

Module 11: Analysis and Reporting - Usability test

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5-step process to get you to the finish line (aka your final report):

- 1. collecting** our data
- 2. compiling** our data
- 3. analysing** our data
- 4. reporting** our data
- 5. presenting** our data

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Data collection

Data collection is the step that takes place *during* the execution of the test.

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Since you've already defined, in your test plan, the "**whys**", the "**hows**" and the "**what types**" of data you're collecting, the actual process of collecting data should be fairly straightforward.

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Most likely, you'll be doing some combination of the following:

- Taking **notes**
- Screen/video **recording**,
- **Tracking** in Excel/Google Sheets/Airtable/some kind of git-based csv workflow.

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Taking notes: Data of interest

- Any issues that the participants encounters while performing tasks
- Sequence of actions & unexpected actions
- Any comments – both positive and negative – by the participant
- When taking notes, be specific and clear:
- Example:
 - *Participant could not find the proper link*
 - *Participant clicked on the add to cart link instead of the save to favorites link*

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Data compilation

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Data compilation is the step wherein **data is prepared for analysis**.

Quantitative : Write your Excel formulae in advance, fill out your spreadsheet during testing and be done with it.

Qualitative: Decide how to compile your data in advance

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Since you're dealing with a small sample size, you could simply present individual answers, and that *can* be valuable, but only when that single data point is significant.

Single data points are significant when that individual teaches us something about a larger issue

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For example: "One participant took 20 seconds longer than others to fill out this form. When we asked them why, they said their cat walked across their keyboard."

Not significant.

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A different example: "One participant was confused by the error message. They recently immigrated from China, where the colour red does not definitively signify an error, and the content of the error message didn't actually *explicitly* say it was an error message."

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While this participant might be the only one of the 5 participants that was confused by this, the *reason* they were confused raises a potentially **significant usability problem** for a lot of people.

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The inverse is true as well - aggregate data is only as important as the lessons we take away from it.

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When compiling your data, **don't pass judgement** by ignoring potentially significant data (individual or aggregate) until you've analysed and determined its validity.

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Data analysis

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Data analysis

Data analysis is the step where you find out the **answers** to your questions (and make new **discoveries!**)

The complexity of this step is defined by the **kind of data** you're dealing with, and the **kinds of questions** you asked.

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If you already have a tightly defined hypothesis (i.e. "If users can complete the 'checkout' task in < 120 seconds with no critical errors, the 'checkout' task does not require a redesign"), and you're dealing with quantitative data, analysing those results will be fairly simple.

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Are users regularly able to complete the 'checkout' task in under 120 seconds?

Users averaged completion of the 'checkout' task in 96 seconds. The minimum completion time was 88 seconds. The maximum time was 104 seconds. No critical errors were observed. **We can conclude that the 'checkout' task does not require a redesign.**

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If you have a more loosely defined hypothesis (i.e. "Users may find alternate ways of completing the checkout process"), this step may be more laborious.

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The amount of work you have to do in this stage isn't a sign of success or failure, it's a function of your methods and data types

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Facts vs. Conclusions vs. Speculation

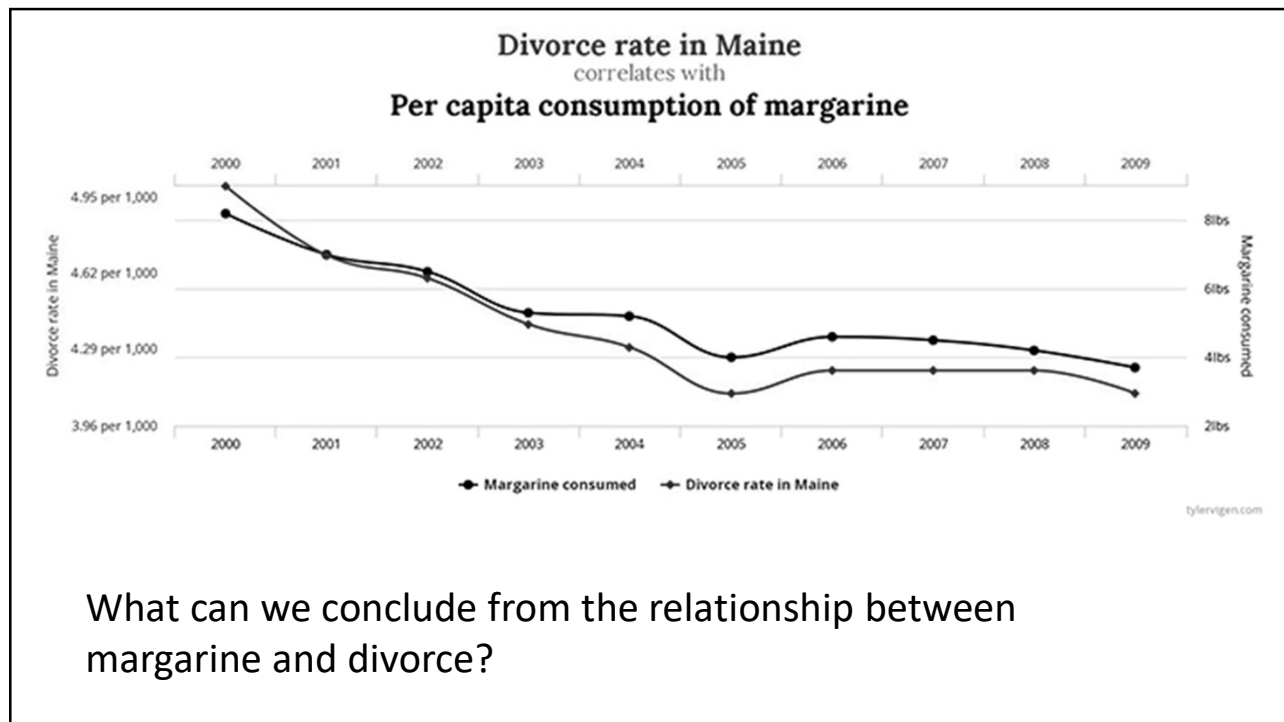
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Facts vs. Conclusions vs. Speculation

In the compilation phase, you are able to generate **facts**.

