

National Innovation Centre Data
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Data Visualisation: Styling Plots Using ggplot2

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March 2023

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Engineering and Physical Research Council

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What's on the agenda?

- What is the National Innovation Centre for Data?
- 3 minute intro

Theory

- Data visualisation definition
- Five key considerations

Practical

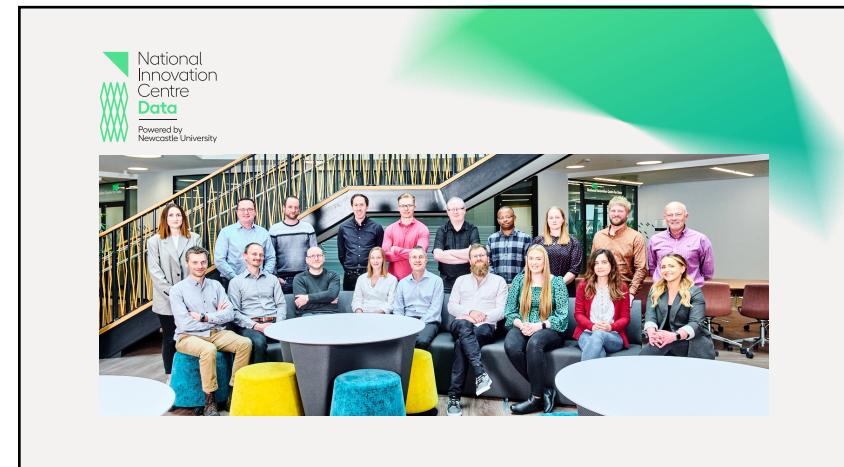
- The Grammar of Graphics (a little more theory) and ggplot2
- Build your own theme() for a consistent design style
- Resources

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3 minute introductions

Name
First job
Something you learned from it

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Data visualisation definition:

“The **visual representation and presentation of data to facilitate understanding**”

Andy Kirk (2016)

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Visual Representation: marks and channels

Munzner (2014)

Marks
Points, Lines, Areas

geom()

mapping = aes()

Channels

- Position: Horizontal, Vertical, Both
- Colour
- Size
- Shape
- Tilt

Length, Area

Data visualisation is the **visual representation and presentation of data to facilitate understanding**

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Visual Representation: marks and channels

Munzner (2014)

1 categorical 1 quantitative

2 quantitative

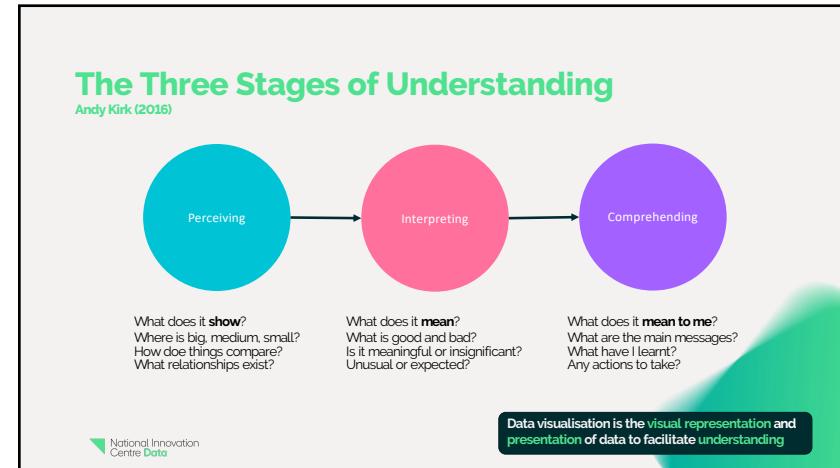
1 categorical 2 quantitative

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- ## Five Key Considerations
1. Context is key: where and how will your visualisations be viewed?
 2. Don't rush chart selection
 3. The importance of colour
 4. Use Gestalt Psychology: reduce clutter
 5. Make use of preattentive attributes
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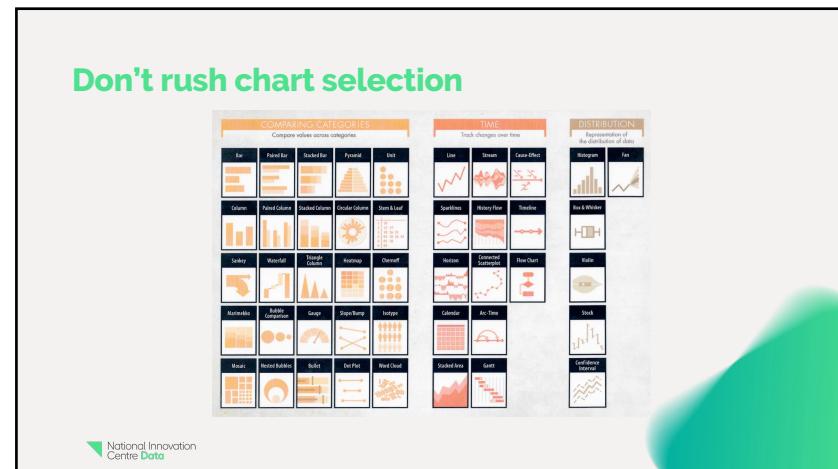
Context is key: where and how will your visualisations be viewed?

