

# DASHBOARD REPORTING IN MODERN EXCEL (Online)

Danielle Stein Fairhurst  
**Plum Solutions**

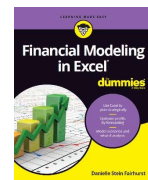
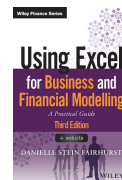
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## Meet your Facilitator, Excel modelling specialist **DANIELLE STEIN FAIRHURST**



- Founded Modellers' Meetups
- Author of "Using Excel for Business & Financial Modelling" and "Financial Modeling for Dummies"
- Judge for the 2020 Financial Modelling Innovation Awards
- ATP & Advisory Board Member for Financial Modeling Institute (FMI)



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# WELCOME TO THE COURSE

- Hello everyone, it's a pleasure to have you with us
- We will be covering tips and tricks of how to build Dashboards in Modern Excel
- You will receive a certificate at the end of the course
- My goal is to take you through this course

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*Dr Andrew Abela, Extreme Presentation*

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## INTERACTION

- POLL
- POLL QUIZ
- GROUP BREAKOUT
- SOLO EXERCISE

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## GETTING TO KNOW YOU & YOUR OBJECTIVES

1. Improve chart & dashboard skills; how to use power pivot in combination with dashboards; power bi use in combination with excel. (MdP)
2. Create visuals for presentation & analysing , story tell , serving data intelligence to non finance non finance stakeholders (KS)
3. Concise, meaningful, timely reporting (NE)

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## DASHBOARDS REPORTING IN MODERN EXCEL

1. Use **visuals**, not data
2. Data Analysis in **Modern** Excel
3. Power **Excel** Tools
4. Choose the chart to get your **message** across
5. Find the **story**. Tell the story.
6. Charts **vs.** Tables
7. Dashboard **Critique**
8. The **Rules** of Visual Perception

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“Data is not  
information,  
information is  
not knowledge,  
knowledge is  
not  
understanding,  
understanding is  
not wisdom.”

Clifford Stoll

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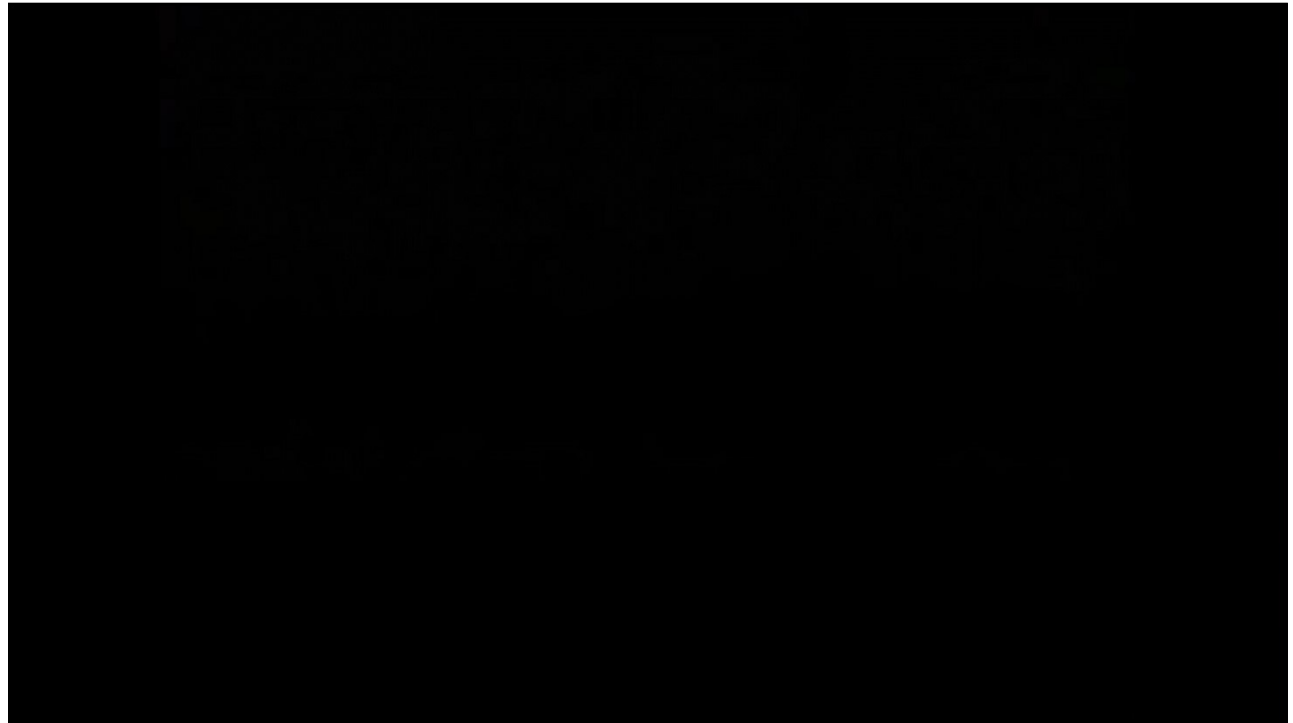
The more data we have, the more difficult it is to extract meaning from it. In the age of **big data**, it's almost impossible!



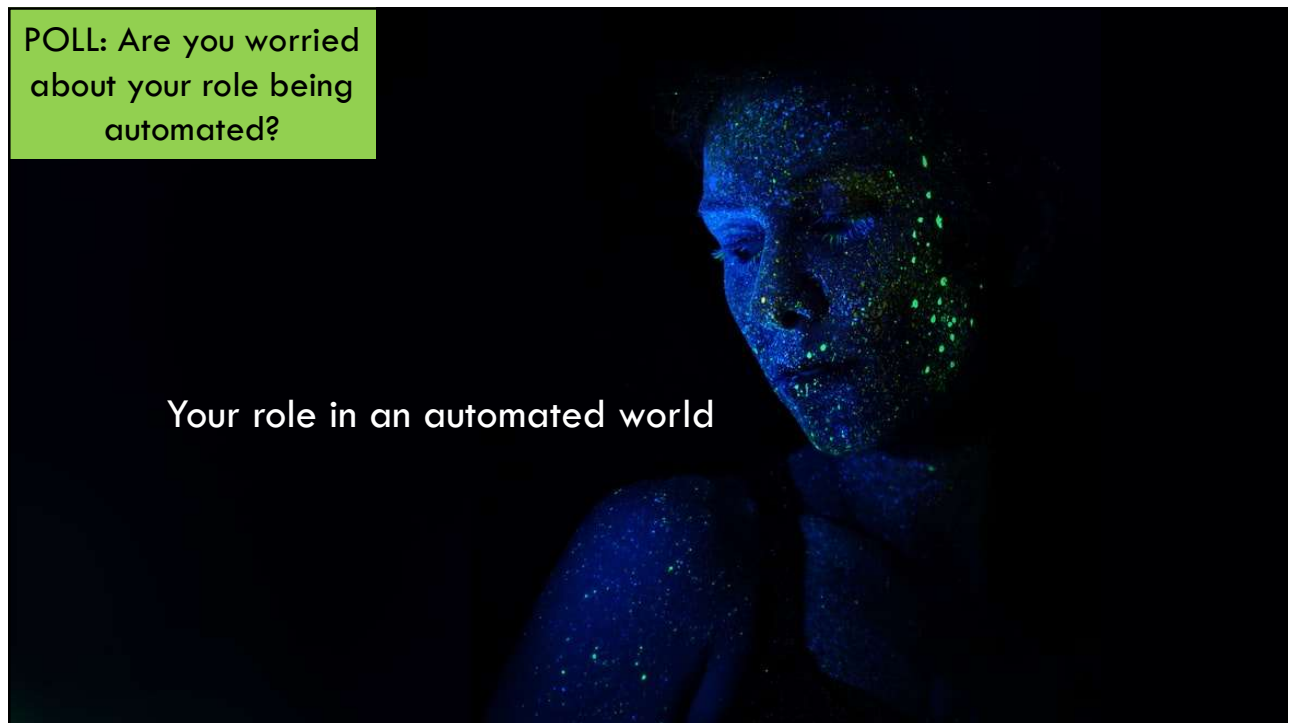
According to some experts, 90% of the **world's data** has been created in the last two years.

Source: <http://marciaconner.com/blog/data-on-big-data/>

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## Debunking the Big Data Myth



Does your data  
need to be  
bigger, or better?

