Know Your Audience

Designing data visualisations for all

Nicola Rennie

About me

- Data visualisation specialist
- Background in statistics, data science consultancy, and academia.
- Co-author of Royal Statistical Society's *Best Practices for Data Visualisation* guidance.

Who is your audience?

Economists

Policy makers

Data analysts

Statisticians

Scientists

Senior leaders

Doctors

Patients

The public

What can you assume about your audience?

What can you assume about your audience?

What if you can’t assume anything?

9 - 11 years old

Average reading age of adults in Scotland.

Source: servicemanual.gov.scot

45%

Percentage of adults who have below primary school level numeric skills.

Source: nationalnumeracy.org.uk

3,000,000

Number of people in the UK with some form of colour vision deficiency.

Source: www.bbc.co.uk

10%

Percentage of UK adults with a mobility or motor impairment.

Source: House of Commons Library

Data visualisations for everyone

“Ensure that data and statistics are easy to use and understandable.”

“Ensure easy access for all when publishing data, statistics and supporting material.”

Source: Code of Practice for Statistics

What are you *really* trying to communicate?

Detailed, accurate numbers?

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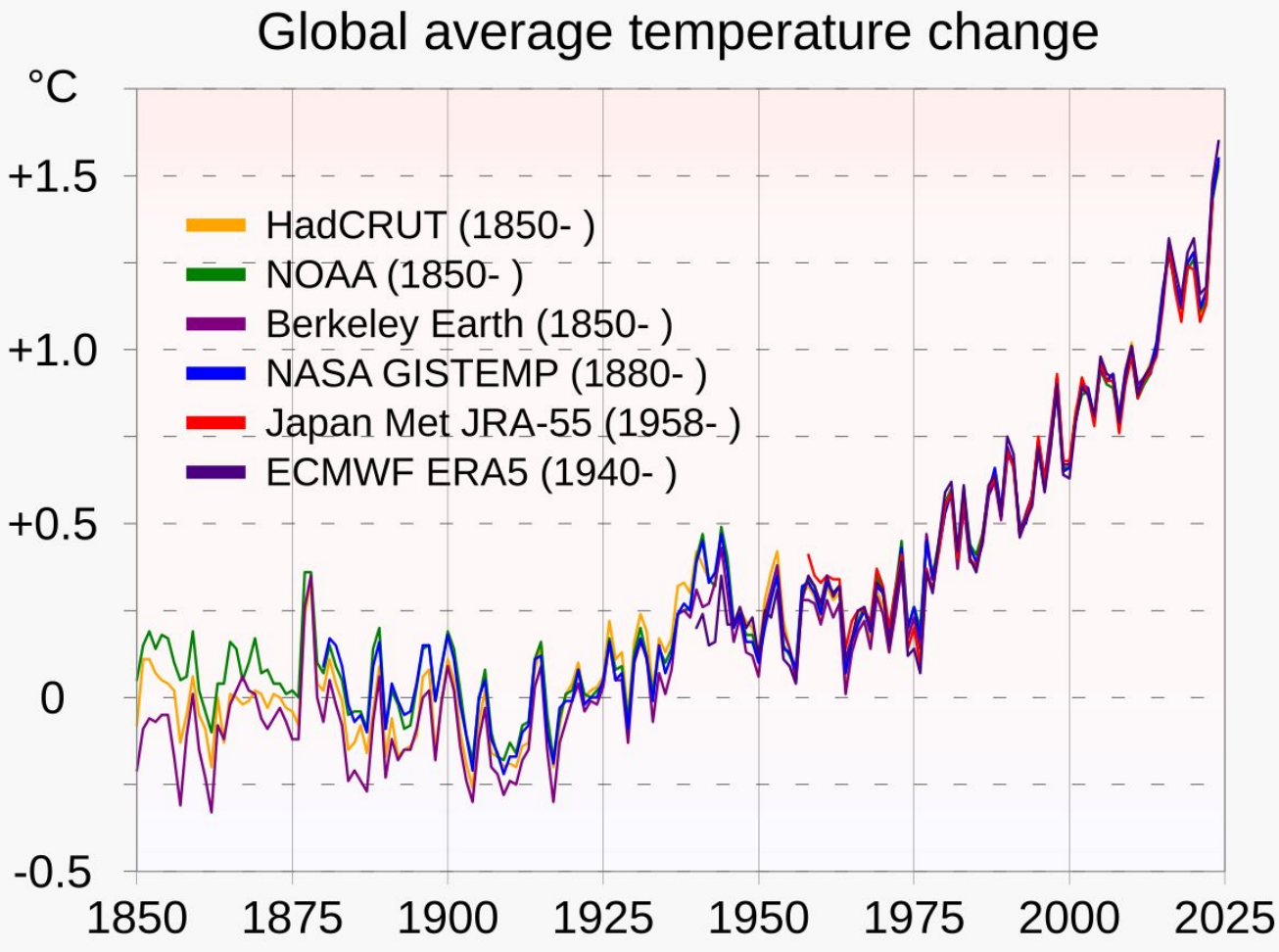
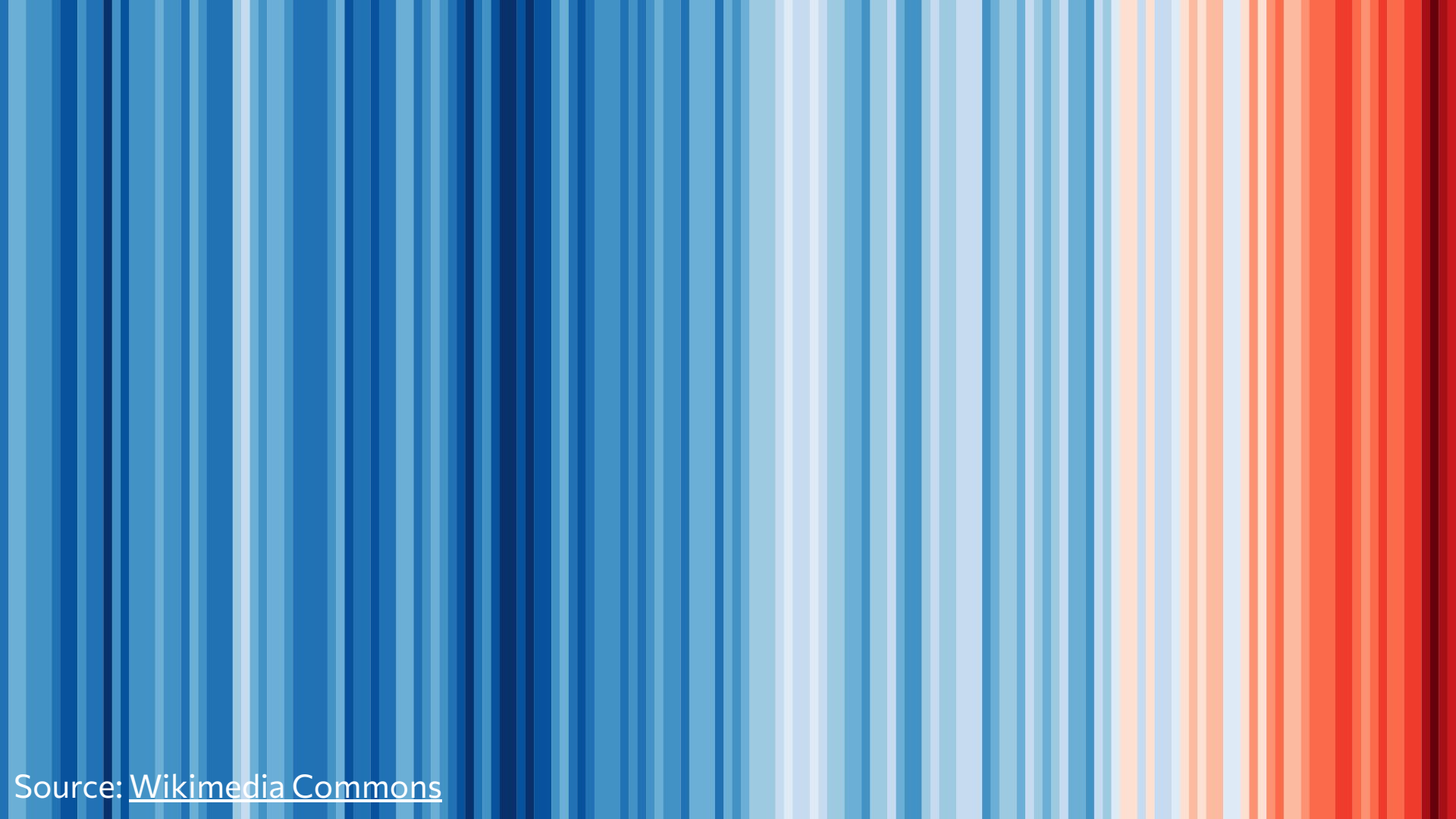
Or the big picture message?



