Curated from [Storytelling with data](#) book by Cole Nussbaumer.

1. Identify elements that don't add informative value and remove them from your visuals.

2. Visual clutter creates an excessive cognitive load that can hinder the transmission of our message.

3. The Gestalt (six) Principles of Visual Perception help you understand how people see and allow you to identify and remove unnecessary visual elements.

4. Proximity: We tend to think of objects that are physically close together as belonging to part of a group.

5. Similarity: Objects that are of similar color, shape, size, or orientation are perceived as related or belonging to part of a group.

6. Enclosure: We think of objects that are physically enclosed together as belonging to part of a group.

7. Closure: The closure concept says that people like things to be simple and to fit in the constructs that are already in our heads.

8. Continuity: When looking at objects, our eyes seek the smoothest path and naturally create continuity in what we see.

9. Connection: We tend to think of objects that are physically connected as part of a group.

10. Use these strategic attributes to draw attention to where you want your audience to look and guide your audience through your visual.

11. Size: Relative size denotes relative importance.

12. Color: When sparing used, it is one of the most important tools you have to draw

13. Position: Without other visual cues, most of your audience scan their eyes in Z pattern.

14. Highlight the important stuff

15. Eliminate distractions

16. Create a visual hierarchy of information.

17. Leverage preattentive attributes to make those important words stand out.

18. Offer your audience visual affordances as cues for how to interact with your visualization:

19. Make it legible

20. Make it clean.

21. Label and title as appropriate, so there's no work going back and forth

between a legend and the data to decipher what is being graphed.

22. Whatever data is required for context, but doesn't need to be highlighted, push it to the background.

23. Employ attributes like color, thickness, size, position, labeling, text and annotation to emphasize and de-emphasize components throughout the visual.

24. If there is a conclusion you want your audience to reach, state it in words.

25. Make your designs accessible by not overcomplicating and by leveraging text to label and explain.

26. A good story grabs your attention and takes you on a journey, evoking an emotional response.

27. No longer will you just show the data. Rather, you will tell a story with it.

28. End with a call to action: make it totally clear to your audience what you want them to do with the new understanding or knowledge that you've imparted to them.

Curated from The Functional Art book by Alberto Cairo.

29. The usefulness of a graph can be evaluated only in the context of the type of data, the questions the designer wants the readers to answer, and the nature of the audience.

30. Whenever you see an information graphic in a magazine, book, or website, practice this exercise:

31. The first part, ask yourself: What does the designer want me to do with this graphic? In other words: If we accept that an infographic is, at its core, a tool, what tasks is this one intended to help me with (present,

compare, organize, correlate)

32. The second part, ask yourself: What shape should my data have? Once we have listed the goals our graphic should help accomplish, it's time to consider what shape the numbers should adopt.

33. In most cases, there is not just one way of encoding a particular set of data properly. But your goal must be always to think first about what kinds of questions readers are more likely to want to be answered by your visualization.

34. The complexity of a graphic should be adapted to the nature of your average reader.

35. At least two factors influence the communication between a designer and an audience through information graphics and visualizations:

36. First, how well the visual forms used to encode the information are adapted to the nature of the story the graphic should tell.

37. Second, the previous knowledge the user has about the topic and about how those visual forms work (e.g., bar charts are more common than scatter-plots).

38. Adding tons of special effects to a graphic will not make it any better if it lacks good information. The special effects take away space that could have been used to highlight other angles of the story.

39. It is possible to find the right balance between density and lightness, novelty and redundancy, functionality and decoration. But it is hard work and depends on the project you are designing, the audience your graphic is aimed at, and the client you work for. Nonetheless, there are some general rules of thumb to apply.

40. Organize your graphics in layers. First, offer a summary of the data, such as a good intro, some averages, or highlights of the main figures. This will be the entry point into the graphic, clueing readers into how to

read what follows.

41. Beneath the outer layer of your onion-like graphic, on the next level, including as many inner layers of information as possible. Don't include everything, of course. Make decisions based on the story and your focus.

42. Structure the layers in a logical order. In some cases, the structure will be linear. In others, you can organize the navigation (regardless of whether you are doing a print or an interactive project) so that readers can explore as they wish.

43. Start with a strong focus, do as much research as you can, organize, summarize, and then deliver your conclusions in a structured and visually appealing manner.

44. Define the focus of the graphic, what story you want to tell, and the key points to be made. Have a clear idea of how the infographic will be useful to your readers, and what they will be able to accomplish with it.

45. Gather as much information as you can about the topic you are covering. Interview sources, look for datasets and write or storyboard ideas in quick form.

46. Choose the best graphic form. What shapes should your data adopt? What kind of charts, maps, and diagrams will best fit the goals you set in the first step?

47. Complete your research. Flesh out your sketches and storyboards.

48. Think about the visual style. Choose typefaces, color palettes, etc.

49. If you've been sketching offline, move the design to the computer. Complete the graphic using the appropriate software tools.