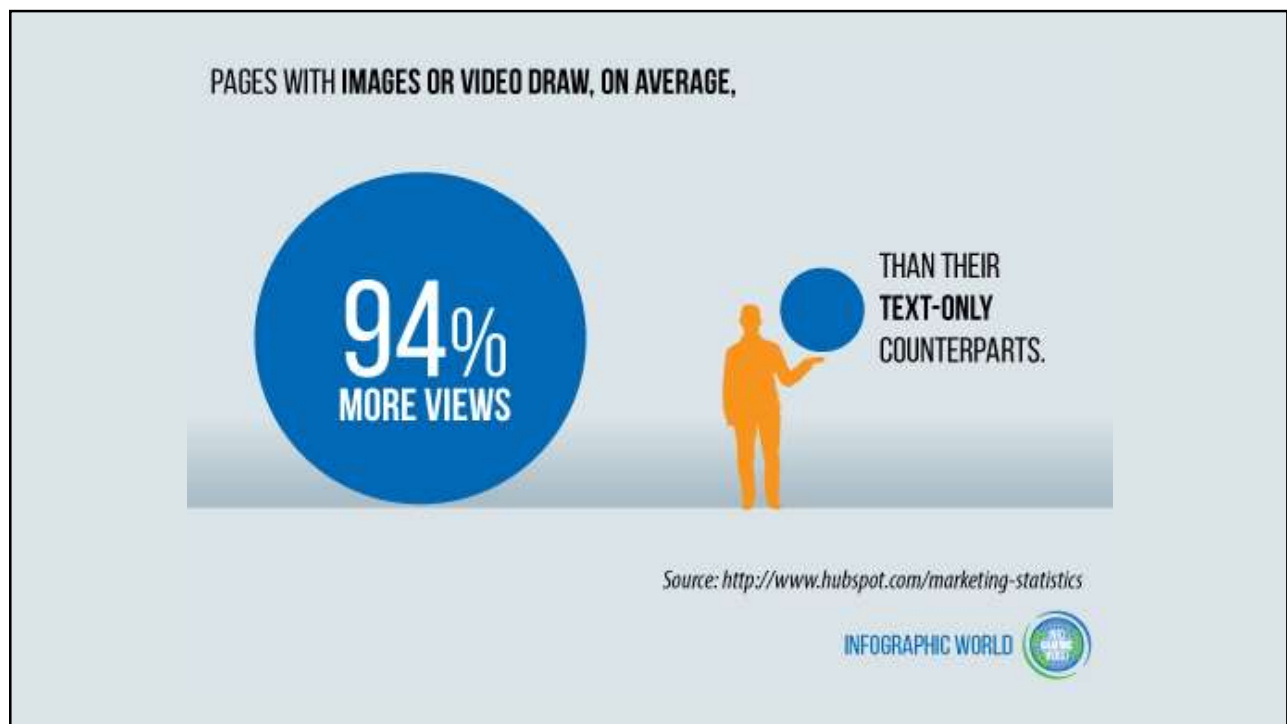
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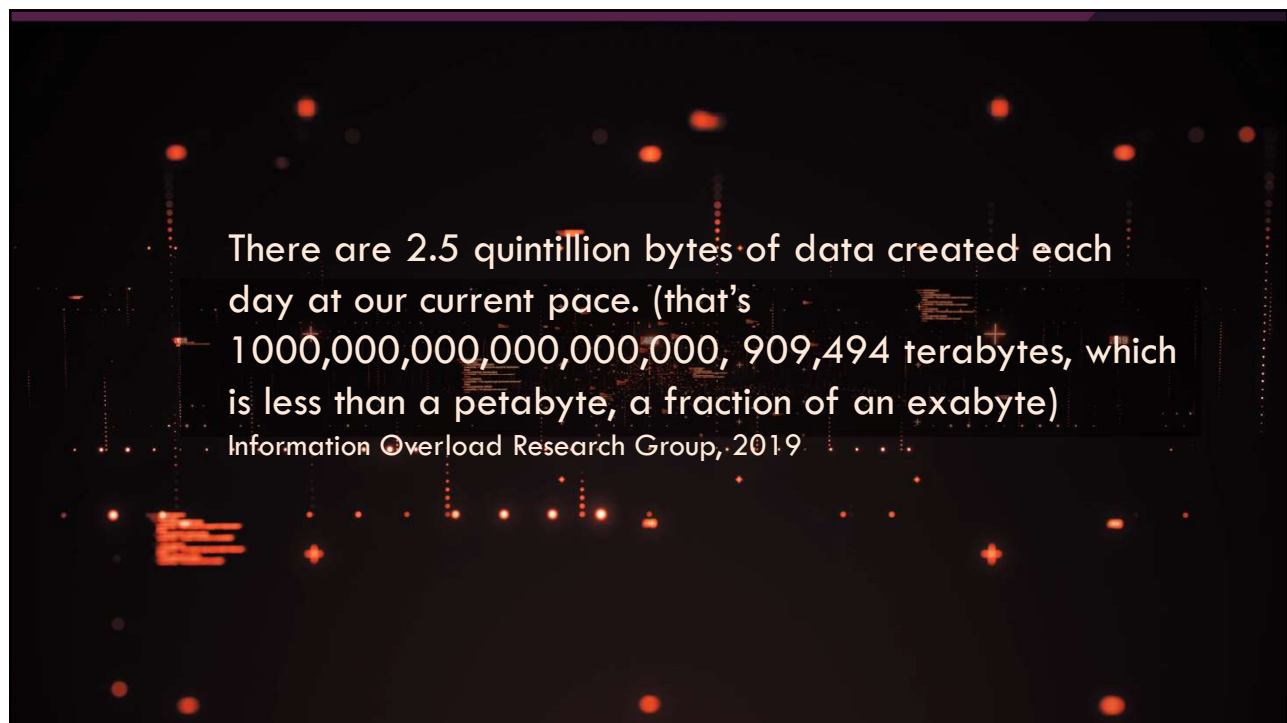
We receive five times as much  
information as we did in 1986

Alleyne, R. (11 Feb 2011). Welcome to the information age – 174 newspapers a day. The Telegraph

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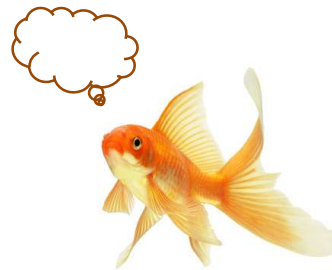


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## IS THE INCREASE OF VISUAL INFORMATION “DUMBING US DOWN”?

Human attention span has fallen  
from **12 seconds** in 2000 to  
**8 seconds** in 2016.

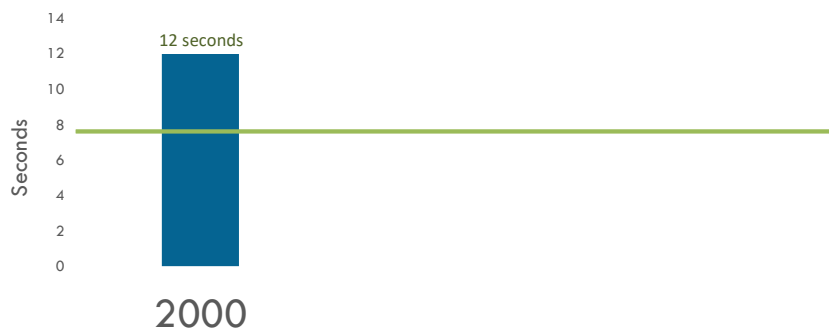
A goldfish has an attention span  
of **9 seconds**.



<http://www.telegraph.co.uk/science/2016/03/12/humans-have-shorter-attention-span-than-goldfish-thanks-to-smart/>

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## Your Attention Span



<http://www.telegraph.co.uk/science/2016/03/12/humans-have-shorter-attention-span-than-goldfish-thanks-to-smart/>

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<http://www.telegraph.co.uk/science/2016/03/12/humans-have-shorter-attention-span-than-goldfish-thanks-to-smart/>

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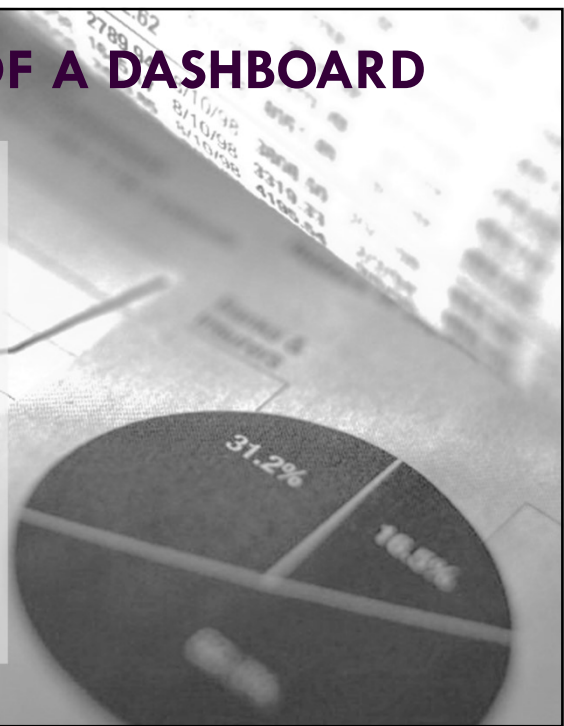


And the same thing goes for quarterly reports. They are unreadable. They're just numbers and boring and *blech*. So what I was thinking is that maybe we should have some sort of graphic, like if we have a bad quarter, put in a storm cloud? And... when we have a good quarter, fireworks?

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## KEY DEFINITION OF A DASHBOARD

- Easy to read
- Usually single page and real-time
- Showing a snapshot of current status and historical trends
- Enables instantaneous and informed decisions to be made **at a glance**



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## What is a Dashboard Report?

“A dashboard is a visual display of the most **important information** needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored **at a glance.**” **Stephen Few**

| 13-Month Trend | Categories         | YTD Sales and Contribution Levels | YTD Sales to Target |
|----------------|--------------------|-----------------------------------|---------------------|
|                | Electronics        | 120,808  32%                      | 93%                 |
|                | Hardware           | 118,733  31%                      | 102%                |
|                | Software           | 52,270  14%                       | 84%                 |
|                | Peripherals        | 47,259  12%                       | 97%                 |
|                | Photo              | 43,634  11%                       | 113%                |
|                | <b>Grand Total</b> | <b>382,704</b> <b>100%</b>        | <b>104%</b>         |

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# PRESENTING FINANCIAL INFORMATION



**Financial data is complex.**

**85% of all managers do not understand the reports they receive<sup>1</sup>**

**Financial concepts are not intuitive**

1. Source: Dr Irwin Jarett, Tomorrow's Software

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## FOR EXAMPLE

**POLL QUIZ: What is the Net Income?**

|    | A                                      | B                | C |
|----|----------------------------------------|------------------|---|
| 1  | <b>Projected Income Statement 2021</b> |                  |   |
| 2  | Gross Revenue                          | \$299,159        |   |
| 3  | Inventory                              | -\$141,326       |   |
| 4  | Direct Costs                           | -\$23,039        |   |
| 5  | Other sales costs                      | -\$7,680         |   |
| 6  | <b>Gross Income</b>                    | <b>\$127,114</b> |   |
| 7  | Staff Costs                            | -\$32,896        |   |
| 8  | Marketing                              | -\$13,873        |   |
| 9  | Facilities & GA                        | -\$44,280        |   |
| 10 | <b>Operating Income</b>                | <b>\$36,065</b>  |   |
| 11 | Taxes                                  | -\$10,819        |   |
| 12 | <b>Net Income</b>                      | <b>\$25,245</b>  |   |
| 13 |                                        |                  |   |
| 14 |                                        |                  |   |



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## Projected Income Statement 2021



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## Another Example – Messy Data

| 1  | Month     | Transactions | Sales        | Costs        | Profit       | Profit Margin |
|----|-----------|--------------|--------------|--------------|--------------|---------------|
| 2  | January   | 3213.0000    | 771120.00    | 560598.2400  | 210521.76    | 0.273007781   |
| 3  | February  | 1359.00      | 326160.2400  | 276148.0000  | 50012.2400   | 0.153336409   |
| 4  | March     | 2841.2540    | 681840       | 611838.2547  | 70001.7453   | 0.102665941   |
| 5  | April     | 3448.4000    | 827520.0000  | 1089303.0000 | -261783.0000 | -0.316346433  |
| 6  | May       | 4106.0000    | 985440.0000  | 825280.00    | 160160.0000  | 0.162526384   |
| 7  | June      | 4032.0000    | 967680.2540  | 822998.2500  | 144682.0040  | 0.15          |
| 8  | July      | 4836.0000    | 1160640.0000 | 956177       | 204463.0000  | 0.176164013   |
| 9  | August    | 3430.0000    | 823200.00    | 740214.0000  | 82986.0000   | 0.100809038   |
| 10 | September | 2271.0       | 545040.0000  | 485818.0000  | 59222.0000   | 0.108656245   |
| 11 | October   | 3097.0000    | 743280.2470  | 636766.0000  | 106514.2470  | 0.143302943   |
| 12 | November  | 1501.2540    | 360240.0000  | 337365.55    | 22874.4522   | 0.063497813   |
| 13 | December  | 3851.0000    | 924240.0000  | 870070.0000  | 54170.0000   | 0.058610318   |

- Open the Excel file “DIME Practical Exercises.xlsx”
- Open up the tab called “Messy”
- How can we make this easier to read?

