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CHAPTER 9

Use Exploratory Analysis

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So your card sort was a success and now you have a great big bundle of data. You might have a file from an online sorting tool, a set of participants’ cards and labels, or a quickly scribbled list of the groups and cards from each session. But how do you figure out what you learned? It’s time to get into analysis.

There are two types of analysis: exploratory and statistical. Both approaches aim to help you spot the key patterns in your data and derive useful insights for your project. This chapter focuses on exploratory analysis. This type of analysis is about playing with your data to pick up some quick lessons and new perspectives. Exploratory analysis is fun and easy. It actually encourages you to dig around and find patterns and easy insights you can use right away.

The type of exploratory analysis I outline in this chapter helps you to examine:

- What groups people form.
- What classification schemes people use.
- What content is placed in each group.
- Where individual cards are placed.
- What words people use to describe their groups.

**Goals and Exploratory Analysis**

Analysis must support your goals of the card sort activity. When planning for analysis, start by looking at your card-sorting goals.

The next sections discuss some of the goals I outlined at the beginning of Chapter 3, “Defining the Need,” and how exploratory analysis helps you achieve them.

**Learning Broad Ideas**

If your goal was to learn broad ideas, you can use either exploratory or statistical analysis (or both). If you only have a small amount of data, stick to exploratory analysis—statistical analysis is probably overkill. If you have
a lot of data, start with exploratory analysis and move to statistical if you feel it will help you gain insights.

**Determining Whether You’re on Track**
With a goal of determining whether you are on track with a project, exploratory analysis is usually sufficient. It can help you check your assumptions against the responses of the participants.

**Investigating an Idea in Detail**
If you want to investigate something in a fair amount of detail, you can use exploratory analysis, but you will need to make sure you spend enough time on it to dig deep.

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**My Examples**

In this and the next chapter, I use two example card sorts to illustrate the analysis process and the types of issues that arise.

The first is for the Information Architecture Summit. For this card sort, I used titles of presentations from three years of the conference. My goal was to learn about how people thought of this content, identify potential organization schemes and, for each organization scheme, determine the main groups that were formed. The card sort contained 99 cards and 19 participants, and the data was originally collected remotely with a range of software tools.

The second is a card sort I run when I teach information architecture workshops. The idea is that the workshop participants are designing a website for a wine region. The content features examples of information that might be included in that type of website—lists of wineries, lists of accommodation and restaurants, local services, and things to see and do. In this case, the card sort contained 39 cards and was completed by 10 participant teams.

For both card sorts, I put the data into my own analysis spreadsheet and statistical software XLSTAT for analysis.

The data for each is available from the book’s website, so you can play around with it as well.

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1 [www.rosenfeldmedia.com/books/cardsorting/blog/card_sort_analysis_spreadsheet/](http://www.rosenfeldmedia.com/books/cardsorting/blog/card_sort_analysis_spreadsheet/)

Preparing for Exploratory Analysis

If your card sort is very simple—with a small number of cards and small number of participants—you may not need to do any preparation. You might be able to get away with a photograph of the cards from a session or a quick write-up of the results from each participant. See Figures 9.1 and 9.2 for examples.

Most of my card sorts are somewhat complex and have many participants. As such, I do most of my exploratory analysis using spreadsheets.

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I recently used the card-sorting spreadsheet template for an exercise with internal employees with one of our channels. It was invaluable when it came time to translate the results to business teams and execs looking to make heads or toes of the data.

—Robert Scrobe (email)
I have created an Excel spreadsheet that I use for exploratory card-sorting analysis. (The examples in this chapter use it.)

The spreadsheet helps you to record the outcomes, explore your data, and present a summary of the card sort. It manages up to 40 participants and 300 cards. The spreadsheet, plus instructions, is available from the book’s website. (See www.rosenfeldmedia.com/books/cardsorting/blog/card_sort_analysis_spreadsheet/index.php.)

**Step 1: Enter Data**

Using my analysis spreadsheet, enter your data for each participant. Fill in the card number in the first column and the label of the group they made in the second. A formula automatically pulls in the card name (see Figure 9.3).

