PRODUCT ANALYTICS PLAYBOOK

Volume 1

MASTERING
RETENTION

Proven methods for turning user behavior
insights into retention strategies

Amplitude

About Amplitude

Amplitude™ provides product analytics to help mobile and web companies understand user behavior. Founded in 2012 and backed by Battery Ventures and Benchmark Capital, Amplitude is the analytics solution of choice for companies who want to leverage user data to build better products.

Special Thanks

Special thanks to Nir Eyal, Julie Zhou, and Fareed Mosavat for sharing their retention expertise and providing feedback throughout the development of this book.

In addition, thanks to *all* of the teams who use Amplitude: you inspire us with your stories and provide invaluable feedback. This book (and Amplitude) wouldn't exist without you!

Authors
Alicia Shiu
Archana Madhavan

Contributors
Justin Bauer
Xin Cao
Nisha Dwivedi
Tareq Ismail
Michael Ottavi-Brannon
Varun Sharma
Wendy Vang
+ the whole Amplitude team

Book Design
Meredith Fay
Sabine Althauser

A note on examples:
Although this playbook draws on real-life examples from companies that we work with, we've altered examples to prevent disclosing specific companies and their real data. However, we've tried to preserve the lessons and principles behind the examples as much as possible.

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productanalyticsplaybook.com
amplitude.com
playbook@amplitude.com

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WHY SHOULD YOU READ THIS PLAYBOOK?

Care about growth? Then you should care about user retention. Without retention, your product is a leaky bucket; you can pour in as many dollars as you like into marketing, advertising, and other means of user acquisition, and still wind up with no long-term users — which means no sustainable growth and no means to generate revenue.

There are thousands of articles listing 'growth hacks' for increasing retention, ranging from social media tactics, to drip campaigns, targeted ads, and push notifications, etc. The problem with most of these tactics are that they're just that: short-term, often unspecific tactics that lead to a transient uptick in active users. To date, there is no broadly applicable framework for improving user retention at various stages of the user lifecycle. Until now.

There are too many companies asking, "How do we acquire more users?" that should instead be asking "How do we get better at keeping the users we already have?"

Jamie Quint, Co-founder of Interstate Analytics

With this playbook, you will learn:
- How to gauge your business's true growth.
- The importance of analyzing retention along different stages of a user's lifecycle.
- How to identify user behaviors and actions correlated with user retention.
- How to activate newly acquired users into becoming regular current users.
- How to turn current users into more engaged power users.
- How you can bring back users who have become dormant. .

What this Playbook is not:
- Short-lived tactics or 'growth hacks.'
- A magic formula that will improve retention.

This framework is an adaptable, repeatable strategy that can be put in place for products at all stages of growth, and in all verticals. Whether you're a growth professional or just starting out, **The Product Analytics Playbook: Retention** will be your go-to guide to leveraging user behavior in order to understand and improve retention.

CHAPTER 01

WHY YOU NEED TO CARE ABOUT USER RETENTION

The internet now has over 3 billion global users and counting, with the number increasing steadily by 10% year over year [1]. Easier online access means people are using digital products across desktop and mobile more than ever. Unfortunately, that means it's only getting harder for software companies to stand out from the competition and keep users interested in their product.

While this trend affects all software products and digital services, it has significant impact on the mobile app industry in particular.

In partnership with mparticle

[1] Source: http://www.kpcb.com/blog/2016-internet-trends-report

Amplitude

Fact: Over 4 million apps now populate the Apple App Store and Google Play Store alone.[2]

However, mobile users spend almost all of their time in just five different apps--with Facebook and Google vying for the top spots.[3] Many apps are pretty much "dead on arrival." In fact, because they have so few users, 90% of English-speaking iOS/Android apps cannot be discovered in any list, any category, or any genre.[4]

So how do you build a product that's not only capable of acquiring users, but also keeping them around? In other words, how do you sustain real growth? It starts with understanding why retention is so critical to growth.

In this chapter we will discuss:

- **Why retention is important for companies at all stages of growth**
- **How we developed 'The Product Analytics Playbook: Retention'**

With these concepts in place, you'll be set to get a better grasp of your product's usage and baseline user engagement metrics in Chapter 2. This baseline will help you better contextualize the Retention Lifecycle Framework for your product.

Topics covered in this chapter:

1.1 - Acquisition isn't the whole answer
1.2 - Shifting focus to user retention
1.3 - When should you start thinking about user retention?
1.4 - How this playbook will help

1.1 | Acquisition isn't the whole answer

Pour enough dollars into acquiring your users and you might be able to temporarily get on one of the App Store's top charts. But attracting users is not enough. Our analysis[5] of over 500 million mobile devices has shown that:

80% of new users stop using the average app just three days after downloading it.

This doesn't just apply to mobile. If you don't demonstrate value to your users early and often, and turn them into habitual users, your product — be it a mobile app or otherwise — will die. Filling the top of your funnel doesn't matter if your product is effectively a leaky bucket; long-term growth of a product, as well as the health of a business, depends on how well you retain users. That's how you demonstrate your product has real value.

N-Day Retention: iOS vs. Android
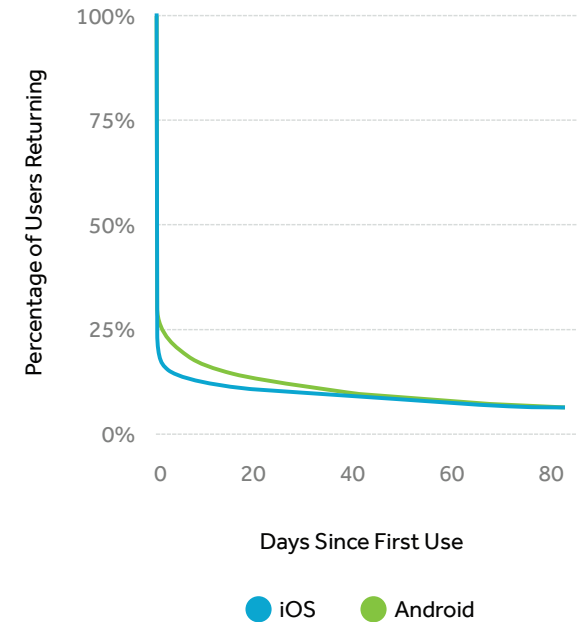
N-Day retention of iOS (blue) and Android (green) users. Less than 20% of users return on exactly the third day after first use of the product.

[2] Source: https://www.statista.com/statistics/276623/number-of-apps-available-in-leading-app-stores/

[3] Source: http://marketingland.com/report-mobile-users-spend-80-percent-time-just-five-apps-116858

[4] Source: https://arc.applause.com/2015/02/05/another-reason-app-discovery-completely-broken/

[5] Source: https://amplitude.com/blog/2016/10/12/1-trillion-events/

TERMS TO KNOW

DEFINITION

N-Day Retention

The proportion of users who come back on the 'Nth' day after first use.

DEFINITION

Retention Curve

A line graph depicting the average percentage of active users for each day within a specified timeframe.

1.2 | Shifting focus to user retention

At a high level, retention is a measure of how many users return to your product over time.

Even the best products lose the majority of their users in just a few days, but if you make retention your primary growth metric, you can change the trajectory of your company from one that stalls or loses users over time, to one that sustains true growth.

Increasing user retention and minimizing churn is the key to building a base of loyal, engaged users and driving sustainable growth. A business that retains its users increases its revenue and becomes profitable[6] faster than one that does not. Retention impacts every important business metric that you (and your investors) care about—active user count, engagement, customer lifetime value, payback period, and more.

"The point is, every improvement that you make to retention also improves all of these other things — virality, LTV, payback period. It is literally the foundation to all of growth, and that's really why retention is the king."

— Brian Balfour,
former VP Growth, HubSpot & Co-founder, Reforge
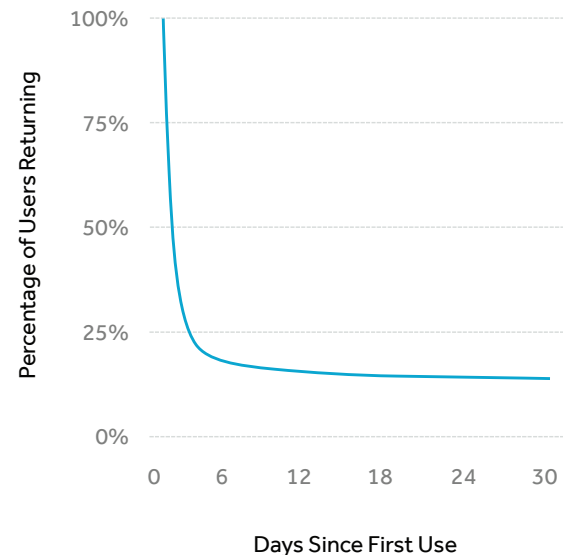
When measuring **N-Day Retention**, Day 0 typically refers to the day on which a new user first uses the product; first-use can encompass anything from downloading and opening a mobile app to completing a specific action within it. Following that, retention on Day N is the proportion of users who started on Day 0, who also returned and were active N days later.

A good way of visualizing retention rate is by plotting a **retention curve**, as shown on the left.

Let's say this is a retention curve for a hypothetical app, and we're looking at users who started using this app for the first time on January 1 through January 31.

This graph shows the weighted average of all Nth day retention numbers from cohorts of users acquired within that time period. According to the retention curve, for example, Day 7 retention is

Retention Curve

Y-axis: Percentage of Users Returning (0%, 25%, 50%, 75%, 100%)
X-axis: Days Since First Use (0, 6, 12, 18, 24, 30)

(6) Source: https://amplitude.com/blog/2016/01/21/is-retention-like-teenage-sex/

about 13%. This means out of all the users who first used the product on January 1 (Day 0), 13% came back and were active on January 8 (Day 7). You can also quickly visualize the drop-off from Day 0 to Day 1: about 37% of users come back 1 day after first use—nearly 2x higher than the industry average.

1.3 | When should you start thinking about retention?

A common misconception about retention is that it only matters after your company is past a certain stage of growth. In reality, once you have some amount of users coming back to your product on a regular basis, you have enough information to begin optimizing for retention.

   Keep in mind that the way you approach your retention may change over time, but what doesn't change is the fact that only companies that constantly improve their retention rates can grow and become profitable.

   Let's look at how retention analysis can benefit companies at all stages of growth.

Before product-market fit
Retention can actually indicate if you have a product-market fit[7] problem; if you plot out your retention numbers as a percentage of active users over time and you have a flat line that reaches zero instead of a curve that stabilizes — you need to solve a product-market fit problem, not a retention problem.

Retention Curve
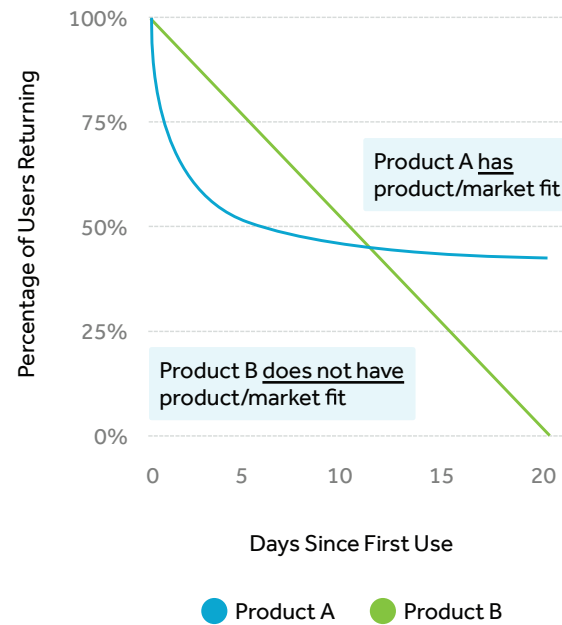
In the graph above, Product A has achieved product-market fit. Its retention drops off initially but stabilizes at roughly 45% active users.

   Product B's retention, on the other hand, trends straight to zero and never levels off, which means that it lacks a user base who regularly uses this product. Product B has not achieved product-market fit.

Building a habit-forming product
How do you think about retention when you don't have users? At the early product development stage, you should be thinking about what re-

[7] Source: http://www.coelevate.com/essays/product-market-fit

[8] Source: http://www.nirandfar.com/2012/03/how-to-manufacture-desire.html

tention ultimately boils down to — why any user would get hooked on your product. Ask yourself if your technology is, as Nir Eyal puts it, "manufacturing desire." Building a habit-forming product[8] is the crux of retaining users long term.

Getting to a baseline of users
Once you have your early users, it's time to start optimizing retention. Test out and resolve factors affecting app performance and clean up bugs — users have little patience for apps that crash all the time. Then start understanding what value your users are getting out of your product. Figure out what your power users are doing and nudge your user base to behave more like them. Get your retention to a healthy baseline *before* spending on acquisition.

Ongoing product iteration
Diagnosing and improving your retention should be an ongoing process, at all stages of growth. As you iterate on your product experience — in order to develop a more habit-forming, sticky product — you have to measure retention in tandem. You may have hypotheses as to why some users churn and others retain, but you have to continuously iterate on and assess your retention metrics to understand how users respond to your product. Making retention the central focus of your business's growth might sound daunting, but it doesn't have to be. This is where The Retention Lifecycle Framework (more on that in Chapter 3) and this playbook can help.

1.4 | How this playbook will help

While there is no magic formula that will improve your retention, this playbook provides a framework to diagnose your product's retention and develop strategies to improve it . Going back to the retention curve, Brian Balfour describes two "levers" that can improve retention.[9] At a very high-level these are:

1. Shifting the retention curve up.
Optimize your first-time user experience and demonstrate your product's core value to new users, so users want to stay around longer, instead of churning in the first few days.

Shift the Curve Up

Early new user retention

Percentage of Users Returning
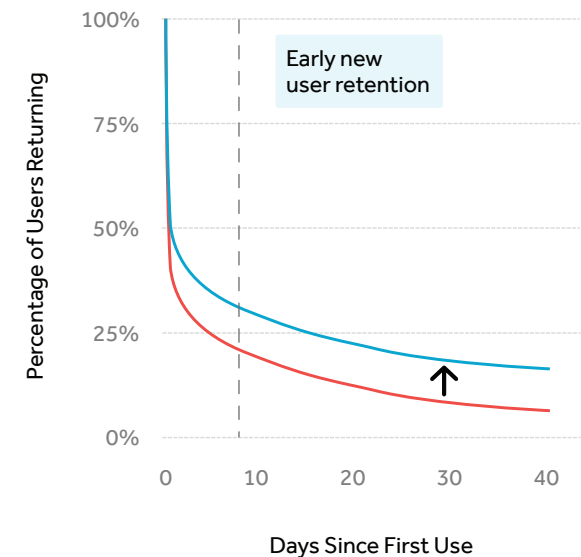
Days Since First Use

2. Flattening the curve.
Increase your baseline level of users by consistently delivering a solid product experience.

Flattening the Curve
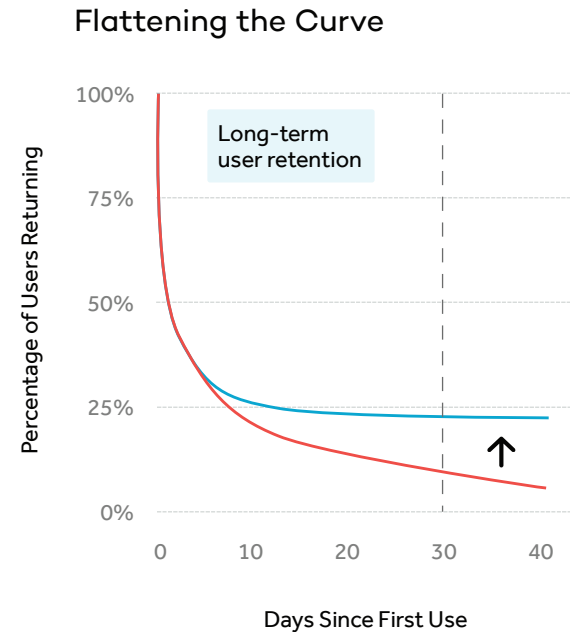
Following both of these concepts, this playbook offers a novel framework for **diagnosing and systematically improving your user retention**.

Coming up with a retention framework
We developed our retention framework by working with eight customers at different stages of growth and in different verticals. By diving into their user behavior data, we were able to vali-

date the principles of our framework as well as the methods we used, and find real insights and recommendations for improving their retention.

Over the next several chapters you'll see how different companies—from utility apps, to ecommerce products, to mobile games—have used the Retention Lifecycle Framework to gain a deeper understanding of their users, implement strategies to improve retention long term, and accelerate their growth.

FURTHER READING

Want to know more about how retention is tied to growth? Check out these resources.

Why Retention is the King of Growth Strategy
Brian Balfour, Co-founder, Reforge & former VP of Growth, Hubspot
http://labs.openviewpartners.com/retention-optimization-is-king-of-growth-strategy/#.V6ltC5MrL4M

New data shows losing 80% of mobile users is normal, and why the best apps do better
Andrew Chen, Growth, Uber
http://andrewchen.co/new-data-shows-why-losing-80-of-your-mobile-users-is-normal-and-that-the-best-apps-do-much-better/

How To Increase Growth Through Retention Analysis
Archana Madhavan, Amplitude Blog
https://amplitude.com/blog/2015/12/15/how-to-increase-growth-through-retention-analysis/

CHAPTER 02

YOUR CRITICAL EVENT & PRODUCT USAGE INTERVAL

Before you can start improving your retention, you need a solid grasp of how people are currently using your product. This will help you choose the right timeframes for your metrics as well (for example, whether you should be looking at daily, monthly, or weekly retention).

This chapter introduces two important concepts: (1) what your critical event is, and (2) how often users naturally come back to use your product.

In partnership with ProdPad

What you'll learn in this chapter

Before diving straight into our explanation of the Retention Lifecycle Framework, we have to explain two concepts related to your product's usage: your critical event and usage interval. As you will see in Chapter 3 and later, defining these concepts for your product is an important prerequisite to implementing the Retention Lifecycle Framework.

Topics and methods we'll cover in this chapter:

2.1 - Determining your critical event
2.2 - Determining your product usage interval
2.3 - Take action

Before You Get Started
Before we dive into this chapter, take a moment to make sure you're set up for success.

Review instrumentation: If you haven't done so already, make sure your analytics is firing correctly and that you're tracking the user actions that are important to you. Review your analytics instrumentation, organize the events you're tracking, and validate your data before moving into the product usage sections of this chapter. Read more about how to conduct an instrumentation review in the Appendix.

Measure baseline metrics: Make sure you have a high-level understanding of your users and their behaviors *before* you put the Retention Lifecycle Framework in place. Get a baseline measure of

your standard product usage metrics and make a note of it in the "Baseline Product Diagnostic" worksheet. You can then periodically track these metrics to see how your retention strategies change them. Take a look the Product Analysis Toolkit in Chapter 4 for the metrics and methods we recommend.

2.1 | Understanding critical events

Your product's critical event and usage interval will inform how you carry out further analyses using the Retention Lifecycle Framework, so it's incredibly important to think through how they apply to you.

What is a critical event?
A critical event is an action that users take within your product that aligns closely with your core value proposition. Chances are you probably already know what your critical event is—it's the action that you want to drive your users toward and get them to perform.

Put another way, when you're measuring retention, the critical event describes the action you want users to perform in order to be counted as truly active or retained.

Airbnb's Critical Event

If you were measuring Airbnb's retention numbers, would you really want to count a user as retained if all they do is open up the app and browse listings? Simply opening up the app doesn't provide any business value to Airbnb, nor does it align with their objective of generating revenue.

Airbnb critical events is making a booking.[1] The company's growth and success depends on hosts listing accommodations on Airbnb and users booking them.

Here are a few more examples of critical events from our customers. Note that in each instance, the critical event is closely aligned with the core value that the business provides its users.

Company	What They Do	Critical Event
Mindfulness app	Self-guided meditation	Completing a meditation session
Lifestyle app	Find and book nearby fitness classes	Booking a class
Mobile game publisher	Mobile MOBA games	Playing a game

How many critical events can you have?
A good rule of thumb is to have one critical event per core product offering. For most companies this means just one.

In some rare cases, it may be appropriate to have multiple critical events. The most common example of this is two-sided marketplaces, which have two distinct product flows—like buying and selling, for example. These products' users tend to fall into one group or the other, so it makes sense to have two critical events and analyze these users separately. Uber, for example, has a user base of drivers

and riders; Airbnb has hosts and guests; Etsy has buyers and sellers.

RECAP: Determining your critical event
In order to determine your critical event, here are some things you should ask yourself:

- What is the one action that you want a user to do every time they use your product?
- What metrics do you care about as a company? What number are you ultimately trying to drive up? Which user actions can be tied to that metric?
- Do you have different product offerings? If so, what are they? What are your success metrics for each?

2.2 | Determining your product's usage interval

You can't draw conclusions about your retention numbers without first having an understanding of your product's usage interval.

Some products are built to be used daily—think social networking, media, casual gaming, or productivity apps. Others, like on-demand, e-commerce, and expense reporting apps, would be used much less frequently.

Why does the product usage interval matter for retention?
Say you have an on-demand restaurant delivery app. Your product intuition tells you that most

[1] Source: https://blog.kissmetrics.com/alex-schultz-growth/

of your users place an order about once a week. If you look at the proportion of users who come back on a *daily* basis, you might see something like this:

Daily Retention

Days Since First Use
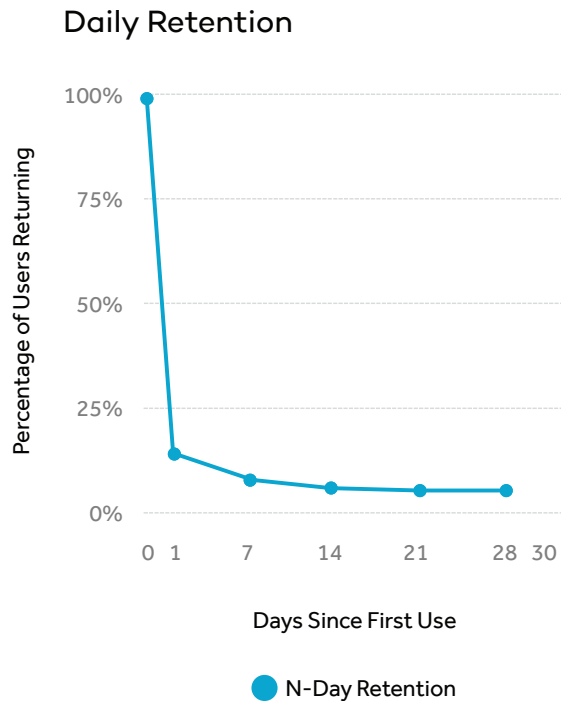
● N-Day Retention

A massive drop-off after Day 0, and then a scarily low proportion of users coming back on any subsequent day.

But that retention curve isn't a good indication of the health of your product; N-Day retention would only give you the proportion of users who are active on one arbitrary day. These numbers will be small because most of your users won't place an order every single day.

Instead, you should be looking at your retention on a *week by week* basis. That is, the proportion of your users come back any time during Day 1-7, Day 8-14, Day 15-21, etc.

Compared to daily retention, *weekly* retention gives you a much better indicator of your product's health because it's aligned with how frequently your users naturally come back to your product.

Comparing Daily & Weekly Retention for the Same Product
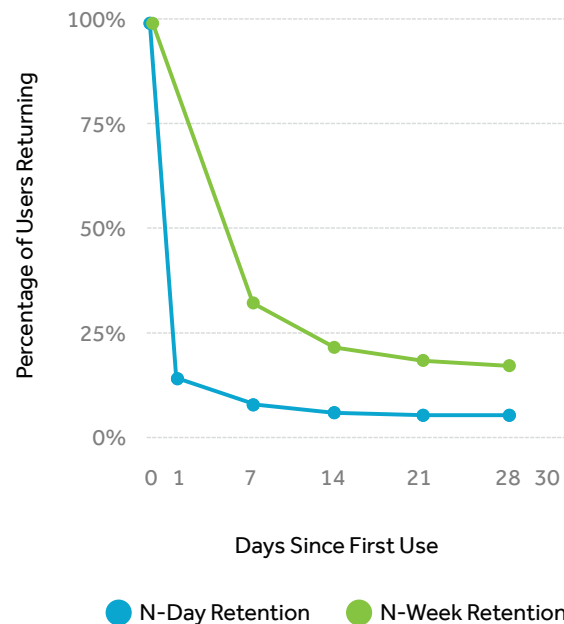
Days Since First Use

● N-Day Retention   ● N-Week Retention

To be able to accurately calculate user retention across all stages of the Retention Lifecycle (more on this in Chapter 3), you have to first determine how often you can expect users to come back to your product. Not doing so can cause you to misinterpret your retention metric and misinform your strategies to improve it.

The Usage Interval Framework
So how do you figure out what your app's usage interval is? You might already have some idea based off your own product intuition. If you don't, not to worry. This four-step framework utilizes your existing user behavior data to help you determine your product's usage interval with certainty.

1. Identify all users who repeated the critical event at least twice within a certain time period. We suggest 60 days. Note: you'll want to use a time period that is longer than your usage interval — for most products 60-90 days is sufficient, since usage intervals rarely go beyond one month. This means we expect users to perform the critical event at least twice within 60 days.
2. Analyze how long users in step 1 took to come back and do the critical event for the second time.

3. Plot the proportion of users who repeated the critical event over different time intervals. This will give you a cumulative distribution function.
4. Identify the time interval at which 80% of users have repeated the critical event— this is your product usage interval.

Let's put this framework in context by looking at a customer example.

DO IT IN AMPLITUDE

Determining your usage interval in Amplitude

The steps we outlined on the previous page will help you calculate your usage interval, no matter what analytics platform you're using. Just follow the instructions in the worksheet at the end of this chapter on page 22 to walk through those steps.

If you're using Amplitude, however, you can use the Usage Interval view in the Retention Analysis chart to quickly find your product's usage interval.

Let's look at an example from one of our customers—a mindfulness app. Since this app's core value is in guiding its users through mindfulness exercises and meditation, their critical event is completing a meditation session.

This team wanted to understand how often their current users return to meditate. In a retention chart, we set both the first event and the return event to 'Meditation session completed'.

⊏¦ Retention Analysis

First event	..performed by Users
Meditation session completed	**1** All Users
..then the return event	where Cohort = Current Users
A Meditation session completed	
B *Select event...*	**..grouped by** *Select property...*

..measured by N-Day Retention **shown as** Retention   **Change to Usage Interval View**

Then, click on 'Change to Usage Interval View'. The resulting curve shows the distribution of how long it took people in the Current Users cohort to repeat the critical event of 'Meditation session completed'. By locating the inflection point of this curve, you can approximate your product's usage interval.

For example, the inflection point for this chart happens around 7 days. The chart shows that 62% of current users have repeated the critical event of completing a meditation within 7 days. We can say that users of this app can be expected to come back about once a week to meditate, or that this app is a weekly usage product.

Retention Analysis

First event

Meditation session completed

..then the return event

A   Meditation session completed

B   *Select event...*

..performed by   Users

1   **All Users**
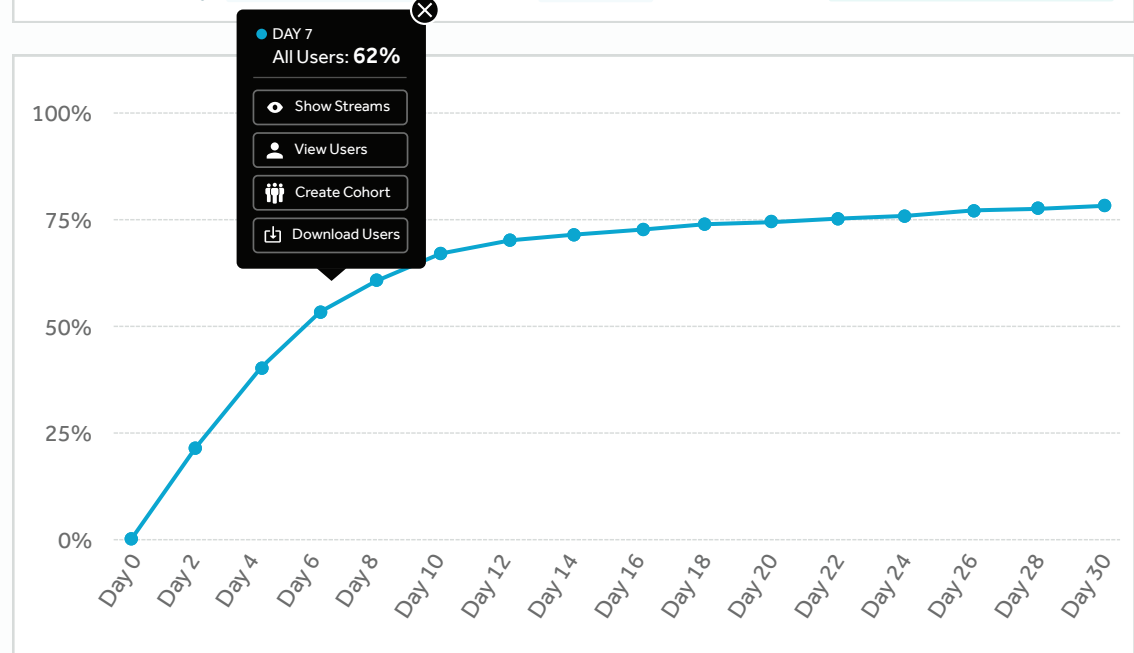
where   Cohort   =   Current Users

..grouped by   *Select property...*

..measured by   N-Day Retention   **shown as**   Retention   **Change to Retention View**

• DAY 7
All Users: **62%**

👁 Show Streams

👤 View Users

👥 Create Cohort

⬇ Download Users

Excepting rare use cases like tax prep software, most businesses won't have longer than monthly usage intervals. If you find yourself to be an exception, feel free to adapt this framework to your needs.

10 Steps to Get You Started With Behavioral Analytics
Archana Madhavan, Amplitude Blog
https://amplitude.com/blog/2016/06/14/10-steps-behavioral-analytics/

Avoiding the Wheel of Meaningless Growth
Brian Balfour, Co-founder, Reforge & former VP of Growth, Hubspot
http://www.coelevate.com/essays/growth-principle-two-seek-authentic-growth

Determining your product usage interval is a critical step in getting an accurate baseline reading of your current userbase, as well as a starting point for analyzing user retention according to the Retention Lifecycle Framework.

Complete the worksheet at the end of this chapter to determine your product's usage interval using this framework.

One more thing
As we said before, determining your product's usage interval should inform your retention analysis and your retention strategies.

This framework is great for determining your product usage in a methodical, quantitative way (which is how we like to do things at Amplitude!). But it's also important to supplement this with your own product intuition, as well as with solid user research. Qualitative user feedback can be just as valuable as, if not more than, your quantitative findings.

2.3 | **Take Action**

This chapter was all about laying the proper groundwork for tackling the more in-depth retention analyses that will be presented in the rest of this playbook. Take some time to complete the following action items from this chapter. This will ensure your success in the future chapters.

❑ Check your analytics instrumentation
❑ Organize your event taxonomy
❑ Determine your critical event(s)
❑ Complete the worksheet **"Determining Your Product Usage Interval"**
❑ Complete the worksheet **"Baseline Product Diagnostic"**

BASELINE PRODUCT DIAGNOSTIC

Before you dive into the rest of this playbook to understand retention, use the metrics in this worksheet to get a baseline of your standard product usage metrics. This will help you measure improvement going forward.

Date: _____

Metric Description	Metric Value	Notes
New & Active Users		
Daily New Users over last 30 days		
Daily Active Users over last 30 days		
Monthly Activer Users over last 3 months		
Check for any important user properties, like platform, device, or location. Note any interesting ones here.		
Sessions		
Average session length over last 30 days		
Average count of sessions per user over last 30 days		
What times and/or days are sessions happening most frequently? (ex. 3-5 pm, Saturdays)		
Top Events (User Actions) *List the top 5 events by total counts over the last 30 days*		
Event 1:		
Event 2:		
Event 3:		
Event 4:		
Event 5:		

Metric Description	Metric Value	Notes
New User Retention *Measure the percentage of new users who return within the given timeframe*		
Day 1		
Day 7		
Day 30		
Week 1		
Month 1		
Funnels		
Onboarding funnel: % conversion over last 30 days		
Critical path funnel: % conversion over last 30 days		
If your product has an important funnel, such as a checkout or upgrade sequence, list that here		
Common User Paths		
Most common sequence of events after entering your product ex. App Open > Song Played > Song Played > Playlist Created > Song Added		

DETERMINING YOUR PRODUCT USAGE INTERVAL

Use this worksheet as a reference to find your product usage interval, which we discuss in Section 2.2. We'll be referring to your usage interval for the rest of the playbook, so make sure you take a few minutes to complete this worksheet

First, list your critical event (discussed in Section 2.1):

STEP 1: Identify current users who perform your critical event at least twice in a 60 day period.

Create a cohort of non-new users who performed your critical event at least twice in two separate sessions during a 60 day period. For more details on how to create these cohorts, see Section 2.2.

STEP 2: Measure how long it takes for users to perform the critical event the second time.

You can do this by adjusting the conversion window of your funnel to different time points. Remember, 100% of your users should have performed the critical event twice within 60 days.

Fill out this table:

Time to perform 2nd critical event (in days)	% users in cohort who have performed 2nd event
60	100
45	
30	
15	
7	
2	
1	
0.5	
0.25	

STEP 3: Plot the time points.

We recommend plugging the numbers in the table from Step 2 into a spreadsheet so that you can what your curve looks like. You can see an example in Section 2.2.

STEP 4: Determine usage interval.

Looking at your curve or the table in Step 2, find the time point when about 80% of users have done the critical event a second time. This is your usage interval!

List your product usage interval:

For example, if it takes 8 days for 80% of users to complete the event a second time, you can estimate that you have a weekly product usage interval. On the other hand, if 80% of users have completed the second event within 1 day, you have a daily usage interval.

For the sake of analysis, it's easiest to round to the closest usage interval:
Daily (1 day)
Weekly (7 days)
Bi-weekly (14 days)

CHAPTER 03

THE RETENTION LIFECYCLE FRAMEWORK

Now that you've done some investigation into the state of your analytics, your current metrics, and your product's usage, it's time to dive into the meat of this playbook. In this chapter, we'll introduce the Retention Lifecycle Framework, our in-depth framework for improving retention based on how users interact with your product.

In partnership with   mind the **PRODUCT**

What you'll learn in this chapter

In the first half of this chapter, we will discuss three ways you can analyze your retention as well as how to do these analyses in the Amplitude platform. The second half of this chapter is about how and why you should look at your users in 3 separate stages—new users, current users, and resurrected users; the flow of users between these three stages is what makes up the Retention Lifecycle Framework.

Topics and methods we'll cover in this chapter:

3.1 - 3 ways of measuring retention
3.2 - The Retention Lifecycle Framework
3.3 - Creating your lifecycle cohorts
3.4 - Take action

3.1 | 3 ways to measure user retention

As we mentioned in Chapter 1, retention is the proportion of users who remain active in your product over time.

Since there are a few different ways to think about retention, it's important to make sure you know how your analytics platform defines it and whether this is suitable for your product. (If it's not clear how your analytics platform defines retention, get clarity on this before going any further!)

At Amplitude, we let you choose between three different types of retention: N-Day retention, unbounded retention, and bracket retention.

Figuring out which type of retention calculation makes the most sense for you depends on your business goals and how your users naturally use your product—your critical event and usage interval (Chapter 2) should have given you a good understanding of this.

Now, let's look at each type of retention so you can determine which is best for your product.

N-Day Retention
As we mentioned in Chapter 1, when most people discuss retention metrics, they're talking about *N-Day retention.* N-Day retention measures the proportion of users who are active in your product on a specific day N after first use.

N-Day retention is well-suited for gaming or social apps, or any other type of product where you're trying to get users to exhibit regular, repeat behavior.

Unbounded retention

Unbounded retention shows you what percentage of users come back on a specific day or later. You can also think of unbounded retention as the opposite of your churn rate.

Example: Day 7 retention = percentage of users who came back on Day 7, or any day after that.

N-Day retention

N-Day retention tells you what percentage of users come back on a specific day.

Example: Day 7 retention = percentage of users who came back exactly on Day 7.

Bracket retention

Bracket retention allows you to define any time brackets that you want, from a single day/week/month to multiple days/weeks/months.

Example: You could set your 1st bracket as Day 0, your 2nd bracket as Day 1-7, and your 3rd bracket as Day 8-14. Amplitude will measure the percentage of users that return during each bracket.

The day a user is first active in your product is designated "Day 0." This could be the day that a user first downloaded your app, the day they registered, or the day they performed any kind of action within your app — played their first song, added their first friend, etc.

For all the new users who first became active on a certain Day 0, you can calculate their Day N retention over the days that follow, looking at what proportion of users were active on Day 1, Day 2, Day 7, and so on.

For example, Day 1 retention looks at how many users returned specifically one day after they were first active; Day 3 retention looks at how many users returned on *exactly* the third day after they were first active; Day 7 retention looks at users who returned *exactly* on the seventh day after they were first active, and so on. This means, if you were looking at Day 7 retention, a user must be active *on* Day 7 to be counted; it doesn't matter how many times users came back between Day 1 and Day 6, or if they returned on

Day 8. If they aren't active on Day 7, they are not considered Day 7 retained.

The N-Day retention curve below shows the weighted averages of all of the N-Day retention numbers in a Day 0 to Day 30 timeframe.

What if you expect users to use your product regularly every week or every month instead of every day? In this case, 'N-Week retention' or 'N-Month retention' would be more appropriate. Conceptually these are the same as N-Day retention.

Third week retention, for example, reflects the proportion of users who are active any time during the *third week* after they were first active (Week 0). Similarly, third month retention reflects the proportion of users who are active any time during the *third month* after they were first active (Month 0).

Unbounded Retention
Unbounded retention* shows you the proportion of users who came back on a specific day or *anytime after that day*. This type of analysis can be a better fit than N-Day retention for businesses that don't expect users to come back and engage with their product or service on any regular cadence.

..measured by [N-Day Retention] shown as [Retention]

N-Day Retention

Unbounded Retention
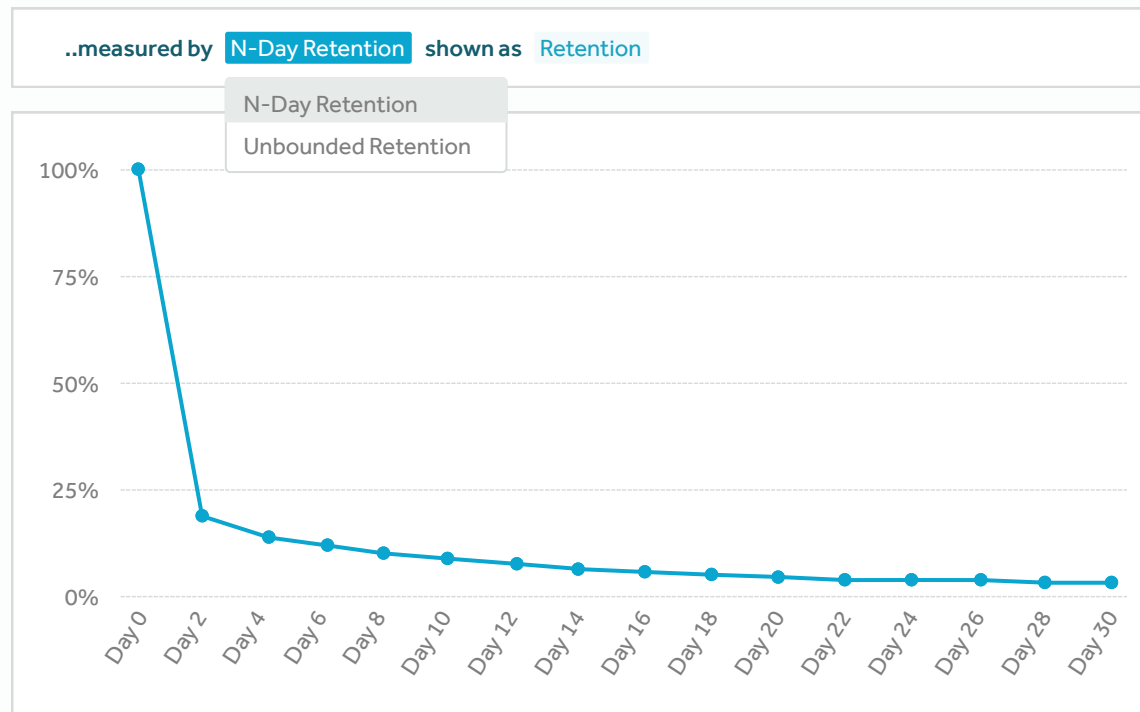
Note: Unbounded retention is sometimes called "rolling retention." We have chosen not to use this term because you are not calculating a true "rolling" or moving average using this method.

EXAMPLE

Social game

One of the App Store's most popular mobile social gaming apps, measures N-Day retention. This is because their most engaged users come back day after day to challenge other players around the world. In fact, for this app, completing a certain number of games within the first day is a key promoter of long-term retention.
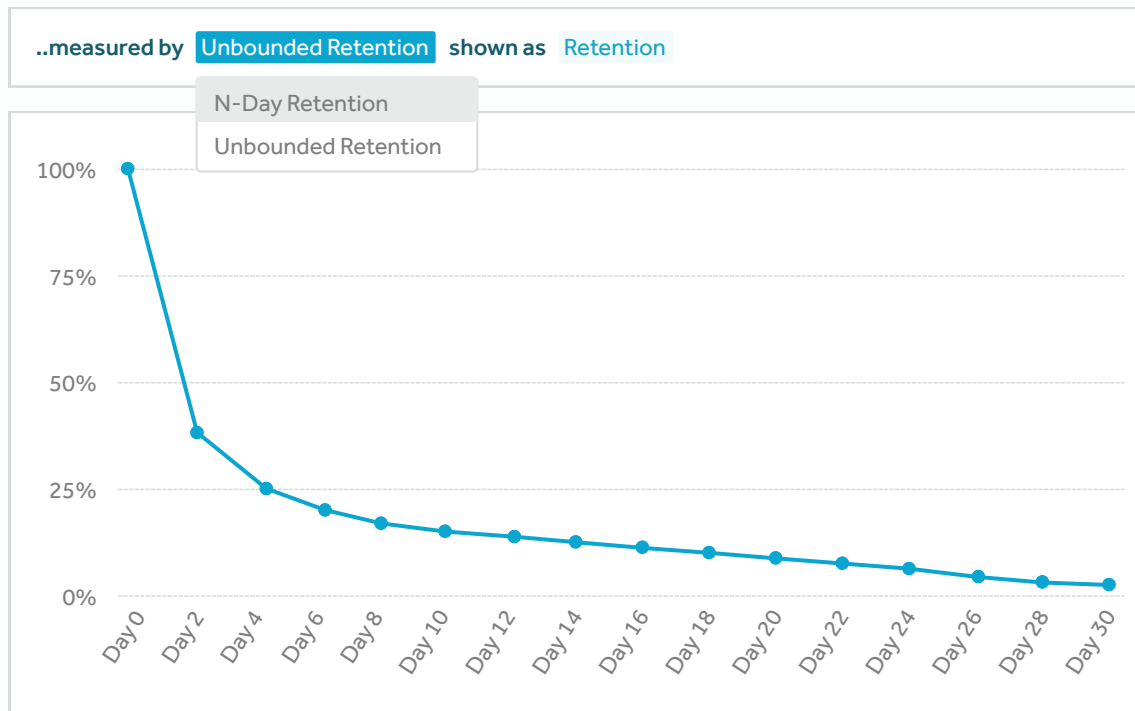
Mindfulness app

Another customer, a mindfulness app, measures N-Week retention. Engaged users of this app come back on a weekly cadence to complete a meditation session, so their retention metric looks at how many users continue to stay active on Week 1, Week 2, Week 3, etc. after first downloading the app.