**BREAK OUT  
GROUPS (5 min)**

### HINTS TO TRY

- Formatting?
- F11?
- Sparklines?

**BONUS!** Create a label with the total transactions  
 ="Total "&ROUND(SUM(B2:B13),0)  
 HINT: Use F2 & = to link the label

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## Using Visualisation to make Sense of Messy Data



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## BASIC SHORTCUTS

Ctrl-C Copy

Ctrl-V Paste

F2 Edit

F4 \$

ALT= SUM

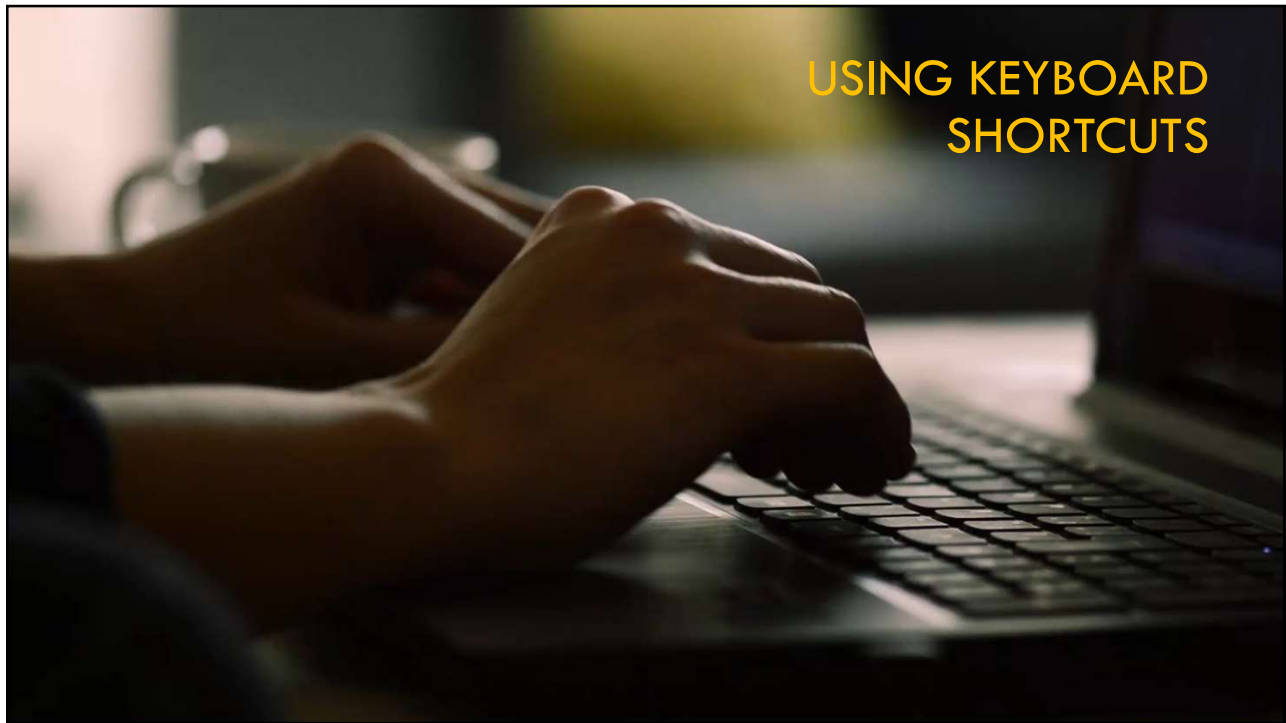
Use the arrow keys (not the mouse)

### Additional Resources

1. <https://plumsolutions.com.au/wp-content/uploads/2013/02/Shortcuts.pdf>
2. <https://plumsolutions.com.au/everybody-loves-a-shortcut>
3. <https://www.youtube.com/watch?v=ykP-agY0tC4&t=1s>

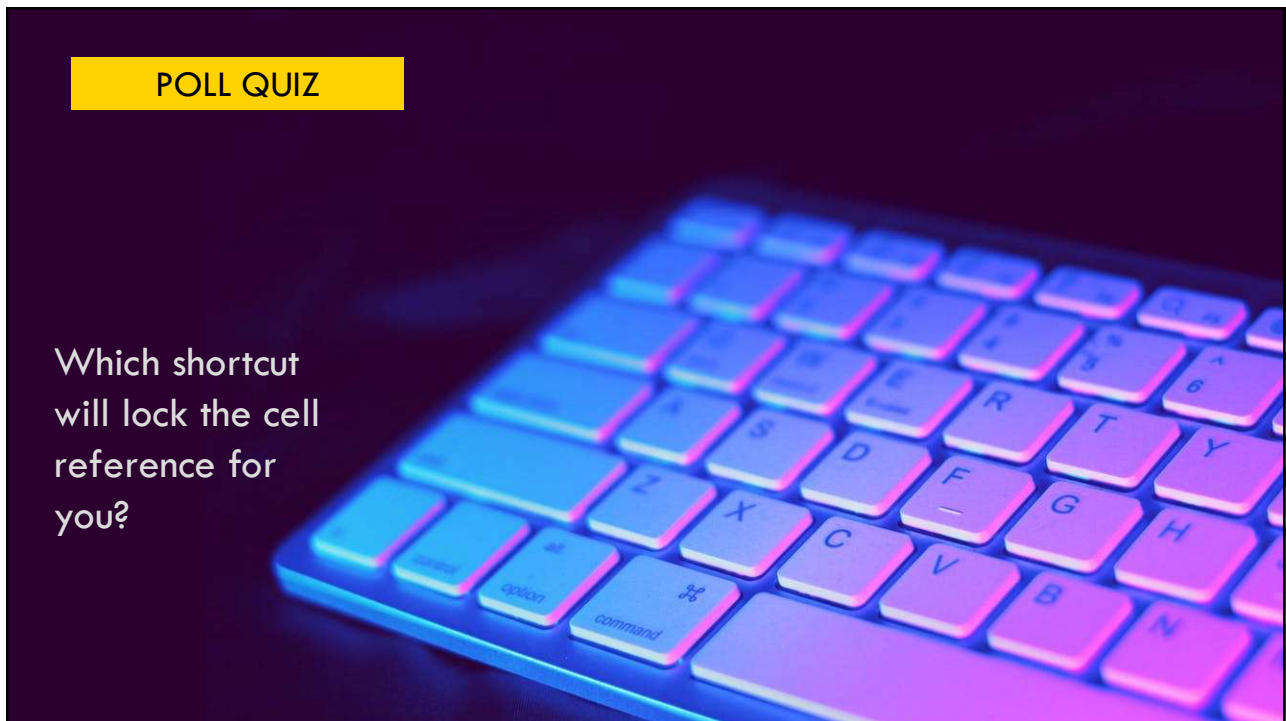
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## USING KEYBOARD SHORTCUTS

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## POLL QUIZ

Which shortcut  
will lock the cell  
reference for  
you?

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## Give them Insights, not Spreadsheets

- Just because you love numbers, doesn't mean they do
- Don't overwhelm them with numbers
- Overwhelmed or confused executives won't make decisions

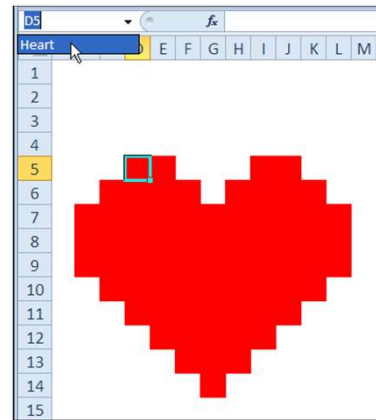


Image source: Debra Dalgleish

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## VIRTUAL MEETUPS



- **Wed 18<sup>th</sup> Nov** PARTNER WEBINAR: “Building the Financial Model Dashboard”
- **Wed 25<sup>th</sup> Nov** VIRTUAL CPA DISCUSSION GROUP: “Forecasting Techniques in Excel” Rahim Zulfiqar Ali
- **Wed 25<sup>th</sup> Nov** WOMEN IN FINANCIAL MODELLING: “Financial Modeling World Cup Stage 3 Debrief”
- **Tues 1<sup>st</sup> Dec** VIRTUAL DEBATE: “Power Query versus Excel Formulas” David Benaim & Alan Murray
- **Mon 7<sup>th</sup> Dec** VIRTUAL MEETUP: “Programming and Problem Solving in Excel” Dan Mayoh & Diarmuid Early

[www.plumsolutions.com.au/meetup](http://www.plumsolutions.com.au/meetup)

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7. Dashboard **Critique**
8. The **Rules** of Visual Perception

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ANSWER IN THE "CHAT"

What do you **like** about Excel?  
What **frustrates** you about it?





www.chandoo.org





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### “CHAT” QUESTION:

What do you love/like about Excel?

OTHER TOOLS DON'T STICK  
 WE ARE USED TO EXCEL  
 IT'S THE FALL BACK  
 "FREE"  
 CUSTOMISABLE AND FLEXIBLE  
 MANIPULATION

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### “CHAT” QUESTION:

What frustrates you about Excel?

CRASH - FILE SIZE?  
 MAC!!!  
 .XLSB FOR LARGE FILES  
 DATA MODEL FOR PIVOT TABLES WITH  
 LARGE FILES

ERRORS!! #NA #REF  
 USER ERROR (OTHER PEOPLE!)

