

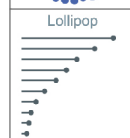
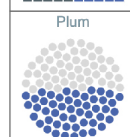
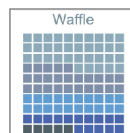
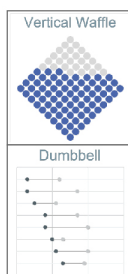
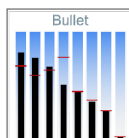
STORYTELLING CHARTS



Visualize Vertical Logic in PowerPoint

*A Step-by-Step Guide
and Software to Speedy
Impactful Presentations*

SAM SCHREIM



"Free Add-in Included"

www.StorytellingCharts.com

Storytelling Charts: Visualize Vertical Logic in PowerPoint

A Step-by-Step Guide and Software to Speedy Impactful
Presentations

BY

SAM SCHREIM

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Important

Before Getting Started, Get the Most Out of This Book:
Download the Visual Companion Pack

Bring this book to life with downloadable graphs, tables and slides. I've received feedback that the static visuals don't allow you to fully experience the strategies. That's why I'm providing a companion download, containing **70+ pages** of high resolution, easy-to-read versions of every chart and diagram.

But we're taking it a step further! To help you immediately put these storytelling techniques into practice, a free PowerPoint add-in is also available. This add-in will streamline your workflow and empower you to create compelling data visualizations directly within PowerPoint. To install it, visit

www.storytellingwithcharts.com

With these dynamic digital assets in hand, you'll be able to follow along and visually grasp each concept. See firsthand how mundane datasets transform into captivating revelations that compel audiences. Watch as intricate information becomes unforgettable narratives.

Unlock the full potential within these pages. Visit

<https://stc.how/freecompanion>

now to download the complete visual companion set and actively apply what you learn. With crystal clear charts and visuals at your fingertips, abstract ideas will spring to life, propelling your Storytelling with Charts skills.

Claim your visual learner's package now – let's bring this book into full view together!

Table of Contents

ABOUT THE AUTHOR	13
INTRODUCTION	15
THE ANATOMY OF STC-BASED PRESENTATION	18
<i>Horizontal Logic</i>	19
<i>Vertical Logic</i>	20
WHO IS THIS BOOK FOR?.....	21
THE IMPORTANCE OF VERTICAL LOGIC.....	22
<i>Acronyms</i>	22
CHAPTER 1: GETTING STARTED WITH STORYTELLING CHARTS	25
STEP 1: DOWNLOAD AND INSTALLATION	26
<i>Downloading the Add-In</i>	26
<i>Running the Installer</i>	27
STEP 2: NAVIGATING THE ADD-IN INTERFACE	27
<i>The Quantitative Charts Icon Interface</i>	28
<i>The STCAI Tab Interface</i>	29
STEP3: ONE CLICK CHART CREATION	30
<i>Recap</i>	31
CHAPTER 2: VERTICAL LOGIC AND STORYTELLING CHARTS—A FORMULA FOR LIFE	33
LINDY VS. BENJAMIN BUTTON	34
<i>How Did It Go in 40 BLC?</i>	35
<i>Top-Down and Bottom-Up</i>	36
<i>The Anatomy of STC</i>	37
<i>Elements in a Slide and a Chart</i>	39
<i>The Relationship Between the Elements on an Individual Slide</i>	44
<i>The Look, Feel and Template Design</i>	46
<i>The Four Types of Charts</i>	48
<i>The Distinction Between Stories and Storytelling</i>	50
<i>The Universal Framework for Vertical Logic</i>	51
<i>Quantitative or Data-Driven Charts</i>	55

<i>Step 1: The Key Question</i>	56
<i>Step 2: Blueprint</i>	59
<i>Step 3: Analysis</i>	66
<i>Step 4: Data</i>	67
<i>Step 5: Chart</i>	68
<i>Visual Cues</i>	70
<i>Qualitative or Conceptual Charts</i>	72
<i>Qualitative Chart Categories</i>	74
<i>The Text-to-Visual Metaphor Qualitative Chart</i>	74
<i>Conceptual Framework Charts</i>	76
<i>Matrices and Categorization</i>	77
<i>Ranges, Comparisons, and Evaluation</i>	79
<i>The Story Flow Framework</i>	83
<i>Qual Combo Charts</i>	84
RECAP.....	84
CHAPTER 3: TIPS, TRICKS AND BEST PRACTICES	87
INTUITION CODIFIED: THE GESTALT PRINCIPLES	87
CHART AND SLIDE DESIGN BEST PRACTICES: THE NUTS AND BOLTS.....	89
THE ULTIMATE TESTS: "SO WHAT?" AND THE CLOCK.....	90
<i>The "So What?" Factor</i>	91
<i>The 3-5-10-15 Rule</i>	91
RECAP.....	91
CHAPTER 4: QUANTITATIVE CHART EXAMPLES	93
FLAG CHARTS OR HORIZONTAL BAR CHARTS.....	94
<i>Showing Two Sides: The Diverging Bar Chart or Tornado Chart</i>	94
<i>Visualizing Spreads and Timeline: Range Visualization</i>	95
<i>Spotting Winners and Losers: Deviation and Ranking</i>	96
<i>One Tip to Make the Most Impact</i>	97
COLUMN CHARTS: STANDING UP FOR COMPARISON	97
TIME SERIES COLUMN CHARTS.....	98
<i>Grouped Column Charts</i>	98
<i>Stacked Column Charts</i>	99
<i>Comparison Column Charts</i>	100

LINE CHARTS: TELLING THE STORY OF CHANGE OVER TIME.....102

- The Classic: Time Series Line Charts*.....102
- Hold On – Let's Talk Aspect Ratio (it's more important than you think!)*..103
- Comparing Journeys: Comparison Line Charts*.....104
- (A Quick Aside: Stacked Line Charts)*.....105
- The Danger Zone: Overplotted or “Spaghetti” Charts*105
- Small multiples: Clarity in numbers*.....107
- Wrapping Up Line Charts*.....108

100% STACKED BAR CHARTS108

WATERFALL CHARTS: EXPLAINING THE JOURNEY FROM START TO FINISH109

- How Does it Work Visually?*110
- So Let Us Take That Profit & Loss Example:*.....110
- When Should You Reach for a Waterfall Chart?*111

SCATTER PLOT CHARTS112

- Correlation in Scatter Plots Charts*112
- Strength of Correlation*112
- Regression*.....113

PIE CHARTS: VISUALIZING SIMPLE PROPORTIONS.....115

- Example: Market Share by Company*.....115

DONUT CHARTS: REFINING PROPORTIONS (AND ADDING SPACE)116

- Donut Charts vs. Pie Charts*.....118
- Considerations and Limitations*.....118

MEKKO CHARTS: SEEING THE BIG PICTURE AND THE DETAILS.....119

- Why bother with the additional complexity?*.....119
- Example: Sales by Product & Region*.....120
- Here's the Catch (Considerations & Limitations)*121
- The Bottom Line*.....121

BARBELL CHARTS122

- How Does it Work Visually?*122
- Why Use Barbell Charts?*.....122
- Best Practices:*.....123
- Example: Change Over Time*123
- The Bottom Line*.....124

SLOPE CHARTS125

<i>How Does it Work Visually?</i>	125
<i>Why Use Slope Charts?</i>	125
<i>Best Practices</i>	126
<i>Example: The Magnificent Five</i>	126
<i>The Bottom Line</i>	127
BULLET CHARTS	128
<i>How Does it Work Visually?</i>	128
<i>Why Use Bullet Charts?</i>	128
<i>Best Practices:</i>	129
<i>Example: ACSI for Smartphones</i>	129
<i>The Bottom Line</i>	130
WAFFLE AND PLUM CHARTS.....	131
<i>How Does it Work Visually?</i>	131
<i>Why Use Waffle/Plum Charts?</i>	132
<i>Best Practices:</i>	132
<i>Example: The 80/20 of US Foreign Aid in 2023</i>	133
<i>The Bottom Line</i>	134
PICTOGRAMS AND ISOTOPES CHARTS	134
<i>How Does it Work Visually?</i>	135
<i>Why Use Pictograms?</i>	136
<i>Best Practices</i>	136
<i>Example: The Wildfires of California</i>	137
<i>The Bottom Line</i>	140
CHAPTER 5: NEXT STEPS AND RESOURCES	141
THE POWERPOINT ADVANTAGE	141
MAKING POWERPOINT WORK FOR YOU	142
THE ENDURING VALUE OF VISUAL STORYTELLING	142
HOW TO FOCUS ON THE BIGGER PICTURE BEHIND THE SLIDE	143
MAKING IT REAL: PRACTICE, TOOLS, AND CONTINUED GROWTH	143
A FINAL THOUGHT	144
REFERENCES	147

About the Author

Sam Schreim is a global strategy consultant and data storytelling expert who has helped Fortune 500 companies, startups, and government agencies turn complex information into clear, compelling narratives. Over a 20-year career spanning management consulting, venture capital, and executive coaching, he has developed frameworks and tools that bridge logic, design, and persuasion.

He is the creator of **Storytelling Charts Add-In (STCAI)**, a free PowerPoint plugin that democratizes the charting and visual storytelling tools once reserved for elite consultants. Through this book, his workshops, and his software, Sam is on a mission to make persuasive data storytelling accessible to everyone—from students and civil servants to executives and entrepreneurs.

Learn more or access the free visual toolkit at www.storytellingwithcharts.com.

Introduction

A poet would be overcome by sleep and hunger before (being able to) describe with words what a painter is able to (depict) in an instant. —Leonardo da Vinci

The most powerful person in the world is the storyteller who set the vision, values, and agenda of an entire generation that's to come. —Steve Jobs

Storytelling is arguably the most powerful tool a human being has. As highly social creatures, we use stories to connect with other human beings on emotional and intellectual levels. In doing so, we create bonds between ourselves and others. Through storytelling, we create relationships, friendships, families, and even entire communities. Politicians tell stories to their voters about their visions. Brands tell stories to their consumers about who they are. As individuals, we even tell ourselves stories about who we are to motivate, teach, and entertain ourselves. According to Yuval Noah Harari, it was storytelling that gave us human beings the ability to create belief systems, relate history, and even dream of the future (Harari et al., 2018). All this is because there's power in a good story. Think back to your childhood. Odds are there are several stories that you grew up hearing and still remember to this day.

There are, in fact, multiple kinds of storytelling, and visual storytelling is one of them. Dating back to the stone age with their cave paintings, visual storytelling is probably the most impactful form of storytelling. This is because visuals convey a richer experience than text-heavy methods of communication. It's also because they communicate information a lot quicker than paragraphs of writing do. This is one of the main reasons why storytelling with charts—that is to say, storytelling using impactful charts—is an incredibly effective way of communicating information. This is especially true in a day and age where the average person visits 89 websites per day and has seven different social media accounts in a quest for instant information (Roothman, 2018).

This book focuses specifically on the vertical logic aspect of storytelling with charts (STC) – the art of crafting individual, persuasive slides that effectively communicate your data story. STC is a very powerful and strategic method of communication that's been around for nearly 60 years. Despite this, few people have been able to truly master it. Having

given presentations throughout your academic career and work life, you might think that you are one of those few. The unfortunate truth, however, is that you most likely are not. But you can learn to attain such mastery with dedication and time. Attaining this mastery requires understanding which visuals to use and how to use them according to the STC method. Our surveys and studies show that using powerful visuals that meet all STC requirements, like in the example below, increases audience engagement by 80%. It also increases audience retention by 65% and story believability by a whopping 99%!

As an example, consider the two flags in the image below. These flags would look identical when they're hanging on a pole. There are essentially only two differences between them: one of these products is both more expensive than the other and comes with a story.

<p>amazon</p> <p>American Flag 3x5Ft, Embroidered Stars 3'x5' USA Flag Outdoor Heavy Duty and Double Edge Sewing</p>  <p>Price \$5.99</p> <ul style="list-style-type: none">• <i>Quality Material:</i> American flag constructed with strong material to withstand any outdoor weather• <i>Embroidered Stars:</i> The stars are embroidered using densely filled rich white thread.• <i>The stripes are sewn together with two rows of double stitches for added strength</i>	<p>ebay</p> <p>Vintage 1940's Detras Stantest Bunting 48 Star American Flag 3' x 5'</p>  <p>Buy It Now US \$300.00</p> <ul style="list-style-type: none">• <i>This is a 48 star, cotton, US flag made with printed stars, and hand sewn stripes. It was made by the Detra Flag Co. of Oaks, PA. Stantest bunting was introduced in the 1920's and was used until the 1950's.</i>• <i>Bunting was discontinued as a result of the addition of the 49th star in 1959. This flag has been dated 1942-1945 because of the presence of distinctive wartime grommets</i>
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This is just one example illustrating how a 50x difference between price points of like-for-like products can be attributed to the story-price premium. Audiences tend to be more engaged in stories than facts, and stories are incredibly effective ways of getting them invested in products and ideas. This is why things like content marketing have become major fields of their own. The fact is, stories are powerful because they pack various experiences and beliefs into neat packages and communicate them to both the storyteller and the audience. During this process, the audience's brainwaves actually synchronize with the teller's (Renken, 2020). This phenomenon is known as neural coupling, and it makes it very easy for the teller and audience to communicate shared goals and then actively move toward them. Stories allow for trust to be formed between storytellers and audience members. These individuals can then start building a productive relationship based on that trust (Patterson et al., 2012).

Another interesting effect of listening to stories is that getting to the climactic, stressful, or dramatic moments of a narrative causes your brain to release cortisol. Cortisol is the hormone that's responsible for your fight-or-flight response. It also plays a part in solidifying memories of emotional experiences and thus having them stored in your brain. Meanwhile, getting to the resolution of a story—the part in the narrative where conflicts are resolved, problems are solved, and things begin to wind down—causes the brain to release oxytocin. Oxytocin is a hormone that facilitates social bonding, as well as feelings of contentment, calm, and even a sense of security. When you use STC effectively, then, you allow your audience to experience all of this (Peterson, 2017). Your audience forms a more emotional memory of the story they're listening to and thus become more likely to remember it (Begg et al., 1985). They form a greater bond with it and associate the narrative that's being relayed to them in the STC with feelings of contentment, calm, and security. Considering all this, it's no wonder that Yuval Noah Harari has claimed that human civilizations and societies could not have been built if we didn't know how to tell stories (Harari et al., 2018).

Although the STC framework applies to both vertical logic (how individual slides are structured) and horizontal logic (how the overall presentation flows), this book is deliberately focused on mastering vertical logic — that is the foundation for telling compelling data stories. You'll learn the key building blocks for data storytelling by first learning how to build impactful individual charts and slides. For a deep dive into horizontal logic and the full STC framework, see the companion volume “Storytelling with Charts: The Full Story”.

The various effects of storytelling are essentially why customers are willing to pay more for the flag that comes with a story. It's also why creating and telling good, effective stories are crucial in the business world. So, how do you go about creating good stories in the business world? A good story within this context needs to accomplish a variety of things. First, it must effectively and accurately communicate the data and information that need to be communicated. Otherwise, why are you even telling this story in the first place? Second, it must provide its audience with some context, meaning that it must relate the given facts to specific kinds of people (i.e. the target audience), places, and events.

It must allow the listeners to derive meaning from that which they're listening to.

The Anatomy of STC-Based Presentation

Whatever story you're telling in a presentation, your overall goal is to ask something of your audience. The Rule Of Thumb (ROT) of doing so is to use 20% of the message you're giving to ask your audience to take action. The remaining 80% of your message should focus on content that will automatically lead them to take the action you want them to take. Alternatively, it can focus on getting them to look forward to hearing what you will ask them to do when you're done with your presentation. This structure can be compared to that of an orchestra which builds up the crescendo of a movement by adding one instrument at a time. This is exactly what you want to do until the messages you're giving pile on top of one another, making up 80% of your content.

You should only ask your audience for something once you have completed the story and thus reached its climax (Boyd et al., 2020). Your goal here is to leave them wanting more and then to deliver your pitch.

This is the correct point to deliver your pitch because by now your story will have allowed you to build trust with your audience (Patterson et al., 2012). It will also have helped you to build anticipation, so much so that you no longer have to convince them of your pitch.