![Figure 9.3]

I list the group and card for each participant.

This will automatically populate a big matrix of all the data—each row represents a card and each column a participant (see Figure 9.4). The row and column intersection has the label for each group. I typically print this out and put it on the wall so I can see everything at once (see Figure 9.5).
Preparing for Exploratory Analysis

### Step 2: Standardize Labels

Participants often use very similar, but not identical, words to create group labels. This makes analysis tricky—it is hard to see any patterns when there are tiny differences getting in the way. To make this process easier and more meaningful, you need to create a set of consistent labels that enables the spreadsheet to group very similar things together more easily.
To do this, create a list of all the categories that participants used. Look at the words people have used for labels and, whenever you find labels that are very similar, either in language or idea, create a standardized label. Don’t combine them unless the word or the idea is very similar, or you will start combining results that don’t belong together. When choosing the term for the standardized label, use the one that has been used by most participants or that represents the idea most clearly.

An example from the winery card sort is in the Table 9.1. This shows the most common term, some variants, and the standardized term I used.

**TABLE 9.1 STANDARDIZE TERMS**

<table>
<thead>
<tr>
<th>Most Common Term</th>
<th>Variants</th>
<th>Standardized Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the region</td>
<td>About region, The region</td>
<td>About the region</td>
</tr>
<tr>
<td>About wine</td>
<td>About wines, About the wine</td>
<td>About wine</td>
</tr>
<tr>
<td>Accommodation</td>
<td>Places to stay, Sleeping</td>
<td>Accommodation</td>
</tr>
<tr>
<td>Events</td>
<td>Wine events, Annual events</td>
<td>Events</td>
</tr>
<tr>
<td>Eating and drinking</td>
<td>Eating and drinking, Food and drink</td>
<td>Eating and drinking</td>
</tr>
</tbody>
</table>

Continue until you have a standardized label for every group. In many card sorts, participants may have created hierarchical groups. Although these are interesting for your analysis, at this step it is easier if you have a flat hierarchy. As you go through the process of standardizing labels, get rid of the hierarchies—use either the broad or detailed labels depending on which fits your cards best.

Use these labels for the analysis steps. (Make sure you keep a copy of the original labels used by participants as well, in case you want to check the original data.)

This will populate another big matrix, which you may also like to print, as shown in Figure 9.6.
Prefering for Exploratory Analysis

FIGURE 9.6
The wine region card sort matrix, showing the standardized labels.

It will also populate a sheet that shows how often a card was placed in each category (this, too, is handy to print), as shown in Figure 9.7.

FIGURE 9.7
The analysis spreadsheet generates another sheet—this one shows how often a card was placed in a category.
Start the Analysis
Your detailed analysis should encompass all the different areas that you are exploring, including analyzing groups, card placement, labels, organizational schemes, how accurately people have grouped content, participant comments, and the closed card sort. We’ll look at all these areas.

Analyze Groups
First, start with the groups that your participants have created, as this will lead you to figure out how they think and categorize. I’ve broken this into two steps.

Step 1: Examine the Groups Your Participants Created
Because one of the main uses of card sorting is to determine what groups exist in a set of content, the main part of exploratory analysis is to look at the groups that people created.

This is where it can be very handy to have the big matrix (see Figure 9.7) printed out and stuck to the wall—it helps you see everything at once. When looking at this, take note of the following details:

- The actual groups people created.
- Whether everyone did a similar thing, or whether the results were wildly different.
- What confirmed your expectations.
- If there are any surprises.

As an example of the types of things you might spot, my analysis of data from the IA Summit card sort showed the following:

- There were many more groups than I expected, and they were very diverse. I hadn’t realized there were so many ways that content could be grouped.
- Some participants had created quirky labels that I would need to dig into. (For example, Nuts and Bolts could mean more than one thing, Metatags for All Seasons was intriguing, I hadn’t a clue what Boundaries meant, and what on earth is IA for You!)
There were quite a few combined groups (such as Taxonomy, Tags, and Classification) that I’d also have to look at more deeply.

