Data stories: Expanding your graphical repertoire

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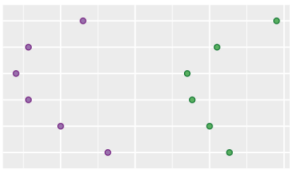
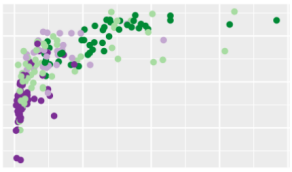
Session 2, 2022–02–21

Expanding your graphical repertoire: Four main topics[1]

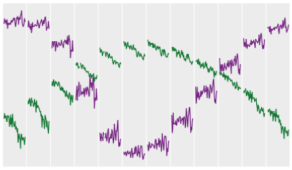
[1] The four main types of argument are adapted from Doumont [2009].



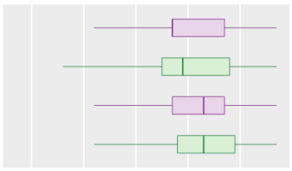
Comparing data



Revealing correlations



Showing evolution



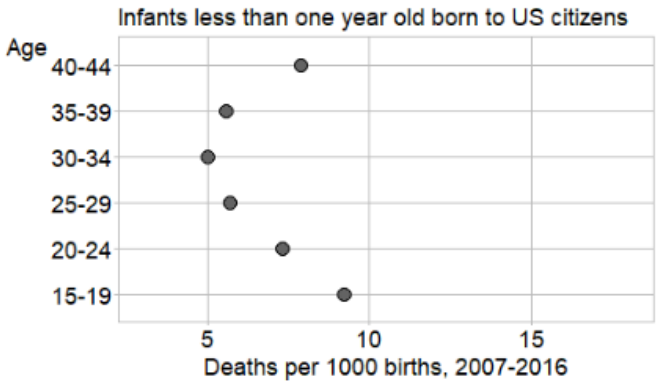
Displaying distributions

I suggest you have a printed copy of these worksheets to write in during the workshop. We have a number of think-write-share activities that for many people work best when thoughts are written down.

Notes

§ *Comparing data*

Dot plot



DATA FROM[2]

[2] CDC Wonder [2022-01]

- Describe the main idea(s) this chart conveys to you.

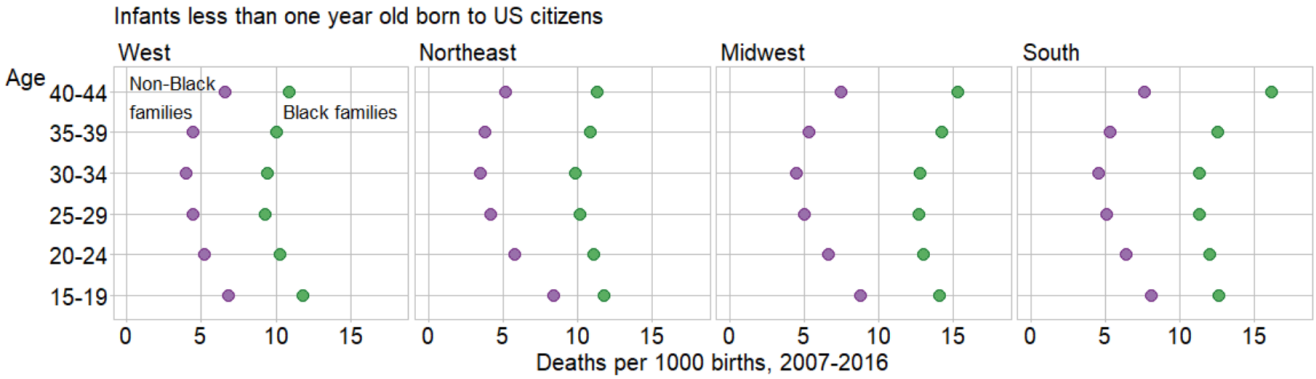
Variables + Argument → Design

Variables: (1) quamtity, (1) category

Argument: Comparison

- What questions does the chart raise?

Multiway dot chart, superposed



DATA FROM[3]

[3] CDC Wonder [2022-01]

- Describe the main idea(s) this chart conveys to you.