What are the characteristics associated with these spaces:

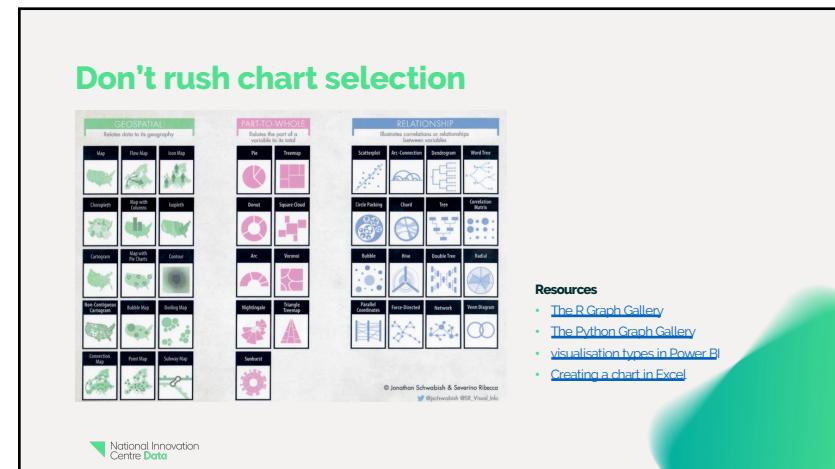
- Boardroom
- Live presentation
- Air traffic control centre
- Learning environment
- Digital or printed report

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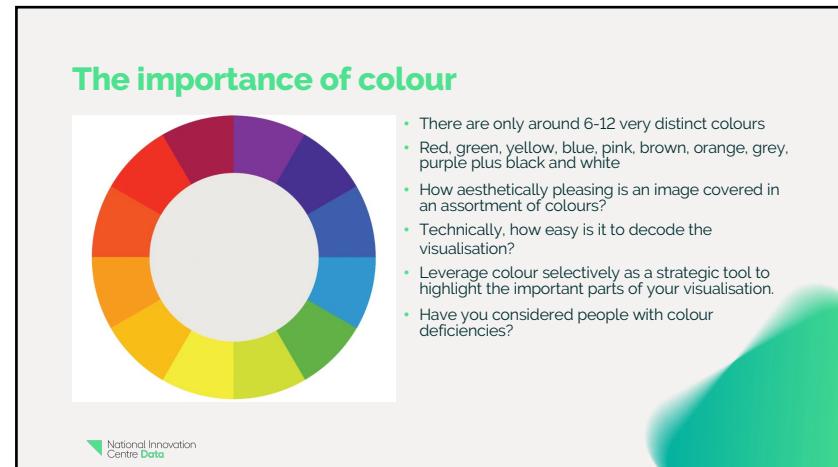
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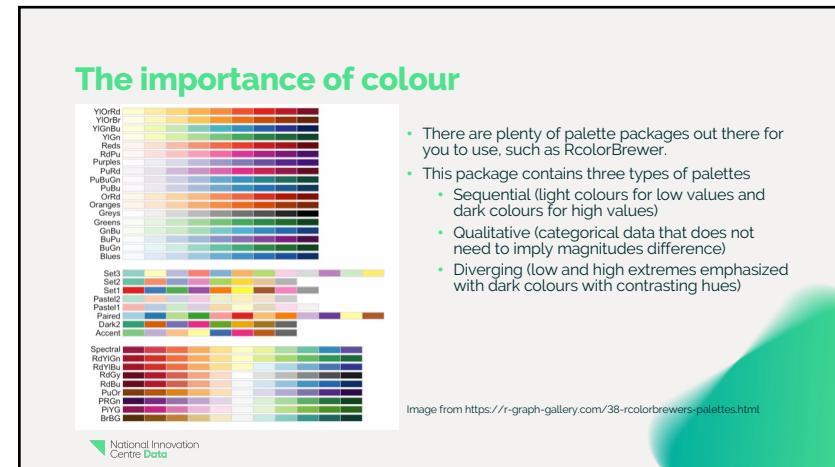
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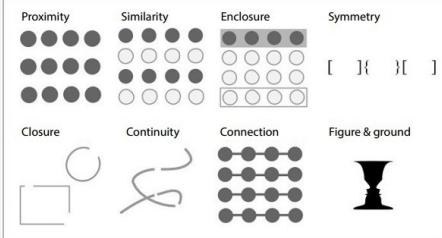
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Use Gestalt Psychology

