

The map cannot show the interval

A choropleth of twelve communes puts the whole finding into colour intensity, which is the weakest encoding, and has nowhere to put the confidence interval that decided the finding. Twelve small charts show both. The map is right when the question is where, and only then.

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Lesson 4 of 8

Data Visualisation for Programmes — Conventions your reader already has

What this lesson covers

- What the map would have to leave out
- The area problem
- When a map is the right chart
- Small multiples
- The chart a request for a map usually wants
- If you do draw the map
- Report it whole
- What comes next

What the map would have to leave out

The finding	On a sorted bar chart	On a choropleth
Anse-Rouge is 15.3%	A bar length, read directly	A shade, read against a legend
Its interval runs 10.9–20.6	A whisker	Nowhere
Three communes clear the median	Three highlighted bars	A second map, or nothing
Eleven pairs overlap	Visible in the whiskers	Nowhere
Gonaives has 768 screenings, Desdunes 189	A note, or a second panel	Nowhere

What the map would have to leave out

- A choropleth has one channel and the analysis produced four numbers per commune — Everything except the point estimate. . .
- And the one channel it has is the weakest — Colour intensity ranks fifth of six for how accurately a reader decodes it; . . .

The area problem — In Python

```
areas = {"Gonaives": 502, "Anse-Rouge": 425, "Desdunes": 76, "Marmelade": 152}
```

The area problem — In R

Visual weight is area. The finding is prevalence. These are unrelated.

The area problem

- A choropleth gives each commune visual weight proportional to its land area — which has nothing to do with its. . .
- This is not a technicality in this sector — Rural communes are large and urban ones small, so a map of a health. . .

When a map is the right chart

- When the question is genuinely spatial — Where the flooding is
- When the audience navigates by geography — A district health officer finds their own area on a map faster than in an...
- When adjacency is the finding — Disease spread, market catchment, a cluster of non-functional water points along one...
- Otherwise, sort a bar chart — "Which communes are worst" is a ranking question, and a ranking is what a sorted bar...

Small multiples — In Python

```
import matplotlib.pyplot as plt

fig, axes = plt.subplots(3, 4, figsize=(10, 6), sharex=True, sharey=True)
for ax, (commune, series) in zip(axes.flat, monthly.groupby("commune")):
    ax.plot(series["month"], series["gam"])
    ax.set_title(commune, fontsize=9)
    ax.axhline(0.10, linestyle="--", linewidth=0.8)    # the same reference on each
```

Small multiples — In R

```
ggplot(monthly, aes(month, gam)) +  
  geom_line() +  
  geom_hline(yintercept = 0.10, linetype = "dashed") +  
  facet_wrap(~commune, ncol = 4)
```

Small multiples

- Shared axes, always — If each panel scales to its own data the reader is comparing shapes drawn at twelve different. . .
- Same reference line on every panel — It is what the eye travels along
- Order the panels by something — By value, by geography, by the order the reader will look for them
- One shape, learned once — The reader decodes the first panel and then reads eleven more for free — which is the whole. . .

The chart a request for a map usually wants

The request	What it usually wants	Give them
"A map of GAM by commune"	Which communes to target	Sorted bar chart with intervals
"A map of the water points"	How many work, and where the failures cluster	A bar chart by district, plus a map only if clustering is the question
"A map of the caseload"	Where the people are	A map of <i>rates</i> , never counts

The chart a request for a map usually wants

- A choropleth of counts is a population map — It shows where people live, in every dataset, every time — because the...

If you do draw the map

- Rates, not counts — for the reason above
- A stated class scheme — Quantiles, equal intervals, or the sector's own thresholds
- The denominator on the page — A commune shaded dark on 189 screenings and one shaded dark on 768 are not the same. . .
- A companion chart — The map answers *where*; the sorted bar chart with intervals answers *how much and how sure*

Report it whole — Example

Global acute malnutrition by commune: presentation

Reported as a sorted bar chart with 95% intervals rather than as a choropleth. The finding is a ranking with substantial uncertainty, and a choropleth has one visual channel, which the point estimate occupies.

Eleven of eleven adjacent communes have overlapping intervals; a map would show twelve distinct shades and imply twelve distinguishable levels.

A commune map is included in Annex C for navigation, showing rates and not counts, with the number of screenings labelled on each commune and the same class breaks as the bar chart.

- The last paragraph is the compromise that usually holds — the map exists, for the people who navigate by it, and it. . .

What comes next

- Everything so far has assumed the reader sees the chart in colour, at full size, on a screen.

Read the full lesson, with runnable code

[https://data-analysis.cassion.dev/courses/data-visualisation/
viz-04-small-multiples-or-a-map](https://data-analysis.cassion.dev/courses/data-visualisation/viz-04-small-multiples-or-a-map)