Source: [Wikimedia Commons]



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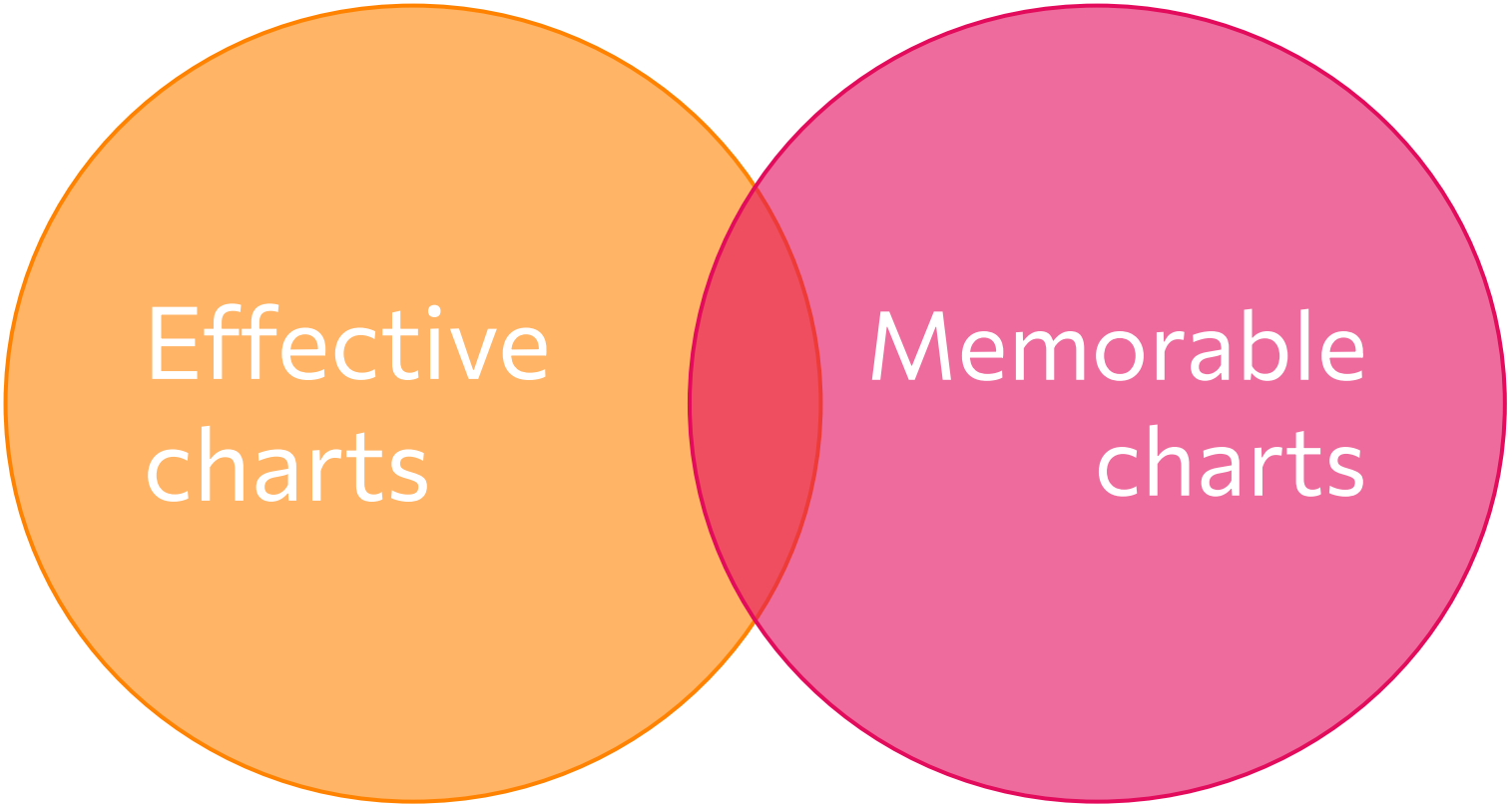

Effective charts
Memorable charts

What’s the best way to communicate that message to your audience?