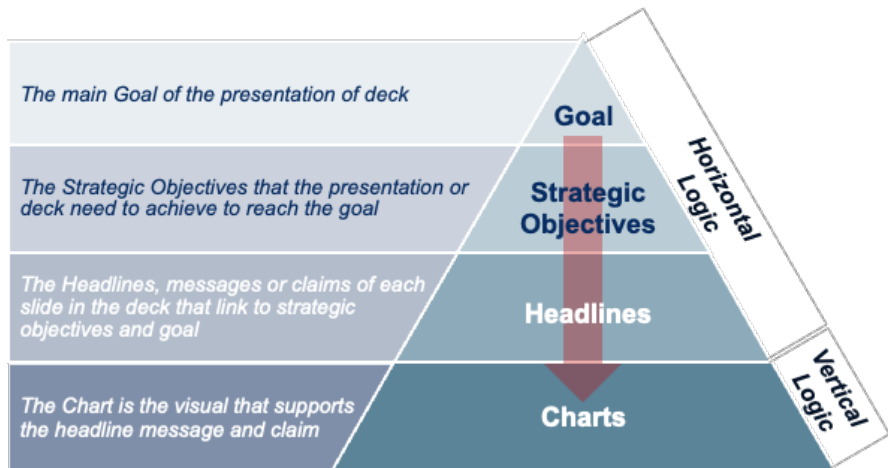
In the following chapters, you'll learn what constitutes a message and a story. But before we get into those details, let's define the following terms as they are the two main dimensions that make up the anatomy of an STC-based presentation.

ROT: Think of the story as a series of individual messages that add up to a full story. If we go back to the language analogy, we can think of the messages as the vertical logic. You can think of the words, sentences, and expressions as the horizontal logic that puts them in a sequence that you then use to express yourself.

Horizontal Logic

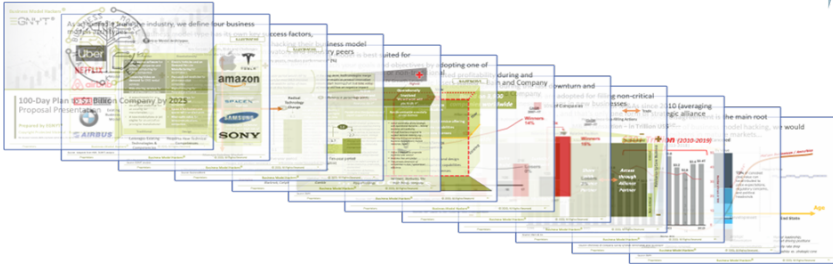
A story is typically made up of what are commonly referred to as horizontal logic and vertical logic. Horizontal logic is alternatively called the horizontal flow or flow of the story. How a narrative flows is your starting point when structuring a story, or at least it should be.

Horizontal logic begins with the **goal**, and that goal is used to determine your **strategic objectives**. Your strategic objectives can be further split into main messages, which can in turn be broken down into individual headlines. These **headlines** can then be supported in **charts**, which are then put into a full story deck.



Horizontal logic is the fundamental structure of your storyline and how you can improve it with storytelling hacks, which will, again, be discussed later. Your story deck, meanwhile, is how you substantially enhance your story, using storytelling hacks.

*Horizontal Logic: As read your Charts Headlines in sequence **individually**, they tell the story – Without the need to see the content of each chart*



Horizontal logic has several moving parts and has both artistic and creative aspects to it. In contrast, vertical logic is more straightforward, in that it follows a system or a process to reach a conclusion.

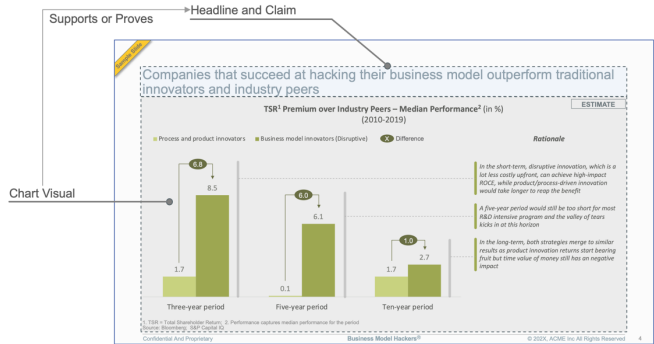
Vertical Logic

Vertical Logic refers to the individual slides that make up a presentation, often containing charts. These are also known as vertical logic. Vertical logic can often be mistakenly seen as an art, but in reality, there's a great deal more science to it than that. What's more, it can be more easily mastered through a structured approach and system that, when followed, can be very effective. That doesn't mean, however, that you can't be creative when working on vertical logic. You can, as you will see later, in detail. This means that you do not have to sacrifice creativity for science and can retain both within the confines of vertical logic.

An individual chart is known simply as a "visual" element. Such elements are designed to back up given messages, which are usually written at the very top of charts. These header messages have a variety of names, such as the "lead in," "action title" and "caption." As you'll see later, vertical logic charts consist of qualitative charts containing frameworks, conceptual charts, and quantitative charts, which can be enhanced using visual cues.

One thing to remember about charts is that you should follow the One Message Per Chart Rule. This is the one rule to rule all rules about charts. Put simply, this means that a single chart shouldn't support more than one key insight made in a presentation.

Vertical Logic:
 Are the individual slides and depict how your headline or claim should be supported by the content in the chart



Another thing to remember is that presenting two things on two different slides takes the exact same amount of time that presenting two things on one single slide takes anyways.

Who Is This Book For?

Everyone, regardless of what profession or field of work they're in, will need to use and/or write presentations at some point. This includes industry professionals, entrepreneurs, consultants, civil/public servants, academics, students, and more. It includes my wife, for instance, who owns her own business and is preparing a pitch for acquiring VC funding and getting a business loan to launch her startup. It includes my 15-year-old daughter who's campaigning to be the president of the school council and is therefore preparing a presentation sharing her campaign promises with the student body and explaining why they should elect her. It even includes my nephew who has had to prepare one presentation after another for his various college courses and is currently preparing one of his thesis defense presentations.

If that's the case, then who is this book for? The short answer? You. The longer answer? This book is for anyone and everyone who needs, uses, writes, and designs presentations or decks for their line of work. It doesn't matter whether you're using PowerPoint, Tableau, Prezi, Keynote, or any other kind of presentation software. If you are someone that's seeking a way to make a case or deliver information to your audience effectively, then this book is for you.

While the STC framework encompasses both vertical and horizontal logic, this book primarily focuses on the vertical logic aspect. Vertical

logic deals with the story and logic within individual slides, ensuring that each chart, graph, and visualization effectively communicates your message and supports your overall narrative. On the other hand, horizontal logic is concerned with the overarching structure and flow of your data story, combining individual slides into a cohesive and persuasive narrative. Although both aspects are essential for successful data storytelling, vertical logic is sometimes underemphasized. This book aims to bridge that gap by providing a comprehensive guide to mastering vertical logic and creating compelling, persuasive stories. If you're interested in learning more about horizontal logic and how it complements vertical logic, I recommend exploring "Storytelling with Charts: The Full Story," which covers both aspects in detail.

The Importance of Vertical Logic

Vertical logic is a crucial component of effective data storytelling, yet it is sometimes overshadowed by discussions of horizontal logic and the overall narrative flow. However, without strong vertical logic, even the most well-structured story will fail to convince and persuade your audience. Vertical logic is what gives your story its credibility, its persuasive power, and its ability to drive action and decision-making. It is the foundation upon which your entire data story rests. That's why I believe vertical logic deserves a dedicated focus and its own book.

By diving deep into the principles and techniques of vertical logic, we can empower storytellers and presenters to create more compelling, persuasive, and action-inspiring stories. This book aims to do just that - to give vertical logic the attention it deserves and to provide readers with a comprehensive guide to mastering this essential skill. Whether you're a seasoned data storyteller or just starting out, understanding and applying vertical logic will take your data stories to the next level and help you achieve your goals more effectively.

Acronyms

As you will undoubtedly notice, I will be using a variety of acronyms in this book that are specific to this framework. These acronyms are intended to help you retain important concepts, hacks, tips, and tricks once you have finished reading *Storytelling with Charts*. To keep you from

getting lost in these acronyms though, here is a partial look-up table of the not so common acronyms. I hope you won't have to refer to it too often, but you always can if you need to.

Acronym	Spell-Out
ROT	Rule of Thumb
STC	Storytelling With Charts
HL	Horizontal Logic
VL	Vertical Logic
5SUF	5-Step Universal Framework
TVMA	Time, Number of Variables, Message Attribute

Chapter 1: Getting Started with Storytelling Charts

Choosing the right software is a key first step to efficiently applying the frameworks, principles, and techniques of Storytelling Charts. While this book is applicable to all platforms, having the right software tools on hand can considerably accelerate learning.

Today, numerous options exist to create charts and presentations, which can be broadly divided into four major categories:

- **Data Visualization Platforms**, which are best suited when you have a more complex dataset, often from a data warehouse. Such platforms include tools like Tableau, Power BI, and Qlik, which offer advanced data visualization capabilities. These platforms excel at data exploration and analysis, but they are overkill for the average business presentation. Their robust capabilities require longer learning curves and, although powerful, can yield over-complex visualizations that are ineffective for storytelling.
- **Premium PowerPoint Add-ins** such as Think-Cell and Empower Suite are examples of tools that enhance the native functionality of PowerPoint with additional charting and time-saving features. These add-ins add professional-grade functionality, but their exorbitant price tags justify the incremental value they provide over modern versions of PowerPoint, especially for storytelling.
- **Light Presentation Apps** such as Apple Keynote and Google Slides can create layouts that have some basic charting capabilities. However, while these apps are excellent for basic presentations, they fall short in providing the crucial features required for advanced data storytelling and vertical logic.
- **AI-Generated Presentation Tools** such as Gamma AI and Beautiful AI (which were popular at the time of writing of this book) leverage artificial intelligence to automate slide design. These tools enable users to create visually appealing presentations effortlessly. However, their reliance on automation often compromises analytical depth. The ease of use comes at the expense of precision and the detailed customization essential for crafting effective vertical logic within compelling data narratives.

All things considered; PowerPoint continues to dominate business presentations for a good reason. The upgraded Office 365 natively includes powerful charting features which have greatly improved in recent years, including many features that were previously only possible through specialized add-ins. The only advantage such premium and paid add-ins offer is enhanced annotation capabilities, but this limited benefit rarely justifies their considerable cost. This is precisely where the Storytelling Charts Add-In (STCAI) becomes relevant.

STCAI focuses on vertical logic, data storytelling, and the most effective visual presentation. This makes it much easier to create charts in accordance with the principles in this book. The add-in is a free download and is compatible with modern versions of PowerPoint. It offers a specialized narrative frameworks and chart visual designs geared towards practice of informative charting. Let's first download and install this tool, which will serve as your practical partner your journey toward effective data storytelling.

In this chapter, I have intentionally refrained from including screenshots of the website or the tool interface. I made this decision because we are continuously upgrading and redesigning both the website and STCAI to improve functionality and user experience. While the visual elements may change over time, the fundamental flow and process described in this chapter should remain consistent. This ensures that the instructions provided remain relevant regardless of the changes and cosmetic updates to the interface.

Step 1: Download and Installation

Downloading the Add-In

The first step is downloading the STCAI add-in. To do so, follow these simple steps:

1. **Visit the Official Website:** Open your preferred web browser and navigate to: www.storytellingwithcharts.com Locate the "Download" button prominently featured on the homepage.
2. **Find your email:** Check your spam folder if you did not receive an email within a few minutes of signing up. Click on the provided link

for your operating system, and download the correct version of the add-in.

3. **Click to Download:** Click the “Download” button and wait for the installer file to appear in your downloads folder.

Running the Installer

With the installer file in hand, proceed as follows:

1. **Open the Installer:** Locate the downloaded installer file. Double-click to launch the installer.
2. **Installation Process:** The installer will guide you through the setup process. Make sure to grant or allow the necessary permissions as this is crucial to enable the add-in to install correctly.
3. **Completion and Confirmation:** This process usually takes just a few minutes. Once installation is complete, you will see a confirmation message. Click “Finish” to exit the installer.
4. **Launch PowerPoint:** Open Microsoft PowerPoint, and a new license window will pop-up. Locate your license, which was sent via email. If you lose or misplace your license that was sent to you in the welcome email, you can always request a new email on the site, and it will be resent to you. Enter the license numbers, accept the terms and conditions, and click verify. You should now receive a confirmation that the license is active.

You should now notice a new tab labeled “STCAI” on the ribbon—this confirms the add-in is successfully installed.

Step 2: Navigating the Add-In Interface

Now that you’ve installed the add-in, let explore its simple user interface. Knowing the layout well will enable you to take advantage of its features fully and speed up your chart creation process significantly.

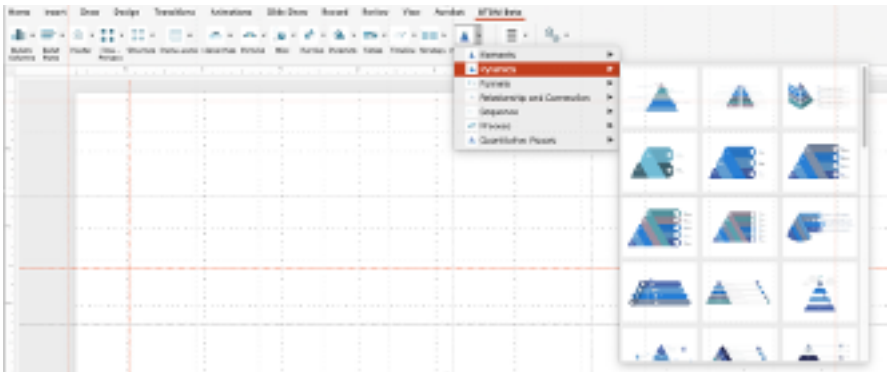
Please keep in mind that while the interface images shown here may evolve and appear different after add-in updates and the publication of this book, the core functionality and organization described here are likely to remain the same.

The Storytelling Charts Add-In has two interfaces or points of access, seamlessly integrated into PowerPoint.

The STCAI Tab Interface

The second interface aspect is a dedicated PowerPoint "STCAI" tab in the ribbon. This tab opens a full dashboard, organized into three functional areas:

1. **Qualitative Charts Library:** This extensive collection features 2,000+ qualitative chart templates sorted by categories. From frameworks to process flows, pre-designed elements help you bring concepts to life without hours spent in PowerPoint's Shape Tools. Just click on the relevant category, select the type of chart you would like and add the chart with one click.
2. **PowerPoint Enhancement Tools:** This includes a set of specialized functions that expand on PowerPoint's built-in functionality. Tools for precision alignment, object matching, and text box manipulation can mitigate many limitations in PowerPoint's default toolset. This gives you the ability to fine-tune complex slides without losing the professional look.
3. **AI Assistant:** In addition to the above, there are integrated AI capabilities that utilize sophisticated language models that speed up your vertical and horizontal logic within your content. Although the AI features have some usage limits (it's free with limits, despite underlying costs), it will help you choose the right chart, refine content, and develop your presentation outline.

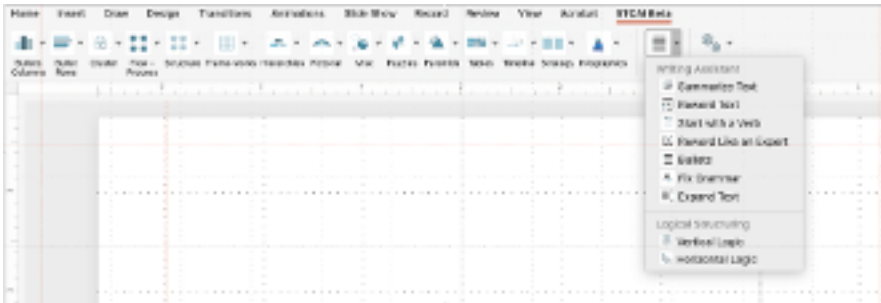


Understanding AI Capabilities and Considerations

Functions of the AI assistant include:

- Text enhancement and expansion for headlines and key messages
- Chart type recommendations based on your data and message

- Slide structure suggestions following vertical logic principles
- Data interpretation assistance and insight generation



Although there are a few caveats to watch for (including usage limits on the free version and the limitations of the PowerPoint platform -- in particular, in Office 365 for MacOS), the AI capabilities significantly accelerate the process of learning to create professional-quality presentations.

For the most current tutorials and feature demonstrations, visit the resources section of storytellingwithcharts.com, where we regularly update guidance as capabilities evolve. But the most effective approach is hands-on experimentation — many users find powerful workflows just by exploring the available options.