- Gestalt psychology introduced the idea that humans naturally perceive visual elements as organised patterns and objects.
- The Gestalt principles of visual perception
 - Proximity
 - Similarity
 - Enclosure
 - Closure
 - Continuity
 - Connection



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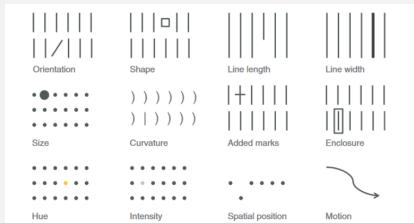
Make use of preattentive attributes

2649357630762396739
 9245074235604756047
 9492357630762396739
 349556026032-584306
 9245074235604756047
 349557026032-584306
 2649357630782393739
 9245074235604756047
 9492357630742396739
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 349556026032-584301

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Make use of preattentive attributes

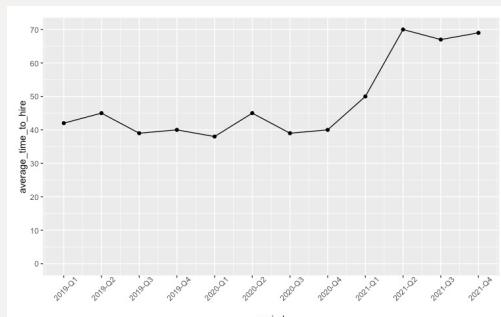


Use preattentive attributes to focus your audience's attention on specific parts of your visualisation.

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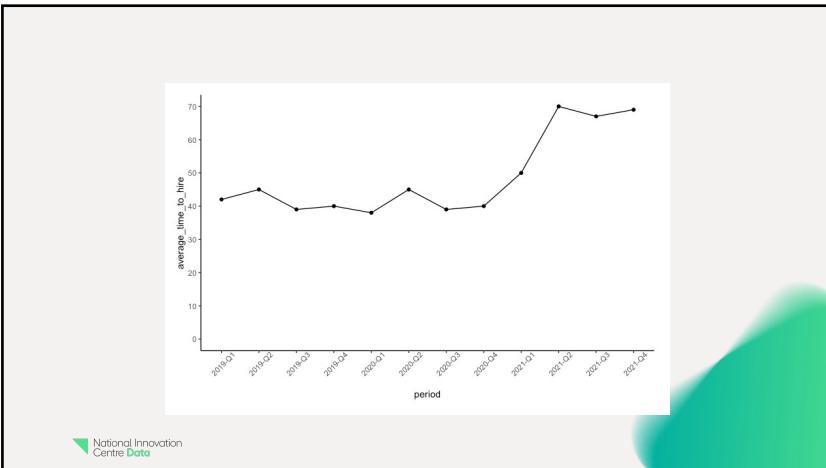
Example: report on the impact of a new hiring policy



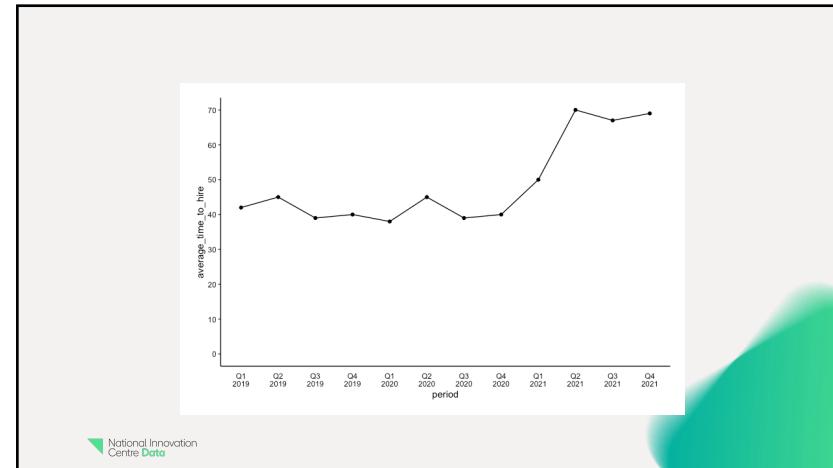
Period	Average Time to Hire
2019-01	42
2019-02	48
2019-03	40
2019-04	40
2020-01	38
2020-02	48
2020-03	38
2020-04	40
2021-01	52
2021-02	68
2021-03	65
2021-04	68

