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storytelling with data Uis PRACTICE!

cole nussbaumer knaflic

illustrated by catherine madden

WILEY

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about the author

Cole Nussbaumer Knaflic tells stories with data. She is the founder and CEO of *storytelling with data* (SWD) and author of the best-selling book, *storytelling with data: a data visualization guide for business professionals* (Wiley, 2015), which has been translated into a dozen languages, is used as a textbook by more than 100 universities, and serves as the course book for tens of thousands of SWD work-shop participants. For nearly a decade, Cole and her team have delivered knock-out interactive learning sessions highly sought after by data-minded individuals, companies, and philanthropic organizations all over the world. They also help people create graphs that make sense and weave them into compelling stories through the popular SWD blog, podcast, and monthly challenge.

Prior to SWD, Cole's unique talent was honed through analytical roles in banking, private equity, and as a manager on the Google People Analytics team. At Google, she used a data-driven approach to inform innovative people programs and management practices and traveled to Google offices throughout the US and Europe to teach the course she developed on data visualization. Cole has acted as an adjunct faculty member at the Maryland Institute College of Art (MICA), where she taught Introduction to Information Visualization, and regularly guest lectures at prominent universities in the US and beyond.

Cole has a BS in Applied Math and an MBA from the University of Washington. When she isn't ridding the world of ineffective graphs, Cole is undertaking the adventures of parenting three young children with her husband at home in the Midwest and on travels abroad.

introduction

I often receive emails from people who have read my first book, *storytelling with data*, or attended one of our workshops by the same name. There are notes of encouragement, support for the work we're doing, and plenty of questions and requests. I especially love hearing the success stories: reports of having influenced a key business decision, spurred an overdue budget conversation, or prompted an action that positively impacted an organization's bottom line. The most inspiring accounts are those of personal growth and recognition. One grateful reader applied *storytelling with data* principles during an interview, helping him land a new job. All of this success is the result of people from different industries, functions, and roles committing time to improve their ability to communicate with data.

I also hear regularly from people who want *more*. They've read the book and understand the potential impact of telling stories with data, but struggle with the practical application to their own work. They have additional questions or feel they are facing nuanced situations that are keeping them from having the desired impact. It's clear that people crave more guidance and practice to help fully develop their data storytelling skills.

Others reach out who are—or would like to be—teaching the lessons outlined in *storytelling with data*. In many cases, they are university instructors (it's amazing to think that *storytelling with data* is used as a textbook at more than 100 universities around the world!) or they are a part of a learning and development function within an organization, interested in building an in-house course or training program. There are also leaders, managers, and individual contributors who want to upskill their teams or provide good coaching and feedback to others.

This book addresses all of these needs for individuals, teachers, and leaders. By sharing invaluable insight through many practical examples, guided practice, and open-ended exercises, I will help build your confidence and credibility when it comes to applying and teaching others to apply the *storytelling with data* lessons.

How this book is organized & what to expect

Each chapter starts with a brief recap of the key lessons that are covered in *storytelling with data*. This is followed by:

practice with Cole: exercises based on real-world examples posed for you to consider and solve, accompanied by detailed step-by-step illustration and explanation

practice on your own: more exercises and thought-provoking questions for you to work through individually without prescribed solutions

practice at work: thoughtful guidance and hands-on exercises for applying the lessons learned on the job, including practical instruction on when and how to solicit useful feedback and iterate to refine your work from good to great

Much of the content you'll encounter here is inspired by our *storytelling with data* workshops. Because these sessions span many industries, so do the examples upon which I'll draw. We'll navigate between different topics—from digital marketing to pet adoption to sales training—giving you a rich and varied set of situations to learn from as you hone your data storytelling skills.

Warning: this is not a traditional book that you sit and read. To get the most out of it, you'll want to make it a fully interactive experience. I encourage you to highlight, add bookmarks, and take notes in the margins. Expect to be flipping between pages and examples. Draw, discuss with others, and practice in your tools. This book should be beat up by the time you're done with it: that will be one indication that you've utilized it to the fullest extent!