The curve on the left depicts the same set of data-points that we looked at in the N-Day retention graph above, but this time shows unbounded retention numbers.

Notice our unbounded Day 1 retention rate is 50%, compared to only 21% for N-Day — this means that 50% of users who were new on Day 0 were active at any time on *or after* Day 1, whereas the N-Day retention rate only counts users who showed up on Day 1 exactly. Unbounded Day 2 retention is around 38%, which means 38% of users who signed up on Day 0 were active at any time on or after Day 2.

Put another way, unbounded retention is actually the inverse of your churn rate[1]. By measuring the inverse of your unbounded retention, you can see precisely how many users used your product on Day 0 and never returned again.

..measured by Unbounded Retention   **shown as** Retention

> N-Day Retention
> Unbounded Retention

[1] Source: https://amplitude.zendesk.com/hc/en-us/articles/217115887-Unbounded-Retention

On-demand delivery

A grocery delivery service does not expect people to use their product on a daily basis; they might not even use their service with a predictable cadence. Instead of looking at whether someone comes back exactly on Day 7 or Day 30, which is what N-Day retention would indicate, this company would get more value out of looking at their unbounded Day 7 retention—that is, how many new users return to buy groceries after their first week.

Bracket retention

Amplitude also allows you to calculate bracket retention. Bracket retention is a more nuanced version of N-Day retention; it lets you split up your retention analysis into custom retention periods, instead of limiting yourself to a daily, weekly, or monthly timeframe.

Once you understand your users and their expected usage patterns, you can begin to use bracket retention and define your own custom intervals of multiple days, weeks, or months.

Custom Bracket   ×

Customize how you measure retention entering the range of days for each bracket.

Bracket By	Day ▼	
1st Bracket	2	Day 0
2nd Bracket	3	Day 1-3
3rd Bracket	3	Day 4-6
4th Bracket	5	Day 7-11
5th Bracket		

Cancel   **Apply**

Here, we've set up four brackets in Amplitude:
1. Day 0: (one day)
2. Day 1–3 (three days)
3. Day 4–6 (three days)
4. Day 7–11 (five days)

Let's say for this example that an active user is someone who comes back and performs any kind of activity. Then, someone would be counted as fully retained by:

1. Registering for the app on Day 0
2. Coming back on Day 1, Day 2, or Day 3
3. Coming back on Day 4, Day 5, or Day 6
4. Coming back on Day 7, Day 8, Day 9, Day 10, or Day 11

On the next page, you can see what a retention curve might look like with these brackets.
Each multiple-day bracket is like a bucket, and if a user is active anytime inside that bucket, they're counted as retained. The spacing of each bucket in time is based on the pattern that you want to see your users exhibiting.
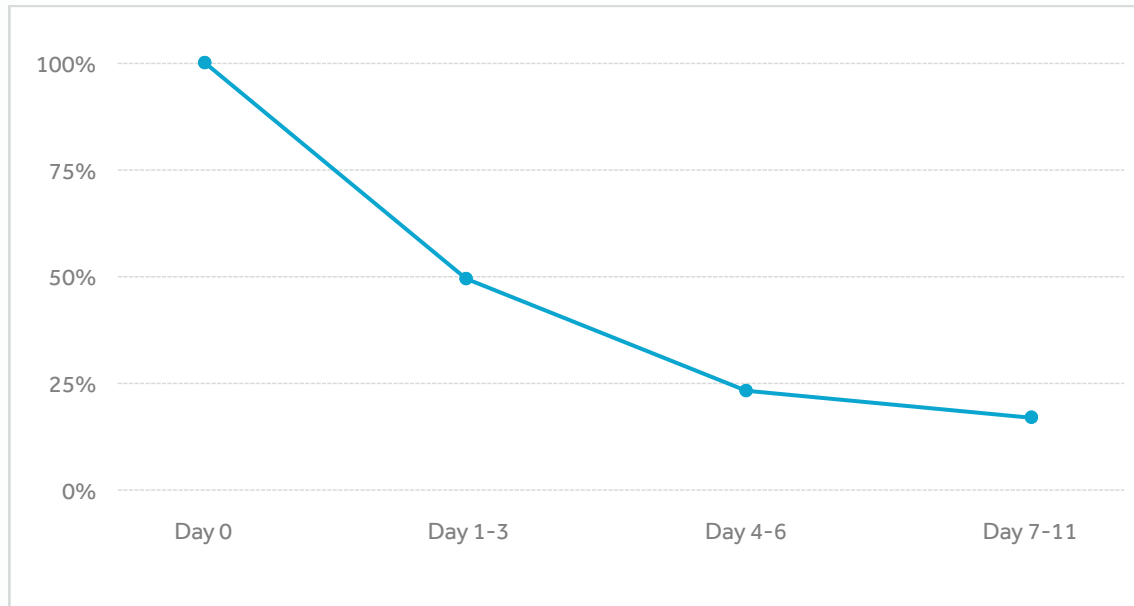
For a product that people use every three weeks to stock up on home goods, we might create buckets that span about three weeks, plus or minus a week. In that case, we don't care whether people come back exactly on Day 1 or Day 3, or whether their second order is after two weeks or a month — we just want to see a rhythm that proves they're getting value.

..measured by Day 0 / 1-3 / 4-6 / 7-11 **shown as** Retention

How Pinterest uses bracket retention

Pinterest uses one type of reten-tion metric, which they call "1d7," to measure how many of their new users come back and discover value in their product[2] (more on value discovery, see Chapter 6). This metric looks at the proportion of new users who who visited Pinterest any time between Day 1 and Day 7. The growth team also looks at retention of these users in the Day 28-Day 35 bracket, in order to know what percentage of new users are still active one month after signup.

Which retention is right for you?

To summarize the key differences between N-Day, unbounded, and bracket retention:

- **N-Day retention:** The percentage of us-ers that come back on a specific day.
- **Unbounded retention:** The percentage of users who come back on a specific day or after.
- **Bracket retention:** A flexible version of N-Day retention, where you can look at retention during custom timeframes.

How do you figure out which type of retention to use? There's no quick and easy answer, but it de-pends on a combination of your product's usage patterns and your business goals.

Figuring out which type of retention to use is heavily dependent on how frequently you expect people to use your product. If you expect people to come back on a regular basis, like daily for a mobile game, or weekly for an exercise app, then N-Day retention is probably a better fit. If you no-tice that many of your users don't have a steady usage pattern — for example, a food delivery app

where people place orders sporadically, then un-bounded retention may provide a more accurate measure of how your business is doing.

To start out, you can try measuring your retention via a few different methods to see which one gives you the most meaningful infor-mation.

The right retention metric should show you where you can improve and give you an accurate view of the health of your business.

[2] Source: http://jwegan.com/growth-hacking/27-metrics-pinterests-internal-growth-dashboard/

> **PRO TIP**
>
> What do we mean by a user that is "active"? In Chapter 2, we introduced the concept of a *critical event*—an action that you want a user to perform in order to be counted as truly active or retained. We recommend measuring retention [3] based on whether users come back to your app and perform your critical event, not just whether they open up the app. This will give you a more accurate view of how many users are truly getting value out of your product.

Retention Curve

Percentage of Users Returning

Days Since First Use
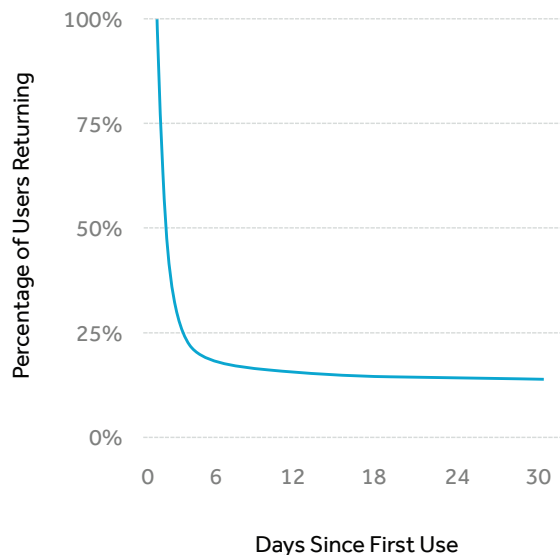
3.2 | **The Retention Lifecycle Framework**

By now, you're hopefully used to seeing a typical retention curve like the one above.

The fundamental problem with a retention curve like this is that it lumps together a lot of different *types* of active users in one single curve.

In reality, not all active users are created equal. In order to make meaningful, long-term improvements to your retention, you need to understand your active users as they flow through different stages of being retained.

The Retention Lifecycle Framework can help you accomplish this goal.

What is the Retention Lifecycle Framework?

What do we mean when we talk about the "retention lifecycle?" The way we think about analyzing retention and putting strategies in place to improve it should change depending on what *stage* a user is at in their product journey. Active users go through three different stages of retention: new user retention, current user retention, and resurrected user retention.

These three groups make up your total active users at any given time. If you're a daily usage product, this means that on any given day, an active user of your product will be at the new, current, or resurrected user stage.

The image maps how we think about the flow of users between these different stages of retention:

The main objective of the Retention Lifecycle Framework, and the Retention Playbook as a whole, is to get your existing new, current, and resurrected users to become more engaged current users.

To achieve retention that rivals the likes of Snapchat and Instagram, you have to engage differently with new users and current users, put strategies in place to resurrect inactive users, and move all of your users toward being more engaged overall.

The objective of the Retention Lifecycle Framework, and this playbook, is to get your existing new users, current users, and resurrected users to become more engaged current users.
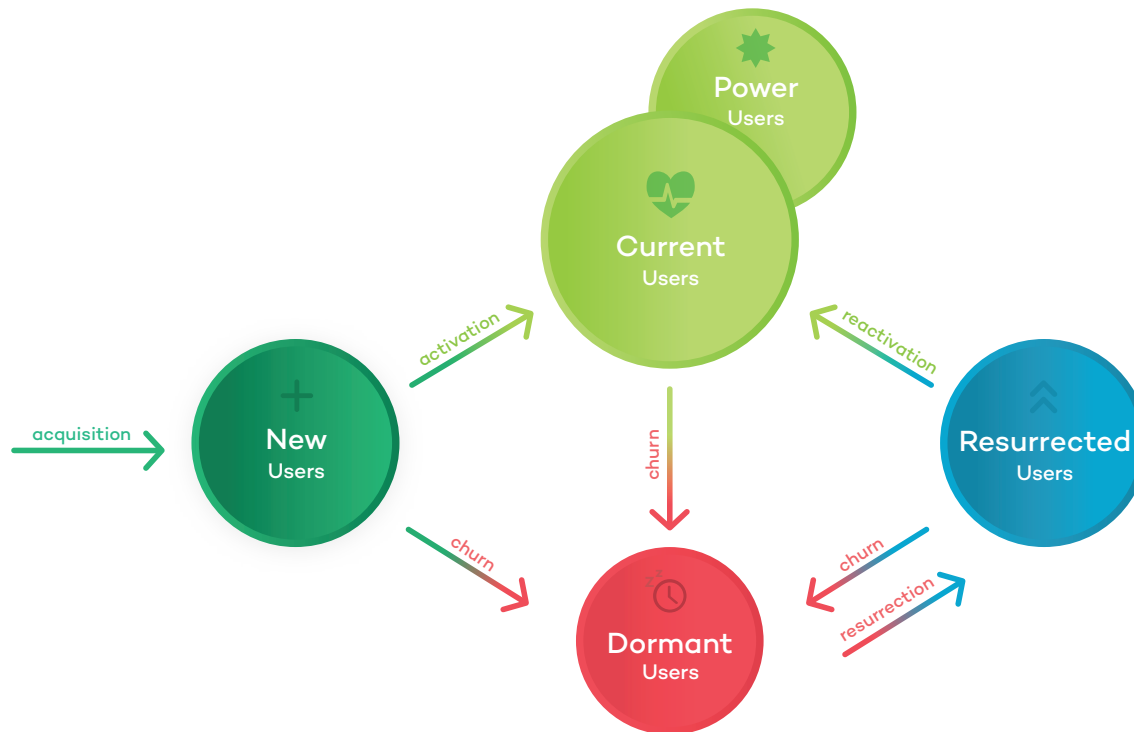
Chapters 5-7 will cover each of these user stages in more detail, but here's a quick high-level overview.

New User Retention
A lot of the existing content about improving user retention focuses on how to retain *new users*—things like revamping your onboarding flow or sending new user drip campaigns, for example. This makes a lot of sense, since so many users churn within the first 7 days. But *not* focusing on engaging your current users or finding ways to resurrect inactive users would be a huge wasted opportunity.

- **Why it matters:** Your new user experience is your product's first impression.
- **How to improve:** Figure out which behaviors or features bring new users back.

Current User Retention
Don't take your current users for granted. Every current user has the opportunity to turn into a highly-engaged power user. Your goal for current users is to continue providing them with value and keep them coming back.

- **Why it matters:** Understanding and improving the experience for your currently active users is critical for long-term growth

- **How to improve:** Figure out what certain groups of users are (and aren't) doing.

In the next chapter we'll talk about how to cluster your users into different *behavioral personas,* which can help you further understand and capitalize on the value (or values) that current users derive from your product.

Resurrected User Retention
users are, in fact, the largest percentage of most products' potential user pool. Many of these users are probably using a competitor's product, so they're high value as well. There are also numerous

studies that show that it's cheaper to resurrect a dormant user than it is to acquire one.

- **Why it matters:** Untapped potential for more active users.
- **How to improve:** Analyze why users are coming back.

When you find that more dormant users are coming back to your product, it's important to invest time into figuring out *why*. Did they respond to a particular winback campaign? Push notification?

Did they become current users or did they drop off again?

Why do you need the Retention Lifecycle Framework?
Why does the retention lifecycle matter? Because too many products try to artificially increase their active user counts through simply acquiring new users. Of course, top of the funnel is important (if you can't attract new users you have no one to retain) but the growth of your current and resurrected user base is what really matters for true growth.
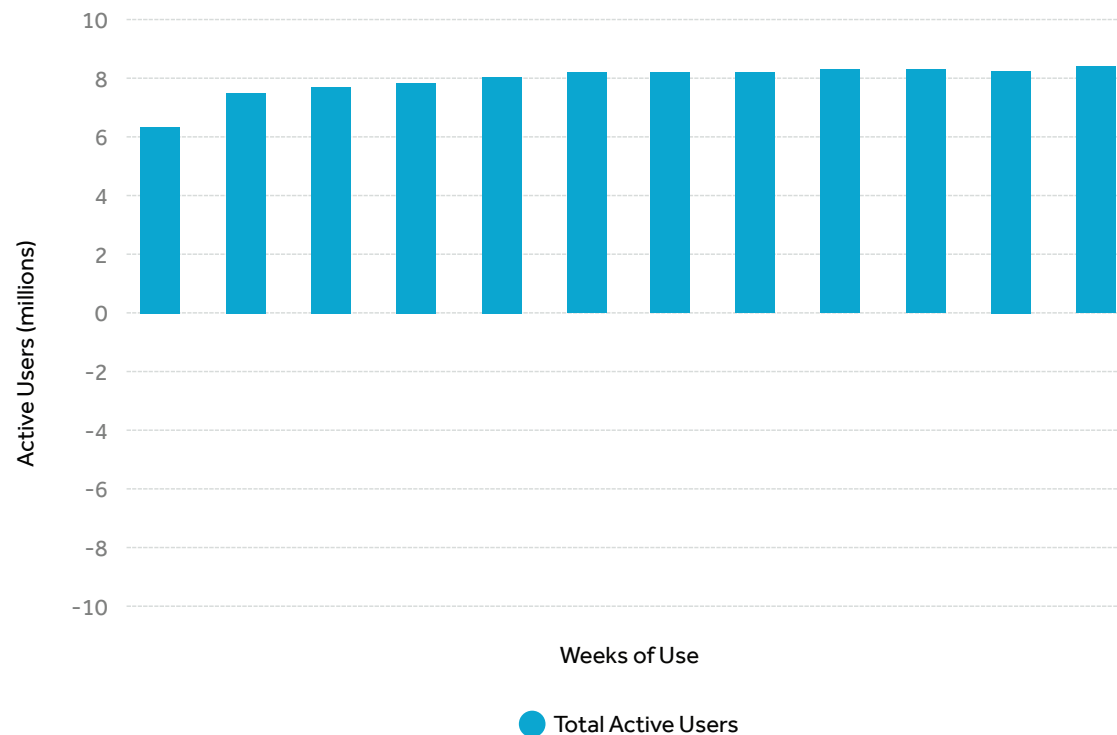
Let's take a look at the example below:
Here we have a bar graph showing the total number of active users for a certain product over the course of 12 weeks. The product grew from having 6 million active users to just over 8 million active users by week 12—things seem to be going great, right?

Break down these users into new, current, and resurrected users (graph on the right), however, and it's a different story.

New users (green) are definitely increasing over time, but your number of current users (blue) is actually decreasing. If you take this one step further and graph the number of users who become dormant every week (red), you'll see that this population is getting larger and larger over time. Bottom line: Although you may be gaining more new users, you're not experiencing true growth if a large proportion of users end up churning and you don't have a sustainable, growing base of current users.

3.3 | Creating your lifecycle cohorts

In product analytics, the broadest definition of a cohort is a group of users who share some common characteristic. To analyze your new, current, and resurrected users in the next few chapters, the first step is to create these cohorts.
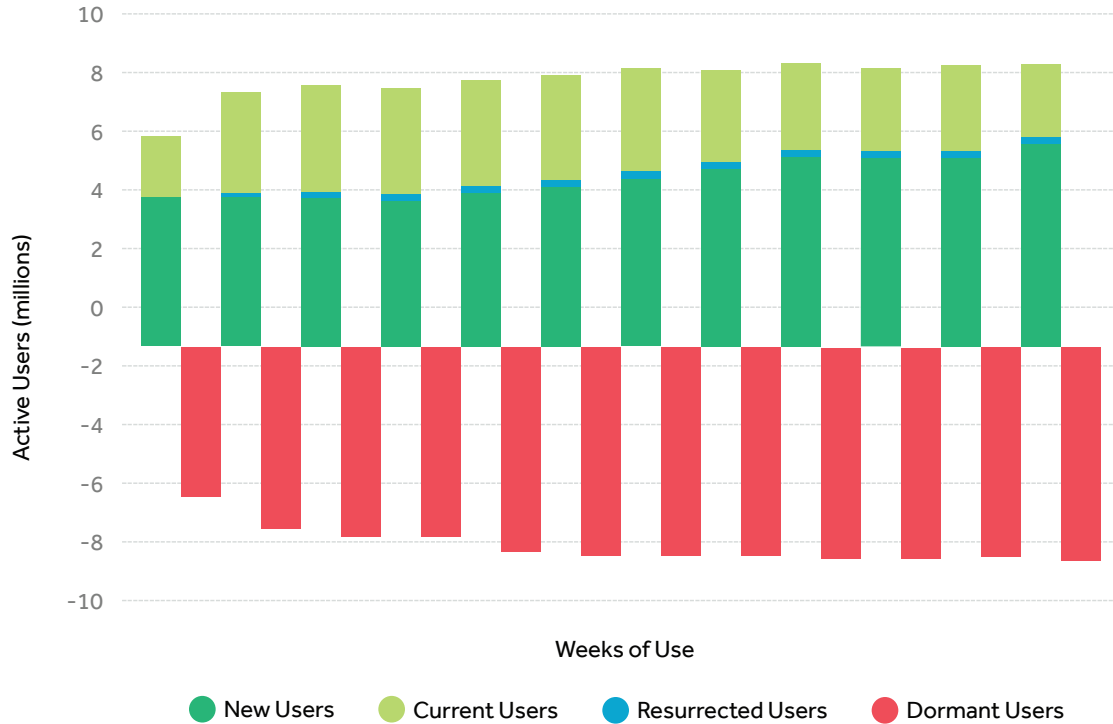
Depending on what analytics software you're using, you can either define these cohorts within that software or in your raw data.

Weeks of Use

● Total Active Users

[3] Source: https://amplitude.com/blog/2016/01/14/measuring-active-users/

New Users ● **Current Users** ● **Resurrected Users** ● **Dormant Users**

As we alluded to in Chapter 2, your product's usage interval is an important part of measuring your retention accurately, across all stages of the Retention Lifecycle Framework. This interval determines how you define your timeframes for new, current, resurrected users, as well as your

dormant users.

- *new user:* A user who is in their **first interval** of using the product.
- *current user:* A user who used the product **in the previous interval and the current interval.**

resurrected user: A user who is **active in the current interval, but was not active in the previous**

interval. Also, this user was active at some time prior to the previous interval (i.e. they are not new). Note that a user can only be "resurrected" once they've become dormant, which is why this definition requires one interval of inactivity.

- *dormant user:* A user who **did not use the product in the current interval but was active in the previous interval.**

Since you'll want to measure the long-term reten-

New User Timeline

active: 1st time

Current Interval

Current User Timeline

active | active

Previous Interval | Current Interval

Resurrected User Timeline

formerly active | inactive | active

Previous Interval | Current Interval
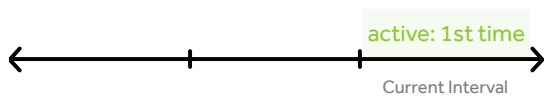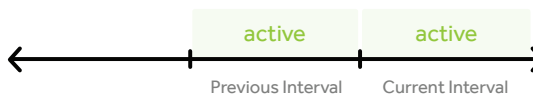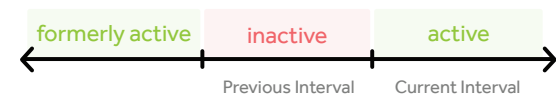
DO IT IN AMPLITUDE

Using Lifecycle to define new, current, and resurrected user cohorts

In Amplitude, you can use the **Lifecycle** feature to see your retention lifecycle breakdown and create your cohorts in just a few clicks. Lifecycle breaks out your active users into new, resurrected, and current buckets, and also shows you your churn in each time period. This example shows a product with a weekly usage interval.

When you hover over one of the bars, you'll see a tooltip. This is Amplitude's **Microscope** feature, which allows you to dig deeper into any data point and see the users and behaviors behind it. To create your cohort, just click 'Create Cohort' and give it a name. Repeat this for new and resurrected users.

Lifecycle

Event	..performed by Users
A Any Event	**1** All Users
	where *Select user property...*

..shown as Growth

Show Streams

View Users

Create Cohort

Download Users

Oct 14 - Oct 20   Oct 21- Oct 27   Oct 28 - Nov 3   Nov 4 - Nov 10

● New Users   ● Current Users   ● Resurrected Users   ● Dormant Users
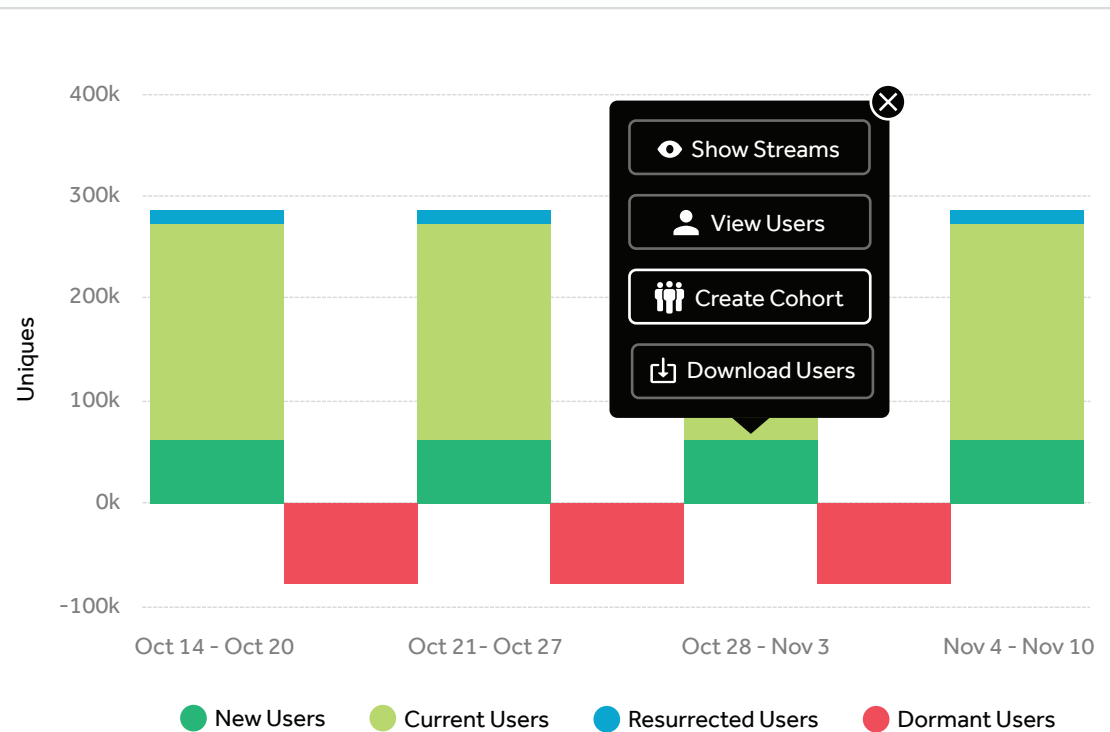
Measure your retention lifecycle split
Once you've created your cohorts, you can see what percentage of your active users fall in each stage of the lifecycle. Here's an example from a product's split in a given week:

Product A	# of Users	% Active Users
Total Active Users	593,744	
New Users	425,121	71.60%
Current Users	124,344	20.94%
Resurrected Users	44,279	7.46%
Dormant Users	414,295	

Creating a table like this will give you an idea of where your strengths and weaknesses are. In the example above, over 70% of the active users in the time period are new users. For the product to grow sustainably, this company needs to make sure they are retaining new users well to grow their current user base each period, and not only focusing on acquiring new users.

You can also see that they have pretty high churn relative to their total active users. While they definitely want to reduce that churn, this is also a large base of users to potentially resurrect, which we'll cover in Chapter 7.

Here's another example:

Product B	# of Users	% Active Users
Total Active Users	732,059	
New Users	161,207	22.02%
Current Users	510,988	69.80%
Resurrected Users	54,093	7.39%
Dormant Users	23,098	

This product has a much healthier distribution of active users. Almost 70% of their users are current users who were active in the previous period, and their churn is pretty low relative to the total number of active users. A company with a distribution like this already has pretty good retention, and can put more efforts behind top of funnel to drive more new users and accelerate growth.

To take note of your own retention lifecycle split, be sure to complete the worksheet **"Your Retention Lifecycle"** at the end of this chapter.

DO IT IN AMPLITUDE

Using Pulse to get a "pulse" on growth

Pulse is a chart view in **Lifecycle** that lets you get a quick *pulse* on your product growth. It depicts the ratio of incoming users to outgoing users for a particular day, week, or month and allows you to see how many active users you gain for each user that churns.

The Pulse ratio is calculated as:

(# of new users + # of resurrected users) / (# of dormant users)

Note that since both newly acquired users and resurrected users increase the pool of active users, they contribute to your total user influx.

At a high level:

- Pulse ratio > 1 indicates that you are gaining more users than losing them. Your product is experiencing true growth.
- Pulse ratio < 1 indicates you are losing more users than gaining them. Your product is *not* experiencing true growth.

..shown as Pulse

Growth
Dormant
Pulse
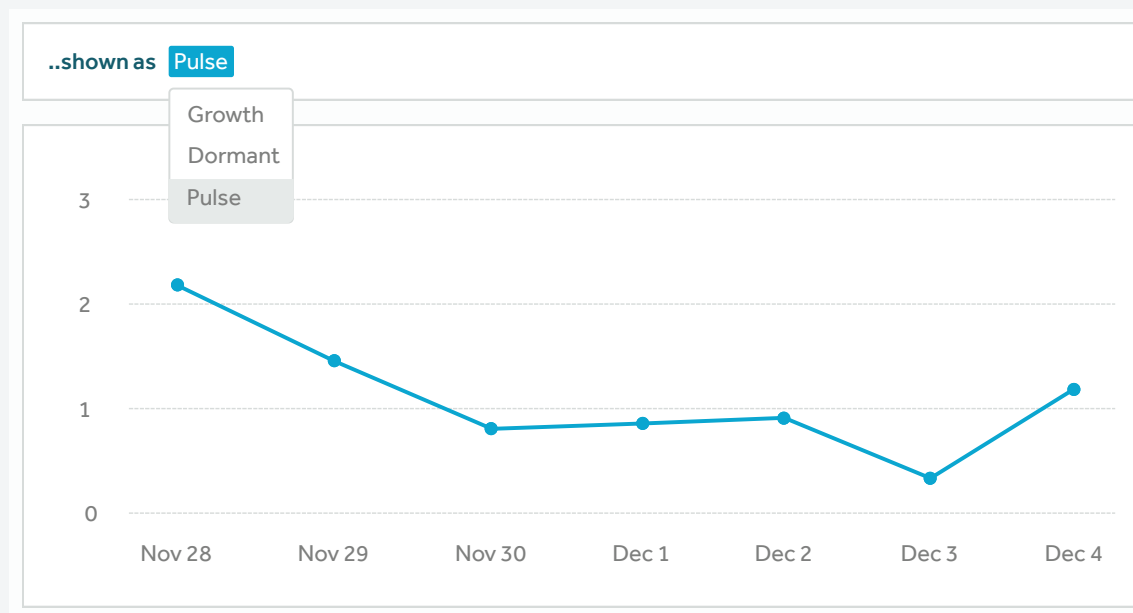
The chart above shows overall growth for this product decreasing between November 28 and December 4. At its highest point, on November 28, the pulse ratio was 2.19, suggesting that for every 2 users gained, one was lost. At its lowest point, on December 3rd, the pulse ratio was 0.36. This means, for everyone *one* user gained, roughly *three* users were lost on this day.

If you don't use Amplitude, you can still manually calculate this ratio after splitting up your user base into the lifecycle cohorts mentioned in Section 3.3.

3.4 | Take Action

The purpose of this chapter was to introduce different ways to analyze retention as well as the Retention Lifecycle Framework. Whichever retention analysis you choose for your business, the framework remains the same: first get a deep understanding of how users retain at each stage of their lifecycle, and then put in place strategies to turn your active users into highly engaged current users.

In the next several chapters, we will explain the deeper nuances of new, current, and resurrected user retention. To prepare yourself for those chapters make sure you:

❑   Determine which type of retention analysis makes sense for you (N-Day, Unbounded, or Bracket)

❑   Complete the worksheet Your Retention Lifecycle to define your lifecycle cohorts, measure your retention lifecycle split, and calculate your Pulse ratio.

PRO TIP

Reminder: Be careful about over-optimizing for just your power users. Understanding power usage is important, but you can't convert everyone into a power user overnight. As you iterate on your product, make sure to optimize for retaining the most number of users, not just the best users.

For example, say you're an on-demand delivery app and find that purchasing at least 7 items at a time leads to significantly higher long-term retention — however, only 2% of your users actually do this action. It would be a bad idea to encourage users to buy more by increasing the minimum cart size, as this would exclude a huge proportion of your current user base. Many of them may end up churning as a result!

FURTHER READING

Accounting for User Growth
Jonathan Hsu, Partner at Social Capital
https://medium.com/swlh/diligence-at-social-capital-part-1-accounting-for-user-growth-4a8a449fddfc#.bvu0we2z3

You're Measuring Daily Active Users Wrong
Archana Madhavan, Amplitude Blog
https://amplitude.com/blog/2016/01/14/measuring-active-users/

YOUR RETENTION LIFECYCLE

In this chapter, we introduced the Retention Lifecycle Framework, which breaks out your active users into three separate stages of retention: new, current, and resurrected.

Your product usage interval that you calculated in Chapter 2 determines how you define your timeframes for these stages. Remember, the definitions of each type of user are:

New user: A user who is in their first interval of using the product.
Current user: A user who used the product in the previous interval and the current interval.
Resurrected user: A user who is active in the current interval, but was not active in the previous interval. Also, this user was active at some time prior to the previous interval (i.e. they are not new).

New User Timeline

active: 1st time

Current Interval

Current User Timeline

active | active

Previous Interval | Current Interval

Resurrected User Timeline

formerly active | inactive | active

Previous Interval | Current Interval
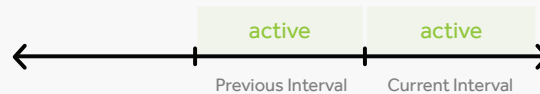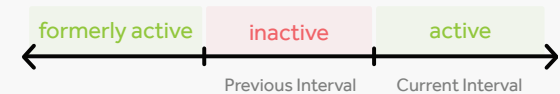
STEP 1: Measure your Retention Lifecycle split

Measuring your current distribution of new, current, and resurrected users will help you identify your strengths and weaknesses, as well as what stage you might want to focus on improving first.

Complete the table below by recording the size of each cohort in a given time interval (equal to your product usage interval from Ch. 2). Since you'll want to measure the long-term retention of these users, we recommend choosing a time frame that is at least 2 months before today.

	Number of Users	Percent of Active Users
Total Active Users		
New Users		
Current Users		
Resurrected Users		
Dormant Users		

For more details on how to create these cohorts, refer back to Section 3.3. If you're using Amplitude, you can use the Lifecycle chart instead of calculating these cohorts manually.

## STEP 2: Calculate your Pulse

"Pulse" is a ratio that gives you a quick check on the health of your product growth. In short, it's a ratio of incoming to outgoing users for a time interval.

Calculate your Pulse ratio as:

$$\frac{\text{\# of new users + \# of resurrected users}}{\text{\# of dormant users}}$$

using the numbers you recorded in Step 1 of this worksheet. If you're using Amplitude, you can use the Lifecycle chart instead of calculating this manually (see p. 36).

Write down your pulse here:

Remember:

- Pulse ratio > 1 indicates that you are gaining more users than losing them. Your product is experiencing true growth.
- Pulse ratio < 1 indicates you are losing more users than gaining them. Your product is not experiencing true growth.

CHAPTER 04

PRODUCT ANALYSIS TOOLKIT

Now that you've found your critical event and product usage interval, we're going to take a quick pause before we dive into your Retention Lifecycle. This chapter introduces key concepts and methods that that you'll use to analyze the behavior of users during each lifecycle stage.

Principles and methods for under-standing the Retention Lifecycle

In the next 3 chapters, we're going to walk you through the Retention Lifecycle Framework so that you can understand retention across your Current, New, and Resurrected Users.

Before we dive into that, this chapter will introduce some key concepts and methods that you'll use for analyzing the behavior of each group. It's a lot of information, so you should use this chapter as a reference as you work through Chapters 5-7.

In this chapter, we'll cover the following methods:

4.1 - An introduction to behavioral personas
4.2 - How to find your behavioral personas
4.3 - Digging into retention: your product analysis toolkit

4.1 | An introduction to behavioral personas

While demographic data can be informative (and we'll cover it later in this chapter), the most important way to understand your users is based on their behavior in your product.

Learning what active users are doing in your product can help you understand the value they get from using your product. An important thing to keep in mind is that people can be using your product in various ways and may not all be deriving the same value. This brings us to the concept of **behavioral personas.**

PRO TIP

Buyer or customer personas are a common concept in marketing. A persona is a representation of a key customer segment that the marketer wants to target, and can include customer demographics, habits, and goals. This information helps marketers develop the right messaging and marketing channels to reach that segment of potential buyers.

For this playbook, however, we're going to be talking about **behavioral personas** — each persona describes a distinct way of using your product. Much like in marketing, understanding these behavioral personas will inform your product design and development for different types of users.

We'll look at behavioral personas for all 3 stages of the retention lifecycle: current, new, and resurrected.

To illustrate, here's an example of behavioral personas you might be familiar with:

YouTube

- Creators: The small percentage of people who actually create videos and post them.
- Viewers: The vast majority of YouTube's traffic: people who are simply watching videos.
- Viewers + Commenters: People who view videos *and* leave comments (lots of internet trolls might fall in this persona).

Each of these groups of users, or behavioral personas, are using YouTube in a distinct way and for a specific reason. Creators use YouTube as a platform to get their content on the web and establish an audience, while Viewers and Commenters use YouTube for entertainment or to follow Creators they like.

PRO TIP

The 1% Rule

There's a rule of thumb about online communities, called the '1% rule' or '1/9/90 rule'[1], that taps into this concept of behavioral personas. According to this rule, only 1% of users actively create content in any internet community or social network. 9% of users may engage with the content, such as commenting, sharing, upvoting, etc. And the remaining 90%? The vast majority of users are only passively consuming the content.

If a platform like Youtube only focused on the 1% of creators and making the best possible experience for them, but neglected the viewing experience, that could have a huge negative impact on their growth.

While these actual ratios may not hold true for all social networks, and certainly not for all types of products, the general takeaway still does. You should never assume that all of your users are looking to get the same benefit out of your product. Make a conscious decision about what type of user you're optimizing for and their specific use cases.

1%
Create

9%
Interact

90%
Consume
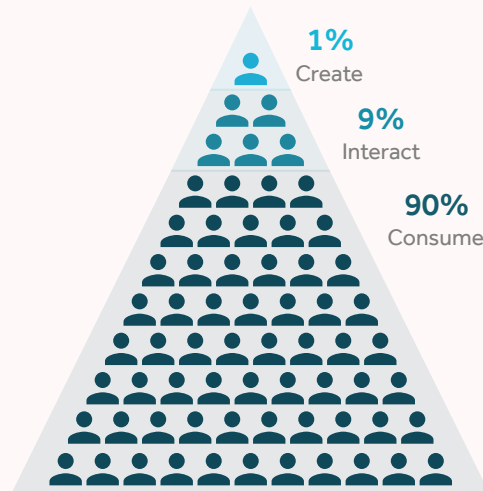
Why you need to know your behavioral personas

Understanding how different groups of users behave in and ultimately derive value from your product helps you:

1. **Shape your product to provide the best possible experience for your users.**
2. **Get a more nuanced understanding of your retention and find areas of your product you can improve.** Each persona may have drastically different retention rates, which you'll miss out on if you only look at retention for all of your current users lumped together.

If you're still an early stage startup and can really only focus on one use case for now, your personas can help you decide which group of users is the highest impact to focus on right now. If you have a larger team and more established product, you might notice a new use case you hadn't thought about before, and start making some changes to improve that experience and broaden your user base.

Either way, finding your behavioral personas will help you understand who your users are, what they're doing, and the opportunities you have to improve the experience for all of your users.

[1] Source: https://en.wikipedia.org/wiki/1%25_rule_(Internet_culture)

Behavioral personas: 2 quick case studies

From Burbn to Insta
Ever heard of Burbn? It was a location-based app, similar to Foursquare, that included multiple features for checking in at locations, earning points, and posting pictures. Unfortunately, it wasn't seeing much growth. When the founders studied their user behavior, they found that while most features weren't being used, there was a small group of users consistently using one aspect of the app: posting and sharing photos.

Seeing that data, they decided to scrap everything and focus solely on photo sharing. They made uploading photos fast and seamless, and in October 2010, they launched Instagram [2]. We all know the rest of the story: how Instagram quickly gained tens of millions of users, sold to Facebook for $1 billion in 2012, and continues to grow, now with over 500 million monthly active users.

Burbn could easily have been just another failed startup. Instead, its founders found one behavioral persona that was using their product and used it to shape the product into one of the most popular apps today.

Twitter: the customer support platform?
While Twitter was originally created as a social network, it soon became clear that many people were using it for something else entirely: customer support. People were tweeting complaints or problems they were running into, and companies were responding.

Eventually, Twitter realized that this use case was significant enough to warrant a product change to improve the experience for these users and businesses. In early 2016, they released new tools [3] that helped customers quickly move from Tweets to Direct Messages to discuss support issues, as well as provide customer feedback within Twitter. In some cases, Twitter is taking over the role of traditional help desks, support tickets, and email support.

In both of these cases, the companies noticed that a subset of their users had a unique way of using their product and decided to make product changes to support (or completely focus on) that use case to improve the user experience.

[2] Source: http://www.theatlantic.com/technology/archive/2014/07/instagram-used-to-be-called-brbn/373815/
[3] Source: https://blog.twitter.com/2016/making-customer-service-even-better-on-twitter

PRO TIP

Power, core, and passive users

For most products, you can think about bucketing users into power, passive, and core personas. This may not apply to every product, so think about whether it makes sense in your case. You can also have multiple personas in each category: for example, two types of Core Users who have distinct use cases.

- Power Users: People who use your product with a very high frequency or use a "power" feature that the majority of users don't take advantage of.
- Core Users: People who are using your app at a regular frequency and in the "expected" way.
- Passive Users: These are people who might not be using your app in the core way that you designed, but are still coming back at a regular frequency to do something.

We've included some real examples of behavioral personas in this chapter, which should give you a better idea of what power, core, or passive users might look like.

4.2 | How to find your behavioral personas

In this section, we'll discuss how to identify your own behavioral personas, assess retention differences, and decide which personas to focus on.

Quantitative *and* qualitative approaches to finding personas

To determine whether there are groups of people who are using your product in a specific way or for a certain use case, using *both* qualitative and quantitative approaches will get you the most complete answer.

Qualitative methods

Start with brainstorming some personas that you think (or know) exist based on your current knowledge of your users. Qualitative data from user interviews and user testing can be really helpful for determining personas. If you can, ask current users why they use your product and how it fits into their day. You can also study user activity timelines to look for behavioral patterns that jump out. Often, qualitative data provides more context for trends you observe in your user data.

Quantitative methods

It's important to supplement qualitative knowledge with quantitative methods, which are more scalable and give you a more accurate picture. Here are a few ways you can discover behavioral personas through your product analytics data:

1. Segment your user base by different user and event properties
2. Bucket users based on the frequency at which they perform certain key events
3. Use a clustering algorithm (like the one that powers Amplitude's Personas feature) to automatically group users based on similarities in behavior

EXAMPLE

For an on-demand delivery company, personas could depend on factors like how often people place orders and the amount spent per order. This company used their behavioral data to identify a few major personas.

