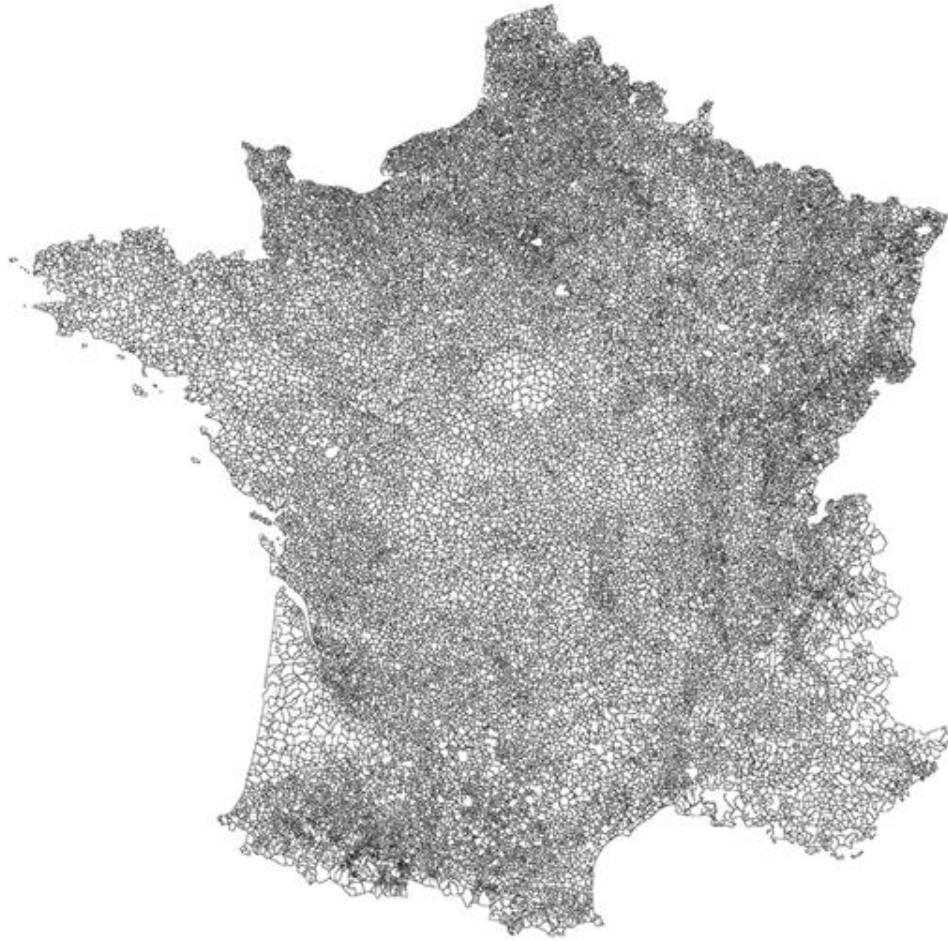


22-Data-Density

Human eyes can detect very detailed graphical information in small spaces



SOURCE: COMMUNES IN FRANCE
WIKIPEDIA.COM

Data density

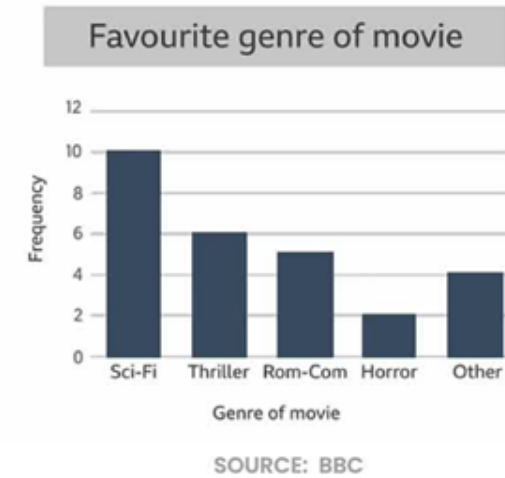
Data density

Data density

Take advantage of the great level of detail our eyes can perceive, and display the highest amount of data in the smallest space possible.

Data density

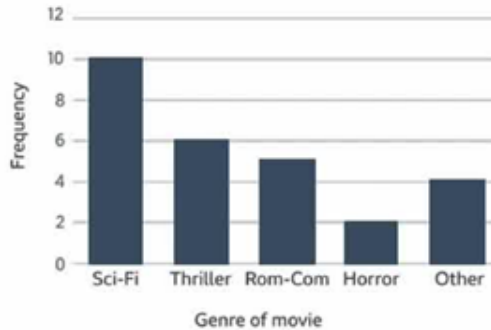
Take advantage of the great level of detail our eyes can perceive, and display the highest amount of data in the smallest space possible.



