# UI/UX DESIGN

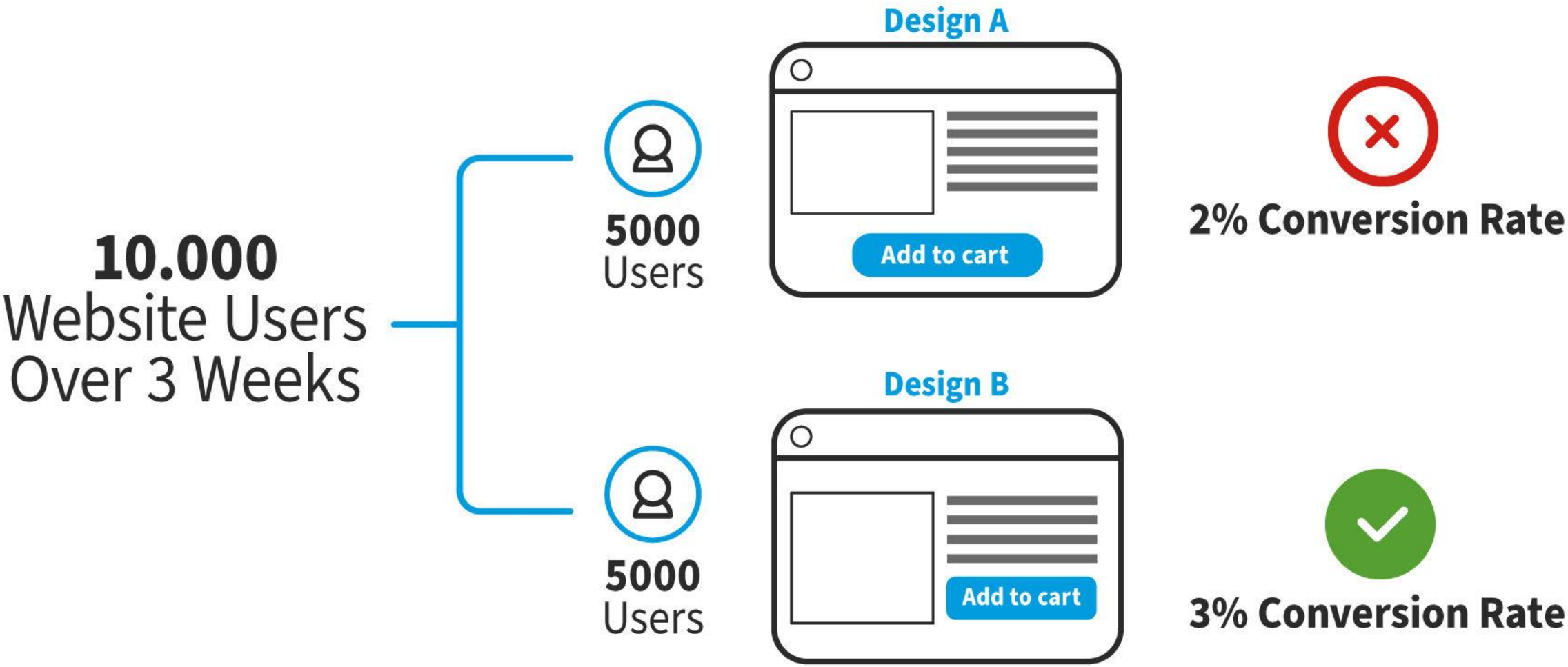
## Lecture 12. **A/B testing**

# What Is A/B Testing?

A/B testing is a **quantitative research method** that tests two design variations with a live audience to determine which variation performs best according to a predetermined set of business-success metrics.

Most commonly, you'll compare the original design A, also called the control version, and one variation B, called the variant. Ideally, the variant should differ from the original design only in one design element alone, such as a button, an image, or a description.