The company used the first method listed above, segmenting their user base by the event property **amount spent per order.**

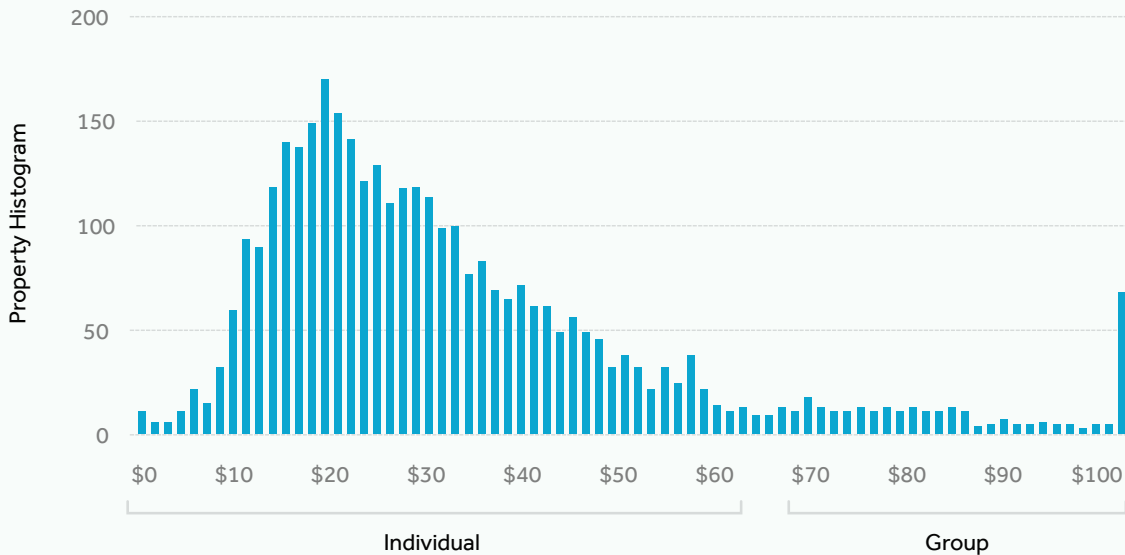**They found the following personas:**

- "Individuals": People whose typical order size indicates that they're just ordering for themselves.

- "Group orders": People whose typical order size is above a certain threshold, indicating that they're regularly ordering for a larger group, like a family, group of friends, or small company.

They also used the second method, bucketing users based on frequency of performing certain events. For this company, placing an order is the critical event.

The chart to the right measures a metric called **stickiness** (which we'll discuss more in section 4.3.6). Out of a 30 day period, it shows the percentage of users who placed an order on at least *x* days out of 30. In the chart, you can see that a little over 75% of users place an order on 2 or more days out of 30, while only about 20% of users place an order on 7 or more days out of 30.

Stickiness of Checkout Event

Distribution of Amount Spent Per Order
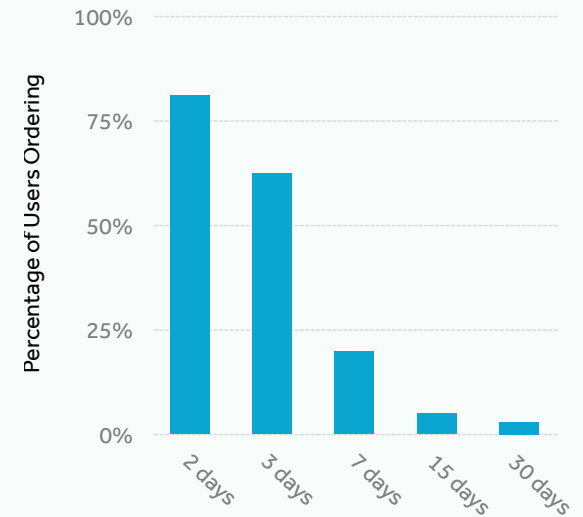
Based on this data, the on-demand company decided on these personas for order frequency:

- "Occasional orders": People who placed an order on 1-3 days per month.
- "Frequent orders": People who placed orders on > 4 days per month. For these people, using the on-demand service is part of their routine, rather than an occasional convenience.

People who fall into these different categories likely represent distinct demographic groups and are using the on-demand service for different reasons. It's important for the on-demand company to understand these personas so they can best meet the needs of all their customers.

DO IT IN AMPLITUDE
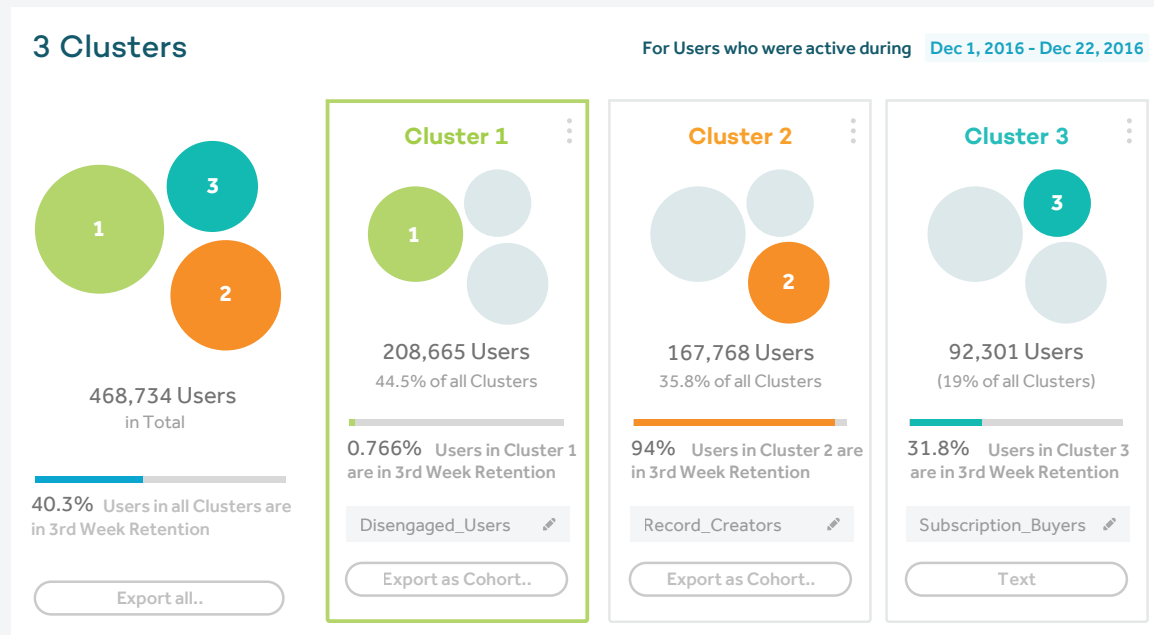
How to find behavioral personas in Amplitude

Amplitude has a feature called **Personas** that automatically groups users based on what actions they take, and how frequently they take them.

The Personas feature uses a unique clustering algorithm, based on k-means clustering. You can run Personas on any cohort of users, so in this case, you would select your current users cohort.
When you run Personas, it gives you a number of user groups, or clusters. You can see how many users in the time period fall in each group, and also see the percentage overlap with any other cohort you choose. For example, you can see what percentage of users in a cluster are retained 3 weeks later. For more details on how to use Personas in Amplitude, we recommend checking out the article in our Help Desk [4].

In the example below, you can see 3 clusters generated from the current users cohort of a business software product. Cluster 1 is the largest, making up 44.5% of all current users — but only 0.766% of users in Cluster 1 are retained in the 3rd week. On the other hand, you can see that users in cluster 2 have very high 3rd week retention: 94% of them come back in the 3rd week.

3 Clusters

For Users who were active during   Dec 1, 2016 - Dec 22, 2016

Cluster 1

208,665 Users
44.5% of all Clusters

0.766% Users in Cluster 1 are in 3rd Week Retention

Disengaged_Users

Export as Cohort..

Cluster 2

167,768 Users
35.8% of all Clusters

94% Users in Cluster 2 are in 3rd Week Retention

Record_Creators

Export as Cohort..

Cluster 3

92,301 Users
(19% of all Clusters)

31.8% Users in Cluster 3 are in 3rd Week Retention

Subscription_Buyers

Text

468,734 Users
in Total

40.3% Users in all Clusters are in 3rd Week Retention

Export all..

[4] Source: https://amplitude.zendesk.com/hc/en-us/articles/235648588

Personas also allows you to compare the behavior of users in each cluster. You can see tables of events that a given cluster performs more often or less often when compared to the other clusters. When we look at Cluster 2, which has the best retention, you can see that users do the 'Create Record' action 60 times on average, which is much more often than Clusters 1 and 3.

The table also shows you the number of standard deviations above (or below) the mean, which gives you an indication of how significant that difference is. In this case, this cluster's data is a good indicator that users who do 'Create Record' above a certain threshold might be more likely to retain long term.

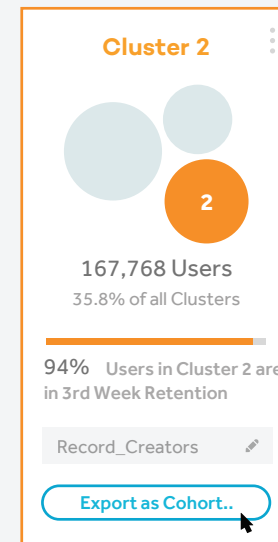## Create cohorts of these behavioral personas for further investigation

Once you've identified a few key personas that you'd like to learn more about, you need to create cohorts of these users so that you can do more analysis on them.

Events Greater than Average	All Clusters 468,734 Users	Cluster 2 167,768 Users	Cluster 1 208,665 Users	Cluster 3 92,301 Users
	Avg # Events	Avg # Events	Avg # Events	Avg # Events
★ 1 Create Record	27.95	60.49 +1.1 σ	4.71 -0.8 σ	21.32 -0.2 σ
★ 2 Click Support Page	4.2	10.32 +1.1 σ	0.095 -0.7 σ	2.34 -0.3 σ
★ 3 Remove Channel	3.85	9.32 +1.1 σ	0.096 -0.8 σ	2.41 -0.3 σ
★ 4 Create Channel	4.03	9.46 +1.1 σ	0.20 -0.8 σ	2.78 -0.3 σ

Cluster 2

2

167,768 Users
35.8% of all Clusters

94%   Users in Cluster 2 are in 3rd Week Retention

Record_Creators

Export as Cohort..

In Amplitude's Personas feature, you can create cohorts directly from Personas to investigate further.

4.3 | Digging into retention: your product analysis toolkit

Once you've created your lifecycle cohorts (Section 3.3) and identified your behavioral personas (Section 4.2), you should measure the baseline retention for each cohort and dig deeper into the drivers of retention. This section covers a number of product analysis methods that you can use to do that. You don't need to use all of these methods — think of this chapter as the toolkit from which you can pick and choose the methods that will be most enlightening for your product and your users.

Through these methods, you can answer questions like: Does a certain persona retain better than others or have a higher lifetime value (LTV)? What actions seem to be contributing to those metrics? How could you get more users into that persona?

Your product analysis toolkit includes:

4.3.1 - Measure & compare baseline metrics for each cohort and persona
4.3.2 - Investigate user properties
4.3.3 - Use behavioral cohort analysis to measure the impact of different user actions
4.3.4 - Conversion rate through your critical path funnel
4.3.5 - Find your most common user flows
4.3.6 - Measure stickiness
4.3.7 - Session metrics

4.3.1 | Measure & compare baseline metrics for each cohort and persona

Remember, retention is the main metric that you will diagnose in each chapter and try to improve over time. Later, we'll break down this retention by different user properties and behavioral personas.

First, plot the retention curve of your current users. Remember, you can use N-Day, unbounded, or custom bracket retention, as discussed in Section 3.1. Depending on your business goals, one may make more sense for you to use than the other.

Here are the recommended retention metrics to look at based on your usage interval:

Usage Interval	Retention Metric
Daily	Daily retention for at least 30 days
Weekly or Bi-weekly	Weekly retention for at least 4 weeks
Monthly	Monthly retention for at least 3 months

⊏⫶⊐ Retention Analysis

Baseline Retention - Current Users

First event

A Play Song

..then the return event

B Play Song

..performed by Users

1 Current Users

where Cohort = Current Users

..measured by N-Day Retention **shown as** Retention
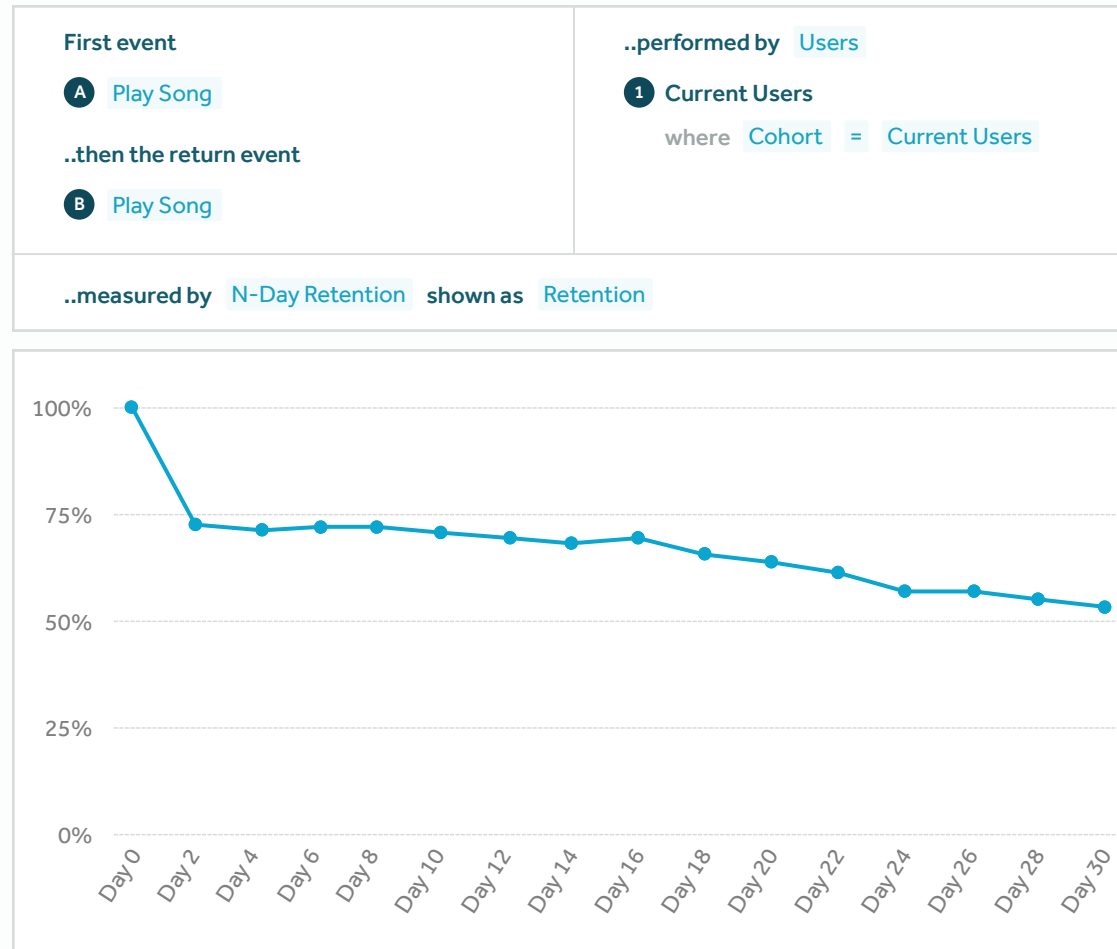
In this chart, you can see the retention curve for current users of a music streaming app. The first event and returning event are set to 'Play Song', which is this product's critical event.

PRO TIP

A user property is any characteristic that is tied to an individual user. Some common examples are:

- country
- age
- language
- platform (iOS, Android, web)
- app version
- customer plan type
- paying vs. non-paying user

Compare the retention curves of behavioral personas

Comparing the retention curves of different behavioral personas will help you decide which personas to focus on — should you commit resources to converting more users to certain "power" personas?

Do some of your core or power behavioral personas retain better or worse than others? And how much of a difference is there over your overall current user retention? By quantifying these retention differences, you'll have a better idea of which personas to focus on in your retention strategy.

Retention curves make it really easy to see these retention differences at a glance. Below,

you can see the daily retention curves for 3 different behavioral personas found in Amplitude. Clearly, Persona 2 (green) has much better retention than the other 2 personas. In a case like this, you'd want to understand whether you can get people in Personas 1 & 3 to behave more like Persona 2 to improve their retention.

4.3.2 | Investigate user properties

Looking at user properties will give you a high-level understanding of who these users are. Measure the breakdowns of key user properties to help you identify trends and groups of users you should study more closely.

Daily Retention by Persona

Persona - Cluster 1   Persona - Cluster 2   Persona - Cluster 3
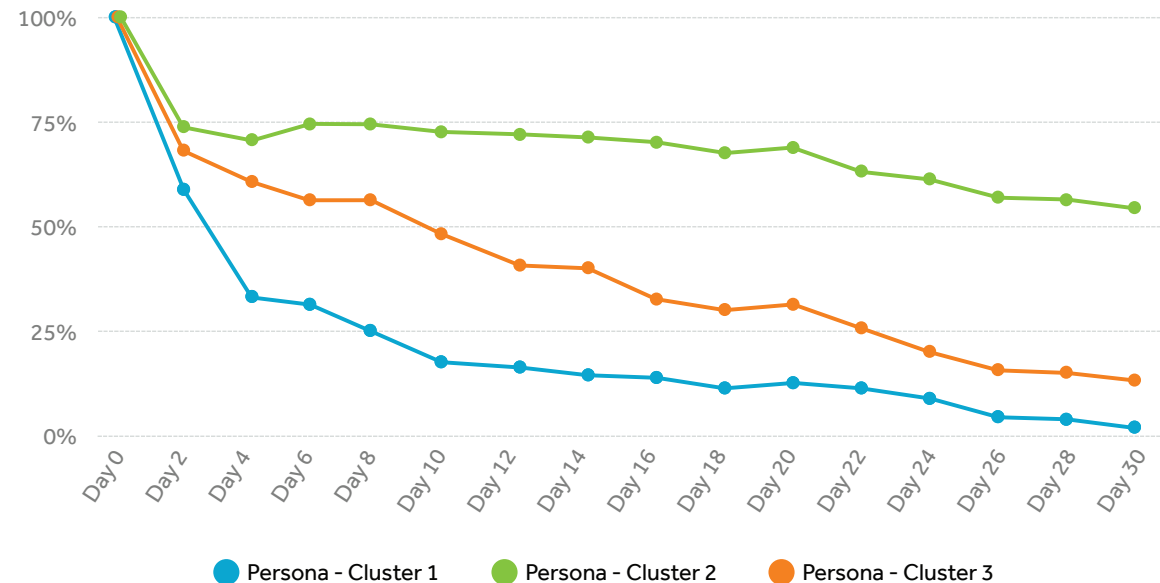
DO IT IN AMPLITUDE

User properties in Amplitude

In Amplitude, user properties can get updated throughout the course of a user's lifecycle in your product. Amplitude tracks a set of default user properties and also allows you to define any custom properties you need.

You can segment every chart by user properties and use them in behavioral cohort definitions.

..performed by Users

1 **All Users**   ✕

   where Cohort = Current Users   ✕

🔍 Search..

User Properties

Cohort

Carrier

City

Device Family

Device Type

Language

Library

User Properties

For all Users, show composition by Region

Segments

From the following User segments

1 **Current Users**

   where Cohort = Current Users
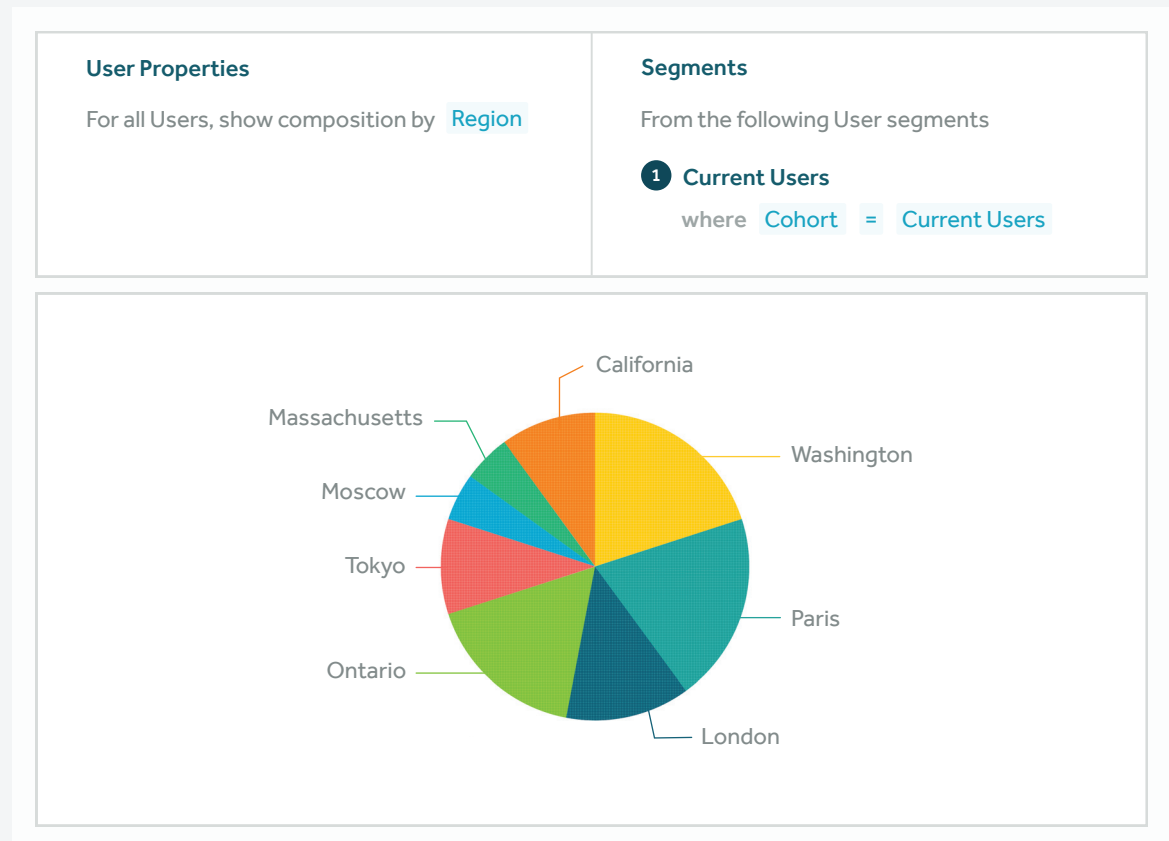
In Amplitude, you can use the **User Composition** view to quickly visualize different user properties of a specific group of users. Above, you can see the breakdown of the current users cohort by Region.

EXAMPLE

One of our customers, an on-demand delivery company, segmented their retention curve for current users by the Platform user property. As you can see, there are some large differences in retention between the different platforms, and people on iOS have the lowest retention of all.

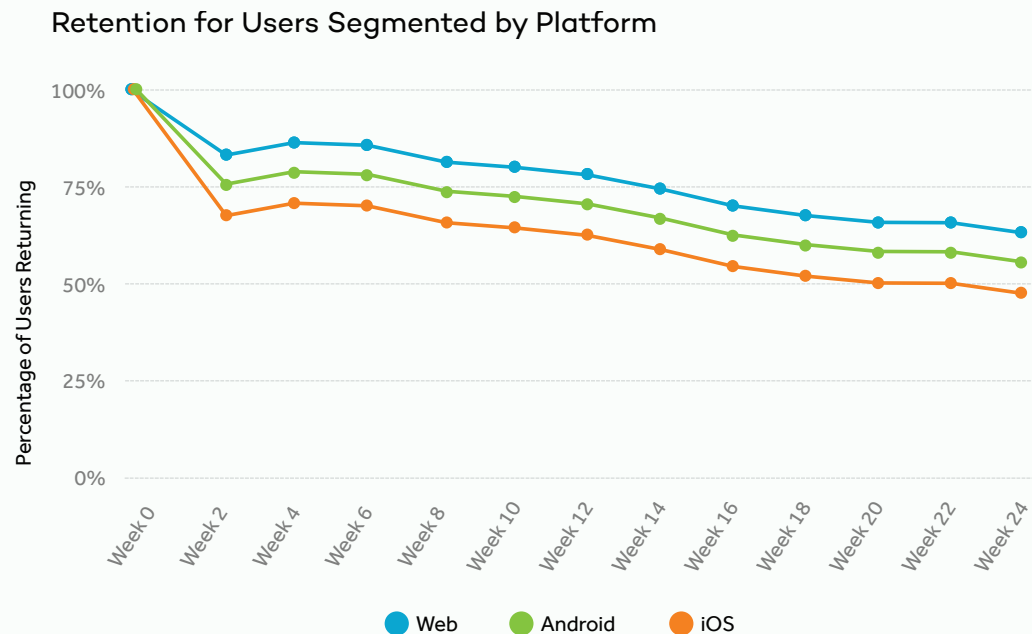**Takeaway:** Based on this data, we recommend they look more closely at behavior across their three platforms and see what about the user experience could be improved to get Android and iOS retention levels to match the web.

Segment retention curves by user properties
Once you identify any user properties you want to study, segmenting your retention curve by these properties will help you identify any significant differences that are worth exploring further.

Retention for Users Segmented by Platform

Legend: ● Web   ● Android   ● iOS

4.3.3 | Use behavioral cohort analysis to measure the impact of different user actions

While segmenting your retention curve by user properties can help you uncover useful insights, it doesn't give you any information about how users' behavior within your product impacts retention. That's where **behavioral cohorts** come in. A behavioral cohort is a group of users who performed (or didn't perform) certain actions within a defined time period.

Here's an example. Facebook found a famous insight that users who added at least 7 friends within their first 10 days were more likely to be retained long term. **That's a behavioral cohort: there's a behavior (adding at least 7 friends) and a time period (within 10 days of signing up).**

PRO TIP

In user analytics, the broadest definition of a **cohort** is a group of users who share some common characteristic.

There are two main types of cohorts:

- **Acquisition cohorts** group users by when they signed up for your product. You might break down your cohorts by the day, week, or month they signed up. By measuring the retention of these cohorts, you can see how long people continue to use your product from their initial start point.
- **Behavioral cohorts** group users by behaviors they perform in your product within a given timeframe. These could be any number of discrete actions that a user can perform —

sharing a photo, playing a song, buying gold coins, or any combination of these actions. A cohort will be a group of users who did those actions within a timeframe that you specify (for example, within the first 3 days of use). You can then measure how long different cohorts stay active in your app after they perform those actions.

Forward-thinking companies today are using behavioral cohorts to understand how different actions or characteristics of users impact retention.

DO IT IN AMPLITUDE

Creating behavioral cohorts

In Amplitude, it's easy for anyone to create behavioral cohorts and apply them across different charts to measure the impact of user actions on your metrics. In the example on the right, you can see a cohort of users who started a trial subscription within 7 days of first using the product.

You can add additional events and user properties to any behavioral cohort definition, as well as specify that users have *not* done a particular action or don't have a certain user property.

Once you've created a behavioral cohort, simply select that cohort in a retention chart to see how well those users retain. You can compare their retention with users who are not in the cohort, or with a different cohort of users.

The chart on the right shows the retention curve for 3 cohorts of users:

* started trial - first 7 days
* NOT started trial - first 7 days
* played at least 3 songs - first 7 days

As you can see, users who started a trial in their first week have significantly better retention than users who didn't, indicating that starting a trial could potentially contribute to better retention. Users who play at least 3 songs are somewhere in between, but still nowhere close to users who start a trial.

Started Trial Subscription Within 7 Days

The Users who.. | ..performed TrialSubscription

with a count >= 1 time

anytime within 7 days of first use (only new users in the past 90 days)

And also | ..performed Event   ..had been Active   ..had been New   ..had user Property

Retention for Three Cohorts

Percentage of Users Returning

● Started Trial   ● Did Not Start Trial   ● Played At Least 3 Songs
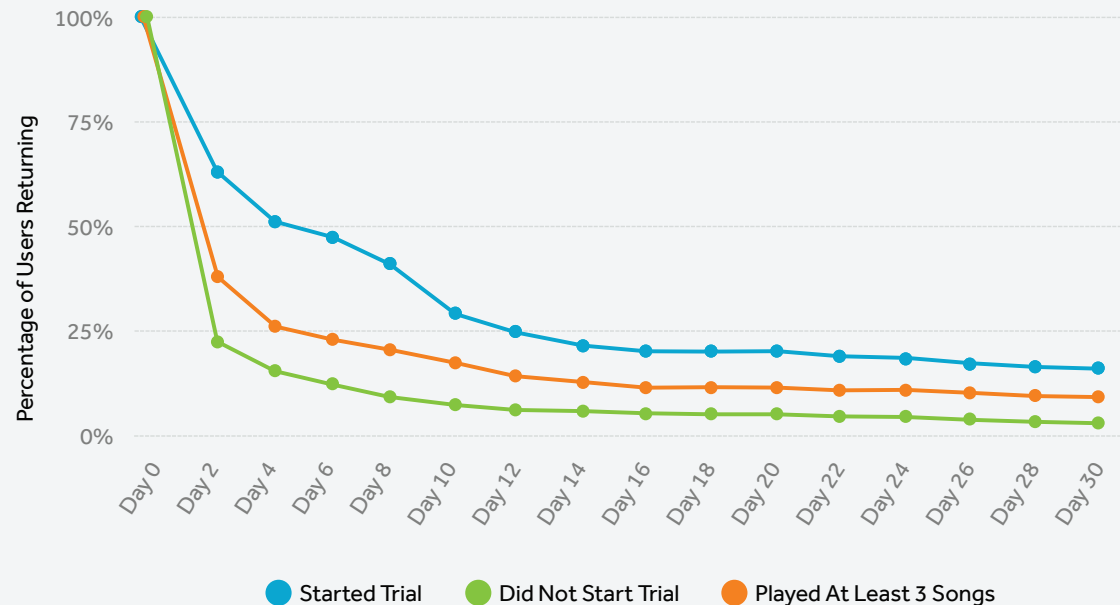
Takeaway: Behavioral cohorts can help you form and test hypotheses about actions that are important for retention. With the graph above, you now have correlation, but not causation. In this case we recommend running a test where you encourage more users to start a trial early in the user experience, such as in the onboarding flow or with an email reminder. Then, you can evaluate whether getting more users to start a trial causes higher overall retention.

4.3.4 | **Conversion rate through your critical path funnel**

A **critical path funnel** is the series of actions you anticipate users taking in order to complete your critical event. A funnel chart will allow you to visualize the drop-off along each of those steps. You can also compare conversion rates for different groups of users.

Not every product will have a clearly defined path that you want your users to repeat, so this analysis may not be necessary for everyone.

EXAMPLE

One of the companies we work with, an on-demand delivery company, identified their critical funnel as:

App launched → Select vendor → Add item → Complete order

Here's the funnel for the company's current users — each step in the funnel shows the number of users who moved on from the previous step. Of everyone who entered the funnel (by opening the app), 66% did all of the steps and completed an order. When we segmented the funnel by platform (iOS, Android, or web), we found that users on iOS had a higher conversion rate through the critical funnel than web and Android.

Takeaway: The largest drop-off happens between the App launched → Select vendor step. This is the step we recommend focusing on first if we want to improve the conversion rates for web and Android.

App Launched > Complete Order
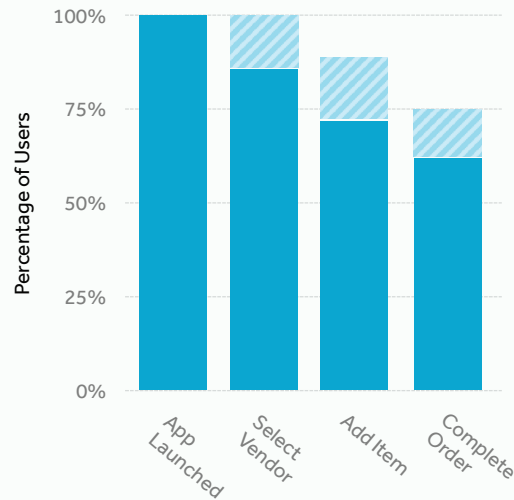
Critical Funnel Segmented by Platform

● iOS ● Web ● Android
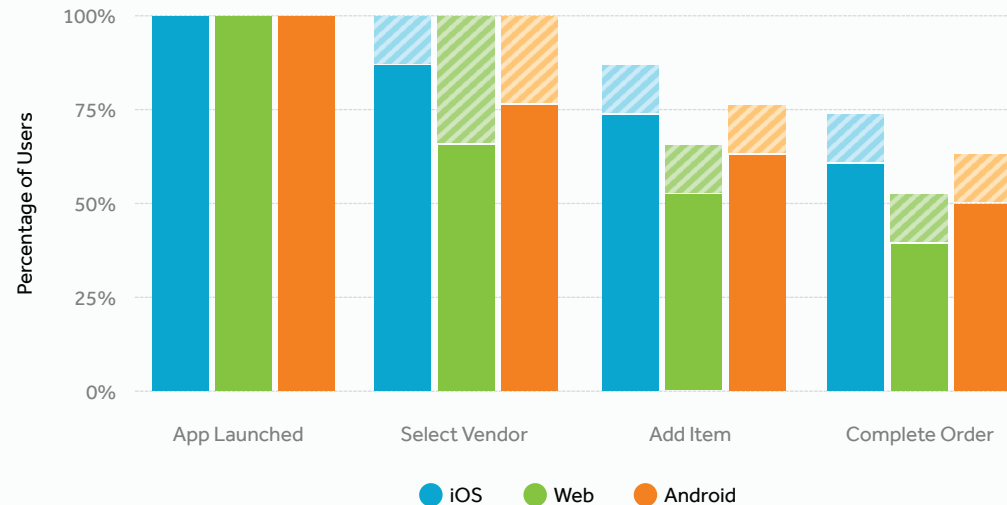
DO IT IN AMPLITUDE

Visualizing user routes with Pathfinder

**Creating your own path analysis visualization can be very time-consuming; instead, the Pathfinder feature in Amplitude enables you to explore the actions users take to or from any point in your product.** Pathfinder aggregates the paths users take, so that you can see the percentage of users or sessions that followed each sequence.

You can specify a particular starting action to see all of the events that follow, or select an ending action to see all of the paths that lead up to that event. For example, a common use case is to see what users do before making a purchase or upgrading their plan.

In addition, you can study the behavior of a certain group of users by defining a user segment or choosing a behavioral cohort. This allows you to compare the paths of different groups of users.
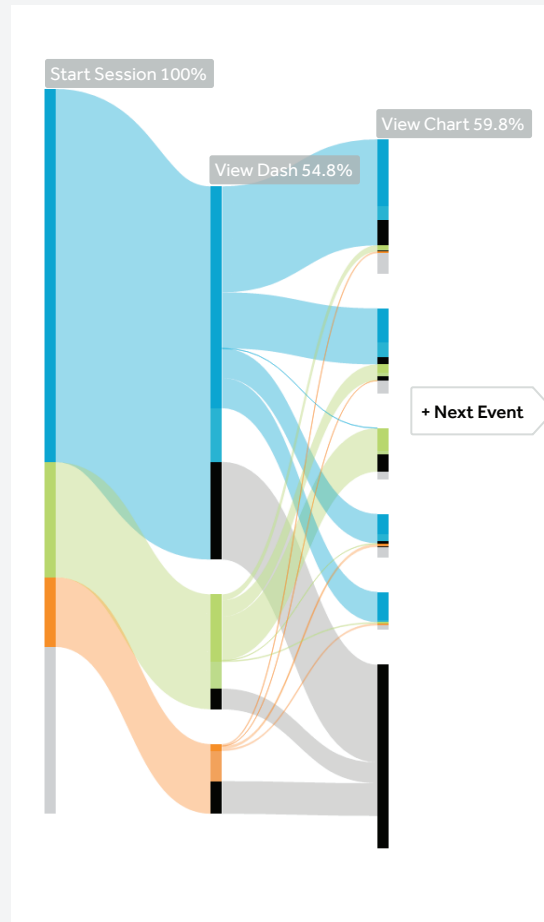
4.3.5 | Find your most common user flows

Funnels are great for measuring well-defined sequences, but what if you'd like a broader picture of how new users are behaving? It's impossible to know ahead of time every single route a user might take in your product, and people often defy our expectations of 'normal user behavior'.

This is where user activity streams that show you sequences of events can be really useful. Depending on your analytics setup, you might be able to get raw logs of all of the events that users do and study some of these sequences to look for patterns. Some analytics platforms (including Amplitude) will give you access to these user timelines out of the box. In addition, you can do some user testing to watch how people navigate through your product.
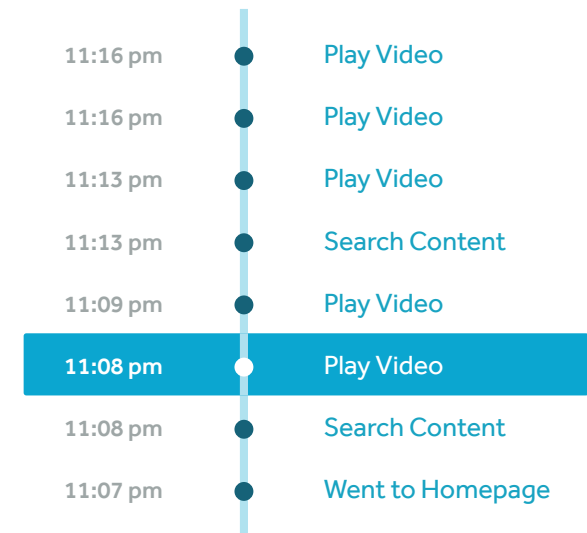
There are a number of questions you can answer with path analysis, including :

- Comparing the paths of retained users to dormant users
- Seeing what users who drop out of a funnel are doing instead
- Identifying the main paths toward an important event in your product, like creating a new account or making a purchase
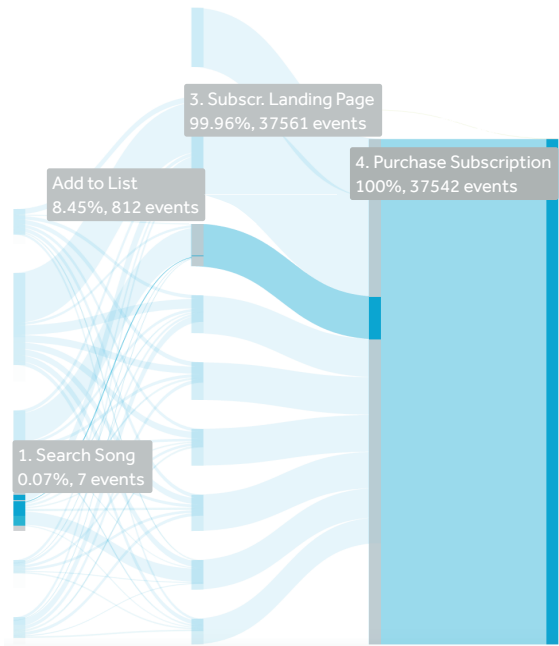
For example, you can use path analysis to discover the paths users take to end up at your critical event. In the image above, you can see what users are doing before they purchase a subscription in a music streaming app.

4.3.6 | Measure stickiness

Measuring stickiness provides another dimension of understanding user engagement. While retention measures the rate at which users return over time, stickiness looks at usage frequency — how many times people use your product within a certain time period.

To compare stickiness metrics, you can measure stickiness both for:

- General usage: how many days out of a week or month did users open the app and do anything?
- Your critical event: how many days out of a week or month did users do the critical event?

If your product has a *daily* or *weekly* usage interval, you should compare the weekly stickiness metrics of your persona cohorts. If your product has a *biweekly* or *monthly* usage interval, you should compare the monthly stickiness metrics.

General usage stickiness in a social mobile game.

Stickiness can help you identify your most engaged users. Here's a chart showing stickiness for the main behavioral personas of one of our customers, a social mobile game. This graph is measuring stickiness for general usage, counting each day that a user opened the app.
As you can see, Persona 4 is the most sticky. Almost 75% of the users in that cohort are opening the app for 7 out of 7 days in a week — we don't need to tell you that's *really* high.

Takeaway: With a chart like this, we recommend focusing in on Persona 4 to learn more about what makes them so engaged. You'll then want to encourage those behaviors in other users to get more people to match Persona 4.

Active User Stickiness

Percentage of Users Ordering

● Persona 1   ● Persona 2   ● Persona 3   ● Persona 4   ● All Current Users
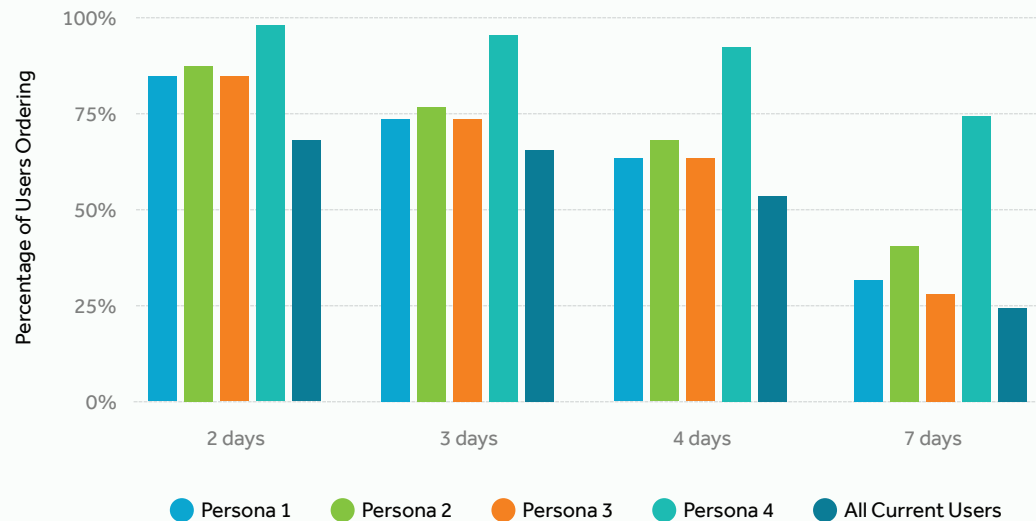
DO IT IN AMPLITUDE

Session Metrics in Amplitude

Amplitude has default ways of defining sessions [5], but you're free to modify this definition as makes sense for your product. For example, a music streaming service would want a session to last as long as someone was playing music, even if the app is in the background.

Key session metrics you can measure are:

- **Length distribution:** the distribution of session lengths of all users, shown as a histogram.

- **Average length:** the average session length per user.

- **Average per user:** the average number of sessions per user, per day.

Below, you can see a graph of session length distribution. The chart shows that the greatest number of sessions are between 10-30 minutes long.

