

A HANDY GUIDE TO BEHAVIORAL COHORTS

Finding Behaviors that Lead to Retention



Next to building a great product, retaining the people that use your product is the most important element of product development. Increasing user retention and minimizing churn is the key to building a base of loyal, engaged users and driving sustainable growth.

As Brian Balfour, CEO at Reforge and former VP of Growth at HubSpot, put it, “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.”

To put it simply: A business that retains its users increases its revenue and becomes profitable faster than one that does not.

The key to improving retention is uncovering the things that users do in your product that make them come back day after day, month after month. First, you need to understand the specific behaviors of users that come back and user your product, then, get the rest of your users to do more of those actions.

In this guide, we’ll explore one important method you can employ to answer the question, which behaviors lead to retention? The method is called behavioral cohorting.



First, what are cohorts?

Generally speaking, a ‘cohort’ is a group of people who experienced a common event in a specific period of time. In product, the term typically applies to an acquisition cohort: a group of users who started using your product in the same time period such as a day, week, or month.

When people talk about ‘cohort analysis’, they mean measuring the retention of each acquisition cohort over time, often visualized like this:

Segment	Users	Day 0	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Aug 22	12,995	100%	*16.2%						
Aug 21	10,664	100%	*45.7%	*10.7%					
Aug 20	7,391	100%	44.1%	*34.4%	*8.06%				
Aug 19	7,091	100%	28.3%	29.5%	*24.3%	*6.78%			
Aug 18	11,216	100%	22.4%	20.5%	21.4%	*18.9%	*5.72%		
Aug 17	11,626	100%	32.7%	17.9%	18.3%	20.1%	*18.3%	*5.30%	
Aug 16	12,082	100%	42.1%	24.1%	14.2%	15.4%	18.3%	*16.7%	*5.31%
Aug 15	13,330	100%	43.2%	32.9%	20.3%	12.0%	13.7%	16.9%	*15.6%
Aug 14	10,512	100%	45.0%	22.8%	27.7%	16.5%	10.5%	12.3%	15.5%

Okay, so what are *behavioral* cohorts?

A behavioral cohort is a group of users defined by the actions they take in your product in a specific time period.

Here are a few examples of behavioral cohorts to get the wheels turning:

- Users who enabled push notifications during onboarding in project management software
- Users who “heart” three songs on day 1 in a music streaming app
- Users who make a purchase and refer a friend in week 1 on an ecommerce site

Knowing the **time** a user started using your product is important, but the **actions** they take in your app give you much deeper insight into user behavior and set the stage for understanding the actions that contribute to retention. This is where behavioral cohorts come in.

Let's use a music streaming app as an example.

Imagine you're interested in learning more about users who mark at least 3 songs as a 'favorite' on their first day in the app. Your question is around whether favoriting songs on day 1 is an indicator of retention later on. First, you would define a behavioral cohort of users who favorited at least 3 songs on their first day:

The screenshot shows a mobile application interface with a search bar at the top containing three dots. Below the search bar is a section titled "Favorited at least three songs on their first day". This section contains a query builder with the following parameters:

- The Users who..**
- ..performed FavoriteSong**
- with a count \geq 3 times**
- anytime within 1 day of first use**

Depending on your analytics stack, you can either define this cohort within your analytics platform, or use SQL or some other query language to define the cohort from your raw event data.

Once you create a behavioural cohort, you can apply it to learn how that behaviour affects metrics like retention, conversion, and revenue.

What kind of analysis can you do with behavioral cohorts?

Defining behavioral cohorts allows you to easily compare one group of users to another group across your core metrics. For example, you can see how much revenue your product generates from users who favorited three songs compared to those users who did not favorite three songs.

Below are examples of the types of questions you can ask about core product metrics with behavioral cohorts. We'll continue with our hypothetical example of a cohort of users who favorite at least 3 songs in a music streaming app.