Variables + Argument → Design

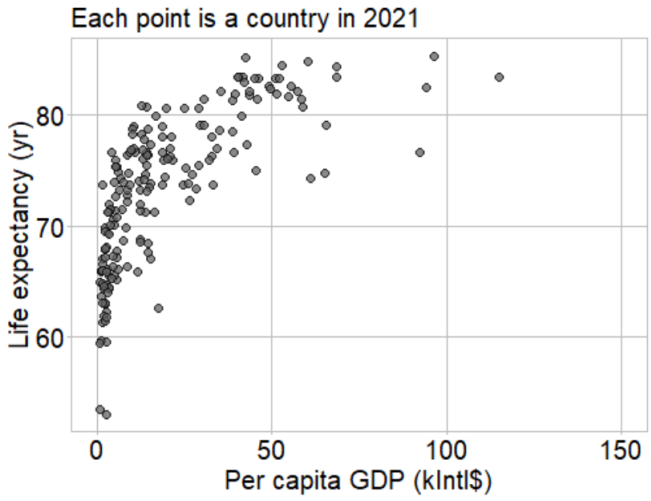
Variables: (1) quamtity, (3) categories

Argument: Comparison

- What questions does the chart raise?

§ *Revealing correlations*

Scatterplot



DATA FROM [4,5]

[4] Gapminder Fdn. [2022-01a]
[5] Gapminder Fdn. [2022-01b]

- Describe the main idea(s) this chart conveys to you.

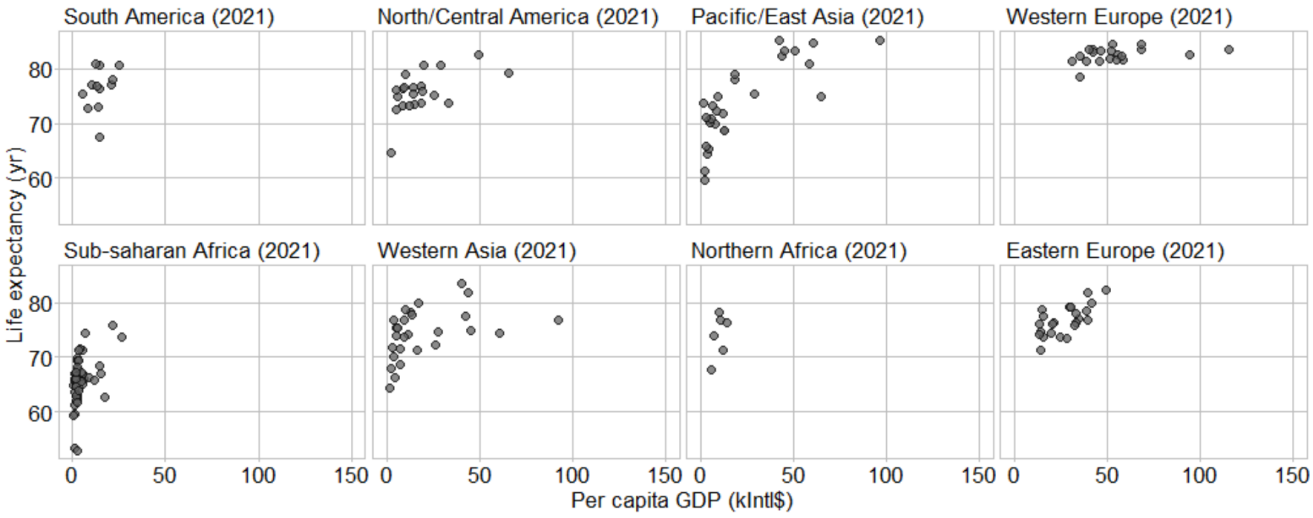
Variables + *Argument* → *Design*

Variables: (2) quamtities

Argument: Correlation

- What questions does the chart raise?

Scatterplot, faceted



DATA FROM [6,7]

[6] Gapminder Fdn. [2022-01a]
[7] Gapminder Fdn. [2022-01b]

- Describe the main idea(s) this chart conveys to you.