How to use this book in conjunction with the original

SWD: let's practice! works as a great companion guide to *storytelling with data: a data visualization guide for business professionals* (Wiley, 2015; henceforth referred to as *SWD*). It will not replace the in-depth lessons taught there, but rather augment them with additional dialogue, many more examples, and a focus on hands-on practice.

This book generally follows the same chapter structure as *SWD* with a couple of differences, as shown in Figure 0.1. Chapters 7, 8, and 9 are comprehensive exercises that offer additional guidance and practice applying the lessons covered throughout *SWD* and here.

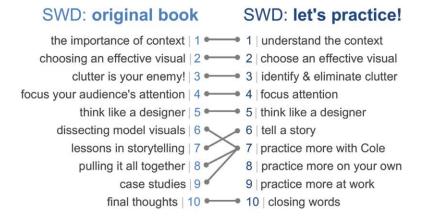


FIGURE 0.1 How SWD chapters correspond to this book

If you've picked up both *SWD* and *SWD: let's practice!*, you can use them in a couple of ways. You can read *SWD* once from start to finish to understand the big picture before digging into specifics. From there, you can determine which lessons you'd like to practice and can dive into the relevant sections within this book. Alternatively, you can peruse *SWD* one chapter at a time, then turn here to practice what you've read through hands-on exercises.

If you've already read *SWD*, feel free to jump right in as you will be familiar with these topics.

And if you've only bought this book, there is enough context within to give you the basics. You can always pick up a copy of *SWD* or check out the many resources at storytellingwithdata.com for supplemental guidance.

Do you want to learn or teach?

SWD: let's practice! was written with two different audiences in mind, united by a common goal—to communicate more effectively with data. Broadly, these two distinct groups are:

- 1. Those wanting to learn how to communicate more effectively with data, and
- 2. Those wanting to provide feedback, coach, or teach others how to communicate more effectively with data.

While the content is relevant for both groups, there will be subtle differences when it comes to getting the most out of it. Depending on your goal, the following strategies will maximize efficiency.

I want to learn to communicate more effectively with data

Because some later content builds upon or refers back to earlier content or exercises, begin with Chapter 1 and work through in numerical order. After that, you'll likely find yourself revisiting sections of interest and focusing your practice based on your specific needs and goals.

Start by reviewing the lesson recap for a given chapter. If you encounter anything that isn't familiar and you have access to *SWD*, turn back to the corresponding chapter for additional context.

After that, move straight into the *practice with Cole* exercises. First, work through each on your own—don't just jump to the solution (you're only cheating yourself!). If you're using this book with others, many of these activities lend themselves well to group discussion. The exercises in this section don't necessarily need to be worked through in order, though they do occasionally build upon prior exercises.

Once you've spent time on the given exercise (not just in your head: I strongly encourage you to write, draw, and use your tools), read through the provided solution. Observe where there are similarities and differences between that and your response. Be aware that there are very few situations where there is a single "right" answer. Some approaches are better than others, but there are usually numerous ways to solve a given problem. My solutions illustrate just one method that applies the lessons covered in *SWD*. Do read through all of the solutions, as many points of advice, tips, and nuances will arise that you will find helpful and insightful.

After completing the *practice with Cole* exercises, turn to the *practice on your own* section for more. These problems are similar to those in the first section, except that they don't include any predetermined solutions. If you are working in a group, have individuals first tackle a given exercise separately, then come together to present and discuss. Invariably, different people approach exercises in distinct ways, so you can learn a good deal through this sharing process. Conferring with others is also great practice for talking through your design choices and decisions, which can further clarify thinking and help improve future application. Whether completing on your own or as part of a group, get feedback on your recommended approach. This will help you understand if what you propose is working, as well as where you can iterate to further improve effectiveness.

If, at any time, you find yourself with a current project that would benefit from applying the lessons outlined in a specific chapter, flip straight to the *practice at work* exercise section within that chapter. These contain guided practice that can be applied directly to real-world work situations. The more you practice implementing the various lessons in a work setting, the more they will become second nature.