Step 3: One Click Chart Creation

Now that you are familiar with the interface, let's get create your first vertical slide using the Storytelling Charts add-in.

Creating a New Slide

Before getting started, make sure you have:

- Prepared your data
- Designed your headline, title, or hypothesis
- Decided what chart type best conveys your message (either through your own analysis, or by using the AI assistant's guidance)

Let's walk you through how to create a slide with a Plum chart:

1. **Choose Your Chart Type:** Go to the Insert tab, click on the "Quantitative Charts" icon, and find the "Waffle & Plum Charts" section.
2. **Add the Chart:** Select the desired Plum chart option. A predefined chart will be inserted in the current slide, filled with sample data formatted in a professional way.
3. **Edit Your Data:** Double-click on the chart to open the linked Excel spreadsheet so that you can replace the sample data with your own values. The data remains linked, ensuring and the chart retains its professional formatting.

Refining Your Slide

When you have your chart and data in place, — it's time to finish the slide by following the principles of vertical logic:

- Ensure your headline clearly communicates the key insight
- Add appropriate annotations to guide the viewer's attention
- Apply any necessary visual cues to emphasize key points
- Verify that the slide follows the best practices discussed in Chapter 3

A key advantage of the Storytelling Charts Add-In is that it handles of the technical aspects of chart generation, allowing you to focus on the strategic parts of your data story. This allows you to focus on crafting the story and ensuring it connects with your audience, rather than wasting time with adjusting colors, alignment, and formatting. In addition to saving hours, as you become more familiar with the add-in, it will enable you to complete more iterations in a single day and ultimately produce higher quality presentations.

Recap

- Consider trade-offs between visualization platforms, premium add-ins, presentation apps, and AI tools when selecting software
- Data visualization platforms (Tableau, Power BI) offer powerful analysis but often create overly complex visuals
- Premium PowerPoint add-ins rarely justify their cost compared to modern PowerPoint capabilities
- Light presentation apps lack robust features for advanced data storytelling
- AI-generated presentation tools create appealing slides but sacrifice analytical precision
- PowerPoint with Office 365 provides robust native charting capabilities

- STCAI enhances PowerPoint through two interfaces: Quantitative Charts icon and STCAI tab
- Quantitative Charts icon provides pre-formatted chart types organized by category
- STCAI tab includes qualitative charts library, PowerPoint enhancement tools, and AI assistance
- AI capabilities include text enhancement and chart recommendations, with some usage limitations
- STCAI simplifies chart creation: select type, insert, replace sample data
- Focus on crafting narrative rather than adjusting design elements

Chapter 3: Tips, Tricks and Best Practices

"Design is not just what it looks like and feels like. Design is how it works." - Steve Jobs

Do you ever wonder why some slide designs seem effective while others appear more confusing — even messy? It often comes down to principles that were identified more than a century ago, on account of an inquisitive psychologist on a train ride.

In 1910, Max Wertheimer was traveling from Vienna, ostensibly on holiday. But at the train station, his attention was caught by an observation: the manner in which strobe lights, flashing in succession, created an illusion of movement. It was not only a trick of the light; it was a trick of the brain. He later named it the phi phenomenon (Schultz & Schultz, 2015).

Curious, Wertheimer probed further, using an instrument called a tachistoscope to precisely time and control visual stimuli. His experiments showed something radical for the time: our perception is not simply the sum of sensory inputs. The brain actively organizes what it sees (Wertheimer, 1912). This insight contradicted the dominant ‘structuralist’ theories.

When Wertheimer returned to Frankfurt, he joined forces with Wolfgang Köhler and Kurt Koffka. Together, they established the principles that underlie Gestalt psychology — the idea that we instinctively perceive objects in organized wholes, patterns, and recognizable forms. Their famous maxim that “the whole is greater than the sum of its parts,” was not a mere academic musing (Koffka, 1935). It has deep implications for anyone trying to communicate visually — with charts and especially, with data.

Intuition Codified: The Gestalt Principles

Gestalt psychology provides an interesting glimpse into how our minds instinctively make sense of the visual world by grouping and

interpreting objects and elements without us consciously thinking about them (Köhler, 1947). Although academics have listed as many as a dozen specific principles (Schultz & Schultz, 2015), we won't delve into all the theoretical particulars here. When designing for clarity and impact in charts, I find it helpful to consider these as powerful guidelines rooted in how people naturally see.

Don't take every nuance as the Holy Grail. Instead, I'd recommend internalizing the following five principles as you design charts. It'll help you create slides that feel intuitive, direct the viewer's focus, and communicate your message more effectively:

4. **Proximity:** Things that are close to each other look like they belong together. It's that simple. Our eyes naturally group nearby items.
 - ⇒ Use this by: Putting your chart title immediately above the chart, positioning labels close to the data points they describe, or physically grouping similar metrics on the slide. Avoid making the viewer's eye jump across blank space to connect related ideas.
5. **Similarity:** We also place things that look alike together. A relationship is signaled by shared color, shape, size, or orientation.
 - ⇒ Use this when representing the same data series in multiple charts by using a consistent color across all charts for the that data series. Similar elements should ideally have the same shape or font style. This consistency creates visual coherence and facilitates comparisons.
6. **Closure:** Our brains are accustomed to completeness. In other words, we often fill in gaps to make them relate to more recognizable shapes.
 - ⇒ Use this by: Simplifying the visual but making it recognizable. Often, an outline or silhouette communicates a more complicated concept (for example, a customer segment) better than a detailed illustration can, allowing the audience's mind to 'fill in' the shape.

7. **Continuation:** The eye wants to follow lines, curves, and paths. Once the eye establishes a visual direction, it tends to continue down that same trajectory.
 - ⇒ Use this by: Placing elements on a well-defined visual path (such as the natural Z-pattern or F-pattern of reading) to help draw attention. Use smooth lines in a line chart, so the eye intuitively follows the trend.

8. **Figure-Ground:** We automatically separate a main object (the figure) from its background. Clear distinction is key.
 - ⇒ Use this by: Providing a strong contrast between essential elements (such as text or data points) and the background. Light text over a dark background, or the other way around, improves reading ease and makes the important 'figure' stand out.

By remembering these Gestalt principles, you can focus on more than just placing data on a slide. You can begin designing visuals that not only amplify your vertical logic, but also anticipate how your audience will interpret aesthetics, making your data stories even more convincing.

Chart and Slide Design Best Practices: The Nuts and Bolts

Putting Principles into Practice: Step one is to understand how people see (The Gestalt Principles). Step two is putting that knowledge into action with tangible design practices. If you've downloaded the Storytelling Charts Add-In (STCAI) or templates from our toolkit, most of the basic formatting has already been done for you. Those tools are based on best practices. But if you understand why these practices work, and how they should and shouldn't be used, it prepares you to communicate more effectively.

Here are some of the most important principles to bear in mind at all times:

- **Unit:** Don't make it hard for your audience. Never put too many digits in a chart. As a general rule of thumb, no more than 3 digits should be displayed. For millions (10 million to 99 million), use "96.5

(in millions)". Once you cross triple-digit millions, it's the billions (e.g. 129,900,000 -> "0.13 (in billions)"). And when rounding, prioritize accuracy together with digestibility.

- **Consistency:** Think of consistency as the visual 'voice' of your slide deck. Be consistent with color palettes, font choices, and chart types for similar data throughout your entire deck or report. A cohesive look and feel enables your audience to concentrate on the insights rather than getting lost in jarring stylistic discontinuities.
- **Simplicity:** Don't overcomplicate things. As Steve Jobs hinted, "good design works". Unneeded 3D effects, and distracting gradients — contribute to unclear visuals. Just remember to take the "less is more" approach. A clean chart without clutter is almost always a more effective and professional.
- **Clarity:** If your audience is squinting, guessing, or hunting for a meaning, your chart isn't clear enough. Labeling needs to be clear and concise. It should be clear what axes, data series, legends, units, and dates mean. Use clear titles and subtitles to establish context early. Make use of annotations or use labels to show critical findings right on the chart.
- **Emphasis:** Don't force your audience to work hard to see your main point. Use subtle ways to lead your audience where to look. Complementary colors (in moderation!), bold fonts, arrows, or callouts can direct attention to the most important data. The effective use of whitespace and intentional placement creates a visual hierarchy that guides the viewer through the data in a logical manner.
- **Accessibility:** Good design is inclusive design. Some people have impairments in their vision, so make sure your charts are legible to them as well. Use enough color contrast (test this!). Use long and descriptive alternative text for screen readers. Another important point to check is how your charts look when printed out in black and white – a common scenario! Another common design trap is relying on color alone for differentiation. Making your charts accessible to all isn't simply good practice; it helps ensure your message reaches the widest possible audience.

The Ultimate Tests: "So What?" and the Clock

Beyond those mechanics of visualization, there are two final checks for every single chart you create:

The "So What?" Factor

This is the ultimate test. After you build your chart, ask yourself: **So what?**

How does the insight presented on this slide eloquently lead and/or relate back to the big-picture and overarching strategic goals and objectives of your presentation or deck? If the answer is weak, tangential, or nonexistent, that chart should either be rewritten or eliminated. In other words, if it doesn't add to your core message in a meaningful way, it's noise, no matter how good it looks. Each chart must justify itself by helping to answer that all-important "So what?" question for your audience.

The 3-5-10-15 Rule

Value your audience's time and mental bandwidth. They should be able to understand the main takeaway of a slide fairly quickly (Cowan, 2010). As a guideline:

- 3 seconds for slides that are very simple (e.g., one important number)
- 5 seconds for somewhat more complex visuals (e.g., simple bar chart)
- 10 seconds for medium-complexity slides (such as a complex line chart with a few series).
- No more than 15 seconds for the most complex visuals you include.
- Test this! So, before you finalize: test slides on a colleague who is not familiar with the content. If they have difficulty understanding the main point within these time limits, the slide is probably too complicated. Make it shorter, spread it out over multiple slides, or add more obvious emphasis.

Recap

- The Gestalt Principles provide practical guidelines for effective visual design: proximity, similarity, closure, continuation, and figure-ground
- Focus on these principles as rules of thumb rather than strict requirements
- When displaying large numbers, avoid showing more than 3 digits on charts
- Maintain consistency in style across all charts in your presentation
- Adopt the "less is more" principle in chart design
- Ensure clear and concise labeling of all chart elements

- Use strategic techniques to emphasize key takeaways
- Create accessible charts for all audiences, including those with visual impairments
- Apply the "So What?" test to every slide to verify it connects to your objectives
- Use the 3-5-10-15 Rule: audience should grasp simple slides in 3 seconds, slightly complex in 5 seconds, moderately complex in 10 seconds, and most complex in 15 seconds
- If viewers struggle to understand within these timeframes, simplify your slide or break it into multiple slides
- Test your slides with someone before finalizing your presentation

Chapter 4: Quantitative Chart Examples

In this final chapter, we'll focus more on practical applications. I thought, what better way to close this book than by adding a section on the most frequently used quantitative chart examples. The idea here is to be able to create charts effortlessly and intuitively when you know you have a specific message and its corresponding data to back it up.

In the previous chapters, I provided a lookup table or cheat sheet that guides the type of chart to use by context. Here, I will provide a reference by chart type for the most frequently used charts and the situations they are typically used in.

Throughout this book, we've explored the fundamentals of Storytelling Charts (STC), delving into the psychological aspects of vertical logic, horizontal logic, and best practices for creating compelling and persuasive slide presentations. We've discussed the importance of understanding your audience, crafting a clear narrative, and using the right chart types to convey your message effectively.

Now, it's time to put all that knowledge into practice. In this chapter, we'll walk through a series of real-world examples, showcasing how to apply the principles of STC to create impactful and memorable presentations. We'll explore a variety of chart types, including flag charts, line charts, and more, discussing when and how to use each one for maximum effectiveness.

By the end of this chapter, you'll have a comprehensive toolkit of practical examples and chart types to draw from as you create your own presentations. Whether you're presenting to colleagues, clients, or stakeholders, you'll be equipped with the skills and knowledge needed to craft compelling stories that inform, engage, and persuade your audience.

Now, let's dive in and see how the principles of Storytelling Charts and vertical logic come to life in real-world applications.

Flag Charts or Horizontal Bar Charts

Now let's talk about a mighty workhorse of the charting world; the horizontal bar chart, also known as the “Flag Chart”. Why “flag”? Because the bars often protrude from the y-axis and resemble tiny flags on poles. But the name doesn't matter as much as the action. These types of charts are great any time you want to compare items to each other — like performance across regions, survey responses across a category, or benchmarks against competitors.

Their superpower? That horizontal layout. It provides lots of room for readable labels next to each of the bars, which quickly becomes difficult in vertical column charts as soon as you have more than a handful of categories and longer names.

Flag Charts can be as simple as bars next to each other or stacked (segmented), so they are versatile.

Here are some of the common scenarios where flag charts perform gracefully:

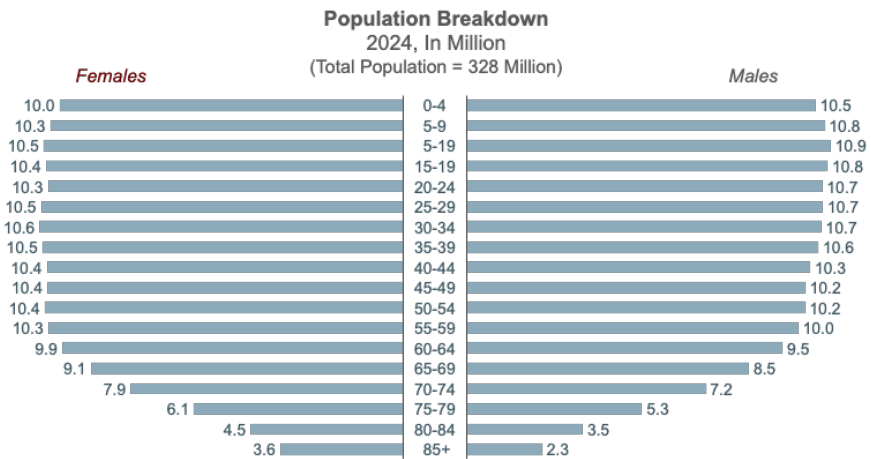
Showing Two Sides: The Diverging Bar Chart or Tornado Chart

At times, you want to present not only a number, but the extent to which it strays from a middle point, or contrast two competing categories with one another directly. This is why the diverging flag chart is useful.

- **Example: That Customer Satisfaction Survey** — Imagine asking your customers to rate various aspects of your service on a nonlinear scale from -5 (highly dissatisfied) to $+5$ (highly satisfied). Here we have an ideal case for a diverging chart. You would set your baseline at ‘0’ (neutral). Positive ratings (such as for Product Quality) extend as bars to the right, while negative ratings (perhaps for Customer Service) stretch to the left. In an instant, your audience knows where you're succeeding and where you need work. No need to sift through figures.



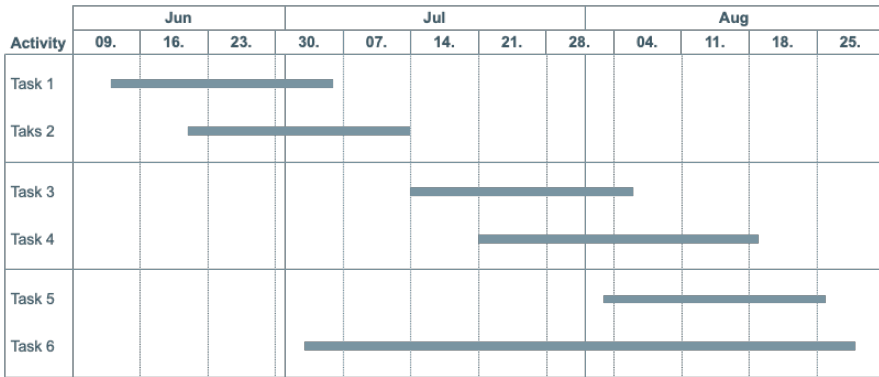
- Example: Population Structure (The “Tornado”):** You’ve probably seen pyramid graphs that are used to compare the number of males and females in each age group. That’s often a tornado chart — a kind of diverging chart with back-to-back sets of flag charts that typically share the same y-axis (age groups). It takes its name from that distinctive funnel or butterfly wing shape, which creates a striking visual summary of population distribution.



Visualizing Spreads and Timeline: Range Visualization

Flag charts can also be used to show ranges, particularly time, and are not limited to single values.