A picture is worth a thousand words.

A picture is worth a thousand words.

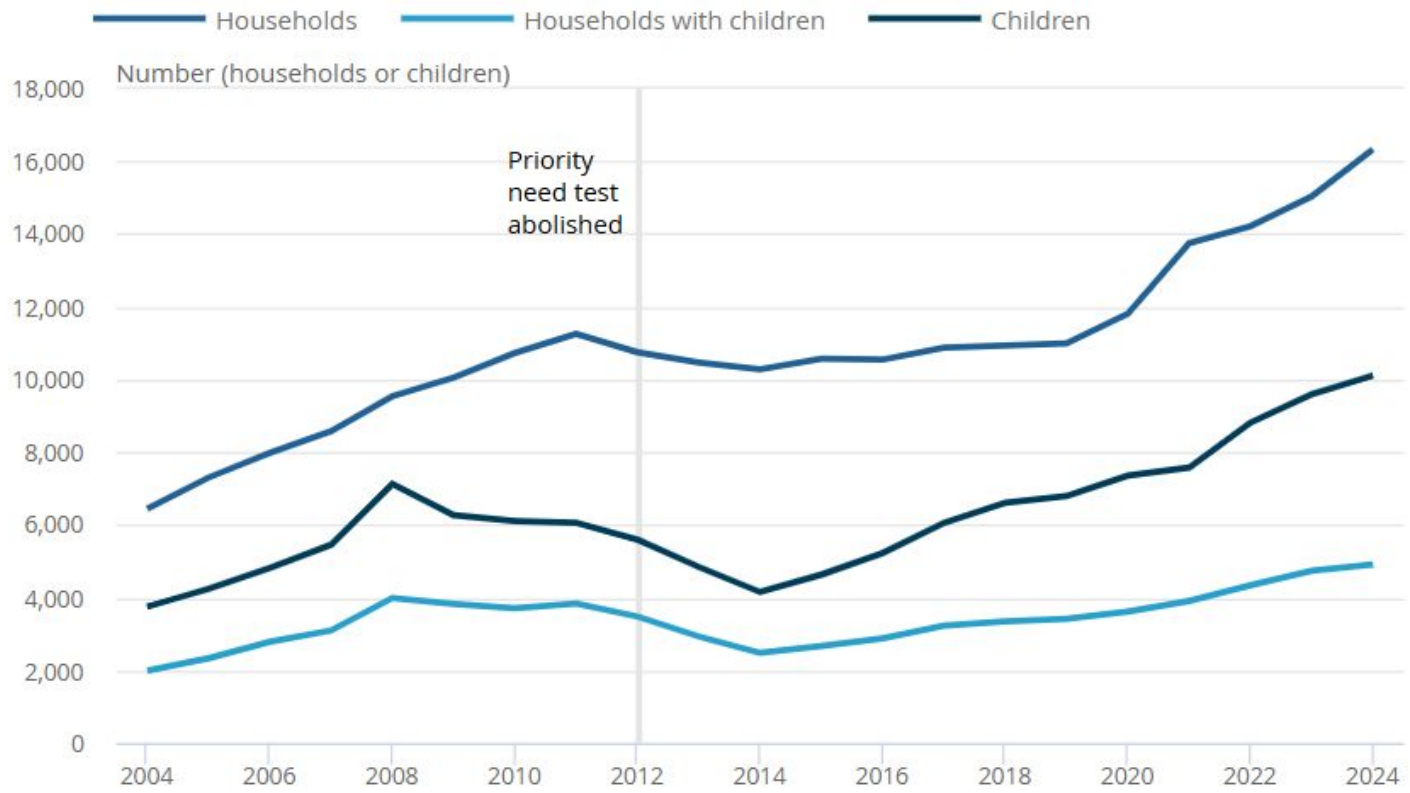
But that doesn’t mean you can’t also use words.

Use narrative titles to summarise

- Describe the main trend you want the chart to show to the user.
- Users are more likely to understand and remember the main trend from a chart where it is also in the chart title.
- If the trend described in your chart title is not the most prominent visual trend in the chart, consider what and how you are visualising.