Data density

Take advantage of the great level of detail our eyes can perceive, and display the highest amount of data in the smallest space possible.

Favourite genre of movie



SOURCE: BBC

| Genre | Frequency |
|----------|-----------|
| Sci-Fi | 10 |
| Thriller | 6 |
| Rom-Com | 5 |
| Horror | 2 |
| Other | 4 |

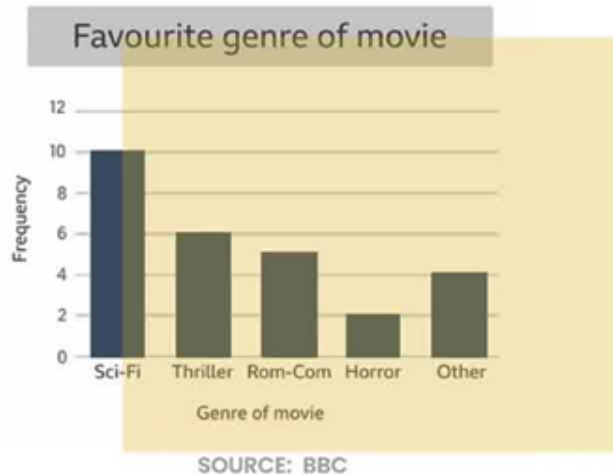
NUMBER OF ENTRIES IN THE DATA MATRIX

Data density

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| Genre | Frequency |
|----------|-----------|
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NUMBER OF ENTRIES IN THE DATA MATRIX

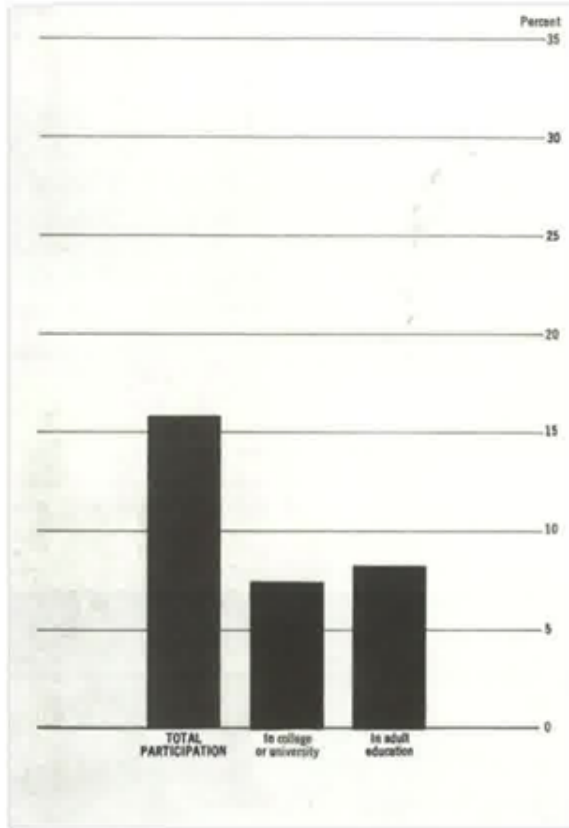


Data density

Take advantage of the great level of detail our eyes can perceive, and display the highest amount of data in the smallest space possible.

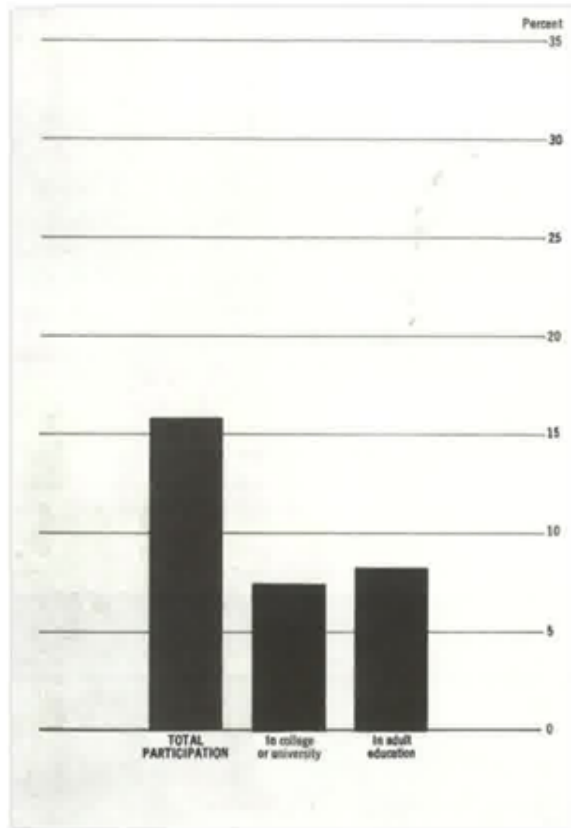
$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$