Each chapter ends with discussion questions related to the lessons. Talk through these with a partner or perhaps even use as the basis of a larger book club conversation.

While the exercise sections in each chapter focus primarily on applying the given lesson, Chapters 7, 8, and 9 offer more comprehensive examples and exercises for applying the entire *storytelling with data* process. **Chapter 7** ("practice more with Cole") contains full-blown case studies presented for you first to solve, followed by my thought process for tackling and completing. **Chapter 8** ("practice more on your own") has additional case studies and robust exercises to practice the process without prescribed solutions. **Chapter 9** ("practice more at work") has tips on how to apply the *storytelling with data* process at work, guides to facilitate group learning, and assessment rubrics that you can use to evaluate your own work and seek feedback from others.

As part of your learning, it's also imperative that you set specific goals. Communicate these to a friend, colleague, or manager. See **Chapter 9** for more on this.

Next, let's talk about how those interested in teaching others to effectively tell stories with data can use this book.

I want to provide feedback, coach, or teach others

You might be a manager or leader who wants to give good feedback on a graph or presentation from your team. Or perhaps you have a role in learning and development and are building training programs around how to communicate effectively with data. You may be a university instructor teaching students this important skill. In all of these scenarios, the chapter recap will provide an overview of the given lesson. After that, you will likely find the most value in the second and third exercise sections: *practice on your own* and *practice at work*. Each chapter ends with discussion questions that can be assigned, incorporated into tests, or used as the basis of group conversations.

The *practice on your own* section within each chapter contains targeted exercises helping those undertaking them practice the lessons outlined in the respective chapter and relevant section of SWD. These can be used as the basis of hands-on exercises in a classroom setting or assigned as homework. Some will also lend themselves well for use as group projects. These examples are provided without prescribed solutions. The problems in these sections can also work as models: consider where you could substitute data or visuals to create unique exercises.

Practice at work's guided exercises can be used directly in a work setting as part of an ongoing program for professionals. They can be assigned, completed, and discussed in a group or classroom setting. Managers looking to develop their team's skills may ask them to focus on specific exercises through their work or projects, or use with individuals as part of a goal-setting or career development process. For those teaching, **Chapter 9** has additional *practice at work* exercises, including facilitator guides and assessment rubrics.

A quick note on tools

Many tools are available for visualizing data. You may use spreadsheet applications like Excel or Google Sheets. Perhaps you are familiar with chart creators such as Datawrapper, Flourish, or Infogram or data visualization software like Tableau or PowerBI. Maybe you write code in R or Python or leverage Javascript libraries like D3.js. Regardless of your tool of choice, pick one or a set of tools and get to know them as best you can so the instrument itself doesn't become a limiting factor for effectively communicating with data. No tool is inherently good or evil pretty much any can be used well or not so well.

When it comes to undertaking the exercises in this book, you are encouraged to use whatever means for visualizing the data you have at your disposal. These may be tools you use currently, or possibly one or more that you'd like to learn. The visuals that illustrate the *practice with Cole* solutions were all created in Microsoft Excel. That said, this is certainly not your only choice and I welcome you to use other tools. We are also adding solutions built in other tools to our online library for you to explore.

On the topic of tools, there are a couple I highly recommend having on hand while reading this book: a pen or pencil and paper. You may consider dedicating a notebook to use as you work your way through the various exercises. Many direct you to write and sketch. There are important benefits to low-tech physical creation and iteration that we'll explore and practice, which can make the process of working in your technical tools more efficient.

Where to get the data

Downloads for the data throughout this book and for all of the visuals shown in the solutions for the *practice with Cole* exercises can be found at storytellingwith-data.com/letspractice/downloads.

Let's get started

There has never been a time in history where so many people have had access to so much data. Yet, our ability to tell stories with our graphs and visualizations has not kept pace. Organizations and individuals that want to move ahead must recognize that these skills aren't inherent and invest in their development. With a thoughtful approach, we can all tell inspiring and influential stories with our data.

