Information Visualization

Digital storytelling

Lesson 8

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Table of contents

01

Storytelling

What are the building blocks to create a data-centric story

01

What it is about

Questions

Start with a question to frame your story

Context

Audience, objectives

Story

Visual data and presentation techniques

Start with the big Question

01

Questions

Frame the scope

Preliminary question(s) are useful at the beginning when acquiring and filtering data.

The final question is often the result of several attempts, and might not be clear at the beginning.

Example

Examine the relation between {topics} (influence, divergence, correlation)

Explore {topic} over space and time (evolution, potential correlation with other topics/events)

Make data-centric questions

01

Questions

Sub-questions

Decompose the big Question in small, **complementary**, sub-questions.

Answers to such questions, all together, should contribute to answer (or reframe) the big question.

Begin with...

A question must be data-centric, meaning it should start with terms like **where, when, how much, how often**.

N.B. It is hard that visualisations alone can answer questions that start with **why** (which is the domain of data analysis and human interpretation).

Make the right questions

01

Questions

Ask yourself “who”

Your questions should be the ones that your **audience** would do.

Different audiences, different questions.

Ask yourself “why”

Clarify why your audience should be interested in knowing the answer to your questions.

What is their purpose?

What would they do with the information you provide them? How does it *enable* them?

N/N group guidelines
https://www.nngroup.com/articles/persona/
https://www.nngroup.com/articles/journey-mapping-101/

Make answers actionable

01

Questions

SO WHAT?

When you find an answer to any of your sub-questions, ask yourself “so what?”

Example

A pie chart tells you that *“60% of DHDK students like poetry, 30% like novels, and only 10% like plays.”*

[audience]
Who cares about this result?

[purpose]
Is this result relevant for any task or future work?

[reframe]
Now that I know this, do I know more about the big Question?

Never ever...

01

Questions

Claim objectivity

Data are abstractions of real-world entities, and **interpretations** are human products, they are not objective.

Always give an account of the **limitations** of your work - it's a plus for credibility, not a weakness.
(some would say "it is a feature, not a bug")

Claim completeness

Rather, look for **representativeness** of data, to justify the validity of your findings.

Reframe (**narrow down**) your scope until you can claim representativeness
(e.g. work on Italian art rather than world-wide art).

Explore or explain

01

Context

Exploratory

You have some data and **no assumptions**.

You **showcase** the added value of your dataset, which should **reveal** something that was not not known before.

E.g. *“What is the relation between music genres and ethnicity?”*

Explanatory

You have some data and a **thesis** to demonstrate.

You **present** result of your analysis, which **confirms/refutes** your thesis.

E.g. *“Is Jazz Music just Black Music?”*

Explore or explain

01

Context

Jupyter notebook

It's where you **explore** your data, and show the main features of your dataset.

Then you move to your research questions.

Web project

It's where you **present** your results.

You must provide some information on the dataset that you used for the analysis, but you focus on your questions only here.