VERSIONS & COMPATIBILITY

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## Example

### SOLO EXERCISE

PPMT    X   ✓   fx    =D5\*\$E\$2

|    | A        | B        | C       | D        | E          | F |
|----|----------|----------|---------|----------|------------|---|
| 1  |          |          |         |          |            |   |
| 2  |          |          |         | GST      | 10%        |   |
| 3  |          |          |         |          |            |   |
| 4  | Customer | Store    | Product | ex GST   | GST        |   |
| 5  | Fred B   | Uptown   | DVD     | \$22,400 | =D5*\$E\$2 |   |
| 6  | Jenny A  | Uptown   | CD      | \$33,200 |            |   |
| 7  | Faisal Z | Uptown   | Book    | \$28,100 |            |   |
| 8  | Ahmed L  | Uptown   | Book    | \$27,800 |            |   |
| 9  | Helen M  | Uptown   | Book    | \$26,300 |            |   |
| 10 | Jane D   | Uptown   | DVD     | \$27,500 |            |   |
| 11 | Bill W   | Uptown   | Book    | \$29,000 |            |   |
| 12 | Li C     | Uptown   | CD      | \$40,300 |            |   |
| 13 | Steve H  | Uptown   | DVD     | \$27,600 |            |   |
| 14 | Fred B   | Downtown | DVD     | \$26,600 |            |   |
| 15 | Jenny A  | Downtown | CD      | \$34,500 |            |   |
| 16 | Jeremy X | Downtown | Book    | \$35,700 |            |   |
| 17 | Ahmed L  | Downtown | Book    | \$29,200 |            |   |
| 18 | Helen M  | Downtown | Book    | \$33,900 |            |   |
| 19 | Winnie W | Downtown | DVD     | \$30,000 |            |   |
| 20 | Bill W   | Downtown | Book    | \$38,700 |            |   |
| 21 | Li C     | Downtown | CD      | \$30,600 |            |   |
| 22 | Steve H  | Downtown | DVD     | \$37,500 |            |   |
| 23 |          |          |         |          |            |   |

- Go back to the file “DIME Practical Exercises.xlsx”
- Open up the next tab called “Tables”
- Calculate the GST in column E
- Use F4 Shortcut to fix referencing

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## TABLES

### SOLO EXERCISE

1. Click anywhere inside data
2. Go to Insert > Table or Control T
3. On Design tab:
  - Change Colours
  - Name table as “Sales”

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## Example

### SOLO EXERCISE

|    |          |          |         |          |         |          |
|----|----------|----------|---------|----------|---------|----------|
| F5 |          |          |         |          |         |          |
|    | A        | B        | C       | D        | E       | F        |
| 1  |          |          |         |          |         |          |
| 2  |          |          |         | GST      | 10%     |          |
| 3  |          |          |         |          |         |          |
| 4  | Customer | Store    | Product | ex GST   | GST     | Incl GST |
| 5  | Fred B   | Uptown   | DVD     | \$22,400 | \$2,240 | \$224    |
| 6  | Jenny A  | Uptown   | CD      | \$33,200 | \$3,320 | \$332    |
| 7  | Faisal Z | Uptown   | Book    | \$28,100 | \$2,810 | \$281    |
| 8  | Ahmed L  | Uptown   | Book    | \$27,800 | \$2,780 | \$278    |
| 9  | Helen M  | Uptown   | Book    | \$26,300 | \$2,630 | \$263    |
| 10 | Jane D   | Uptown   | DVD     | \$27,500 | \$2,750 | \$275    |
| 11 | Bill W   | Uptown   | Book    | \$29,000 | \$2,900 | \$290    |
| 12 | Li C     | Uptown   | CD      | \$40,300 | \$4,030 | \$403    |
| 13 | Steve H  | Uptown   | DVD     | \$27,600 | \$2,760 | \$276    |
| 14 | Fred B   | Downtown | DVD     | \$26,600 | \$2,660 | \$266    |
| 15 | Jenny A  | Downtown | CD      | \$34,500 | \$3,450 | \$345    |
| 16 | Jeremy X | Downtown | Book    | \$35,700 | \$3,570 | \$357    |
| 17 | Ahmed L  | Downtown | Book    | \$29,200 | \$2,920 | \$292    |
| 18 | Helen M  | Downtown | Book    | \$33,900 | \$3,390 | \$339    |
| 19 | Winnie W | Downtown | DVD     | \$30,000 | \$3,000 | \$300    |
| 20 | Bill W   | Downtown | Book    | \$38,700 | \$3,870 | \$387    |
| 21 | Li C     | Downtown | CD      | \$30,600 | \$3,060 | \$306    |
| 22 | Steve H  | Downtown | DVD     | \$37,500 | \$3,750 | \$375    |
| 23 |          |          |         |          |         |          |
| 24 |          |          |         |          |         |          |

- Recalculate column E (copy down again)
- Add "Incl GST" in column F

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**BREAK OUT GROUPS**  
(3 min on your own + 3 min discussion)

## Tables & PivotTables

- Go back to the "Tables" tab and click anywhere in the table
- Go to Insert > PivotTable
- Select Existing worksheet and location

**BONUS! Create Filters + Slicers**

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AutoSave ON DIME Practical Exercises - Excel PivotTable Tools Sign in

File Home Insert Page Layout Formulas Data Review View Developer Help Power Pivot Analyze Design Search Share Comment

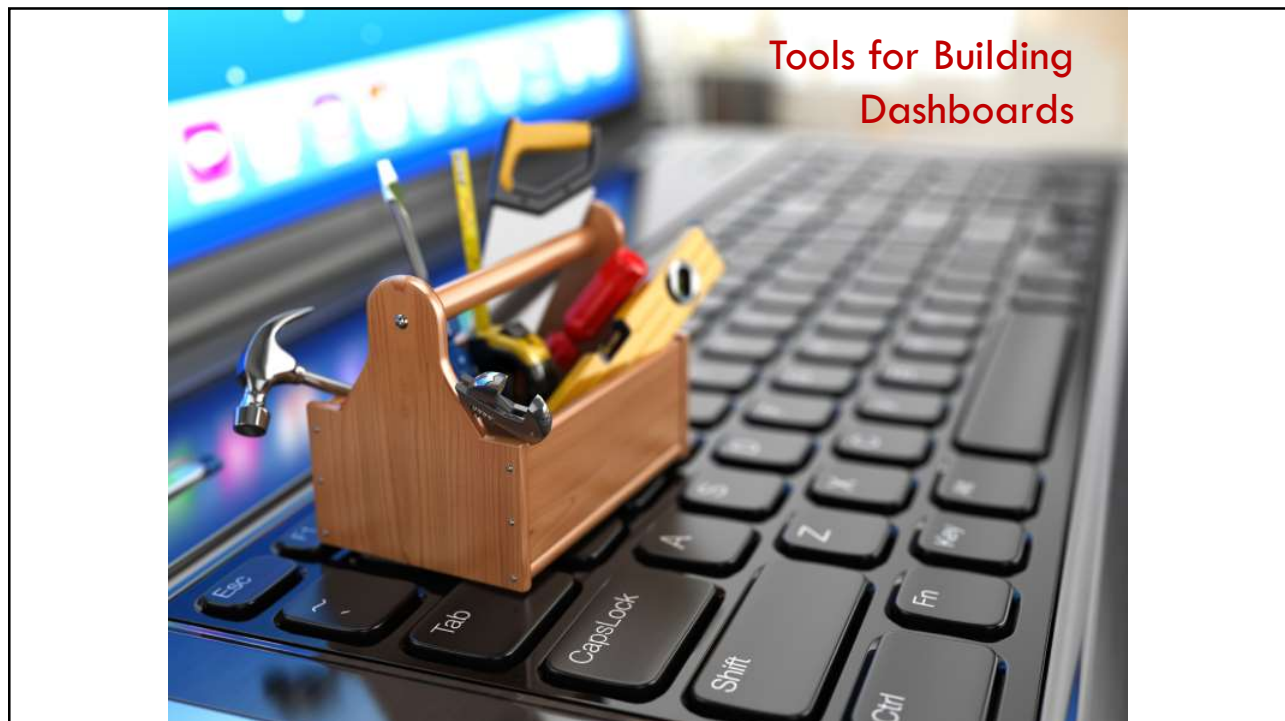
PivotTable: Active Field: Sum of Incl GST, Field Settings, Active Field, Active Field, Group Selection, Ungroup, Group Field, Filter, Insert Slicer, Insert Timeline, Filter Connections, Refresh, Change Data Source, Clear, Select, Move PivotTable, Fields, Items, & Sets, OLAP Tools, Relationships, PivotChart, Recommended PivotTables, Field List, +/- Buttons, Field Headers

14 Sum of Incl GST

| Customer    | Store    | Product | ex GST   | GST     | Incl GST |
|-------------|----------|---------|----------|---------|----------|
| Fred B      | Uptown   | DVD     | \$22,400 | \$2,240 | \$224    |
| Jenny A     | Uptown   | CD      | \$33,200 | \$3,320 | \$332    |
| Faisal Z    | Uptown   | Book    | \$28,100 | \$2,810 | \$281    |
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| Li C        | Uptown   | CD      | \$40,300 | \$4,030 | \$403    |
| Steve H     | Uptown   | DVD     | \$27,600 | \$2,760 | \$276    |
| Fred B      | Downtown | DVD     | \$26,600 | \$2,660 | \$266    |
| Jenny A     | Downtown | CD      | \$34,500 | \$3,450 | \$345    |
| Jeremy X    | Downtown | Book    | \$35,700 | \$3,570 | \$357    |
| Ahmed L     | Downtown | Book    | \$29,200 | \$2,920 | \$292    |
| Helen M     | Downtown | Book    | \$33,900 | \$3,390 | \$339    |
| Winnie W    | Downtown | DVD     | \$30,000 | \$3,000 | \$300    |
| Bill W      | Downtown | Book    | \$38,700 | \$3,870 | \$387    |
| Li C        | Downtown | CD      | \$30,600 | \$3,060 | \$306    |
| Steve H     | Downtown | DVD     | \$37,500 | \$3,750 | \$375    |
| Grand Total |          |         | 2487     | 1386    | 5589     |

PivotTable Fields: Choose fields to add to report: Customer, Store, Product, ex GST, GST, Incl GST. Drag fields between areas below: Filters, Columns, Rows, Values.

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## “Dashboarding” Tools

### Static Tools

- Adobe Illustrator
- Web-based

### Dynamic, Data driven Tools

- Tableau
- QlikView
- Microsoft Power BI
- Microsoft Power Pivot
- “Vanilla” Microsoft Excel

ANSWER IN THE  
“CHAT”  
Have you used  
any other  
dashboarding  
tools?

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## “Modern Excel” (2010+)

1. PowerPivot -“data warehouse”
2. PowerQuery (Get & Transform)-  
data collection and cleansing
3. PowerBI (All-in-one Desktop) –  
data visualisation & dashboards

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## Upgrading to Excel 2013 or 2016 “MODERN” EXCEL: SOME NEW FEATURES