50. Constraints Think of an interface as a mediator between users and a goal. As such, interactive graphics designers must think not only about what they will offer their readers but also how they will orient their

navigation.

51. Consistency A rule in traditional graphic design states that entities of similar nature should look alike. That is, elements of the same kind whether they are headlines, body copy, footnotes, or whatever should always be designed with the same typefaces, size, and style.

52. Our main goal should be to tell a story clearly by achieving order and having some sort of narrative through each graphic. Any project should start by analyzing what your story is about and then finding the best way to tell it by splitting it up into easily digestible chunks, without losing depth.

53. Don’t create fancy visualizations with tons of bubbles, lines, bars, filters, and scrubber bars, and expect readers to figure the story out by themselves, and draw conclusions from the data. That’s not an approach to information graphics. Not all readers are data analysts!

54. Don’t just show stuff; explain the main points, focusing the reader’s attention on the most interesting parts of the information.

55. After that, if readers want to navigate deeper into other possible stories, they can do it. But first, they are exposed to a traditional, linear narrative that lays out the basic facts.

56. If you want to produce information visualizations, you need to be able to work with the data directly. So you should learn about statistics and programming.

57. Of course, you should also look into the arts, graphic design history, and visual language. If you master all those, then nothing can go wrong.

58. I would recommend getting used to produce 10 to 20 different solutions to each challenge, to draw many sketches for any project. You need to be honest about which ones work and which ones don’t.

59. Don’t be afraid to fail. Sometimes you’ll have a good hunch in the

beginning, but more often you will need to look at many different variations of how to present the data using the right graphic forms.

60. That's the other crucial component to be successful in data visualization. You need to design a lot to become a good designer.

61. You need to build a solid backbone for your information, a reading path, an order, and a hierarchy before you lock yourself into a style for your display.

62. The structure is the skeleton and muscles of your graphic; the visual style is the skin. With no bones to support it, the skin of your project will collapse.

63. You should not proceed to develop a graphic on the computer before you've devised a precise outline of the graphic's elements and how they relate to one other.

64. Planning your content in advance saves a lot of time down the road.

Curated from Visualize This book by Nathan Yau.

65. The purpose of data visualization is to tell an interesting story to convince you of something or compel you to action.

66. Data is a representation of real life. It's not just a bucket of numbers. There are stories in that bucket. There's meaning, truth, and beauty. It's up to you, the statistician, programmer, designer, or data scientist to decide how to tell the story.

67. When you design a graphic, annotate important points or areas; carefully explain symbols and colors in a legend or with points; make it easy for readers to see the story in the data. It's not just a graph. It's a graphic.

68. It's not just about the data that makes for interesting chatter. It's how you present it and design it that can help people remember. Approach visualization as if you were telling a story. What kind of story are you trying to tell? Is it a report, or is it a novel? Do you want to convince people that action is necessary?

69. Before you start working on the visual part of any visualization, you actually need data. Data-checking and verification is one of the most important—if not the most important—part of graph design. The data is what makes a visualization interesting. If you don't have interesting data, you just end up with a forgettable graph or a pretty but useless picture.

70. You also need to check for context. You don't need to become an expert in the data's subject matter, but you should know where the original data came from, how it was collected, and what it's about. This can help you build a better graphic and tell a more complete story when you design your graphic

71. The design of every graph follows a familiar flow. You get the data; you encode the data with circles, bars, and colors; and then you let others read it. The readers have to decode your encodings at this point. What do these circles, bars, and colors represent?

72. Some encodings work better than others. But it won't matter what you choose if readers don't know what the encodings represent in the first place. If they can't decode, the time you spend designing your graphic is a waste.

73. Sometimes you might forget because you're actually working with the data, so you know what everything means. Readers come to a graphic blind though without the context that you gain from analyses. So how can you make sure readers can decode your encodings? Explain what they mean with labels, legends, and keys.

74. Label Axes Along the same lines as explaining your encodings, you should always label your axes. Without labels or an explanation, your

axes are just there for decoration. Label your axes so that readers know what scale points are plotted on.

75. Even though everyone looked at the same graph, a simple change in axis labels told a completely different story. Of course, this was just for play. Now just imagine if your graph were meant to be taken seriously. Without labels, your graph is meaningless.

76. Keep Your Geometry in Check When you design a graph, you use geometric shapes. A bar graph uses rectangles, and you use the length of the rectangles to represent values. In a dot plot, the position indicates value —same thing with a standard time series chart. Pie charts use angles to indicate value, and the sum of the values always equal 100 percent

77. Always consider your audience and the purpose of your graphics. For example, a chart designed for a slide presentation should be simple. You can include a bunch of details, but only the people sitting up front will see them. On the other hand, if you design a poster that's meant to be studied and examined, you can include a lot more details.