Behavioral cohorting allows you to:

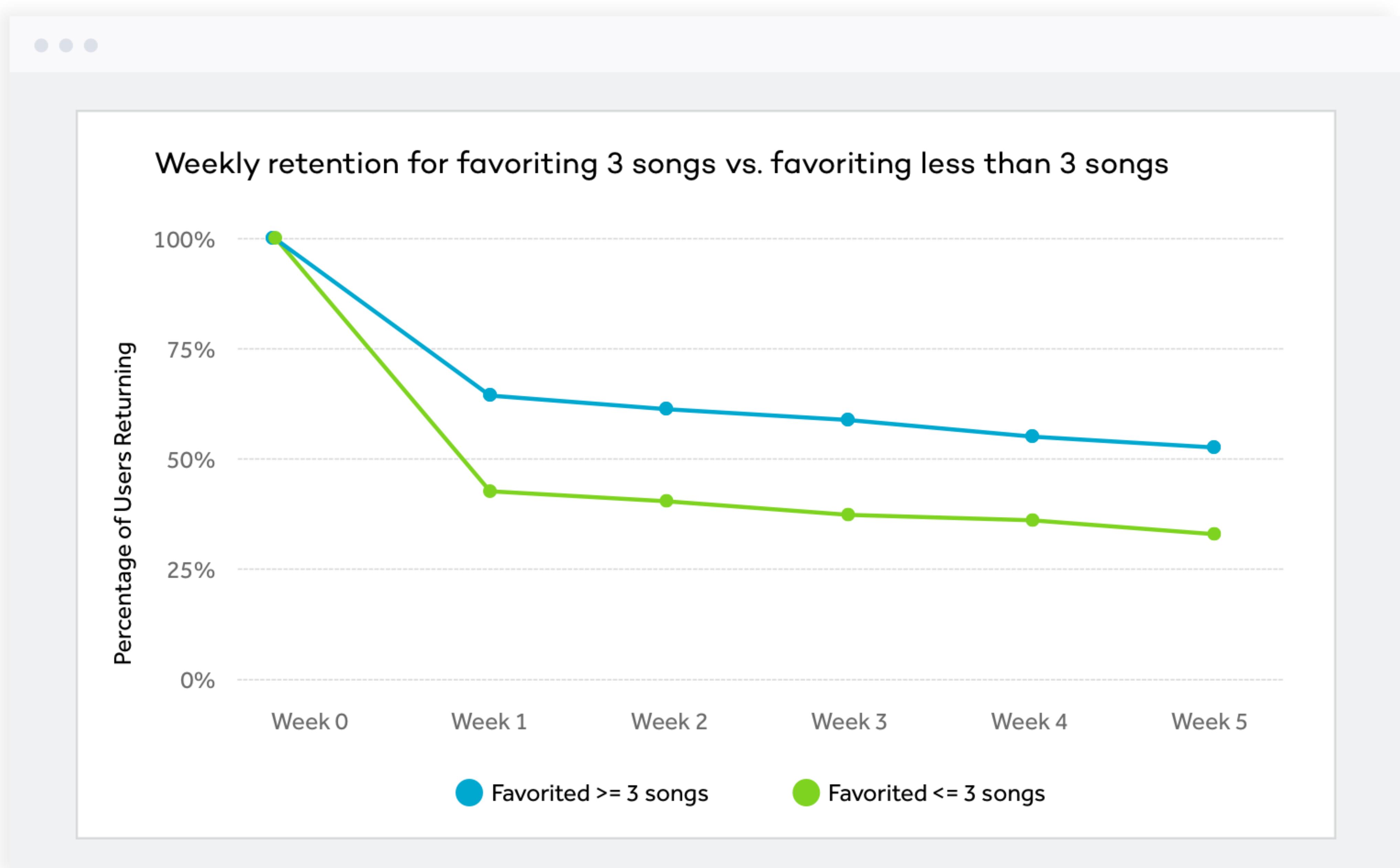
- Define a group of users based on actions they take (or don't take) in your product
- Save that group of users and perform further analysis for metrics like Funnels, Retention, and Revenue
- Understand your user behavior and make better decisions about your product



Retention

Does favoriting at least 3 songs impact new user retention?