Visual data

01

Story

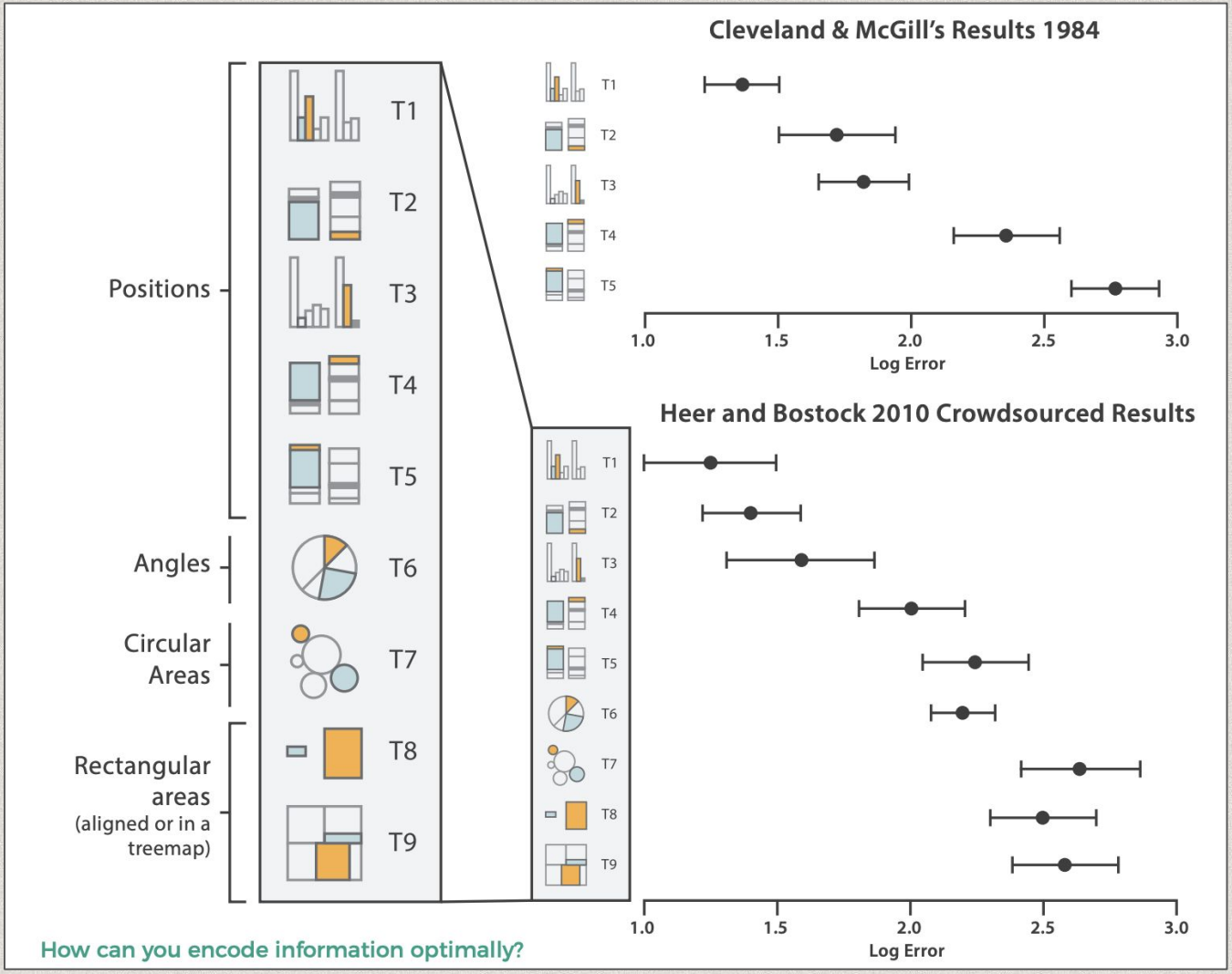
Appropriateness

According to the background of your audience, **some charts** would be easier/harder to understand.

Effectiveness

According to the type of question, the data to be shown and the task, **some charts** would fit better to present a result.

Are these the same charts?

