

# Collecting and Presenting Data

A step-by-step exercise using Excel and Powerpoint

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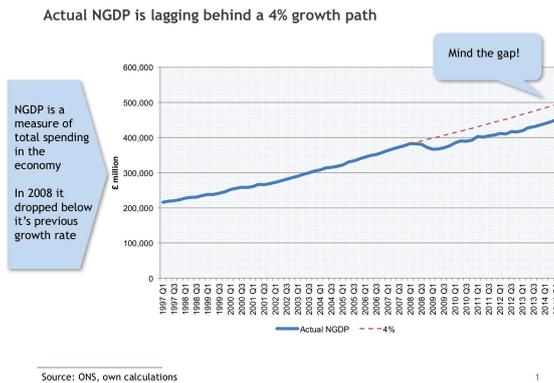
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## Getting started

1. Download "[aje\\_template.potx](#)"
  - Creating a template in Powerpoint is a good way to save time and ensure consistency
  - Create the design you want, select "save as", and choose the template format
  - When you open Powerpoint make sure you select "New from Template" rather than "New Presentation"
  - All templates are saved as .potx files in a designated folder
    - Word templates are .dotx
    - Excel templates are .xltx
  - Alternatively, you could open an existing presentation that you're happy with and use that as a basis

Task 1: replicate the following (but *without* the patterned fill)



Downloading the data

1. We are going to use Nominal GDP data from 1997-2014 for the UK. For the most recent data go to <http://www.ons.gov.uk/> and search for "YBHA"
  - This is the series code for "Gross Domestic Product at Market Prices"
2. However this will have been revised since I created the original chart. Therefore you should use this [stable link](#) for our data
3. Select green button that says "View all data used in this statistical bulletin"
4. Annoyingly the ONS list the Annex's first, but we want the main table (on page 2) which is called:
  - UK quarterly national accounts data tables
5. Select the green button that says ".xls(6.2mb)"
6. You should download the Excel spreadsheet

### Creating a spreadsheet

1. We need the sheet called A2 AGGREGATES
2. We want “Gross Domestic Product at Market Prices” (Series code YBHA)
3. Copy and paste the dates into Column A of a new spreadsheet
4. Copy and paste the seasonally adjusted, quarterly data into Column B
  - Label this column **Actual NGDP**

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### Adding a projection

1. Actual NGDP was at it’s highest in 2008 Q1. We need to add a 4% growth rate from the peak of the boom
2. We use the following formula to convert an annual growth rate into a quarterly one:

$$Q = (1 + Y)^{1/4} - 1$$

3. Insert the desired growth rate into Cell C3 (in our case 4%)
  - If you Format the Cell you can either categorise it as a number (0.04) or as a percentage (4). If you enter a “%” sign Excel should recognise this
4. Insert the formula into Cell C2
  - $(1+C3)^{(1/4)}-1$
5. This allows us to apply a 4% year-on-year growth rate to our quarterly data

See: <http://www.experiglot.com/2006/06/07/how-to-convert-from-an-annual-rate-to-an-effective-periodic-rate-javascript-calculator/>

### Completing the dataset

1. Column C will display our projected growth rate. Go to 2008 Q1 and copy the Actual NGDP figure into Column C
2. For 2008 Q2 we enter the following equation:
  - =C48+(C48\*\$C\$2)
3. In other words,
  - 2008 Q2 = 2008 Q1 + 2008 Q1 \* quarterly growth rate
  - We use the \$ sign to indicate that this is a stable reference
4. We copy this formula to complete Column C
5. To tidy things up we can Format Cell for the number:
  - Category: Number, 0 decimal places, Use 1000 Separate (,) and Fill background color: no fill
6. I've also ensured everything is the same Font (Arial) and Font Size (12)