78. Are you working on a business report? Then don't try to create the most beautiful piece of data art the world has ever seen. Instead, create a clear and straight-to-the-point graphic. Are you using graphics in analyses? Then the graphic is just for you, and you probably don't need to spend a lot of time on aesthetics and annotation. Is your graphic meant for publication to a mass audience? Don't get too complicated, and explain any challenging concepts.

79. In short, start with a question, investigate your data with a critical eye, and figure out the purpose of your graphics and who they're for. This will help you design a clear graphic that's worth people's time—no matter what kind of graphic it is.

80. It's fun to explore patterns over time. You can use visualization as an exploratory tool. Zoom in on sections of time and question why there was

a small blip on some day but nowhere else or why there was a spike on a different day. That's when data is fun and interesting—the more you know about your data, the better story you can tell. After you learn what your data is about, explain those details in your data graphic. Highlight the interesting parts so that your readers know where to look. A plain graph can be cool for you, but without context, the graph is boring for everyone else.

81. Prepare Yourself You need to know your source material to tell good stories with data. This is an often- overlooked part of designing data graphics. When you start, it's easy to get excited about your end result. You want something amazing, beautiful, and interesting to look at, and this is great; but you can't do any of that if you have no idea what you're visualizing.

82. Don't assume your readers know everything or that they can spot features in your graphic. This is especially true with the web because people are used to clicking to the next thing. That's not to say that people won't spend time looking at data.

83. At its most basic level, visualization is turning data, which can be numbers, text, categories, or any variety of things, into visual elements. Some visual cues work better than others, but applicability also varies by dataset. A method that's completely wrong for one dataset could fit perfectly for another. With practice, you can quickly decide what fits your purpose best.

84. I consider the audience, the data in front of me, and ask myself whether the final graphic makes sense. Does it tell me what I want to know? If yes, then great. If no, I go back to the drawing board and figure out what would make the graphic better so that it answers the questions I have about the data. Ultimately, it's all about your goals for the graphic, what story you want to tell, and who you tell it to. Take all of the above into account—and you're golden.

85. For beginners, one of the hardest parts to design data graphics is to

figure out where to start. You have all this data in front of you without a clue about what it is or what to expect. Usually, you should start with a question about the data and work off of that question.

86. One of the best ways to explore and try to understand a large dataset is with visualization. Place the numbers into a visual space and let your brain or your readers' brains find the patterns. We're good at that. You can often find stories that you might never have found with just formal statistical methods.

87. John Tukey, my favorite statistician and the father of exploratory data analysis, was well versed in statistical methods and properties but believed that graphical techniques also had a place. He was a strong believer in discovering the unexpected through pictures. You can find out a lot about data just by visualizing it, and a lot of the time this is all you need to make an informed decision or to tell a story.

88. Whatever you decide visualization is, whether you're making charts for your presentation, analyzing a large dataset, or reporting the news with data, you're ultimately looking for truth. At some point in time, lies and statistics became almost synonymous, but it's not that the numbers lie. It's the people who use the numbers who lie.

89. Sometimes it's on purpose to serve an agenda, but most of the time it's inadvertent. When you don't know how to create a graph properly or communicate with data in an unbiased way, false junk is likely to sprout. However, if you learn proper visualization techniques and how to work with data, you can state your points confidently and feel good about your findings.

90. You don't have to be a graphic designer to make great graphics. You don't need a statistics PhD either. You just need to be eager to learn, and like almost everything in life, you have to practice to get better.

Curated from Good charts book by Scott Berinato

91. Show the chart and stop talking. A good chart will speak for itself. Let the viewers' active visual systems work without distractions.

92. Don't read the picture. Talk about the ideas in the chart, not its structure.

93. For unusual visual forms, guide the audience. Don't read the picture, but do provide some brief explanation of how the form works.

94. Use reference charts. Companion visuals that show "ideal" or "average" cases can add context and make your chart easier to understand.

95. When you have something important to say, turn off your chart. As long as a visual is displayed, viewers will look more than listen. If you want them to hear you, turn off the screen for a moment to refocus them.

96. Show something simple. Leave behind something more detailed.

97. Use the simplest forms possible in presentations, but create versions with more information that audience members can spend time with on their own.

98. Create tension. Before revealing a full visual, show parts of it and ask the audience to speculate on what it will ultimately show.

99. Use time. To make an audience grasp large values, reveal them gradually.

100. Zoom in or out. To give viewers a sense of scale, start with a relatable value and then increase or decrease the scale step by step to show the value you want them to understand.

101. Bait and switch. Lure viewers in with a visual they may expect to see

and then show them the actual version, which contradicts expectations.

102. Deconstruct and reconstruct. Break down a visualization into multiple, simpler charts and then put it back together for the audience.

103. Tell stories. Use the dramatic structure of setup, contact, and resolution to make a chart or several charts tell a short story.