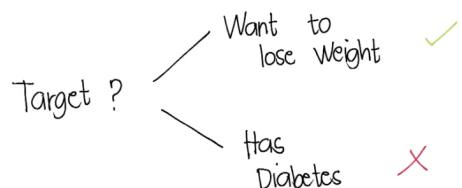
- Focused products ✓
- Good Value Proposition ✓



Q&A

Notes:

Healthy Eating App



Q&A

Notes:

Segment Using...

<u>Demographics</u>		
- age		
- gender		
	}	less actionable
<u>Behavior</u>		
- made purchase		
- Enabled push notification		
	}	more actionable

Q&A

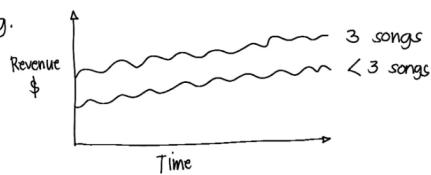
Cohort Analysis

A group sharing a common

Trait (demographics)

Event (behavior)

e.g.



Notes:

What Behaviors are
Important?

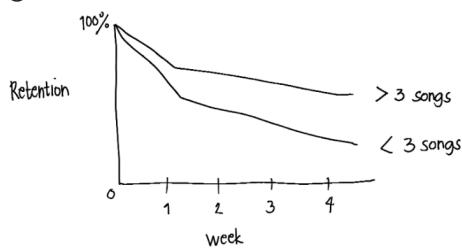
Next : A step by step
guide to behavioral
cohort analysis

Notes:

Lecture #29: Analyzing Behavioral Cohorts

Types of Analysis

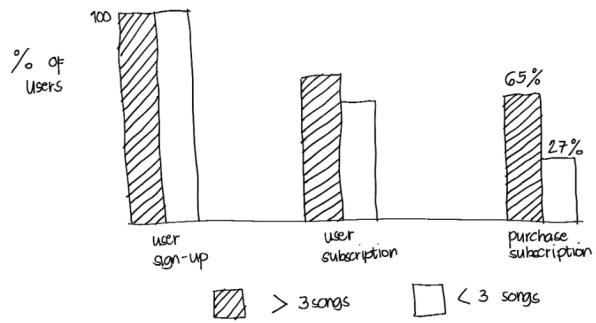
① Retention



Notes:

Notes:

② Conversion Rate



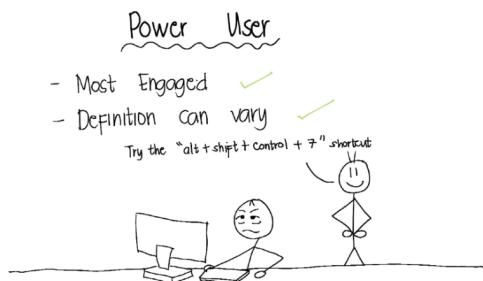
Notes:

Other Behaviors

- ③ Stickiness: - more frequent use ?
- ④ Revenue: - spend more money ?
- ⑤ Other key actions

Lecture #31: Who Are Your Power Users

Notes:



Notes:

Power User Curve

- Measures user engagement
- Calculated across different time

Notes:

Summary

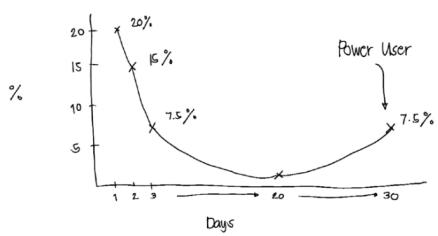
Calculating Power Users

- 1) Identify goal e.g. order placed
- 2) Identify frequency e.g. daily
- 3) Find users who complete goal in identified frequency

Notes:

Summary

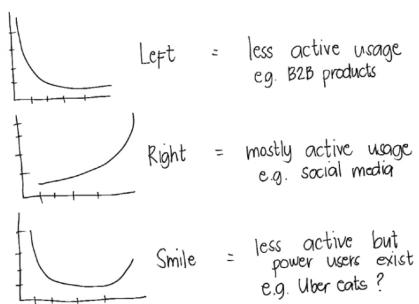
Example



Notes:

Summary

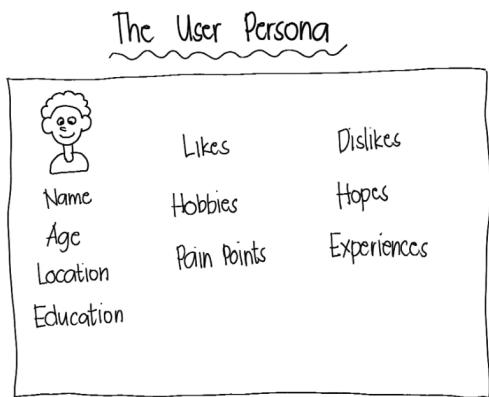
Notes:



Galaxy

Lecture #33: Data Informed Personas

Notes:



Galaxy

Persona Creation

Instinct
+
Qualitative Study
+
Limited Product Analytics

Notes:

Galaxy

Data Driven Approach

Amplitude Persona Chart

- cluster based on behavior
- cluster are not pre-specified
- created by algorithm using machine learning