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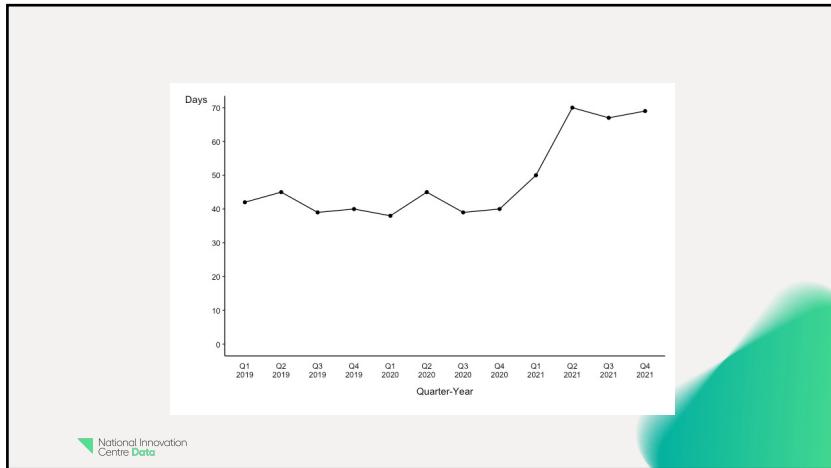
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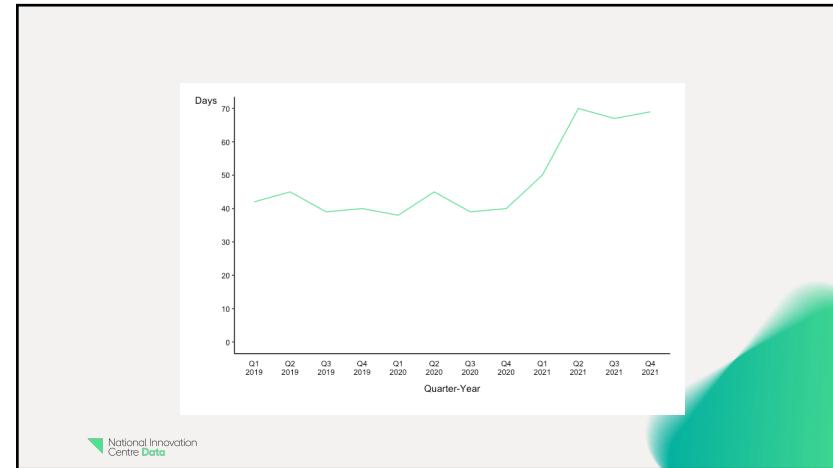
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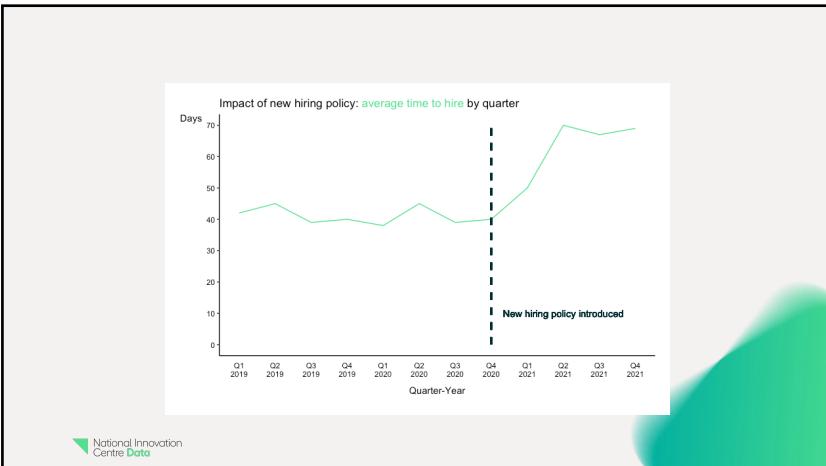
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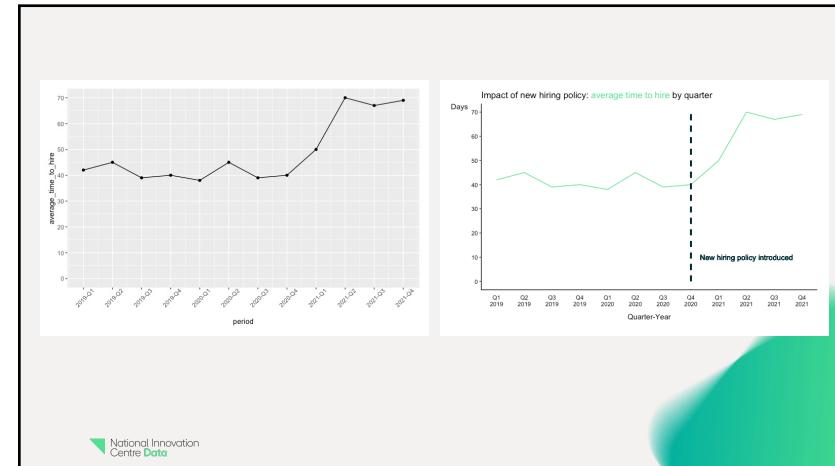
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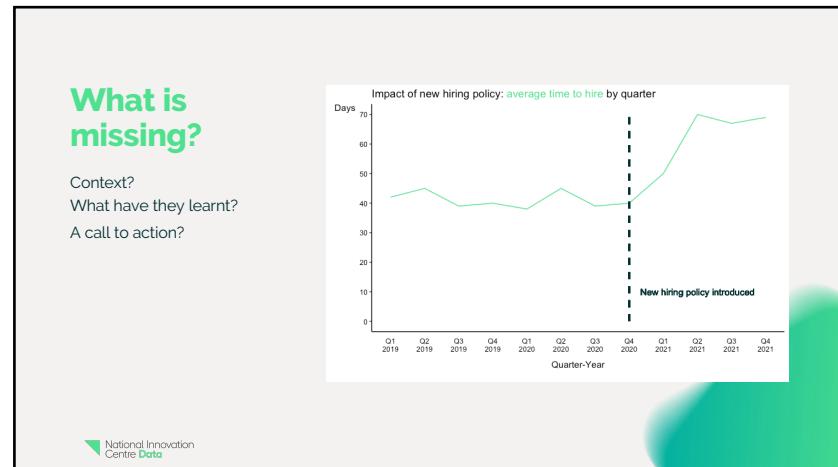
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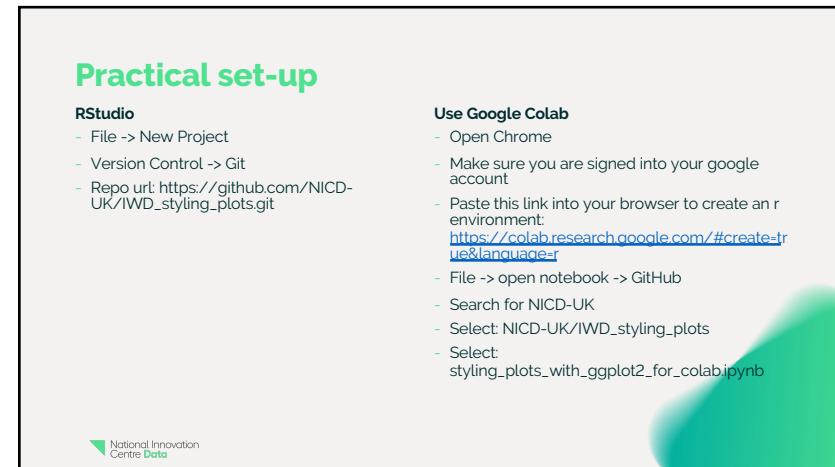
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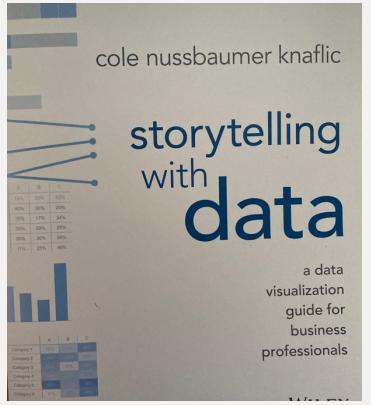


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Recommended Reading

Data visualisation

- [Storytelling with Data Cole Nussbaumer Knaflic](#) [online access via NCL library]
- [Visualisation Analysis & Design Tamara Munzner](#) [online access via NCL library]
- Data Visualisation: A Handbook for Data Driven Design, Andy Kirk Ibook available in Philip Robinson Library



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