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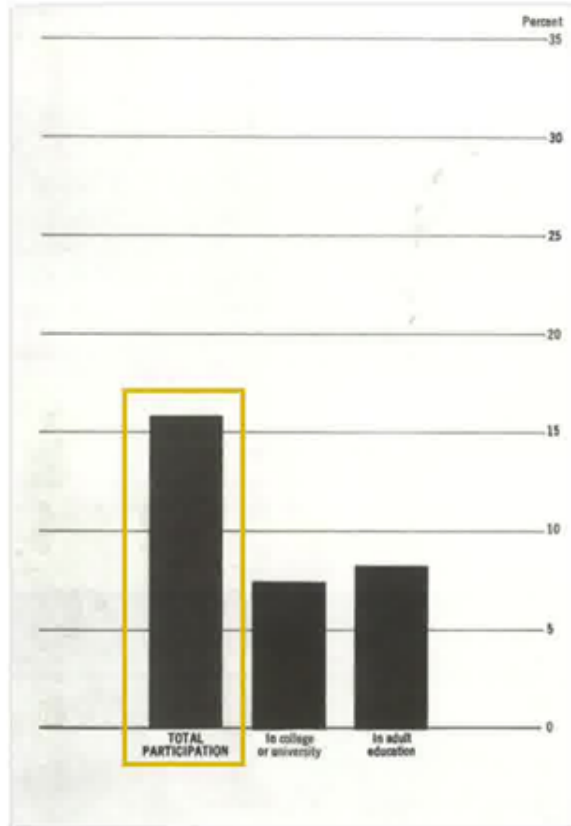
SOURCE: THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION, E. TUFTE