- Example: Keeping Projects on Track (Gantt charts):** If you manage projects, you are familiar with the Gantt chart. It's basically a collection of flag charts! Tasks are horizontal bars. The left edge indicates the start date, the right edge indicates the end date, and the length of the bar indicates the duration. It helps you see at-a-glance what's coming up with your project — what overlaps, what's dependent, what's next. It's the heartbeat of the project in visual form.



Spotting Winners and Losers: Deviation and Ranking

Flag charts can be used for visualizing benchmarks, e.g., the performance of different regions, products, or teams against each other. Or just ranking them from worst to best. This can be illustrated nicely with flag charts.

- Example: Sales Performance vs. Target:** Imagine you are comparing the sales from different regions against a target. A flag chart can be creatively used to visualize this comparison. In this example, the flag chart would display the sales figures as bars extending from the target baseline. Regions that exceeded the target (Regions A and C) would have bars extending to the right, while regions that fell short (Region B) would have bars extending to the left. By color-coding the bars and ordering the regions based on their deviation from the target, you could quickly identify top-performing and underperforming regions.



One Tip to Make the Most Impact

One best practice that makes these comparison charts far easier to read is to order your data in descending or ascending order (assuming, of course, there is no natural order — like time). It helps the viewers' eyes to travel fast and makes the relative differences easier to process without extra effort.

Flag charts are very useful in their multitude of forms, as they leverage the human's natural ability to compare lengths and positions horizontally. By knowing how to use these styles — from flagging deviations, to timelines, to ranking performance — you have a powerful and flexible solution in your arsenal, one that will ensure your data stories are clear, compelling, and instantly grasped by your audience.

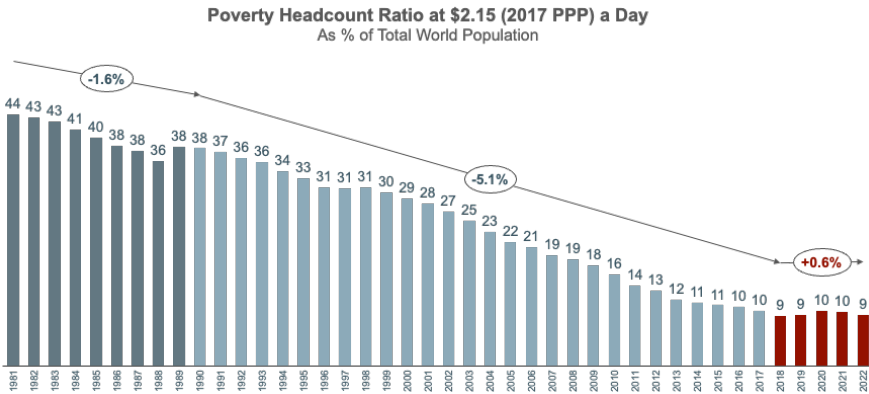
Column Charts: Standing Up for Comparison

Vertical bar charts, also known as column charts, are versatile tools for visualizing data across various categories or time periods. They can be used to show time series data, compare values across categories, or display the relationship between different data series over time. Column charts display data using vertical bars, with the height of each bar representing the value for a specific category or time period.

Time Series Column Charts

Time series column charts are ideal for showing changes or trends over time, especially when you have a relatively small number of data points (usually less than 20). They help visualize data with a clear beginning and end for each time period, such as monthly sales or quarterly revenue.

- **Example: World Poverty Ratio:** To show how poverty has evolved over the past 40 years, a line chart could be used. However, a time series column chart would also be a great choice. In this example, each year would be represented by a vertical column, with the height of the column indicating the percentage of people living on under \$2.15 per day at 2017 prices. By isolating specific periods and adding Compounding Annual Growth Rate (CAGR) to these periods, you can clearly visualize how the trend shows a slow drop (-1.6%) between 1981 and 1990. The trend shows a rapid acceleration (-5.1%) in poverty reduction after 1990, up until 2018. Since 2018, a complete reversal of the trend occurs, and we start to see an increase in poverty rates by 0.6% since.

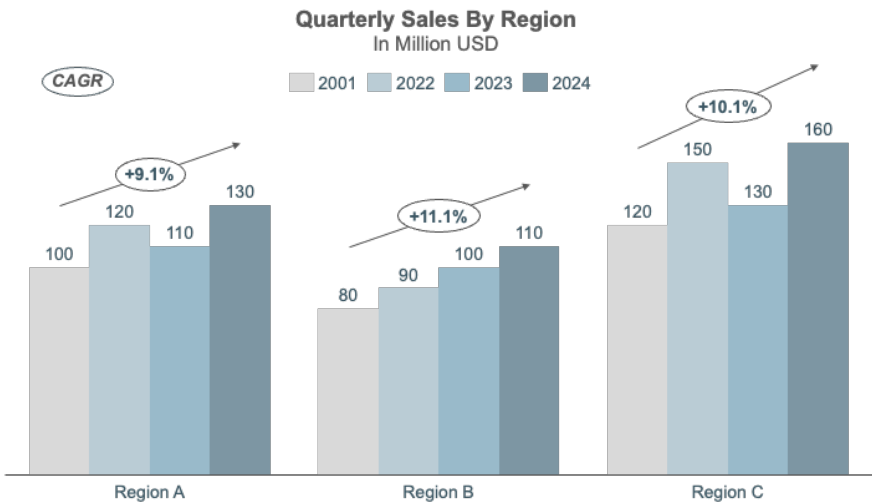


Grouped Column Charts

Grouped column charts are used to show the relationship between different data series over time or across categories. Each group of columns represents a specific time period or category, and within each group, there are multiple columns representing different data series.

- Example: Quarterly Sales by Region:** Imagine you want to compare the quarterly sales performance of different regions over the past four years as shown below. In this example, each region would be represented by a group of four columns (one of each year), with each column within the group representing the sales value for a specific region over the years. This allows you to compare the sales growth performance for each of the regions and observe trends or changes over time.

In this visualization the key takeaway is that Region B has shown consistent growth trend.



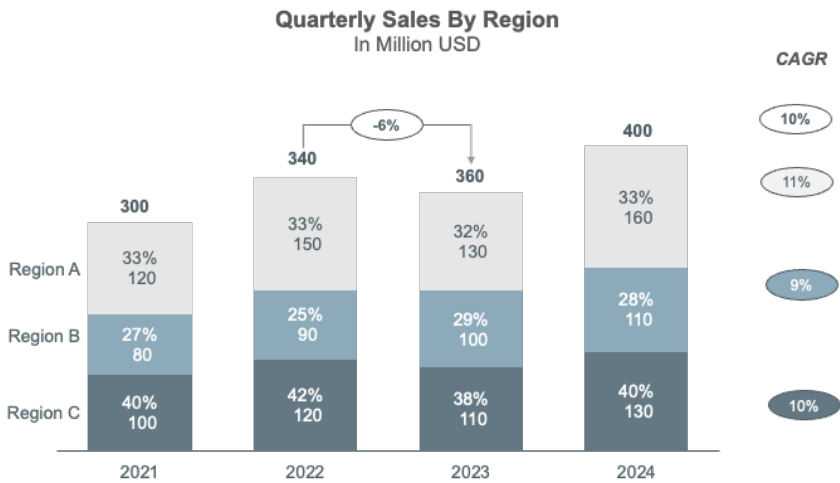
Stacked Column Charts

Stacked column charts are used to display the individual components that contribute to a total value. Each column represents the total value, and it is divided into segments representing the different components.

These charts help reveal more insights, such as breakdown in each stacked column as well as overall trends by component and total. To illustrate, let's take the same example from the Grouped column charts and visualize the data in stacked column charts.

- Example: Quarterly Sales by Region:** As you can see in the chart below, each year would be represented by a vertical column, with the

height of the column indicating the total sales for that year. The column would be divided into three segments, each representing the sales contribution of a specific region (Regions A, B, and C). This allows you to see the total sales for each year and understand how each region contributes to the overall sales. The visual reveals several components, including sales per region per year. This would be useful to visualize overall CAGR vs. regional CAGR, as well as the total sales per year. These were not identifiable in the Grouped column visual.



The key takeaways in this version of the column chart are some additional insights not seen in the grouped column version, such as overall growth, the drop in overall sales in 2023, and the fact that the regional contribution to the overall sales has remained more or less constant.

One best practice to note about Stacked Column Charts is always display the segments in descending order (i.e., from the bottom to the top with the largest segment at the bottom of the column).

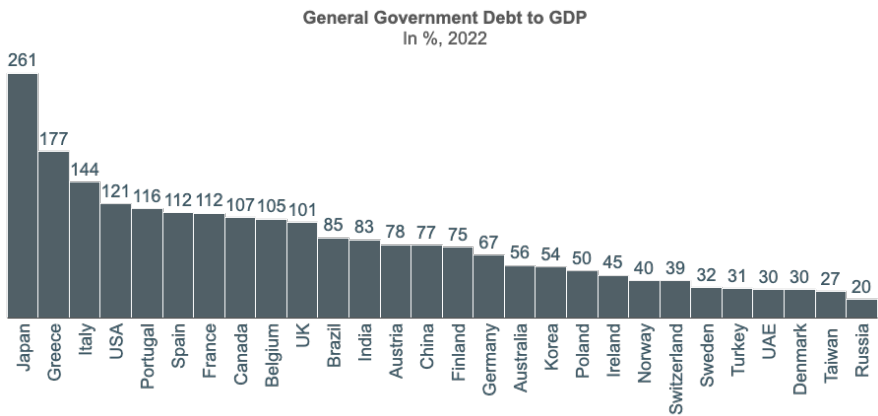
Comparison Column Charts

In Column Charts, the height of bars illustrates relationships between categories. They're commonly used to compare discrete groups on the same measure, like salaries of different CEOs. They are universally

understood and excellent for simple category comparisons. However, many bars may create the impression of a trend line rather than highlight discrete values, and multiple groups of bars can become difficult to interpret. To address this, the columns could be butted against one another to make it easier to compare the relative heights of the bars.

In a way, they are similar to flag charts. Both Flag and Column Charts are essentially bar charts designed to facilitate visual comparisons between different data points or categories. The horizontal orientation of these flag charts allows for the inclusion of less data points, albeit with longer labels. On the other hand, column charts are particularly useful when dealing with shorter labels and more data points. Additionally, the vertical layout of column charts provides space for additional content such as callouts, percentage indicators, or visual elements that can enhance the chart's informational value.

In the following example of General Government Debt to GDP by Nation, you can isolate outliers like Japan and Germany or highlight specific countries.



These examples illustrate the effectiveness of column charts for visualizing data across categories, time periods, and different data series. By understanding the various types of column charts and when to use them, you can create informative and visually appealing charts that effectively communicate your data insights to your audience.

One best practice to note about Comparison Column Charts that are not time dependent is to always display the data in descending order.

Line charts: Telling the Story of Change Over Time

If there is one kind of chart that almost everyone knows, it's this one. Consider the basic stock market line graph depicting its highs and lows, or a chart plotting temperature changes over the course of the year. We sometimes refer to them as “fever charts” or “trend lines,” and that gets directly to one of their key strengths: displaying how something evolves over a consecutive span. The magic is in connecting the dots. By connecting individual data points (such as daily stock prices or monthly sales figures) with a line, they create a flowing visual narrative. Your eye just automatically follows it, which makes trends and patterns easy to spot intuitively so you can get a feel for the data's overall journey. Is it generally going up? Down? Staying flat? Was there a strange event at a particular moment? These larger insights are immediately clear from the line chart.

However, while they highlight the general trend, sometimes the precise value of any given point along the graph gets a little lost in the visual sweep of the trend. And there's a notorious trap: trying to put too many lines on one chart run the risk of the “spaghetti chart” — a spaghetti-like confusion where it is impossible to follow anything clearly. However, if used wisely, the line chart is a foundation of data storytelling. Let's look at how.

The Classic: Time Series Line Charts

This is the bread-and-butter use case. The time series line chart is your best option when you need to demonstrate how something has progressed over days, months, years, or even decades, particularly when you have thousands of data points. It makes the noise vanish and enhances the continuity, the story arc, of your data.

- **For example, the NASDAQ:** Imagine plotting the history of the daily closing value of the NASDAQ index going back to the 1980s.



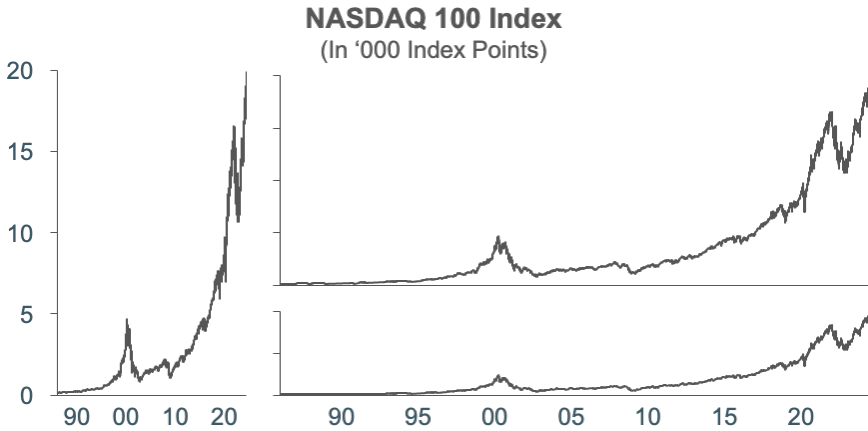
Plot each day as a point and connect them to show the dramatic growth spurts, the bubbles, the crashes, and the recoveries over decades. It's not about being precisely correct about the value and the movement of June 5th, 1992 — you're watching the whole economic story unfold.

Hold On – Let's Talk Aspect Ratio (it's more important than you think!)

There's one special, critical thing about line charts: the aspect ratio, that is, the ratio between the width of the chart and its height. This isn't only an aesthetic issue — it completely shifts the way your audience views the trends.

- **Wide and Flat:** Shows a gradual, less dramatic approach to change.
- **Tall and Skinny:** Exaggerates changes, making slopes steeper, and trends appear more erratic.

Remember that NASDAQ chart? If we squeeze it horizontally (make it tall), the market spikes are terrifyingly pronounced. Stretch it out horizontally, and those same swings appear much tamer. So, what's the "right" ratio?



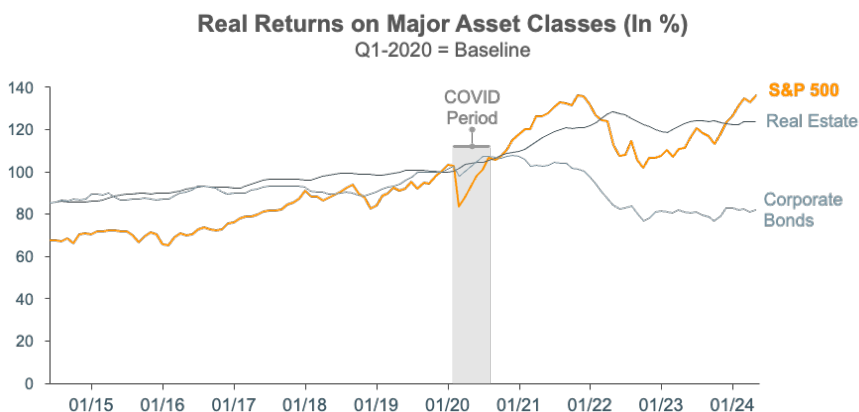
There's no universal magic number, but there are two key principles:

- **Be Honest:** Don't mess with the aspect ratio just to make a trend look more dramatic or less alarming than it actually is. That's misleading.
- **Be Consistent (and Conventional for Time):** Use similar overall aspect ratios for your related charts, one that is typically consistent. For time series data, the default convention is wider than tall. This guidance is consistent with how we visualize time passing from left to right, and it makes charts easier to read and interpret for most audiences.

Comparing Journeys: Comparison Line Charts

So what if you want to see the trends for different items next to each other? This is where comparison line charts come into play. Plotting multiple lines on the same axes allows you to see how the different categories or data series compare against each other.

- **Example: Investment Returns:** Let's compare the real (inflation-adjusted) returns of investing in stocks (S&P 500), real estate, and corporate bonds over several years, including the pandemic. Plotting them as separate lines on the same chart tells the story: Stocks swooned first, then sprung back sharply, then cooled; real estate remained mostly steady but growing; and bonds lagged in the inflation-fed landscape. The lines soaring steep, then crossing and diverging, tell a comparative story that raw numbers would not capture as clearly as this visualization does.