I'm excited to help you take your data storytelling to the next level.

Let's practice!

understand the context

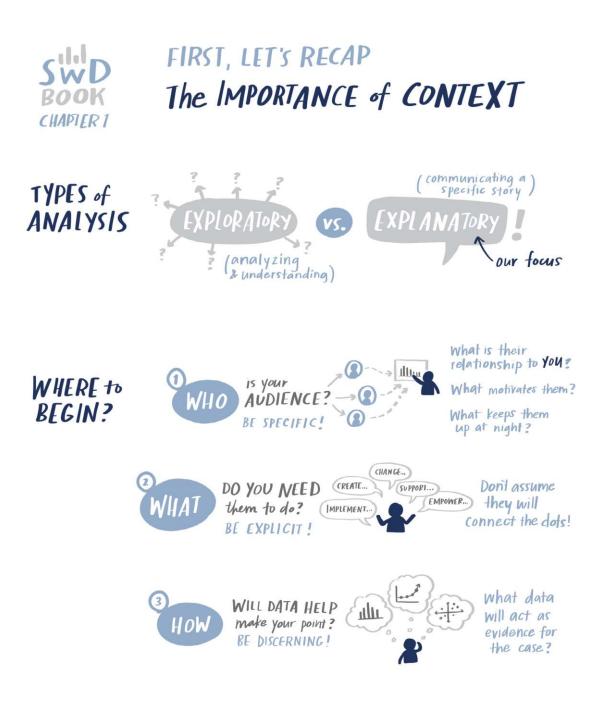
A little planning can go a long way and lead to more concise and effective communications. In our workshops, I find that we allocate an increasing amount of time and discussion on the very first lesson we cover, which focuses on context. People come in thinking they want data visualization best practices and are surprised by the amount of time we spend on—and that they *want* to spend on—topics related more generally to how we plan for our communications. By thinking about our audience, message, and components of content up front (and getting feedback at this early stage), we put ourselves in a better position for creating graphs, presentations or other data-backed materials that will meet our audience's needs and our own.

The exercises in this chapter focus primarily on three important aspects of the planning process:

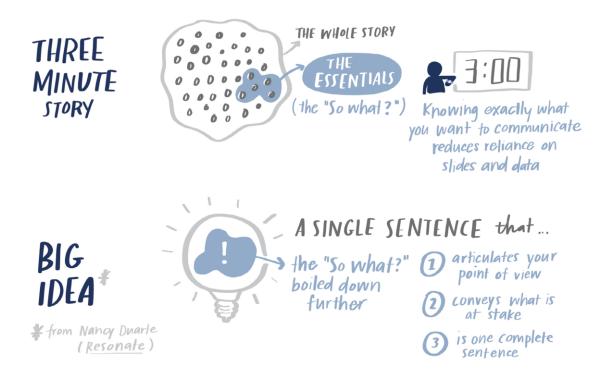
- 1. **Considering our audience:** identifying who they are, what they care about, and how we can better get to know them and design our communications with them in mind.
- 2. Crafting and refining our main message: the Big Idea was introduced briefly in *SWD*; here, we'll undertake a number of guided and independent exercises to better understand and practice this important concept.
- 3. **Planning content:** storyboarding is another concept that was introduced in *SWD*—we'll look at a number of additional examples and exercises related to what we include and how we organize it.

Let's practice understanding the context!

First, we'll review the main lessons from SWD Chapter 1.