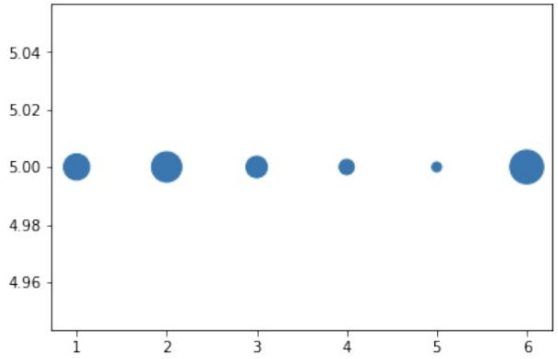


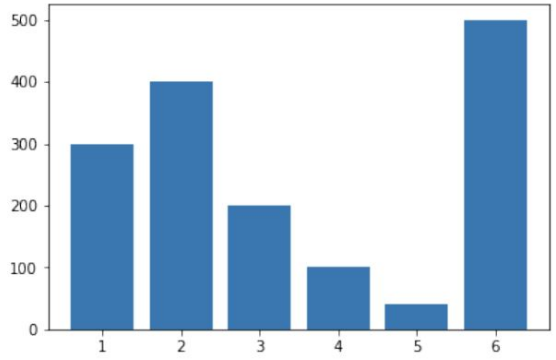
01

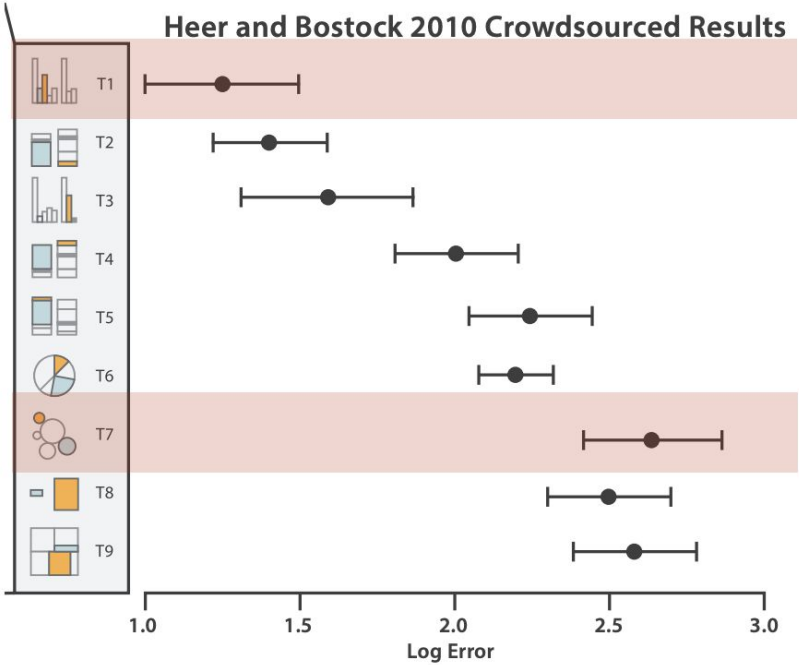
Appropriateness

It is well-known in the literature that the interpretation of some charts is more error-prone than others.

Positions and length (bar charts) are easier for comparison. Differences in areas and angles are more difficult to grasp.