Session Length Distribution
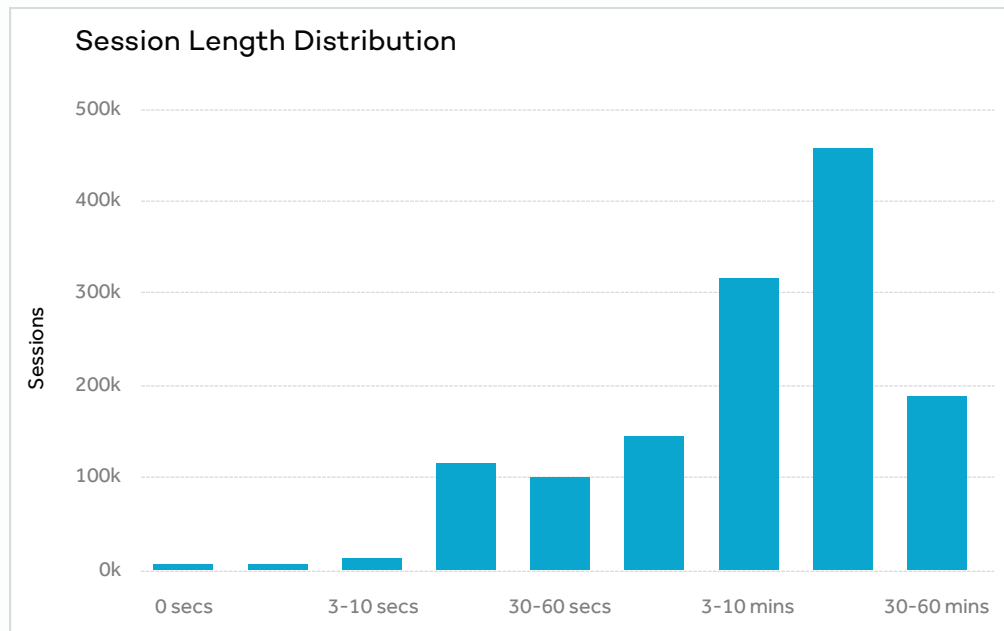
4.3.7 | Session metrics

Yet another way to round out your understanding of user engagement is with session metrics. Loosely defined, a session is the period in which a person is actively using your product.

A caveat is that the length of time someone spends in your product may not be a good indicator of engagement for your business. You should only look at session metrics if it makes sense for your app. For example, an on-demand delivery service or an app that helps you find and book exercise classes wouldn't necessarily care how much time a user spends in the product — if anything, the process to complete an order should be as fast and seamless as possible. For a social game or music streaming service, however, the amount of time spent in the app directly correlates with how engaged a user is.

EXAMPLE

Here's a graph of average session length for different behavioral personas in a lifestyle app. Here we see that Power Users (blue) spend much longer in the app, with an average session length around 30 minutes, compared to roughly 16 minutes for Passive Users (green) and Total Current Users (orange).

Average Session Length
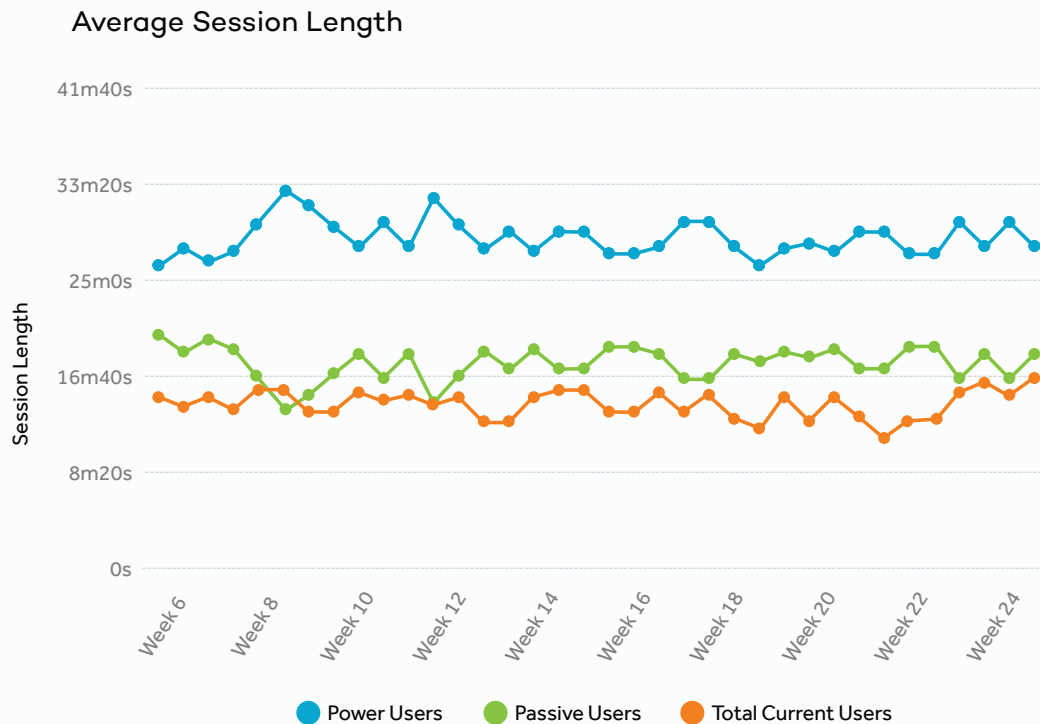
Summing up

Now that you know how to find your behavioral personas and have these product analytics methods at your disposal, it's finally time to roll up your sleeves and get to work.

You'll apply these methods in each of the next 3 chapters, where we'll walk through the entire Retention Lifecycle Framework. Let's get started!

YOUR PRODUCT ANALYSIS TOOLKIT

This "toolkit" includes key concepts and methods that you'll use to understand user behavior and retention at all stages of the retention lifecycle. Refer back to this sheet as you work through Chapters 5-7 of this playbook to remind yourself of all the methods available to you.

Behavioral personas

A behavioral persona describes a distinct way of using your product. Identifying your product's personas will inform your product development for different types of users.

- **Qualitative:** User interviews and user testing can provide more context for trends you observe in your product analytics data.
- **Quantitative:** Segment by different user & event properties; bucket users based on the frequency at which they perform key events; or use a clustering algorithm to automatically group users based on similar behaviors.

Compare baseline retention for each cohort and persona

Comparing the retention curves of different behavioral personas will help you decide which personas to focus on — should you commit resources to converting more users to certain "power" personas?

Make sure you choose the retention method that makes the most sense for your product: N-Day, unbounded, or custom bracket retention.

Unbounded retention

Unbounded retention shows you what percentage of users come back on a specific day or later. You can also think of unbounded retention as the opposite of your churn rate.

Example: Day 7 retention = percentage of users who came back on Day 7, or any day after that.

N-Day rentention

N-Day retention tells you what percentage of users come back on a specific day.

Example: Day 7 retention = percentage of users who came back exactly on Day 7.

Bracket retention

Bracket retention allows you to define any time brackets that you want, from a single day/week/month to multiple days/weeks/months.

Example: You could set your 1st bracket as Day 0, your 2nd bracket as Day 1-7, and your 3rd bracket as Day 8-14. Amplitude will measure the percentage of users that return during each bracket.

Segment by user properties

Measure the breakdowns of key user properties to help you identify trends and groups of users you should study more closely. Some common examples are: country, language, platform, paying vs. non-paying -- but make sure you look at ones that are important for your business!

Segment your baseline retention curve by different properties to identify factors that could impact retention either positively or negatively.

Behavioral cohort analysis

A behavioral cohort is a group of users who performed (or didn't perform) certain actions within a defined time period. Create cohorts for behaviors that you're interested in, and then measure the retention of those users to see how well that behavior correlates with retention.

You can also apply behavioral cohorts to funnel conversion rates and any of the other analyses in this toolkit.

Critical path funnel

A critical path funnel is the series of actions you anticipate users taking in order to complete your critical event. Comparing conversion rates for your behavioral personas and by different user properties will help you identify areas for improvement.

Common user flows

Funnels are great for measuring well-defined sequences, but user behavior usually isn't so linear. Look at the most common paths to or from important actions, and compare the paths of your behavioral personas and cohorts.

Stickiness

Stickiness refers to the frequency at which people are using your product. Specifically, stickiness measures the number of days out of a given time period that a user was active, or did a specific event (like your critical event).

Session metrics

Key session metrics you can measure are:

- **Length distribution:** the distribution of session lengths of all users, shown as a histogram.
- **Average length:** the average session length per user.
- **Average per user:** the average number of sessions per user, per day.

CHAPTER 05
CURRENT USER RETENTION

By now, you've already accomplished a lot: you've determined your critical event and product's usage interval (Chapter 2). You've learned the Retention Lifecycle Framework and created cohorts for each stage of the lifecycle (Chapter 3). You've also learned how to dig deeper into your retention by identifying behavioral personas and using various product analysis methods (Chapter 4).

Now it's time to dive into each stage of the Retention Lifecycle. In this chapter, we'll start with understanding current user retention.

In partnership with **CXL**

Why current user retention matters

Current user retention matters because it focuses on your most important users: those who are active right now and consistently use your product. Understanding and improving the experience for your active users is critical for long-term sustainability of your business.

Most articles and presentations about retention focus on new user retention, but as we discussed in Chapter 3 with the Retention Lifecycle Framework, the retention of your current and resurrected users can be equally important. In fact, it's best to start with analyzing your current user retention so that you understand what successful long-term usage looks like. Once you fully understand the value that these users are getting from your product, you can leverage that information to create better experiences for retaining new users or reengaging dormant users.

Once you understand what causes someone to become an engaged, repeat user of your product, you can use that knowledge to get more people to become current users.

Current User Timeline

active	active
Previous Interval	Current Interval
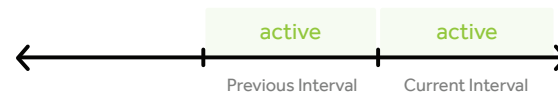
Improving your current user retention is also critical to creating a sustainable business. If your retention curve doesn't flatten out at some point, it will become impossible to sustain true growth. At some point, even if you keep adding new users, your poor retention will cause your overall growth to stagnate, and even decrease.

TERMS TO KNOW

DEFINITION

A **current user** is someone who's actively using your product with some level of consistency. For this playbook, we're defining a current user as someone who was **active in the previous time period** *and* **active in the current period that you're measuring.**

For example, if you determined that you have a weekly usage interval based on the usage interval calculation in Chapter 2, your current people are users who were active last wee*k and* active this week.

PRO TIP

Nir Eyal's 5% rule and Habit testing

In Nir Eyal's book *Hooked*, he outlines a process he calls 'Habit Testing.' Habit Testing has 3 steps [1], which correspond well with how we're laying out the process in this Playbook:

1. Identify - find habitual users
2. Codify - understand what these users have in common
3. Modify - adapt user flow based on these learnings

In the context of this Playbook, habitual users = current users; these are people who are consistently using your product as you expect them to. Nir's rule of thumb for how many habitual, or current, users you need before beginning to Habit Test is 5%.

This means that at least 5% of your users are getting enough value from your product to use it as intended. If you don't have 5% yet, Nir recommends rethinking the vision and core value proposition of your product before diving into Habit Testing.

Retention for Sustainable Growth
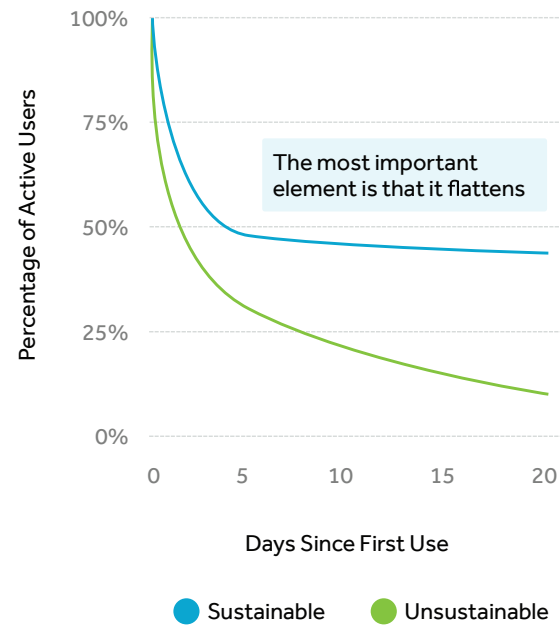
Notice how the blue curve flattens off around day 7. Although there's some initial drop off in the first 7 days, a steady user base remains — these are your current users. If your retention curve flattens off at some point, you have a base to work off for this Playbook.

The goal of current user retention analysis is to move this baseline up.

The green curve, however, keeps going down and never flattens off, meaning that the product is not attracting a steady base of people who keep using the product. If your retention curve looks more like the green curve and trends toward zero, that's an indication that you haven't reached product/market fit yet. In that case, you should work on rethinking the core value of your product *before* optimizing for retention.

[1] Source: http://www.nirandfar.com/2012/04/hooking-users-in-3-steps.html

What you'll learn in this chapter

**The overall goals of current user retention analysis are to:**

- Get new users to form habits and become current users
- Get current users to become core users, and core users to become power users

By the end of this chapter, you will have learned how to identify distinct behaviors of your currently engaged users and understand the factors that contribute to their retention. This includes:

- The different behavioral personas of your current users
- Finding the actions that drive someone to become a current user
- Methods to nudge new or resurrected users to create a habit of using your product and become current users

Topics and methods we'll cover in this chapter:

5.1 - Current users diagnostic

5.2 - Find behavioral personas of your current users

5.3 - Discover the drivers of Habit Formation

5.4 - Discover drivers from passive → core → power personas

5.5 - Take action
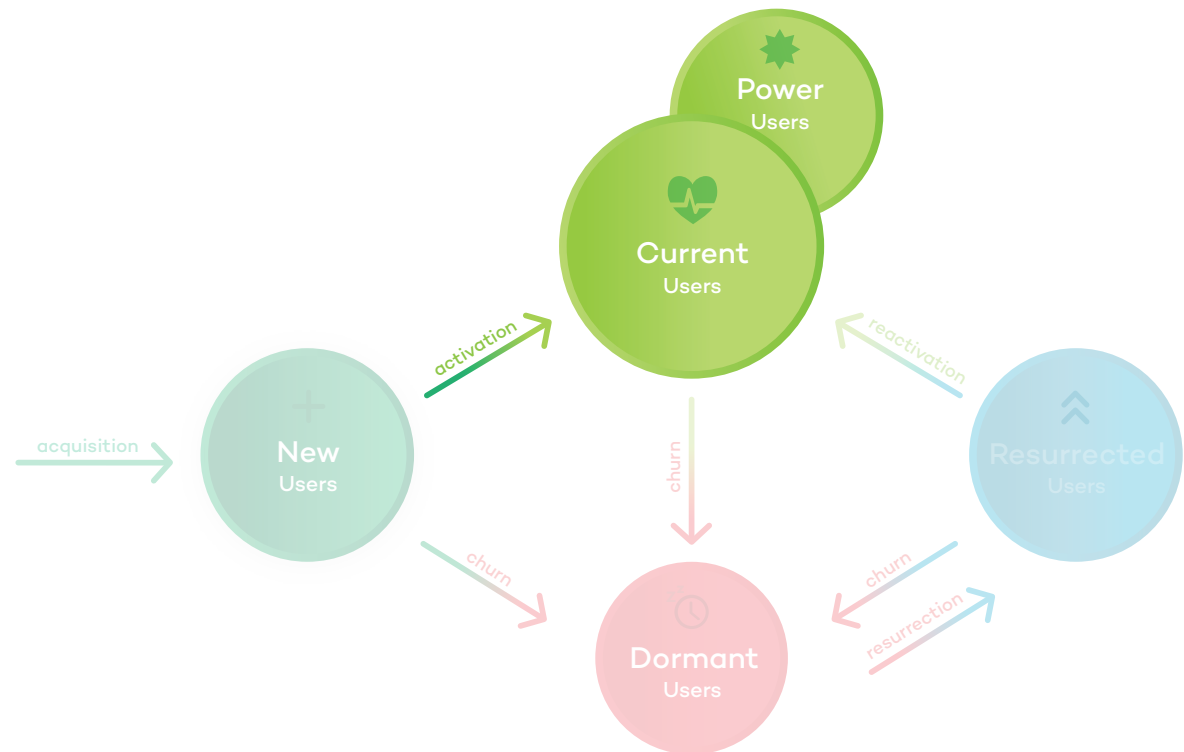
5.1 | Current users diagnostic

As we defined in the Retention Lifecycle Framework, a current user is someone who was active in the previous time period *and* active in the current period that you're measuring.

First, create your current user cohort, as we covered in Chapter 3.3, and plot your baseline retention for current users.

Remember, you can use either N-Day or unbounded retention, as discussed in Chapter 3.1.

In the example on the next page, you can see a retention curve for the cohort of current users.

Investigate user properties & segment your retention curve
Once you create your current user cohort, look at user properties to get a high-level understanding of who these users are. Measuring the breakdowns of key user properties can help you identify trends and groups of users you should study more closely.

First event

A   Any Event

..then the return event

B   Any Event

..performed by   Users

1   **Current Users (Oct 5-11)**

where   Cohort   =   Current Users (Oct 5-11)

where   *Select user property...*

..measured by   N-Day Retention   **shown as**   Retention
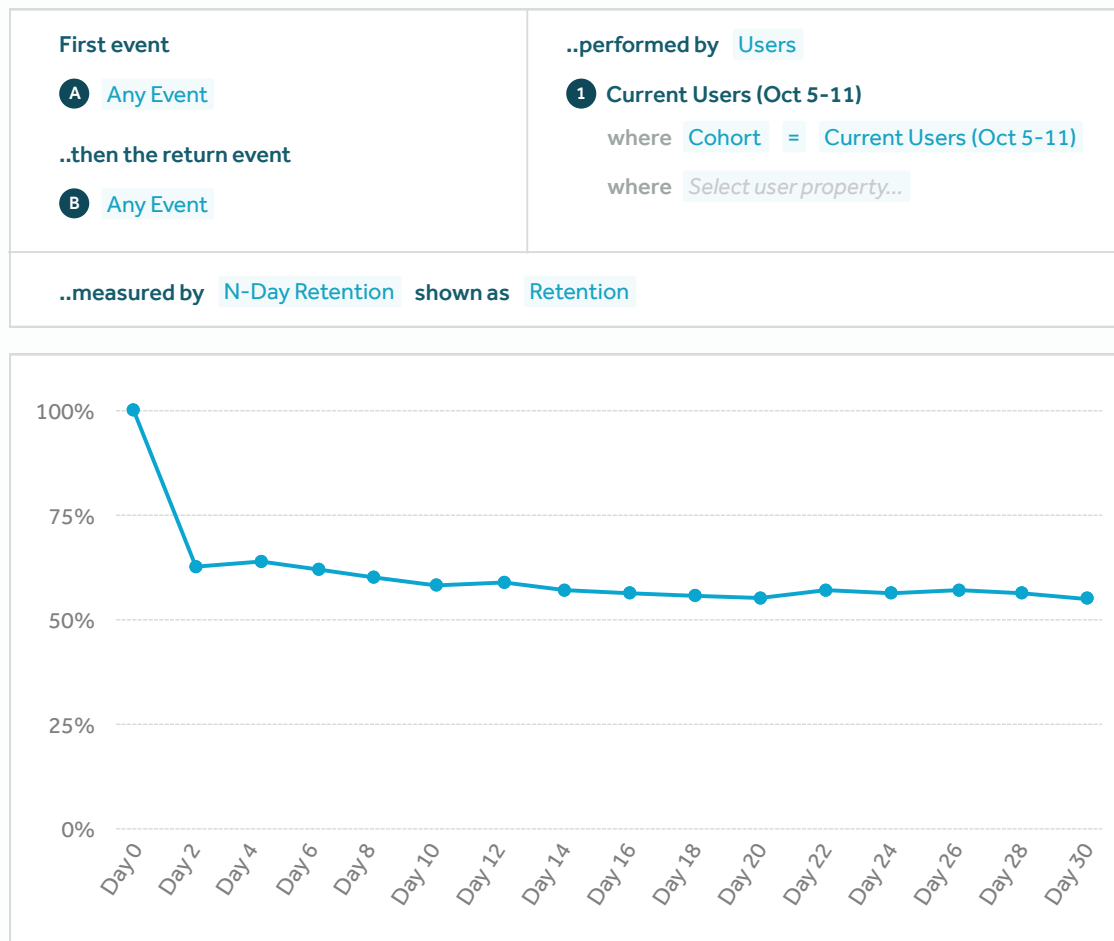
You should also segment your retention curve by your major user properties (e.g. platform, location, attribution source) to identify any differences to investigate. Refer back to Chapter 4.3.2 for a refresher on segmenting by user properties.

5.2 | **Find behavioral personas of your current users**

In Chapter 4, we introduced the concept of **behavioral personas** — each persona represents a distinct way of interacting with your product.

The goals of finding the personas of your current users are to understand:

- The value current users get from using your product
- Whether there are distinct use cases
- Any patterns of behavior that might impact retention (positively or negatively) later on

In this section, we'll discuss some examples of behavioral personas and principles for deciding which personas to focus on.

EXAMPLE

Personas for a casual mobile game

One of our customers has a social casual game for mobile smartphones. The game matches players against each other in real-time and also includes a social component where users can chat with each other.

When this company analyzed their current users, they found three core personas who all had high

retention despite distinctly different behavioral patterns:

- High social only: Users who heavily use social features, but don't play many games.
- High gameplay only: Users who mainly play games, but don't use social features.
- High gameplay + high social: Users who both play games and use the social features actively.

As you can see in the retention chart below, the 3 personas have significantly higher retention than the baseline for all current users. In addition, the high gameplay + high social persona has the highest retention.

Takeaway: While this data indicates that users who both play games and use the social features will retain the best, it shows that users who actively play games *or* use the social features will still retain at a much higher rate than the baseline. This means that even if the company starts with focusing on just increasing engagement with one aspect of the product (social or gameplay), they'll likely see some significant retention gains.

Retention Curve Segmented by Personas

Legend:
- High Social Only
- High Gameplay Only
- High Gameplay + High Social
- All Current Users

<div style="text-align:center">
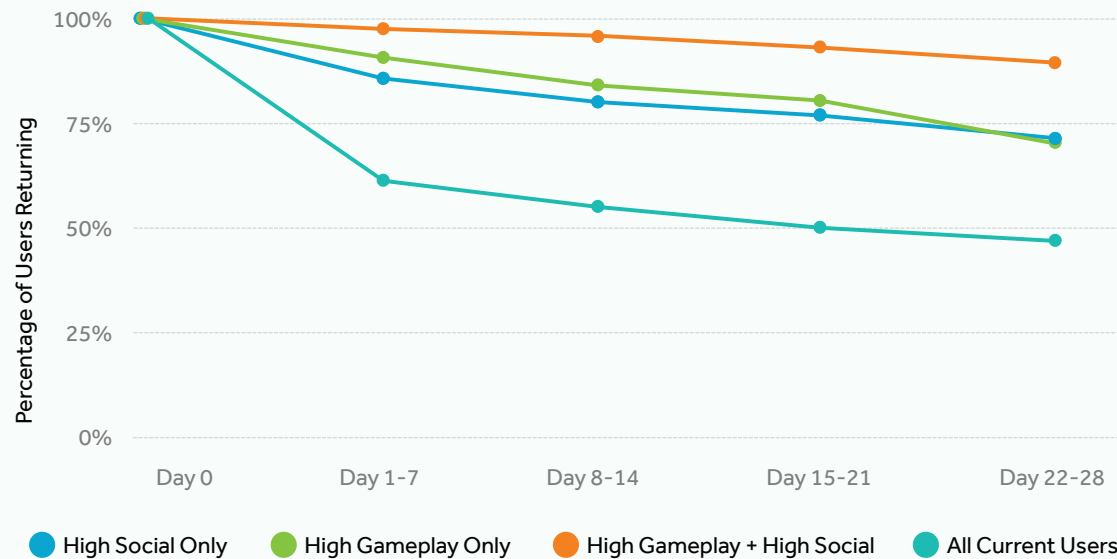
EXAMPLE

</div>

Passive and core user personas for a mindfulness app

One of our customers' products is a mindfulness app for mobile smartphones that provides meditation courses as well as 'scenes' with calming background sounds.

Using the Personas feature, the app's product team identified three personas:

- Listeners: Users who primarily listen to and swipe through different scenes.
- Meditators: Users who completed more meditations than average.

- Alert Savers: Users who turned on a feature that sends a Daily Reminder to meditate. These users also completed several meditations per week on average.

The 'Alert Savers' persona was particularly interesting: only a very small percentage of users, about 1%, were setting an alert. This feature was buried deep in the Settings screen of the app, so very few users were actually discovering it — but these users had very high retention compared to other groups.

Using the power/core/passive framework, the company classified Listeners as passive users, Meditators as core users, and Alert savers as power users because they were using a "power feature".

★ **Starred Events**	**All Clusters** 215,775 Users	**Meditators ▾** 108,058 Users	**Listeners** 107,396 Users	**Alert Savers** 321 Users
	Avg # Events	Avg # Events	Avg # Events	Avg # Events
★ 1 Session Completed	3.12	8.75	0.52	10.23
★ 2 Session Started	4.21	9.12	0.88	10.98
★ 3 Scenes Swiped	3.19	2.89	9.51	2.76
★ 4 Set Alert	0.11	0.13	0.11	0.98

Comparing retention curves of different personas:

This company compared the retention curves of Listeners and Meditators. They found that both personas had similarly high Day-N retention for the next 30 days after the current period, although Listeners had slightly lower retention.

To see how these personas might differ in retention longer-term, they looked at weekly retention for the next 24 weeks. This helped to uncover some larger differences: Alert Savers have the highest long term retention, followed by Meditators, followed by Listeners.

Takeaway: Based on these retention graphs, Listeners are a fairly active Passive persona, but still have lower retention than Meditators long-term. In addition, Alert Savers who set a daily reminder to meditate have the highest long-term retention at 24 weeks. To increase overall retention, the company could think about trying to convert Listeners to become Meditators, and getting Meditators to set a daily reminder and become Alert Savers.

Daily Retention by Behavioral Persona
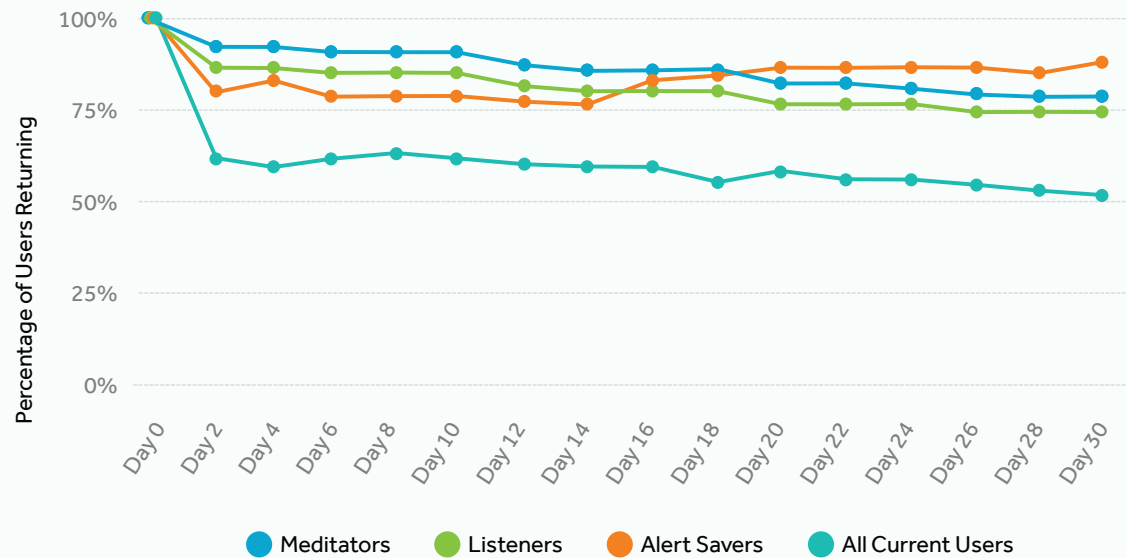
Long-Term Weekly Retention by Behavioral Persona
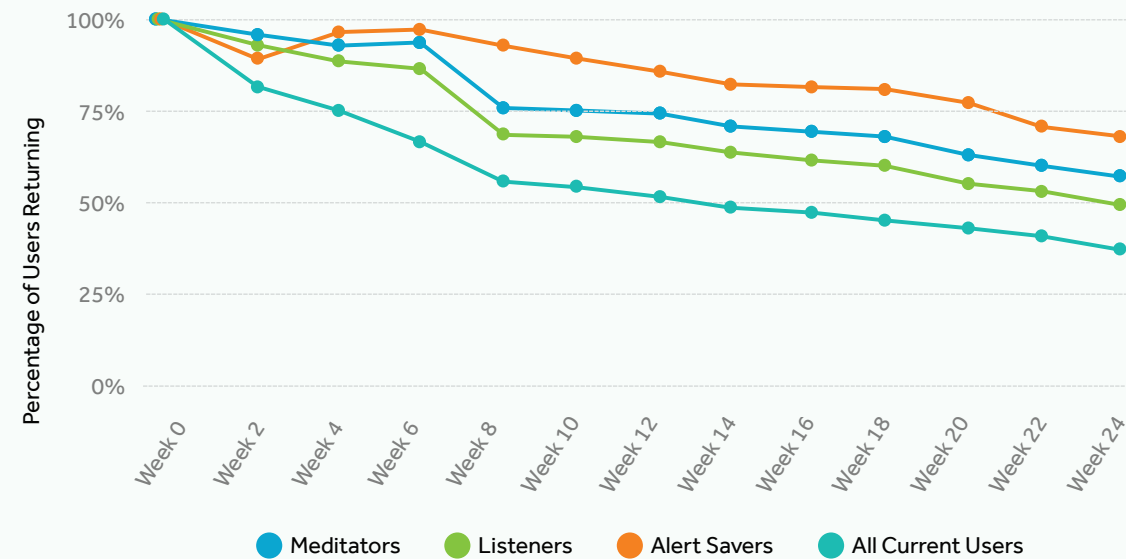
Dig deeper into your personas - Product Analysis Toolkit

Once you identify your own current user personas, you should use some or all of the analyses in the **Current User Worksheet** to get a fuller understanding of how these users behave. This will help you identify opportunities for improvement and more potential drivers of current user retention. If you need to review any of the methods, refer back to Chapter 4 - Product Analysis Toolkit.

Critical event stickiness

It's important to also look at stickiness for your critical event. In this case, the stickiness graph is measuring each day that a user did the critical event in your product.

For example, one of our customers has developed an app that helps users find and book fitness classes near them. This company's critical event is when a user books a class through the app, so stickiness of bookings is a more meaningful metric than the stickiness of general app usage.

Monthly Stickiness for Any Event
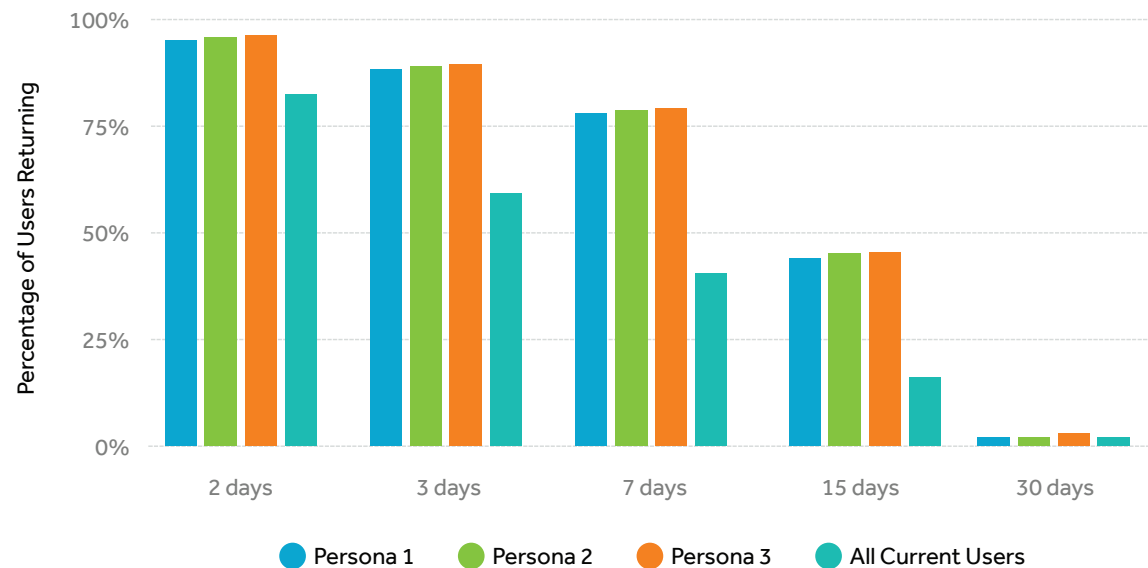
Monthly Stickiness for Appointment Booked
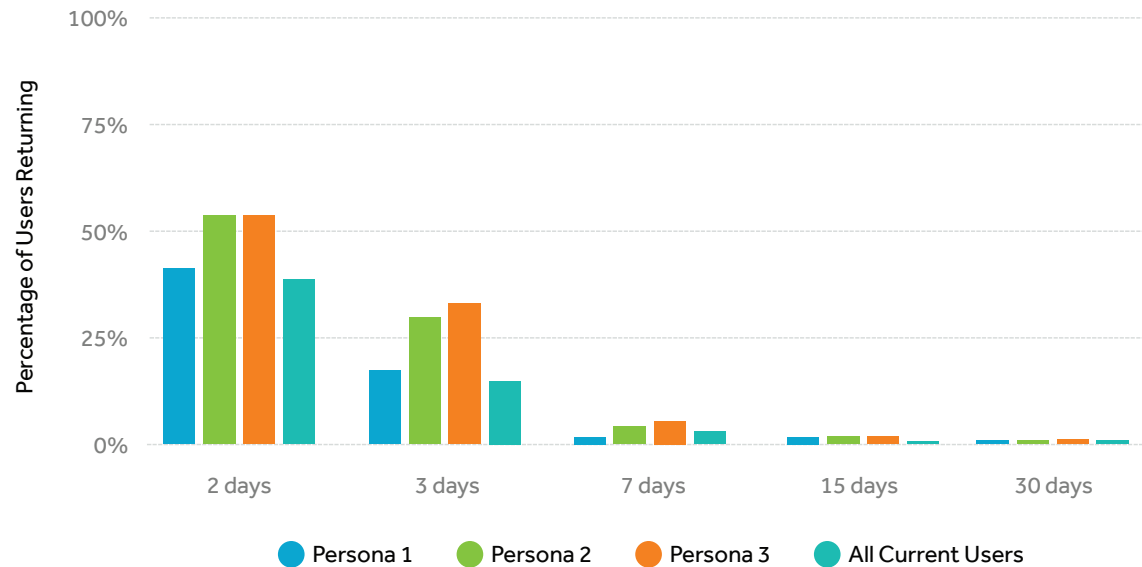
The charts show that stickiness for booking an appointment is significantly lower than general activity stickiness. So, while a high percentage of each of the three personas are opening the app and doing something, like browsing classes or checking class schedules, on at least 15 days out of a month, there's a much lower percentage booking appointments that frequently.

Looking at stickiness for 'Appointment Booked' also helps to differentiate the personas better. Here we see that Personas 2 and 3 have significantly better stickiness than Persona 1:

about 30% of users in Personas 2 & 3 book an appointment at least 3 days out of a month, compared to 19% for Persona 1 users.

Takeaway: Based on these results, the team realized that Personas 2 & 3 would be more valuable to focus on than Persona 1. They decided to focus on getting more users into Personas 2 and 3 and improving the product experience for these personas.

5.3 | Discovering the drivers of Habit Formation

Current users have formed a habit of using your product

When a new user first starts using your product, they go through a few phases before becoming a retained, current user:

1. Onboarding
2. Value Discovery
3. Habit Formation

Once a user completes the Habit Formation phase, they've successfully transitioned from being a new user to a current user of your product.

Current users of your product have formed a habit. You have successfully onboarded them and shown them value while they were new users, and now they're returning on a regular basis. In this chapter, we're going to focus on the drivers that help get a user through the Habit Formation phase. The Onboarding and Value Discovery phases happen during the new user time period, which we'll discuss in the next chapter.

Phases of New and Current User Retention
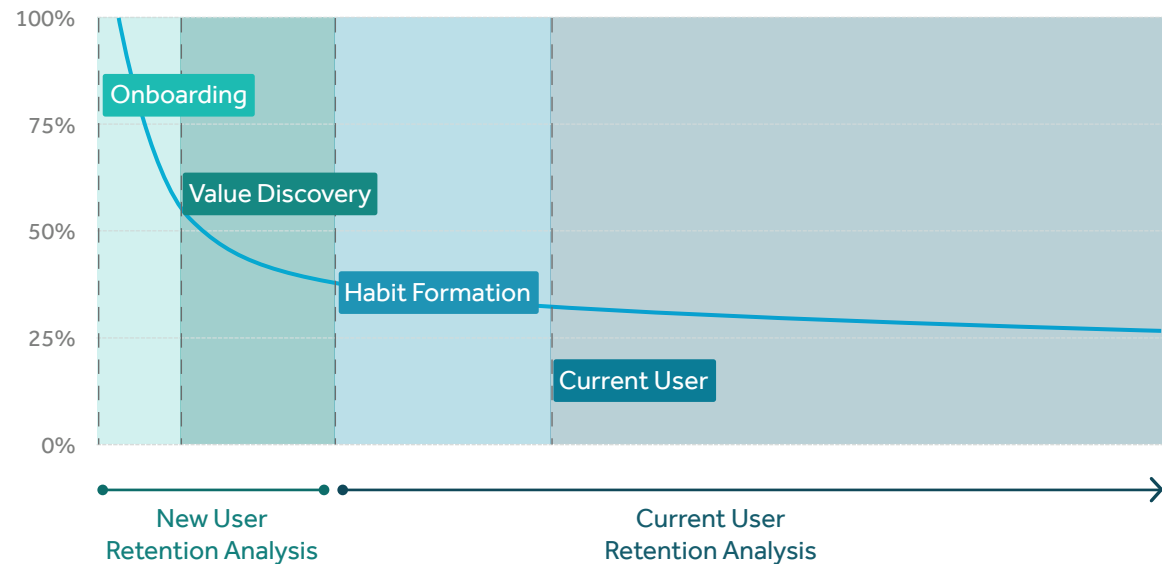
Studying current user retention is about understanding the factors that encourage people to form a habit. By studying your current users, you'll look for indicators of habit formation. You can then apply this knowledge to get more new or resurrected users to form habits. To help you make this a repeatable process, we're going to show you how to look for behavioral drivers that tend to tip the scale for habit formation.

To understand what gets new users to become current users, you need to dig into the user behaviors that drive that transition.

The concept of a behavioral driver that helps a user transition from one phase to the next is essentially the same as the concept of the **'a-ha' moment**, a commonly used concept in the field of product retention. Traditionally, the 'a-ha' moment is something that a user does early in their experience that makes them much more likely to retain — probably the most famous example is when Facebook found that users who added at least 7 friends in their first 10 days retained better.

However, you can apply this concept of important behaviors to any stage of the user lifecycle, not just for the 'a-ha' moment of new users.

To identify these drivers of habit formation, find an action or set of actions that separates users who successfully go through Habit Formation, from those who don't. In other words, for action(s) to qualify as a driver:

- Most users who complete the action(s) form a habit and become current users
- Most users who do *not* complete the action(s) churn before becoming a current user

To identify drivers of Habit Formation, find an action or set of actions that separates users who form a habit, from those who don't.
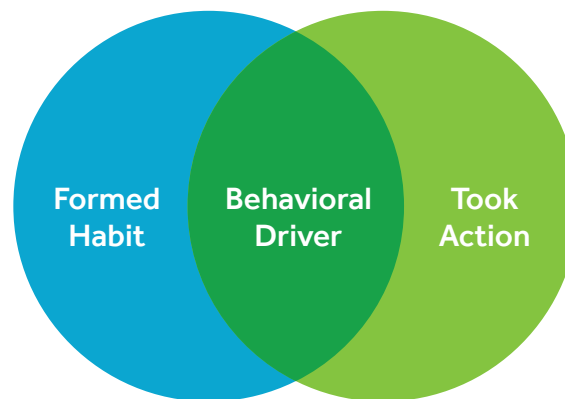
Phases of Current User Retention
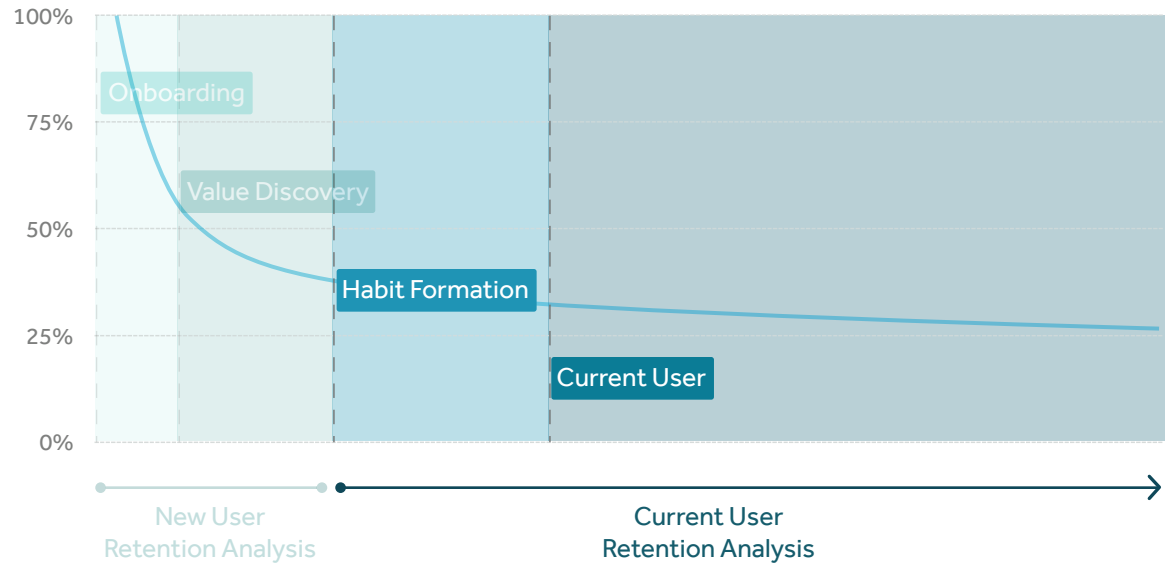
How to find your drivers of Habit Formation

In this section, we'll go over how to find the behaviors that drive users to complete the habit formation phase.

You can use the following 5 steps to help you find your drivers (but after this we'll show you a much easier and faster way to do it in Amplitude)

Step 1: Create a **base cohort** of users who were retained during the Habit Formation period.