### Excel 2010:

- Sparklines
- Slicer
- PowerPivot

### Excel 2013:

- Inbuilt Data Model
- Combo Charts
- Flash Fill

### Excel 2016:

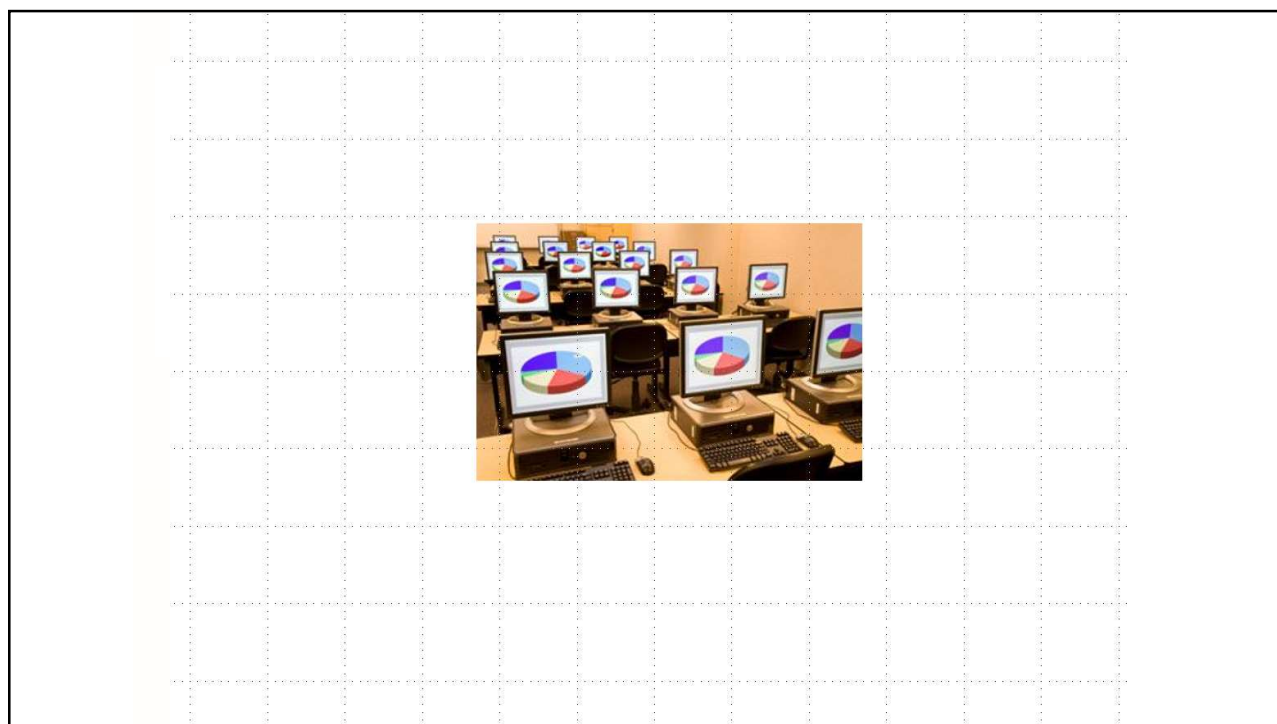
- Charts (Waterfall, Hierarchy etc)
- Inbuilt Power Query (Get & Transform)
- Forecast Sheet

### Excel 2019/365:

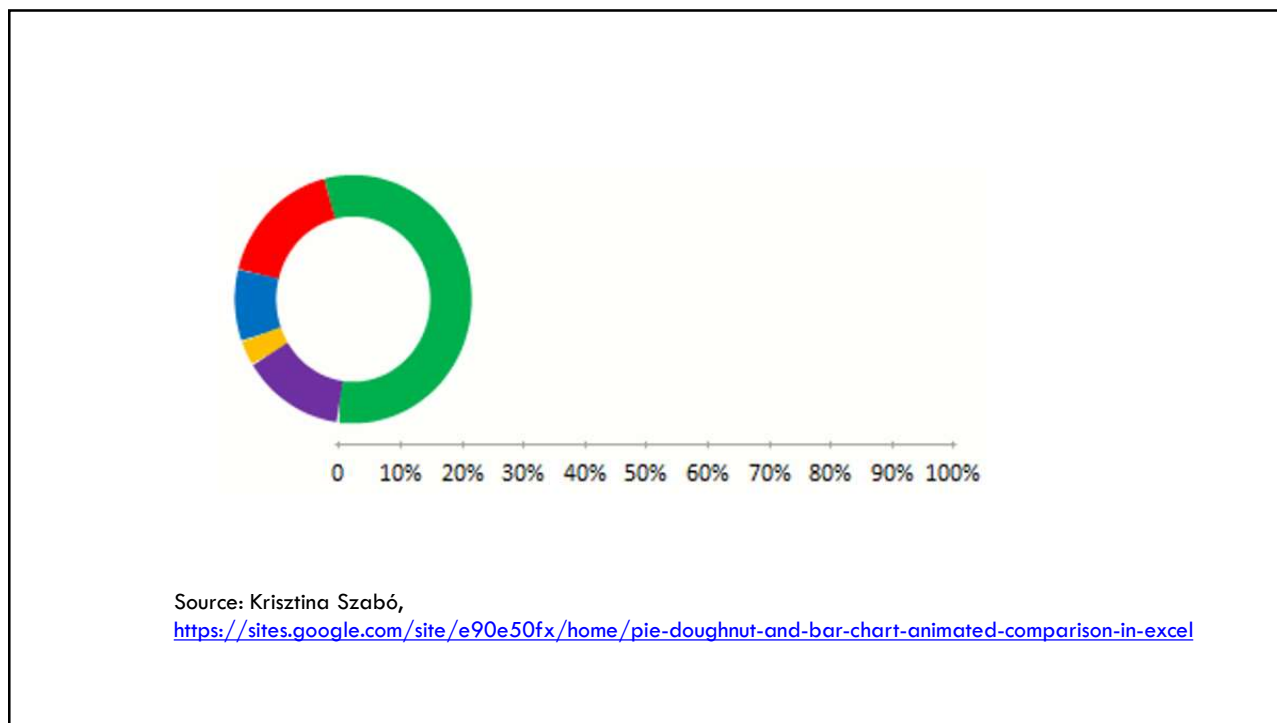
- Custom Visuals
- New Functions (IFS, SWITCH, TEXTJOIN)
- Dynamic Arrays

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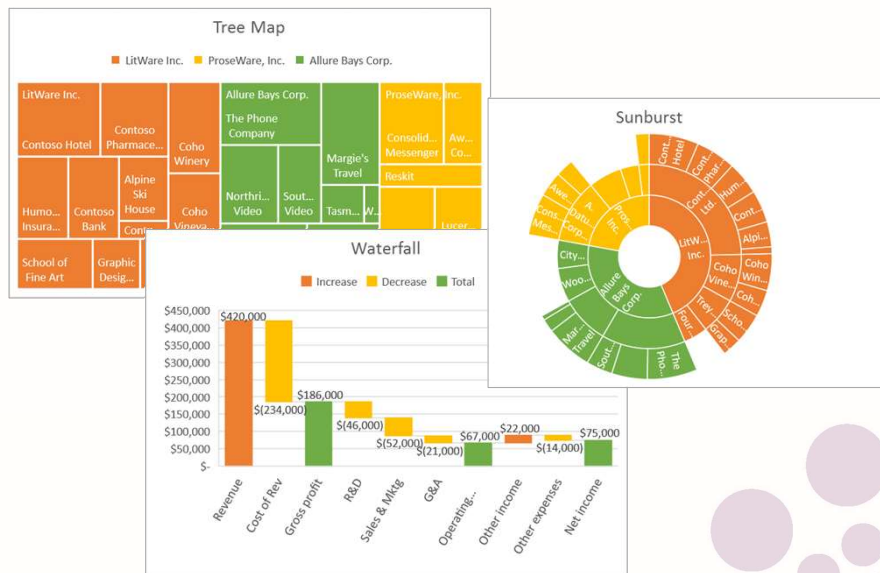


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## New Charts in Excel 2016



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## The Power Excel Family

Power Pivot + Power Query + Visuals = Power BI



Power Pivot



Power Query



Power BI



Excel

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## Getting Started WITHOUT Power Query

1. Go to the "Split Names – Excel" tab
2. Highlight the column
3. Go to Data > Text to column > Delimited > Space
4. In cell C2, use the formula =LEFT(A2)&B2 or =LEFT(A2)&". "&B2
5. Copy it down

SOLO EXERCISE

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## Getting Started WITH Power Query

1. Select a cell within the table, and press Data > From Table/Range
2. Select Home > Split Column > by Delimiter > Space
3. Select Add Column > Custom Column and add formula:  
`Text.Start([Name.1],1)&". "&[Name.2]`  
(Note PQ formulas are case sensitive)
4. Select Home > Close & Load to go back to Excel
5. Test query by changing source data, and then refreshing query

**BREAK OUT GROUPS**  
(3 min on your own + 3 min discussion)

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## APPENDING & USING THE DATA MODEL

1. Go to Data > Get data > From File > From Folder
2. Find the folder "Append" and press OK > OK
3. Go to Combine > Combine & Transform Data > OK
4. In Power Query, select the first column and remove the .csv suffix with Home > Split Column > By Delimiter > Custom "."
5. Remove the second column and rename the first column to "Date". Ensure column data type is date.
6. Go to Home > **Close & Load To** > Only Create Connection + Add this data to the **Data Model** > OK
7. In Excel, go to Insert > PivotTable > Use this workbook's Data Model > OK
8. Select fields for PivotTable and create dashboard

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## EXTRACTING DATA FROM PDF – OPTION 1

1. Go to Data > Get data > from file > PDF
2. Load the file and select multiple tables and Transform Data
3. Go to Home > Append queries as New > Three or more tables, select and add all tables > OK
4. Remove top 2 rows
5. Use first row as headers
6. Close and load

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## EXTRACTING DATA FROM PDF – OPTION 2

1. Go to Data > Get data > from file > PDF
2. Load the file, and in the Navigator, right-click on the file name and choose Transform Data
3. Filter by kind
4. Remove ID and Name columns
5. Press the split symbol  and press expand
6. Remove extra rows and columns
7. Use first row as headers
8. Close and load

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# DASHBOARDS REPORTING IN MODERN EXCEL

1. Use **visuals**, not data
2. Data Analysis in **Modern** Excel
3. Power **Excel** Tools
4. Choose the chart to get your **message** across
5. Find the **story**. Tell the story.
6. Charts **vs.** Tables
7. Dashboard **Critique**
8. The **Rules** of Visual Perception

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## SOLO EXERCISE



### Instructions

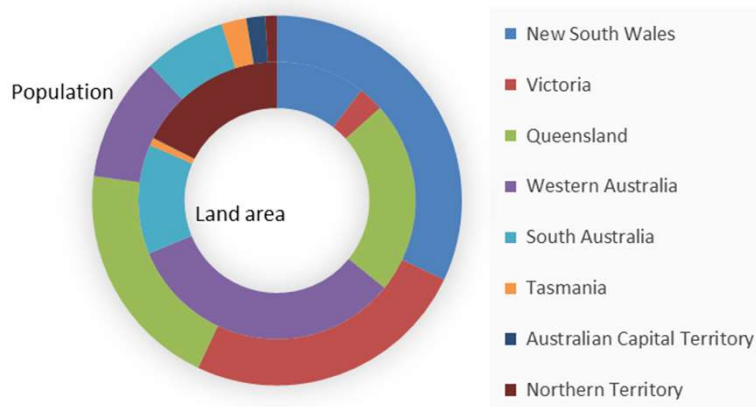
1. Go to the “Which Chart” tab
2. Highlight data and go to Insert > Recommended Chart
3. Create as several different charts to show the data

POLL: Which displays our message best?

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## DOES THIS CHART CONVEY OUR MESSAGE?

Land Area vs Population of Australia by State/Territory



ANSWER IN THE “CHAT” What is this chart telling us?

## SOLO EXERCISE

### Instructions

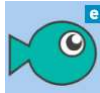
1. Go to “Donut” tab
2. Create a better chart!