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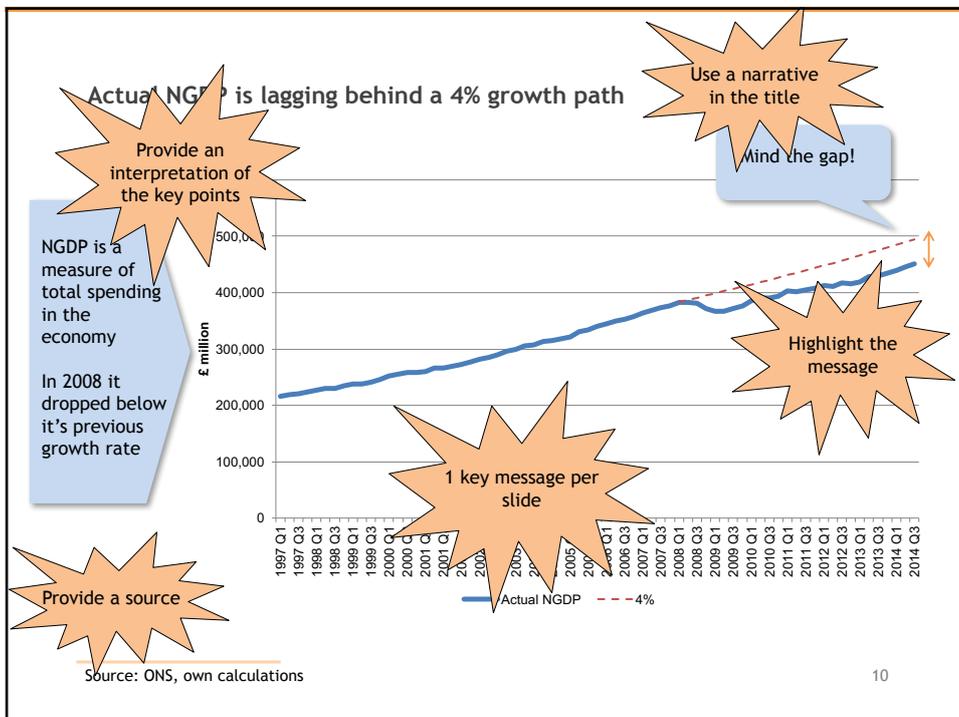
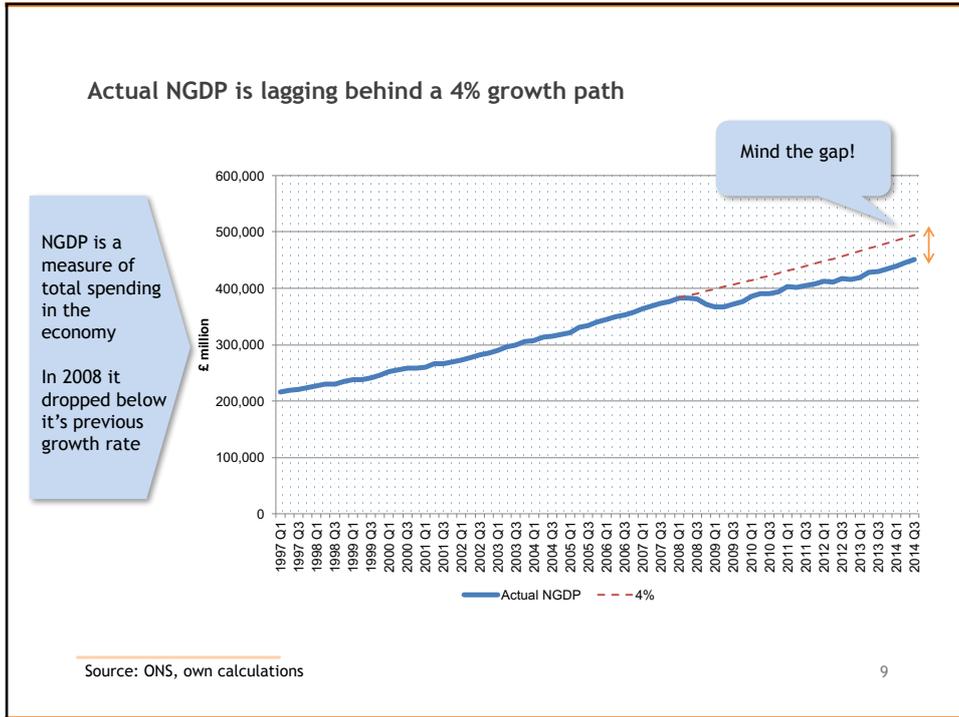
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### Creating the graph

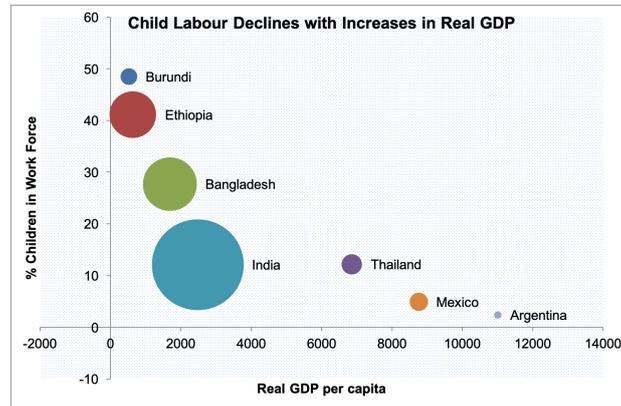
1. We can now insert a line chart comparing the Actual NGDP and the 4% projection
2. I've moved the chart into a new sheet so that it's easier to work with
  - Change Font to Arial
  - Place the Legend at the Bottom
  - Format the 4% series so that the Line is 1.5pt weight and dashed
  - Add "£ million" to the Y axis title
  - I've also renamed the sheets and switched their order
3. Copy and paste the chart into Powerpoint
  - Resize so that width = 20 (but make sure the height is proportionally resized as well)
- Save the file as a PDF

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Task 2: replicate the following (but *without* the patterned fill)



Graphing three variables

- This example is taken from the excellent textbook:
  - Cowen, T., and Tabarrok, A., *Modern Principles: Macroeconomics*, (Worth, 2013) - see Appendix A-9
1. Download "[aje\\_data\\_2.xlsx](#)"
    - A line chart shows us that child labour declines with increases in real GDP
    - But we also want to understand the total amount of child labour in each country
  2. Create a Bubble graph (under "Other") with:
    - Real GDP on the X axis
    - % Children in Workforce on the Y axis
    - Total Children in the Workforce as the "size"
  3. Instead of a legend chose "Data Labels" and "Series Name"
  4. Add a title, increase the font size to 16 and remove gridlines
  5. Save as Picture (select PNG)

### Common features of a good data visualisation

1. It contains relevant information
2. The design had been chosen so that relevant patterns become noticeable
3. It is presented in an attractive manner, but appearance should not get in the way of honesty, clarity and depth
4. When appropriate, it is organised in a way that enables some exploration

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These are based on Alberto Cairo, and can be found in Spiegelhalter (2019, p.65)