



GROWTH THAT COMPOUNDS

What is cohort analysis? A stable entry event before a retention curve

Cohort analysis aligns units by a declared entry event and age. Define the cohort, outcome, maturity rule, and denominator before reading the curve.

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MANAGEMENT SUMMARY

Cohort analysis groups accounts, users, customers, or contracts by a common entry event and follows their outcomes at the same age relative to that event. A retention curve is interpretable only when the unit grain, entry rule, outcome, denominator, time origin, cohort composition, and maturity rule are stable. This article separates cohort analysis from a calendar snapshot, activation, time to value, and a causal treatment comparison. A synthetic line chart and cohort worksheet show how an immature cohort can be misread as a retention failure and how different entry events create different curves. Ascarza et al. and Steinhoff et al. supply bounded intervention and lifecycle timing context. The curve and formulas are author synthesis, not a retention benchmark or causal estimate.

Keywords: Cohort Analysis · Customer Cohort · Cohort Entry Event · Cohort Age · Retention Curve · Cohort Composition · Retention

A retention dashboard can put the January, February, and March signups beside one another and call the differences a trend. The March cohort may simply be three days old. The curve is being asked to answer a question its units have not had time to answer.

Cohort analysis groups units by a declared entry event and compares their outcomes at the same age relative to that event. A retention curve is only as stable as its entry rule, unit grain, outcome, denominator, and maturity boundary.

The activation-rate article owns the earlier first-value event. The retention disclosure article owns the question of what firms disclose. This page owns the age-relative cohort comparison before a curve is interpreted.

What does cohort analysis measure?

Keep the cohort objects separate:

Table 1 What does cohort analysis measure?

Object	Declaration	Failure when it is hidden
Unit grain	Account, user, workspace, contract, or subscription	The numerator changes from accounts to users
Entry event	Signup, paid start, contract start, activation, or renewal	Cohorts mix different lifecycle origins
Cohort composition	Eligibility, plan, region, acquisition route, and exclusions	A composition shift looks like a product trend
Cohort age	Days or months since each unit's entry	Calendar time is mistaken for lifecycle time
Outcome	Active, retained, renewed, used, or paid under a rule	A proxy is called retention without a declared endpoint
Denominator	Eligible units at entry or another declared risk set	Units are silently added or removed after entry
Maturity rule	Minimum observation age for each reported point	Immature units are counted as failed outcomes

Table from this essay. Sources and interpretation are given in the article.

The cohort is not a label on a dashboard filter. It is a population definition. If the entry event changes from signup to paid start, the new curve can be useful, but it is a different cohort object.

How is a retention curve calculated?

For cohort c at age t , one transparent convention is:

$$\text{retention}(c,t) = \text{units remaining at cohort age } t / \text{eligible units at cohort entry}$$

The numerator must use the same unit and outcome rule as the denominator. If an account is the unit, three active users do not create three retained accounts. If the outcome is paid renewal, a login is not a retained contract.

If a unit is still too young to reach age t , it should be excluded from the definitive point or labeled immature rather than counted as a failure.

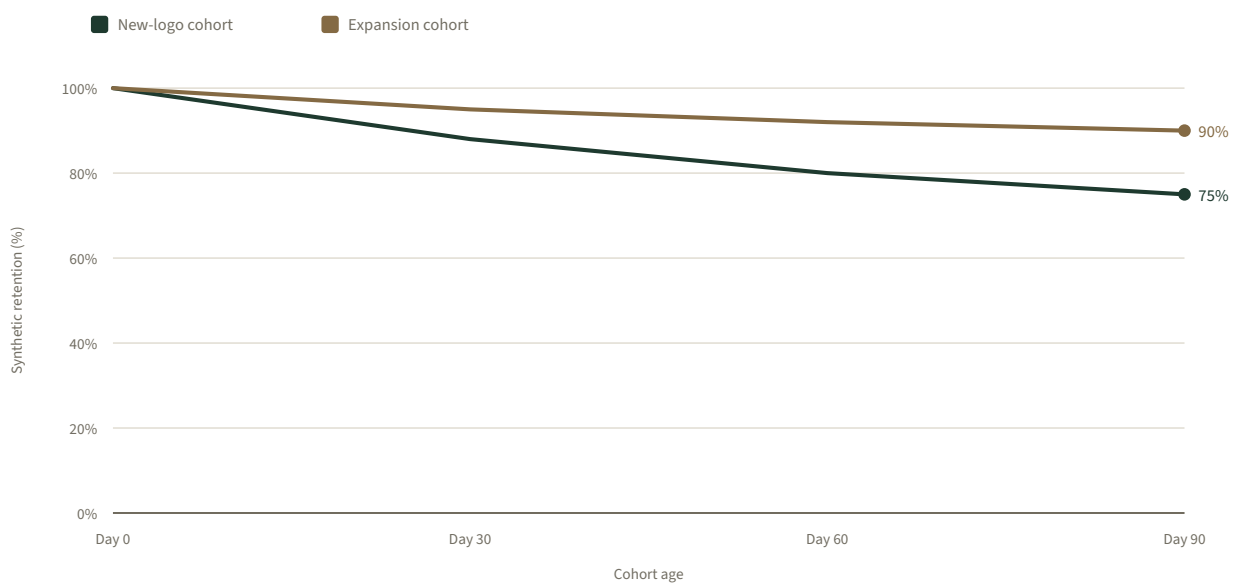
Ascarza, Iyengar, and Schleicher evaluate a proactive intervention against later churn in a randomized wireless-provider field experiment. Their study keeps treatment, eligible population, and follow-up window together. It does not provide a universal retention curve or a general cohort definition. Its value here is the timing boundary: an earlier intervention or engagement event and a later outcome should not be collapsed.