# A/B Testing

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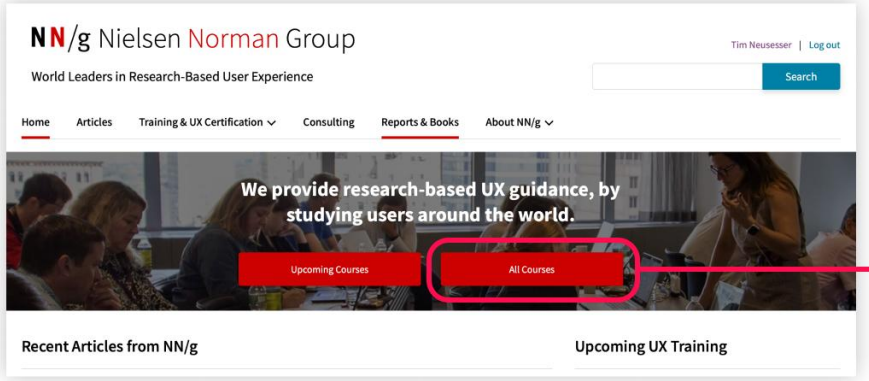
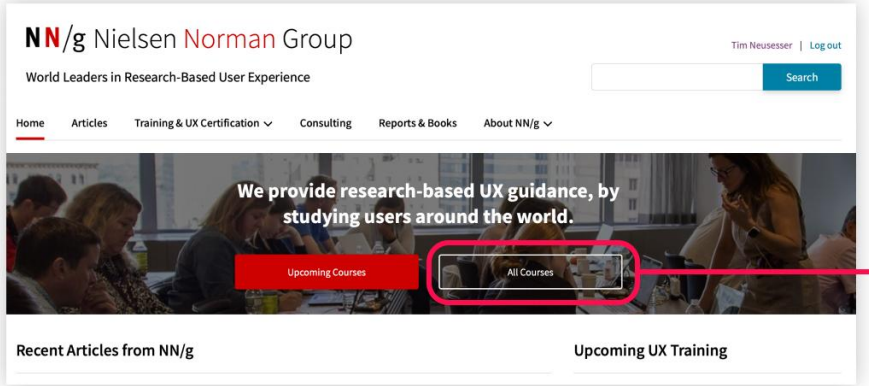
# A/B Test Design