I was also surprised that a lot of people created a group called Case Studies—such a large proportion of the content is in case studies that I didn’t think people would use it as a group.

At this step, you are likely to spot all sorts of things you find interesting and want to follow up on later. Make a note of them as you go.

**Step 2: Start Deeper Analysis of Groups**

Now that you have a good idea of the groups that people created and a set of standard labels, it is time to explore the data in some depth.

Start by identifying groups that were used consistently by participants. Look at each group that participants created and note which cards they included in it (see Figure 9.8).

**FIGURE 9.8**

In the wine region sort, everyone created a category called About the Region with some very consistent cards.
Mostly, when participants create similar groups, they will contain similar cards. This is great because this type of group usually represents an idea that everyone understands and means they have similar expectations. For example, in card sorts on corporate sites, I almost always find a group called About Us that has a consistent set of cards.

Sometimes participants will create similarly labeled groups but include quite different cards. This happened with the IA Summit card sort. Eighteen participants created a group called Case Studies or something similar. (I was the only person who didn’t, which I thought was especially interesting.) When I looked more deeply at this group, I found that cards included were very diverse—a few cards were almost always in the group, but out of the 99 cards in the sort, more than half were put into that group by at least one participant. This was very interesting, so I dug deeper. The cards placed consistently were those that had the words “case study” in their titles, or had a title that clearly indicated it was a real-world example of a project. The cards that were put in that group least frequently were all ones that didn’t fit strongly anywhere else. The remainder of the cards depended on the participant’s other groups—sometimes they fit better with other groups, sometimes not. See Figure 9.9.

![Figure 9.9](Image)

**FIGURE 9.9**
The IA Summit card sort, showing how diverse the Case Studies group was.
Start the Analysis

While you are looking at cards in each group, make sure you have a good look at the Other, Miscellaneous, and Don’t Know groups (most sorts have them). These groups can help you to understand content that was poorly labeled, that participants didn’t understand, or that just didn’t fit anywhere.

After you have finished looking at the groups to see what was similar, do the same and see what was different. For most of my card sorts, this process is the most useful. Differences usually provide much better insights than similarities.

Analyze Card Placement

Another way of looking at the data is to examine each card and see what groups it was assigned to. The analysis process is a bit different than the previous steps. Here it is less important to look for consistency—you have done that when looking at the groups. Looking at each card gives you an idea of what participants think a card means.

Again, the example shown in Figure 9.10 will help.

![Figure 9.10](image)

**FIGURE 9.10**
Examining each card and the groups it was in.
For example, participants put the card labeled Making Personas More Powerful into these groups:

- User research (twice)
- User centered design issues
- Interaction design
- Deliverables (twice)
- Methods and techniques
- IA methodologies
- Design tools: research and innovation
- Learning from the user
- IA basics
- Fundamentals
- Usability methods
- Techniques (twice)
- Practical: tools and methods for IAs
- Development/testing
- Usability
- IA fundamentals

Even this simple example is interesting. Clearly, some people think of personas as having to do with users (a topic), some as a method (something you do), and some as a deliverable (an end result).

I may not do anything explicitly with that information, but it helps inform me as to how my users think about a topic.

Don’t over-analyze this, though. It only tells you a small amount about how the users think—given most people will have put the card in one
Analyze Labels

While you are looking at groups, it’s important to pay particular attention to the way they have been labeled. For each group, look at what they called it. Pay attention to:

- **Similarities in terminology.** For a particular idea, see how similar the label was. For example to me, About the Region, The Region, and About Region all represent the same idea, and I’d feel comfortable using any as a navigation label.

- **Differences in terminology.** However, Things to Do, and Attractions and Activities are quite different words that still represent a fairly clear concept. You could probably use any of them in navigation and people would understand what the category was about. I’d choose the one that works best with other category labels.

- **Formality of language.** Sometimes, people will use very precise language (Dining, Restaurants), and sometimes informal (Places to Eat). Very different label types may tell you something about the way your audience uses language.

Analyze Organizational Schemes

A more general trend to look for is whether people have created groups according to a particular organization scheme.