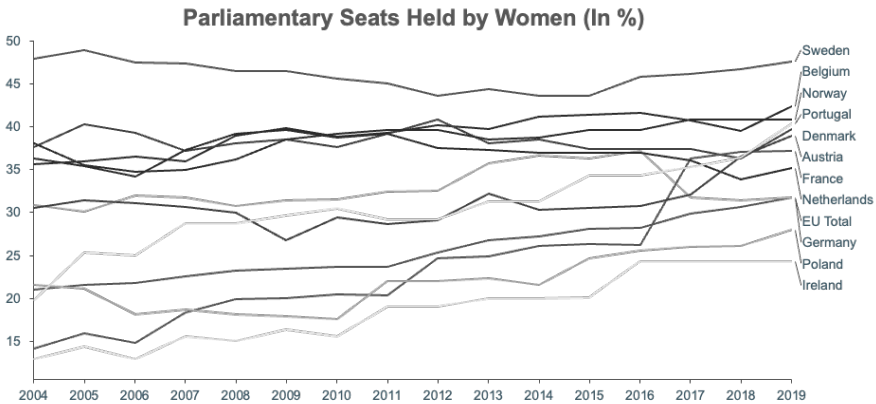
(A Quick Aside: Stacked Line Charts)

You may also encounter stacked line charts — line charts that represent components of a whole, layered above each other — similar to stacked columns. The space between the lines indicates how much each component contributes. They can work, but to be honest, they frequently get harder to read correctly than stacked bars or other chart types that show composition. Use them with caution.

The Danger Zone: Overplotted or “Spaghetti” Charts

The allure of seeing just a few more lines at once quickly leads to disaster. A chart with eight trend lines is not twice as informative as one with four — it’s often twice as confounding.

- Example: Women in Parliament: Consider attempting to display on one line chart how many percentage points of parliamentary seats in 15+ European countries were held by women over 20 years? It quickly becomes a jumbled flurry of crossing lines. You cannot follow individual countries, the colors become indistinguishable, and the overall message is entirely swallowed up in visual noise.



How to Tame the Spaghetti

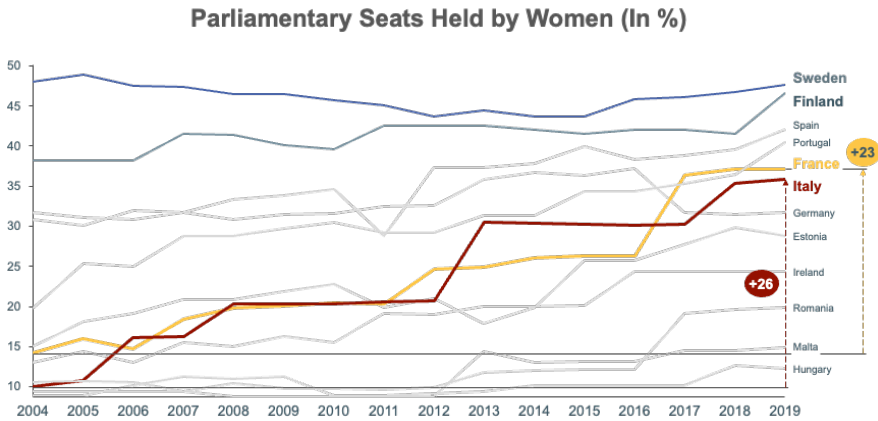
If you've got a little too many lines, don't worry! You have options:

1. **Limit Lines:** Be ruthless. Can you describe the core story with 4–6 lines? That's generally the sweet spot for clarity on one chart.
2. **Use Contrast:** Use a heavier weight or brighter color to differentiate your main line(s). Make noncritical lines thinner and mute colors (say gray or dashed patterns). Guide the viewer's eye!
3. **Highlight & Annotate:** If you need to get all these lines on the page, consider graying out most of them and actively highlighting one or two trends that you want to discuss. Then use callouts or annotations to refer directly to meaningful events or takeaways written on the highlighted lines.
4. **Break It Down (Into Small Multiples):** This is usually the most graceful solution. Do not create one complex chart but create a grid of small, simple line charts (the so-called “Trellis Charts” or “Panel Charts”). Each of the small charts has the same axes and scale but includes only one or a few categories.

By highlighting the key trends, we emphasize in the example below the countries with the highest female participation in parliament (i.e., Finland and Sweden) and the ones with the highest increase (e.g., France and Italy).

As a ROT, keep in mind that the goal of a line chart is to clearly communicate trends and patterns. If the chart becomes so complex that it obscures this goal, it's time to reconsider your approach. Sometimes,

creating multiple simpler charts is more effective than trying to cram everything into a single, complex visualization.



Small multiples: Clarity in numbers

So back to that ugly Parliament data. Rather than one messy chart, picture a grid, with each little chart showing the trend in the EU average compared to the trend in one single country.

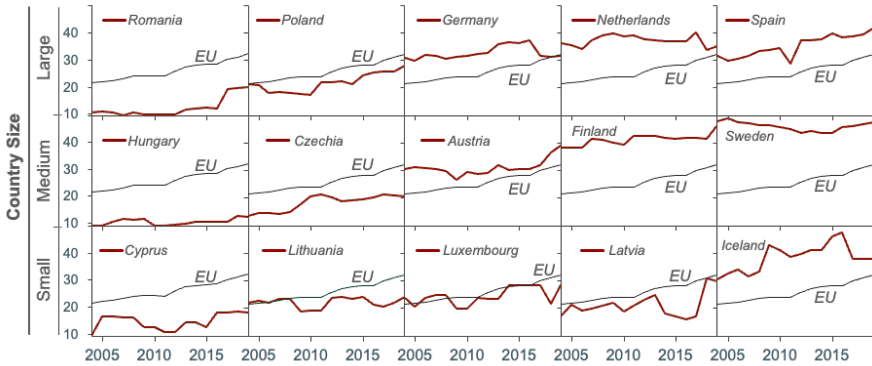
All of a sudden, you can see the trajectory of each country in comparison to the average and each other without the visual clutter. Small multiples do a great job of clearly showing individual trends across many categories. The trade-off? It becomes more difficult to identify exact crossover points between the categories that might otherwise be apparent in a single (less cluttered) chart.

The key features of Small Multiples Charts:

- Shows individual source trends and total consumption.
- Visualizes the shifting mix of components over time.
- Maintains visibility of individual trends within the total.

Parliamentary Seats Held by Women By Country Vs. EU Total

2004-2019, In %



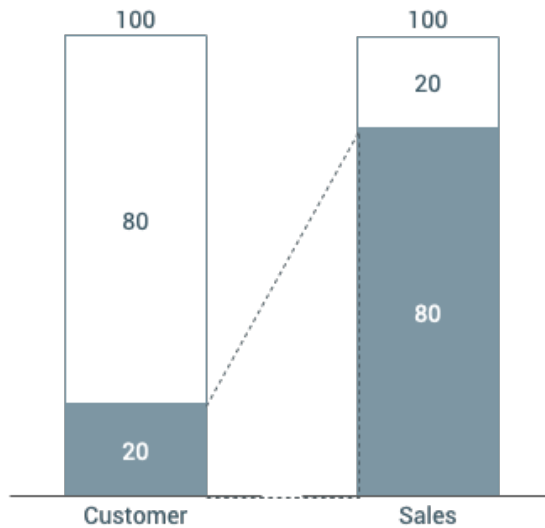
Wrapping Up Line Charts

Line charts are most powerful storytellers when it comes to depicting change and trends over time. Their visual flow is easy to understand. But keep in mind the aspect ratio affects perception and beware the spaghetti monster! Be judicious in the use of comparison lines; when the variables to compare are numerous, accept the clarity provided through highlighting, annotating, or the neatness provided by small multiples. With these strategies in your toolkit, you will be able to use the line chart to tell accurate and effective stories of trends and comparisons.

100% Stacked Bar charts

100% Stacked Bar Charts use multiple rectangles divided into sections to represent proportions of a whole. They're frequently deployed to illustrate simple breakdowns of totals. Many consider them superior to pie charts, as they effectively show dominant versus non-dominant shares and can handle more categories. They work both horizontally and vertically. However, including too many categories or grouping multiple stacked bars can make them challenging to use for discerning differences and changes.

One way to use stacked bar charts is to visualize proportions instead of pie charts as in the example below shows an 80-20 rule-like visualization.



Waterfall Charts: Explaining the Journey from Start to Finish

Ever have the need to show precisely how a beginning number led to an ending number? Or perhaps you need to demonstrate how an original sales figure became your actual profit after accounting for the various costs and adjustments in between. This is exactly where the Waterfall Charts shine.

You can think of it as building a bridge or following a cascade of water down a series of steps — hence the terms “bridge chart” or “cascade chart” that you sometimes hear. It visually guides your audience through a series of additions and subtractions. Unlike pie charts (discussed later) which provide a static snapshot of parts-of-a-whole, or stacked bar charts, which provide a view of composition, the waterfall is the king of showing the cumulative effect of an ordered series of changes. It’s about the journey.

Waterfall charts have become a favorite among financial analysts for good reason, but their utility extends far beyond basic profit and loss statements.

How Does it Work Visually?

Once you see one, it becomes quite intuitive:

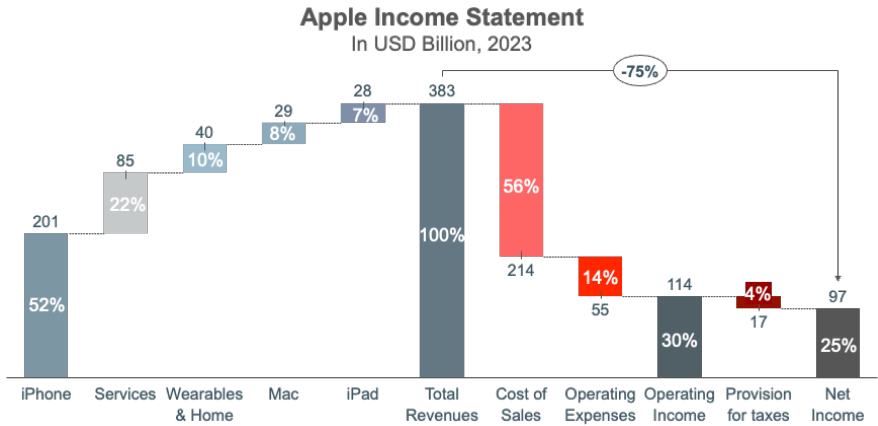
- **The Starting Point:** You start with your base number – which could be last year’s sales figures, starting inventory, or total revenue. This is typically the first full bar standing tall on the left.
- **The Steps (Ups and Downs):** Then follows the in-between numbers — the things that alter the original number. Positive contributions (e.g. new sales, new funding) are indicated by “floating” bars that rise up from the end point of the previous bar. Costs (negative contributions), expenses (negative contributions), and returns are shown as floating bars dropping down.
- **The Cumulative Flow:** This is the most important part – each floating bar starts where the previous one finished. You follow the running total visually, rising and falling as you traverse each step. It’s like watching a tide come in and out.
- **The Grand Finale:** The full bar on the right represents the final result – the total, regardless of the number of steps it takes to reach the end.
- **(Optional) Milestones:** There are times when you want to display a subtotal along the way (think Gross Profit before Operating Expenses). For common breakpoints within the series, waterfall charts typically use a solid bar resting on the baseline to represent these key milestones or breakpoints in the sequence.

So Let Us Take That Profit & Loss Example:

Imagine explaining Apple’s profitability going from revenue to net income and how that might look in a waterfall chart using data extracted from Apple’s Income Statement:

- **Revenue Streams:** Each tall blue bar represents one income stream (iPhone income is \$201B, followed by Services \$85B, Wearables & Home \$40B, Mac \$29B, and iPad \$28B).
- **Total Revenue:** These positive impacts accumulate to reach Apple's Total Revenue (\$383B), shown as a solid blue milestone bar.
- **Deductions:** From there, the downward red floating bars show deductions: Cost of Goods Sold (-\$214B); Operating Expenses (-\$55B); Taxes (-\$19B).
- **Cumulative Effect:** Each red bar begins where the previous one ended, in sequence, deducting from the running total.
- **Net Income:** And this brings us to Net Income (\$97B), represented by the final solid blue bar.

This waterfall chart elegantly visualizes how Apple's multiple revenue streams combine into total revenue, and how different costs and expenses then reduce this total to reach the final profit figure. It succinctly tells the financial tale of how Apple made almost \$100 billion in profit, laying out revenue sources and cost categories all in one flowing visual.



When Should You Reach for a Waterfall Chart?

These charts are especially useful when you have to:

- Discuss two periods of performance differences between two periods (like year-over-year profit differences)
- Break down the components that contribute to a net change (e.g., explaining the variance between budget and actual results).
- Explain how various elements add up to the final value (see the P&L example).
- Illustrate trends in inventory, cash flow, or population over time.

The waterfall chart is, in many ways, the visual storyteller of financial and operational change. When you want to deconstruct the steps and demonstrate how positive and negative elements coalesce to achieve an ultimate outcome, it offers clarity and narrative flow that's difficult to beat.

Scatter Plot Charts

Scatter Plot Charts, also known as dot charts or X-Y plots, display individual data points on a coordinate system and are used to visualize the relationship between two variables. Each dot represents a piece of data that has two numbers attached to it. That is, each data point is represented by a dot, with its position determined by its values on the horizontal (X) and vertical (Y) axes. For example, if you were looking at how height relates to weight, each dot might represent a person. The dot's position left-to-right would show their height, and its position up-and-down would show their weight. Scatter Plot Charts are particularly useful for identifying correlations, outliers, and patterns in data.

Correlation in Scatter Plots Charts

Scatter plots are great for showing how two things or variables might be related and how strongly they are correlated.

Correlation is a statistical measure that reflects how two variables are related to each other. It doesn't necessarily imply cause and effect, but rather the extent to which they change together.

- **Positive Correlation:** If the dots seem to make a line going up from left to right, it means that as one thing increases, the other tends to increase too. In our height-weight example, this would mean that taller people tend to weigh more.
- **Negative Correlation:** If the dots make a line going down from left to right, it means that as one thing increases, the other tends to decrease. For example, this might happen if we plotted "time spent studying" against "number of questions missed on a test".
- **No Correlation:** If the dots look randomly scattered with no clear pattern, it might mean there's no strong connection between the two things we're looking at.

Strength of Correlation

Correlation strength is quantified by a coefficient that can range from (minus one) -1 (perfect negative correlation) to (plus one) +1 (perfect positive correlation). This coefficient is a numerical indication of the correlation between two variables.

The strength of correlation can be explained as follows:

- **Strong correlation:** coefficient values between ± 0.7 and ± 1.0 suggests that variables move linearly and predictably with one another.
- **Moderate correlation:** coefficients ranging between ± 0.4 and ± 0.7 suggest a significant but not necessarily controlling relationship.
- **Weak correlation:** coefficients ranging between ± 0.1 and ± 0.4 suggest a minor relationship.
- **No correlation:** coefficients ranging between -0.1 and $+0.1$ indicate no significant linear relationship.

In scatter plots, strong correlation manifests as a tight cluster of points that forms a straight or curved line, a lower degree of correlation manifests as a broader, more diffused pattern. Correlation strength tells us how significant the relationship is between two variables — whether the relationship is worth exploring or may simply be a coincidence.

Regression

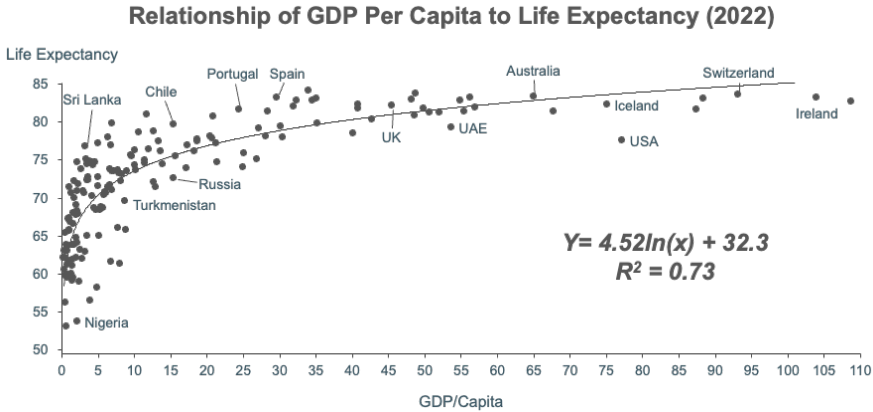
Regression analysis goes further than finding correlation: it constructs a mathematical model that tries to predict how the dependent variable varies when the independent variable changes. While correlation indicates whether two variables are associated, regression explains the nature of the association.