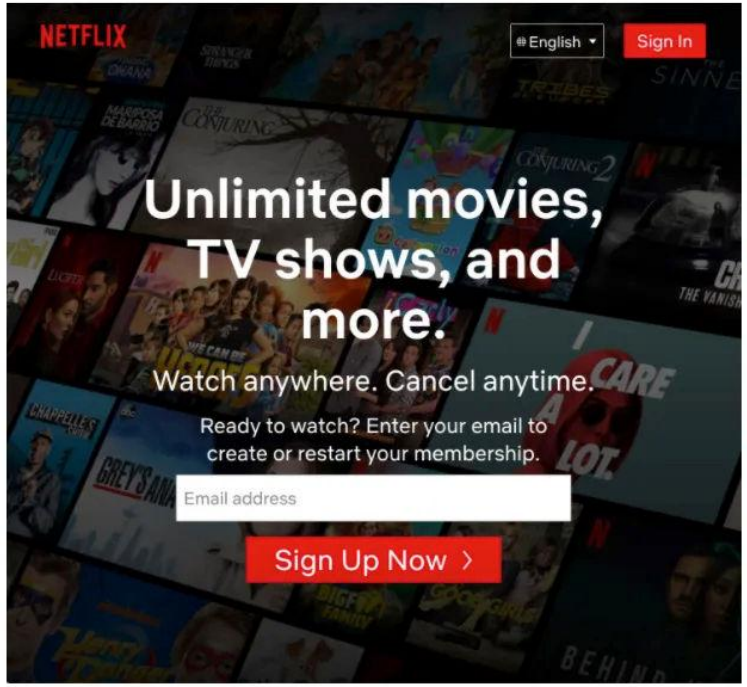

ORIGINAL BUTTON DESIGN




TEST VARIANT

NNGROUP.COM NN/g

*The design of an A/B test on nngroup.com, where the impact of a design change of the* All Course *CTA was tested.*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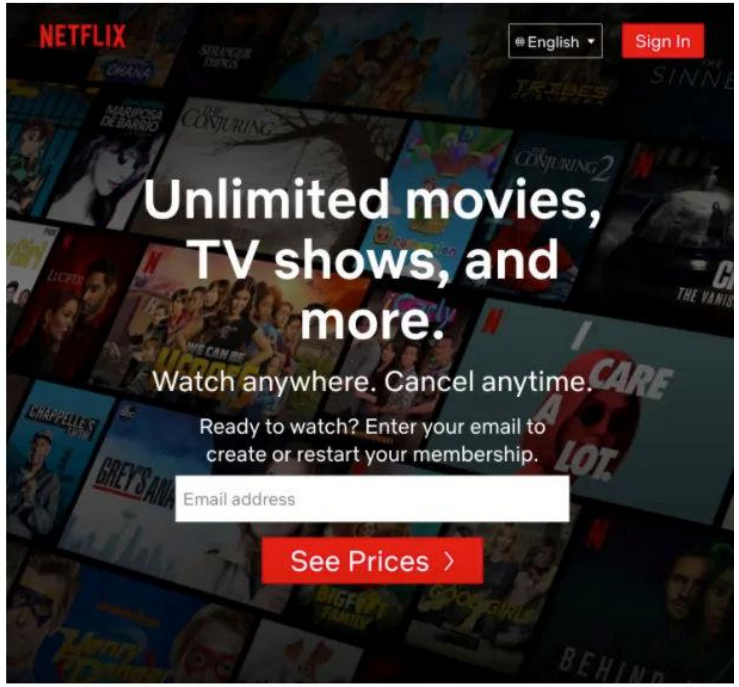
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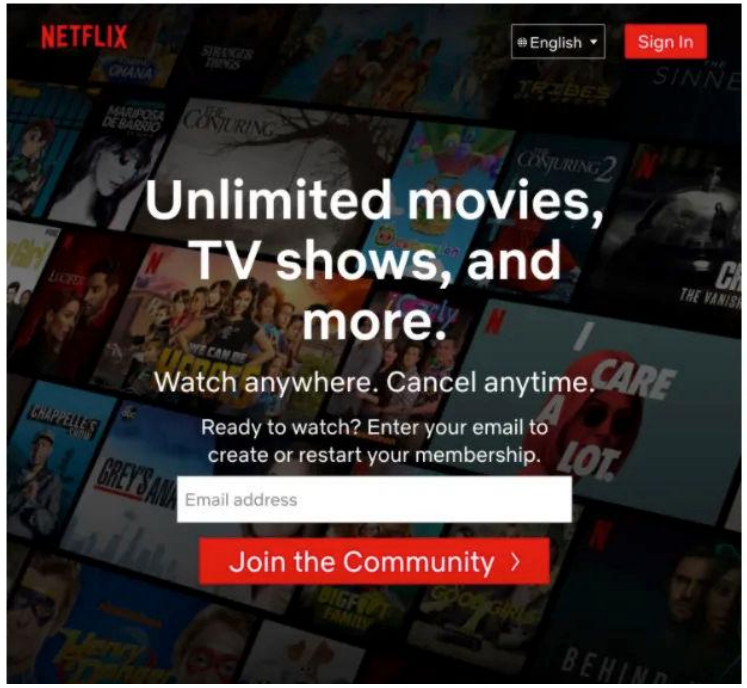
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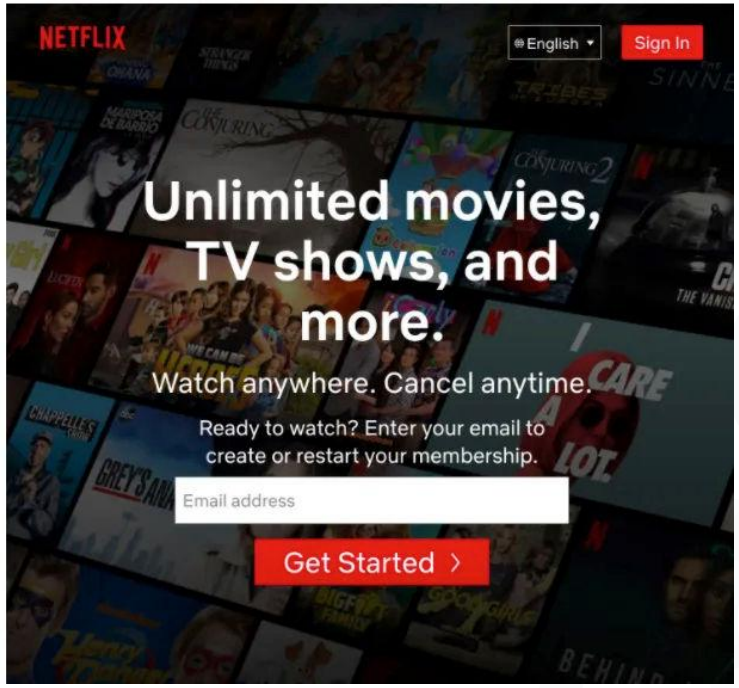
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# A/B Testing Goals