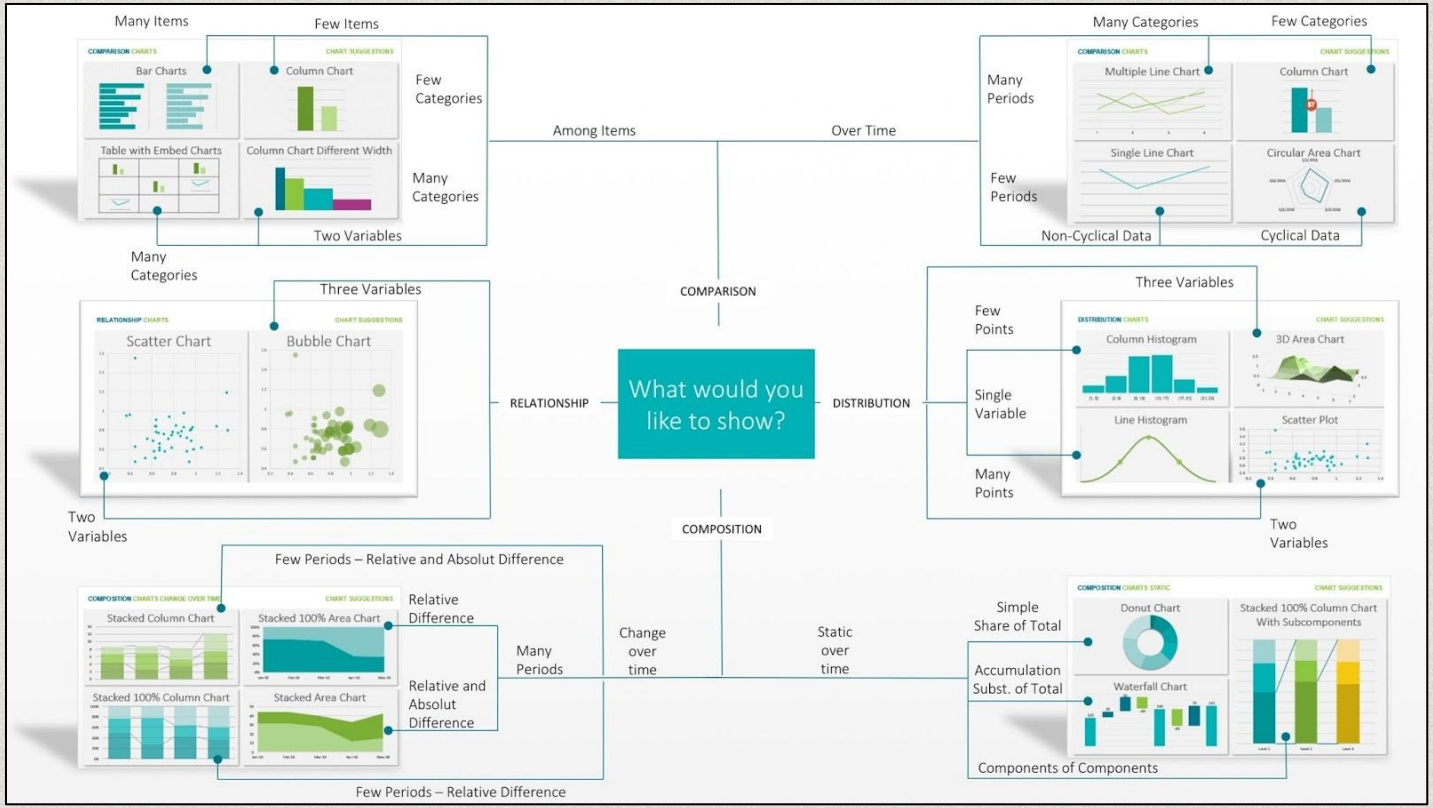




01

Appropriateness

See an example. Compare the same values in a bubble chart and a bar chart.



01

Effectiveness

Remember this table?

Choose a chart according to what you want your reader to do

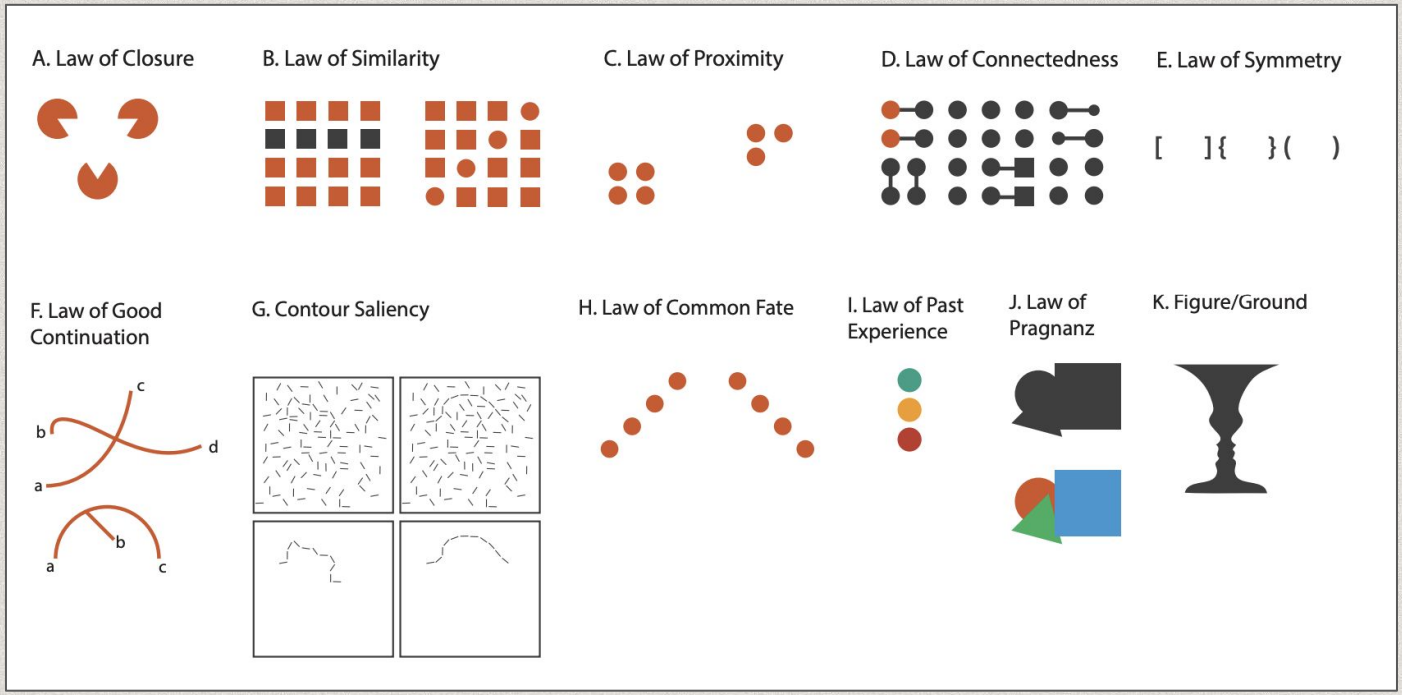
SHOW RELATIONS
COMPARE
SEE DISTRIBUTION
SHOW COMPOSITION