Regression models can take many forms based on the pattern of the relationship, such as linear, logarithmic, exponential, polynomial, and so on. A regression model is usually evaluated based on R-squared (R^2)—the percentage of variance in the dependent variable that can be explained by the independent variable(s). A higher R-squared means a better fit.

The majority of data visualization tools (for example, Excel and PowerPoint) provide either default functions to compute regression models or to plot R-squared values on a scatter plot.

Consider the example of the relationship between GDP per capita and life expectancy, which tends to be logarithmic, not linear. As shown in the graph below, this relationship can be characterized by the following equation: $Y = 4.52\ln(x) + 32.3$.

The logarithmic model captures an important real-world pattern: as GDP per capita increases, life expectancy rises as well, though the effect starts to falter (diminishing returns) above about \$20,000 per capita. This means that beyond this threshold, more wealth yields smaller gains in life expectancy.



In this example, each data point would be represented by a dot on the chart, with the horizontal position determined by the advertising spend and the vertical position determined by the sales revenue. If the dots form a pattern that slopes upward from left to right, it indicates a positive correlation between advertising spend and sales revenue. Conversely, if the dots slope downward, it suggests a negative correlation. If there is no clear pattern, it implies no correlation between the two variables.

Scatter plots are most useful when:

- You have two sets of numbers to compare.
- You want to see if there's a relationship between these numbers.
- You have enough data points to see a pattern (usually at least 30).

They're commonly used in science, business, and social studies to look at things like:

- How temperature affects plant growth.
- The connection between advertising spending and sales.
- How study time relates to test scores.
- The relationship between a country's wealth (GDP per capita) and life expectancy.

Pie charts: Visualizing Simple Proportions

Pie Charts are ubiquitous charts that divide a circle into sections representing proportions of a whole value, often used for simple breakdowns like product categories, traffic sources, or survey results. While they effectively show dominant versus non-dominant shares, people generally don't estimate pie wedge areas very well. More than a few slices can make values hard to distinguish and quantify. Pie Charts are one of many alternatives used in visualizing breakdowns, which include the donut charts, waterfall charts and stacked bar charts.

Key Features of Pie Charts:

- **Composition:** Pie charts are used to show how a whole is divided into different parts or categories. Each slice of the pie represents a category, and the size of the slice represents its proportion of the total.
- **Proportions:** The angles of the slices in a pie chart are proportional to the quantities they represent. The entire pie represents 100% of the total, and each slice represents a percentage of that total.
- **Categorical Data:** Pie charts are best suited for categorical data, where each category is distinct and mutually exclusive.
- **Limited Categories:** Pie charts are most effective when there are a limited number of categories (typically up to 6). Too many slices can make the chart cluttered and difficult to read.

When to use Pie Charts:

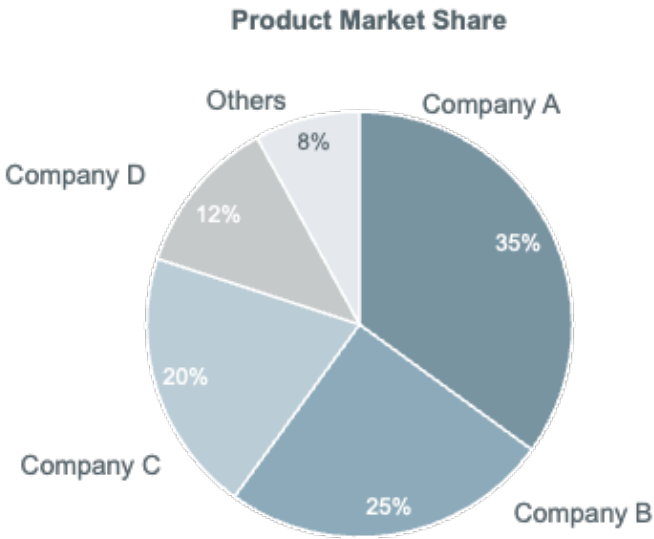
- There are a small number of segments in the pie.
- The difference between the segments is large and easy to see.
- There are no small segments (or they can be combined into an “Other” category).
- The overwhelming focus is on showing all the parts of the whole, rather than a comparison between segments.
- The audience is unused to seeing information graphically.

Example: Market Share by Company

Let's say you want to visualize the market share of different companies in a specific industry.

In this example, a pie chart would have each company represented by a slice of the pie. The size of each slice would be proportional to the

company's market share. The "Others" category combines the smaller companies to keep the chart readable.



Donut Charts: Refining Proportions (and Adding Space)

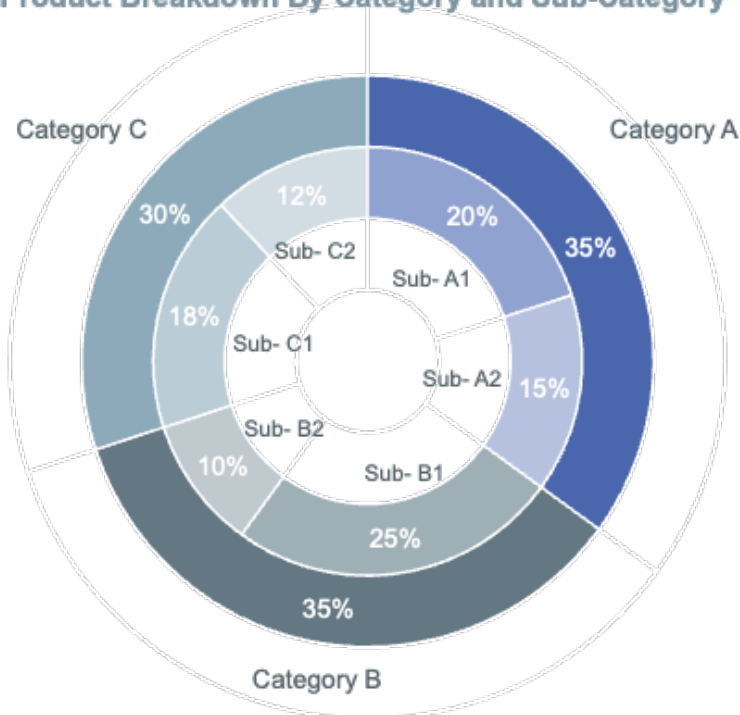
Donut charts are often a better alternative to pie charts. While pies provide a full view of the surface area and the proportions are driven by angles, in a donut chart, the arc length is the intuitive driver of the breakdown. That said, while pie charts become messy if you have more than a few variables to visualize, the donut chart helps overcome this limitation by stacking two or more donuts.

Donut charts are a variation of pie charts that have a circular hole in the center, resembling a donut shape. Like pie charts, donut charts are used to visualize the composition or breakdown of a whole into its parts. However, donut charts have some advantages over traditional pie charts, particularly when dealing with multiple categories or when you want to emphasize specific information.

Key Features of Donut Charts:

1. **Composition:** Donut charts, like pie charts, show how a whole is divided into different parts or categories. Each segment of the donut represents a category, and the size of the segment represents its proportion of the total.
 2. **Central Space:** The hole in the center of the donut chart provides space to display additional information, such as the total value, the title, or key metrics related to the data.
 3. **Multiple Levels:** Donut charts can be used to display multiple levels of data by having concentric rings, each representing a different level of categorization. This allows for a more detailed breakdown of the data.
 4. **Emphasis on Key Categories:** Donut charts can be effective in emphasizing specific categories by visually separating them from the rest of the data. This can be achieved by pulling out or exploding a segment of interest.
- **Example: Sales by Product Category and Sub-Category:** Let's say you want to visualize the sales breakdown by product category and sub-category.

Product Breakdown By Category and Sub-Category



In this example, a donut chart with two levels can be used to visualize the data. The outer ring would represent the main product categories (A, B, C), while the inner ring would represent the sub-categories within each main category. The size of each segment would be proportional to its sales percentage.

Donut Charts vs. Pie Charts

Donut charts offer some advantages over traditional pie charts in certain scenarios:

1. **Multiple Levels:** Donut charts can effectively display multiple levels of categorization by using concentric rings. This allows for a more detailed breakdown of the data compared to a single-level pie chart.
2. **Central Space Utilization:** The hole in the center of the donut chart provides valuable space to display additional information, such as the total value or key metrics. This can enhance the overall information conveyed by the chart.
3. **Emphasis on Key Categories:** Donut charts can be used to emphasize specific categories by visually separating them from the rest of the data. This can be achieved by pulling out or exploding a segment of interest, making it more prominent.

Considerations and Limitations

Donut charts come with some limitations that you should consider when deciding whether to use them:

1. **Perception of Angles and Areas:** Like pie charts, donut charts rely on the visual perception of angles and areas to represent the proportions of categories. This can make it challenging to accurately compare the relative sizes of the segments, especially when the differences are small.
2. **Limited Data:** Donut charts, similar to pie charts, are not suitable for displaying large amounts of data or many categories. As the number of segments increases, the chart becomes cluttered and difficult to interpret.
3. **Comparison Difficulty:** Comparing multiple donut charts side by side can be challenging, as the viewer needs to mentally compare the sizes of the segments across different charts.

In summary, donut charts are a useful alternative to pie charts, particularly when you want to display multiple levels of categorization or emphasize specific categories. The central space in the donut chart can be utilized to provide additional information or key metrics. However, like pie charts, donut charts have limitations in terms of accurate comparisons and handling large amounts of data. By understanding the strengths and limitations of donut charts, you can make informed decisions on when to use them effectively in your data storytelling.

Mekko Charts: Seeing the Big Picture and the Details

Now let's pivot to discuss the chart type that may seem more complex but packs a serious punch when you need it: the Marimekko Chart (or just Mekko for short). Another name it goes by is variable width chart or mosaic plot, or you might even see it appear in top-level business presentations without a name – its unique appearance gives it away.

Imagine a stacked bar chart where one bar equals one total broken down into components. Now, what if the *width* of each of those bars also represented something meaningful? What if wider bars represented larger categories in aggregate? This is the basic concept of a Marimekko. It allows you to view two categorical dimensions simultaneously:

- **The Width:** The width of each stacked bar represents the absolute amount of that category (i.e., total market share of a company, total sales in a region).
- **The Height:** In each bar, the height of the segments indicates how much of that second categorical variable is represented (e.g. product category mix of that company's share, revenue sources of that region's sales).

Why bother with the additional complexity?

So, why do this instead of a simpler stacked bar or two pie charts? Because it allows you to see relationships and compositions that would otherwise be hidden or require multiple separate charts to piece them together.

- **Beyond Simple Stacking:** While a simple stacked bar chart allows such comparisons between the internal composition of your categories, it doesn't show the size difference between them overall. All the bars are the same width. The Marimekko solves this problem — you immediately see which bars (categories) are the largest overall while simultaneously showing the breakdown within each category.
- **Two Variables, One View:** It is uniquely able to decompose how composition changes across categories of different sizes. For instance, do our largest customers (wide bars) purchase a different mix of products (segment heights) than our smallest customers (narrow bars)? A Marimekko chart can provide this insight visually.
- **Visual Pattern Recognition:** With variable widths, different heights of segments, and color-coding, the elements create a visual tapestry. Your eyes can rapidly identify dominant segments in big categories, register deviations (e.g., a small category with an outlandish internal mix) and sense the overall skeleton of the data in a way impossible to achieve with other chart types.

Example: Sales by Product & Region

For example, consider smartphone sales by country (China, India, East, USA, Japan, and Rest of the World) and product categories (iOS, Android, Other).

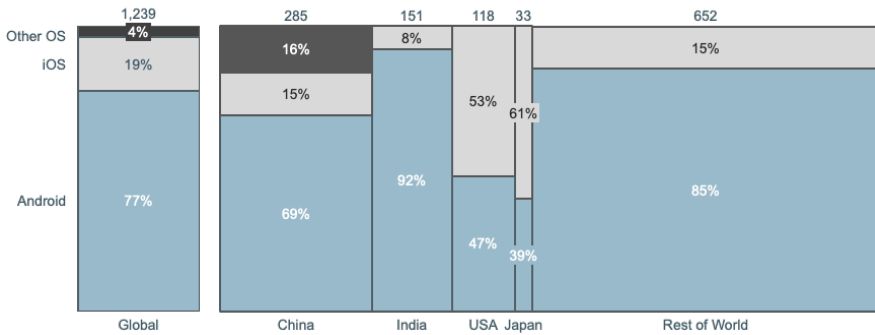
- In a Marimekko, each country would be a bar. The bar's width would represent that country's total unit sales volume.
- Inside each of the country bars, the height of the segments would show the share of iOS, Android, and other OS in that country.

So, now if you were analyzing Apple iPhone sales because you are considering launching a new smartphone application but want to decide which OS platform you should be prioritizing, you can answer questions such as:

- What would be your potential global market reach from new smartphone buyers?
- Where would the target market be coming from in the largest markets vs. rest of the world?
- If the USA is your primary target market, then which OS should be prioritized for the widest reach?

Global Smartphone Sales Breakdown

In Million Units Sold, 2024



Here's the Catch (Considerations & Limitations)

Marimekko charts have many strengths, but they're not the right tool for every situation.

- **Complexity Can Bite:** If you add too many bars (regions) or too many segments (products), suddenly, the chart becomes a mess. Most of all, you need to balance detail with readability. Less is often more.
- **Judging Areas Visually is Difficult:** It is challenging for the human eye to accurately compare the area of various differently colored rectangles (especially rectangles of different shapes)—just like with pie charts. If accurate observation for comparison between segments is needed, this could be a poor choice without clear labels. It's better for demonstrating relative structure and patterns.
- **Focus on Proportions:** This chart focuses on relative composition and the relationship between the two items, rather than the precise numerical values. If the main objective is to pinpoint accuracy on every value, then yes, you'll definitely need labels or annotations, or maybe even a different chart type altogether.

The Bottom Line

If the narrative's main point isn't just the parts of a whole but the differences among those parts across wholes of varying size, then by all means, reach for a Marimekko chart. Mekko charts are great to visualize the relationship between two categorical variables (and composition) in the context of overall scale. They offer a uniquely insightful visual perspective that simpler charts often can't. Only make sure to use it

judiciously and design it cleanly to prevent your audience from being overwhelmed.

Barbell Charts

Barbell charts are a unique type of visualization that has gained popularity with prominent financial publications such as *The Economist* and *Financial Times*. Characterized by the lateral line that connects two different points and resembles weightlifting equipment, this chart powerfully showcases the change or gap between two data points for a single category and enables the viewer to easily compare the change between two states.

Unlike bar or column charts, which emphasize absolute values, the barbell chart's superpower lies in its emphasis on the distance and direction of the movement. This feature makes barbell charts most suited for “before” and “after” comparisons, shifts over time, or comparing actual results to target values.

How Does it Work Visually?

The format is crisp and laser-focused:

- **Two Markers:** Typically circles or dots, denoting the values at the two points to be compared.
- **Connected Line:** Draws a straight connecting line between the two markers.
- **Category Label:** Next to the barbell, specifying what is being measured.
- **Value Labels (optional but recommended):** Usually found right next to the markers to indicate their respective values.
- **Sorting:** Categories are often sorted by size or direction of change to reveal and emphasize a specific pattern.

Why Use Barbell Charts?

Because these kinds of charts are a relatively a new visualization technique, some elements of their design may be confusing in some regards. However, this type of visualization has become increasingly popular with top financial publications for several compelling reasons.

They enable viewers to slice through noise and immediately deliver the heart of the story – investors gauging changes, comparisons between two points in time (before/after) – which is valued. The Economist, for example, uses a barbell chart to compare GDP change between different countries, shifts in market indices, or fluctuation in currency during a certain period.

They enable the audience to quickly understand:

- What categories saw the most and least changes.
- The nature of the change (up or down).
- The size of the difference between the two positions.