- Increased Website Traffic
- Higher Conversion Rate
- Lower Bounce Rate
- Perfect Product Images
- Lower Cart Abandonment

# Common Use Cases

Industries and products where A/B testing is frequently used and where it can have a significant impact and a high return on investment include:

- Ecommerce (e.g., Amazon)
- Entertainment products (e.g., Netflix, Spotify)
- Social media (e.g., Facebook, Instagram, TikTok)
- Software as a service (e.g., Salesforce, Office365)
- Online publishing (e.g., The New York Times)
- Email marketing

Design elements these industries most commonly test include:

- Call-to-action buttons
- Headlines
- Page layouts
- Website copy
- Checkout pages
- Forms

# What Can Designers A/B Test?

A/B testing typically measures the difference in conversion rate between two designs. The conversion rate is the percentage of users who complete a desired action.

A/B testing is limited in what it can measure. However, the variables that researchers can A/B test are almost limitless. Researchers change one **variable** between design variants and compare the **metrics**.

# What Can Designers A/B Test?

| Example | Variable 1 | Variable 2 | Variable 3 |
|---|---|---|---|
| Navigation menus | Style (horizontal vs. vertical) | Icons vs. text | Placement (top, bottom, side) |
| Page layouts | Number of columns | Above-the-fold content | Sidebar presence and position |
| **Buttons** | Color | Shape and size | Text ("Add to Cart" vs. "Buy Now") |
| **Forms** | Number of fields | Field types (dropdowns, text input) | Layout and ordering of fields |

# What Can Designers A/B Test?

| | | | |
|---|---|---|---|
| Typography | Font styles and sizes | Text color and contrast | Line spacing and text alignment |
| **Images and videos** | Placement and size | Static vs. carousel | Thumbnails vs. full-size images |
| Color schemes | Overall color theme | Contrast ratios | Button and link colors |
| **CTA (call-to-action) elements** | Placement on the page | Wording and urgency | Design and visibility |
| **Content strategy** | Headlines and subheadings | Length and style of copy | Use of bullet points vs. paragraphs |

# What Can Designers A/B Test?

| | | | |
|---|---|---|---|
| Accessibility | Alt text for images | Keyboard navigation | Screen reader friendliness |
| **Error messages** | Wording and tone | Instructions for resolution | Sound effects |
| Search functionality | Search box placement and design | Search algorithms | Filters and sorting options |
| **Pop-ups and modals** | Timing and frequency | Offer types (newsletter sign-up, discount codes) | Exit-intent vs. timed display |
| **Email capture forms** | Placement and timing | Incentives (discounts, ebooks) | Design elements |