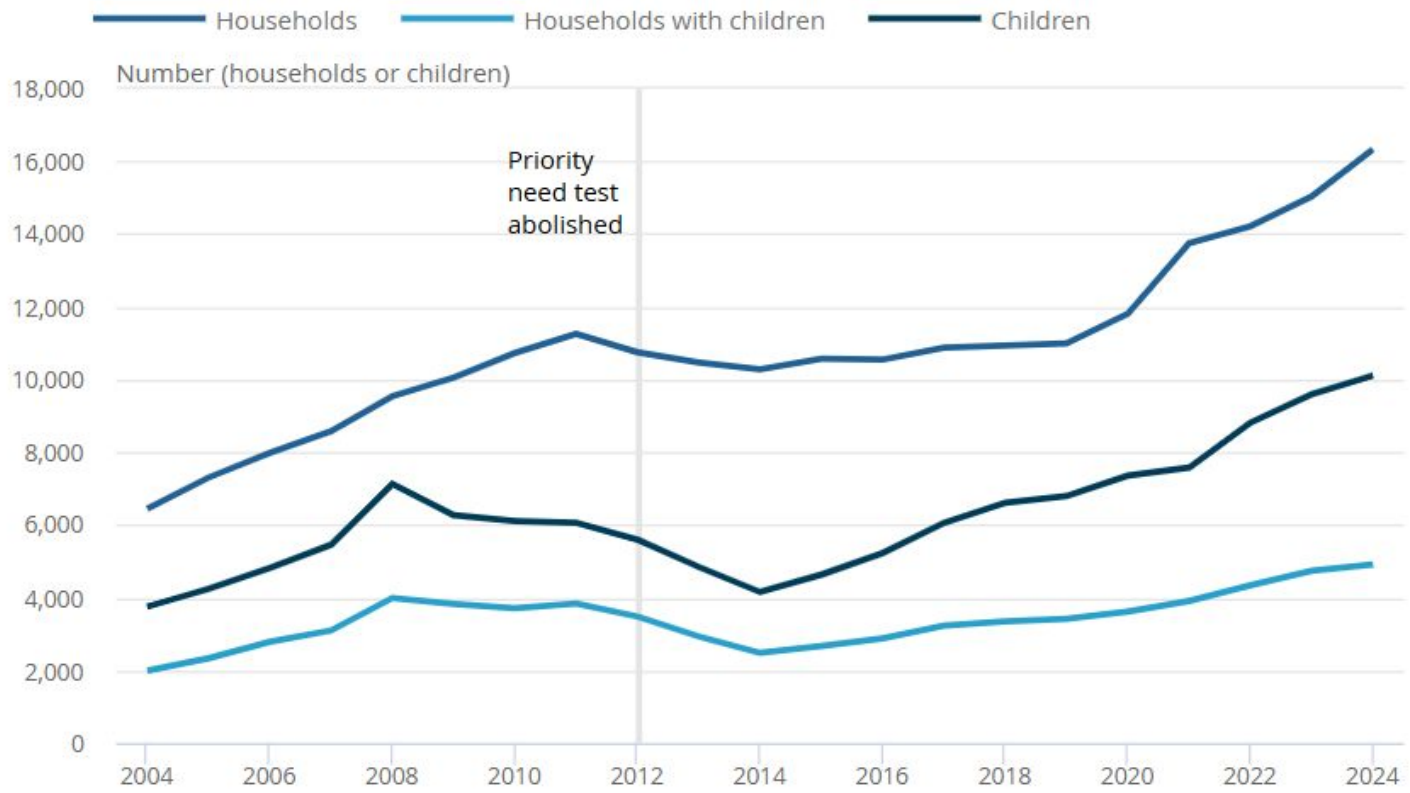
Read more: service-manual.ons.gov.uk/data-visualisation

Change in temporary accommodation over time



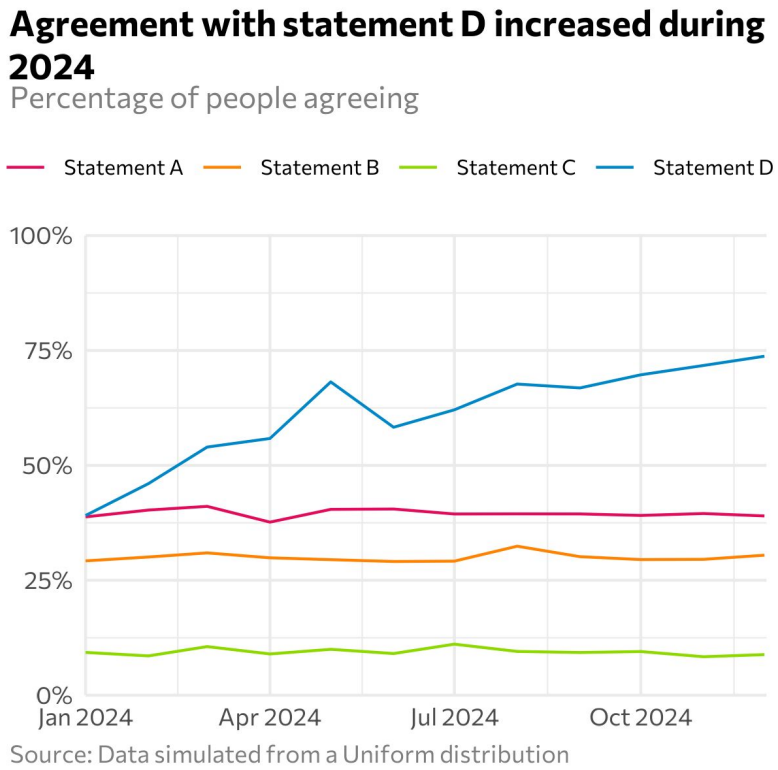
Source: Scottish Government | Chart: ONS

The number of households, and households with children, in temporary accommodation in Scotland are at record highs