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## Custom Visuals in Power BI



Dot Plot



Aquarium



Word Cloud



Bullet



Infographic Designer



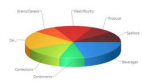
Organization Chart



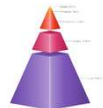
Stream Graph



Circle KPI Gauge



3D Pie Chart



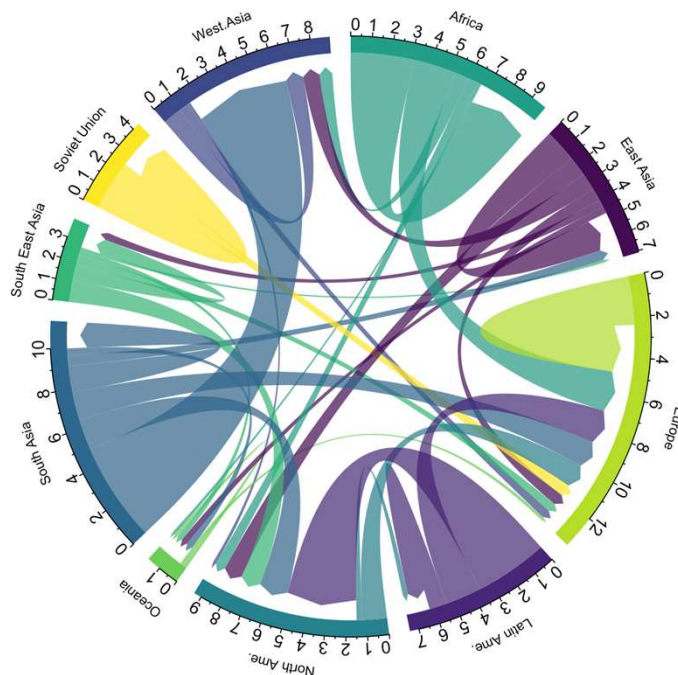
3D Pyramid



Chord

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## Chord Chart



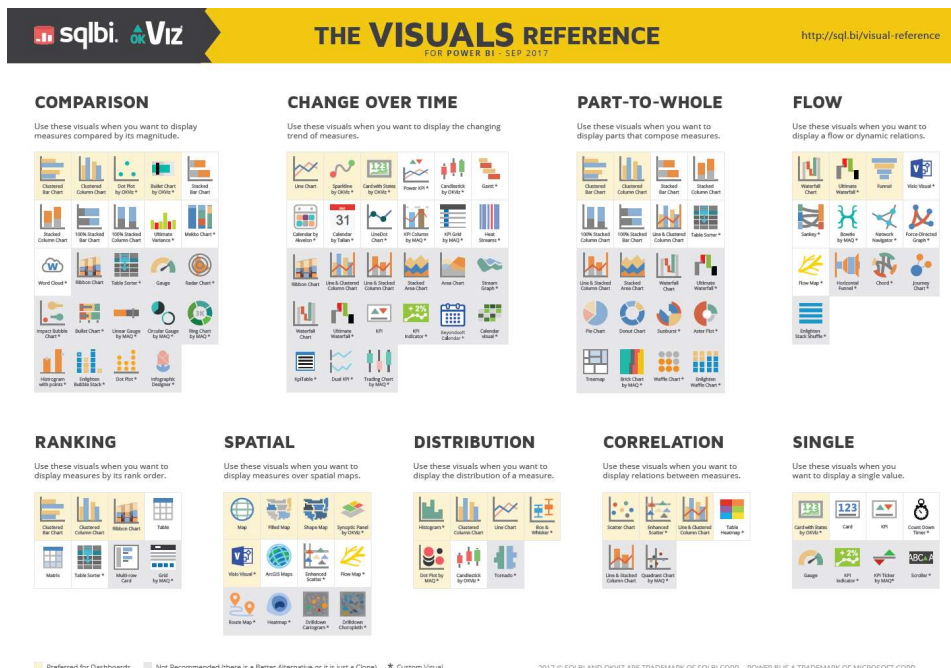
Source: Data to Viz  
Data: Gui J. Abel

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Source: <https://twitter.com/softwareasia>

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## COMMONLY USED DATA VISUALISATIONS (FROM POWER BI)



### NOMINAL COMPARISON

A simple comparison of the quantitative values of subcategories. Example: Total sales in different regions



### TIME-SERIES

This tracks changes in values of several consistent metric over time. Example: Monthly sales Vs. targets



### CORRELATION

Data with two or more variables that may demonstrate a positive or negative correlation to each other. Example: Income by hours of work



### RANKING

This shows how two or more values compare to each other in relative magnitude. If plausible, use of **logarithmic scale** is recommended.



### PART-TO-WHOLE

This shows a subset of data compared to the larger whole. Example: Percentage of customers purchasing specific products



### TREND & OUTLIERS

This shows the trend of a metric over time. Also useful for highlighting data outliers. For example, ice cream sales in a winter season region

Source: <http://www.agilebi.com.au/visualisation-best-practices/>

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## BAR & COLUMN CHART DOS AND DON'TS

### USE HORIZONTAL LABELS

Avoid steep diagonal or vertical type, as it can be difficult to read



### USE CONSISTENT COLORS

Use one series of colors for bar / column charts. You may use an accent color to highlight a significant data point but try to avoid using too many color variations.



### ORDER DATA LABEL

Order categories alphabetically, sequentially, or by value



### START FROM 0, IF POSSIBLE

Starting at a value above zero truncates the bars and doesn't accurately reflect the full value

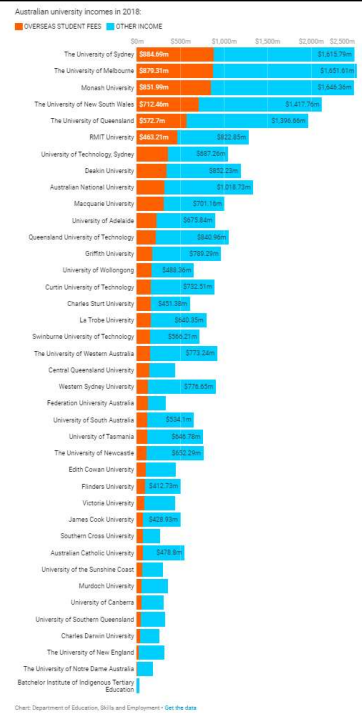


Source: Jixin Jia <http://www.agilebi.com.au/visualisation-best-practices/>

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## SORTING BAR CHARTS

Source: <https://www.abc.net.au/news/2020-05-20/coronavirus-impact-on-universities-research-worse-than-qfc/12264606>



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## PIE & DONUT CHART DOS AND DON'TS

### KEEP UNDER 5 CATEGORIES

It is hard to differentiate smaller values on a pie chart. Depicting too many slices diminishes the impact of the visualization. If possible, group smaller slices into an "other" category.



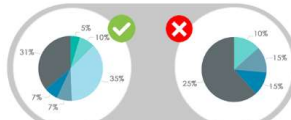
### DONT COMPARE PIES

Slice sizes are difficult to compare even when lined up side-by-side. Use a 100% stacked bar chart instead.



### ENSURE IT TALLIES UP

If you are displaying percentage on a pie chart, verify that values sum to 100% and that pie slices are sized proportionally to their corresponding value.



Source: Jixin Jia  
<http://www.agilebi.com.au/visualisation-best-practices/>

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## DURING THIS COURSE WE WILL:

1. Use standard Tables, PivotTables and PivotCharts to build a dashboard
2. Use Power Query in Excel... and then PivotTables and PivotCharts to build a dashboard
3. Use Power Query within Power BI... and then use Power BI to build a dashboard



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## 1. BUILDING A DASHBOARD IN STANDARD EXCEL

- Select the tab called “Membership”
- Create a Table
- Create a PivotTable
- Create some Charts

### HINTS TO TRY

- Slicers
- Grouping
- Timeline

**BREAK OUT GROUPS**  
(5 min demo +10 min on your own + 5 min discussion)



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## 2. USING POWER QUERY IN EXCEL TO PREPARE DASHBOARD DATA

1. Select the tab called "UnPivot"
2. Select a cell within the data, and press Data > From Table/Range
3. Select the Expenditure column, go to Transform > Unpivot OTHER Columns
4. Change the Attribute to "Date"
5. Then go to Home > Data Type and change the Dates to Date format
6. Go to Home > Close & Load to export to a table in Excel
7. Create a PivotTable based on the formatted data

BREAK OUT GROUPS  
(5 min demo + 5 min on  
your own  
+ 5 min discussion)



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## GOOD DASHBOARD DESIGN



Source: Yellowfin Resources

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## GOOD DASHBOARD DESIGN



Source: econsultancy.com

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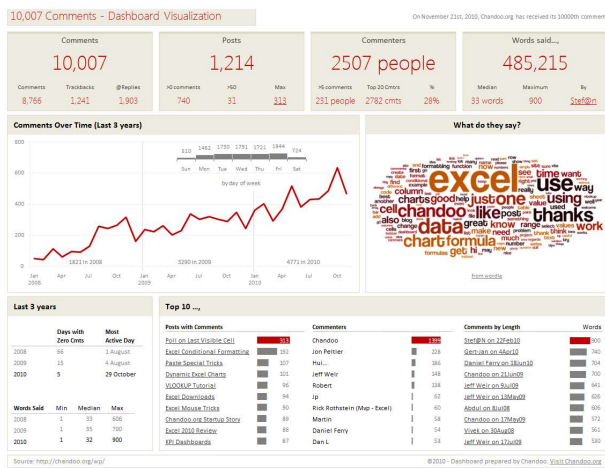
# GOOD DASHBOARD DESIGN



Source: econsultancy.com

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# GOOD DASHBOARD DESIGN



Source: [www.chandoo.org](http://www.chandoo.org)

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## DASHBOARDS REPORTING IN MODERN EXCEL

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## Another Example – Which one would you choose?

|    | A                                  | B    | C    | D    | E    | F    | G    | H    | I    | J     | K |
|----|------------------------------------|------|------|------|------|------|------|------|------|-------|---|
| 1  | Tell a story with this data        |      |      |      |      |      |      |      |      |       |   |
| 2  | Which product would you invest in? |      |      |      |      |      |      |      |      |       |   |
| 3  |                                    | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018  |   |
| 4  | Product 1                          | 260  | 270  | 275  | 289  | 295  | 295  | 304  | 304  | 304   |   |
| 5  | Product 2                          | 157  | 130  | 116  | 94   | 77   | 62   | 51   | 41   | 34    |   |
| 6  | Product 3                          | 271  | 254  | 244  | 261  | 272  | 296  | 276  | 281  | 292   |   |
| 7  | Product 4                          | 255  | 301  | 377  | 441  | 533  | 693  | 811  | 908  | 1,045 |   |
| 8  | Product 5                          | 387  | 329  | 263  | 216  | 179  | 149  | 120  | 102  | 82    |   |
| 9  | Product 6                          | 343  | 391  | 505  | 454  | 427  | 542  | 672  | 686  | 699   |   |
| 10 | Product 7                          | 253  | 283  | 258  | 240  | 259  | 290  | 342  | 414  | 381   |   |
| 11 | Product 8                          | 294  | 294  | 297  | 300  | 300  | 303  | 306  | 309  | 312   |   |
| 12 | Product 9                          | 324  | 354  | 350  | 382  | 412  | 503  | 583  | 618  | 606   |   |
| 13 |                                    |      |      |      |      |      |      |      |      |       |   |

- Open up the tab called “Story”
- How can we make this easier to interpret and make a decision?