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



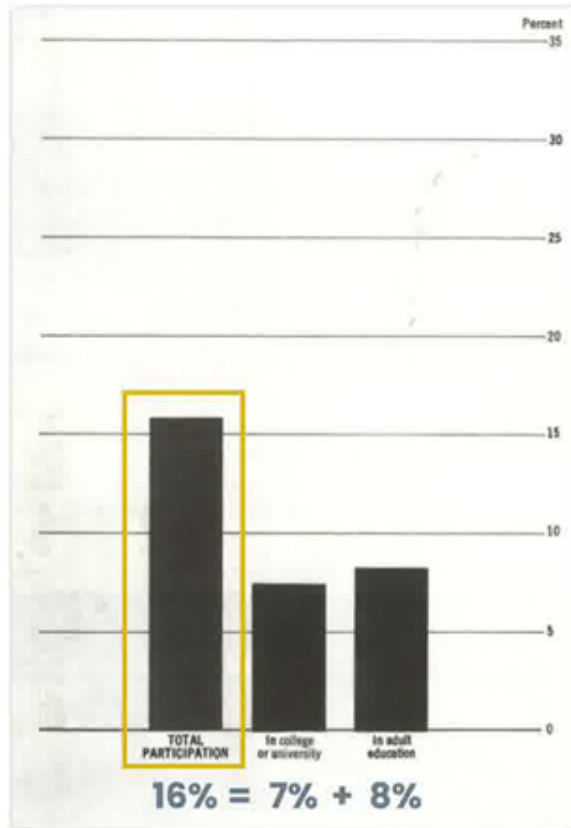
NUMBER OF ENTRIES IN THE DATA MATRIX

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



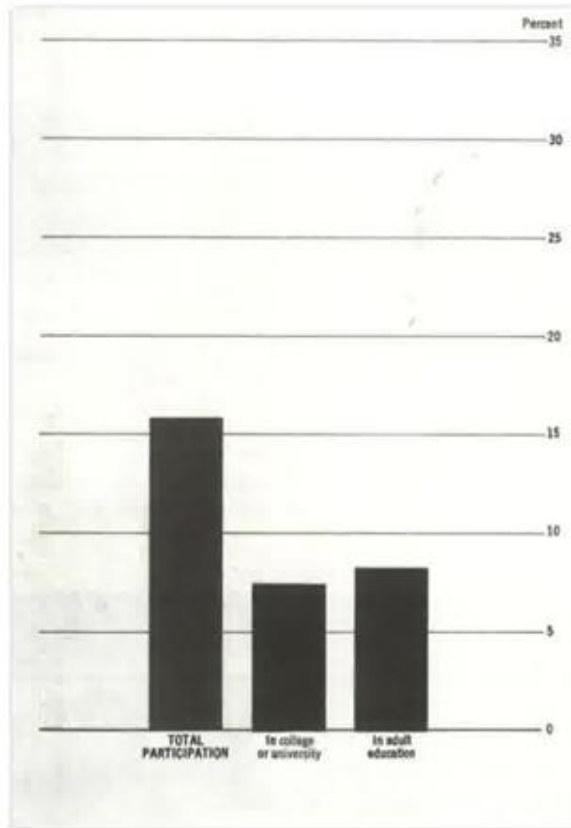
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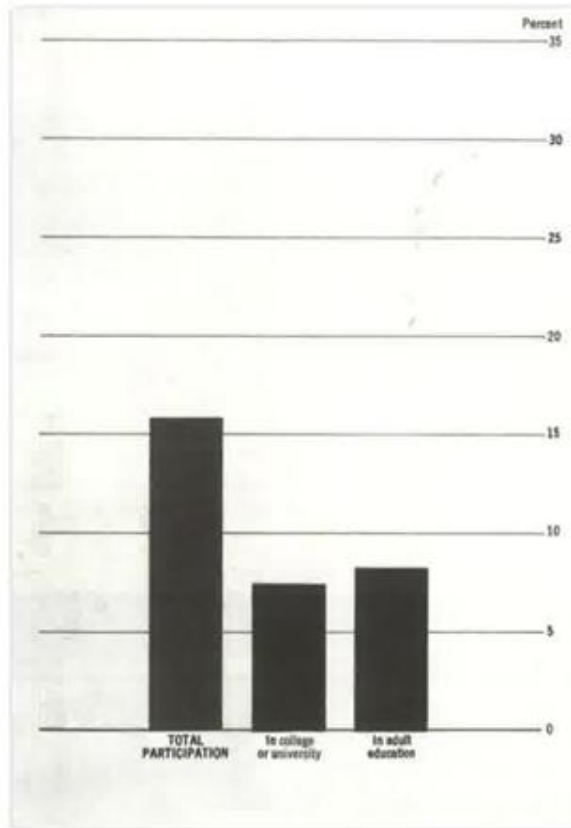


NUMBER OF ENTRIES IN THE DATA MATRIX

| | |
|------------|--------------------|
| In college | In adult education |
| 7% | 8% |

Total = **16%**

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



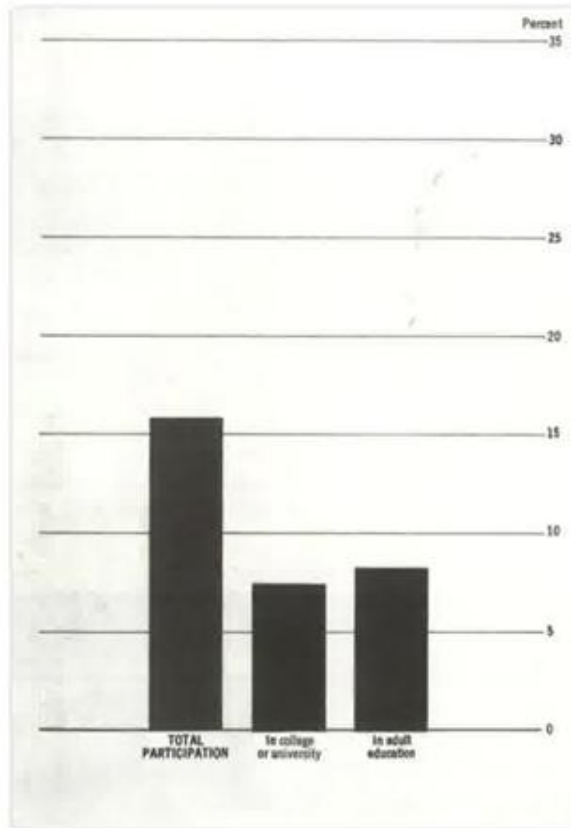
NUMBER OF ENTRIES IN THE DATA MATRIX = 4

| | |
|------------|--------------------|
| In college | In adult education |
| 7% | 8% |