Source: Scottish Government | Chart: ONS

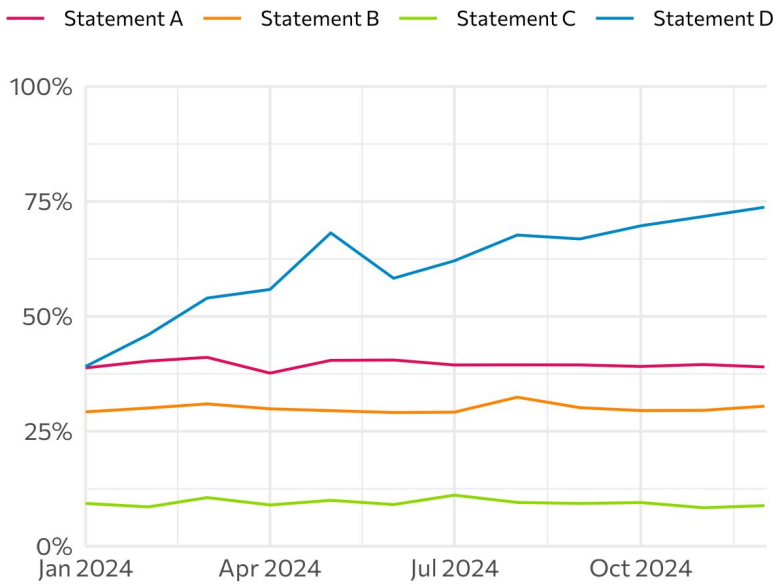
Use labels to aid accessibility



Use labels to aid accessibility

Agreement with statement D increased during 2024

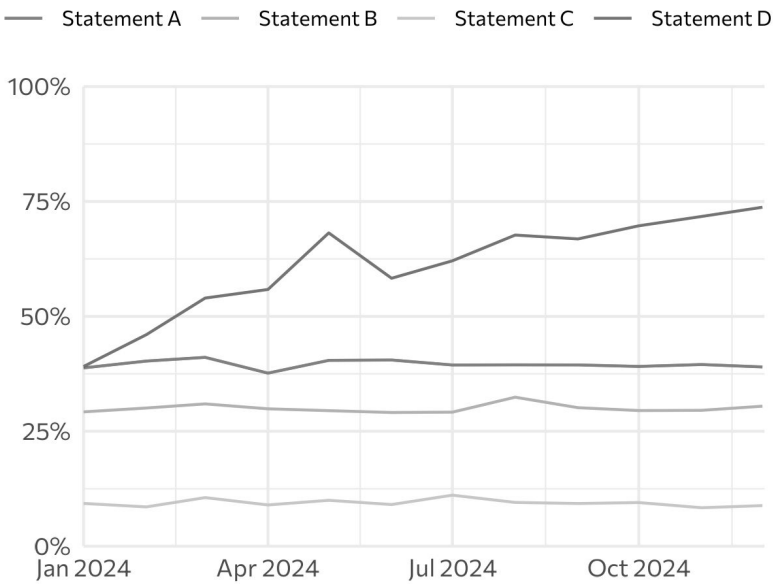
Percentage of people agreeing



Source: Data simulated from a Uniform distribution

Agreement with statement D increased during 2024

Percentage of people agreeing



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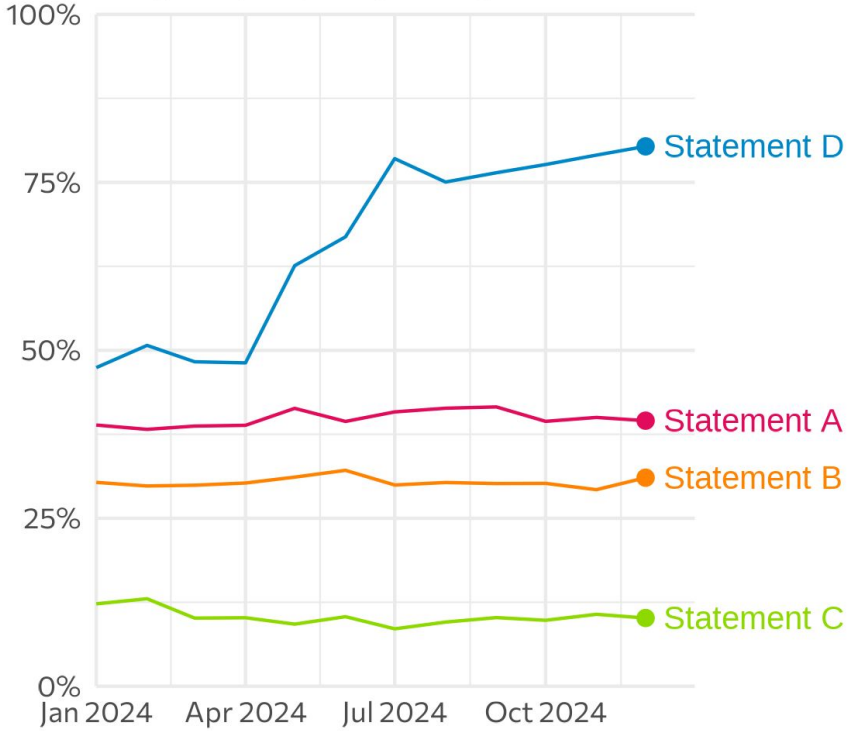

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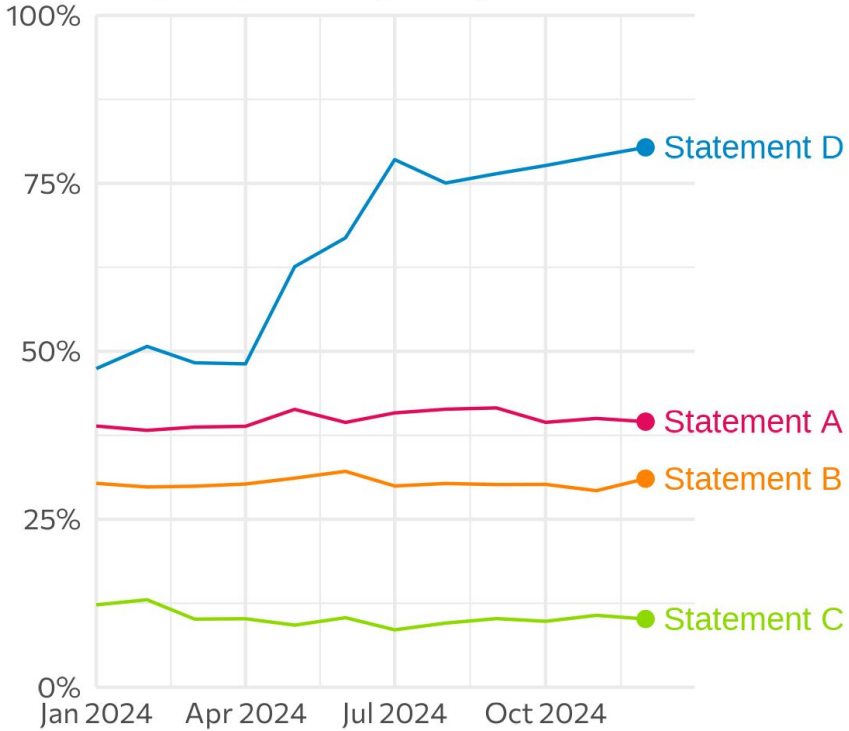