Variables + Argument → Design

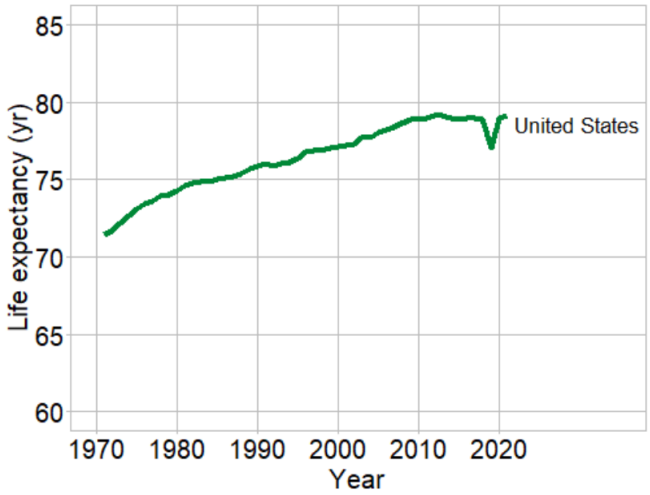
Variables: (2) quamtities, (1) category

Argument: Correlation & comparison

- What questions does the chart raise?

§ *Showing evolution*

Time series



DATA FROM[8]

[8] Gapminder Fdn. [2022-01b]

- Describe the main idea(s) this chart conveys to you.

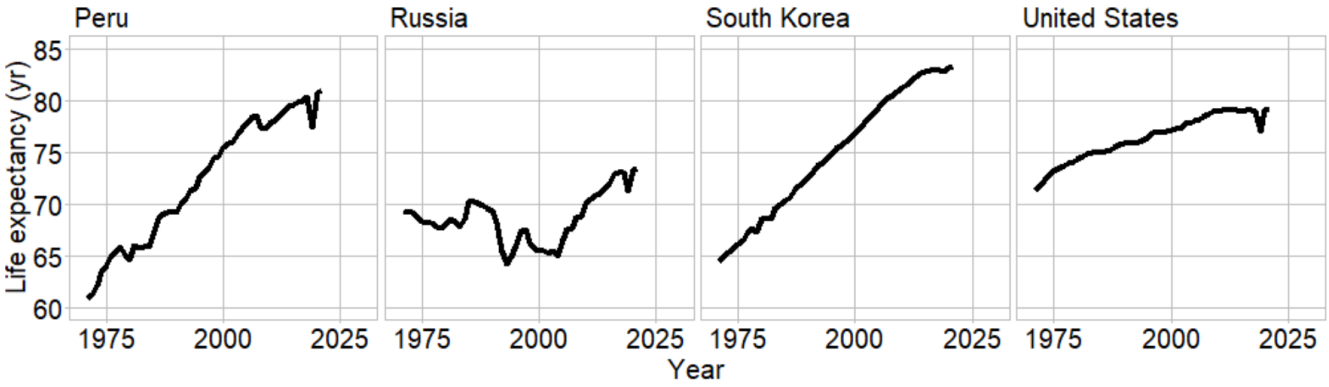
Variables + *Argument* → *Design*

Variables: Discrete time, (1) quantity

Argument: Evolution

- What questions does the chart raise?

Time series, faceted



DATA FROM[9]

[9] Gapminder Fdn. [2022-01b]

- Describe the main idea(s) this chart conveys to you.