Steinhoff and colleagues distinguish onboarding and post-onboarding stages in a B2B digital-subscription setting. The stage distinction is a reason to preserve the entry event and cohort composition before comparing later retention. Their observational result does not establish that a curve difference is caused by onboarding or by any single product event.

What do different cohort curves show?

The chart is synthetic. It uses two different entry populations and holds the displayed unit and outcome definitions constant. The values are illustrative and are not customer data or a benchmark.

Figure 1 Two synthetic cohort-retention curves



Author's synthetic cohort model grounded in Ascarza, Iyengar and Schleicher (2016) and Steinhoff et al. (2025). Values show age-relative retention for two illustrative cohorts; they are not company data or a benchmark.

The lines differ, but the chart alone cannot say why. The expansion cohort may have a different entry event, buying context, product history, or eligibility rule. Those are composition and design questions before they are explanations.

Why does cohort maturity matter?

Suppose an account entered three days ago and the report asks for day-30 retention. The account has not yet had a full opportunity to reach the day-30 observation. Counting it as a day-30 failure depresses the rate mechanically. A definitive day-30 point should include only units whose entry is at least thirty days before the as-of date, or should visibly label the point as immature.

The same rule applies to day-60 and day-90 points. A report can show a leading partial cohort for monitoring, but it should not place that partial observation beside mature cohorts without marking the difference in risk-set maturity.

How is cohort analysis different from a snapshot or experiment?

Table 2 How is cohort analysis different from a snapshot or experiment?

Method or view	Comparison clock	Primary question	Boundary
Calendar snapshot	Calendar date	What is the current state?	Does not align units by entry age
Cohort analysis	Time since entry	How does an age-relative outcome develop?	Descriptive unless a causal design is added
Activation rate	Fixed window after entry	Which units reached a declared first-value event?	Does not measure later survival alone
Experiment	Assignment and follow-up window	What changed relative to a counterfactual?	Needs treatment, control, exposure, and estimand

Table from this essay. Sources and interpretation are given in the article.

A cohort comparison can be a useful descriptive diagnostic. It is not automatically a treatment effect. If the business changes onboarding, pricing, acquisition, or product access between cohorts, the cohorts may differ in more than age.

What does cohort analysis not measure?

Cohort analysis does not prove that a cohort’s retention is caused by its acquisition route, product version, onboarding program, price, or account manager. It does not supply a universal retention benchmark or a forecast for an immature cohort. It does not replace a definition of the outcome or make a mixed denominator comparable.

The useful conclusion is narrower: at the declared unit, entry event, age, outcome, and maturity rule, this cohort has the observed status shown. Any explanation requires a separate design and additional evidence.

How should a team review a cohort curve?

- 1 Name the unit grain, eligibility rule, and entry event.
- 2 Freeze the outcome definition and denominator at cohort entry.
- 3 Align each observation by age rather than only by calendar date.
- 4 Exclude or label cohorts that have not matured to the requested age.
- 5 Record composition changes, plan changes, acquisition route, and product version.
- 6 Keep activation, usage, retention, and treatment assignment as separate objects.

7 Treat curve differences as descriptive until a comparison design supports an explanation.

A cohort curve is a disciplined view of time-relative outcomes. Its value comes from the entry rule and risk set that remain visible behind the line.

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END OF ESSAY

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