We look for patterns

We tend to group similar things

We tend to group close things

We tend to group symmetric things



Things arranged in a line or curve are perceived as related

Things that move together are perceived as groups

We use memory to interpret new signals

Light colors pop out, dark colors recede

01

Effectiveness

Refine and improve the effectiveness of your presentation using the **Gestalt principles** appropriately.

Small shapes defined by closed contour, texture, color.		Object, idea, entity, node.
Spatially ordered graphical objects.		Related information or a sequence. In a sequence the left-to-right ordering convention is borrowed from written language (English, French, etc.).
Graphical objects in proximity		Similar concepts
Graphical objects having the same shape color, or texture.		Similar concepts
Size, position or height of graphical object		Size, quantity, importance, 2D location
Shapes connected by contour		Related entities, path between entities.
Thickness of connecting contour		Strength of relationship.
Color and texture of connecting contour		Type of relationship.
Shapes enclosed by a contour, a common texture or color		Contained/related entities.
Nested/partitioned regions		Hierarchical concepts.
Attached shapes		Parts of a conceptual structure.

01

Effectiveness

Use a meaningful **semantic mapping** between shapes and patterns that you want to show.

Munzner T. Visualization Analysis & Design. 2014

Choose wisely

01

Story

Viz. catalogues

- **Data visualisation catalogue**
  https://datavizcatalogue.com/index.html
- **Visme**
  https://visme.co/blog/types-of-graphs/
- **Chart maker matrix**
  https://chartmaker.visualisingdata.com/
- **PolicyViz**
  https://policyviz.com/books/better-data-visualizations/policyviz-data-visualization-catalog/

Get inspired

01

Story

Good visualizations examples

- **Information is beautiful awards**
  https://informationisbeautiful.net/
- **Reddit data is beautiful thread**
  https://www.reddit.com/r/dataisbeautiful/
- **Tableau gallery**
  https://public.tableau.com/it-it/gallery/?tab=viz-of-the-day&type=viz-of-the-day

Get inspired

01

Story

Data storytelling projects

- **Women will**
  https://dataexplorer.womenwill.com/intl/en/thedivide/
- **Where is Poland?**
  https://whereispoland.com/en/where-is-poland/2
- **Lemonade**
  https://www.lemonade.com/giveback-2019
- **Google and NASA**
  https://showcase.withgoogle.com/nasa-fdl/
- **Atlassian - time wasting at work**
  https://www.atlassian.com/time-wasting-at-work-infographic
- **This side of rice**
  http://rice.jennytypes.com/