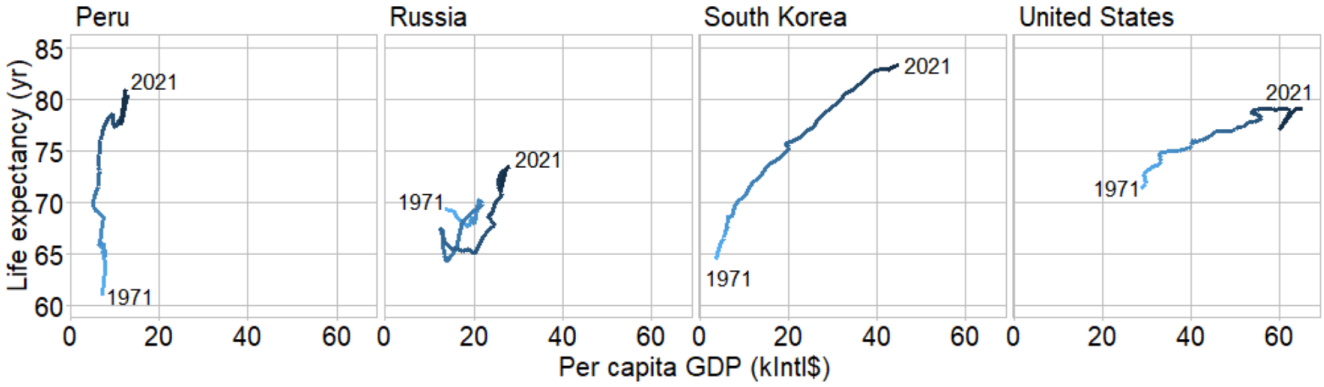
Variables + Argument → Design

Variables: Discrete time,
(1) quantity, (1) category

Argument: Evolution & comparison

- What questions does the chart raise?

Connected scatterplot, faceted



DATA FROM [10,11]

[10] Gapminder Fdn. [2022-01a]
[11] Gapminder Fdn. [2022-01b]

- Describe the main idea(s) this chart conveys to you.

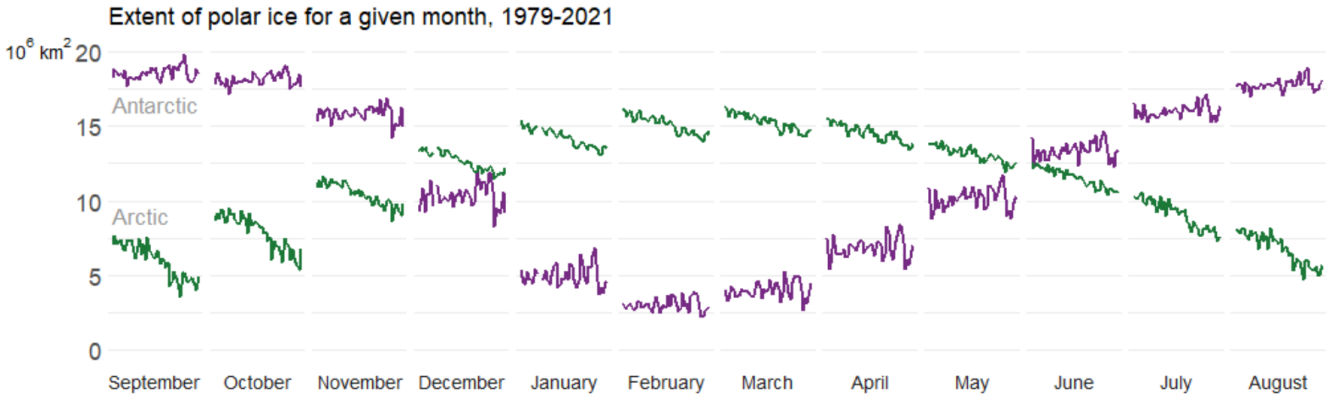
Variables + Argument → Design

Variables: Discrete time,
(2) quantities, (1) category

Argument: Evolution, correlation,
& comparison

- What questions does the chart raise?

Cyclic time series, superposed



DATA FROM[12]

[12] Fetterer et al. [2017]

- Describe the main idea(s) this chart conveys to you.