The table and images below show the Habit Formation period that you should analyze based on the usage interval you calculated in Chapter 2.

Product Usage Intervals	Habit Formation Period
Daily	Days 4-6
Weekly	Days 8-14
Biweekly	Days 15-28
Monthly	Days 31-60

Step 2: Create a **retained cohort** of users who were retained in the next interval after the Habit Formation phase. These are your current users

Create Your Retained Cohort
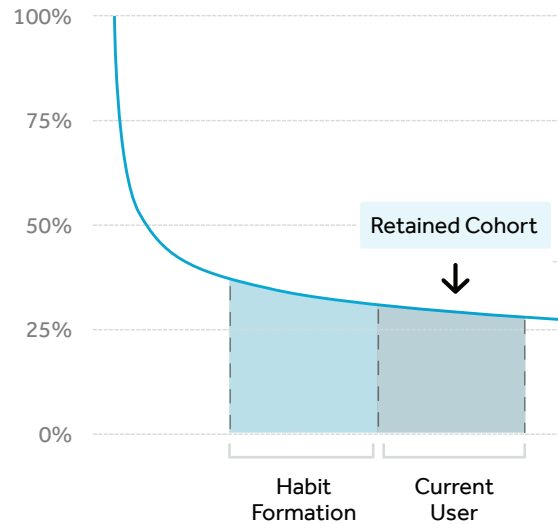
who successfully formed a habit.

Step 3: Create a **dormant cohort** of users who were in the base cohort and were *not* retained in the following time period.

Step 4: Compare your retained and **dormant cohorts** to look for behaviors that are present in the retained cohort, but not in the dormant cohort.

You can do this by:

- Brainstorming some actions that you think might be important drivers and measuring the percentage of users in your retained and dormant cohorts who did those actions.
- Talking to users from both groups to get qualitative data.
- Watching user replays or looking at user activity sequences from both cohorts.

For example, a music streaming product would hypothesize that some important actions would include: playing songs, creating playlists, favoriting songs, and so on. The team would then look at whether there are any differences between the retained and dormant cohorts in the number of times users perform these actions.

Step 5: Once you've formed some hypotheses of actions that might be drivers, measure the difference in retention between users who do that action, and users who don't do that action.

This will help you confirm whether or not performing that action correlates with higher retention. In the image below, you can see that users who favorited at least 1 song have significantly higher retention than users who do not.

To get more details about this process of finding behavioral drivers or 'a-ha' moments, check out this article **(2)**.

Daily Retention for New Users
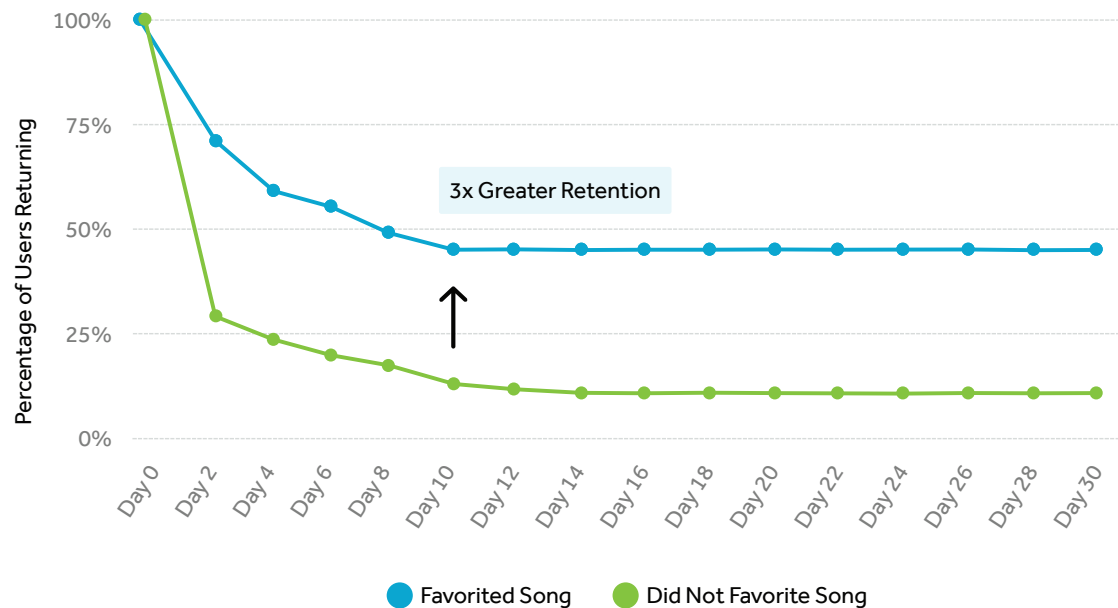
Apply what you've learned: Get more users to form habits & become current users

Once you've discovered your own drivers of habit formation, you know the milestones that you need to get new users through to increase their chances of continuing to use your product as current users.

To put these insights into action, think about ways you can get more users to pass these milestones during their early experience. For the gaming company that we discussed, these could include:

• Sending push notifications when a user's social connection is active in the game, encouraging them to join that person
• Presenting users with some kind of reward, like a badge or in-app currency, once they've used the social feature a certain number of times

By experimenting with a few methods, you can find the most effective ways to get users across the habit formation threshold.

Note that the drivers we're talking about for Habit Formation are different from the onboarding experience — we'll focus on onboarding in the next chapter: New User Retention. Habit formation happens after a user has already been successfully onboarded and has started to discover value in your product or service.

5.4 | Discover drivers from passive → core → power personas

As we discussed in Chapter 4 about behavioral personas, you can often classify personas as passive, core, or power users. From the personas of current users you identified earlier in this chapter, you should have identified some personas that are more active and valuable than others.

Remember that for the mindfulness app, they found a passive persona of Listeners and a core persona of Meditators. To increase core usage of their app, they should try to get more Listeners, who already use the app on a pretty regular basis, to become Meditators.

So: how do you get a passive user to become a core user, or a core user to become a power user? Just like we identified drivers of Habit Formation, you can identify behaviors that drive people to become a core user or a power user. Use the same process we just went over in Section 5.3 to do that.

5.5 | Take Action

Now that you've completed current user retention analysis, summarize what you've found and form some hypotheses to test.

Here are some key questions to ask yourself:

❑ What are the key action(s) that you identified as drivers of Habit Formation? What are some methods you can test to get more new users to cross those thresholds?
❑ Who are your passive, core, and power users? How are they different? How can you get core users to become power users?
❑ Did your behavioral persona analysis reveal any use cases you didn't expect, or didn't think were very important? How might you improve or tailor the experience for those users?
❑ Are some of your personas more important for your main business objective, like revenue?
❑ How can you get more users to convert into one of your core or power user personas? The biggest improvements can come from targeting users who are not well-retained and getting them to perform actions of your power behavioral personas.

FURTHER READING

If you'd like to dive deeper into some of the topics we covered in this chapter, we suggest starting with these:

Hooking Users in 3 Steps: An Intro to Habit Testing
By Nir Eyal, author of *Hooked*
http://www.nirandfar.com/2012/04/hooking-users-in-3-steps.html

Why You Need Cohorts to Improve Your Retention
Alicia Shiu, Amplitude Blog
https://amplitude.com/blog/2015/11/24/cohorts-to-improve-your-retention/

This Is How You Find Your App's Aha! Moment
Kendrick Wang, Apptimize Blog
https://apptimize.com/blog/2016/02/this-is-how-you-find-your-apps-aha-moment/

Track improvement over time
As you start testing some of your hypotheses and trying out new ways to improve your current user retention, it's important to keep track of your metrics to see what is and isn't working.

Keep the goals of current user retention in mind as you form your metrics:

- Get new users to form habits and become current users
- Get current users to become core users, and core users to become power users

We suggest tracking these metrics over time to measure your progress:

- The size (in absolute numbers) and percentage of your total active users that is made up of your current users (as calculated via Lifecycle or manual analysis).
- Retention over time of all current users and of each behavioral persona.
- Size and percentage breakdown of your important behavioral personas. Are you getting more people into important personas?
- Stickiness over time for critical events. This will show you any changes in how active current users are in the product.
- Conversion rate over time through your critical path funnel.

CURRENT USER RETENTION

A current user is someone who was active in the previous time interval and active in the current interval that you're measuring. Current user retention matters because it focuses on your most important users: those who are active right now and consistently use your product. **Understanding and improving the experience for your active users is critical for long-term sustainability of your business.**

Current User Timeline

	active	active
	Previous Interval	Current Interval
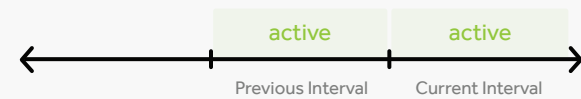
Current user diagnostic checklist

Run through the metrics below to get a baseline understanding of your current users. Refer back to Ch. 4 for a refresher on any of these methods.

- ❑ Create a cohort of your current users
- ❑ Plot the baseline retention curve of current users
- ❑ Segment the retention curve by user properties
- ❑ Measure conversion through your critical path funnel
- ❑ Identify common user flows
- ❑ Measure stickiness for your critical event
- ❑ Measure session metrics

Current user behavioral personas

Identify any behavioral personas within your current users and list them here.

Persona Nickname	Description & Key Behaviors	% of Current Users	Retention Metric (choose 1 for your time frame)
Ex. Meditators	Ex. Complete at least 3 meditation sessions per week	Ex. 32%	Ex. 72% Week 2 retention

Drivers of habit formation

Use the process in Section 5.3 to identify the behavioral drivers of habit formation. List those drivers here and some ideas you have for how to get more users to perform those actions.

Behavioral driver	Ideas
Ex. Meditate at least 3 times within 1st week	Ex. Motivate users with an extra feature that gets unlocked after 3 sessions; experiment with push notifications as reminders

Drivers from passive → core and core → power personas

Repeat the same exercise, looking for any drivers that shift passive users to become core users, or core to power.

Behavioral driver	Passive → Core or Core → Power	Ideas
Ex. Meditate at least times within 1st week	Ex. Core → Power	Ex. Prompt users to set a daily reminder after their first meditation session

Take action: hypotheses & next steps

Ask yourself these questions as you form hypotheses and come up with experiment ideas.

- What are the key action(s) that you identified as drivers of Habit Formation? What are some methods you can test to get more new users to cross those thresholds?
- Who are your passive, core, and power users? How are they different? How can you get core users to become power users?
- Did your behavioral persona analysis reveal any use cases you didn't expect, or didn't think were very important? How might you improve or tailor the experience for those users?
- Are some of your personas more important for your main business objective, like revenue?
- How can you get more users to convert into one of your core or power user personas? The biggest improvements can come from targeting users who are not well-retained, and getting them to perform actions of your power behavioral personas.

Notes

Metrics for tracking improvement over time

As you start testing some of your hypotheses and trying out new ways to improve your current user retention, it's important to keep track of your metrics to see what is and isn't working.

Keep the goals of current user retention in mind as you form your metrics:

- Get new users to form habits and become current users
- Get current users to become core users, and core users to become power users

We suggest tracking these metrics over time to measure your progress:

- The size (in absolute numbers) and percentage of your total active users that is made up of your current users (as calculated via Lifecycle or manual analysis).
- Retention over time of all current users and of each behavioral persona.
- Size and percentage breakdown of your important behavioral personas. Are you getting more people into important personas?
- Stickiness over time for critical events. This will show you any changes in how active current users are in the product.
- Conversion rate over time through your critical path funnel.

CHAPTER 06

NEW USER RETENTION

Now that you've analyzed the retention and behavior of your current users in Chapter 5, it's time to move on to the next Lifecycle stage: new users. In this chapter, you'll repeat several of the methods from the last chapter on your cohort of new users. We'll also introduce a few new concepts and dive deeper into the phases of new user retention.

In partnership with adjust

Why new user retention matters

New user retention is probably the most commonly and closely analyzed type of retention — many of the resources available today about user retention are focused on how you retain your new users. And for good reason: recent benchmark data shows just how critical a user's early experience is.

In a study of both iOS and Android apps on 500 million mobile devices, we found that on average, an app only has 14% of users returning on day 7 after install (measured by N-Day retention). We also benchmarked retention during a few time brackets, which show a more representative measure of activity than N-Day (which only measures retention on single days).

By bracket retention, the average app has 34% of users retained in Days 1-7. **Put another way, 66% of new users don't come back at all in the first week after install.** As you can see in the graph below, there's a very rapid initial drop-off in retention.

Clearly, the new user experience presents a huge opportunity for improving your overall retention and growth. This is your chance to make a stellar first impression. If you don't successfully onboard a new user and show value as quickly as possible, there's a very high chance that user will never come back.

Average Retention Curves for Mobile Apps
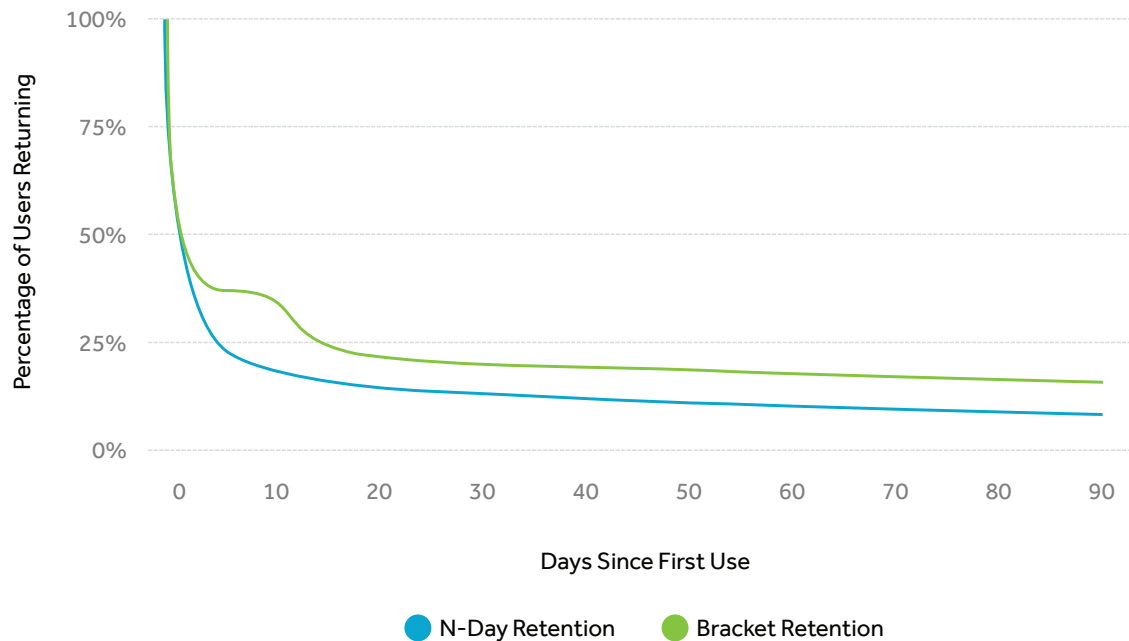
This graph shows average retention for the first 90 days of use on mobile apps - both Android and iOS. We calculated retention using both N-Day and bracket retention methods.

Bracket retention: Measured percentage of users returning on Day 0, Days 1-7, 8-14, 15-30, 31-60, 61-90

N-Day retention: Measured percentage of users returning on Day 0, 1, 3, 7, 14, 30, 60, 90

DEFINITION

WHAT IS A NEW USER?

A **new user** is someone who is using your product for the first time. For this playbook, we're defining a new user as someone who is using your app for the first time in the current time period that you're measuring.

As we covered in the introduction of this Playbook, there are two main ways to improve your retention curve: shift the curve up or flatten the curve. **Improving new user retention shifts the curve up by decreasing the initial drop-off during a user's early experience.**

New User Timeline

active: 1st time

Current Interval
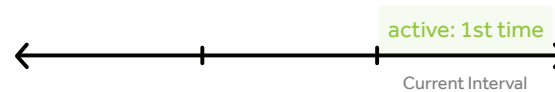
What you'll learn in this chapter

New user retention analysis will help you understand how your new users are onboarding and discovering value in your product.

Remember: successful new user retention doesn't mean you need show a new user every single feature you have in their first session. If you think about it like dating, the first date is about getting them to the second date, *not* getting them to marry you. In the same way, focus the early experience on getting users to come back for the next session — don't worry about long term retention just yet.

The overall goal of new user retention is to get new users successfully onboarded into your product (or to the "second date")

Shift the Curve Up

Early new user retention

Percentage of Users Returning

100%

75%

50%

25%

0%

0   10   20   30   40

Days Since First Use
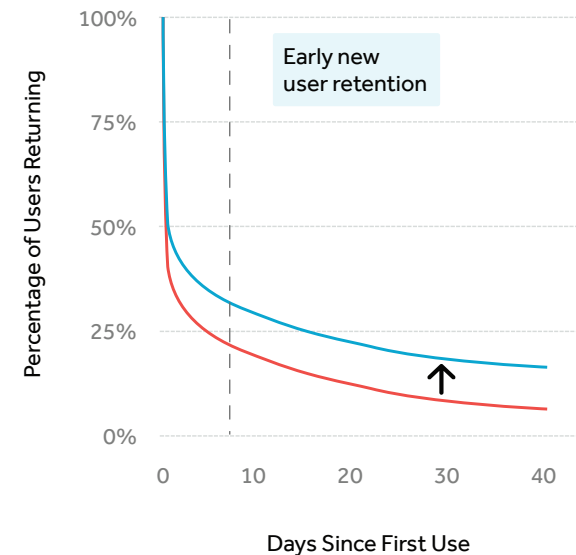
By understanding new users, you will learn:

- The behaviors and factors that contribute to whether a new user retains or churns
- How to effectively onboard new users
- How to quickly show value to new users during their early experience

Topics and methods we'll cover in this chapter:

6.1 - New users diagnostic
6.2 - Find behavioral personas of your new users
6.3 - Understand your onboarding funnel
6.4 - The phases of new user retention: Onboarding and Value Discovery
6.5 - Identify the drivers of successful Onboarding
6.6 - Identify the drivers of successful Value Discovery
6.7 - Take action

6.1 | New users diagnostic

As we defined in the Retention Lifecycle Framework, a new user is someone who was using your product for the first time during the current period that you're measuring.

First, take your new user cohort that you created in Section 3.3, and plot your baseline retention for new users.
Remember, you can use either N-day, bracket, or unbounded retention, as discussed in Section 3.1.
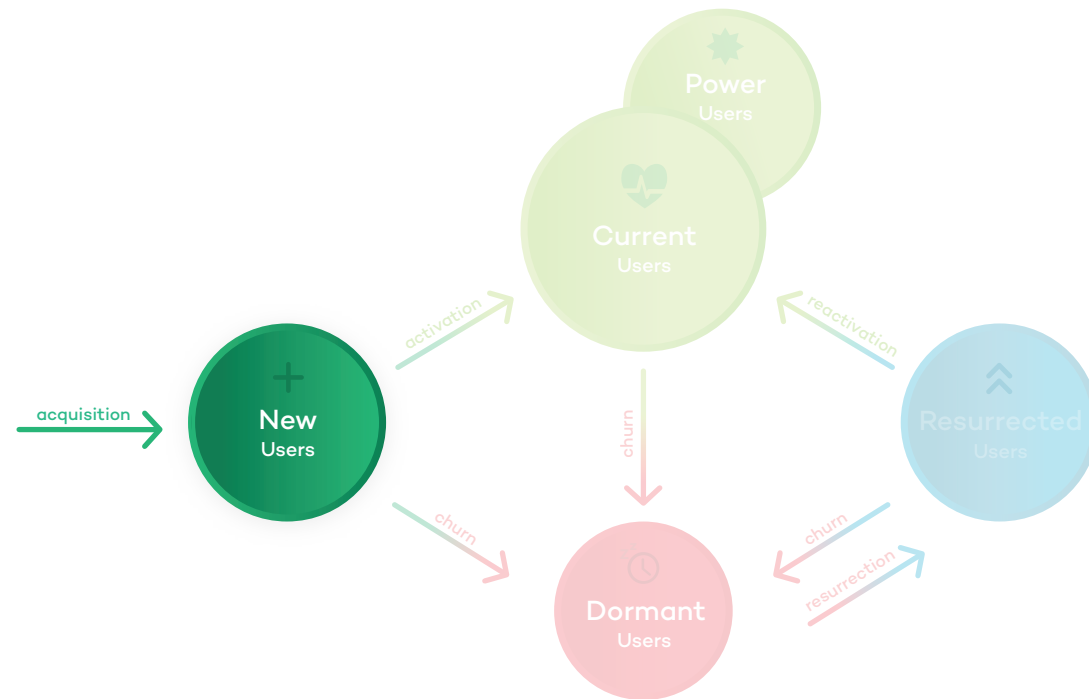
Investigate user properties & segment your retention curve
Once you create your new user cohort, look at user properties to get a high-level understanding of who these users are. Measuring the breakdowns of key user properties can help you identify trends and groups of users you should study more closely.

You should also segment your retention curve by your major user properties (e.g. platform, location, attribution source) to identify any differences to investigate.

EXAMPLE

For example, here we can see the breakdown of where new users are coming from.
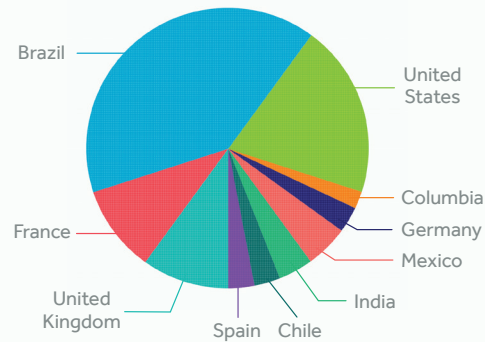
When we segment the new user retention curve by country, we see that while the overall retention curve looks similar for different countries, there are some significant differences. For example, by Day 7, users in India have 9.6% higher retention than users in Brazil.

Retention for New Users Segmented by Country
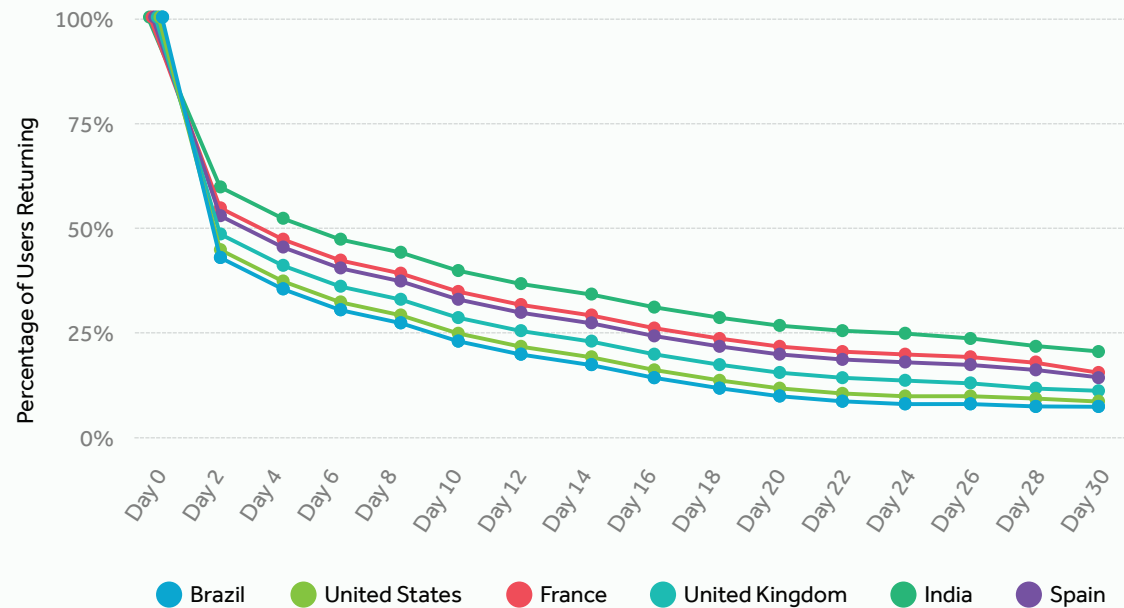
If you see differences like this, it's worth digging into the user experiences in these countries to find contributing factors. Are there ways that this company could get their retention in Brazil and other countries to match India?

6.2 | Find behavioral personas of your new users

Now it's time to look for personas of users who are new to your product. Remember, behavioral personas describe distinct ways that people use your product. In Chapter 5, we identified

personas of current users, and now we'll look for specific ways that new users behave — which may have some overlap with your current user personas. For more background on behavioral personas and why they're important, flip back to Chapter 4.

Studying the personas of your new users can help you understand:

- Why users are trying out your product
- Where new users are coming from
- Any patterns of early behavior that might impact retention (positively or negatively) later on

New user personas of a B2B SaaS company

We work with a B2B SaaS company with a platform that enables marketers and other professionals to easily make professional animated videos. When they looked at new user personas on their website, the first thing they established was one important way to group new users:

New users who had created an account vs. those who had not
Users who had created an account were likely to be video "producers," whereas the SaaS company hypothesized that users without accounts were potentially video "consumers" who were on the platform simply to view video content. This company decided to separate users who had created an account from those who had not, before looking for distinct personas within each group. This is a great example of using qualitative knowledge of your product to group users before using quantitative data analysis methods.

Discovering new user Personas in Amplitude
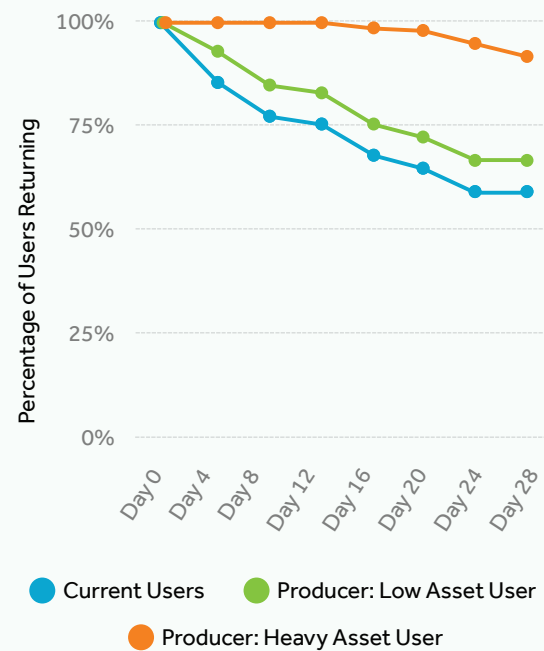To start, the team created two **behavioral cohorts** in Amplitude: 'New User - Account' and 'New User - No Account'. They then ran each cohort through the **Personas** tool to find clusters of users who behave similarly (see Chapter 4 for a refresher on how Personas works).

Retention for New User Accounts

For the New User - Account cohort, they found that most users were taking actions related to producing videos — 'Producers.'
Using the Personas feature, the SaaS company identified two main groups within 'Producers':

- **Producers - Heavy Asset Users:** These users launched the video maker and added lots of "assets" — basically any object or component — to videos
- **Producers - Low Asset Users:** These users also launched the video maker, but did not use many assets

Looking at retention of 'Heavy' versus 'Low' Asset Users, they found that Heavy Asset users have significantly better retention (see chart).

These findings helped highlight that using assets in a video early on is probably important for understanding the platform's value, increasing the chances of retention.

For the New User - No Account, they found some interesting personas as well.

- **Consumers:** These people are mainly watching videos that were created on the platform. Moving forward, it will be important to measure Consumers separately from Producers.
- **Potential Leads:** These people are visiting the company's website and performing actions consistent with potential customers of the platform. The main differentiating action was visiting the pricing page — most users in other personas were not doing this at all.

Takeaway: Overall, this company found that the product experience and messaging should be very different for these personas, which they easily identified via Personas in Amplitude. The company decided to dig deeper into the 'Potential Leads' persona to learn more about their current behavior on the website and their conversion rate to signing up for a free trial, and plan to optimize the website experience for this persona.

By measuring the retention of users in each persona, you can compare the best-retained clusters to those with lower retention. For personas with high retention, you can hypothesize that their behaviors while they are new users are related to their retention. Further testing can confirm whether that's true.

6.3 | Understand your onboarding funnel

First impressions matter
One of the most important parts of understanding new user retention is to analyze your onboarding funnel. Bad onboarding leads to a bad new user retention. Onboarding is the first phase in new user retention, so increasing the number of users who successfully onboard will shift your entire retention curve up.

Define your onboarding funnel
Many apps have a well-defined sequence that users move through during their first-time experience. If that's the case for you, defining your onboarding funnel is pretty easy: simply track an event for each step, and that's your funnel.

If your first-time user experience is more open-ended and flexible, think about the key events that a user needs to do before they can start getting value out of your product (and see Section 4.3.5 for how Pathfinder can help you identify those event sequences).

EXAMPLE

Onboarding funnel for B2B SaaS

The B2B SaaS company that we just discussed above includes a tutorial in their onboarding process that introduces new users to the

platform. They created a funnel to capture the major steps in their onboarding process from signing up to completing this tutorial.
At each step in the funnel, you can measure the percentage of users who continued from the previous step, and the percentage of users who dropped out of the funnel and didn't continue.

Onboarding Tutorial Funnel

Start with the largest drop-offs
Anytime you're diagnosing a funnel, it helps to start with the largest drop-off to see what you can improve. Here you can see that the largest drop-off is between the 'Begin Tutorial' and 'Completed Tutorial' steps. Only about one-third of the users who start the tutorial go on to complete it.

Takeaway: In this case, the company decided to start tracking specific steps within the tutorial to learn where users are losing interest. They plan on using that data to redesign the tutorial so that it is useful to their users while still getting across the most important tutorial information.

Measure the retention impact of your onboarding flow
If you have a defined onboarding flow or tutorial like the SaaS company example, you should also measure the impact your onboarding has on retention. Do people who complete the onboarding

flow have higher retention than those who don't? How important is it to get users to complete the tutorial?

Retention impact of an onboarding tutorial

Here's an example from one of our customers, who has a marketplace app where users can buy and sell items. The first time a user opens the app, they get put into a tutorial flow that points out key features, but they can exit the flow if they want.

As the funnel chart below shows, the app has a 26% conversion rate from the onboarding flow start to finish. In other words, only 26% of users finish the onboarding tutorial.
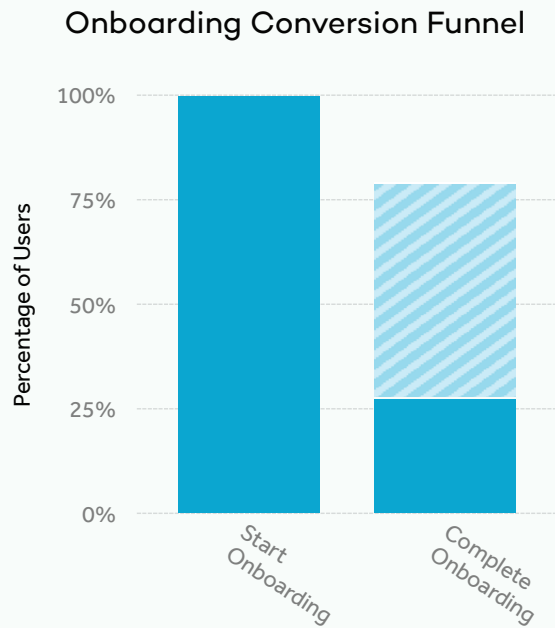
This company created behavioral cohorts of new users who completed the flow, and those who did not. Remember that in Amplitude, you can use the Microscope feature to create cohorts straight from any chart.

When they compared the retention of the two cohorts over the first 30 days, they found that users who completed onboarding had about 5% higher (unbounded) retention than users who did not.

Takeaway: Now, 5% may not seem like a huge difference, but over time this 5% can add up. Incremental improvements like this can add up

to many more users retained in your product over time. For this company, we recommend that they investigate the following:

- What value is the onboarding flow adding for users who complete it? Is there a specific feature that they're using earlier?
- Is there a way to then resurface that value later in the user experience for people who skip the onboarding flow?
- Why are 74% of new users abandoning the onboarding flow? Could it be improved so that it still conveys the essential information but has a higher completion rate?

Onboarding Conversion Funnel

Retention for Two Cohorts Who Did and Did Not Complete Onboarding

● Cohort: Onboarding Abandoned   ● Cohort: Onboarding Completed
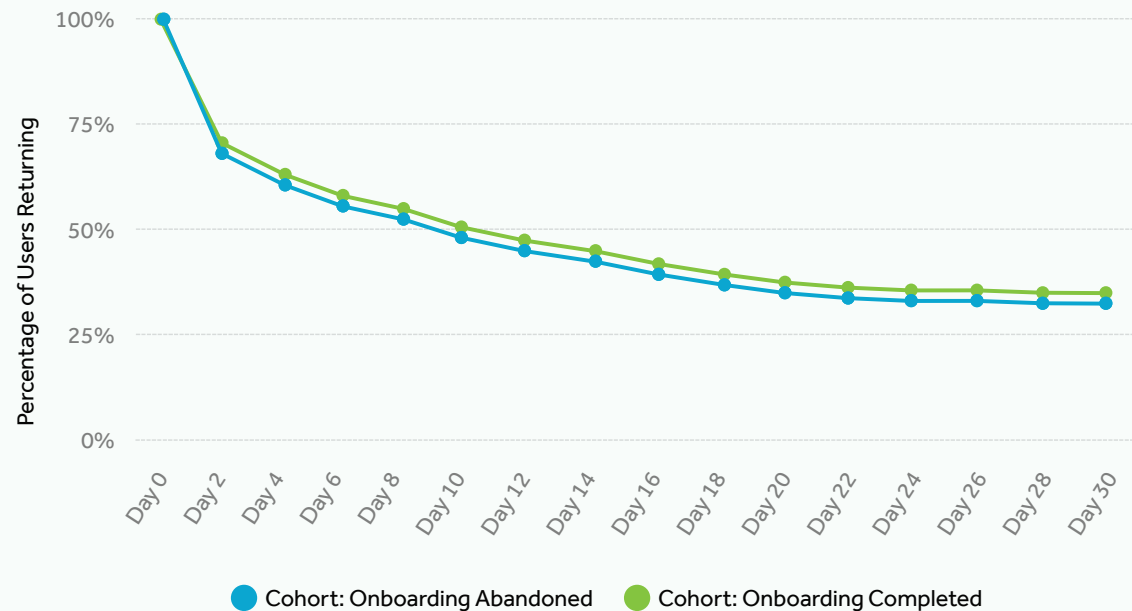
What do "dropped-off" users do instead?
Path analysis can be really useful for seeing what users are doing once they drop out of a funnel, like the onboarding flows we looked at earlier. Are these users leaving the app for good, or are they doing something else instead?

For example, let's look at Pathfinder for the marketplace app, where about 74% of new users are abandoning the onboarding tutorial. What are those users doing instead?

This shows that of users who abandon the onboarding flow, only about 5% are actually leaving the app right after abandoning onboarding — so that's encouraging. 84% of the time, the next action is to view product listings, followed by viewing product details, viewing other product

listings, or searching for items. Some users even start the process of listing an item to sell.

Takeaway: Based on this data, it seems like the vast majority of users who abandon the onboarding flow end up using the product as expected. This may be the case because the marketplace app is intuitive enough for users to understand as they explore it, and doesn't require a structured onboarding tutorial.

We recommend the marketplace company try the following to see how they impact retention:

- Streamline the onboarding flow so it has a higher completion rate.

- Try getting rid of the onboarding flow. Dump users straight into the app and have contextual tooltips that explain features and encourage users to take action as they encounter them.

6.4 | The phases of New User Retention: Onboarding and Value Discovery

The prevailing wisdom around new user retention has been to benchmark N-day retention on some arbitrarily appointed days: D1, D7, D30, D90, much like the graph of mobile retention that we showed at the beginning of the chapter. As we've discussed in earlier chapters, this approach is problematic because products have very different expected usage patterns. You expect someone to play a mobile game or use a music streaming service at different frequencies than an e-commerce site or on-demand food delivery app.

Using arbitrary 'Day N' benchmarks for retention is problematic because products have very different expected usage patterns.

Instead, we'll provide you with a framework for analyzing new user retention that you can adapt to the usage patterns of any product.

After a user starts using your product, they progress through **three phases: Onboarding → Value Discovery → Habit Formation.** Users who don't make the transition from one phase to the
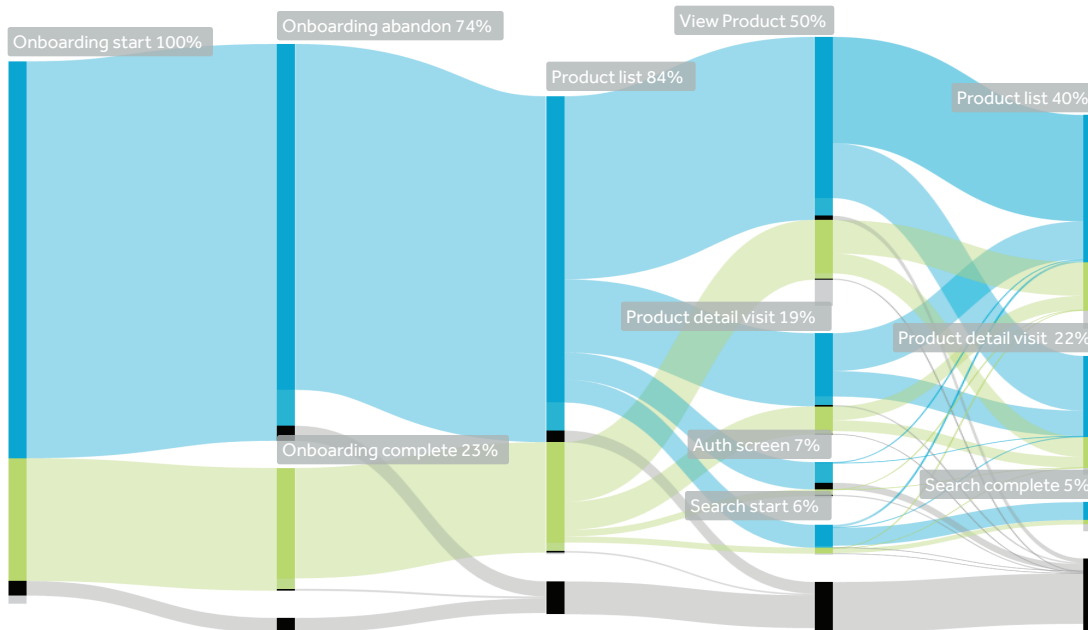
next are dormant users.

Onboarding - A first-time user of your product completes the onboarding experience and uses the product for the first time. In this phase, it's critical that you get users to experience your product's core value as quickly as possible.

Value Discovery - After onboarding, you have a limited window of time to continue showing your core value to a new user. During this time, make sure users are experiencing the core value as many times as possible so that they get a good understanding of how your product helps them or improves their current way of doing things.

Habit Formation - Once a user has discovered value in your product, it's time to make sure they develop a habit so that they keep coming back over time.

We've already discussed **Habit Formation**, in which a new user becomes a current user, in Section 5.3.

In this chapter, we want to understand the transitions that occur during the **Onboarding** and **Value Discovery** phases. What are the behaviors that contribute to pushing someone over the line into the next phase?

Defining the timeframes for the Onboarding and Value Discovery phases
For any product, we're setting the Onboarding phase to Day 0, the first day that someone

Phases of New User Retention: Onboarding & Value Discovery
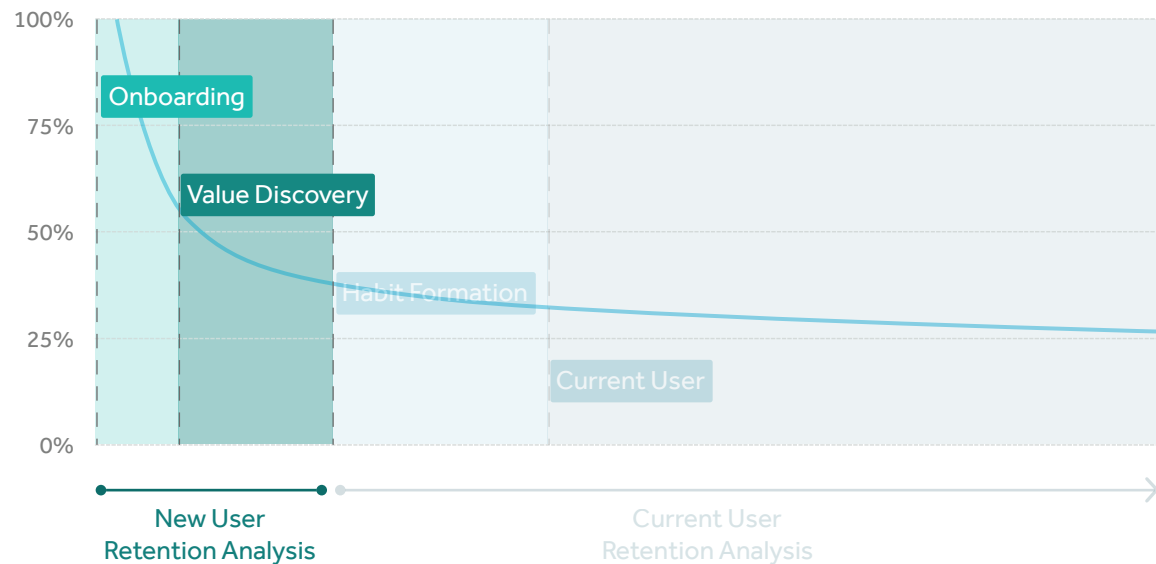
Usage Interval	Onboarding	Value Discovery	Habit Formation
Daily	Day 0	Day 1-3	Day 4-6
Weekly	Day 0	Day 1-7	Day 8-14
Bi-weekly	Day 0	Day 1-14	Day 15-28
Monthly	Day 0	Day 1-30	Day 31-60

opens your app. The length of the Value Discovery phase, however, is determined based on your product's usage interval, which you calculated in Chapter 2. The table above outlines the phases for products of different usage intervals:

Once you have the timeframes for your product, create the cohorts of new users who return during those timeframes. You'll use these cohorts to understand the transitions between the phases.

DO IT IN AMPLITUDE

How to create cohorts for Onboarding and Value Discovery in Amplitude

You can use custom bracket retention in Amplitude to quickly create cohorts for each phase of new user retention.

..measured by N-Day Retention shown as Retention

N-Day Retention
Unbounded Retention
Bracket
Day 0/ 1-7 /8-14
Custom...

Custom Bracket   ✕

Customize how you measure retention entering the range of days for each bracket.

