Steps to configuring this predictive growth model

This spreadsheet is a growth model that has been created for the Growth community to use to understand how to model a user base over time, size up opportunities, and as a tool at the core of finding sustainable growth. This model was created by Chris More, Firefox Product Lead at Mozilla as an open-source project. Feel free to copy this spreadsheet and use it for your product or organization.

Not sure what a growth model is? Check out Chris' presentation from the 2017 Growth Hackers conference.

Ready to get started? Go to "File" and "Make a copy" in the menu above to copy this spreadsheet and make it available for editing.

1) Getting started

a) Fill out your company name and product for this specific model in the "model details" sheet.

b) Determine what period of time you want to aggregate data. This model has 730 periods, which could be days, weeks, or months. This will be used when inputting your acquisition data. Document the period of time in the "model details" sheet.

c) Determine what is considered to be "acquisition" for your product. This is very specific to your product and what you consider to be a useful top-of-funnel. This may be installs, registrations, or sign up. Document this on the "model details" sheet.

d) The default settings for all periods is an incrementing numeric value. If you wanted to use a custom field, like a date, set those custom values on the "Period Names" sheet.

2) Input baseline metrics (yellow rows on input sheets)

a) Add in your aggregated acquisition data over time starting on the product launch date (ideally) row 2 (yellow) of the "input acquisition" sheet. Period 0 is product launch period. The values entered are the raw number of users acquired per period of time. The model has 730 periods of data and if you don't have that many periods of acquisition, estimate or forecast those numbers to completely fill all 730 periods. Add the source of this data in the "model details" sheet to be able to reference later.

b) Add in your average retention rate for your newly acquired users on row 2 (yellow) of the "input retention" sheet. For simplicity reasons, this model will assume your retention rates are flat over time as the baseline. The values entered are the percentage of active users in a given period following their period of acquisition (period 0). Add the source of this data in the "model details" sheet to reference later.

3) Create alternative growth scenarios (green rows on input sheets)

a) Add in pontential "What if" scenarios in the green rows in the "input acquisition" or "input retention" sheets. In the "input acquisition" sheet, the values in the columns are the total number of acquired users for that period, which should include the baseline value plus the scenario value. For the "input retention", simply enter the relative percent improvement (positive or negative) ove the baseline retention. Also, in the "input retention" sheet, you can choose which period you want the retention improvement to start on.

b) Change the "row number" field (green) in the "Scenario Configuration" sheet to be specific to what scenario you want to analyze in either of the "input acquisition" or "input retention" sheets.

4) Explore outcomes

(note: each time you make a modification to the model, you will have to wait 3-8 for it to recalculate)

a) Review the "Active User Trend" sheet for the active user trends.

b) Review the "Scenario Impact" sheet to understand the ROI of each potential "What if" scenario.

5) Grow your product

a) Deploy winning growth experiments

b) Review learnings

c) Create new growth hypotheses

d) Repeat!

Sheet color legend

Green: sheets you need to provide input on

Red: sheets that output that you don't edit.

Black: hidden sheets that are only used for calculations.

Sheet names and purpose

Instructions: how to use and manipulate this model.
Model details: where to describe some of the core assumptions with this model.
Period names: where you can change from numeric period numbers to custom values like dates.
Input acquisition: the sheet where you enter your baseline and scenario acquisition metrics.
Input retention: the sheet where you enter your baseline and scenario retention metrics.
Scenario configuration: the sheet that you choose which acquisition and retention scenario you want to calculate.
Active user trend: The output in active users over time for the baseline and scenario inputs.
Scenario Impact: the ratio and ROI of inputs vs active user outouts.
Cohort baseline (hidden): This sheet is used to calculate the cohorts of the baseline user base.
Cohort acquisition change (hiddden): The sheet is used to calculate the cohorts for acquisition scenarios.
Cohort retention change (hidden): This sheet is used to calculate the cohorts for retention scenarios.

Important Note

Due to the millions of formulas to calculate this growth model over the all the periods of time, changes to inputs and settings can take 5 to 10 minutes to replicate through the entire spreadsheet. Thus, it is hard to know when the calculations are over. Other than hearing the fan on your computer spin up or down, there is another easy method to know when the calculations are final.