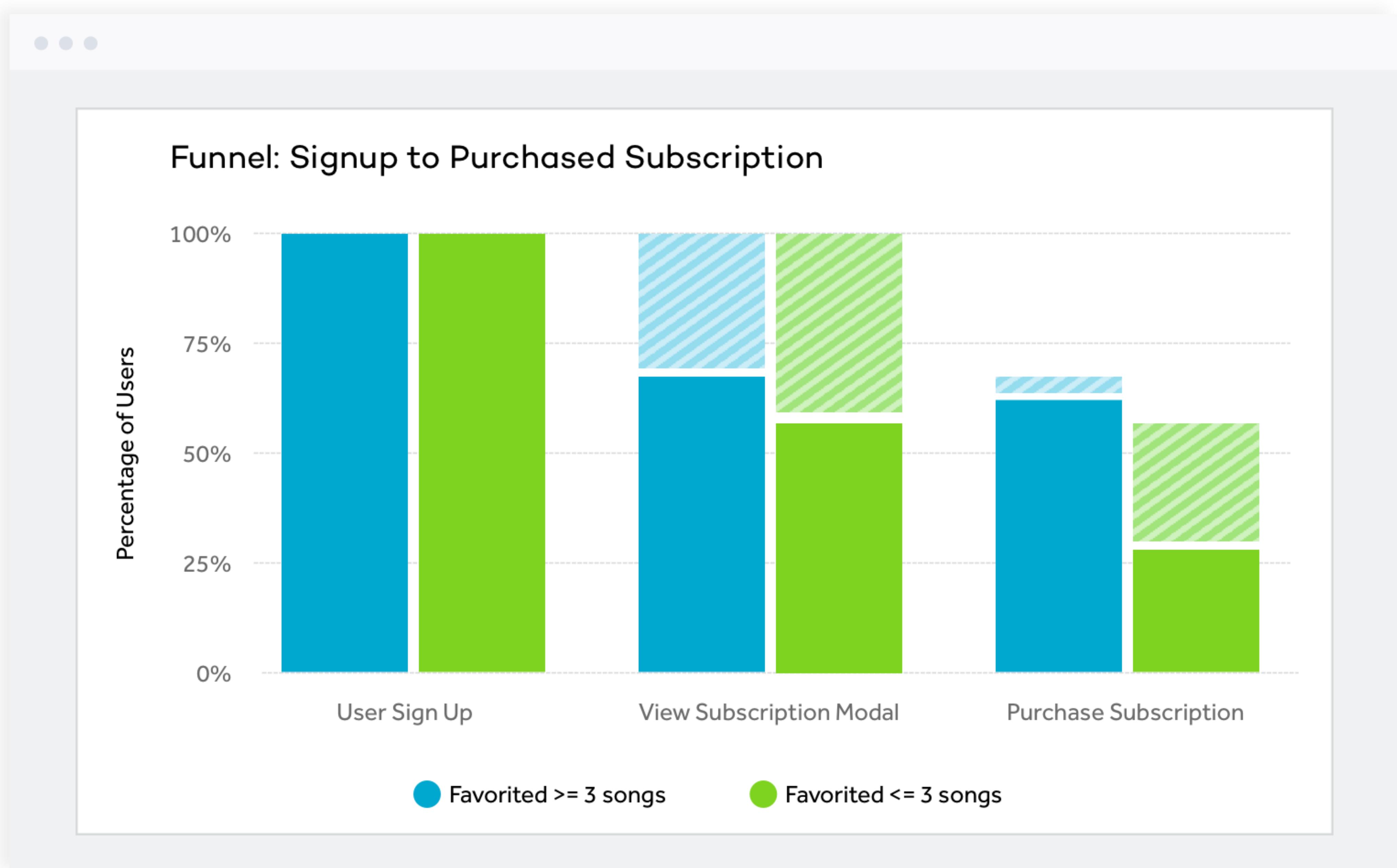
In the graph below, we're comparing weekly retention of users who favorited at least 3 songs, with users who did not. The data shows that the cohort of users who favorite at least 3 songs have higher retention, indicating that the action of favoriting songs may be an important driver of retention in your product.



Conversion Rate

Does favoriting at least 3 songs affect your conversion rate of converting free users into paying customers?

In this chart, we've applied the behavioral cohort to a conversion funnel so that we can see how favoriting songs impacts the conversion rate from signing up to purchasing a subscription. The funnel shows that users who favorite at least 3 songs have a much higher conversion rate to a paid subscription: 65%, compared to only 27% of users who favorite less than 3 songs.



Based on these results, it seems like it's a good idea to encourage your new users to favourite more songs on their first day. That behavior is positively associated with both retention and conversion to paid subscriptions.