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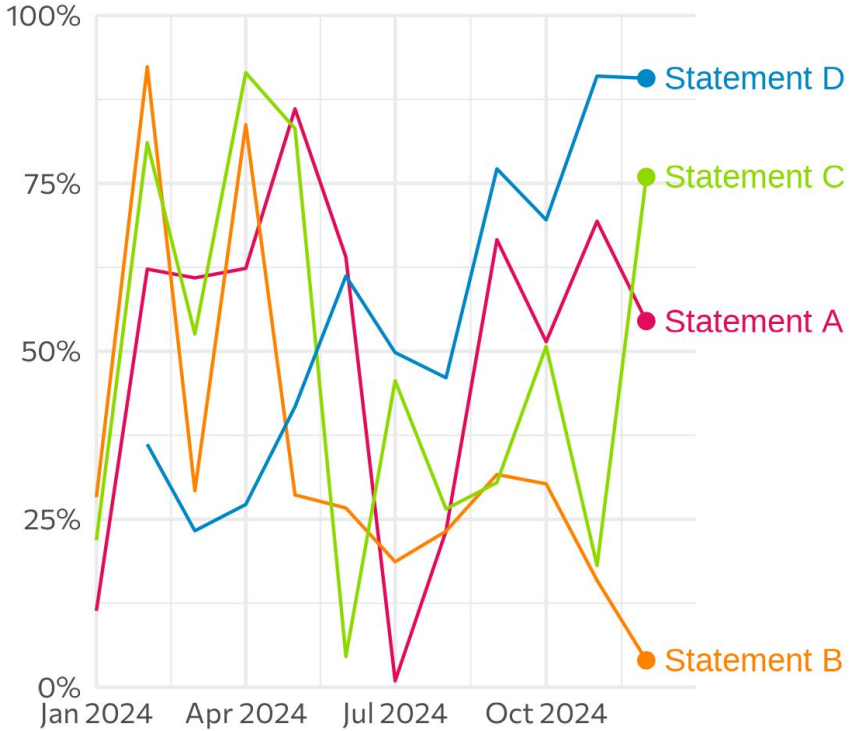
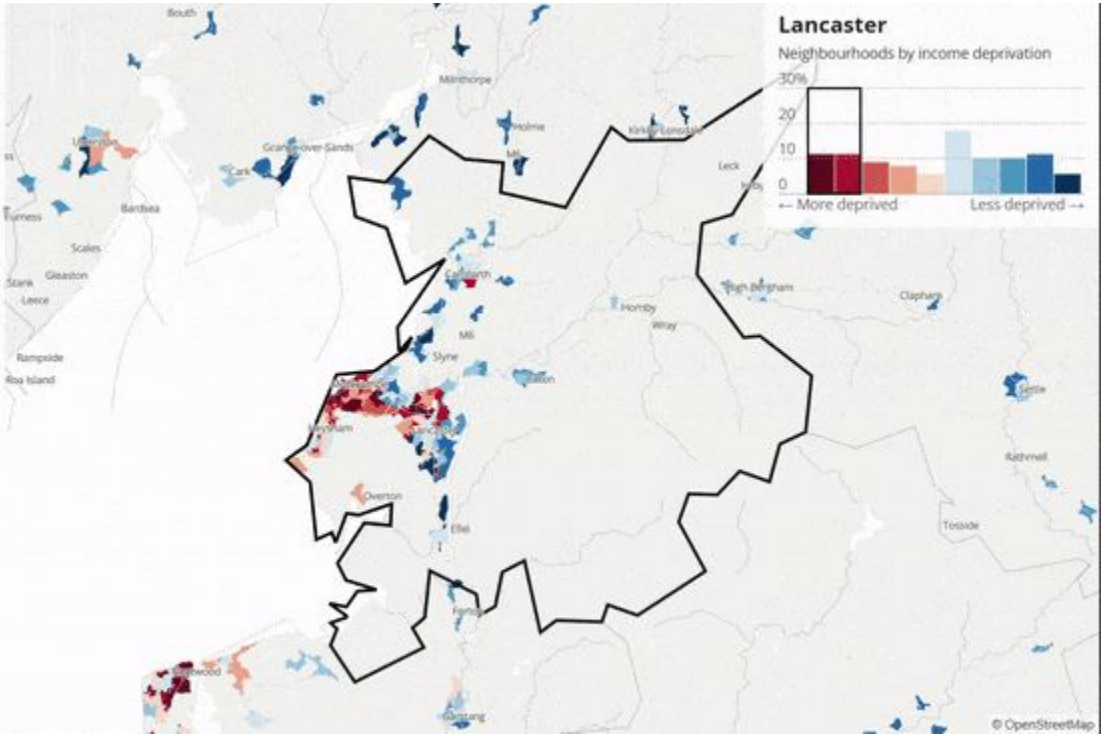


Source: Data simulated from a Uniform distribution

Complex charts need explanation

Of the 89 neighbourhoods in Lancaster, 20 were among the 20 percent **most income-deprived** in England. This is shown in the first two bars in the chart on the top right in red.