Go to View menu on the top left of the Google Spreadsheet and click "Formula Bar". The formula bar will add a progress bar over to the right hand side of the spreadsheet to denote when processing is happening across the spreadsheet.

The spreadsheet appears to run better in Firefox as it often crashes Chrome in my experience.

Created by Chris More
VP Growth Brave

Questions? Ask on twitter

Company	ACME Products
Product	Widget 3000
Model's period of time	(define here what period of time is going be used for this model. This could be days, week, or years)
Acquisition definition	(define here what you are going to consider as "acquisition" for this model.)
Acquisition source	(provide a link or name the specific source of where you will pull your acquisition data from)
Retention source	(provide a link or name the specific source of where you will pull your retention data from)

Input Scenario	input sheet line number	Scenario (takes 5-10 minutes to calculate after changing the line number)
Acquisition	3	Marketing campaign in the United States from October through December 2019 estimated 10% lift
Retention	3	Deploy a change to a user onboarding experience that improves day 1-30 retention only 10% October 1, 2019
		Note: Given the millions of calculations in this spreadsheet, it will take 5 to 10 minutes for most changes to process.

Baseline ROI	Value
Input: acquisition	66,220
Output: active users	4,324
Input to output ratio (higher is better)	0.065

OR

Measure at period	730
Measure at date	7/1/2020
Measure method	date

Note: Given the millions of calculations in this spreadsheet, it will take 5 to 10 minutes for most changes to process.

Marketing campaign in the United States from October through December 2019 estimated 10% lift

Variable: Acquisition	Value	Absolute Change	Percent Change
Input: acquisition	68,060	1,840	2.78%
Output: active users	4,383	59	1.37%
Input to output ratio (higher is better)	0.064	-0.0009	-1.37%

Deploy a change to a user onboarding experience that improves day 1-30 retention only 10% October 1, 2019

Variable: Retention	Value	Absolute Change	Percent Change
Input: acquisition	66,220	0	0.00%
Output: active users	4,433	109	2.52%
Input to output ratio (higher is better)	0.067	0.0016	2.52%

Both: Marketing campaign in the United States from October through December 2019 estimated 10% lift + Deploy a change to a user onboarding experience that improves day 1-30 retention only 10% October 1, 2019

Variable: Acquisition+Retention	Value	Absolute Change	Percent Change
Input: acquisition	68,060	1,840	2.78%
Output: active user	4,492	168	3.89%
Input to output ratio (higher is better)	0.066	0.0007	1.08%

Scenario Impact Overview

One factor when calculating the ROI of a growth idea is to determine when you want the measure the success or failures of that scenario. The "measure at period" or "measure at date" input field above (green) is used to evaluate the impact on the left at that specific point in time. If you are using numeric periods, set the period to a number or if you are using custom period names, set it to a specific date. Then choose period or date in the drop down menu.

A growth ratios are simply the ratio of key variables and their impact or simply the ratio between inputs and outputs. In the case of these inputs, it is the return on investment of the acquired users compared to the active users. As you can see the ROI of acquisiton tactics vs retention scenario tactics is different depending on the size and timing of the change.

Feature	Status	Date	Model version
Original MVP	Done	6/29/2017	v1.0
Added incremental input and output calculations on growth ratios and additional calculations on on dual scenarios on active user trend.	Done	7/3/2017	v1.1
Bug fix on period 180 of acquisition in the cohort hidden sheets.	Done	7/13/2017	v1.1
Increase the size of the periods from 180 to 624 and adding custom period names instead of just numbers.	Done	3/5/2018	v1.5
Added ability to pick a specific period on when a retention scenario starts.	Done	3/11/2018	v1.6
Increased the number of periods of 730	Done	3/7/2019	v2.0
Added new scenarios and new features on the scenario impact sheet.	Done	3/10/2019	v2.0
Improved retention scenario cohort with allow for any reteltenion curve scenario	Done	3/12/2019	v2.0
Added absolute retention calculations on the input retention sheet as the standard retention input is relative to the baseline.	Done	9/12/2021	v2.0