For example, on a movie site, people may organize the cards by genre, director, or year. On intranet projects, some participants sort the cards according to audience, others according to task, and most by topic.

Most often, you won’t see a consistent scheme, but a strange mixture of schemes or a simple grouping by topic. At the end of the sort, I like to ask participants whether they have used an underlying method—they may be able to explain it to you, or may not have used one at all.
Analyze How Accurately Participants Have Grouped Content
I also like to look at how accurately participants have grouped the cards. I know that I said before that there are no wrong answers. Well, that’s true, but most content has some type of internal correctness, and it is interesting to examine how close participants came to that correctness.

For the IA Summit card sort, many of the cards that ended up in a group called Case Study or something similar actually weren’t case studies at all. A case study is a concrete example about a particular situation, not a presentation about theory or about a new idea or approach. I thought this was quite interesting because it told me that titles didn’t communicate the type of presentation (well, I knew that, but this confirmed it), that Case Study was perhaps a looser concept for the participants than it was for me, and that it was possibly being used as an Other category.

In a recent intranet card sort, I noticed that some participants organized the cards according to who was responsible for it, but placed some cards in the “wrong” group. This indicated to me that some of the content didn’t fit neatly in the organization (something that was supported by other research) and that participants really weren’t sure who was responsible for some things.

But be careful with how you interpret accuracy. While you may have found that the technically correct structure has some flaws, there may be other reasons that people are inaccurate. You may not have labeled the content clearly, or participants may not have understood the content well or may not have been very careful during the card sort.

On a related topic, sometimes you’ll spot something that just seems wrong—something that is out of step with everything else that a participant has done. This can happen—people can make mistakes during the activity, the facilitator may transcribe something incorrectly, or you may accidentally jumble some cards. When I was analyzing the IA Summit card sort, I found two strange placements in the data from my own sort, and I think I must

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3 By the way, it is usually not a good idea to organize an intranet (or a website for that matter) according to the organizational chart, but that doesn’t mean people won’t do it in the card sort.
Start the Analysis

have dropped cards into the wrong category in the software tool. If you are sure there is a mistake, don’t hesitate to fix it—it is better to do the analysis without obvious errors in the data.

**Analyze Participant Comments**

Don’t forget to analyze the other data that you may collect during the card sort—for example, any notes that you have made, as well as the participant comments. I usually try to capture general comments that participants make when working in teams, information on which cards were put together first and which were left to the end, and any interesting spatial patterns (for more detail of things to collect see Chapter 4, “Choose the Method”). I also make sure I capture the exact words that people use, as this phrasing can be another potential source of ideas for groups and labels.

I often find that the participant comments provide some of the best insights into reasons people create particular types of groupings and how they think. It is important not to lose this when you start to analyze the data. It is easy to get so drawn into data that the comments go unanalyzed.

**Analyze a Closed Card Sort**

Closed card sorts are much simpler to analyze than open sorts. I document the result with a big spreadsheet—categories in the top row and cards in the first column (see Figure 9.11). Then I simply count how many times each participant placed a card in a particular category.
When you’re analyzing, look at the following information:

- Differences between what you thought would happen and what participants did. Sometimes you’ll have a clear idea about where you thought content should go and participants will do something quite different.

- Determine if the content is evenly distributed between categories or clumped in a few. If it is clumped, those categories may be too broad for your content, and you may want to break them down (or you may just have provided more content for those than others).

- Check any content that is placed in a number of categories. If you have a lot of content like this, your categories may overlap too much, or your content may not be clearly defined.
**Chapter 9 Summary/Tips**

If running the card sort was the fun part, analysis is the painful part, at least until you get going. Exploratory analysis is like playing around in the data—looking for connections that make you think “hey, that’s interesting” or that show patterns of behavior. You can use exploratory analysis for most card sorts, unless you collect too much data, and then it’s better to use statistical analysis, covered in Chapter 10, “Use Statistical Analysis.”

When doing exploratory analysis, look for:

- What groups were created.
- Where cards were placed.
- What people used for group labels.
- What organizational scheme people used.
- Whether people created accurate or inaccurate groups.

And don’t forget to analyze the participants’ comments if you have them.