Variables + Argument → Design

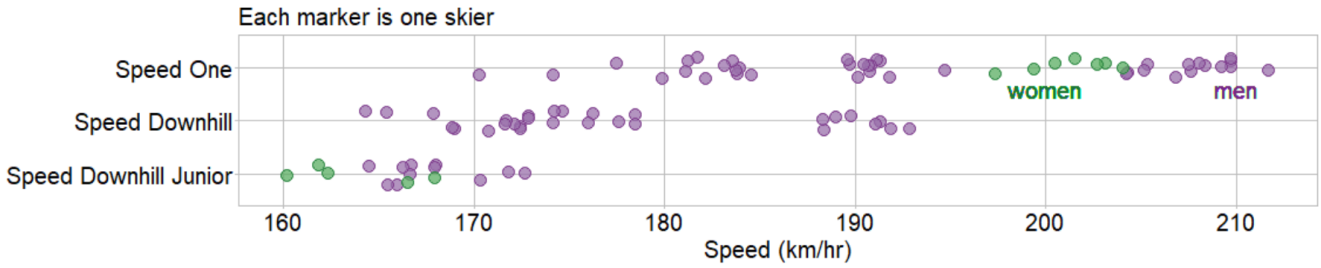
Variables: Discrete time,
(1) quantity, (2) categories

Argument: Evolution & comparison

- What questions does the chart raise?

§ *Displaying distributions*

Strip chart, superposed



DATA FROM[13]

[13] Unwin [2015]

- Describe the main idea(s) this chart conveys to you.

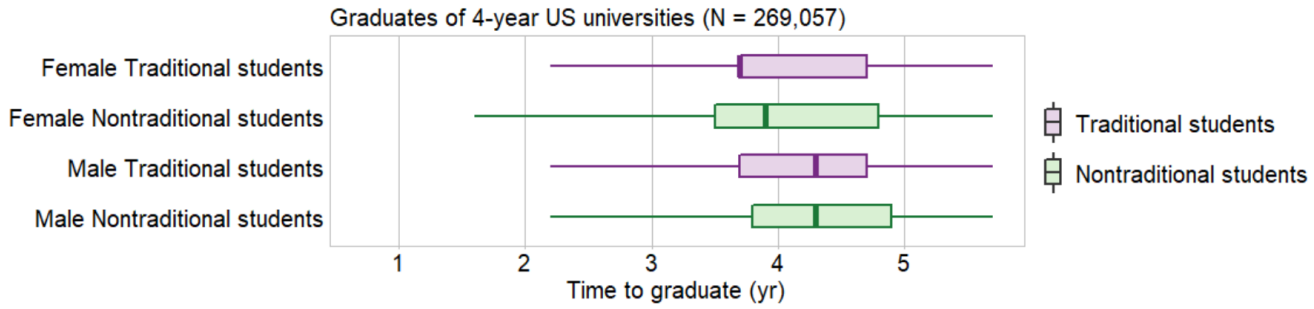
Variables + Argument → Design

Variables: (1) quantity, (2) categories

Argument: Distribution & comparison

- What questions does the chart raise?

Box and whisker chart



DATA FROM[14]

[14] Layton [2021]

- Describe the main idea(s) this chart conveys to you.

Variables + Argument → Design

Variables: (1) quantity, (2) categories

Argument: Distribution & comparison

- What questions does the chart raise?

Ideas to consider

Chart selection

- What are your variables, by name?
- Is a variable quantitative or categorical?
- Is a categorical variable naturally ordered (ordinal) or not (nominal)?
- Starting with a small number of variables, what chart types match the data structure?
- How does the chart type change as you add new variables?

Chart aesthetics

- Superposed designs work best with small numbers of subsets or when the subsets visually cluster.
- Faceted designs permit a greater number of subsets to be compared.
- Deliberately assign the size, shape, and color of every visual element.
- Use color deliberately. Choose colors that are safe for color-vision-deficient viewers.

Audience and message

- What is your story?
- Does the visual evidence directly support your verbal argument?
- Have you placed the story in context visually?
- Who is your audience?
- Will the audience resist your conventions?
- If so, is overcoming audience resistance worth the effort?

Ethics of visual rhetoric

- Is your design equitable and inclusive?
- Are you seeing only what you want to see? What the audience wants to see?
- All there alternative explanations for what the chart shows?
- Are your data dubious? Insufficient?
- Have you concealed information? Concealed a large uncertainty?
- Does your chart suggest misleading patterns?

References

CDC Wonder. Linked Birth/Infant Death Records, 2022-01. URL https://wonder.cdc.gov/lbd-current.html.

Jean-luc Doumont. *Trees, Maps, and Theorems*. Principiae, Belgium, 2009.

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