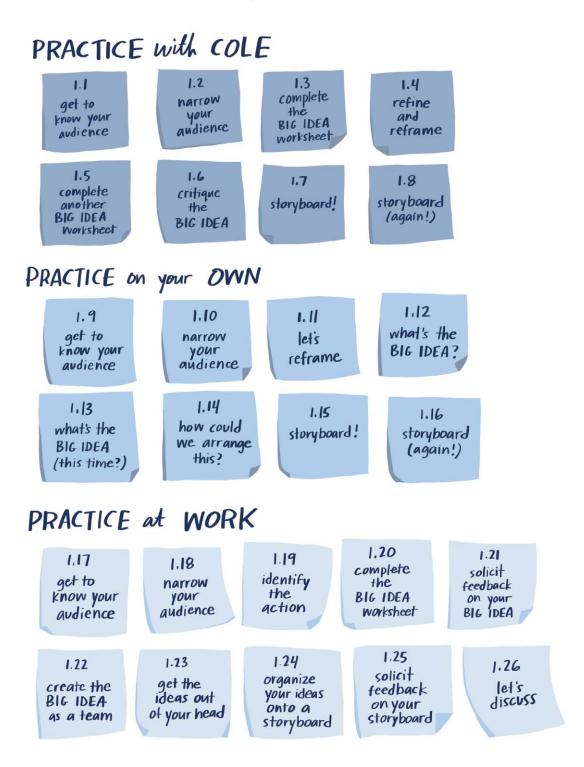
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5

PRACTICE with COLE

When communicating with data, don't do it for yourself - do it for your audience! The following exercises will help you consider your audience, craft your message, and plan your content, setting you up for effective communication.

Exercise 1.1: get to know your audience

Who is my audience? What do they care about? These may seem like obvious questions to ask ourselves when we step back and think about it, but too often we completely skip this step. Getting to know our audience and understanding their needs and what drives them is an important early part of the process for successfully communicating with data.

Let's examine what this looks like in the wild and how we can get to know a new audience.

Imagine you work as a People Analyst (a data analyst within the Human Resources, or HR, function) at a medium-sized company. A new head of HR has just joined the organization (she is now your boss's boss). You've been asked to pull together an overview with data to help the freshly hired head of HR get up to speed with the different parts of the business from a people standpoint. This will include things like interview and hiring metrics, a headcount review across different parts of the organization, and attrition data (how many are leaving and why they are leaving). Some of your colleagues in other groups within HR have already had meet-and-greets with the new leader and given their respective synopses. Your direct manager recently had lunch with the new head of HR.

How could you get to better know your audience (the new head of HR) in this circumstance? List three things you could do to understand your audience, what she cares about, and how to best address her needs. Be specific in terms of what questions you would seek to answer. Get out your pen and paper and physically write down your responses.

Solution 1.1: get to know your audience

Since this isn't likely a case where we can ask our audience directly what she cares about, we'll need to get a little creative. Here are three things I could do to set myself up for success when it comes to better understanding my audience and what matters to her most:

- Set up time to get a debrief from colleagues who have already met with the new leader. Talk to those who have had conversations with the new head of HR. How did those discussions go? Do they have any insight on this new leader's priorities or points of interest? Is there anything that *didn't* go well from which you can learn and adapt?
- 2. Talk to my manager to get insight. My manager has lunched with the new leader: what insight did he get about potential first points of focus? I also need to understand what my manager sees as important to focus on in this initial meeting.
- 3. Use my understanding of the data and context plus some thoughtful design to structure the document. Given that I've been working in this space for a while, I have a big picture understanding of the different main topics that someone new to our organization will assumably be interested in and the data we can use to inform. If I'm strategic in how I structure the document, I can make it easy to navigate and meet a wide variety of potential needs. I can provide an overview with the high level takeaways up front. Then I can organize the rest of the document by topic so the new leader can quickly turn to and get more detail on the areas that most interest her.

Exercise 1.2: narrow your audience

There is tremendous value in having a specific audience in mind when we communicate. Yet, often, we find ourselves facing a wide or mixed audience. By trying to meet the needs of many, we don't meet any specific need as directly or effectively as we could if we narrowed our focus and target audience. This doesn't mean that we don't still communicate to a mixed audience, but having a specific audience in mind first and foremost means we put ourselves in a better position to meet that core audience's needs.

Let's practice the process of narrowing for purposes of communicating. We'll start by casting a wide net and then employ various strategies to focus from there. Work your way through the questions and write out how you would address them. Then read the following pages to better understand various strategies for narrowing our audience.