Facts are not valuable in and of themselves. In the analysis phase, you must **turn facts into answers**.

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A fact **that doesn't answer a question** is **not important**.

A **conclusion supported by facts** is **important**.

Speculation is also important, so long as it is presented as **a line of further inquiry**, and not a conclusion!

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Consider the following fact (“The myopia boom” via [Nature.com](https://www.nature.com)):

Fact: Sixty years ago, 10–20% of the Chinese population was near-sighted.



Credit: ImagineChina/Corbis

Fact: Today, up to 90% of teenagers and young adults in China are near-sighted.

What can we speculate on?

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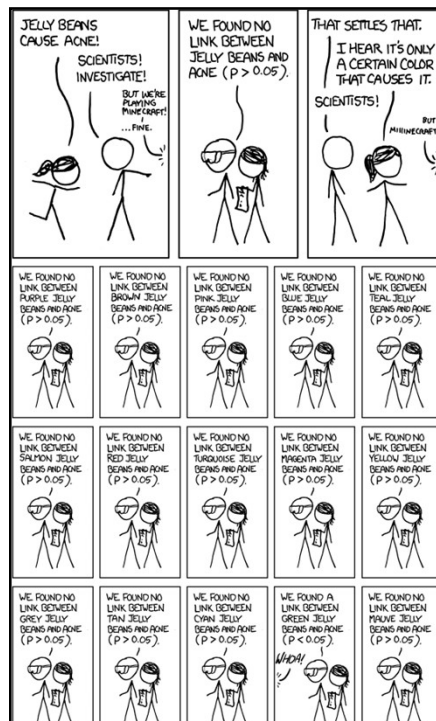
Fact: At a school in southern Taiwan, teachers were asked to send children outside for 80 minutes of their daily break time instead of giving them the choice to stay inside.

After one year, doctors had diagnosed myopia in 8% of the children, compared with 18% at a nearby school.

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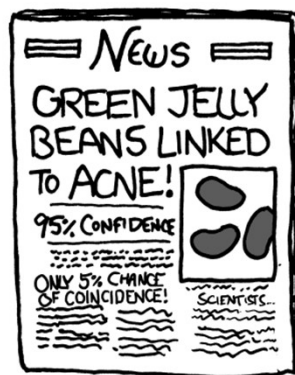
P-hacking

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P-hacking

As a little aside, let's look at a common pattern of **abusing statistical significance**: 'p-hacking'.



Source: <https://xkcd.com/882/>

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What is P-hacking?

- manipulation of data's 'p-value' (statistical significance) in various ways, a.k.a. the likelihood of data being coincidental.
- Leads to biased and misleading results

Your data analysis will be testing a hypothesis - **taking your assumptions and seeing if they are correct.**

<https://projects.fivethirtyeight.com/p-hacking/>

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Task analysis

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Task Analysis

Task scenarios (a.k.a goals) are broken down into **steps** for users to accomplish those goals.

What users actually *do* is another story.

By looking at the **tasks users actually perform**, you can gain valuable insights into how users use your web site.

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Task analysis topics

1. **Trigger:** What prompts users to start their task?
2. **Desired Outcome:** How will users know when the task is complete?
3. **Base Knowledge:** What will the users be expected to know when starting the task?
4. **Required Knowledge:** What the users actually need to know in order to complete the task?
5. **Artifacts:** What tools or information do the users make use of during the course of the task?

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Data analysis is a complicated topic, and it depends largely on what **questions you're trying to answer**, what **topics you're trying to investigate**, and what **type of data** you're working with.

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Reporting your data

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2 types of solutions to propose

1. Improvements
2. Further investigation

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- Keep solutions **specific** and **positive**
- The gold standard is 'elegance'
- Be mindful of **how resource-heavy your solutions are** - and **how certain you are of their efficacy**.
- The more uncertain you are of a solution – then **present multiple options** with **pros and cons**.
- Chart the solutions and **grade for issue severity and actionability**

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Be useful

- Be **specific**
- It's **not the user's fault**
- Don't recommend making **small changes to a big problem**
- Don't **do their redesign for them**
- Align with the **client's priorities**
- **Help the client** prioritize

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Make it readable

More difficult to explain in a simply manner

Focus on what the client care about –
what works, quick wins, and big wins.

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Data presenting

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Presenting a story

Data can be boring.

Anecdotes are fun, but lack credibility.

Use enough data to build a credible story, but focus on **actions that create value.**

How? Focus on people.

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Component of the Week

Headings and text

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Font size

- Larger font size: 16 points or larger for body text
- Serif can decrease reading speed and accuracy for those with dyslexia and limited vision
- Use relative font size in % or em instead of fixed units (px).
 - Allows users to adjust font size based on their preferences and thereby making content more readable
 - `body { font-size: 100%; } h1 { font-size: 2em; } p { font-size: 1.1em; }`

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Headings structure

- Organize content with proper heading levels for a clear hierarchy
- Each page should have only one <H1> as the main heading

<h1>MyWebsite</h1>

<h2>About Us</h2>

<h3>Our Mission</h3>

<h2>Services</h2>

<h3>Web Development</h3>

<h3>Web Development</h3><h1>Welcome to Our Website</h1>

<h2>About Us</h2> <h3>Our Mission</h3> <h2>Services</h2> <h3>Web Development</h3>