



World Leaders in Research-Based User Experience

Quantitative Research: Study Guide

Summary: Unsure where to start? Use this collection of links to our articles and videos to learn about quant research, quant usability testing, analytics, and analyzing data.

By [Kate Moran](#) on August 29, 2021

Topics: [Research Methods](#), [Study Guides](#)

The following tables contain links to some of our articles and videos related to quantitative user research. Within each section, the resources are in recommended reading order.

Quantitative vs. Qualitative UX Research

In UX, we often use qualitative research to gather insights or observations about users. This type of research is useful for discovering problems and determining design solutions. (We also have a study guide for [qualitative usability testing](#).)

With **quantitative research**, our focus is different. We collect UX metrics — numerical representations of different aspects of the experience. Quantitative research is great for determining the scale or priority of design problems, benchmarking the experience, or comparing different design alternatives in an experimental way.

4-minute video: [Quantitative vs. Qualitative UX Research](#)

Topics and Methods Covered in This Article

- [UX Benchmarking and Return on Investment](#)
- [Quantitative Usability Testing](#)
- [Analytics and A/B Testing](#)
- [Surveys](#)
- [Card Sorting and Tree Testing](#)
- [Analyzing Quantitative Data](#)
- [Visualizing and Presenting Quantitative Data](#)

UX Benchmarking and Return on Investment (ROI)

UX benchmarking refers to evaluating a product or service's user experience by using metrics to gauge its relative performance against a meaningful standard. Teams use benchmarking to track improvements to the user experience over time or to compare against competitors.

Benchmarking metrics are often also used to calculate **return on investment (ROI)** of UX work; this type of calculation helps UX professionals prove their value and argue for more resources.

Number	Link	Format	Description
1	The Benefits of Benchmarking Your Product's UX	Video	Track how well your design performs over time
2	Benchmarking UX: Tracking Metrics	Article	How benchmarking works at a high level
3	7 Steps to Benchmark Your Product's UX	Article	Specific steps to follow to get started with benchmarking
4	Calculating ROI for Design Projects	Video	Using metrics to estimate the value of a design change

5	Calculating ROI for Design Projects in 4 Steps	Article	
6	Three Myths About Calculating the ROI of UX	Article	Common mistakes people make when they get started with ROI calculations
7	Average UX Improvements Are Shrinking Over Time	Article	An analysis of benchmarking trends since 2006, meant to set expectations for how much your metrics might change over time

For more in-depth help, check out our report and full-day course. (Unlike the articles and videos in this study guide, these resources are not free.)

Report: [UX Metrics and ROI](#)

Full-day course: [Measuring UX and ROI](#)

Quantitative Usability Testing

In **quantitative usability testing**, researchers collect metrics (like time on task, success rates, and satisfaction scores) while participants perform tasks. This version of usability testing requires more participants and a more rigorous study structure than qualitative usability testing.

Number	Link	Format	Description
1	Quantitative vs. Qualitative UX Research	Video	How to determine when you need a quantitative study
2	Quantitative vs. Qualitative Usability Testing	Article	Differences between quantitative user testing

	<u>Testing</u>		and (the more-common) qualitative usability testing
3	<u>How Many Participants for Quantitative Usability Studies: A Summary of Sample-Size Recommendations</u>	Article	The reasoning between the 40-participant guideline for quant user testing and why you may see other recommendations
4	<u>Why You Cannot Trust Numbers from Qualitative Usability Studies</u>	Article	Why it's a mistake to think you can collect quant metrics during qual studies
5	<u>Why 5 Participants Are Okay in a Qualitative Study, but Not in a Quantitative One</u>	Article	Why sample sizes differ in quantitative vs. qualitative user testing
6	<u>Writing Tasks for Quantitative and Qualitative Usability Studies</u>	Article	The differences between tasks for quant vs. qual user testing and why good quant tasks are specific and concrete
7	<u>Success Rate: The Simplest Usability Metric</u>	Article	How to analyze task completion when you have multiple levels of success
8	<u>Risks of Quantitative Studies</u>	Article	The reason why quantitative usability

			studies can't replace qualitative studies, and how qual studies can complement the findings from quant studies
9	Between-Subjects vs. Within-Subjects Study Design	Article	How to choose between two alternative study setups in quant usability testing that compare two different designs
10	How to Measure Learnability of a User Interface	Article	Quantifying the learnability of complex products that take a while for new users to learn by looking at how much time it takes people to learn the interface

Analytics and A/B Testing

Analytics data describe what people do with your live product — where they go, what they click on, what features they use, where they come from, and on which pages they decide to leave the site or app. This information can support a wide variety of UX activities — it can help you monitor the performance of various content, UIs, or features in your product and identify what doesn't work.

Number	Link	Format	Description
1	Analytics vs. Quantitative Usability Testing	Video	Comparing the information obtained from these two sources of quantitative metrics for UX
2	Three Uses for Analytics in User-	Article	How to avoid feeling lost in your analytics data and make

	Experience Practice		it meaningful
3	Macro & Microconversions as Metrics in Analytics	Video	How to use both high-value user actions (macroconversions) and smaller-value, frequent user actions (microconversions) as analytics metrics to track the performance of your site and identify issues
4	Translating UX Goals into Analytics Measurement Plans	Article	Advice for choosing the right analytics metrics for your specific UX goals
5	Turning Analytics Findings into Usability Studies	Video	Pairing analytics with qualitative research to learn the “why” behind those problems identified through analytics
6	In Analytics, What do the Numbers Really Mean?	Video	How to understand analytics metrics that require interpretation
7	How to Interpret User Time Spent and Page Views	Video	When and how to use two key analytics metrics (time spent and page views) to evaluate whether your users are efficient or engaged
8	Vanity Metrics: Add Context to Add Meaning	Article	Why metrics that only go up (like total visitors) aren’t very useful and how to avoid these feel-good vanity metrics

9	5 Information Architecture Warning Signs in Your Analytics Reports	Article	How to use analytics to discover potential problems in your product's information architecture
10	Bounces vs. Exits in Web Analytics	Video	The difference between two metrics that people often confuse

While you can use analytics metrics to monitor your product's, you can also create experiments that detect how different UI designs affect those metrics — either through **A/B testing** or **multivariate testing**.