# Is A/B Testing Worth It?

*"Testing leads to failure, and failure leads to understanding."*

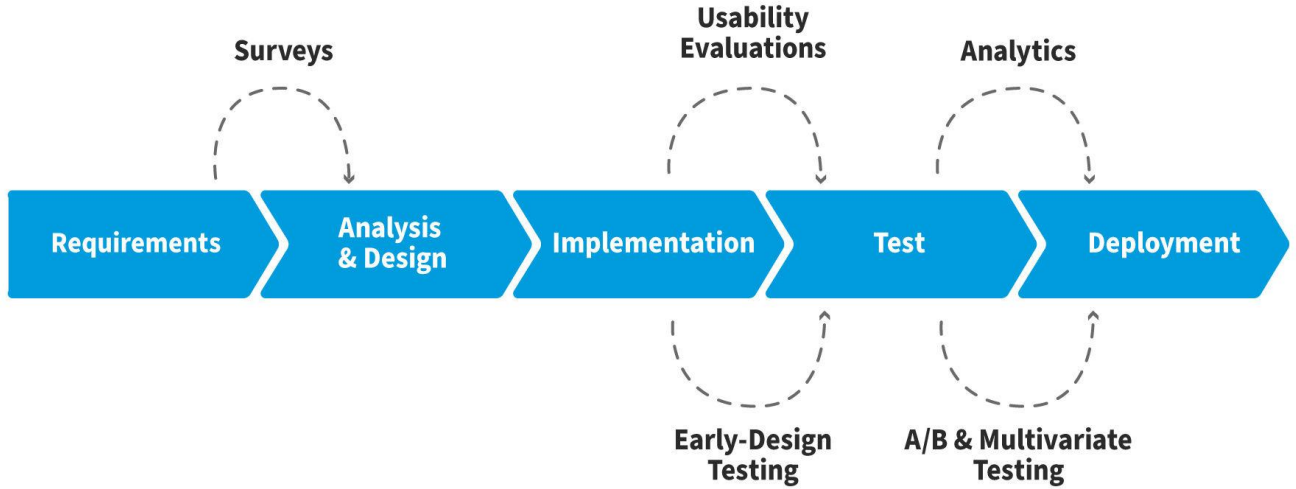
*—Burt Rutan*

User researchers and designers use testing to make data-driven design decisions and optimize their products' user experience (UX). A/B testing is a highly effective user research method that is:

- **Cost-effective.** Researchers can implement A/B testing with live users following deployment. This approach eliminates the need for expensive pre-launch testing environments.
- **Efficient.** A/B testing provides rapid results, especially for products with substantial user bases. Sometimes, two weeks of testing is enough to collect actionable data.
- **Straightforward.** Analytics tools provide researchers with clear insights into which design variant performs best.

# Requirements for A/B Testing

- Before a researcher can conduct an A/B test, their website or app must be fully functional. Test results will be unreliable for unfinished products.
- The number of users tested **must be significant enough** to see actionable results.

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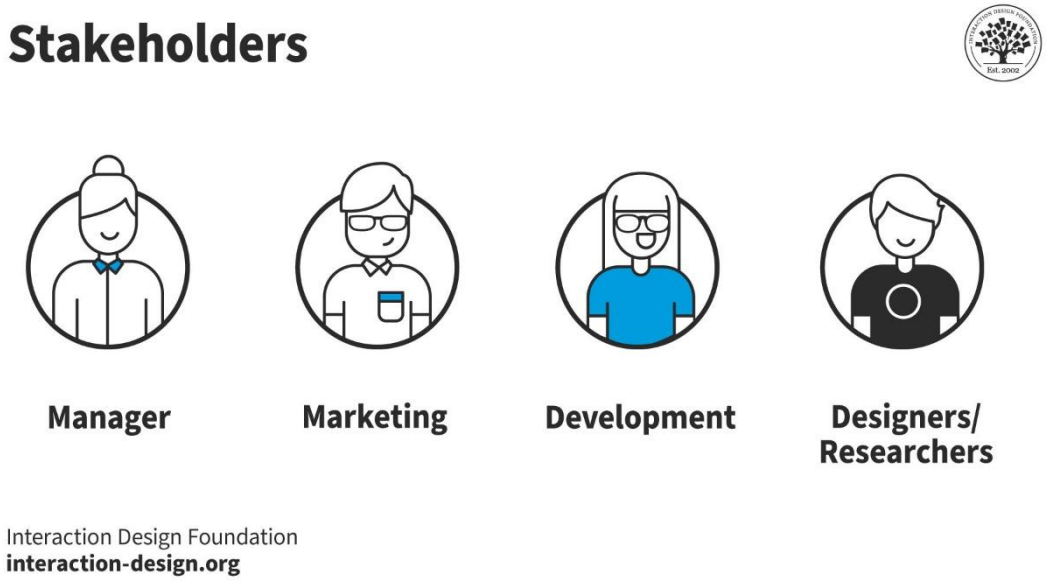
*Designers and researchers use A/B testing in the late stages of the development cycle or after deployment. A/B tests need stable, well-designed environments to function correctly.*