The narrative

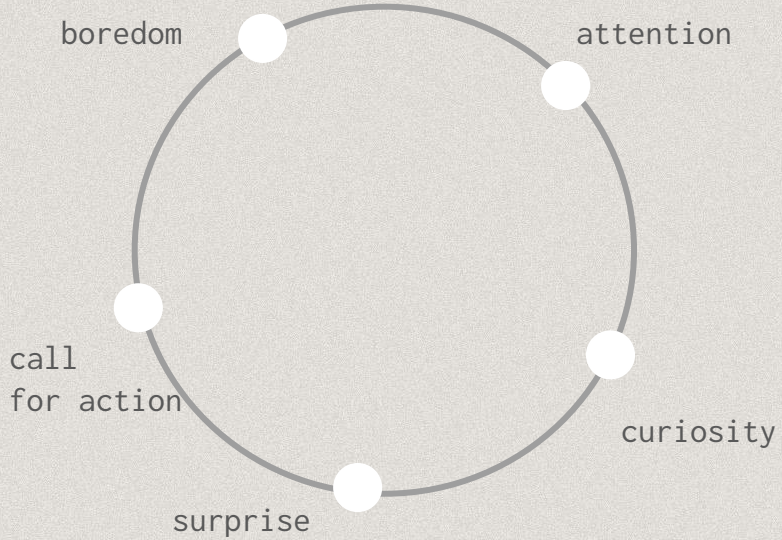
01

Story

The engagement circle

- **Entertainment** usually triggered by boredom (e.g. in waiting room, cafèteria)
- Draw **attention** attract the user (e.g. give her a screen)
- Stimulate **curiosity** provide introductory information
- Discovery by visual storytelling to learn something **unexpected** (the so what)
- **Recommendation** call for action (read a book or article, listen to music, watch a movie)

Build a climax!



02

Communication

Leverage visual aspects and phenomena in the communication of your results

The page

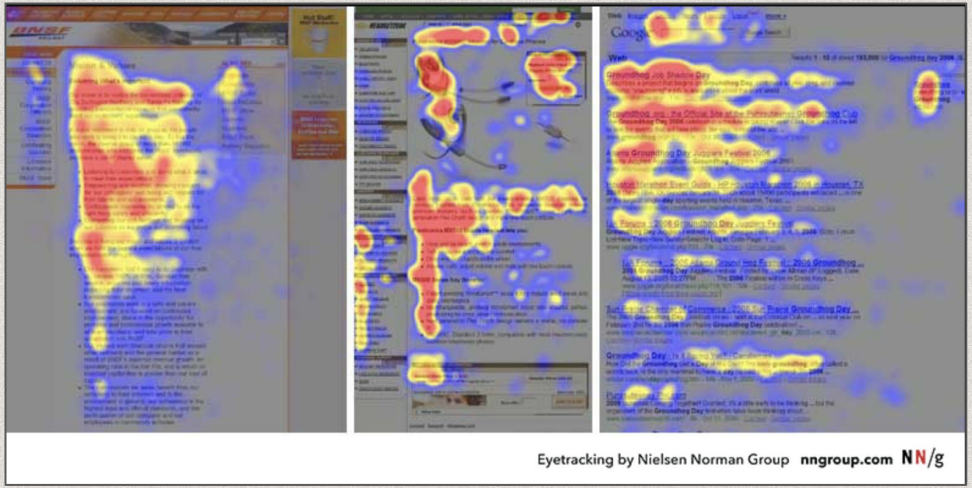
02

Eye focus

F pattern

Short sentences in short paragraphs.

Make strategic interruptions in the flow of text with visuals, titles, actions.



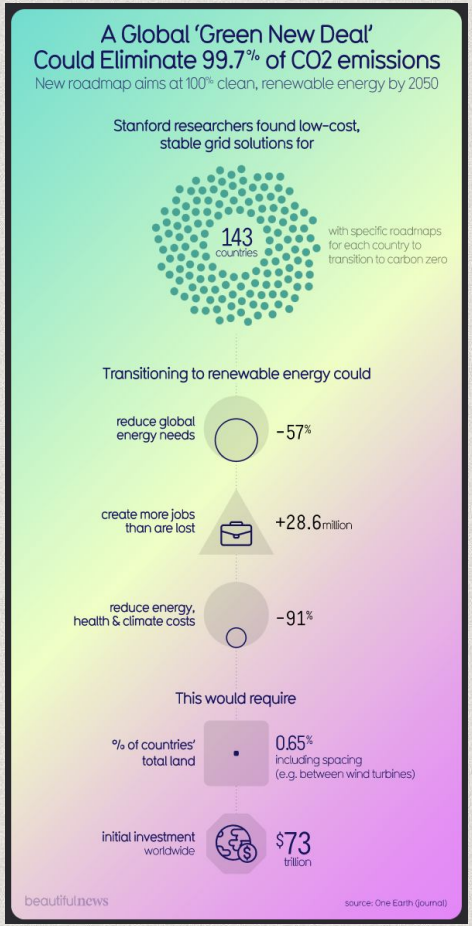
Colors and space

Make space!