Bracket By   Day   ▾

1st Bracket   [1]   Day 0

2nd Bracket   [7]   Day 1-7

3rd Bracket   [7]   Day 8-14

4th Bracket   [   ]

Cancel   **Apply**

First event   ..performed by Users

(A) New Users   (1) All Users

..then the return event

(B) Any Event

..measured by Day 0 / 1-7 / 8-14 shown as Retention
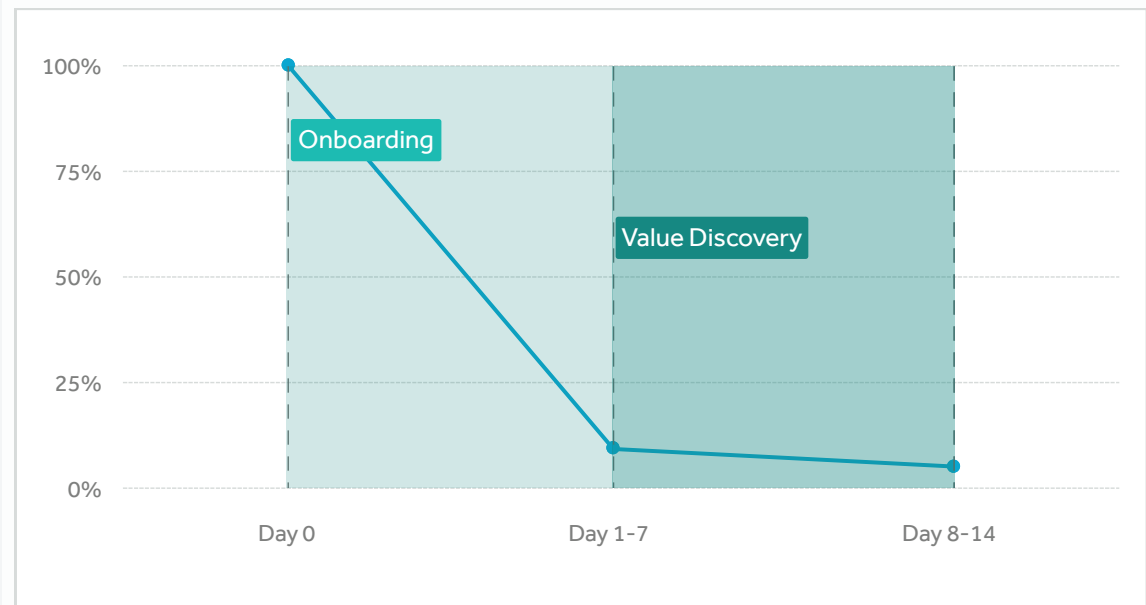
In the **Retention** view, choose **Custom Bracket** retention as your method.

Then simply enter the number of days that should be in each bracket. For a product with a weekly usage interval, that's 1 day for Onboarding, 7 days for Value Discovery, and 7 days for Habit Formation.

Once you apply those brackets to the retention chart, you will get a retention curve of the Onboarding and Value Discovery Phases. In this chart, only 6% of users are successfully onboarded and make it to the Value Discovery phase.

To create a cohort for each phase, simply click on the data point and click 'Create Cohort'. For example, clicking the Day 1-7 data point will give you the Value Discovery Cohort: users who were new on Day 0 and then came back anytime during Days 1-7.

6.5 | Identify the drivers of successful onboarding

In Section 5.3, we walked through a process to discover the behaviors that drive completing the habit formation phase. We will repeat that process now to identify behaviors that lead to a new user becoming successfully onboarded.

Again, here are the basic steps to follow for finding these triggers:

Step 1: Create a **base cohort** of new users during your usage interval.

Step 2: Create a **retained cohort** of users who were in the base cohort *and* were retained in the Value Discovery period.

Step 3: Create a **dormant cohort** of users who were in the base cohort and were *not* retained in the Value Discovery.

Step 4: Compare your **retained and dormant cohorts** to look for behaviors that are present in the retained cohort, but not in the dormant cohort.

Step 5: Once you've formed some hypotheses of actions that might qualify as triggers, **measure the difference in retention between users who do that action, and users who don't do that action.**

Or, use Compass
Alternatively, you can simply enter your new user and value discovery cohorts into Amplitude Compass to get a list of potential drivers. Compass will find the user actions that are most correlated to successful onboarding. For a more complete description of how Compass works, refer back to Section 5.3.

Phases of New User Retention: Onboarding
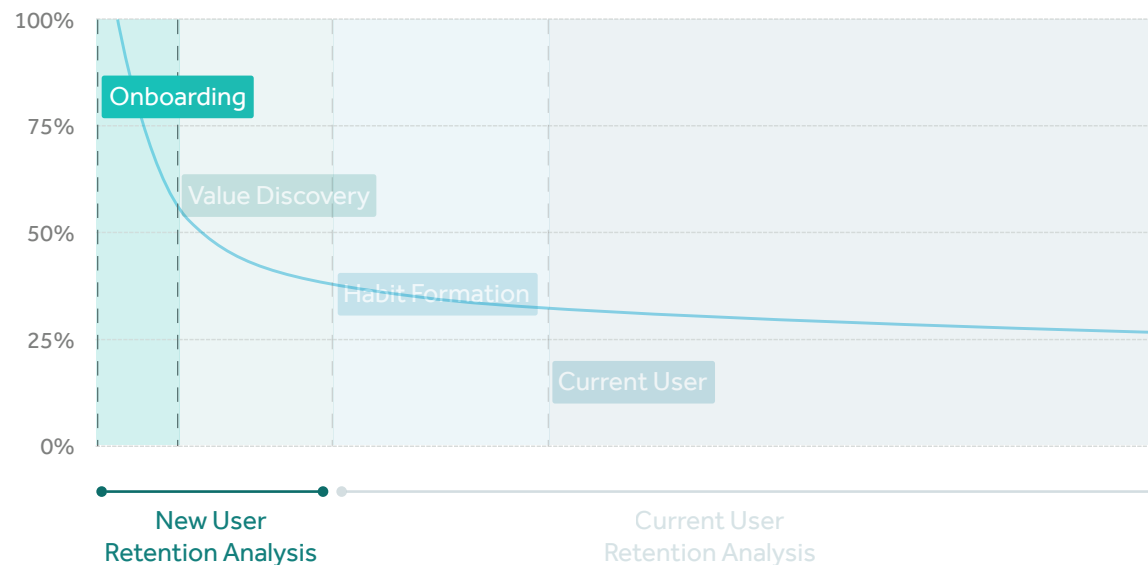
Onboarding drivers for a mindfulness app

Here's an example Compass report from our customer who makes a mindfulness app. While some of these events are too generic, like 'Application: Launched' and 'End Session', you can see that 'Meditation Session Completed', an event that fires when a user completes a meditation session, is second on the list.

Showing: Correlation	Within:	1 Day
[Amplitude] End Session		0.21 (≥3)
Meditation Session Completed		0.19 (≥1)
Application: Launched		0.19 (≥1)
[Amplitude] Start Session		0.17 (≥6)
Meditation Session Began		0.20 (≥4)

Correlation / Number of Events bar chart
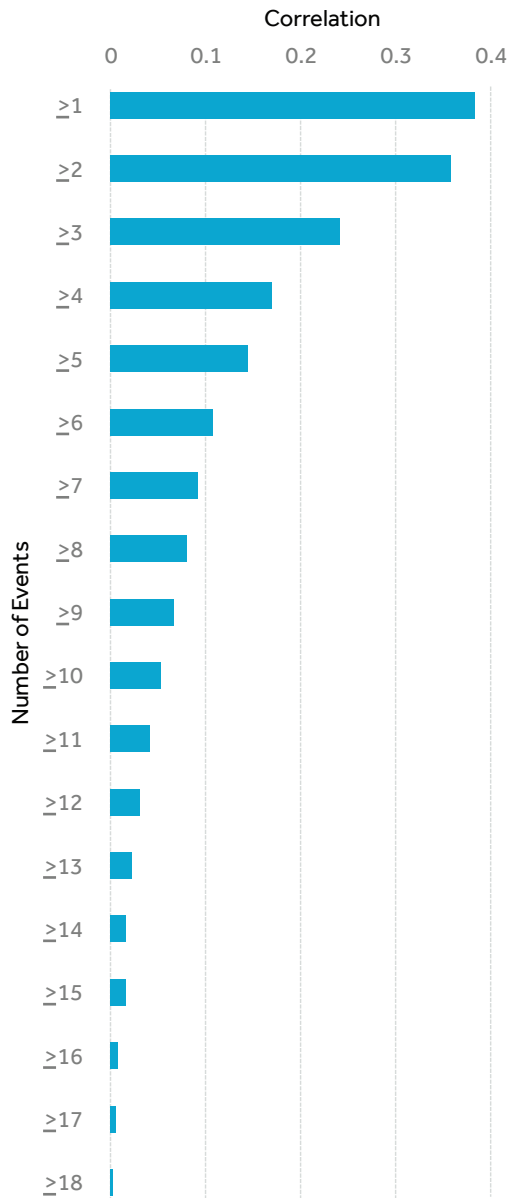
For New Users, how well does performing 'Meditatioin Session Completed' within 1 day of first use predict being in: Value Discovery?

Moderately Predictive

0.338	Correlation score (Margin of error: ≥ 0.0031)
≥ 1	Number of time this action was performed
22.6%	Users who did this (86,358 of 382,922)

Create Cohort

Compare Retention Rates

Percentage of Users Returning vs Days Since First Use

● This Behavioral Cohort　● New User Retention
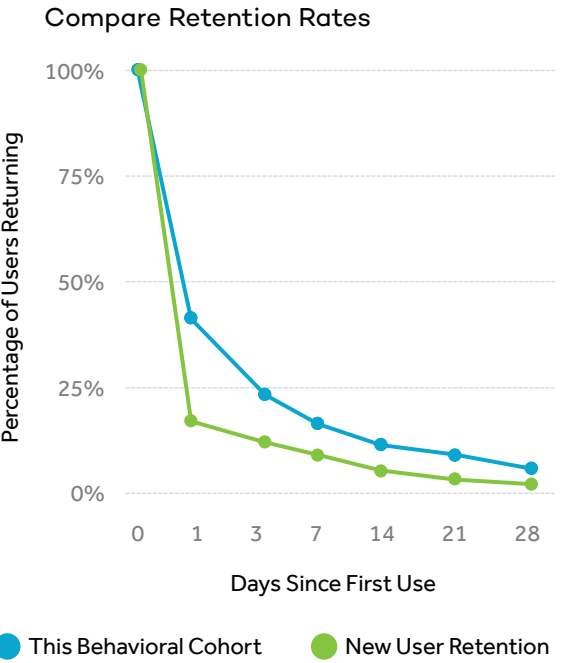
Let's take a closer look at the 'Meditation Session Completed' event. According to Compass, completing this event at least one time within the first day of use is moderately predictive of successful onboarding. The 'Compare Retention Rates' graph also shows that users who complete a meditation session their first day have better retention than new users overall.

Based on this Compass report, it seems that getting a new user to perform one meditation session in their first 24 hours is a good indicator that they will successfully pass the Onboarding phase.

Takeaway: This company decided to tailor their first-time user experience to get a user to complete a meditation within their first session in the app.

6.6 | Identify the drivers of successful value discovery

Now, we'll repeat the same process for the transition from the Value Discovery → Habit Formation phase.

Phases of New User Retention: Value Discovery
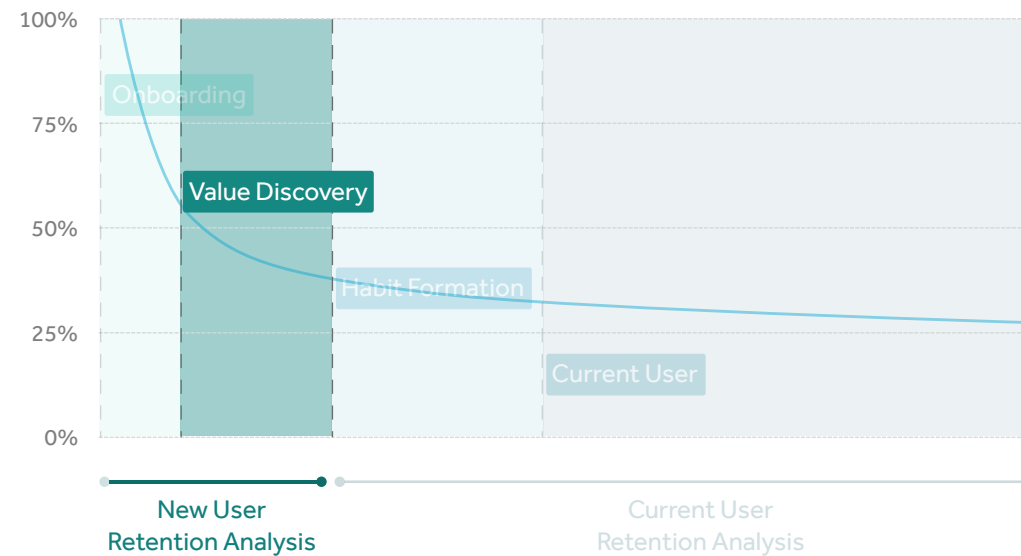
EXAMPLE

Let's continue the example from the mindfulness app. In Compass, we'll now set the 'Value Discovery' cohort as the base cohort, and the 'Habit Formation' cohort as the target predict cohort.

The resulting Compass report shows that in the first 7 days, completing meditation sessions is still the most correlated action for retaining from the Value Discovery phase to the Habit Formation phase. **The best predictor for successful Value Discovery is completing at least 3 meditation sessions in the first week.**

Takeaway: Based on these findings, the company decided to test ways to get users to complete 2 additional meditation sessions between days 1-7 in the app, for a total of 3 meditation sessions in the first week.

Showing: Correlation Within:	1 Day	2 Days	3 Days	4 Days	5 Days	6 Days	7 Days
Meditation Session Completed	0.24 ($\geq$ 1)	0.28 ($\geq$ 2)	.30 ($\geq$ 2)	0.32 ($\geq$ 2)	0.33 ($\geq$ 2)	0.34 ($\geq$ 3)	0.35 ($\geq$ 4)
[Amplitude] End Session	0.30 ($\geq$ 1)	0.30 ($\geq$ 1)	0.31 ($\geq$ 2)	0.31 ($\geq$ 2)	0.32 ($\geq$ 2)	0.33 ($\geq$ 3)	0.34 ($\geq$ 2)
Meditation Session Began	0.20 ($\geq$ 2)	0.24 ($\geq$ 2)	0.26 ($\geq$ 3)	0.28 ($\geq$ 3)	0.30 ($\geq$ 3)	0.31 ($\geq$ 4)	0.33 ($\geq$ 4)
[Amplitude] Start Session	0.22 ($\geq$ 2)	0.24 ($\geq$ 3)	0.26 ($\geq$ 3)	0.27 ($\geq$ 3)	0.28 ($\geq$ 4)	0.29 ($\geq$ 4)	0.31 ($\geq$ 4)
Application: Launched	0.22 ($\geq$ 2)	0.24 ($\geq$ 3)	0.26 ($\geq$ 3)	0.27 ($\geq$ 3)	0.28 ($\geq$ 4)	0.29 ($\geq$ 4)	0.30 ($\geq$ 4)
Landing_Button_Tapped	0.16 ($\geq$ 6)	0.20 ($\geq$ 6)	0.23 ($\geq$ 7)	0.25 ($\geq$ 7)	0.27 ($\geq$ 7)	0.28 ($\geq$ 8)	0.30 ($\geq$ 8)
Profile: Landed	0.17 ($\geq$ 2)	0.21 ($\geq$ 3)	0.24 ($\geq$ 3)	0.25 ($\geq$ 3)	0.27 ($\geq$ 4)	0.29 ($\geq$ 4)	0.30 ($\geq$ 4)

⚡ Compass

Users in the following cohort	..predict they will be in the following cohort
1 Value Discovery	**2** Habit Formation
..how does performing	
A Any Event	

Apply what you've learned: Getting more users through the Onboarding and Value Discovery phases

Once you've discovered your own drivers for Onboarding and Value Discovery, you know the milestones that you need to get new users through to increase their chances of staying retained.

Sometimes you'll find that the drivers are similar for both the Onboarding and Value Discovery phases, in which case it may make sense to consolidate your approach to focus on one time period. This was the case for one of our customers' products, which helps users find and book fitness classes near them. Their highest correlated event for both phases was booking 1 class, so we recommended that they focus on getting users to book 1 class during the Value Discovery Phase, instead of limiting the focus to only the Onboarding time period.

To put these insights into action, think about ways you can get more users to pass these milestones during their early experience. This will improve your overall retention rate by shifting the curve up. Here are some suggestions based on the mindfulness app example.

Onboarding
- Provide an onboarding experience that includes completing a short meditation session, so a user immediately gets the core value of the app.
- If a user doesn't complete a meditation during their first session, ask them to set a reminder (via push notification) to complete a meditation session at a later time.

Value Discovery
- On a user's second day, if they haven't yet done a meditation session, send a push notification reminding them to meditate.
- Present users with a goal of completing three sessions in their first week, with some incentive if they reach the goal.
- Introduce the idea of meditation "streaks" — if a user has already meditated for two days in a row, send them a notification on the third day reminding them to meditate so that they don't break their streak.

By experimenting with different methods, you can find the most effective ways to get users through the phases of new user retention.

Remember, the phase that comes after Value Discovery is Habit Formation, which we covered in Section 5.3.

More examples of Onboarding & Value Discovery drivers

To help get your own ideas flowing, here are some other examples that our customers have found and recommendations for getting more users to complete those actions.

Product	Driver	Phase	Ideas
Music app	Share 1 song	Onboarding (Day 0)	Since sharing is a major use case of the app, include sharing a song as a step in the onboarding flow for new users
Marketplace app	Send 1 message to a seller	Onboarding (Day 0)	During a first-time experience, encourage users to send a message to a seller on an item they're interested in
Casual social game	Play 6 games	Onboarding (Day 0)	Encourage users to play more games on their first day. Can do this by pushing more people to keep playing games once they've started, or by using push notifications after they've left the app
B2B SaaS video platform	Saved video 1 time	Value Discovery (Days 1-7)	Once users have opened the video maker and played around a bit, prompt them to save their progress
Lifestyle app for booking appointments	Book 1 appointment	Value Discovery (Days 1-7)	Optimize their browsing process and potentially recommend some classes nearby to make it easier for someone to book their class
On-demand delivery app	Place 1 order	Value Discovery (Days 1-30)	If a user doesn't place an order on their first day, stay top of mind with a few targeted emails over the course of the first 30 days

PRO TIP

Don't forget retention detractors

We focus most of this playbook on finding positive correlations with retention so that you can get more users to do the things that improve retention. However, it's important to also think about the factors that might have a negative retention impact. Fixing these 'retention detractors' can sometimes provide really big wins.

**Improve product quality first**

The overall quality and performance of your product can have a big impact on retention. Some obvious culprits are bugs, crashes, and slow load times— if your app performance is unreliable, it doesn't matter how much value your product can theoretically provide. Users will quickly give up and abandon your app. If you have any major performance issues, make sure you spend engineering resources to fix those first before implementing your retention strategy.

Here are some ways to find detractors via your analytics data:

- Find bugs or crash events, if you're logging these in your user analytics.
- Find events that have a low correlation with retention. In Amplitude, you can find these low correlation events in Compass.
- Segment your dormant users by different user properties to identify any trends. For example, you might notice that your retention on Android devices has taken a sudden dip, and pinpoint a bug in your latest release.
- Use Amplitude's Personas feature (or a similar clustering algorithm) to identify groups of users with low retention, and see what events or properties they have in common.
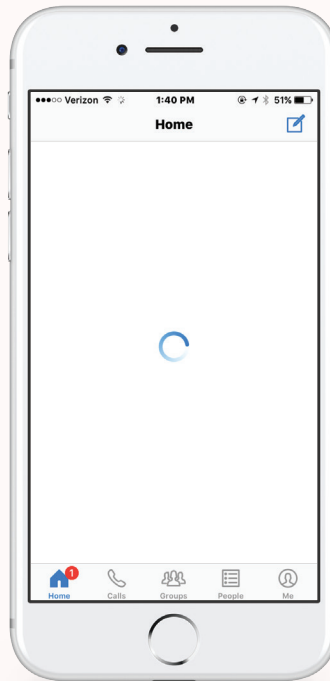
6.7 | Take action

To recap, the key components of new user retention analysis are:

- Identify important user properties and behavioral personas of your new users
- Diagnose your onboarding funnel
- Identify the actions that drive users to complete the Onboarding and Value Discovery phases of new user retention
- Don't forget about retention detractors!

Now that you've completed new user retention analysis, summarize what you've found and form some hypotheses to test. You can use the **New User Retention worksheet** at the end of this chapter to take notes and keep organized.

Here are some key questions to ask yourself:

❑ Who are your new users, and what are their behavioral personas or significant user properties? Is there a specific persona that you should focus on?

❑ Why do you think some of your behavioral personas retain better than others? Are there particular behaviors that seem to positively (or negatively) impact retention?

❑ How does the first-time onboarding experience affect later retention? Are there certain steps that can be improved? Is a tutorial or structured onboarding flow beneficial for your product?

❑ What are the key actions that you identified as drivers for successfully passing the Onboarding and Value Discovery phases of new user retention? What are some methods you can test to get more new users to cross those milestones?

❑ Did you identify any retention detractors? How can you improve them?

❑ What experiments can you run to determine whether a certain action or sequence of actions is critical to your new users retaining?

Track improvement over time

As you start testing some of your hypotheses and trying out new ways to improve your new user retention, it's important to keep track of your metrics to see what is and isn't working.

Remember, the overarching goal of new user retention analysis is to set new users up to become current users. Keep this in mind as you form your metrics and KPIs for new user retention.

Here are some metrics you can track over time to measure your progress:

• The percentage of new users who become current users.

• Retention over time of your new users and of important behavioral personas.

• In particular, you can set up a bracket retention curve that follows your New → Onboarding → Value Discovery → Habit Formation phases. You might choose to focus on improving one part of this curve first, depending on where the largest opportunity for improvement is.

• Conversion rate over time through your onboarding funnel.

NEW USER RETENTION

A **new user** is someone who is using your product for the first time during the current interval that you're measuring. New user retention analysis will help you understand how your new users are onboarding and discovering value in your product.

New User Timeline

active: 1st time

Current Interval
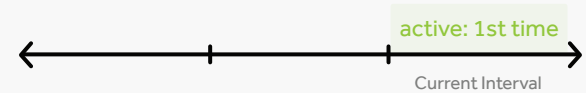
New user diagnostic checklist

Run through the metrics below to get a baseline understanding of your new users. Refer back to Ch. 4 for a refresher on any of these methods.

- ❑ Create a cohort of your new users
- ❑ Plot the baseline retention curve of new users
- ❑ Segment the retention curve by user properties
- ❑ Measure conversion through your critical path funnel

- ❑ Identify common user flows
- ❑ Measure stickiness for your critical event
- ❑ Measure session metrics

New user behavioral personas

Identify any behavioral personas within your new users and list them here.

Persona Nickname	Description & Key Behaviors	% of New Users	Retention Metric (choose 1 for your time frame)
Ex. Social users	Ex. Participate in at least 5 chats in the first 3 days	Ex. 36%	Ex. 82% Week 1 retention

Define & measure your onboarding funnel

List the steps in your onboarding funnel (you may not need all the rows)
and the conversion rate between steps, noting where your largest drop-offs
between steps are.

Funnel Step Name	Conversion Rate from Previous Step	Overall Conversion Rate (from Step 1)
1)		
2)		
3)		
4)		
5)		
6)		

Segment your funnel by user properties and personas

Make note of any interesting trends you see here:

You should also:

❑   Measure the retention impact of completing your onboarding flow (Section 6.3)

❑   Look at what "dropped off" users do instead (Section 6.3)

Drivers of onboarding & value discovery

Use the process in Sections 6.4-6.6 to identify the behavioral drivers of the Onboarding and Value Discovery phases of new user retention.
List those drivers here and some ideas you have for how to get more users to perform those actions.

Behavioral driver	Phase	Ideas
Ex. Meditate at least 1 time on first day	Onboarding	Ex. Include a short, easy meditation session in the onboarding flow to demonstrate value

Take action: hypotheses & next steps

Ask yourself these questions as you form hypotheses and come up with experiment ideas.

- Who are your new users, and what are their behavioral personas or significant user properties? Is there a specific persona that you should focus on?
- Why do you think some of your behavioral personas retain better than others? Are their particular behaviors that seem to positively (or negatively) impact retention?
- How does the first-time onboarding experience affect later retention? Are there certain steps that can be improved? Is a tutorial or structured onboarding flow beneficial for your product?
- What are the key actions that you identified as drivers for successfully passing the Onboarding and Value Discovery phases of new user retention? What are some methods you can test to get more new users to cross those milestones?

- Did you identify any retention detractors? How can you improve them? What experiments can you run to determine whether a certain action or sequence of actions is critical to your new users retaining?

Notes

Metrics for tracking improvement over time

As you start testing some of your hypotheses and trying out new ways to improve your new user retention,
 it's important to keep track of your metrics to see what is and isn't working.

Remember, the overarching goal of new user retention analysis is to set new users up to become current users.
Keep this in mind as you form your metrics and KPIs for new user retention.

We suggest tracking these metrics over time to measure your progress:

- The percentage of new users who become current users.
- Retention over time of your new users and of important behavioral personas.
  - In particular, you can set up a bracket retention curve that follows your New → Onboarding → Value Discovery → Habit Formation phases. You might choose to focus on improving one part of this curve first, depending on where the largest opportunity for improvement is.
- Conversion rate over time through your onboarding funnel.

CHAPTER 07

RESURRECTED USER RETENTION

At this point, you've studied both your current users (Chapter 5) and new users (Chapter 6). You've identified some important user behaviors that drive people through these stages, as well as found your core and power personas. Now we're down to the last stage of the Retention Lifecycle: resurrected users. In this chapter, you'll apply many of the methods you've already learned, as well as compare the behavior of your resurrected users with that of current and new users.

In partnership with appboy

Why resurrected user retention matters

A **resurrected user** is someone who has returned to your product after being inactive, or dormant, for a period of time. Resurrected users are often overlooked when people discuss retention strategies, but they can offer a lot of potential for improving your overall retention and active user count. **Think about it this way: all of the users who are dormant in your product have the potential to be resurrected.** If you're like most companies, that's a pretty big pool of users.

In addition, you've already acquired these users — that means you have a better chance of re-engaging them than you do convincing a brand new prospect to try your product. Often, you can spend fewer resources (whether that's ad dollars or your team's time) resurrecting users than trying to acquire brand new ones.

Resurrecting your inactive users can help you flatten the retention curve and increase your baseline of active users (and in some cases even inflect the curve upwards, like in Evernote's 'smile graph'[1]).

Flattening the Curve

[1] Source: https://techcrunch.com/2012/11/04/should-your-startup-go-freemium/evernote-smile-graph/
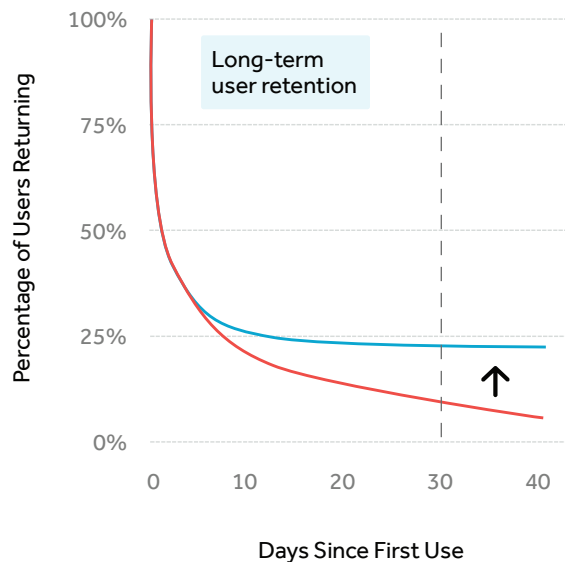
TERMS TO KNOW

DEFINITION

WHAT IS A RESURECTED USER?

A **resurrected user** is someone who has returned to your product after being inactive, or dormant, for a period of time. Specifically, we're defining a resurrected user as someone who is active in the current period, was *not* active in the previous period, and was active at some point before that.

For example, if you determined that you have a monthly usage interval based on the usage interval calculation in Chapter 2, your resurrected users would be those who were active in the current month, *not* active in the previous month, and active at any point in time *before* the previous month.

Don't let users come back to a poor empty experience

Think about the experience for a resurrected user — when someone returns to your product after a period of inactivity, what do they see? If it's an empty state and there's not much for them to interact with, they might just close the app and never come back.
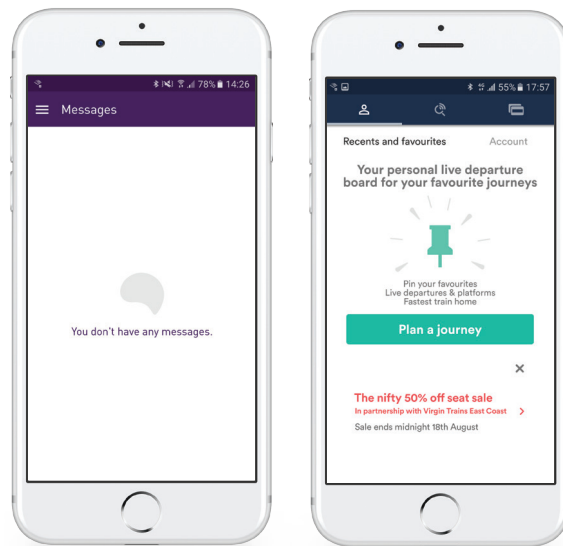
Here we see 2 examples of empty states. In the screenshot on the left, we see that we have no messages — but there's nothing else to interact with on the screen. On the other hand, the screenshot on the right shows a travel app. The user has no 'Recents and favourites' yet, but the screen encourages them to start with a prominent call to action to 'Plan a journey', and even offers a relevant promotion. Think about any empty

state as an opportunity to engage users and get them to perform an action you care about. For example, the app on the left could improve this screen with a call to action to send a message to one of your friends.

Take another example from mobile gaming — Words with Friends is a popular game by Zynga in which people play a Scrabble-esque game against their friends in real time. Users who have been inactive on Words with Friends for a prolonged period of time don't have any active games going on with their friends, which means that if they come back to the app, they don't have anything to immediately engage with.

The Words with Friends team realized that due to this poor user experience, most resurrected users did not reengage well and didn't come back to the app. They decided to send push notifications to the person's friends, encouraging them to invite that user to start a new game. That way, when a user returned to the app, they had game invites waiting for them and were much more likely to start playing again.

Providing a rich experience for resurrected users is an important way to encourage them to reengage and hopefully become current users. In this chapter, we'll go through different analyses that will help you identify ways to resurrect more users and improve their retention.

Resurrected User Timeline

What you'll learn in this chapter

The overall goals of resurrected user retention analysis is to learn how you can (1) "resurrect" or reactivate dormant users and (2) get them to become current users of your product.

You also want to determine whether resurrected users are a good potential source of growth for your product.

As we go through resurrected user retention analysis, we'll be answering the following questions. Keep these in mind as you work through this chapter and do your own analysis:

- Are there any behavioral personas of resurrected users that differ from current users?
- Can you identify any triggers for resurrection? How do metrics like retention and conversion compare between those who receive the trigger and those who don't?
- How do resurrected users compare to new and current users in terms of key behaviors and revenue?
- What is the ROI of resurrecting existing users compared to acquiring new ones?

Topics and methods we'll cover in this chapter:

7.1 - Resurrected users diagnostic

7.2 - Find behavioral personas

7.3 - Identify triggers of resurrection

7.4 - Compare resurrected user behavior to new and current user behavior

7.5 - Take action
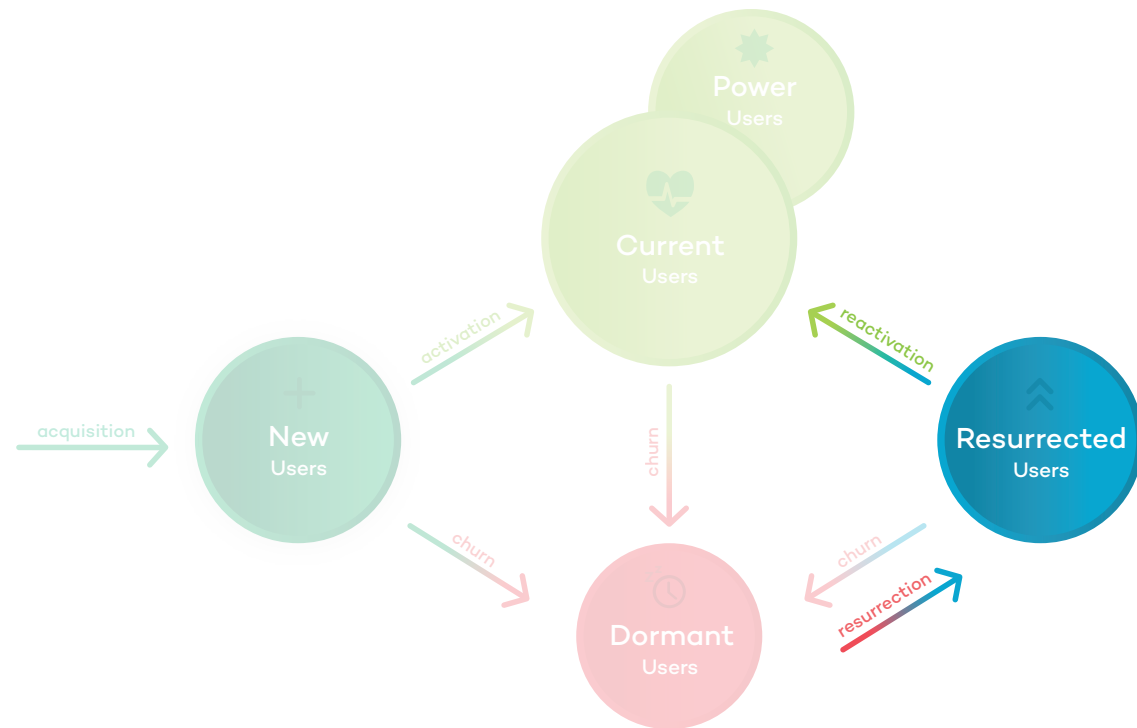
7.1 | Resurrected users diaostic

Remember, a resurrected user is someone who is active in the current period, was *not* active in the previous period, and was active at some point before that.

Just like you did for new and current users, take your resurrected user cohort that you created in Section 3.3 and plot your baseline retention for resurrected users.

It's helpful to look at longer-term effects, at least 1-2x your product's usage interval out. Here's the retention curve of resurrected users for one of our customers, an on-demand delivery company.

How do resurrected users retain compared to other users?
You should also compare this with the retention curves of your current users and new users. This will give you a sense of how your resurrected users currently perform relative to these other two groups.

Retention for Resurrected Users
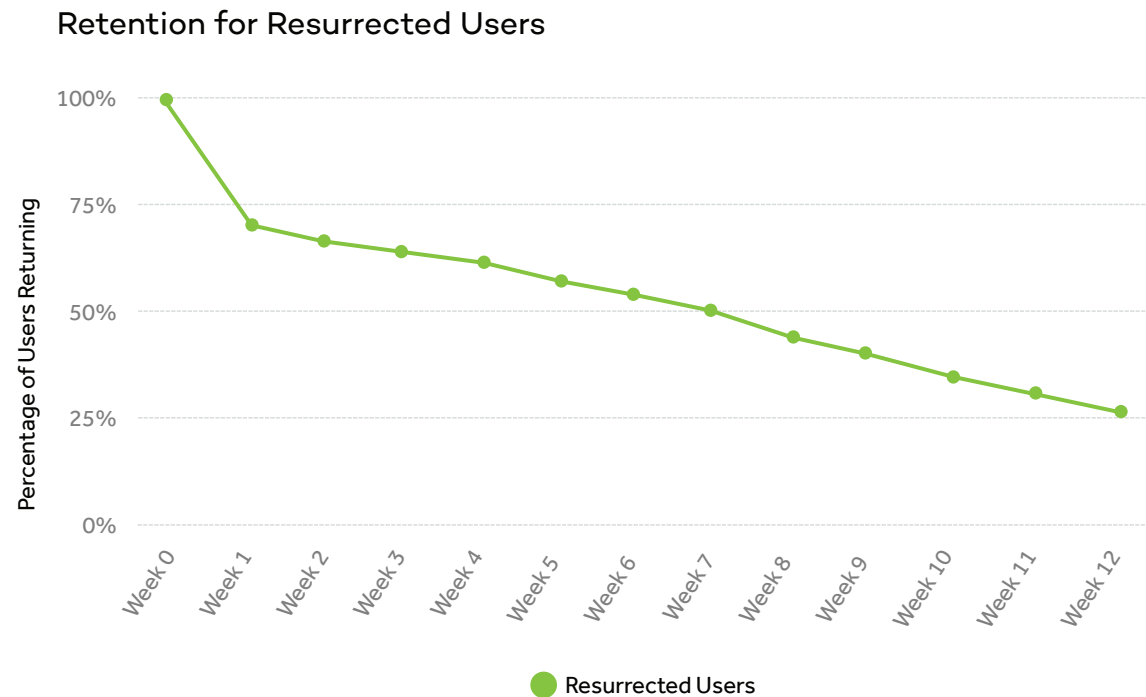
EXAMPLE

In the chart, we've added the retention curves of current and new users for the on-demand delivery company. While resurrected users don't retain as well as current users, they *do* retain better than new users during the same time period.

Remember, you should also look at retention for your critical event, not just for "active" users who may not be doing anything valuable in your product. The second chart shows retention during the same time period, but with the company's critical event, 'Checkout,' set as the returning event. You can see that resurrected users have significantly better rates than new users during the same time period of returning and placing an order, even many weeks after they initially resurrect.

Takeaway: In this case, resurrected users already retain and place orders at much better rates than new users. This indicates that resurrecting users could be a good source for gaining more current users and increasing revenue.

Retention for Users
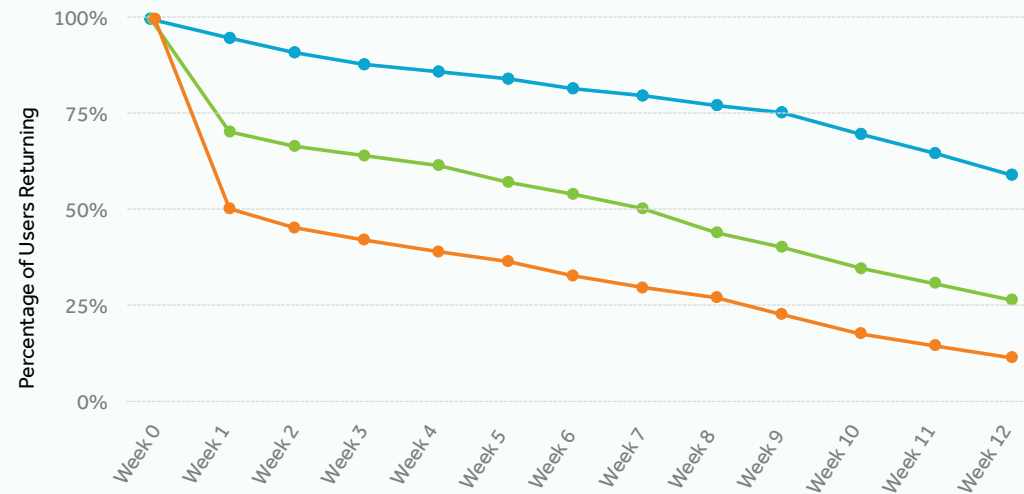
Retention for Users Where Return Event is Checkout

Current Users   Resurrected Users   New Users
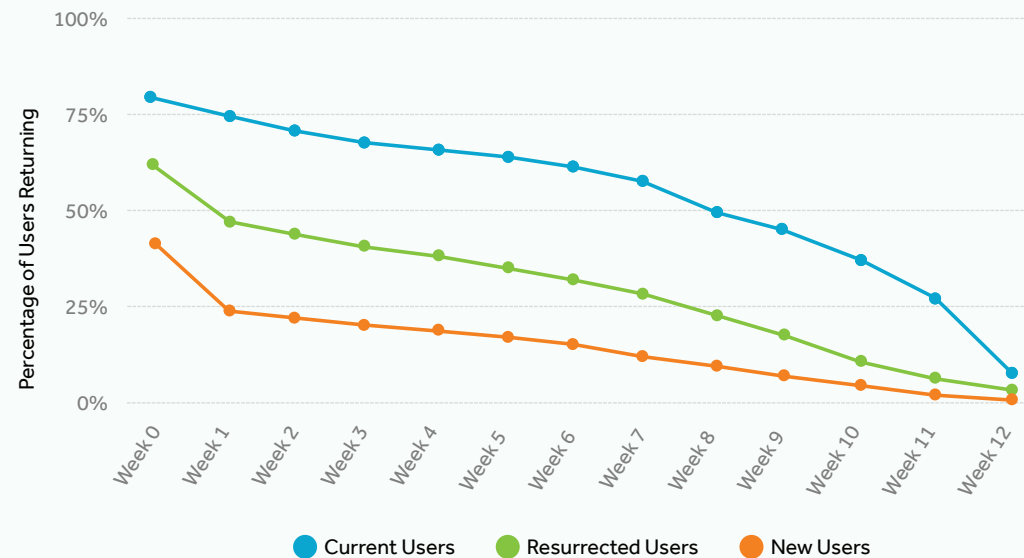
Here's a different situation for a product where the retention for resurrected users is very low, even lower than for new users. This could mean that the product isn't doing a good job of showing value to resurrected users, so people are not reengaging and end up just leaving the app.

Takeaway: The good news is that this product has strong current user retention. For a situation like this, we recommend looking at what it would take to increase resurrected user retention, and weighing that effort against the potential benefit. For smaller teams with limited time and resources, it might make more sense to focus on improving new user retention in the short term.