Number	Link	Format	Description
1	A/B Testing 101	Video	How A/B testing works
2	Define Stronger A/B Test Variations Through UX Research	Article	How to ground your A/B testing experiments in research to develop well informed design variations
3	Don't A/B Test Yourself Off a Cliff	Video	Why relying on A/B testing alone is likely to result in design mistakes.
4	Putting A/B Testing in Its Place	Article	
5	A/B Testing vs. Multivariate Testing for Design Optimization	Video	When you need multivariate testing vs. A/B testing and why multivariate testing requires more traffic
6	Multivariate vs. A/B Testing: Incremental vs. Radical Changes	Article	

Surveys

Quantitative **surveys** involve asking a large number of users to answer a standardized set of questions. These surveys often involve selecting a response on a rating scales and are used to quantify users' perceptions.

Number	Link	Format	Description
1	User Satisfaction vs. Performance Metrics	Article	Why user satisfaction and performance metrics (like time on task) often correlate, but don't always
2	Survey Response Biases in User Research	Article	Biases which might cause problems in your survey data
3	Keep Online Surveys Short	Article	Why online surveys must be short to collect many high-quality responses
4	Iterative Design of a Survey Question: A Case Study	Article	An example of how to design and refine your own survey
5	Rating Scales in UX Research: Likert or Semantic Differential?	Article	When to use each of the

			two most popular types of rating scales
6	How Useful is the System Usability Scale (SUS) in UX Projects?	Video	Jakob Nielsen's thoughts on one of the most popular and longest-standing UX questionnaires
7	Net Promoter Score: What a Customer-Relations Metric Can Tell You About Your User Experience	Article	The Net Promoter Score (NPS) is a popular marketing metric with limited relevance for UX
8	Beyond the NPS: Measuring Perceived Usability with the SUS, NASA-TLX, and the Single Ease Question After Tasks and Usability Tests	Article	A set of questionnaires to consider as alternatives to the NPS

Card Sorting and Tree Testing

Card sorting and tree testing are both useful methods for assessing and improving your product's information architecture.

In a **card-sorting** study, participants are given content items (sometimes written on index cards) and asked to group and label those items in a way that makes sense to them. This test can either be conducted in person, using physical cards,

or remotely using a card-sorting platform. Card sorting can have qualitative and quantitative components.

In a **tree test**, participants complete tasks using only the category structure of your site. It's essentially a way to evaluate your information architecture by isolating it away from all other aspects of your UI.

Number	Link	Format	Description
1	The Difference Between Information Architecture (IA) and Navigation	Article	What information architecture is and how it relates to site navigation
2	Card Sorting: Uncover Users' Mental Models for Better Information Architecture	Article	An introduction to card sorting
3	Card Sorting: How to Best Organize Product Offerings	Video	
4	Card Sorting: How Many Users to Test	Article	How many participants to include in your card-sorting study
5	Open vs. Closed Card Sorting	Video	How to choose between these two variations of card sorting
6	Tree Testing: Fast, Iterative Evaluation of Menu Labels and Categories	Article	An introduction to tree testing
7	Tree Testing to	Video	

	Evaluate Information Architecture Categories		
8	Tree Testing Part 2: Interpreting the Results	Article	How to make decisions based on your tree testing data
9	Quantifying UX Improvements: A Case Study	Article	An example of how one team used tree testing when redesigning a B2B site's information architecture

Full-day course: [Information Architecture](#)

Analyzing Quantitative Data

To draw conclusion and interpret quantitative data, you'll need to understand some statistics and study-design concepts. The following resources will introduce you to those concepts.

These resources won't give you step-by-step instructions for calculating things like confidence intervals or statistical significance — these are too complex to be covered in a short article. If you want to learn those analysis procedures, please see our full-day course below.

Number	Link	Format	Description
1	Internal vs. External Validity of UX Studies	Article	Why validity matters in UX studies
2	Why Confidence Intervals Matter for UX	Video	Why you should calculate confidence intervals for your quantitative metrics
3	Confidence Intervals, Margins of Error, and	Article	Detailed explanations of these three important analysis concepts

	or Error, and Confidence Levels in UX		analysis concepts
4	Statistical Significance in UX	Video	What statistical significance means, and why you should calculate statistical significance when comparing two designs quantitatively
5	Understanding Statistical Significance	Article	
6	Handling Insignificance in UX Data	Video	What to do when your findings are not statistically significant

Full day course: [How to Interpret UX Numbers](#)

Visualizing and Presenting Quantitative Data

Number	Link	Format	Description
1	Better Charts for Analytics & Quantitative UX Data	Video	An overview of why you should customize your data charts to enhance Context, Clutter, and Contrast
2	Choosing Chart Types: Consider Context	Article	Clearly visualize your UX data by providing context and contrast, while avoiding clutter.
3	Clutter-Free: One of the 3 Cs for Better Charts	Article	Cut out the chartjunk; eliminate elements that distract from your data visualization.
4	Dashboards: Making Charts and	Article	Visualizations should leverage human cognition

	Graphs Easier to Understand		to communicate quantitative information quickly.
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