Use **white spaces** to help the eye to fucs.

Create **symmetries** and highlight the flow.

Use the **minimum number of colors** possible. Repeat the colors through the story to show the way.

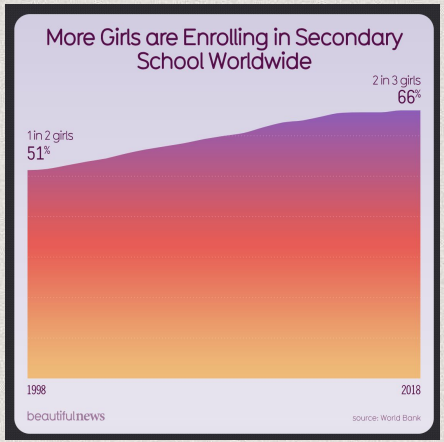


The titles

Make it memorable

Titles are most likely the only thing readers will read.

Titles should report the **take-home message** of a visualization. Should not be a description of what the graph does.



Explain

Nothing given for granted

Use short lists

Explain **results, conclusions,** salient points in lists.

Do not assume the consequences of your discourse are clear or obvious.

Never ever...

02

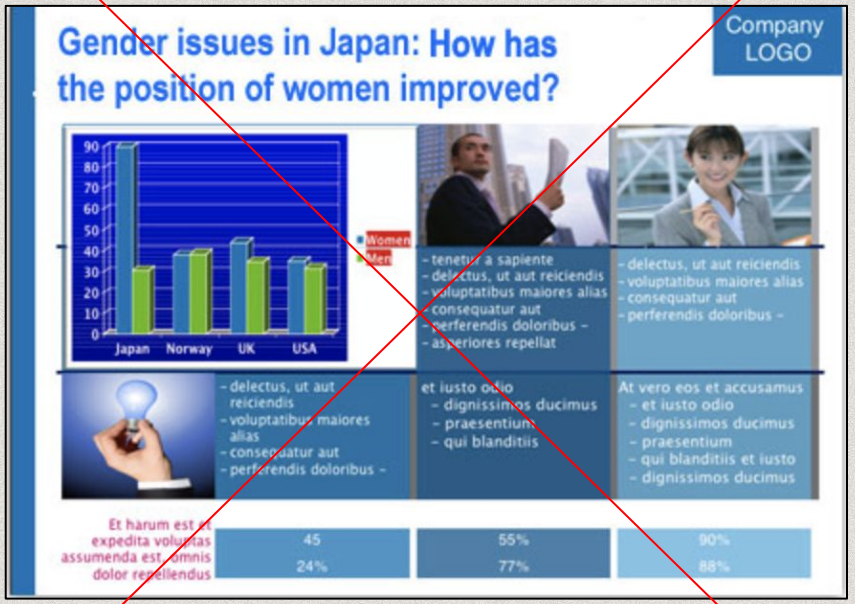
Nothing given for granted

SLIDUMENT

Avoid **imbalances** in the presentation.

Do not put too much text as you would do in a document (remember the F-pattern)

Do not be too short with catchy phrases only (you still need to explain things!)



03

Hands-on

A trivia! With the proper soundtrack

Trivia time

03

Get amazing prizes

Go to the form

1. Go to the google form https://forms.gle/Q6ctgcRRbWNujJen7
2. I'll show you some numbered **slides**, you will have to answer in the form under the corresponding numbered question.
3. Each question is **timed**. Be quick!
4. **Winners** will be announced during the last lecture.
5. There is a reward!

Next time

03

Get amazing prizes

Install dependencies

```
pip install qwikidata
pip install beautifulsoup4
pip install spacy
```

Thanks!

Do you have any questions?

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https://github.com/marilenadaquino/information_visualization