**BREAK OUT  
GROUPS (5 min)**

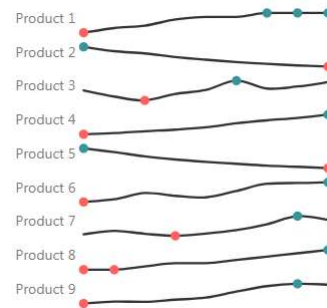
### HINTS TO TRY

- Formatting?
- F11?
- Sparklines?

[www.plumsolutions.com.au](http://www.plumsolutions.com.au)

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## Tell a story with this data



Which product would you invest in?

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## TELL A STORY

- People respond to pictures and stories
- If they wanted data, just send a report.
- In a verbal presentation you can give them **emotion** as well as data (no, it's not a dirty word)
- Slides should reinforce your message, not repeat it
- Give them detailed financials as a handout *after* the presentation.

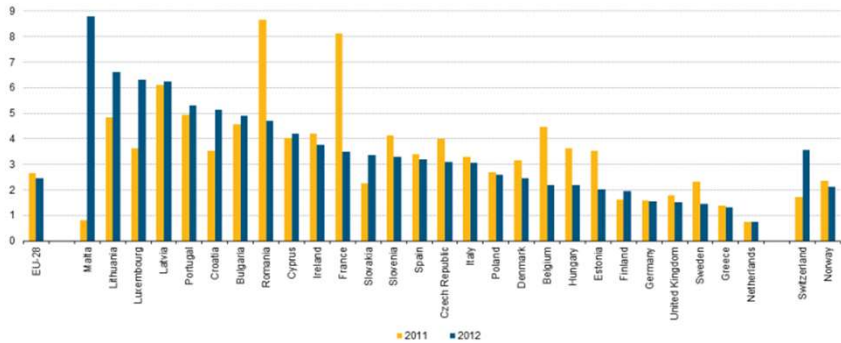
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FATAL AND NON-FATAL WORKPLACE ACCIDENTS

|                | Accidents at work involving at least<br>four calendar days of absence from work |           |         | Fatal accidents at work |       |        |
|----------------|---------------------------------------------------------------------------------|-----------|---------|-------------------------|-------|--------|
|                | Total                                                                           | Male      | Female  | Total                   | Male  | Female |
| EU-28          | 2 487 794                                                                       | 1 953 554 | 533 984 | 3 515                   | 3 382 | 153    |
| Belgium        | 49 546                                                                          | 40 451    | 9 093   | 46                      | 46    | 0      |
| Bulgaria       | 1 768                                                                           | 1 353     | 415     | 90                      | 82    | 8      |
| Czech Republic | 36 013                                                                          | 26 820    | 9 193   | 104                     | 102   | 2      |
| Denmark        | 34 245                                                                          | 26 825    | 7 292   | 43                      | 42    | 1      |
| Germany        | 709 940                                                                         | 578 076   | 131 794 | 473                     | 452   | 21     |
| Estonia        | 4 993                                                                           | 3 065     | 1 928   | 11                      | 10    | 1      |
| Ireland        | 9 794                                                                           | 6 628     | 2 921   | 42                      | 42    | 0      |
| Greece         | 11 926                                                                          | 9 446     | 2 480   | 37                      | 34    | 3      |
| Spain          | 281 045                                                                         | 212 968   | 68 077  | 273                     | 266   | 7      |
| France         | 461 376                                                                         | 353 980   | 107 396 | 524                     | 494   | 30     |
| Croatia        | 8 844                                                                           | 6 766     | 2 078   | 50                      | 50    | 0      |
| Italy          | 274 040                                                                         | 219 282   | 54 758  | 489                     | 450   | 19     |
| Cyprus         | 1 511                                                                           | 1 127     | 384     | 7                       | 7     | 0      |
| Latvia         | 1 213                                                                           | 875       | 338     | 33                      | 30    | 3      |
| Lithuania      | 2 303                                                                           | 1 698     | 605     | 55                      | 54    | 1      |
| Luxembourg     | 6 299                                                                           | 5 378     | 921     | 13                      | 13    | 0      |
| Hungary        | 16 717                                                                          | 11 878    | 4 838   | 60                      | 58    | 2      |
| Malta          | 2 190                                                                           | 1 978     | 212     | 7                       | 7     | 0      |
| Netherlands    | 116 029                                                                         | 89 307    | 26 722  | 31                      | 31    | 0      |
| Austria        | 56 299                                                                          | 46 731    | 9 568   | 137                     | 128   | 9      |
| Poland         | 67 472                                                                          | 50 290    | 17 182  | 303                     | 284   | 19     |
| Portugal       | 109 511                                                                         | 82 685    | 26 826  | 162                     | 157   | 5      |
| Romania        | 2 889                                                                           | 2 308     | 581     | 257                     | 245   | 12     |
| Slovenia       | 11 505                                                                          | 9 318     | 2 187   | 21                      | 21    | 0      |
| Slovakia       | 7 469                                                                           | 5 405     | 2 064   | 49                      | 49    | 0      |
| Finland        | 34 821                                                                          | 28 042    | 6 779   | 32                      | 30    | 2      |
| Sweden         | 24 864                                                                          | 18 674    | 6 189   | 37                      | 34    | 3      |
| United Kingdom | 143 171                                                                         | 111 998   | 31 162  | 149                     | 144   | 5      |
| Norway (*)     | 14 855                                                                          | 12 335    | 2 520   | 34                      | 32    | 2      |
| Switzerland    | 72 106                                                                          | 60 352    | 11 754  | 60                      | 57    | 3      |

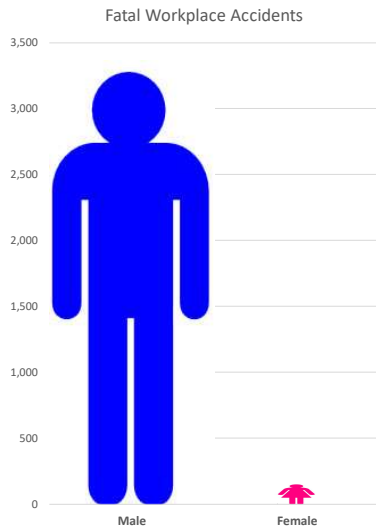
(\*) NACE Rev. 2 Section A and Sections C to N. Non-fatal accidents reported in the framework of ESAW are accidents that imply at least four full calendar days of absence from work (serious accidents).  
(\*) 2011.  
Source: Eurostat (online data code: hsw\_mi01)

FATAL AND NON-FATAL WORKPLACE ACCIDENTS



(\*) NACE Rev. 2 Section A and Sections C to N. Austria: data not yet validated.  
Source: Eurostat (online data code: hsw\_mi01)

## GET YOUR MESSAGE STRAIGHT

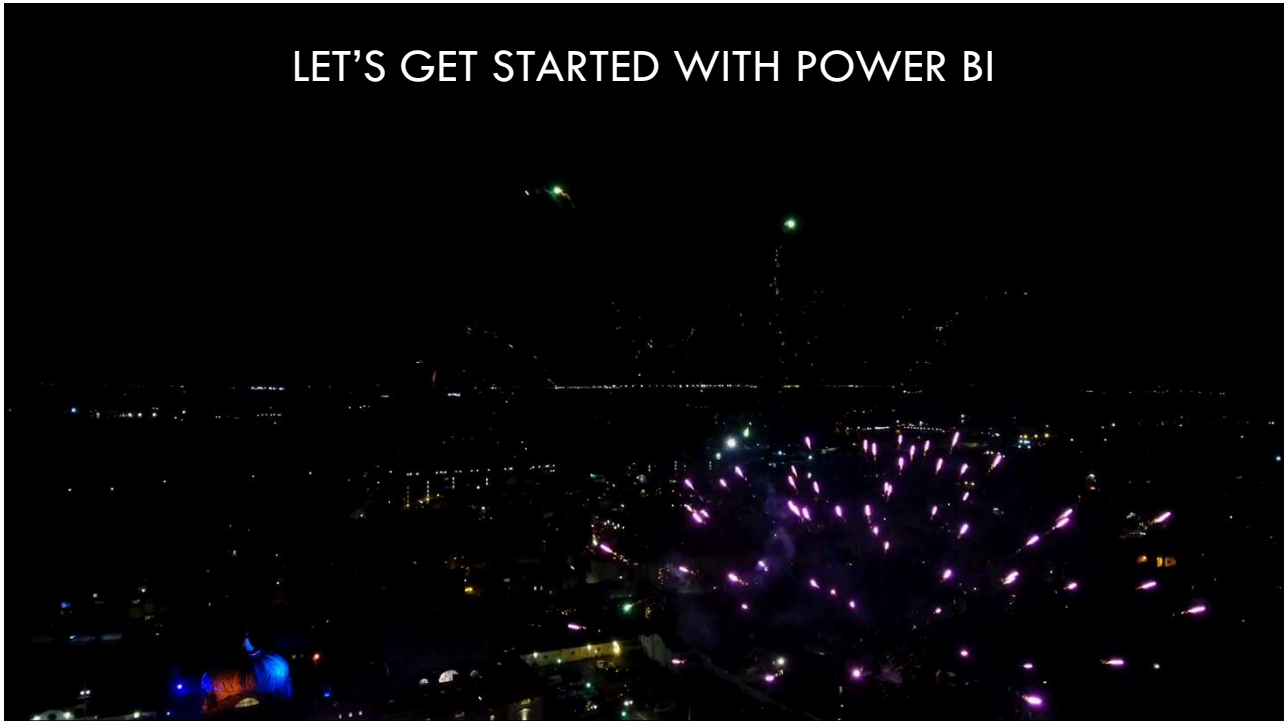


Men are more likely to die in workplace accidents, therefore we should hire only women.

Is this a good interpretation of the data?

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## LET'S GET STARTED WITH POWER BI



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## HOW IS POWER BI DIFFERENT TO EXCEL?



- Power BI creates visuals you can't do (or are very difficult to do) in Excel
- You can click on part of a visual which will highlight or filter relevant data.
- Power BI works with large data sets. The size limit depends on what your computer (or Power BI server) can process.
- Share and read reports easily You can create reports in Power BI and share them in formats that are universal
- Power BI is for story telling while Excel is for almost anything.