We'd follow the same format for the next three questions.

- **Stickiness** - Do users who favorite 3 songs use your product more frequently?
- **Revenue** - Do users who favorite 3 songs spend more money in your product?
- **Key User Actions** - Do users who favorite 3 songs perform key actions more than other users?

Uncovering the behaviors that lead to growth at scale

You likely have an endless number of possible behaviors a user can take (not to mention the possible combinations). How do you efficiently discover which behaviors correlate with retention, high conversion rates, stickiness and so on?

Our recommendation is that you first complete the worksheets included at the end of this handbook to get clarity on the specific behaviors and actions you think have a relationship with retention. You can also dig deeper into the components of a user retention strategy by watching this [free, comprehensive webinar series](#). Presented by experts at Amplitude, the User Retention Bootcamp walks through the different steps of mastering user retention, identifying behavioral personas and creating a sticky product. You can view the free, three-part series by [registering here](#).

Once you have an idea of the cohorts you'd like to measure, use an analytics tool to define the cohorts and measure how they each compare across your core metrics.

If you don't have a behavioral analytics platform in place, you can use a number of tools you may already have to do the analysis manually, using a query language like SQL. However, the fastest approach to uncovering these behaviors is to work with an analytics platform that can help do this analysis for you.

Trying to delve into this type of analysis without the necessary ease of access to data is both time consuming and requires guesswork; two traits that are detrimental to the speed of product development and iteration, as well as true growth. **If you're interested in learning more about Amplitude, and how to discover behavioral cohorts at scale, we'd love to chat with you. You can get in touch with our analytics experts by sending an email to contact@amplitude.com.**

WORKSHEET

A Step-by-Step Guide to Behavioral Cohort Analysis

Now that you know what behavioral cohorting is, you can apply the method to understand how different behaviors impact your product's retention, revenue, and growth. Use this worksheet as a guide to defining and analyzing your behavioral cohorts.

Phase 1: Define your behavioral cohort

What are you trying to learn from your behavioral cohort analysis? Ask yourself these questions to frame your problem and guide your cohort definition.

Question	Notes
What action or behavior would you like to investigate? ex. Adding a friend, sharing content	Your notes...
What timeframe are you interested in? ex. Within 1st day of use, during a specific date range, or in the last 30 days	Your notes...
Is the number of times the user does the action important? ex. Add at least 7 friends, complete exactly 1 order	Your notes...
Are there any user properties that you need to specify? ex. Only iOS users in the US between ages of 18-24	Your notes...
Are there additional actions that you'd like to investigate in combination? You can use behavioral cohorting to investigate multiple behaviors, for example, users who added 7 friends AND shared 3 links.	Your notes...

Phase 2: Analyze the impact of the behavior

After saving your behavioral cohort, it's time to understand the impact that behavior has on your core metrics. For this table, we'll use the example of 'favoriting at least 3 songs.'

Question	Directions	Notes
Retention Does favoriting at least 3 songs impact new user retention?	Plot the retention curve of the cohort who favorited at least 3 songs, compared with the cohort who favorited less than 3 songs. Is there a difference in retention 1 week later? 1 month later?	Your notes..
Conversion Rate Does favoriting at least 3 songs affect your conversion rate?	Set up a funnel of the key steps a user takes to 'convert', whether that's completing an onboarding flow or making a purchase. Look for differences in conversion rate between your 2 cohorts at each step of the funnel -- you might find that there's a key step at which most of your users are dropping off.	Your notes..
Stickiness Do users who favorite 3 songs use your product more often?	To measure stickiness, look at the percentage of users who access your app n days out of a week (ex. 3 days a week). Compare stickiness between your 2 cohorts: this will tell you whether users who favorite 3 songs use your app more frequently than users who don't.	Your notes..
Revenue Do users who favorite 3 songs spend more?	If your product has in-app purchases or e-commerce orders, compare whether users who favorite 3 songs spend more. Some common metrics to look at are LTV, ARPU, and ARPPU.	Your notes..
Key User Actions Do users who favorite 3 songs perform key actions more than other users?	Investigate how favoriting 3 songs relates to how often users do other important actions in your app. In the music app example, you might look at how many times users create and share playlists, or how many times they purchase songs.	Your notes..