Total = **16%**

AREA OF THE PLOT

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



NUMBER OF ENTRIES IN THE DATA MATRIX = 4

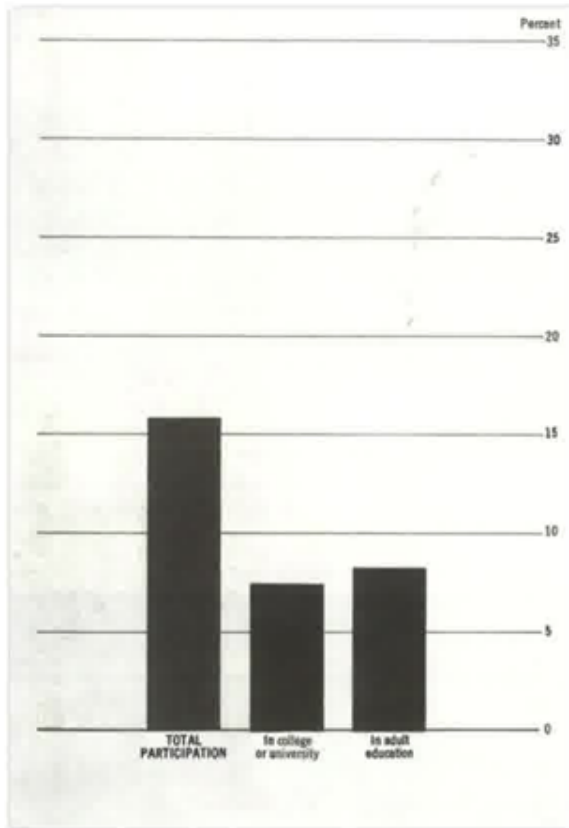
| | |
|------------|--------------------|
| In college | In adult education |
| 7% | 8% |

Total = **16%**

AREA OF THE PLOT

As printed on the original book = 171cm²

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



NUMBER OF ENTRIES IN THE DATA MATRIX = 4

| | |
|------------|--------------------|
| In college | In adult education |
| 7% | 8% |

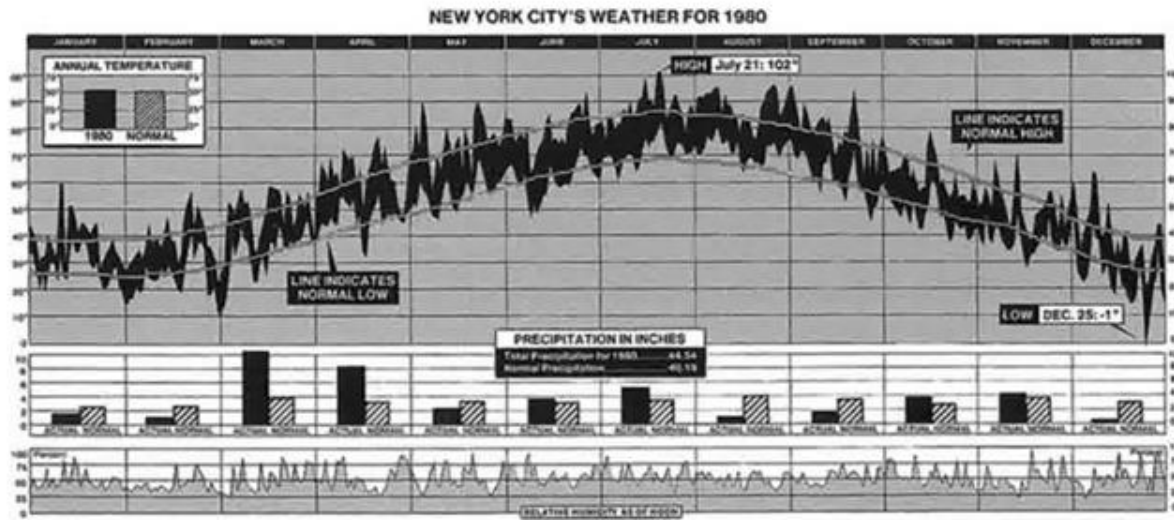
Total = **16%**

AREA OF THE PLOT

As printed on the original book = 171cm²

$$\text{DATA DENSITY} = \frac{4}{171 \text{ CM}^2} = 0.02 \text{ UNITS OF DATA PER CM}^2$$