Comparing Retention for New, Current & Resurrected Users

Percentage of Users Returning

- ● Current Users
- ● Resurrected Users
- ● New Users
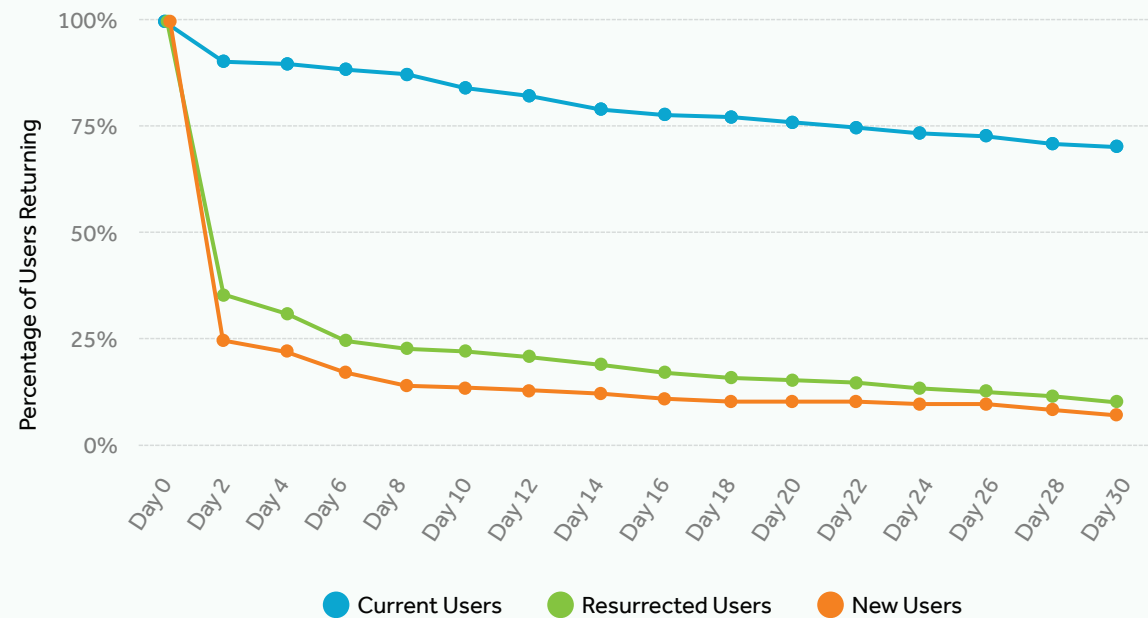
Determine the opportunity size of resurrected users

Now that you have your baseline resurrected user retention and know how these users retain relative to current and new users, it's time to assess whether resurrected users might be a good source of growth for your product. Two calculations that will help you determine the opportunity size are:

- The percentage of your active users that are resurrected
- How many potential resurrected users you have

What percentage of your active users are resurrected?

Calculate the breakdown of your active users during the current time period you're measuring. In Amplitude, you can do this using the Lifecycle feature (see Section 3.3). Here's a hypothetical example of active users during a week:

The first thing to note is that 73% of the active

users during this week are current users — people who have been using the app with some consistency. That's great — it means this product has a healthy base of users, and isn't just pouring on new users who quickly churn.

Notice that resurrected users actually make up 14% of the active users, which is about equal to the number of new users during that week. This indicates that the company is already successfully resurrecting users (whether organically or with targeted marketing efforts), and increasing their efforts here could have a positive impact on overall retention.

How many *potential* resurrected users do you have?

Next, let's look at the size of the *potential* pool of resurrected users. Anyone who has used your product in the past but has *not* used it in the current period of analysis is a potential resurrected user. A practical way to assess the size of this opportunity is to calculate the number of people who used your product sometime in the preceding 6 months, but have not used it in the current period. Depending on the type of product you have, your usage interval, and any seasonality of your product, you may want to look at a period that's longer or shorter than 6 months, but it's a good place to start.

	# of Users	% of Total Active
Total Active Users	590,084	
New Users	76,167	13%
Current Users	429,394	73%
Resurrected Users	84,523	14%

👥 Behavioral Cohort

Users active in the last 6 months, but not active in the current week

The Users who..	..had been active
	any time since Jan 3, 2016
And not who	..had been active
	any time during July 3, 2016 – July 9, 2016

In Amplitude, you can calculate this group of users with a behavioral cohort definition. If you're looking at the current time period of the week of July 3 - 9, 2016, you would create a cohort of users who were active at any time in the last 6 months, but were *not* active in the current week:

Going back to our example, this product has **1.3 million potential resurrected users**. Think about this from an acquisition perspective. This company has 1.3 million people who have downloaded their app in the past 6 months, but are currently inactive. These are people they can try to reengage with a well-timed push notification or email, and are much easier to reach than all of the potential new users that they're spending money to acquire.

	# of Users	% of Total Active
Total Active Users	590,084	
New Users	76,167	13%
Current Users	429,394	73%
Resurrected Users	84,523	14%
Potential Resurrected Users	1,304,242	-

7.2 | Find behavioral personas of your resurrected users

Just like you did for new and current users, you should examine behavioral personas of your resurrected users. Understanding these patterns of behavior can show you why users might be returning, or what may have triggered their resurrection. For a refresher on behavioral personas, see Chapter 4.

Resurrected personas for on-demand delivery

An on-demand delivery used Amplitude Personas to find clusters of users within their resurrected user cohort. They identified a few interesting personas, listed in the table on the right.

The first 2 personas are especially encouraging — people in these personas are placing an order when they return to the app, *plus* almost all of them are retained 2 months later. These personas, who together make up 20% of resurrected users, are using the product as expected when they return.

The other 2 personas, 'Just browsers' and 'Discount redeemers', provide some interesting information.

Browsers
The 'Just browsers' persona contains a lot of users, making up 21% of the resurrected user cohort. These people exhibit browsing behavior on a similar level to 'Browsers who order', but then ultimately don't complete an order that day. As a group, they have pretty high 2 month retention at 74.52%, showing that even though they don't complete an order on that day, there's a high likelihood they'll come back later.

Persona	Description	2 Month Retention	% Resurrected Users
People who know what they want	These people did not have many events related to browsing different vendors or items, but instead found exactly what they want and placed an order	99%	11%
Browsers who order	These people did place an order eventually, but did a lot of browsing of different vendors before making their decision	97%	9%
Just browsers	Like the previous persona, these people also did a lot of browsing, but ended up not completing an order	75%	21%
Discount redeemers	This group of people all did an event called 'redeem discount'. This was a discount emailed to a subset of users for a few dollars off a delivery	90%	5%
Open and leave	People who just opened the app	35%	37%

Takeaway: Improving the browsing experience could be an effective way to boost resurrected user retention, since 21% of resurrected users are browsing but ultimately not ordering. If the company could get more 'Just browsers' to become 'Browsers who order', not only would they get more revenue from orders on the day they resurrect, but this data shows that 'Browsers who order' have much higher long-term retention as well (97% 2 month retention).

Discount redeemers
The 'Discount redeemers' Persona showed several events related to redeeming a discount on their next order, which was sent to them via email.

Any time you're looking at the impact of discounts, you need to measure how well they incentivize users to place an order not only in the short-term, but as a repeat customer moving forward. We'll look at that more in the next section.

PRO TIP

Internal vs. External Triggers

In his book *Hooked*, author Nir Eyal talks about two types of triggers: external and internal.

External triggers are things like push notifications, emails, or ads that we use to get users' or potential users' attention. Many mobile apps use push notifications to encourage users to come back to their app.

Internal triggers, on the other hand, happen in a person's mind. According to Nir, an internal trigger occurs when "a product is tightly coupled with a thought, an emotion, or a pre-existing habit."[2] For example, we open Facebook when we're feeling bored or lonely — the impulse to open Facebook is cued by emotions.

The best habit-forming products start out with external triggers to initially attract and educate the user, but over time users no longer need the external triggers to keep using the product, relying instead on internal ones.

7.3 | Identify triggers of resurrection

The next step is to determine any measurable triggers of resurrection. These may be push notifications or emails that you send to your users — for example, if you already have some reengagement campaigns targeted at users who have been inactive for some amount of time. If your product has a social component, these notifications could be based on actions from users' friends or networks (like the notification you get when someone mentions you on Twitter).

Your product might also have triggers that coincide with outside factors like holidays, sporting events, or weather. For example, you might notice more users placing orders with an on-demand app during a week of heavy snow, when people are less inclined to go outside to run the errands they normally would. It's hard to confirm these factors in your data, but anytime you notice spikes or dips in usage, don't forget to think about these outside influences on your users.

For resurrected users, we want to identify any **external triggers** that might have brought them back to the product. Once we identify them, we can measure how effective they are at reengaging users and think of ways to improve.

[2] Source: http://www.nirandfar.com/2012/04/billion-dollar-mind-trick.html

Here are a few ways to identify triggers:

- If you have a website or web app, look at session utm parameters and referrer data to look for common sources, like an email campaign or ad.
- If you do a cluster analysis to determine behavioral personas, like we did in the previous section with the Personas feature, you can look for events within each cluster that could have triggered resurrection.
- Analyzing the paths of resurrected users, using Amplitude's Pathfinder or a similar path visualization, can also shed light on why users are returning.

Once you identify potential triggers, compare downstream metrics like the critical funnel conversion rates and long-term retention for users who receive these triggers. This will allow you to measure whether they're having the intended effect.

Note: Tracking messaging data (push notifications and emails) and attribution data in your product analytics platform enables you to measure the impact of these campaigns on later in-product behavior. We recommend sending messaging and attribution data to your product analytics so that you can get the full picture of user behavior. If you're using Amplitude, we partner with best-in-class providers across messaging and attribution so that you can easily integrate different data sources into Amplitude [3].

[3] Source: https://amplitude.com/partners

The impact of discount email offers

In the previous section, we discussed the 'Discount redeemer' persona for the on-demand company. These discounts are sent via email to a subset of users who have been inactive (not completed an order) for some amount of time.
We created a behavioral cohort of resurrected users who had received the special offer, and found that **22% of all resurrected users had received a discount offer**.

When we compared the critical funnel conversion rates for resurrected users who received the special offer, versus those who did not, we found a huge difference — **94.5% of resurrected users who received a special offer completed an order, compared to only 26.5% for the rest of the resurrected users**.

Basically, almost every single user who came back to the app after receiving a discount completed an order. The team also looked at the conversion rate from receiving a discount to launching the app, and found that 58% of users who receive a discount offer go on to launch the app within 7 days.

Critical Funnel: App Launched > Delivery

Legend:
- ● Resurrected Users - Discount Received
- ● Resurrected Users - No Discount
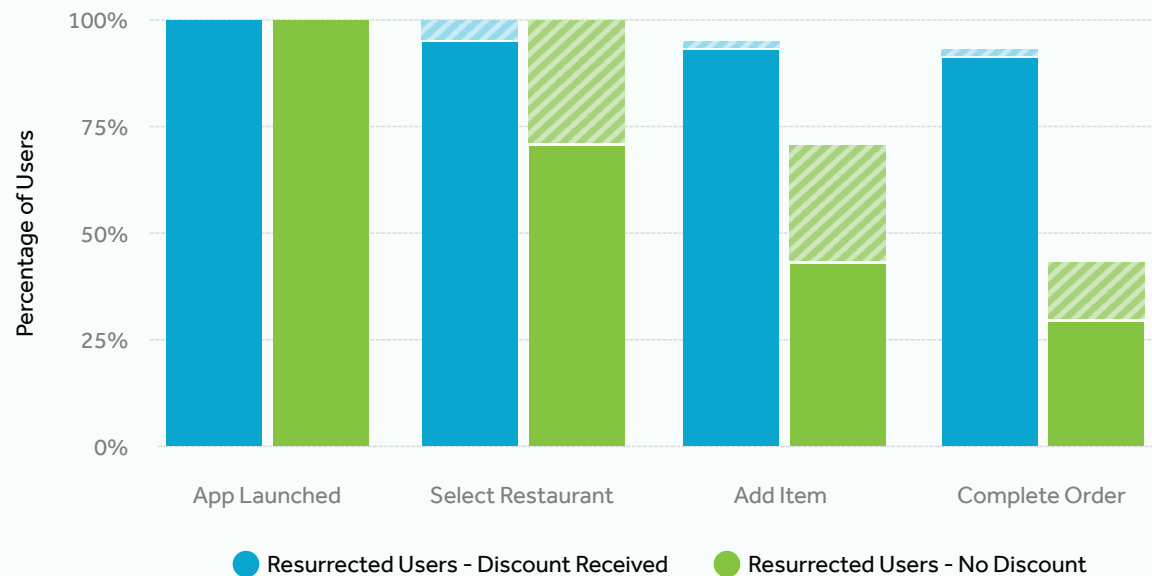
Monthly Retention for the Critical Event: 'Complete Order'
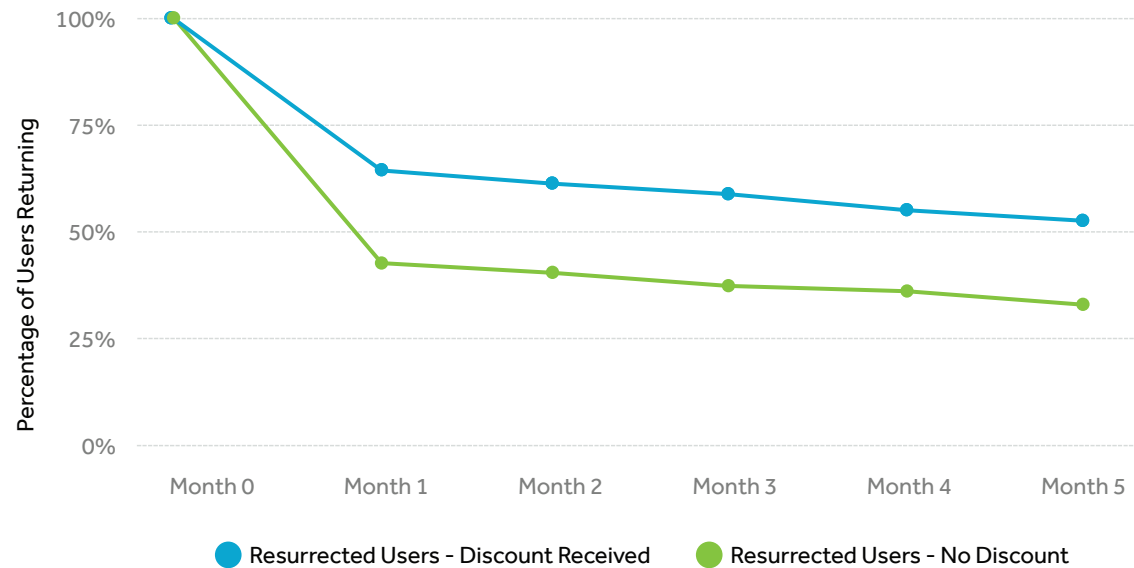
Now that the company knew that the special offer was effective at getting people to come back and place an order, they wanted to look at the long-term impact. Are users just coming back the one time with the special offer, or do they keep placing orders over time?

Looking at monthly retention moving forward, where the returning event is to 'Complete order', you can see that people who got the special offer retain at significantly better rates than those who did not — even many months later.

Takeaway: Clearly, the discount program has a significant long-term effect on increasing purchases. The on-demand company decided to try expanding this program to more of their dormant users to encourage resurrection.

Notification spam doesn't work!

It might be tempting to blast your dormant users with notifications or emails, but chances are these will not be effective and will only serve to annoy your users, causing them to unsubscribe or worse, stop using your product *forever.*

Remember that external triggers, like push notifications, need to be well-timed with a user's internal triggers and existing behavior. Notifications work best when they redirect existing emotions or behaviors to your product. They're even better when you can personalize them based on something you know about the user — whether it's preferences they've set or prior actions they've taken.

7.4 | Compare resurrected user behavior to new and current user behavior

Once you identify some triggers and behavioral personas, go back and compare these to your current and new users. We recommend looking at long-term retention and critical funnel conversion rates. You can also measure revenue and use any other methods from the Product Analysis Toolkit in Chapter 4 to help you assess how valuable current users are to focus on relative to other groups.

EXAMPLE

Compare long-term retention & critical funnel conversion rates

Continuing the on-demand company example from the previous sections, the company split resurrected users into 2 main personas: **Organic** (*did not* receive any email reactivation campaign) and **Non-Organic** (*did* receive a reactivation campaign). Then, they compared the retention of these two resurrected user personas to current and new user retention.

Here is the weekly retention chart, where the returning event is placing an order (the critical event). Organic

resurrected users have retention that is about 65% higher than for new users, while non-organic resurrected users retain far better than new users — they have 260% greater retention. These retention impacts are also long-term, extending 24 weeks out.

Compare critical funnel conversion rates
Comparing the critical funnel conversion rate for resurrected users compared to new and current users will show you whether resurrected users are currently helping your business goals. You can also identify any critical drop-off points for resurrected users, and see what dropped-off users do instead of converting.

Weekly Retention for the Critical Event: 'Placing an Order'

Legend: Current Users, New Users, Organic Resurrected Users, Non-Organic Resurrected Users
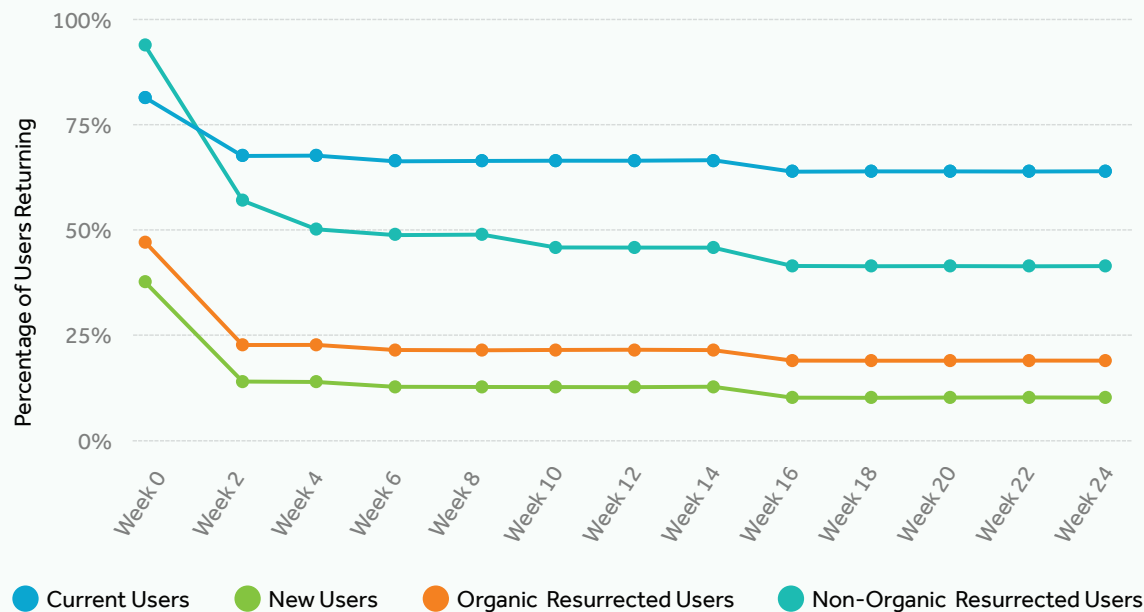
Here's the critical funnel, comparing the same user groups during the current period. The funnel shows the conversion rate from opening the app to completing an order. Non-organic resurrected users have the highest conversion rate, at 94.6%. Organic resurrected users have a slightly lower conversion rate than new users: 28.2% compared to 33.2%.

Takeaway: For this company, reactivation email campaigns not only increase conversions during the current period, they also have a significant positive impact on retention and repeat orders over at least the next 24 weeks. This is a really good indication that their campaigns are working, and they should try sending campaigns to more of their dormant users.

In addition, this data shows that resurrected users as a whole have higher conversion rates and place more orders in the long-term than new users, especially non-organic resurrected users.

Critical Funnel: App Launched > Complete Order

Legend:
- Current Users
- New Users
- Organic Resurrected Users
- Non-Organic Resurrected Users
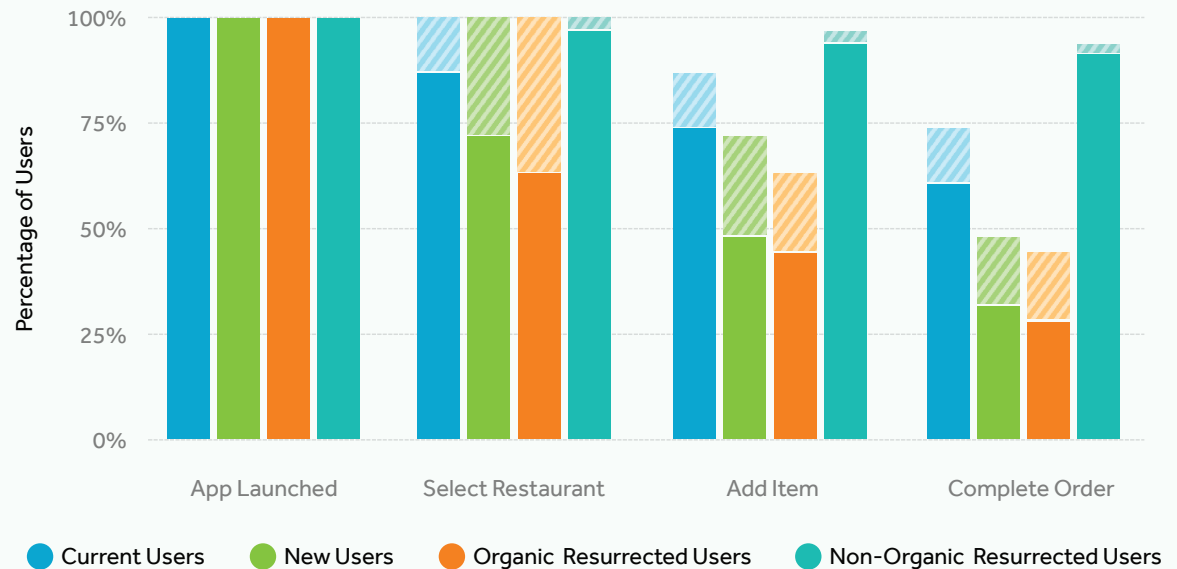
Measure critical events and event properties

Remember, your critical event is the user action that represents that a user is *actually* using your product and getting value out of it (e.g. completing a game, placing an order, playing a song). When analyzing your resurrected users, make sure you investigate how much they perform your critical event, not just whether they return to the product.

Comparing critical events and event properties helps you investigate whether resurrected users have different behavioral patterns or perform these events at a different frequency than current users. This can help you determine whether:

- It's worth focusing your efforts on resurrecting more dormant users, from a retention or monetization perspective
- There's something unique to how resurrected users behave that you should use to tailor their experience upon return

Compare engagement for critical events

One way to compare critical event engagement between different user cohorts is to measure the percentage of users in each cohort that did the event. Remember to also graph any significant personas of resurrected users that you've identified.

Critical events for a lifestyle product

Our lifestyle customer's critical event is booking an appointment. In the chart below, they looked at this critical event as a percentage of active users in each cohort. In other words, the graph is showing what percentage of each cohort (current, new, or resurrected) that booked an appointment on each day.

As you can see, resurrected users have a lower percentage of their users booking an appointment when compared to new and current users.

Another way to look at engagement is the average number of times a user does the event. In the next graph, we see a similar pattern, that resurrected users on average book fewer classes than new and current users.

% Daily Active Users Who Booked an Appointment
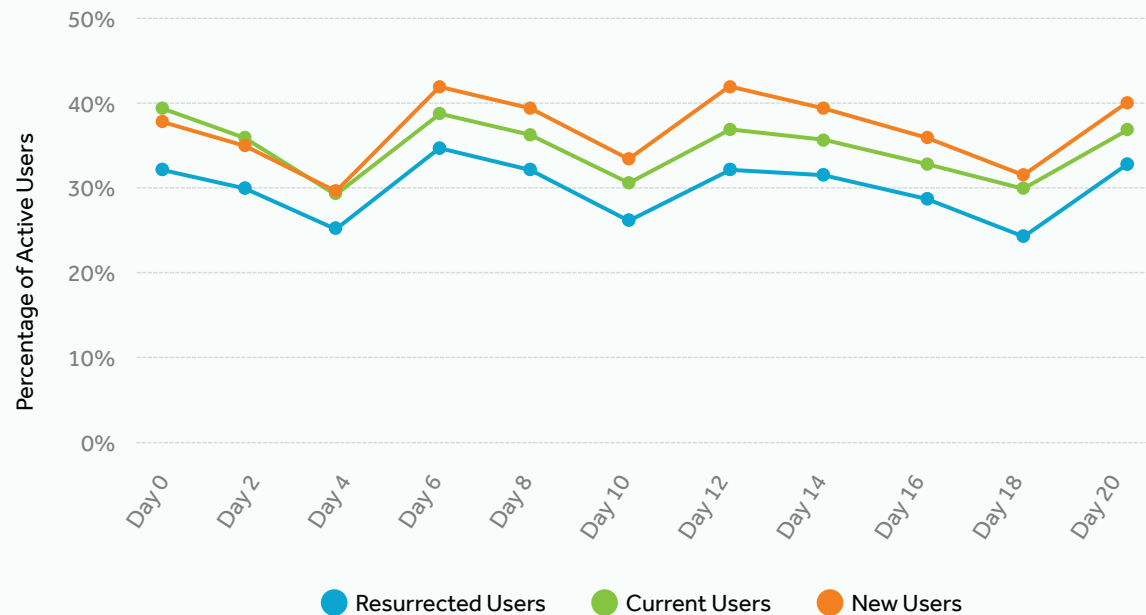
Compare important event properties

While the number of bookings that users make is an important metric for this company, the end goal is revenue — how much users actually spend. So, they looked at 'cart total price', which is an event property for their booking event.

Graphing the average cart total price for each group of users, they found that resurrected users are actually spending more than new users on average for each transaction.

Takeaway: Even though the total number of booking is less for resurrected users, they spend more per transaction *and* there is a large pool of potential resurrected users for this company. We recommend dedicating some time and resources to resurrect users.

Average Number of Appointments Booked Per User

Average Cart Total

● Resurrected Users   ● Current Users   ● New Users
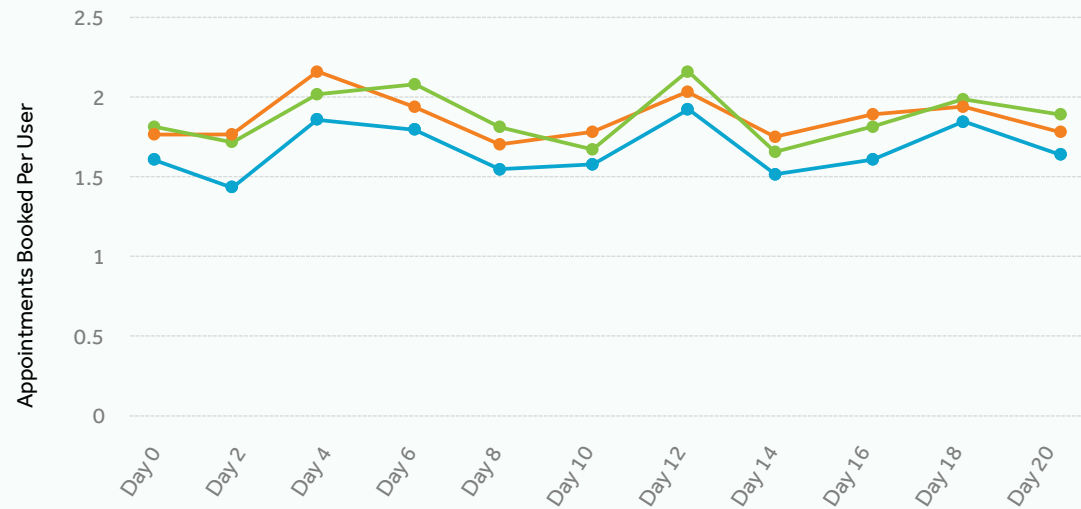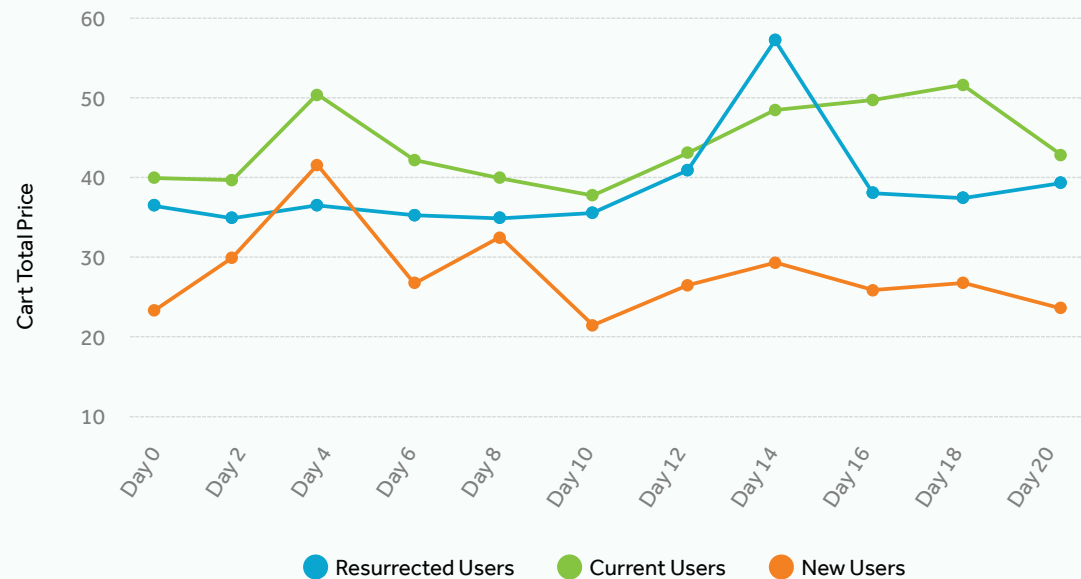
Compare stickiness and session metrics

In addition to looking at critical event patterns and event properties, you can look at stickiness and session metrics to get at other aspects of resurrected user engagement. We covered these metrics in Chapter 4, so feel free to go back and review those sections for more details on how to measure them.

Stickiness and session metrics are another way to compare the engagement of your resurrected users to the behavior of current users. By uncovering any differences, you can form hypotheses about why resurrected users are different and find ways to get resurrected users to behave more like current ones.

We recommend doing the following analyses:

- Compare stickiness of your critical event(s) for resurrected, new, and current users
- If session length is important for your business, you can compare session length distributions and average session length for resurrected, new, and current users

Session Metrics

If session length is a good indicator for engagement for your product, try graphing the distribution of session lengths for resurrected users and compare that to the usage of current users. Similar distributions will indicate that resurrected users behave similarly to current users, so it should be easier to get them to become current users in the long-term.

EXAMPLE

For the mindfulness app that we've discussed, session length is a good indicator for engagement. The more time a user spends in the app, the more value they're getting from the product.

Looking at the average session length, the team found that current users on average have longer sessions that resurrected users.

Average Session Length

Session Length Distribution
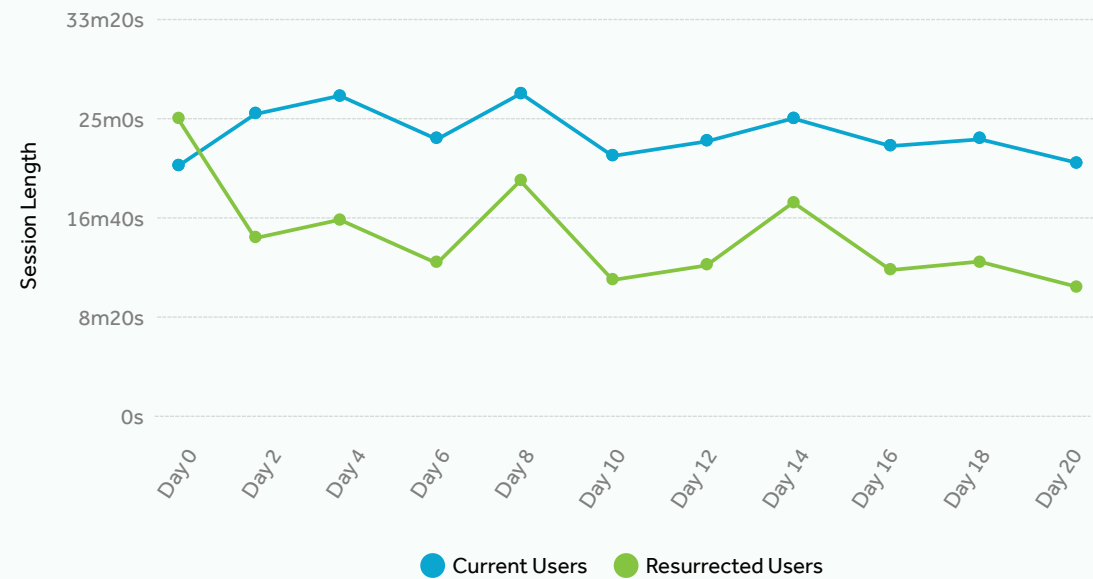
When looking at the distribution of session lengths, they found that resurrected users have a much higher percentage of sessions that are only less than 30 seconds long. For this product, there's not much a user can accomplish in less than 30 seconds, so we can assume those users aren't really using the app during that time.
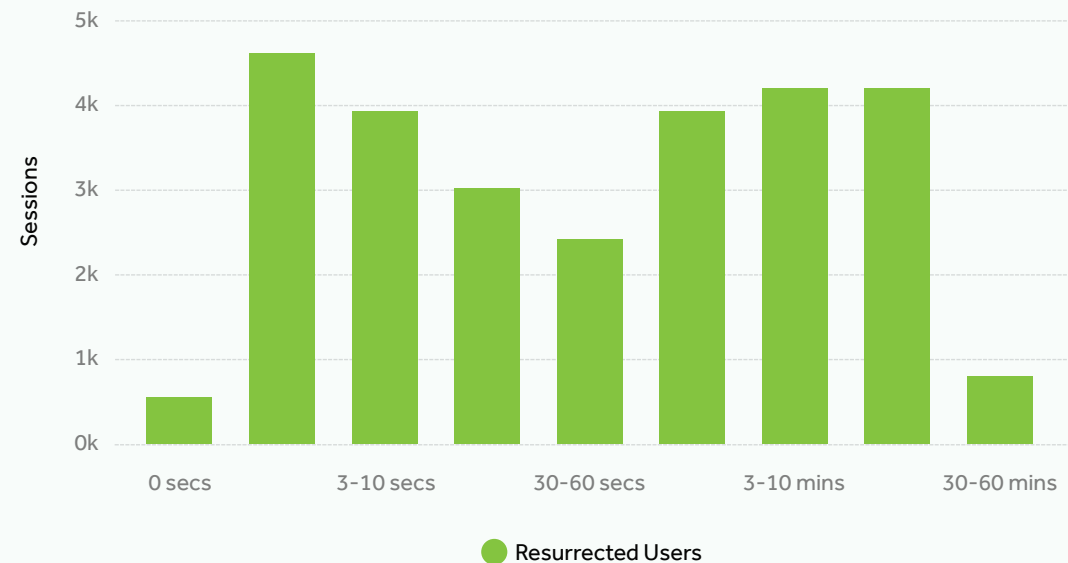
Current users also have a much higher proportion of sessions that last 10 minutes or longer.

Takeaway: This data shows that current users spend more time in the app and have longer, likely more meaningful sessions than resurrected users. If this company wants to reengage resurrected users, they likely need to improve the resurrected user experience in order to encourage them to behave more like current users.

Session Length Distribution
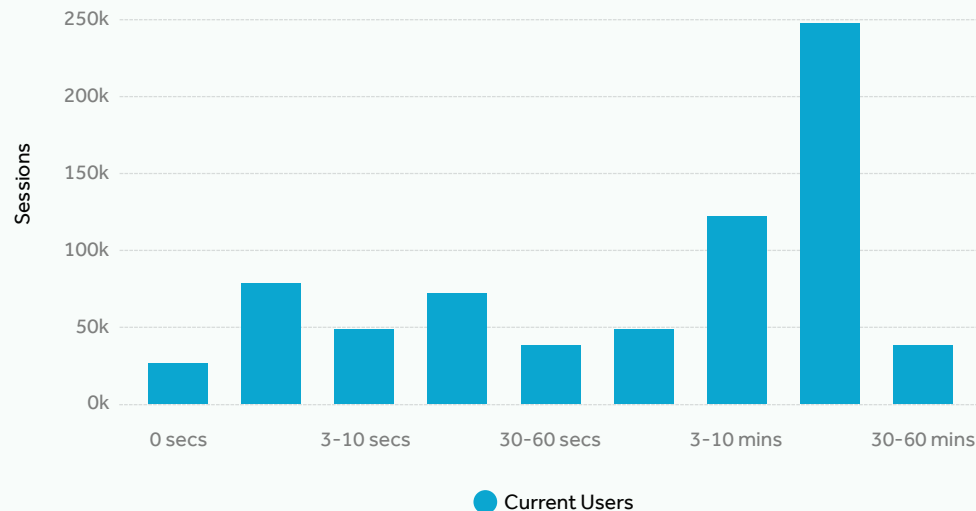
Current Users

Compare revenue for resurrected, current, and new users

Of course, the bottom line for most businesses is revenue. Comparing the revenue for resurrected users (and any important personas) relative to current and new users will help you decide whether resurrecting users is a worthwhile pursuit for your team.

As we mentioned before, it will likely cost you far less to resurrect a user than to acquire a new one. So, by comparing the potential monetization of resurrected users compared to new, you can determine the relative ROI and decide how you want to spend your resources.

We recommend comparing revenue metrics like:

- ARPU: Average revenue per user
- ARPPU: Average revenue per paying user

EXAMPLE

Average Revenue Per User (ARPU)

In the graph to the right of ARPU, resurrected users spend more per user than new users during the same timeframe, and spend about the same amount as current users.

Average Revenue Per Paying User (ARPPU)
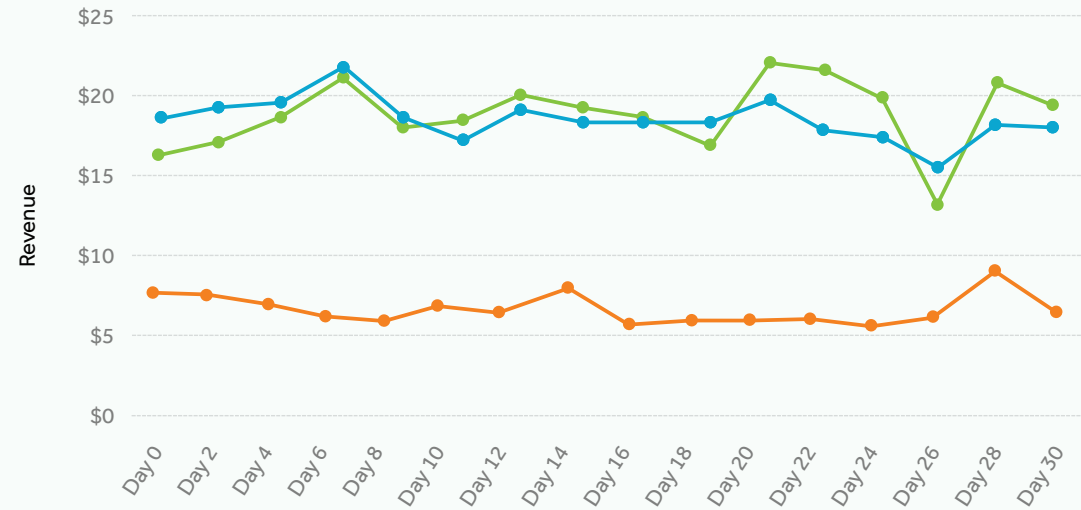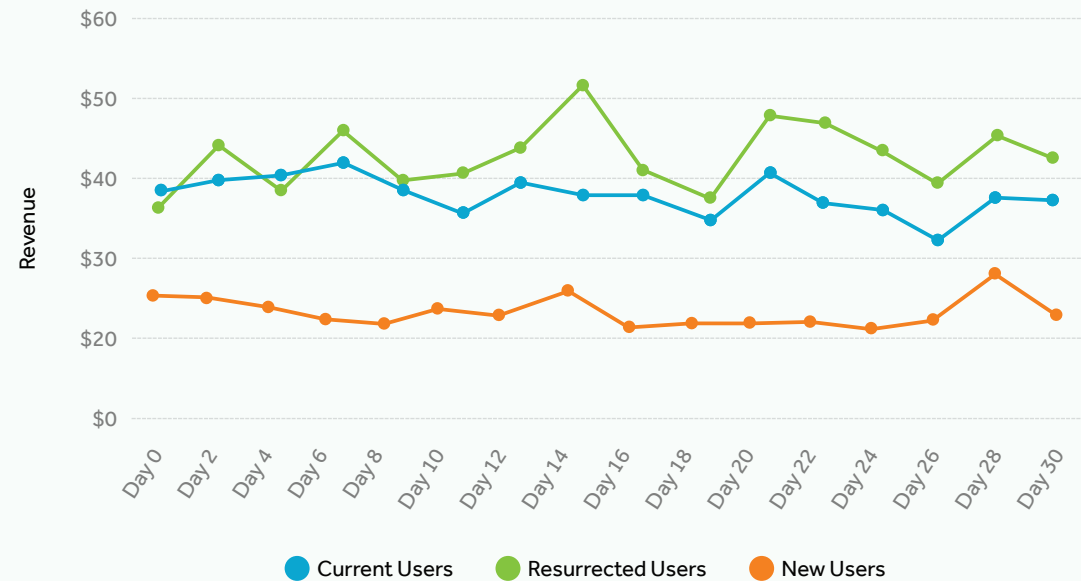
The ARPPU values are closer together, but still shows that per paying user, resurrected users are spending more than new users and are spending similar amounts to current users.

● Current Users   ● Resurrected Users   ● New Users

If you'd like to dive deeper into some of the topics we covered in this chapter, we suggest starting with these:

The Billion Dollar Mind Trick: An Intro to Triggers
Jason Hreha & Nir Eyal, author of 'Hooked'
http://www.nirandfar.com/2012/04/billion-dollar-mind-trick.html

The Psychology of Notifications: How to Send Triggers that Work
Ximena Vengoechea & Nir Eyal, author of 'Hooked'
http://www.nirandfar.com/2015/03/notifications-that-work.html

How to Bring Inactive Users Back From the Dead
Ty Magnin, Appcues Blog
http://www.appcues.com/blog/how-to-bring-inactive-users-back-from-the-dead/

Empty States
site that collects empty states from all kinds of products, great for inspiration
http://emptystat.es/

7.5 | Take action

Remember, the overall goal of resurrected user retention analysis is to learn how you can "resurrect" or reactivate dormant users and get them to become current users of your product. You also want to get a sense of the potential value of resurrected users and whether you should spend your efforts resurrecting more users, especially as compared to your resources spent acquiring new ones.

Although not always the case, we've seen that for several of our companies, resurrected users convert and retain better than new users, as well as contribute more revenue per user. And since you've already acquired those users, the cost to resurrect a user through a push notification, email, or special offer is likely to be less than the cost of acquiring a new user. You'll need to do your own analysis to make sure this is true for your business, but it's certainly worth investigating as an (often overlooked) source of growth. **Here are some key questions to ask yourself as you form hypotheses:**

☐   What percentage of your active users curently come from resurrected users, and what's the potential active user growth you could get from increasing the number of resurrected users?

☐   Are there any ways you can tailor the experience for resurrected users to increase the chance that they re-engage and become a current user?

☐   Is there an opportunity to trigger more users to resurrect that will provide an overall lift in your retention and other core metrics?

☐   What are effective triggers that you can experiment with for resurrecting dormant users?

You can use the **Resurrected User Retention worksheet** at the end of this chapter to take notes and keep organized.

Track improvement over time

Keep the goals of resurrected user retention in mind as you form your metrics:

•   Trigger dormant users to become resurrected users

•   Get resurrected users to become current users

We suggest tracking these metrics over time to measure your progress:

•   The proportion of your active users that come from resurrected users (which you can do via Lifecycle).