Notes:

Summary

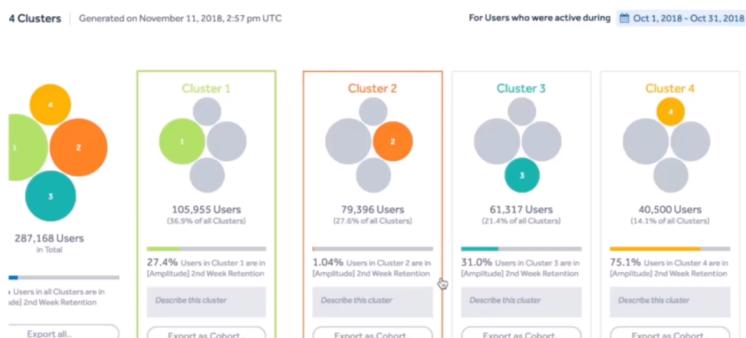
Notes:

Example

- i) Define who to examine
 - new users active on website for last 2 weeks
- ii) Define number of clusters
 - 4

Summary

Notes:



Summary

Top Events sorted by Cluster 4

	All Clusters	Cluster 4	Cluster 1	Cluster 2	Cluster 3
	287,168 Users	40,500 Users	105,955 Users	79,398 Users	61,317 Users
	Avg # Events	Avg # Events	Avg # Events	Avg # Events	Avg # Events
1 Edit Profile	1.26	6.96 +1.9 o	0.76 -0.2 o	0 -0.4 o	0.0012 -0.4 o
2 Download Song or Video	1.83	9.67 +1.8 o	1.19 -0.2 o	0 -0.4 o	0.12 -0.4 o
3 Add Content to Cart	1.47	7.84 +1.8 o	0.94 -0.2 o	0 -0.4 o	0.099 -0.4 o
4 Purchase Song or Video	1.19	6.33 +1.8 o	0.76 -0.2 o	0 -0.4 o	0.080 -0.4 o
5 Share Song or Video	0.84	5.66 +1.5 o	0.11 -0.2 o	0 -0.3 o	0.023 -0.3 o
6 Concert Landing Screen	0.68	4.28 +1.3 o	0.14 -0.2 o	0.000013 -0.3 o	0.15 -0.2 o
7 Purchase Ticket	0.55	3.44	0.11	0	0.10

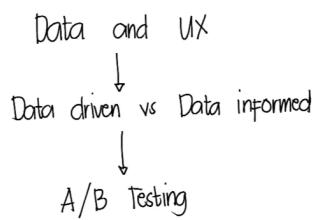
Notes:

Part 5: How Should I Build It?

Lecture #34: Section Introduction

Notes:

How should I build it?

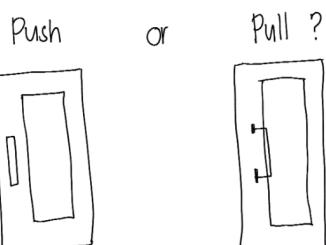


Source

Lecture #35: Why Data Is The New UX

Notes:

How to build it?



Source

Notes:

UX Analytics

Measurement of user activity
for design insights

Quantitative

- what is done

Qualitative

- why it is done

Summary

Notes:

UX Analytics can complement
the designers intuition
and knowledge,
not replace it

Summary

Notes:

Benefits of UX Analytics

- Test and Validate design
intuition

e.g. user not clicking on
button because its green.
↓
AB test it
if true, change color

Summary

Lecture #36: Data Driven vs Data Informed Design

Notes:

- | Data Driven | vs | Data Informed |
|-----------------------------------|----|------------------------------------|
| - Data is foundation for decision | | - Data is a reference for decision |
| - Data guides decision | | - Data validates intuition |

Summary

Notes:

Which approach to use?

- Data driven
- Have the needed data
 - success can be measured numerically.
 - e.g. optimization

- Data informed
- more complex problems
 - many variables

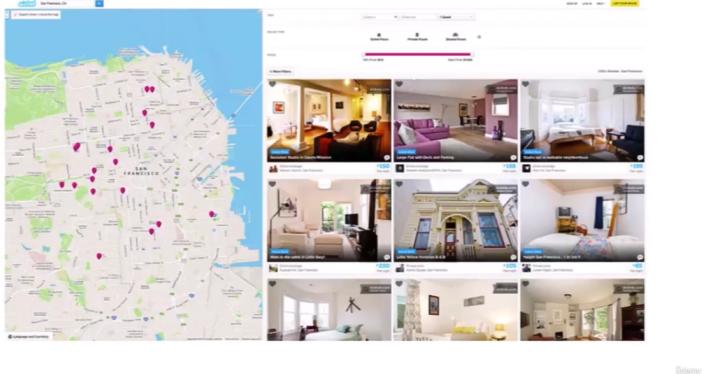
Summary

Notes:

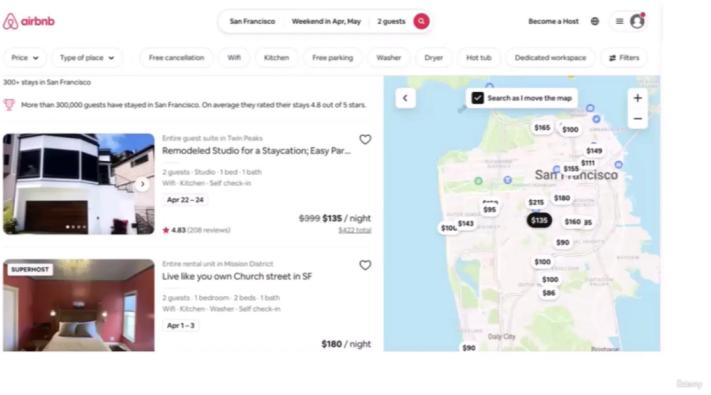
The screenshot shows the Airbnb search interface for London. At the top, there's a search bar with 'London' and filters for 'Check in', 'Check out', '1 Guest', and a 'SEARCH' button. Below the search bar are buttons for 'LIST', 'PHOTO', and 'MAP'. A message 'Going to London? Visit the Airbnb Neighborhood Guide to London!' is displayed. On the left, there's a sidebar with a 'Radius search in map' section showing a map of London with pink flower icons, and dropdown menus for 'Room type' (Entire home/apt, Private room, Shared room), 'Price' (from \$100 to \$1000), and 'Connections'. The main area displays a list of 1000+ rentals, each with a thumbnail, location, name, price per night, and a 'SHARE' button. The first few listings are:

- Comfy Central Home in Camden Town: \$82 per night
- Vintage bedroom near Big Ben Nr1!: \$80 per night
- A cosy home in central London: \$82 per night
- Large lux.double 2mins Kilburn tube: \$82 per night
- Piccadilly Circus Central London 2: \$99 per night

Summary



Notes:



Notes:

Takeaway

- Be data informed unless its an optimization problem

Notes:

Lecture #37: Guidelines For Effective Testing

Notes:

A/B Testing

A/B - Test one variable

Multivariate - Tests many variables



Galaxy

Notes:

	Image	Headline
VERSION 1		+ "ACME WIDGETS"
VERSION 2		+ "ACME WIDGETS"
VERSION 3		+ "THE ONE AND ONLY ACME WIDGETS"
VERSION 4		+ "THE ONE AND ONLY ACME WIDGETS"

Galaxy

Notes:

Formula

$$(\# \text{ of variations of A})$$

$$\times \\ (\# \text{ of variations of B}) \\ \vdots$$

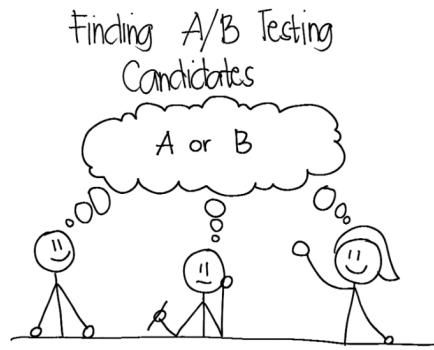
= Total # of variations

Galaxy

A/B Testing Guidelines	
① one hypothesis at a time	② Group elements into one variable
③ measure down the funnel	④ set up control and treatment
⑤ know what to test	⑥ use random sample groups
⑦ Test variants simultaneously	⑧ Pick significance upfront

Notes:

Lecture #38: Finding Good AB Test Candidates



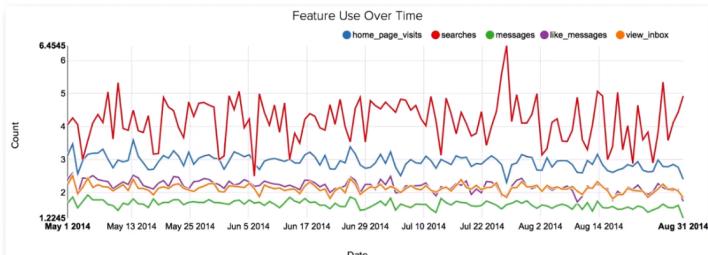
Notes:

A/B Testing Tips

- 1) Brainstorm correctly
 - Diverse group
- 2) Explore customer motivations
 - Commitment ?
 - Social proof ?
 - Liking ?
 - Authority ?
 - Other value drivers ?

Notes:

Notes:



Galaxy

Notes:

3) Map feature use to value drivers

example

sharing feature → High value but low usage → needs A/B testing

Galaxy

Notes:

③

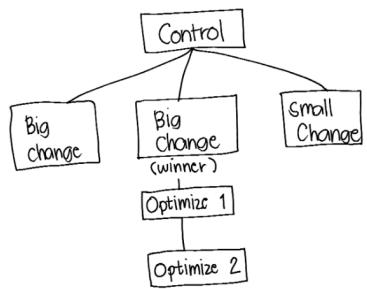
Go Big / High variance

- e.g.
- aggressive
 - video vs text vs audio
 - very short vs very long
 - Ethical but a bit rude
 - Direct

Galaxy

Notes:

Typical A/B Test



Summary



Congratulations!

You're now on top

of your analytics game