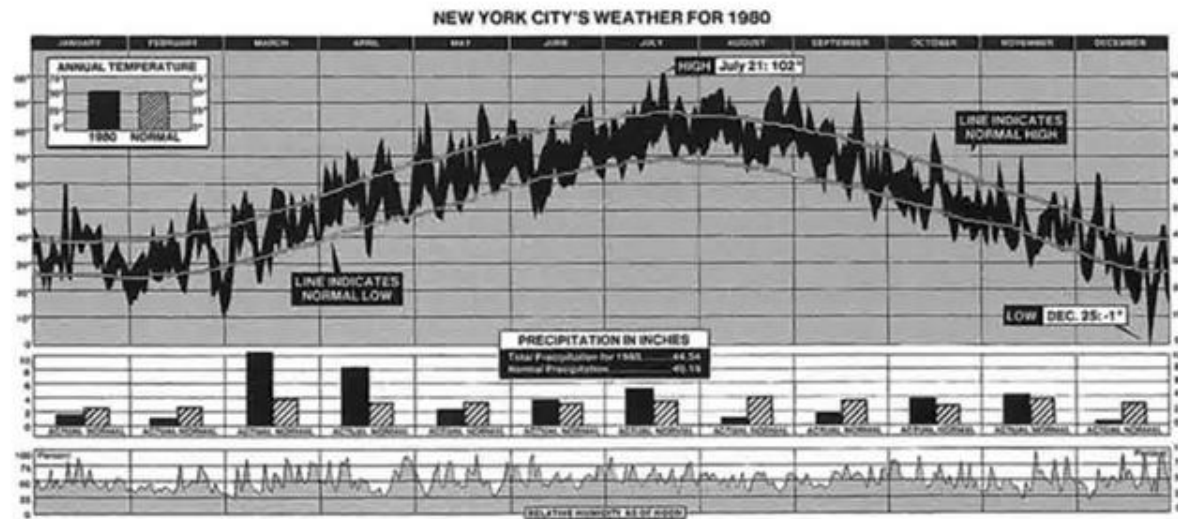
$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



New York Times, January 11, 1981, p. 32.

SOURCE: THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION, E. TUFTS

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$

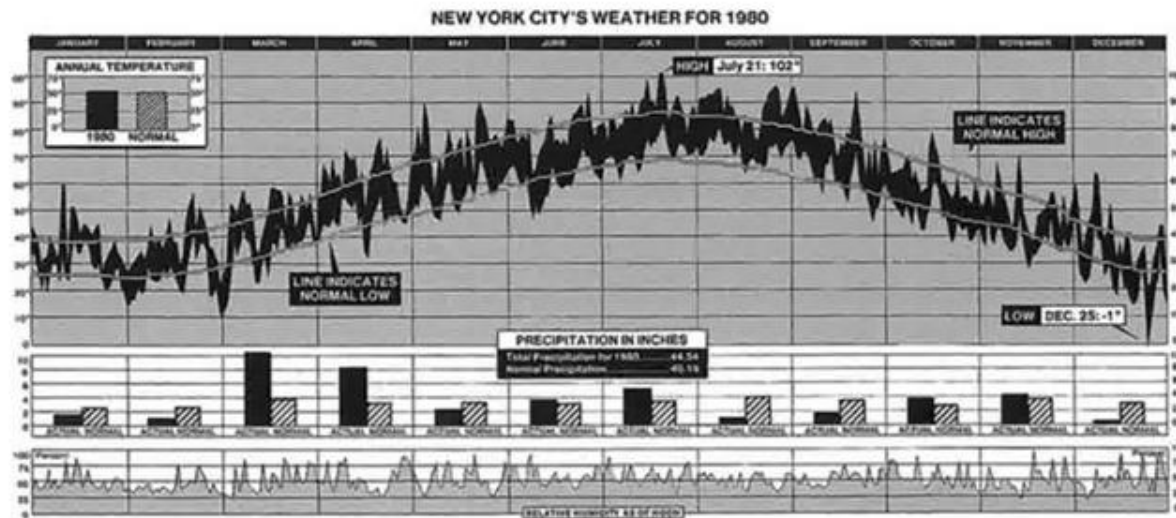


New York Times, January 11, 1981, p. 32.

SOURCE: THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION, E. TUFTS

NUMBER OF ENTRIES IN THE DATA MATRIX = 1888

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



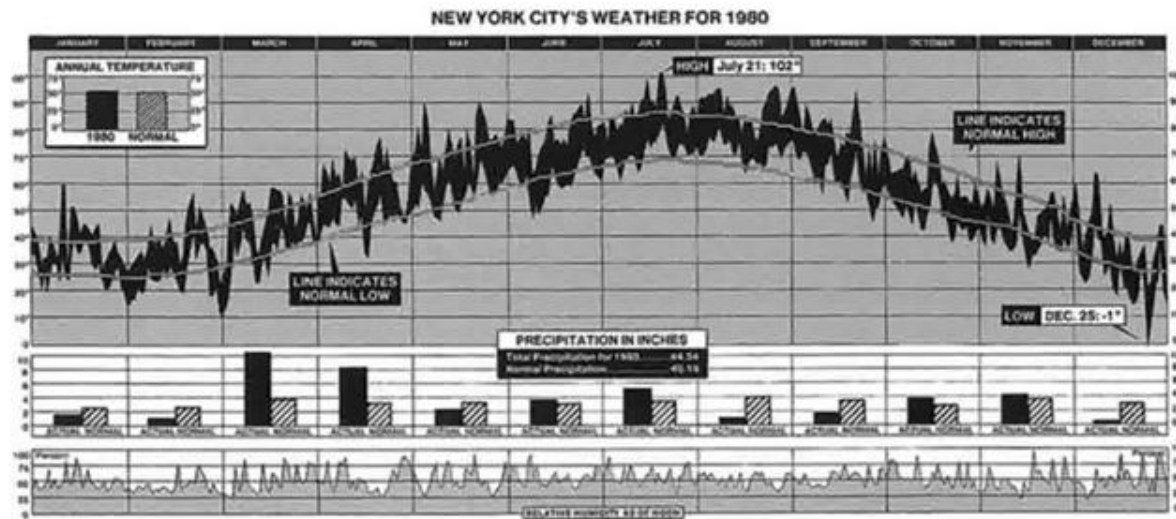
New York Times, January 11, 1981, p. 32.