•   Long-term retention of resurrected users to see what percentage become current users. You want to avoid strategies that only result in short-term spikes in activity.

•   Efficacy of any reengagement campaigns (push notifications or emails). Keep track of open and click through rates, as well as downstream metrics like retention and critical funnel conversion rate for each campaign.

•   Stickiness of critical events.

•   Conversion rate over time through your critical path funne

RESURRECTED USER RETENTION

A **resurrected user** is someone who is active in the current period, was not active in the previous period, and was active at some point before that.

By analyzing your resurrected user retention, you will learn how you can:
(1) "resurrect" or reactivate dormant users and
(2) get them to become current users of your product.

Resurrected User Timeline

formerly active	inactive	active
	Previous Interval	Current Interval

Resurrected user diagnostic checklist

Run through the metrics below to get a baseline understanding of your resurrected users. Refer back to Ch. 4 for a refresher on any of these methods.

TIP: Compare the retention of resurrected users to that of your current and new users. This will show you how your resurrected users currently perform relative to these other two groups and how much effort you want to devote to resurrecting users.

- ❑ Create a cohort of your resurrected users
- ❑ Plot the baseline retention curve of resurrected users
- ❑ Segment the retention curve by user properties
- ❑ Measure conversion through your critical path funnel
- ❑ Identify common user flows
- ❑ Measure stickiness for your critical event
- ❑ Measure session metrics
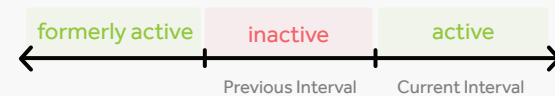
Determine the opportunity size of resurrected users

Answer these 2 questions to get a sense of whether resurrected users can be a good source for boosting overall retention for your product.

1. What percentage of your active users are resurrected? You should have already calculated this breakdown in the Chapter 3 Worksheet: Your Retention Lifecycle.
2. How many potential resurrected users do you have? Calculate the number of people who used your product sometime in the preceding 6 months, but have not used it in the current time interval.

	Number of Users	Percent of Active Users
Total Active Users		
New Users		
Current Users		
Resurrected Users		
Dormant Users		
Potential Resurrected Users (Used your product in the past 6 months, but are not active in the current interval)		

Resurrected user behavioral personas

Identify any behavioral personas within your resurrected users and list them here.

Persona Nickname	Description & Key Behaviors	% of Res-surected Users	Retention Metric (choose 1 for your time frame)
Ex. Discount redeemers	Ex. Redeemed discount after returning to the product	Ex. 82%	Ex. 87% Week 4 retention

Identify triggers of resurrection

Remember, you could have internal or external triggers of resurrection (Section 7.3). Here are a few ways to identify triggers:

- Look at session utm parameters, referrer, and attribution data to look for common sources, like an email campaign or ad.
- Look for events within your resurrected behavioral personas that could have triggered resurrection.
- Analyze the paths of resurrected users, using Amplitude's Pathfinder or a similar path visualization, to look for patterns in what users are doing when they return.

List any triggers you find here:

Take action: hypotheses & next steps

Ask yourself these questions as you form hypotheses and come up with experiment ideas.

- What percentage of your active users currently come from resurrected users, and what's the potential active user growth you could get from increasing the number of resurrected users?
- Are there any ways you can tailor the experience for resurrected users to increase the chance that they re-engage and become a current user?
- Is there an opportunity to trigger more users to resurrect that will provide an overall lift in your retention and other core metrics?
- What are effective triggers that you can experiment with for resurrecting dormant users?

Notes

Metrics for tracking improvement over time

As you start testing some of your hypotheses and trying out ways to improve your resurrected user retention, it's important to keep track of your metrics to see what is and isn't working.

Keep the goals of resurrected user retention in mind as you form your metrics:

- Trigger dormant users to become resurrected users
- Get resurrected users to become current users

We suggest tracking these metrics over time to measure your progress:

- The proportion of your active users that come from resurrected users.
- Long-term retention of resurrected users to see what percentage become current users. You want to avoid strategies that only result in short-term spikes in activity.
- Efficacy of any re-engagement campaigns (push notifications or emails). Keep track of open and click through rates, as well as downstream metrics like retention and critical funnel conversion rate for each campaign.
- Stickiness of critical events.
- Conversion rate over time through your critical path funnel.

CHAPTER 08

WHAT TO DO NEXT

As we've reiterated in the past 7 chapters, the key to your product's growth is retaining users. No matter how much effort you put into increasing top of funnel, if you have a leaky bucket, you simply won't see true growth.

By now you know there's no single silver bullet that will improve your retention overnight — but that's okay.

Now that you're intimately familiar with each part of the the Retention Lifecycle, you're equipped with proven concepts and frameworks that you can use to shape your long-term retention strategy. It's time to start putting this playbook into action.

Topics covered in this chapter:

8.1 - Recap: The Retention Lifecycle Framework
8.2 - Next steps: your retention diagnostic
8.3 - Prioritizing experiments
8.4 - Qualitative feedback matters
8.5 - Frequency of repeating the playbook
8.6 - Take action

Type of Application	Example Critical Events
Music streaming app (e.g. Spotify)	Playing a song, creating a playlist
Online marketplace (e.g. Etsy)	Making a purchase
Messaging app (e.g. Slack)	Sending a message
Social media app (e.g. Facebook)	Adding friends, posting a comment

8.1 | Recap: The Retention Lifecycle Framework

Let's start by recapping some of the most import-ant concepts that we introduced in this playbook.

Defining your critical event

Counting a user as active or retained simply be-cause they logged in or briefly opened up your app doesn't reflect meaningful product usage. An ac-tive user should be engaging with your product in a way that allows them to get to its core value, and al-lows *you* to move the needle on your growth goals. That's why it's important to determine your **critical event** before you jump into retention analyses.

Recall from Chapter 2 that a critical event de-scribes a user action that is significant to your prod-uct and indicates that they're getting value from it.

Your critical event is defined by what your product is, who your users are and how you expect them to use the product. Refer back to Chapter 2 for some useful questions to ask yourself in order to determine your critical event.

Once you know your critical event, you should ask yourself how often you expect users to perform that event.

Determining your product usage interval

Not all products are built for daily use. Your re-tention analysis should take into account the ca-dence with which your users naturally use your app.

In Chapter 2, we also discussed a detailed method for determining your **product usage fre-quency**—that is, how often you expect users to come back and perform a critical event.

Most applications are built to be used on a daily, weekly, or monthly basis:

- A mobile game, social media, or messag-ing app typically has *daily* usage.
- A meditation or music streaming app may have *weekly* usage
- An on-demand delivery app may have *monthly* usage.

The method detailed in Chapter 2 is a great way to quantitatively determine your product usage interval, but be sure to take your own product intuition into account and adjust for that if need be.

Understanding how often users are inclined to engage meaningfully with your product is a prerequisite to using the Retention Lifecycle Framework.

The Retention Lifecycle Framework
At any given time, your active users are made up of:

- **New Users:** Users who are new to your app and are using it for the first time. For a weekly usage app, new users are those who are in their first week of using the app.
- **Current Users:** Users who have been consistently engaging with your app. For a weekly usage app, current users are those who are active this week and last week.
- **Resurrected Users:** Users who used to consistently engage with your app, became dormant (inactive) for some time, and then became active again. For a weekly usage app, resurrected users are those who were active at least two weeks prior, inactive last week (the dormant period), but are active again this week.

As you can see, the product usage interval helps to define the new, current, and resurrected phases for your product's user base. Taking some time to break down your active users into these buckets—either manually or using Amplitude Lifecycle—can be a valuable way to see what proportion of your active users make up each phase.

Your active users can flow through these three phases at any given time. By now you're hopefully familiar with this diagram:
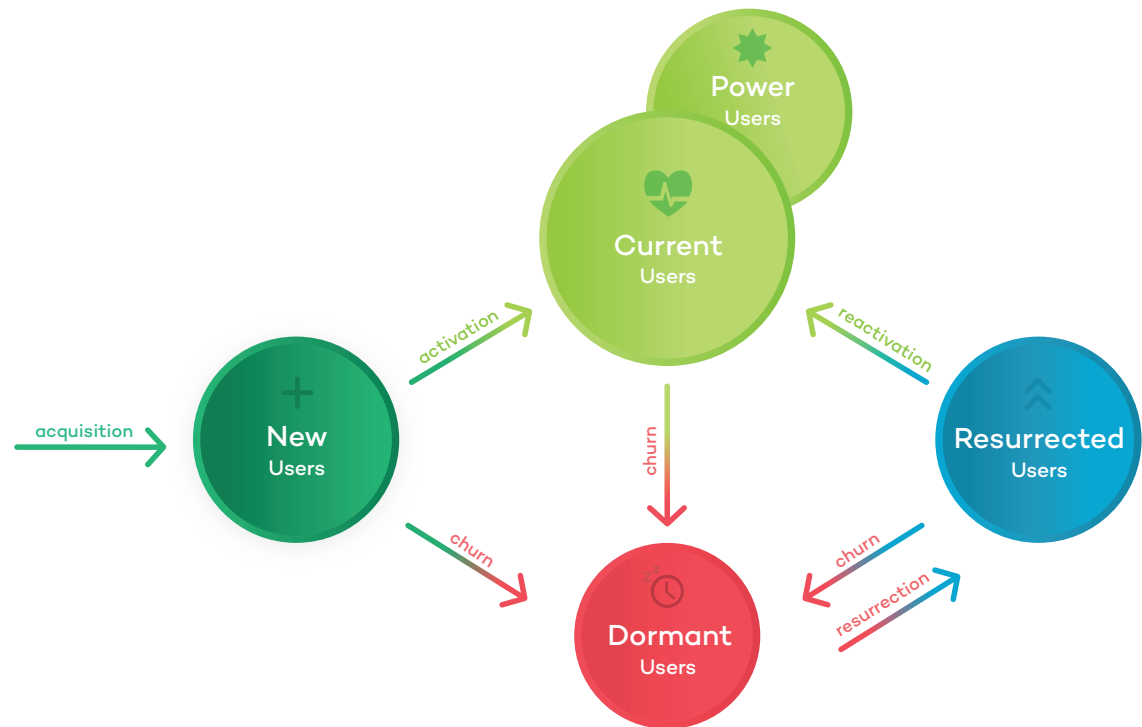
As we've said, the overall goal of the Retention Lifecycle Framework is to get more of your new and resurrected users to behave like your current users — even better if you can get your current users to become more highly engaged power users. This is because your current users are the ones who, through consistently engaging with your app, will be driving your growth as a business and increasing your revenue.

Before you can start developing and testing retention strategies based off this playbook, it's extremely important to get a pulse on your current retention status.

8.2 | Next steps: your retention diagnostic

Benchmarking your retention

There's only one app that you need to benchmark your retention against: your own. If you can measure improvements to your retention over time, then you know you are growing. That's why it's critical before you start uncovering trigger points and putting retention strategies into place to make sure you measure baseline retention metrics for your current, new, and resurrected users.

After determining your critical event and product usage interval, figure out what type of retention calculation works best for you. We cover the three ways of measuring retention—N-Day retention, unbounded retention, and bracket

retention—and different use cases for each in Chapter 3.

Then, based on your usage interval, create cohorts of your new, current, and resurrected users and graph a retention curve for each of these groups of users. We recommend collecting at least 3 months of data before doing this step.

Recall from Chapter 1 that the shape of these retention curves can tell you at a high-level how your retention is trending for each of these groups of users. First look at the shape of the current user retention curve—is it going straight to zero? Is it flattening off at some point? How many users are coming back at certain intervals of time? Do you need to focus on shifting the curve up, or flattening the curve?

Next, you should compare the shapes of your new user and resurrected user retention curves to see how they compare to your current users, to give you a high level view of what's happening there.

Once you benchmark your retention metrics and diagnose any problems, it's time to set retention goals.

Setting concrete retention goals

Brian Balfour, CEO of Reforge and previously VP of Growth at Hubspot, likens the retention building process to constructing a machine [1]. If you're able to set up the right processes and incentives, then growth will basically run itself. That's why it's so critical to set retention goals for you and your team.

[1] Source: http://www.coelevate.com/growth-machine

We recommend using a goal-setting system called OKRs—Objectives and Key Results—which was invented by Intel and popularized by Google. Your retention plan could look something like this:

1. State your goals.
2. Set a timeframe (30 to 90 days).
3. Assign three key results that you want to achieve related to retention. Each needs to be an objective you can measure:
   a. Improve retention by 20%
   b. Improve retention by 2x
   c. Improve retention by 10x
4. Brainstorm the actionable objectives you'll use to hit your key results.

Balfour recommends coming up with three key results separated out in terms of likelihood that they'll succeed [2]. You should have a 90% chance of achieving the first one, and a 50% and 10% chance of achieving the second and third, respectively. This ensures you have shorter term goals that can keep morale high but also have 'reach' goals that drive you and your team to go above and beyond.

There are lots of different retention tactics and strategies that you can spend time experimenting with. Using a framework like OKR allows you to stay laser-focused on your retention goals.

The importance of monitoring key metrics
Once you've decided on your goals and the metrics that you'll use to track the progress toward those goals, you need to make these metrics easily visible to everyone on your team. Putting these metrics on a dashboard on a big screen in your office is a great way to keep the goal top of mind for everyone and keep your team aligned.

In fact, a recent survey showed that companies who set and track key metrics are more likely to reach their goals, and that teams who track these metrics in real-time are *2x as likely* to reach those goals versus those who don't [3].

[2] Source: https://www.youtube.com/watch?v=0APJlxMjPw4

[3] Source: https://www.geckoboard.com/blog/us-smbs-who-set-and-track-key-metrics-are-2x-more-likely-to-hit-targets-survey/

CASE STUDY

MOBILE GAMING COMPANY: 'QUEST' MODE AND AD RAMP UP

When one of our mobile gaming customers completed the playbook process, a few insights really stood out and resulted in experiments or product changes that they quickly implemented.

WHEN TO SHOW ADS?

Part of the company's revenue comes from showing ads in their mobile apps. They noticed that for new and resurrected users, seeing ads on their first day had a negative correlation with retention. However, ad impressions didn't seem to have any impact on retention if the first ads were seen on a user's second or third day.

They hypothesized that ads were a distraction and negative experience for new (or newly resurrected) users, but that once a user had been initially hooked on playing games, they actually didn't mind seeing ads anymore. From this finding, the team decided to test not showing any ads to new users on their first day and to then start showing them on the second day.

GETTING NEW USERS TO PLAY 6 GAMES

During new user analysis (Chapter 6), they found that one of the behavioral drivers for successfully passing the Onboarding phase was to play at least 6 games on Day 0. As a result, the company decided to test implementing a quest-based system in the new user experience. A "quest" would encourage users to complete a string of games to unlock a reward.

DO IT IN AMPLITUDE

Create, share, and subscribe to dashboards in Amplitude

Monitoring and sharing data is a crucial part of forming a data-informed company, which is why we make it easy to pin Amplitude charts to dashboards and share these with your team.

You can also share dashboards with teams and set up regular email reports to go out to the right people:

Email Subscriptions   ✕

Add New Subscribers

| Meredith Fay   ✕ | Alicia Shiu   ✕ |

Set Updates
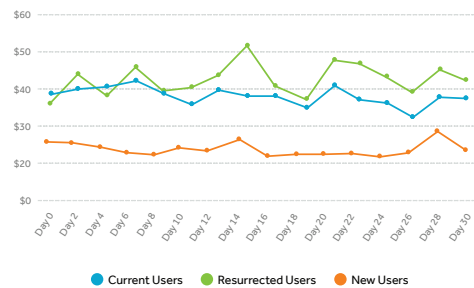Send email updates Mondays at 12:00pm UTC

☐ Include CSV download   Cancel   **Save**

📊 User Sessions

Average Revenue Per Paying User
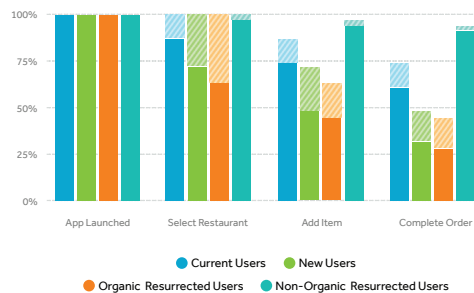Daily, Last 30 Days

● Current Users   ● Resurrected Users   ● New Users

📊 Funnel Analysis

Critical Funnel: Launch > Complete Order
Monthly, Last 3 Months

● Current Users   ● New Users
● Organic Resurrected Users   ● Non-Organic Resurrected Users

+ Add a chart

Of course, the metrics you choose to track over time depend entirely on the goals you set. We'll provide some recommendations to choose from or adapt — the best metrics will be the ones that are custom to your business.

Retention Lifecycle Breakdown - Lifecycle & Pulse

Any company will benefit from measuring their active user makeup using Lifecycle or a similar framework, which we discussed in Chapter 3. We recommend graphing your lifecycle breakdown and pulse metric every period and comparing how each user stage is changing period over period. This can help you easily course-correct if you notice concerns like an increase in dormant users or a dip in current users. You can also track whether the overall health of your user base is improving as you implement your new retention strategies.

As you work on the goals of the Retention Lifecy-cle Framework, Lifecycle shows you how you're doing at all 4 in a glance:

- Activating new users → current users
- Retaining current users
- Resurrecting dormant users
- Reactivating resurrected users → current users

Retention lifecycle metrics to track over time
At the end of Chapters 5-7, we've provided some recommend metrics to track over time to see how you're doing at improving current, new, and resurrected user retention. Here's a summary ta-ble of those metrics:

Lifecycle
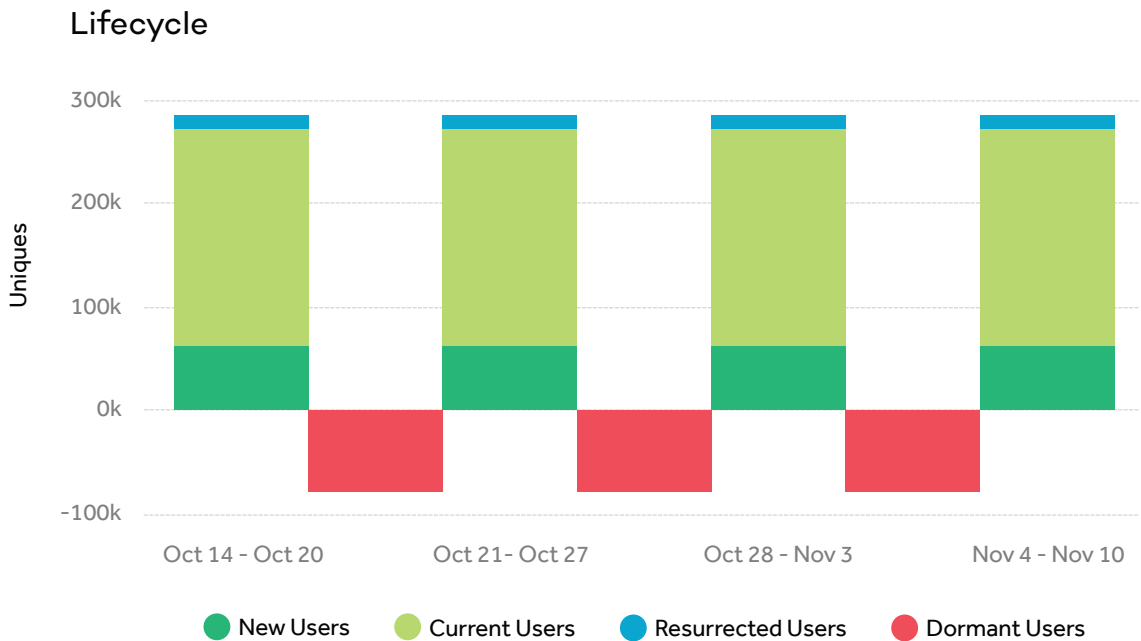
Current	New	Resurrected
Retention over time of all Current Users and key current behavioral personas	Retention over time of your New Users and key new behavioral personas	Retention over time of your Resurrected Users and key new behavioral personas
Size and percentage breakdown of your important behavioral personas. Are you getting more people into important personas?	Bracket retention curve that follows your New > Onboarding > Value Discovery > Habit Formation phases	Downstream metrics from reengagement campaigns like retention and critical funnel conversion rate
Stickiness of critical events	Conversion rate through your onboarding funnel	Stickiness of critical events
Conversion rate over time through critical path funnel	The percentage of new users who become current users	Conversion rate over time through critical path funnel

8.3 | Prioritizing experiments

After working through all the chapters of the playbook, you'll have lots of insights that lead to ideas about what might help you improve retention. How do you decide what to work on first? It's easy to get paralyzed by all of the possibilities.

Prioritizing your growth ideas is crucial to making progress toward your goals.

There are some great resources out there on frameworks for prioritizing growth experiments, so we won't reinvent the wheel. In particular both Brian Balfour[4] and Sean Ellis[5], who is the founder of GrowthHackers.com, have shared their processes, and we highly recommend you check out their work for more details.

Ultimately, you need to pick a process that works for your company and use it to keep accountable to your goals.

As Balfour puts it: "There is no one right or perfect growth process. The important part is just to have one, stick to it, and improve it over time."

Here are some principles, drawn mainly from Balfour's and Ellis' processes, which share many similar components.

1) Brainstorm and keep a backlog of ideas
First, start with a central place to keep a backlog of all of your ideas. A simple spreadsheet works great for this.

Idea Backlog	Impact	Confidence	Ease
Create push notifications for reengagement of dormant users	8	6	8
Enable social logins	6	5	5
Add onboarding step encouraging users to set a daily reminder	9	8	7

[4] Source: http://www.coelevate.com/essays/growth-process-first-tactics-second

[5] Source: http://www.slideshare.net/seanellis/building-a-companywide-growth-culture-saastr-annual-2016/12-12SeanEllis_GrowthHackersBroadParticipationWeeklyCadenceTransparentLearning

[6] Source: https://www.nickoneill.com/sean-ellis-interview/

2) Prioritize

To prioritize which ideas to work on first, you can score each idea on a few factors. Sean Ellis' ICE score[6] is a great way to do rate ideas on 3 key factors:

Impact

What's your hypothesis on the impact this experiment will have? You can use quantitative data from your playbook analysis and previous experiments to back this up, or qualitative data from user feedback.

By identifying the expected outcome or value of making a change, you have something quantitative to prioritize experiments and measure your actual results against. Balfour recommends thinking about your hypotheses like this:

If successful, [variable] will increase by [impact], because [assumptions].

For retention specifically, multiply the expected increase in retention by the number of users who would be impacted — that gives you a sense of how much the change could impact your overall retention.

Confidence

How sure are you that your hypothesis is correct? This one can be a little hard to decide, especially when you're starting out, but as you run more experiments over time, it gets easier.

If you have a lot of data to back up the experiment, you'd assign a higher confidence score. If the idea is based more on a hunch or is something completely new, you'd give it a lower score.

Ease

How much work will implementing this experiment take? Think about the time it will take from each team involved, like design, marketing, product, and engineering.

3) Run experiments

Once you've prioritized your ideas based on impact, confidence, and ease (and any other factors that might matter to you), it's time to design and run those experiments.

This reference provides a template of an experiment doc based on Balfour's process, which you can make a copy of to use for your own team[7].

When designing your experiments, Balfour advises to come up with the 'minimum viable test' to understand your hypothesis. Make sure you also take into account the sample size of users you'll need to see a significant result.

4) Analyze and share results

After each experiment, compare the results to your original hypothesis. How close did you get? What impact did you see on retention? Most importantly, *why* did you get the result that you did?

Make sure to record learnings and any action items, like rolling out a positive experiment to the whole user base.

5) Keep up a cadence

Both Ellis and Balfour recommend having a weekly growth meeting to discuss experiments, their results, and action items. In addition, they talk about the importance of keeping up a regular cadence of experiments. Ellis is a proponent of the idea of "high tempo testing" — in short, the more tests you run, the more you learn[8]. The faster you can run tests, the faster you can learn, adjust, and ultimately drive growth.

Make sure you evaluate experiments on a regular interval and readjust your goals as necessary.

[7] Source: https://robsobers.com/growth-hacking-trello-template/
[8] Source: http://www.slideshare.net/seanellis/500-startups-high-tempo-testing-ellis-final-3-47660394

CASE STUDY

MINDFULNESS APP: INCREASING RETENTION 3X

One of the customers that we've discussed throughout this playbook creates a mindfulness app. When they did the current user retention analysis (Chapter 5), they found that people who set a daily reminder ('Alert Savers') had about 3X the retention of users who did not set a daily reminder.

At the time, the Daily Reminder feature was buried down at the bottom of the Settings page — most users never even found it. Since such a small number of their users (1% of current users) were even setting an alert, they couldn't know whether this was a causal relationship. It could be that the power users of their app, who would have been well-retained anyways, were the ones digging into the Settings page and finding the Reminders feature.

PROMPTING MORE USERS TO SAVE A DAILY REMINDER

After finding this huge positive increase in retention that correlated with setting a reminder, they ran an experiment to test whether getting users to set a daily reminder would increase their retention. In the test, after a user completed their first meditation session, they were immediately shown a screen encouraging them to set a daily reminder.

THE RESULT? **People who set a reminder from the new prompt had an equal boost in retention to the users who had previously found the reminder feature on their own, indicating that the relationship between daily reminders was causative, not just correlative.**

In addition, 40% of users who saw the prompt went on to set a daily reminder, so the new prompt provides a big boost to overall new user retention. Based on these results, the company rolled out the new reminder prompt to all of their users.
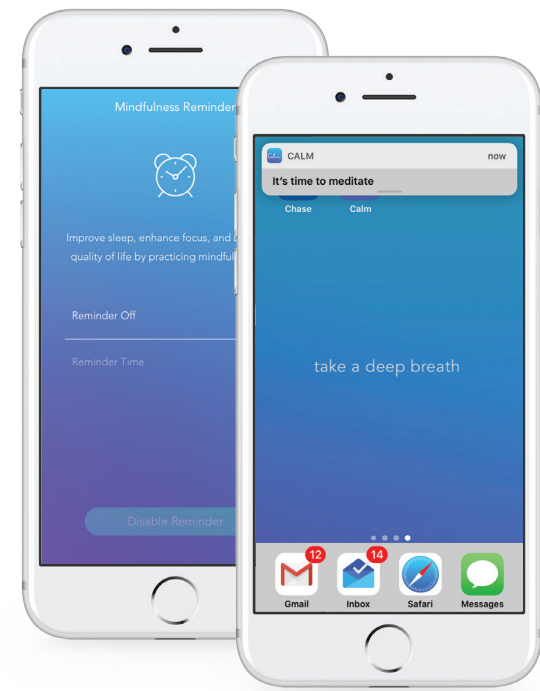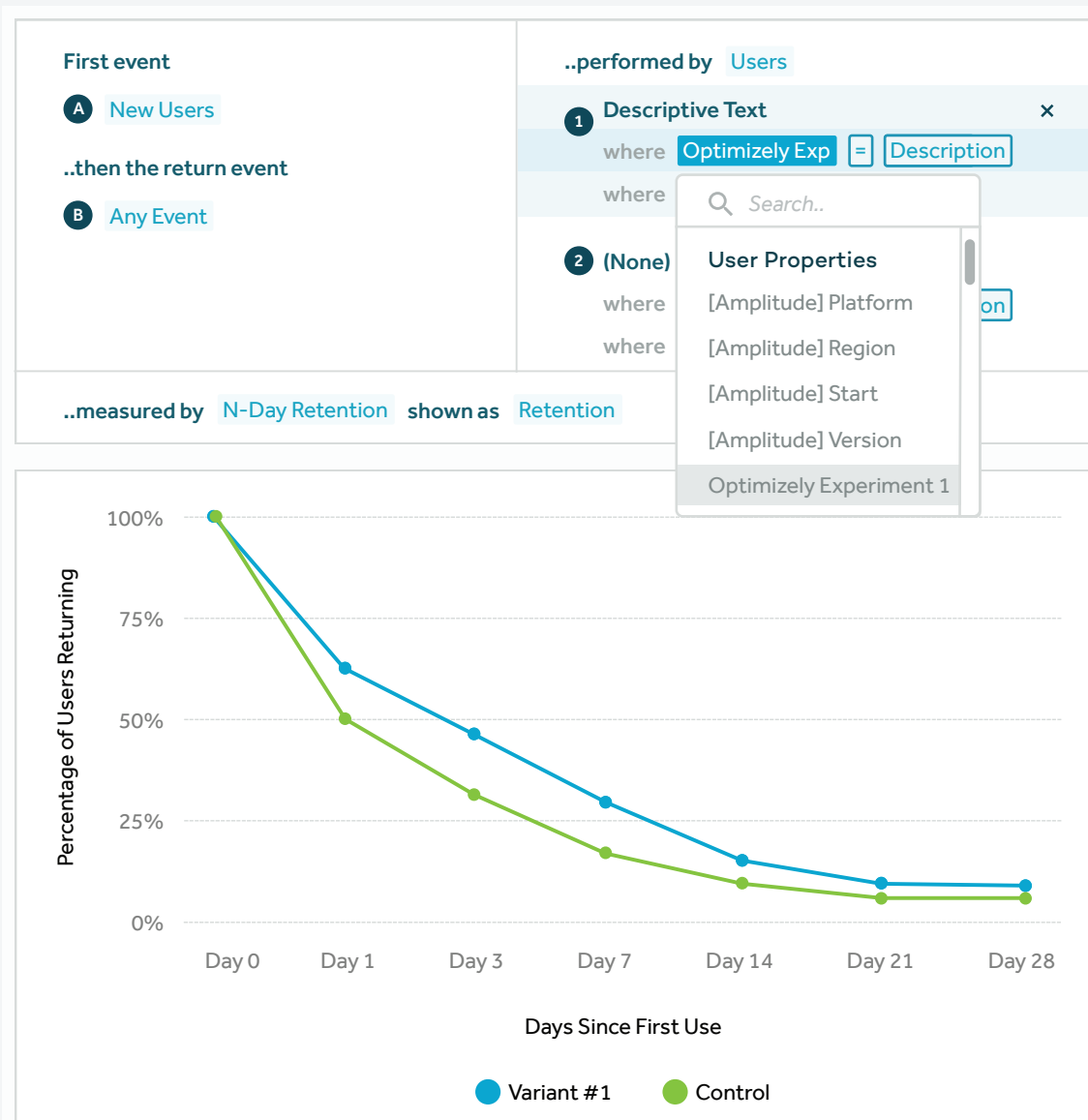
DO IT IN AMPLITUDE

Measuring experiment results in Amplitude

In Amplitude, you can view experiment results by sending relevant details, like the experiment name and experimental group, as user properties. We also integrate with popular split testing platforms like Optimizely.

Here's a retention graph showing the diffe-rence between the Control and Variant #1.

For more details, we recommend checking out this article: How to Analyze A/B Test Results in Amplitude[9].

First event

A New Users

..then the return event

B Any Event

..performed by Users

1 **Descriptive Text**   ✕
   where Optimizely Exp = Description
   where 🔍 Search..

2 (None) **User Properties**
   where [Amplitude] Platform
   where [Amplitude] Region
          [Amplitude] Start
          [Amplitude] Version
          Optimizely Experiment 1

..measured by N-Day Retention **shown as** Retention

Percentage of Users Returning vs. Days Since First Use

● Variant #1   ● Control

Building Amplitude 2.0 with quantitative and qualitative data

In October 2016, Amplitude launched a completely new redesign of its user interface.

One of our goals with this redesign was to make analytics more accessible to everyone across an organization, not just the head data scientist or product person. This meant really understanding why different users care about analytics and how they get what they need in Amplitude. We used both quantitative and qualitative user data to identify exactly who we were building our product for.

Quantitative data: Using Amplitude's Personas feature (which we described in Chapter 4), we identified several different behavioral personas among our current users.

Qualitative data: We went out into the field and interviewed analytics users, asking open-ended questions like:

- How does analytics affect your day?
- What do you use data for?
- What's your typical analytics workflow?

Through quantitative means, we grouped our users into different clusters based on the actions they performed in the platform; through qualitative means, we assigned identities and characteristics to these personas. Ultimately, this research informed the new product and design choices made in Amplitude 2.0.

8.4 | Qualitative feedback matters

Building a strong-retention product is about listening to your users, both in a qualitative and quantitative sense.

While this playbook emphasizes quantitative processes, qualitative feedback also adds value to your analyses. To holistically understand how users engage with your product, try supplementing your analytics insights with direct means of talking to your users. Some ideas include:

- Conducting user interviews to understand common flows users take through the product and to identify different behavioral personas
- Organizing focus groups to test out a new feature or service
- Sending feedback surveys to current and/or dormant users
- Directly talking to users who drop off at certain points in your critical path funnel to understand why

Quantitative and qualitative data complement each other; your behavior data can inform the type of qualitative data you seek, and your qualitative feedback can be validated (or not) with analytics. Throughout the process of putting this playbook into action, it's also worth thinking about ways to communicate directly with your customers and when it makes sense to do so.

8.5 | Frequency of repeating this playbook

How often you repeat the playbook process depends on the nature of your product and how often you update it or launch new features.

Here are some of the situations in which we recommend repeating the playbook analyses, in full or in part:

- You launch a major product update or new feature.
- If your product has seasonality (for example, a product that gets much heavier usage during the school year and less during the summer), you might run the playbook process for different times of the year: summer, beginning of the school year, and sometime in the middle during peak usage.
- You gain a significant new source of users (for example, you start a referral program or start advertising on Twitter), and want to understand how those users behave and retain relative to others.

In the absence of any of these situations, we recommend monitoring your key metrics with every product release, and then running the playbook on a less frequent basis. For example, our company sets goals quarterly, so running the playbook quarterly might be a good cadence for us.

Even if you don't run through the whole playbook, we recommend looking at your behavioral personas for new, current, and resurrected users at least once a quarter, to make you're always up to date on how users are behaving.

8.6 | Take action

By now, you're hopefully well-equipped with the right tools and frameworks to analyze your product's retention at all stages of the retention lifecycle. It's now your turn to put the playbook into practice and start changing the shape of your retention curve.

Before getting to work, take a moment to:

- Review the case studies in this chapter for examples of how our customers have utilized the whole playbook
- Review the main concepts of each chapter
- Complete the worksheets for each chapter

You're now ready to take your product's growth to the next level!

APPENDIX

Instrumentation Review

Before analyzing metrics, the first thing to do is to make sure you've instrumented your analytics correctly. It's tempting to rush through this part (we know it's boring), but this would be a mistake. Sending optimal event data to your analytics platform is the single most important step toward understanding how your users are engaging with your product. It's worth the upfront time investment to get your instrumentation down correctly.

Organize your event taxonomy

In event-based analytics, the term *event* describes any action performed by the user or any activity associated with the user. Opening an app, making a payment, adding songs to a playlist — all of these are examples of events a user can perform, whereas things like receiving or interacting with push notifications are examples of activities associated with the user.

It's critical that your event taxonomy reflects your business objectives. This means taking time to understand the type of company you are (e.g. the vertical you're in, your business model), what success criteria you care about, and the type of metrics that are important to you.

Do a quick check of your event taxonomy by asking yourself the following questions:

- **Are the events you're tracking aligned with your analytics goals?** Think about your analytics goals in terms of business objectives. How will you use analytics to measure the value you deliver to your users and vice versa? Are you able to track revenue, retention, conversion? What experiments and funnels would you want to run in the future? Are you tracking the relevant events that would allow you to run those experiments?

- **Can everyone understand what each event is and why it's being tracked?** Make sure you understand the context around all the events that are currently being tracked, as well as when you expect them to fire. Having an organized event taxonomy document listing each event currently being tracked, as well its corresponding name and properties in a central location is critical if you want everyone to be able to derive data insights. Check out Amplitude's Event Taxonomy Template for more information [1].

- **Are you tracking events aligned with your critical path funnel?** You've probably envisioned an ideal path to conversion that your users flow through—one that perfectly syncs with the product's core value. Make sure you're tracking all events along this path. If you're an ecommerce product, for example, you should be tracking all events leading up to the user clicking 'checkout' and completing a transaction. We discuss how to determine your critical event in Section 2.1 and how to set up your critical path funnel in Section 4.3.4.

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[1] Source: (https://amplitude.zendesk.com/hc/en-us/article_attachments/205227097/Event_Taxonomy_Template.xlsx)

- **How are you defining an active user?** Do users simply need to open an app to be counted as "active," or are there specific actions they should take to be considered active?

Validate your data

To analyze your users' behavior, you need to have a deep understanding of how their actions are reflected in your analytics platform. The easiest way to check your instrumentation is to be your own user.

- **Check your onboarding:** Download your own app and and simulate your app's first time user experience. Go through the onboarding process. Identify yourself as a new user in your analytics platform, which should be possible with a unique user ID. Then check to see that events are firing correctly and all behaviors are being captured properly as you complete each step of the onboarding process.
- **Check your critical paths**: Simulate an "ideal" user flow through your app, from start until conversion, and make sure those events are being captured correctly.
- **Do rigorous error testing:** Bugs and crashes can be major detractors of retention and should be resolved before making product optimizations (more on this in Section 6.6). Try "breaking" your app and forcing it to throw errors, and make sure you track events that correspond to those errors and crashes.

Taking the time to do a comprehensive audit of your event taxonomy and your data quality will ensure you have a solid foundation on which to do more granular analyses. Doing this legwork upfront is critical if you want to trust your data.

GLOSSARY

Here are some definitions for terms used throughout this book. To learn more about any of these topics, check out our **Help Center** at https://amplitude.com.

acquisition cohort: A group users who started using your product (in other words, were new) during the same time period.

active user: A user who has done some action in your product during a given time period.

behavioral cohort: A group of users who performed (or didn't perform) certain actions within a defined time period in your product.

behavioral persona: A group of users who have a distinct way of using your product. Understanding the behavioral personas within your product will inform how you design the experience to meet the needs and habits of different types of users.

bracket retention: A flexible version of N-Day retention where you can look at the proportion of users who return during custom timeframes that you define.

churn rate: The proportion of users who used your product on Day 0 but did not return again; the inverse of your unbounded retention rate.

cohort: A group of users who share some common characteristic. *See **acquisition date cohorts** and **behavioral cohorts***.

Compass: In Amplitude, Compass identifies the user behaviors that best predict retention.

conversion window: The amount of time a user has to complete a funnel from the time they enter it.

core user: People who are using your app at a regular frequency and in the "expected" way. This can describe one of your behavioral personas.

critical event: An action that users take within your product that aligns closely with your core value proposition. When measuring retention, this is the action you want users to perform in order to be counted as active or retained.

critical path funnel: The series of actions you anticipate users taking in order to complete your critical event.

current user: Someone who has been using your product consistently for some period of time. In Amplitude, this is defined as a user who used the product during the last interval *and* the current interval.

dormant user: Users who were once actively using your product and then became inactive. In Amplitude, this is defined as a user who did not use the product in the current interval but was active in the previous interval. You can think of dormant users as people who you have the potential to resurrect.

event: An action a user takes in your product. This could be anything from pushing a button, completing a level, or making a payment.

event property: An attribute of an event that provides more detail about that event. These are up to you to track, and depend on the information you think is necessary to understand a particular event. For example, if you had a 'Checkout' event, some event properties might include 'total amount', 'number of items', and 'payment method'.

Habit Formation phase: This follows the Onboarding and Value Discovery phases of new user retention. Once a user has discovered value in your product, you need to make sure they develop a habit so that they keep coming back over time. Users who successfully pass through the Habit Formation phase become current users of your product.

Lifecycle: A feature in Amplitude that breaks out your active user base into new, current, resurrected, and dormant users during any time interval. Lifecycle helps you measure the health of your product and can identify imbalances, for example if your churn is outpacing new user acquisition.

N-Day retention: This retention method measures the proportion of users who are active in your product on a specific Nth day after an initial event.

new user: Someone who is using your product for the first time. In Amplitude, this is a user who is in their first interval of using the product.

Onboarding phase: This is the first phase of new user retention and is defined as the first day of use for this playbook. During this phase, a new user of your product completes the onboarding experience and uses the product for the first time. It's critical that you get users to experience your product's core value as quickly as possible.

passive user: People who might not be contributing or using your app in the core way that you designed, but are still coming back at a regular frequency to do something. This can describe one of your behavioral personas.

path analysis: A method of measuring the most common sequences of events that users take in your product.

Pathfinder: A feature in Amplitude that enables you to explore the actions users take to or from any point in your product (i.e. path analysis). Pathfinder aggregates the paths users take so you can see the percentage of users or sessions that followed each sequence.

Personas: In Amplitude, Personas automatically groups users into clusters based on similarities in behavior. This is one way to identify behavioral personas in your product.

power user: People who use your product with a very high frequency or use a "power" feature that the majority of users don't take advantage of. This can describe one of your behavioral personas.

product usage interval: How often (daily, weekly, monthly, etc.) users naturally use your product. When determining your product usage interval using the framework in Chapter 2, this is the time interval at which 80% of users complete the critical event a second time.

Pulse: A chart view in Ampliude's Lifecycle feature that depicts the ratio of incoming users to outgoing users for a particular time period. This ratio is calculated as follows: (# of new users + # of resurrected users) / (# of dormant users).

resurrected user: Someone who was once actively using your product, who then became dormant for a period of time, and then became active again. In Amplitude, this is defined as a user who

who used the product sometime *before* the previous interval but *not* in the previous interval, and now active in the current interval.

retention: A measure of how many users are returning to your product over time after some initial event (usually first use). For different methods of retention, see **bracket retention**, **N-Day retention**, and **unbounded retention**.

retention curve: A line graph depicting user retention over time. It shows the percentage of users that returned to the product during a specified time period after acquisition.

retention lifecycle: The flow of active users between the different stages of user retention: new, current, and resurrected user retention.

segment/Segmentation: A **segment** is a subset of users who share a common characteristic, like a user property. **Segmentation** is the act of dividing a chart by this characteristic; for example, graphing a retention curve by country.

stickiness: A measure of the frequency with which people are using your product. Specifically, stickiness measures the number of days out of a week or a month that a user was active, or did a specific event.

unbounded retention: This retention method measures the proportion of users who came back to your product on a specific day or later. For example, Day 30 unbounded retention would give you the percentage of users who returned on Day 30, or any day after Day 30. This is the inverse of your churn rate.

User Composition: A view in Amplitude that lets you quickly visualize the breakdown of different user properties for a specific group of users.

user property: Any characteristic that is tied to an individual user. Examples of user properties are country, device type, age, gender, referral source, plan type, number of photos uploaded, number of units of in-game currency, and current level in a game.

Value Discovery phase: This follows the Onboarding phase of new user retention and precedes the Habit Formation phase. During this time, it's important to show your product's core value as many times as possible.

Keep learning:
productanalyticsplaybook.com
amplitude.com

Feedback or questions? Get in touch:
playbook@amplitude.com

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