Best Practices:

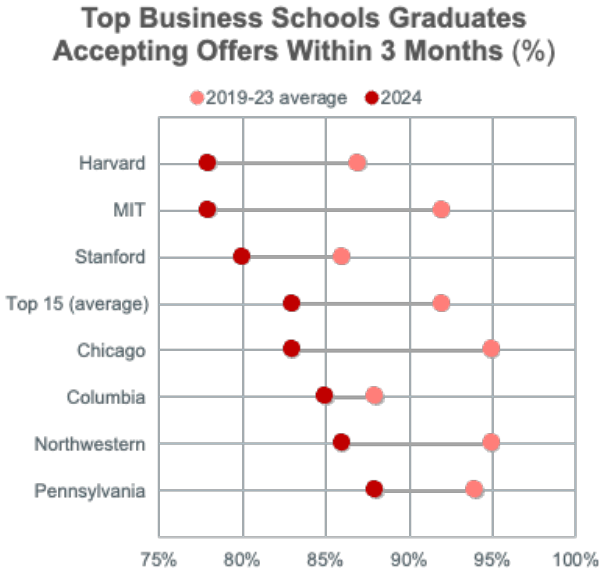
If you decide to design your own barbell chart, consider these best practices in your design:

- **Keep it Clean:** Avoid excessive clutter, as the barbell's strength lies in its simplicity.
- **Sort Meaningfully:** Compare categories side by side, based on either the change amount or the value at the end.
- **Use Color with a Purpose:** If you are using color on the markers or line, consider using color to represent the direction of change (i.e., green when there is an increase, red when there is a decrease) or to isolate certain categories.
- **Use Clear Labels:** Use easy-to-read categories and values (if displayed), e.g., Indicate accurate values on both ends of the chart.
- **Limit Categories:** As is the case with most charts, too many barbells can make it hard to process the information. Concentrate on the most applicable comparisons.
- **Comparison Marker:** Add a secondary marker for benchmark or average values.

Example: Change Over Time

The barbell chart that follows illustrates the change in job offers acceptance rates for top business school graduates between 2019-23 (average) and 2024 — and how well the chart format does at highlighting comparative performance. Each school is represented by a row with two-shaded red circles (the two periods) connected by a horizontal line whose length instantly conveys how much change occurred. At a glance, the chart shows a few important things: MIT and Harvard had the most

dramatic drop, while Columbia, Pennsylvania, and Stanford dipped slightly, and most schools experienced a 10-20% drop. The clean grid lines provide context for how precise the measurements are without unnecessary visual distraction, allowing viewers to easily identify trends and make informed comparisons across many institutions at once—which is why publications like The Economist and Financial Times often prefer to use this chart when comparing comparative changes.



The Bottom Line

The beauty of the barbell chart is its simplicity. By eliminating all but the most basic elements of change, all that is left is the transformation between two points in time which can, therefore, achieve an immediate visual impact that is often hard to equal when using more complex chart types. This is why publications such as the Financial Times, which are known for their excellence in data visualization, have adopted this format as a staple in their visual communication arsenal.

If your story is about the difference, change, or transition between two points in time for several variables, then the barbell chart is a powerful, easy-to-read way to get your point across. This singularity directs focus straight to the scale and direction of change, proving itself as an invaluable tool in the data storyteller’s toolset.

Slope Charts

Similar in spirit to the barbell chart but used for slightly different nuances more often, the Slope Chart is another really effective visual for showing change over time, especially rank shifts among categories. Popularized by the visualization expert Edward Tufte and commonly found in magazines like *The Economist*, slope charts reduce trends to their most basic elements: the start point, the end point, and the slope that connects them. They take the richness of many data points and reduce them to a relationship between one starting and one ending value. *The Financial Times* often uses them to demonstrate changes in economic indicators between countries, changes in performance across sectors, or changes in key metrics between reporting periods.

How Does it Work Visually?

They're like line charts (but less cluttered), and instead of plotting many intermediate points, they just focus on the value for each category at each of the two specific points in time (or under two conditions) you care about. The basic skeleton of a slope chart consists of:

- **Two Parallel Axes (optional):** Represent the two points in time (e.g., 2015 and 2020) being compared.
- **Connecting lines:** For each category, you have a connecting line between the value on the left-axis and the value on the right-axis.
- **Slope Signifies Change:** The slope or angle of the line, immediately conveys:
 - **Direction:** Up means increase, down means decrease.
 - **Magnitude** is the amount of change: A steeper slope means a larger change.
- **Rank Changes:** When lines cross, we can clearly see the categories experiencing rank changes.
- **Labels:** The category names and values are typically printed directly on the ends of the lines.

Why Use Slope Charts?

They are powerful because they expose many dimensions of change across many categories at once:

1. Direction of change (upward or downward slopes)

2. Magnitude of change (steepness of slopes)
3. Ranking shifts (lines that cross indicate changes in relative position)
4. Outliers (unusually steep or contrary slopes)

Best Practices

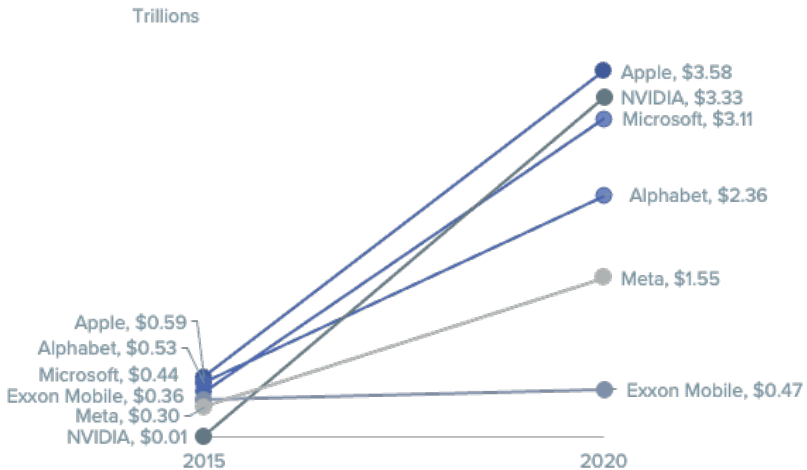
Use these best practices when creating slope charts:

1. Limit the number of categories to avoid visual clutter (typically 5-15 lines).
2. Use color strategically to highlight important shifts or group related categories.
3. Consider sorting the data points on one or both axes by value.
4. Ensure adequate spacing between lines to maintain readability.
5. Add contextual annotations to explain significant changes or anomalies.

Example: The Magnificent Five

The example here shows the change in market capitalization for prominent tech stocks from 2015 to 2020; it shows the power of the format in visualizing growth paths. The chart places the time periods in time on two vertical axes (2015 is on the left, 2020 is on the right) with diagonal lines connecting each company's values, immediately communicating both the degree and direction of change. The slope of each line speaks to its rate of growth — NVIDIA's rapid angle demonstrates its skyrocketing ascent from \$0.01T to \$3.33T, while Exxon Mobile's more horizontal line shows a much more modest pace. Both endpoints have data labels that give specific values, so there is no need to refer to any axes. The use of a blue hue and varying opacity allows for consistent coloring in the chart while enabling viewers to differentiate between companies. This is a classic case of why a slope chart should be used for comparative performance across multiple entities over two separate time points (financial report cards, competitive comparisons, and trends).

Market Cap Change for Selected Stocks



The Bottom Line

Slope charts work very well when your story is focused on:

- Comparative performance among categories
- Ranking changes over time
- Recognizing winners and losers in a relative sense
- Emphasizing convergence or divergence tendencies

The simplicity of slope charts makes them a perfect complement to more complex visuals in larger presentations. An accompanying slope chart can further emphasize the before-and-after part of the story that is often more important to the decision-making process, even if a detailed line chart is available showing the entire trajectory.

When creating your presentations, opt for slope charts to visualize comparative change across categories. The combination of visual simplicity and ease of interpretation makes them particularly useful for audiences who are intellectually curious and who crave a combination of analytical clarity and design elegance.

Bullet Charts

Developed by data visualization expert Stephen Few as a more informative and space-efficient alternative to dashboard gauges and meters, the **Bullet Chart** is a powerhouse for displaying **performance against targets** within context. It packs a surprising amount of information into a compact linear format, making it ideal for dashboards and performance summaries.

Think of it as a bar chart on steroids. While a simple bar shows a single value, the bullet chart layers that value with comparative information and qualitative context.

How Does it Work Visually?

Unlike simple bar charts, which are a simplistic depiction of raw numbers in isolation, bullet charts provide more contextual information by embedding multiple Key Performance Indicators (KPIs) within a holistic visual framework. A bullet chart consists of:

- **Primary Measure:** The main data point (e.g., year-to-date revenue) is displayed as a central bar (the "bullet").
- **Comparative Measure:** A target or benchmark value (e.g., the revenue target) is shown as a short perpendicular line or marker.
- **Qualitative Ranges:** Background shading indicates performance zones (e.g., poor, satisfactory, good). These provide immediate qualitative context.
- **Scale:** A clear quantitative axis runs alongside the chart.
- **Label:** Identifies the metric being displayed.

Why Use Bullet Charts?

Bullet charts illustrate analytical power because they allow you to answer multiple evaluation questions all in one compact visual. For example, when displaying performance, they help answer the following questions:

1. What is the current performance level? (The length of the main bar)
2. How does it compare to the target or benchmark? (Position relative to the marker)

3. Where does it fall within defined performance ranges? Is performance satisfactory, excellent, or concerning? (Which background zone does the bar reach?)

This density of information makes them extremely efficient for conveying performance status quickly and clearly, a reason they are favored in business intelligence dashboards and reports.

Best Practices:

When creating bullet charts, make sure to adopt the following best practices:

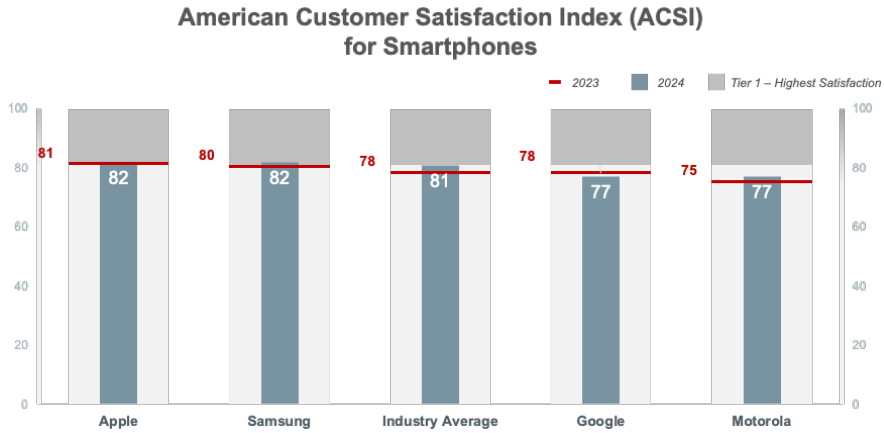
- **Keep Ranges Simple:** Usually, 3-5 distinct qualitative ranges (shades) are sufficient. Too many becomes confusing.
- **Use Intuitive Shading:** Typically, darker shades represent better performance zones but ensure consistency and clarity.
- **Clear Target Marker:** Make the comparative measure visually distinct.
- **Consistent Scales:** When comparing multiple bullet charts vertically (e.g., for different regions or KPIs), use consistent scales if feasible to allow for accurate visual comparison.
- **Label Clearly:** Ensure the metric, scale, and target value are unambiguous.

Example: ACSI for Smartphones

The bullet chart that follows displays the American Customer Satisfaction Index (ACSI) for the most popular smartphone manufacturers. Each manufacturer is represented by a horizontal bullet chart, with the blue bar showing the 2024 score and the red vertical marker showing the 2023 score. The chart clearly shows that the two leaders, Apple and Samsung, are tied with a score of 82, both showing improvement over the previous year. The industry average is 79, while Google and Motorola are below average, with a score of 77 each.

Complementing the charts' scores is a qualitative background horizontal bar. It makes it immediately clear which manufacturers exceed or meet the industry baseline. Similarly, comparative markers (previous year's scores) help viewers quickly contextualize each manufacturer's year-over-year performance changes. Through a single, compact visualization, we can see not only where current performance stands but

also relative positions against industry benchmarks, demonstrating the bullet chart's exceptional ability to convey multiple layers of performance data in an easily digestible format.



The Bottom Line

Bullet charts truly shine when in your presentation needs to:

- Show progress against goals
- Benchmark actual performance
- Provide contextual reference points for interpretation
- Condense multiple related performance metrics in a single visual

Bullet charts are the go-to choice when you need to display a primary measure alongside its target and qualitative performance context in a minimal amount of space. They offer unparalleled information density for performance monitoring and reporting, making complex assessments intuitive and immediate.

The high information density of bullet charts makes them an invaluable component of executive dashboards and summary slides, where space is limited but a rich analytical context is required. Whereas a standard bar chart might convey just absolute values, the bullet chart conveys value, target, and performance thresholds all at once—and all in a single, coherent visual.

In creating your presentations, consider using bullet charts when the story is about performance or benchmarks. Their visual compactness

combined with contextual density makes them especially powerful for complex audiences who need to rapidly assess performances on multiple dimensions without compromising analytical depth.

Waffle and Plum Charts

Waffle charts and their stylistic variant, known as "plum charts," are distinctive visualization approaches that have become signature elements in McKinsey & Company's visual communication toolkit. These charts elegantly meet the challenge of presenting part-to-whole relationships, most notably when mapping onto percentages or proportions.

The waffle chart, also referred to as a square pie chart, takes the form of a grid of squares (usually 10×10) with each individual square representing a proportional fraction of the whole (1%). Coloring these individual squares according to different categories gives a visual that shares the part-to-whole clarity of pie charts and the precision of a grid system.

The "plum" variant, commonly used in McKinsey visuals, utilizes circles instead of squares and sometimes introduces additional design embellishments for visual improvement without compromising analytical integrity.

How Does it Work Visually?

Waffle and plum charts typically include:

- **Grid Layout:** Usually a square grid (e.g. 10x10 units = 100 units).
- **Unit Representation:** Precise proportional representation where each element equals a specific percentage. For example, the circle or the unit square represents an equal fraction of the whole (or some specific number, e.g., 1%, 1,000 people).
- **Color Coding:** The various categories (e.g. quarters and types) have different colors assigned to them, the equivalent amount of each unit is colored in the same color, and clear labeling indicate the categories and their percentage values.
- **Clear Proportions:** The number of colored units is directly related to the proportion of each category.
- Often, a total count or value is included to provide scale.

Why Use Waffle/Plum Charts?

These charts are adopted by expert presenters due to their ability to communicate a proportional idea with breathtaking precision and visual impact. This makes them more visually intuitive than common pie charts, which can sometimes trick us into thinking one portion is larger or smaller than it is, while waffle and plum charts lend themselves to better proportion judgement:

1. **Easier Comparison:** Humans can compare areas made of discrete units with greater accuracy than comparing angles or arc lengths in pies or donuts.
2. **Precision:** They allow for precise counting of individual units when needed.
3. **Visual Engagement:** The grid format is potentially more visually striking and less likely to be distorted (unlike pie charts).
4. **Consistency:** They maintain a consistent shape regardless of the data, making comparisons across multiple charts more reliable
5. **Flexibility:** You can change the size of the grid or unit meaning and apply it to other total numbers.
6. **Categorization:** They can effectively display multiple levels of categorization through nesting or grouping.

Best Practices:

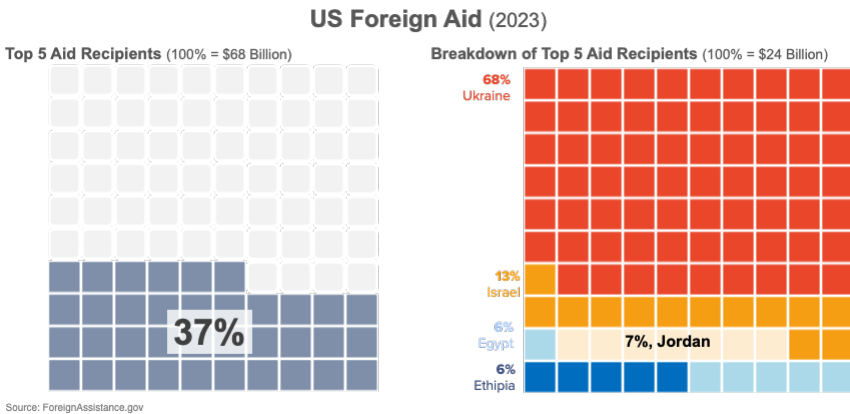
Here are some best practices for creating waffle or plum charts:

- **Maintain Consistent Grids:** For side-by-side analysis with multiple waffle charts, keep grid sizes the same (typically 10×10 for simplicity) for fair comparison.
- **Logical Arrangement:** You may want to keep the colored blocks close together for each category so it will be easier for counting and perception. Commonly, begin input in the same corner (i.e. top-left or bottom-left)
- **Clear Labeling:** Use clear labels and a legend that maps colors to categories showing what & how much each category represents. Consider adding percentage labels directly on the chart for key categories.
- **Coherent Color:** Use a coherent color palette that differentiates categories while maintaining visual harmony.