SOURCE: THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION, E. TUFT

NUMBER OF ENTRIES IN THE DATA MATRIX = 1888

AREA OF PLOT = 180 CM²

$$\text{DATA DENSITY} = \frac{\text{NUMBER OF ENTRIES IN THE DATA MATRIX}}{\text{AREA OF THE PLOT}}$$



New York Times, January 11, 1981, p. 32.

SOURCE: THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION, E. TUFTS

NUMBER OF ENTRIES IN THE DATA MATRIX = 1888

AREA OF PLOT = 180 CM²

$$\text{DATA DENSITY} = \frac{1888}{180 \text{ CM}^2} = 10.48 \text{ UNITS OF DATA PER CM}^2$$

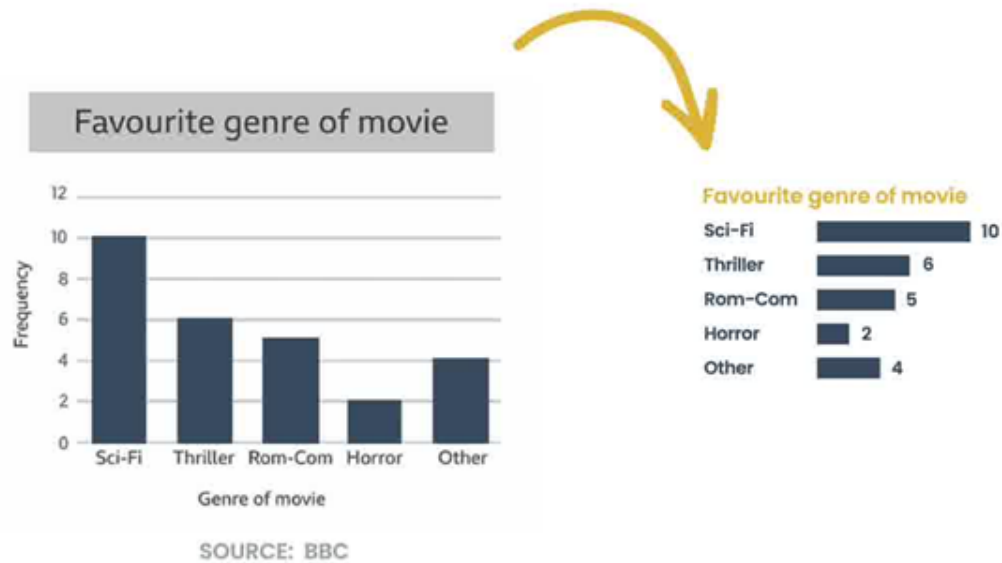
Data density principle

Maximize the data density, within reason.

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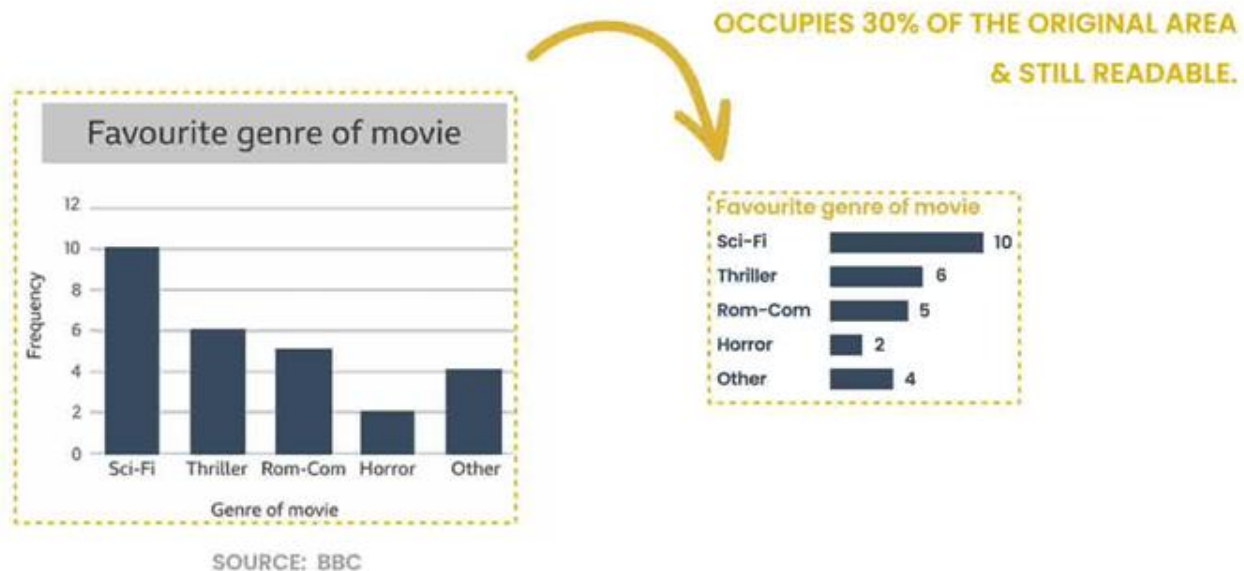
Almost all graphics can be shrunk down without loss of information.



