

INFS 5116

Data Visualisation

Colour in visualisations



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Colour thinking

Data legibility

- Make the data being represented by differences in colour as clearly readable and as meaningful as possible.

Editorial salience

- Using colour to direct the eye to significant or meaningful features.

Functional harmony

- Any remaining colour choices will aid, and not hinder, the functional effectiveness and elegance of the visualisation.

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What's in a colour?

- **Hue**
 - Ranges from 0 to 360 degrees (colour wheel)
- **Saturation**
 - Ranges from 0% (grey) to 100% (colourful)
- **Brightness/value**
 - Ranges from 0% (black) to 100% (actual colour)

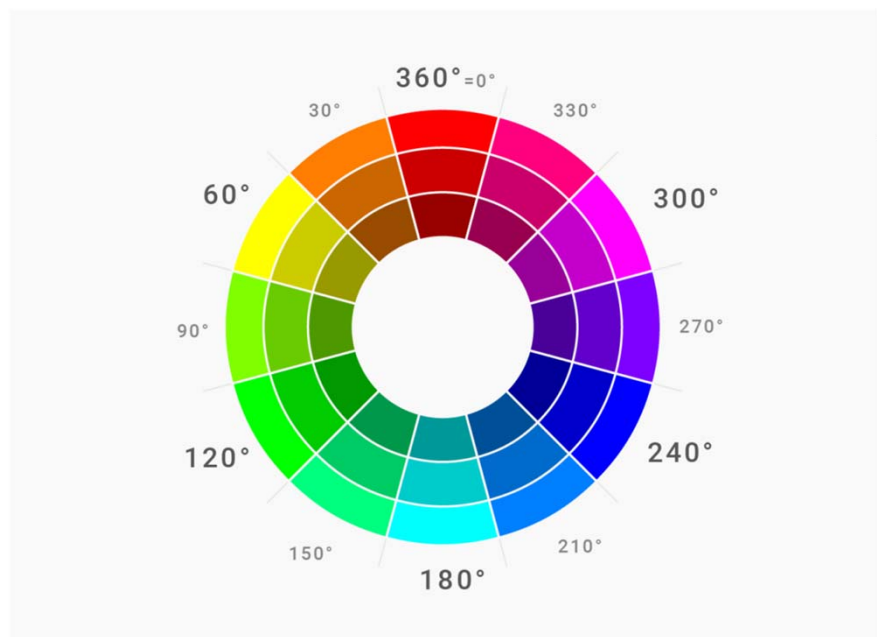
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The colour wheel

Pure colours at
60, 120, 240, 300
and 360 degrees



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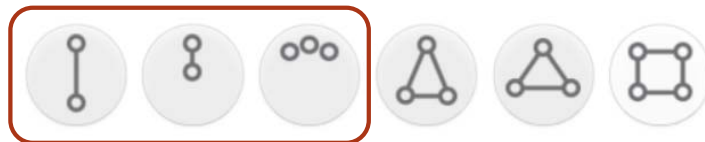
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How many colours?

- There is no need to use hues from all around the colour wheel.
- Using only a few hues and their neighbours is enough:
 - Graphics will look **more professional**, and **more trustworthy**.

Colour harmonies



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Fewer hues is usually better



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Complementary colours



Complementary but too close and too bright



After adjusting saturation and brightness

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Saturation and lightness



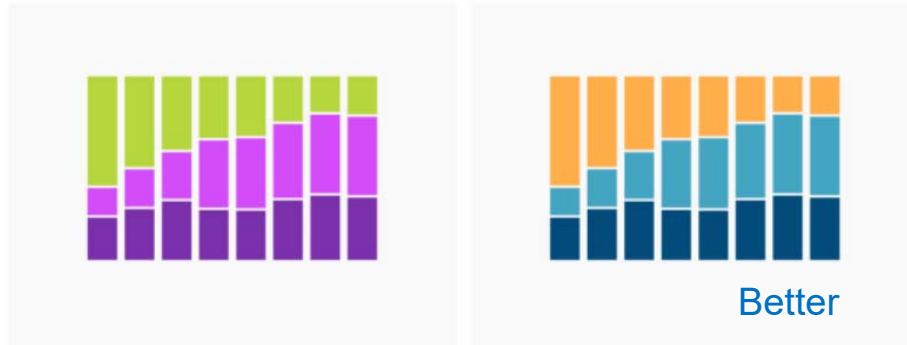
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Warm colours and blue

Visualisation designers often use yellow/orange/red and blue



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Green is tricky to use

Blue-green or yellow-green work best

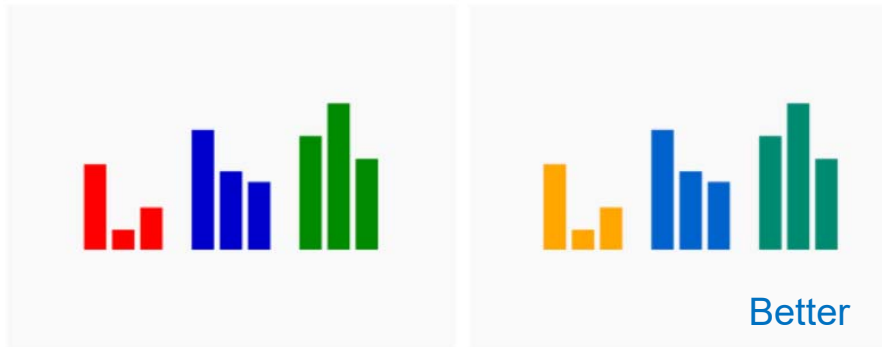


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Pure colours don't work too well