Source: ONS

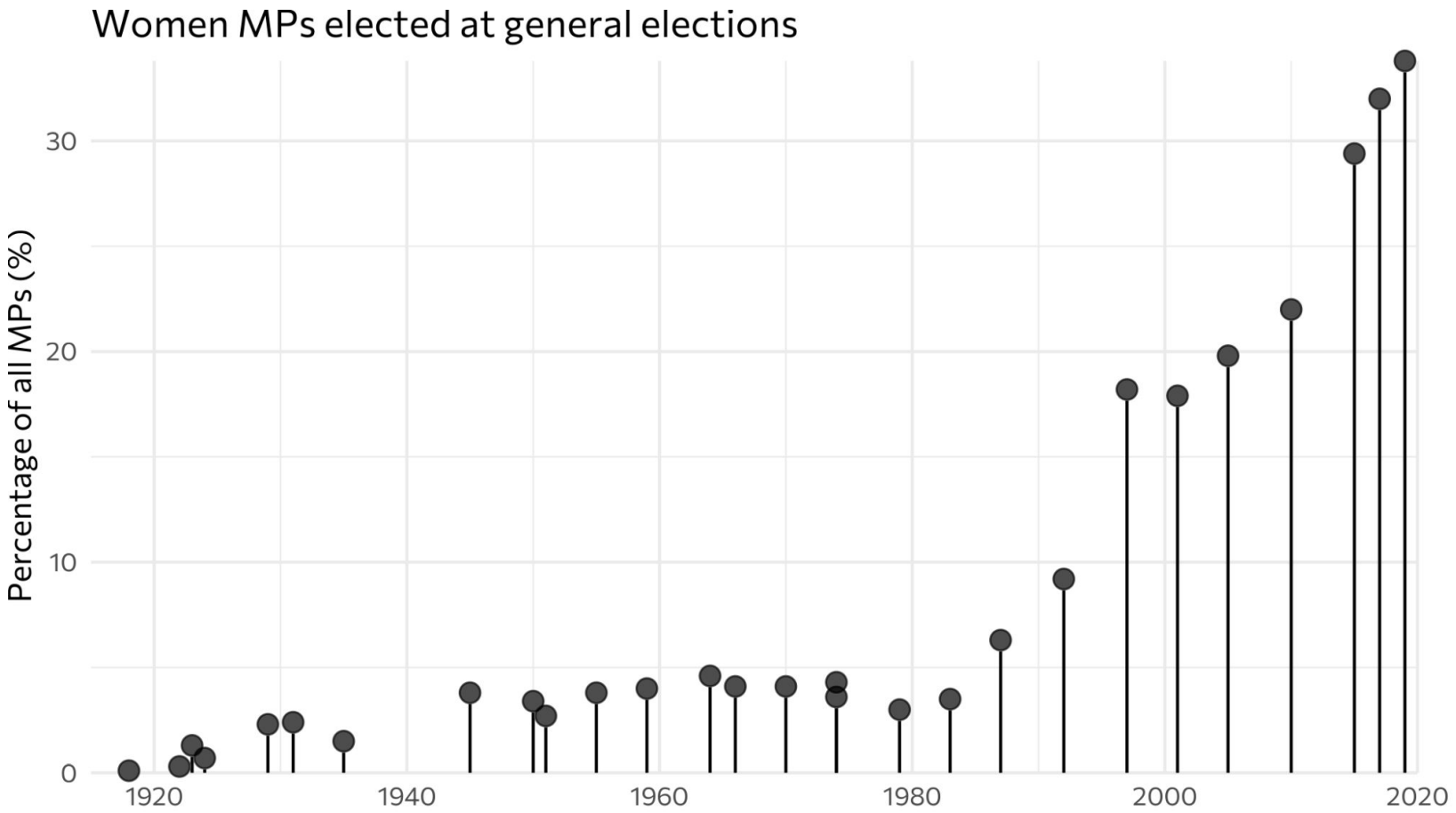
Use annotations to add context

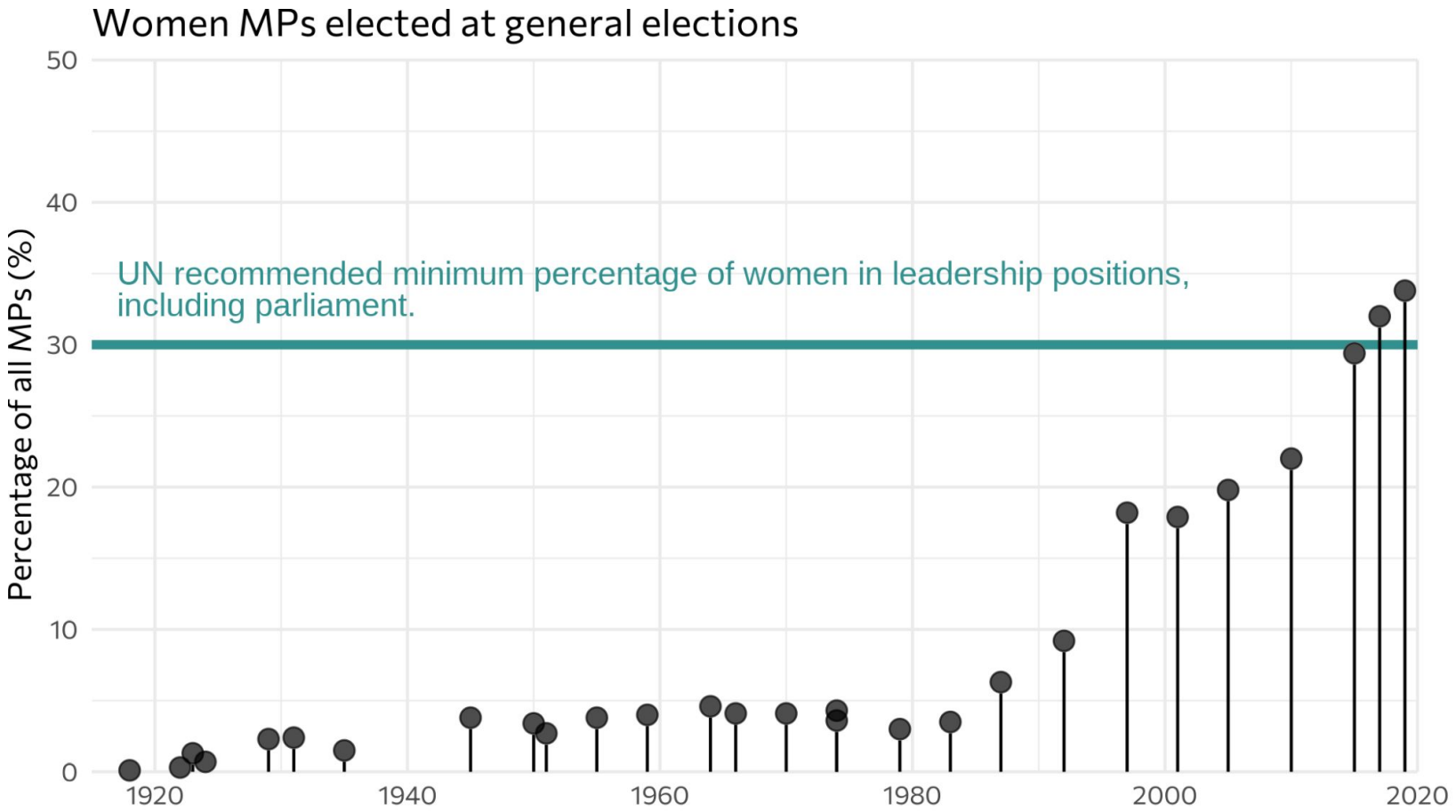
- Give context, such as thresholds or important dates.
- Highlight what a user should look at.
- Keep annotations concise and close to the part of the chart they relate to.