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The lower the data density ratio, the less justified it is to plot a graph instead of a table.

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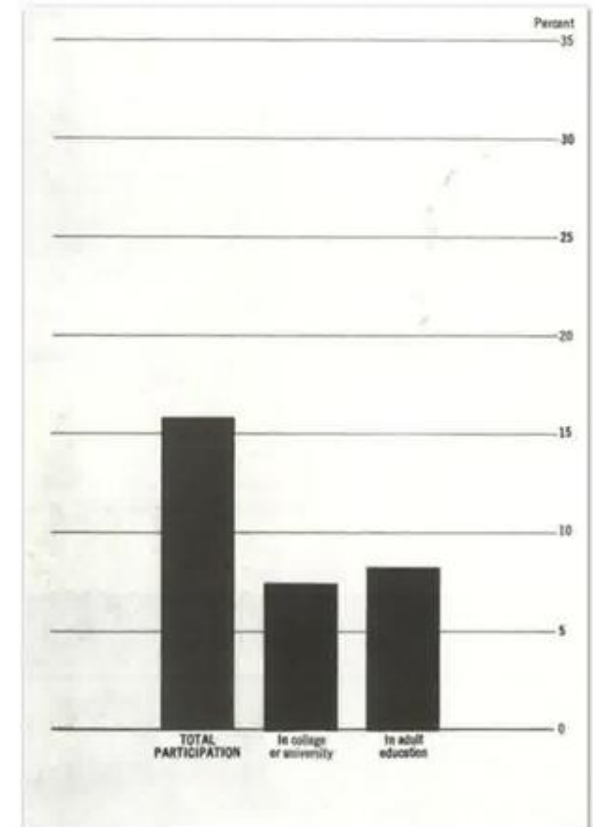
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Take home message

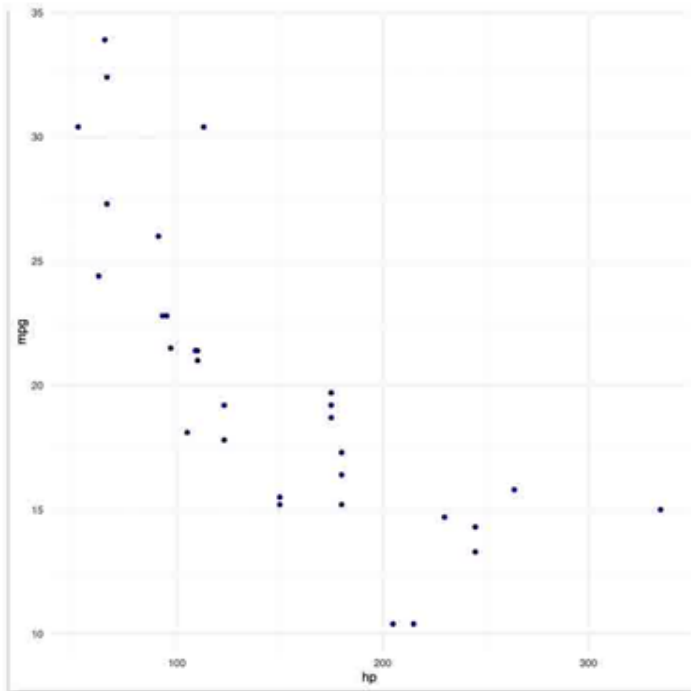
Take home message

Don't be afraid to make your plot smaller and denser.

Try different sizes until you find out the best size for your plot.

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vs.