- **Limit Categories (Sometimes):** Even though they do better than pies with many categories, too many small categories can make a plot seem fragmented. If necessary, include an “Other” category.
- **Accessibility:** Make sure the colors for your categories are contrasting enough.

Example: The 80/20 of US Foreign Aid in 2023

Using a grid of small squares, the following waffle chart conveys how U.S. foreign aid was allocated in 2023, with each small square representing a uniform percentage of the whole. The left grid shows how 37% of aid is concentrated in the top 5 recipients, while the right grid breaks down this 37% among those countries (with Israel receiving the largest portion at 16%, followed by Ukraine, Egypt, Jordan, and Iraq). There is color-coding used for countries, and percentages are clearly labeled and consistent. One thing you can do with the square formatting is make sure the value of the parts-to-whole comparisons are represented by tight grid distances apart, something that would be difficult to ascertain in a pie chart, especially given the (nesting below) hierarchy between the total aid budget and the breakdown of its top recipients. Interestingly, McKinsey consultants love the waffle chart for hierarchical proportional data — this looks amazing as compared to other charts because it shows the aggregate value with the packing efficiency of the grid for counting.



The Bottom Line

These charts are especially effective when you need to:

- Communicate proportional relationships with precision
- Display categorical breakdowns in a visually engaging manner
- Show multiple comparative distributions side-by-side
- Balance analytical accuracy with design elegance

McKinsey's uptake of these charts signals the firm's embrace of communication that is both disciplined and visual. Now, a pie chart works fine for simple proportions, but waffle and plum charts give us a more precise proportion representation while remaining visually appealing. So, for more nuanced, proportional comparisons that require precision and visual impact in equal measure, consider waffle or plum charts in your presentations. Their grid-based structure coupled with intuitive color-coding make them exceptionally useful for sophisticated business audiences who seek analytical rigor alongside polished presentation.

Waffle and Plum charts work great to visualize the exact composition of a whole partwise, presenting them in a way that is often easier to read than pie or donut charts. Their grid-based structure lends itself to clarity and visual appeal, making them effective for representing steps out of the total, questionnaire results, or resource allocations, especially for viewers who prefer a straight-to-the-point approach and few bells and whistles.

Pictograms and Isotopes Charts

Lastly, let's look into a technique that brings a layer of intuitive meaning and interactivity to almost any chart type: Pictogram Charts (often referenced more formally by their historical system name, Isotype — International System of Typographic Picture Education). Rather than using bars or dots or other abstract shapes to communicate the quantity of data points, these charts use relevant icons or symbols.

Pictogram and Isotype charts are a flexible visualization method that can turn almost any chart into a better one, as they include recognizable icons or symbols to illustrate categories and values. We are so conditioned to see graphs as arbitrary shapes, lines, and dots that

replacing the standard shapes with meaningful icons directly connects the chart to the subject matter, thus making the data and content more relatable and memorable.

What distinguishes pictogram charts from anything else we've covered so far is their ability to take the iconic approach and apply it to (almost) any charting framework discussed in this chapter.

Pictogram charts trace their origins to the Picture Language (International System of Typographic Picture Education) that Otto and Marie Neurath created in the 1920s. Their objective was to create a universal visual language for communicating statistical information across literacy and language barriers. Fast-forward to today, this methodology has transformed into advanced data visualization methods that maintain the human-centric essence of the original idea.

How Does it Work Visually?

Pictographic elements can enhance bar charts, column charts, waffle charts, area charts, and even line charts to make them more engaging and persistent.

The fundamental structure of pictogram charts includes:

- **Icons, Icons and More Icons:** Subject-relevant icons that replace or enhance standard chart elements.
- **Descriptive Variation:** Simple and standard symbols specific to the data (e.g., figures for population, cars for car sales, trees for deforestation).
- **Proportional Sizing:** Consistent sizing and spacing of icons to maintain quantitative accuracy.
- **Clear Indication of Scale:** (e.g., "each car icon represents 1 million vehicles"). Per Unit Value — Understand what amount the icon represents: An icon usually represents a certain quantity of an entity (1 icon = 1 million people, for instance). The icon is repeated to display the total amount.
- **Legend and Labeling** are necessary to clarify what amount of something an individual icon contains.
- **Integration with Other Chart Types:** Pictograms themselves are not a stand-alone chart type but rather an application of the technique to other charts. Here are some variants to consider when using pictogram charts:

- **Unit Charts:** Where each icon represents a specific quantity and is repeated to show the total (similar to waffle charts but using themed icons).
- **Icon-Enhanced Bar/Column Charts:** Where standard bars are either replaced by rows of icons or enhanced with relevant imagery.
- **Proportional Icon Charts:** Where the size of a single icon changes to represent different values (though this approach requires careful implementation to avoid distortion).
- **Icon-Infused Area Charts:** Where pattern fills using small icons replace solid colors in area charts.

Why Use Pictograms?

Their key advantage is linking abstract numbers to flesh-and-blood meaning. The strategic benefit of pictogram charts becomes clear from their ability to create immediate cognitive connections.

- **More Relatable:** Icons help ground the data, making it that much less abstract, and more in touch with the subject.
- **Better Retention:** Symbols are typically more memorable than plain bars or digits. They often increase retention of the information presented.
- **Improved Engagement:** They transform abstract numbers into visually tangible elements, which can help make charts more visually attractive and interesting.
- **Accessibility:** Can facilitate understanding across language or literacy barriers (the original aim of Isotype). They can transcend language barriers in international presentations.
- **Cognitive Ease:** They reduce the cognitive load required to understand the subject matter.

Best Practices

When creating pictogram charts, follow these best practices:

1. **Stick to Clear, Simple Icons** — Icons should be easily recognizable and not leave room for interpretation. Do not use too complex or detailed images.
2. **Icon Size:** Maintain consistent icon sizing and spacing to preserve quantitative accuracy. Crucially, each icon should represent the same thing; this is critical to support the proportion. When representing value, never scale the size of icons to indicate value, as this tricks

- perception. Instead, use more icons of the same size. If you must, fractional icons may be used sparingly and in context.
3. **Maintain Consistency:** If you are using the same icons when creating a series of related charts, use icon that are of the same style, size, etc. Provide a clear key: Always state clearly what one icon stands for and provide clear scale references.
 4. **Don't Go Too Far:** These visual markers should facilitate comprehension, not overwhelm or distract from the central premise. Balance visual interest with data integrity – the icons should enhance, not obscure, the data story.

Example: The Wildfires of California

As a quick reminder, don't forget to download the companion visual booklet at www.storytellingwithcharts.com/vl-stcai.

The two visualizations work well together in showing California's largest wildfires through complementary approaches: one as a bar chart with flame icons, and the other as waffle pictograms in which each flame icon represents 10,000 acres burned.

In the bar chart version, we can see the dramatic scale differences between the major fires. The August Complex fire (2020) and Dixie fire (2021) dominate with their massive ~1-million-acre burns, creating bars that extend dramatically longer than the others. The subsequent fires—Mendocino Complex, SCU Lightning Complex, Creek, and others—show a progressive decrease in affected areas, with names and exact acreage clearly labeled alongside each bar.

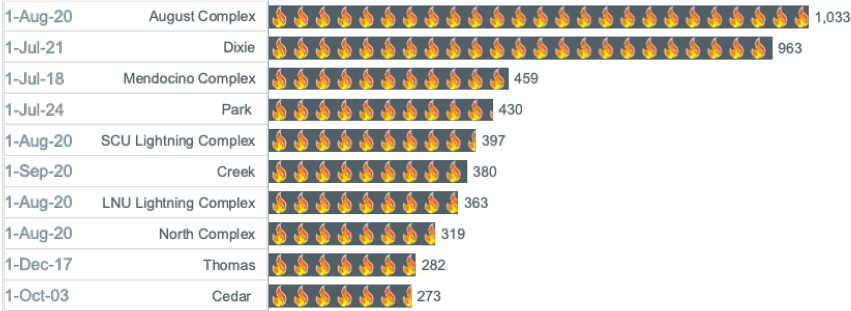
The second version transforms that same data into waffle-pattern flame icons, where each icon = 10,000 acres burned. This creates an immediate visual impact that connects viewers directly to the subject matter. The August Complex fire, which is pictured here with 102 flame icons (indicating its 1,032,648 acres), is dramatically larger than some of the smaller fires at the bottom of the chart. The precise, countable nature of the icons allows viewers to immediately grasp both the absolute and relative scale of each disaster.

Both visualizations illustrate how pictogram charts turbocharge data storytelling by substituting abstract bars with relevant imagery about subjects. This grounds the numerical data (acres burned) in a visual

metaphor (flames) that creates instant recognition and emotional connection to the real-world impact of these wildfires, while maintaining the analytical clarity of the original bar chart format.

California 10 Largest Wildfires

(2017-2024, In '000 Acres)

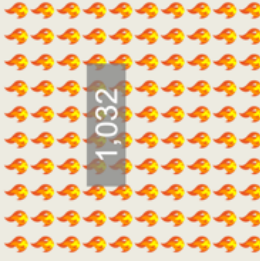


Seven out of the eight largest wildfires in California occurred in the last four years

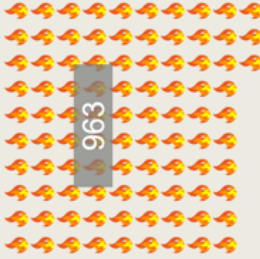
California 8 Largest Wildfires (2008-2024, in '000 Acres)

 ~10,000 acres

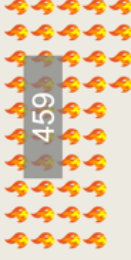
August Complex
(08/20)



Dixie
(07/21)



Mendocino Complex
(07/18)



Park
(07/24)



SCU Lightning Complex
(08/20)



Creek
(09/20)



LNU Lightning Complex
(08/20)



North Complex
(08/20)



The Bottom Line

Pictogram charts are particularly effective when your presentation aims to:

- Make statistical information more approachable and memorable
- Connect data to its real-world context
- Present information to diverse or non-technical audiences
- Create visually distinctive materials that stand out in a crowded information environment

Pictogram charts are a great way to keep some analytic rigor in your data story — and bring a notch of intuition that can sometimes go a long way in engaging audiences with your data. They are particularly great for executive summaries, public-facing reports, and circumstances where you want to quickly convey not just the numbers but the human context behind them.

When developing your presentations, consider how pictogram enhancements might elevate your standard charts into more memorable and engaging visual narratives. Their ability to bridge the gap between data and meaning makes them valuable tools in any data storyteller's toolkit.

Chapter 5: Next Steps and Resources

You are on your way to mastering the art of storytelling with charts, and the principles you have learned will accelerate that journey. I look forward to seeing how you apply these techniques to tell data-driven stories that achieve successful outcomes.

As we conclude this book — a deep dive into the fundamentals of Vertical Logic — recall that we began with the notion that simply asking, “Given this data, what can I visualize?” doesn’t work. And in a world overwhelmed with misconceptions hidden in data — misconceptions that need a clear, persuasive presentation to address — developing these skills is crucial to help you inform, persuade, and drive action.

In the previous sections, we learned how principles such as those from Gestalt psychology can help us create visual representations that will resonate naturally with our brains. And, more importantly, we’ve introduced the ultimate test: the “So What?” question, to ensure that each chart we create is directly relevant to our core message and strategic objectives.

I have deliberately kept this book focused on vertical logic, leaving the discussion of horizontal logic for my other book, “Storytelling with Charts: The Full Story”. In the process, the intent was, for each slide to be created as a self-contained, powerful visual, regardless of context. This is fundamental, to master this framework of deck creation. It’s all about maintaining clarity, usability, and credibility, one point and one slide at a time. It is the art and science of persuasion.

The PowerPoint Advantage

In this book, we have been using Microsoft PowerPoint as our platform of choice for implementing storytelling charts. This choice wasn’t arbitrary. PowerPoint is the industry standard in business presentations for a reason: it has powerful features, offers broad compatibility, and

uses a familiar interface, making it relatively easy to learn more advanced techniques.

If you have a recent release of PowerPoint (especially Office 365) available, you could use it to create all of the visualization techniques presented in this book—its charting capabilities are extensive. With its widespread use, the platform also makes it less likely that your presentations will render incorrectly across different organizations or devices versions, which is essential when your aim is persuasive communication.

Alternative platforms work well for special use cases, but PowerPoint provides the optimal balance of capability, accessibility, and practicality for data storytelling with charts. The techniques you've learned can be applied most efficiently within this environment, especially when enhanced with purpose-built tools.

Making PowerPoint Work for You

To accelerate your application of the principles covered in this book, consider exploring the Storytelling Charts Add-In (STCAI). This free tool integrates seamlessly into PowerPoint to significantly reduce the effort required for creating the types of charts and visual structure we have discussed.

This add-in includes templates specifically for implementing vertical logic, improved workflows for charting, and enhanced annotation capabilities—all tailored to the methodologies described in preceding chapters.

For readers wanting to put these ideas to work today, visit storytellingwithcharts.com. The tool is intuitive, and learning how to use it will pay off in time savings and improved presentation quality.

The Enduring Value of Visual Storytelling

The principles we've discussed are enduring. Much like the longevity of ideas behind the Lindy Effect we talked about earlier, the essentials of *storytelling with charts* — structure, clarity, relevance — haven't

changed significantly since their inception decades ago, and they are unlikely to change drastically anytime soon. They operate based on the way human cognition works. As you apply these principles, you become more than just the person who shows the data or writes a report; you become someone who explains it, who translates complexity into clarity, and who helps guide effective decision making. Such influence is invaluable in any field.

How to Focus on the Bigger Picture Behind the Slide

As you master vertical logic, keep in mind that each powerful slide is part of a greater narrative – the Horizontal Logic that undergirds the entirety of your presentation or report. How do the messages on individual slides sequence together? In what order does the entire story unfold? How do you identify your speaking points and structure supporting evidence in a logical way?

If you're confident at crafting the individual chart but need to learn how it fits into a coherent, persuasive, overarching story, I urge you to take a look at the companion volume — *Storytelling with Charts: The Full Story*. It delves into more advanced horizontal logic techniques to give you the complete picture, from beginning to end, including a complete system for creating impactful presentations.

Making It Real: Practice, Tools, and Continued Growth

Knowing something is powerful, but true mastery is only attained through applying that knowledge. The biggest benefits come when you begin practicing these principles, starting *today*.

1. **Review Your Work:** Find a recent presentation. Choose one or two of your slides and reinvent them according to the frameworks and best practices we have discussed. You'll probably notice immediate areas for improvement.
2. **Build Your Own Library:** Begin building your own library of preferred chart templates in PowerPoint – templates with charts

set up using these principles. This will help automate your process over the long run.

3. **Seek Feedback:** Share your redesigned slides or new charts with colleagues you trust. Ask them: *What's your biggest takeaway? How long did it take for you to get it?* Honest feedback is invaluable for growth.
4. **Learn from Experts:** Study the work of top consulting firms, esteemed publications (*The Economist* or the *Financial Times*), and effective communicators in your domain. Pay attention to how they visually organize their information.

To bridge the gap between the concepts in this book and your daily workflow, we have also developed the Storytelling Charts Add-In (STCAI) for PowerPoint. It embeds directly in the software you probably use every day, offering templates, efficient workflows, and annotation tools that are built based on the vertical logic principles we've discussed. It's designed to make it easier to implement what you've learned on an ongoing basis. You can find the Add-In and other resources, including information on more structured training programs that cover both vertical and horizontal logic, at storytellingwithcharts.com.

A Final Thought

There is more to mastering visual storytelling — it's a lifelong journey — but you now have a solid starting point and a strong framework to create charts that actually tell a story! You know the reasoning, the traps to avoid, and the methods that transform raw numbers into an effective argument.

If that seems intimidating, I encourage you to take these skills, embrace them, practice them deliberately, and see how they will serve you in connecting deeply with your audience and producing results that matter. Take small steps, starting with one chart, but start today. The clarity you add to complex information is a valuable contribution to your audience, your organization, and ultimately to the quality of the decisions being made.

Thanks for exploring vertical logic with me! I wish you the best as you continue to hone your visual storytelling abilities, and I am excited to see the impact that you will have through your use of data in the future.

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