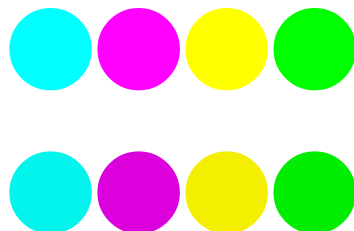
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Some colours are too colourful

100% saturation and 100% brightness is too much



Still bright, but better

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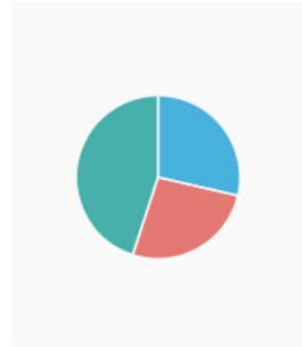
'Get it right in black and white'

Colours have the same lightness

In black and white, this will be a grey circle



Making some colours lighter and others darker helps



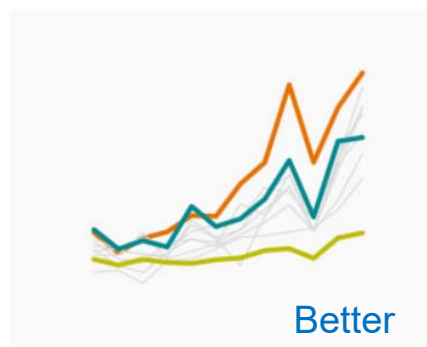
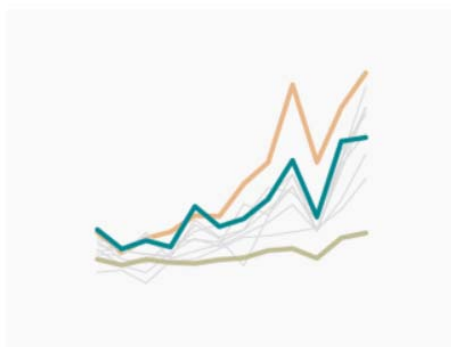
Adding a border helps

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Colours should stand out 'equally'



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Contrast with background



Too little



Too much

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Examples

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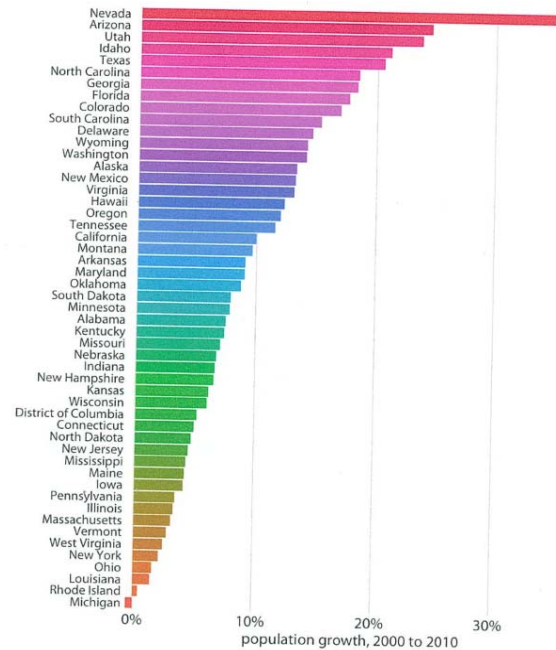
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What is wrong with this chart?

Rainbow colouring serves no purpose and is distracting

Population growth from 2000 to 2010 for all 50 US states and the district of Columbia. Source: US Census Bureau

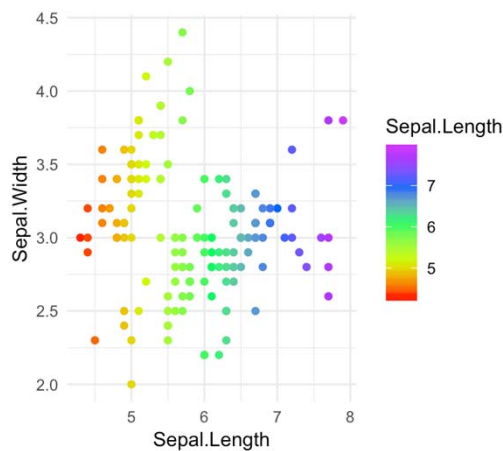


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What is wrong with this chart?



Sepal width versus sepal length for three different Iris species (*Iris setosa*, *Iris virginica*, *Iris versicolor*). Source: datanovia.com

- Use
- Size
- hor
- Wh



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