You work at a national clothing retailer. You've conducted a survey asking your customers and the customers of your competitors about various elements related to back-to-school shopping. You've analyzed the data. You've found there are some areas where your company is performing well, and also some other areas of opportunity. You're nearing the point of communicating your findings.

QUESTION 1: There are a lot of different groups of people (at your company and potentially beyond) who could be interested in this data. Who might care how your stores performed in the recent back-to-school shopping season? Cast as wide of a net as possible. How many different audiences can you come up with who might be interested in the survey data you've analyzed? Make a list!

QUESTION 2: Let's get more specific. You've analyzed the survey data and found that there are differences in service satisfaction reported by your customers across the various stores. Which potential audiences would care about this? Again, list them. Does this make your list of potential audiences longer or shorter than it was originally? Did you add any additional potential audiences in light of this new information?

QUESTION 3: Let's take it a step further. You've found there are differences in satisfaction across stores. Your analysis reveals items related to sales associates as the main driver of dissatisfaction. You've looked into several potential courses of action to address this and determined that you'd like to recommend rolling out sales associate training as a way to improve and bring consistency to service levels across your stores. Now who might your audience be? Who cares about this data? List your primary audiences. If you had to narrow to a specific decision maker in this instance, who would that be?

Solution 1.2: narrow your audience

QUESTION 1: There are many different audiences who might care about the back-to-school shopping data. Here are some that I've come up with (likely not a comprehensive list):

- Senior leadership
- Buyers
- Merchandisers
- Marketing
- Store managers
- Sales associates
- Customer service people
- Competitors
- Customers

Eventually, *everyone in the world* may care about this data! Which is great, but not so helpful when it comes to narrowing our audience for the purpose of communicating. There are a number of ways we can narrow our audience: by being clear on our findings, specific on the recommended action, and focused on the given point in time and decision maker. The answers to the remaining questions will illustrate how we can focus in these ways to have a specific audience in mind when we communicate.

QUESTION 2: If service levels are inconsistent across stores, the following audiences are likely to care most:

- Senior leadership
- Store managers
- Sales associates
- Customer service people

QUESTION 3: We want to roll out training—that sparks some questions for me. Who will create and deliver the training? How much will it cost? With this additional clarity, some new audiences have entered the mix:

- Senior leadership
- HR
- Finance
- Store managers
- Sales associates
- Customer service people

The preceding list may all *eventually* be audiences for this information. We've noted inconsistencies with service levels and need to conduct training. HR will have to weigh in on whether we can meet this need internally or if it will require us to bring in external partners to develop or deliver training. Finance controls the budget and we'll have to figure out where to get the money to pay for this. Store managers will need to buy-in so they are willing to have their employees spend time attending the training. The sales associates and customer service people will have to be convinced that their behavior needs to change so that they will take the training seriously and provide consistent high quality service to customers.

But not all of these groups are immediate audiences. Some of the communications will take place downstream.

To narrow further, I can reflect on where we are at in time: today. Before we can do any of the above, we need approval that rolling out training is the right course of action. A decision needs to be made, so another way of narrowing my audience is to be clear on timing as well as who the decision maker (or set of decision makers) is within the broader audience. In this instance, I might assume the ultimate decision maker—the person who will either say, "yes, I'm willing to devote the resources; let's do this," or "no, not an issue; let's continue to do things as we have been"—is a specific person on the leadership team: the head of retail sales.

In this example, we have employed a number of different ways to narrow our target audience for the purpose of the communication. We narrowed by:

- 1. Being specific about what we learned through the data,
- 2. Being clear on the action we are recommending,
- 3. Acknowledging what point we're at in time (what needs to happen now), and
- 4. Identifying a specific decision maker.

Consider how you can use these same tactics to narrow your audience in your own work. Exercise 1.18 in *practice at work* will help you do just that. But before we get there, let's continue to practice together and turn our attention to a useful resource: the Big Idea worksheet.