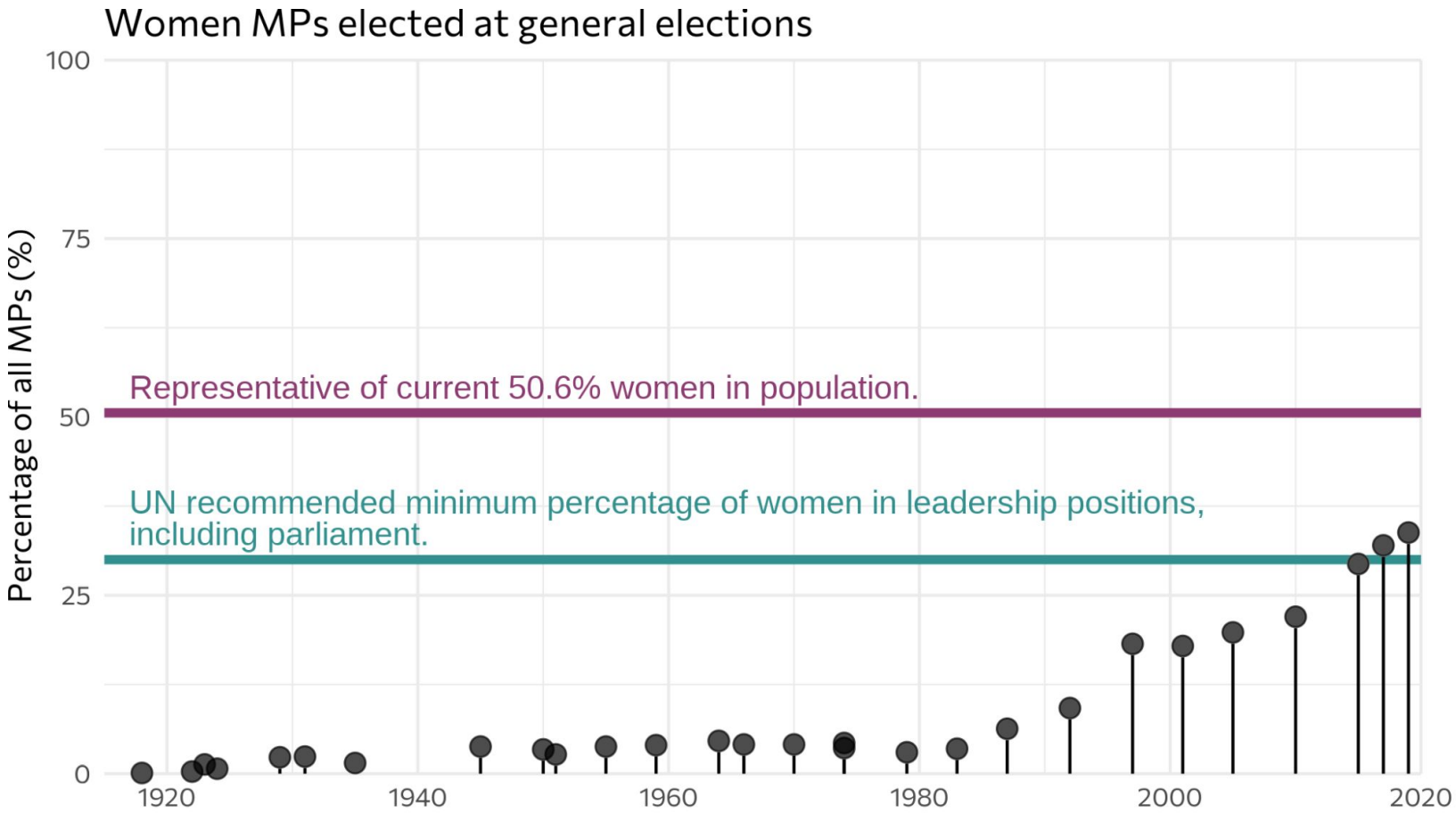
Women MPs elected at general elections

		Total	% all MPs
1918		1	0.1%
1922		2	0.3%
1923		8	1.3%
1924		4	0.7%
1929		14	2.3%
1931		15	2.4%
1935		9	1.5%
1945		24	3.8%
1950		21	3.4%
1951		17	2.7%
1955		24	3.8%
1959		25	4.0%
1964		29	4.6%
1966		26	4.1%
1970		26	4.1%
1974	Feb	23	3.6%
1974	Oct	27	4.3%
1979		19	3.0%
1983		23	3.5%
1987		41	6.3%
1992		60	9.2%
1997		120	18.2%
2001		118	17.9%
2005		128	19.8%
2010		143	22.0%
2015		191	29.4%
2017		208	32.0%
2019		220	33.8%

Source: House of Commons Library


Women MPs elected at general elections
Percentage of all MPs (%)
0
10
20
30
1920
1940
1960
1980
2000
2020


Women MPs elected at general elections
Percentage of all MPs (%)
50
40
30
20
10
0
UN recommended minimum percentage of women in leadership positions, including parliament.
1920
1940
1960
1980
2000
2020


Women MPs elected at general elections
Percentage of all MPs (%)
100
75
50
25
0
Representative of current 50.6% women in population.
UN recommended minimum percentage of women in leadership positions, including parliament.
1920
1940
1960
1980
2000
2020

Design better data visualisations by...

Design better data visualisations by...

1. Knowing your audience
2. Knowing your message
3. Designing charts to communicate your message to your audience

nrennie.rbind.io/talks/data-lab-data-viz

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