# How to Run an A/B Test

## Pre-requisites

- Identify key stakeholders. Discover who needs to agree or give resources for the testing.
- Convince stakeholders of A/B testing's value. It's crucial everyone involved understands why A/B testing is useful.
- Set up the necessary tools. Choose and set up the software for web analytics and A/B testing.




*While A/B testing is inexpensive, managers must still approve its use. Marketing or development teams may hold the keys to existing analytics implementations. Finally, design and research colleagues may need to create alternative designs and run the test.*

# How to Run an A/B Test

## Preparation

- Define research questions. Decide the questions that need answering.
- Design the alternatives. Next, create the designs you will test against each other. Make sure these designs are as perfect as possible.
- Select your user group(s) (optional). Most A/B testing and analytics software allows you to filter results by user group.
- Plan your schedule.

# How to Run an A/B Test

## Results Follow-Up

- Check if the results are reliable. Look at the analytics to see if the differences are significant enough.
- If the results are unclear, change the designs and rerun the test, or run the test longer to get more data.
- If the results are clear, implement the better version.
- Keep improving.

# How to Run an A/B Test

## Chi-Square Testing for Statistical Significance

| | Converted Users | Non-Converted Users | Total Users |
|---|---|---|---|
| **Design A** | 100 | 4,900 | 5,000 |
| **Design B** | 150 | 4,850 | 5,000 |
| **Column Totals** | 250 | 9,750 | 10,000 |

**The P-value is .001362. This result is significant at p < .05**

*The chi-square test determines if A/B test results are statistically significant. In this example, the difference between conversions may seem small compared to the total users. However, the P-value (the output of the chi-square test) is much lower than the significance level—it is statistically significant. Chi-square tests give researchers and designers the confidence to make data-driven decisions.*

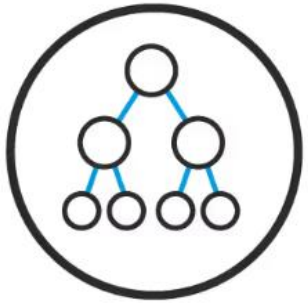
# Limitations and Challenges

- Requires a large user base. A/B testing only provides trustworthy results with a sufficient user pool.
- Outside factors can influence results. External factors like seasonal changes and new trends can negatively affect results.
- Focuses on short-term goals. A/B testing typically focuses on immediate results, like how many people click on a button.
- Ethical Concerns. Some tests significantly change what users experience or how products handle their privacy.

# Alternatives to A/B Testing

**Paper Protyping**

**Card Sorting**



**Tree Testing**

**First-Click Testing**

# Tools to conduct A/B testing

1. Google Аналитика 4.
2. Эксперименты в Яндекс Метрике.
3. Optimizely.
4. MyTarget. .
5. VWO

# Common mistakes when conducting A/B testing



1. **Researching multiple changes.**
2. **Using other people's hypotheses.**
3. **Wrong duration.**
4. **A single test.**
5. **Ignoring external factors.**
6. **Improper selection of tools.**
7. **Insufficiently complete tracking of metrics.**

# THANK YOU!