<https://chandoo.org/wp/powerbi-introduction/>

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## ACCESSING POWER BI



- Power BI is always changing. Microsoft releases a new version each month.
- You do not need PowerBI.com account to use Power BI Desktop. Power BI and you can use the software without logging in.
- You must login to publish & share your reports with others.

<https://chandoo.org/wp/powerbi-introduction/>

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## Getting Started with Power BI

1. Make sure you've saved a Table in the "DIME Practical Exercises"
2. Open Power BI
3. Go to Home > Get Data > Excel
4. Find your Table and Load
5. Go to the Report tab in Power BI and create your first chart

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## WORKPLACE SAFETY IS A DEADLY RESPONSIBILITY



- Eight workers died over the past month:
- A worker, 46, crushed by a vehicle in a factory
- A 45-year-old killed after a cherry picker collapsed
- A ROAD worker killed by a reversing sweeper truck
- A 26-year-old crushed by a 150kg piece of machinery dropped by a crane
- A 52-year-old dies after falling into a sewage tank
- A 73-year-old gored by a bull
- A 25-year-old man dies after a gas explosion in his van
- A worker crushed by a falling tree in the Otway Ranges

Source: Herald Sun

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## CASE STUDIES



### Mariel C\*, Retail Assistant

I had been working in retail for over 40 years when the accident happened.  
We were doing stocktake on the store floor when I suddenly heard a scream. I turned my head then felt something fall onto me. It knocked me stupid and put me in a daze.... [read more](#)



### John D\*, Truck Driver

I drove trucks for over 40 years before I got injured.  
I started doing local deliveries before I got into drive large trucks interstate.  
One day I hurt my right arm and shoulder trying to undo a jammed ring feeder on the back of a truck.... [read more](#)



*Source: Safe at Work*

GAIN THE AUDIENCE'S INTEREST USING STORIES,  
THEN BACK UP YOUR MESSAGE USING THE DATA

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## DASHBOARDS REPORTING IN MODERN EXCEL

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## TABLE DESIGN – DON'T:

- Put too much on a page
- Make it too small (no magnifying glass!)
- Clutter it
- Have too many columns

MANAGEMENT ACTUAL VS FORECAST MANAGEMENT REPORT SUMMARY AS AT SEPT 08

| Sep-08       | YTD at 30 September 2008 |              |             | Jul-08    |           |           | August    |           |          | Sep-08    |          |           | YTD 2008/09 |          |           |
|--------------|--------------------------|--------------|-------------|-----------|-----------|-----------|-----------|-----------|----------|-----------|----------|-----------|-------------|----------|-----------|
|              | Actual                   | Budget       | Var B/V%    | Actual    | Budget    | Var B/V%  | Actual    | Budget    | Var B/V% | Actual    | Budget   | Var B/V%  | Actual      | Budget   | Var B/V%  |
| Income       |                          |              |             |           |           |           |           |           |          |           |          |           |             |          |           |
| Consulting   | \$1,017,408              | \$717,360    | \$100.04%   | \$6,400   | \$49,000  | \$17.43%  | \$42,400  | \$49,000  | \$11.40% | \$92,040  | \$50,000 | \$18.41%  | \$92,040    | \$50,000 | \$18.41%  |
| Products     | \$1,145,448              | \$1,070,957  | \$74.48%    | \$4,838   | \$25,000  | \$18.89%  | \$40,344  | \$25,000  | \$13.34% | \$46,876  | \$15,000 | \$23.85%  | \$46,876    | \$15,000 | \$23.85%  |
| Services     | \$9,167,749              | \$8,868,141  | \$299.80%   | \$1,829   | \$477,690 | \$104.13% | \$27,216  | \$483,770 | \$11.44% | \$69,810  | \$11,000 | \$162.00% | \$69,810    | \$11,000 | \$162.00% |
| Investment   | \$188,720                | \$181,820    | \$2.80%     | \$2,010   | \$16,750  | \$7.40%   | \$12,420  | \$16,750  | \$11.00% | \$11,724  | \$10,000 | \$13.72%  | \$11,724    | \$10,000 | \$13.72%  |
| Total Income | \$11,719,324             | \$11,648,078 | \$671.34%   | \$7,467   | \$578,440 | \$167.85% | \$63,380  | \$574,820 | \$11.40% | \$69,810  | \$11,700 | \$162.00% | \$69,810    | \$11,700 | \$162.00% |
| Expenses     | \$9,093,574              | \$6,116,399  | \$2,987.17% | \$419,328 | \$395,416 | \$23.91%  | \$497,744 | \$409,800 | \$21.93% | \$100,344 | \$11,700 | \$162.00% | \$100,344   | \$11,700 | \$162.00% |
| Profit       | \$2,625,750              | \$4,531,679  | \$5,630.43% | \$728,147 | \$183,024 | \$191.44% | \$135,636 | \$164,020 | \$11.40% | \$168,466 | \$15,000 | \$162.00% | \$168,466   | \$15,000 | \$162.00% |

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## TABLE DESIGN – DO:

- Be careful with alignment  
(numbers should be right-aligned, text should be left-aligned)
- Merge cells  
but be careful with linking to these!
- Use white space instead of gridlines?  
Reduces noise" but can make it harder to read.
- Use alternating fill colour  
tables and styles in Excel make this easier

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# GRIDLINES OR NO GRIDLINES?

| MANAGEMENT ACTUAL VS FORECAST MANAGEMENT REPORT SUMMARY A SAT SEPT 08 |                       |                     |                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                    |                    |                    |                    |                    |                    |                    |                    |
|-----------------------------------------------------------------------|-----------------------|---------------------|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Sep-08                                                                | YTD at September 2008 |                     |                    |                  | Jul-08           |                  |                  |                  | Aug-08           |                  |                  |                  | Sep-08             |                    |                    |                    | TOTAL 2008/2009    |                    |                    |                    |
|                                                                       | actual                | Budget              | Var                | B/V%             | actual           | Budget           | Var              | B/V%             | actual           | Budget           | Var              | B/V%             | actual             | Budget             | Var                | B/V%               | actual / Post      | Budget             | Var                | B/V%               |
| Income                                                                |                       |                     |                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                    |                    |                    |                    |                    |                    |                    |                    |
| Consulting                                                            | \$1,017,408           | \$717,380           | \$300,048          | \$66,400         | \$48,000         | \$17,400         | \$62,400         | \$49,000         | \$13,400         | \$85,040         | \$58,800         | \$26,240         | \$847,840          | \$897,800          | \$50,040           | \$56,240           | \$947,840          | \$897,800          | \$50,040           | \$56,240           |
| Products                                                              | \$1,142,448           | \$1,070,937         | \$71,511           | \$4,188          | \$25,000         | \$16,818         | \$40,344         | \$25,000         | \$15,344         | \$64,978         | \$15,081         | \$49,897         | \$64,978           | \$15,081           | \$49,897           | \$64,978           | \$954,840          | \$892,464          | \$62,376           | \$69,756           |
| Services                                                              | \$8,167,749           | \$3,868,141         | \$4,299,608        | \$61,182         | \$477,690        | \$14,119         | \$527,216        | \$483,770        | \$13,446         | \$693,908        | \$611,819        | \$82,089         | \$7,639,791        | \$7,390,117        | \$249,674          | \$249,674          | \$7,639,791        | \$7,390,117        | \$249,674          | \$249,674          |
| Investment                                                            | \$388,720             | \$395,620           | -\$6,900           | \$26,000         | \$26,750         | -\$740           | \$12,412         | \$26,750         | -\$13,338        | \$11,751         | \$12,100         | -\$349           | \$329,939          | \$326,360          | \$3,579            | \$3,579            | \$329,939          | \$326,360          | \$3,579            | \$3,579            |
| <b>Total income</b>                                                   | <b>\$11,710,324</b>   | <b>\$11,048,076</b> | <b>\$662,248</b>   | <b>\$746,078</b> | <b>\$578,440</b> | <b>\$167,625</b> | <b>\$655,582</b> | <b>\$534,520</b> | <b>\$121,062</b> | <b>\$865,674</b> | <b>\$737,799</b> | <b>\$127,875</b> | <b>\$9,844,650</b> | <b>\$9,394,731</b> | <b>\$449,919</b>   | <b>\$449,919</b>   | <b>\$9,844,650</b> | <b>\$9,394,731</b> | <b>\$449,919</b>   | <b>\$449,919</b>   |
| Expenses                                                              |                       |                     |                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                    |                    |                    |                    |                    |                    |                    |                    |
| Expenses                                                              | \$8,083,574           | \$6,116,399         | \$1,967,175        | \$419,228        | \$896,416        | \$23,812         | \$407,744        | \$406,640        | \$1,104          | \$700,864        | \$411,792        | \$289,072        | \$8,083,574        | \$6,116,399        | \$1,967,175        | \$1,967,175        | \$8,083,574        | \$6,116,399        | \$1,967,175        | \$1,967,175        |
| <b>Profit</b>                                                         | <b>\$3,626,750</b>    | <b>\$4,931,679</b>  | <b>\$1,305,423</b> | <b>\$326,850</b> | <b>\$101,024</b> | <b>\$19,147</b>  | <b>\$247,638</b> | <b>\$138,980</b> | <b>\$108,642</b> | <b>\$164,811</b> | <b>\$326,007</b> | <b>\$161,196</b> | <b>\$1,761,076</b> | <b>\$3,278,332</b> | <b>\$1,517,256</b> | <b>\$1,517,256</b> | <b>\$1,761,076</b> | <b>\$3,278,332</b> | <b>\$1,517,256</b> | <b>\$1,517,256</b> |

| MANAGEMENT ACTUAL VS FORECAST MANAGEMENT REPORT SUMMARY A SAT SEPT 08 |                       |              |             |           |           |           |           |           |           |          |           |           |           |                 |                 |             |
|-----------------------------------------------------------------------|-----------------------|--------------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|-----------------|-----------------|-------------|
| Sep-08                                                                |                       |              |             |           |           |           |           |           |           |          |           |           |           |                 |                 |             |
|                                                                       | YTD at September 2008 |              |             |           | Jul-08    |           |           | Aug-08    |           |          | Sep-08    |           |           | TOTAL 2008/2009 |                 |             |
|                                                                       | Actual                | Budget       | Var B/V%    |           | Actual    | Budget    | Var B/V%  | Actual    | Budget    | Var B/V% | Actual    | Budget    | Var B/V%  | Actual / Post   | Budget Var B/V% |             |
| Income                                                                |                       |              |             |           |           |           |           |           |           |          |           |           |           |                 |                 |             |
| Consulting                                                            | \$1,017,408           | \$717,380    | \$300,048   | \$66,400  | \$48,000  | \$17,400  | \$62,400  | \$49,000  | \$13,400  |          | \$95,040  | \$58,800  | \$36,240  | \$847,840       | \$997,800       | \$150,400   |
| Products                                                              | \$1,142,448           | \$1,070,937  | \$71,511    | \$4,188   | \$25,000  | \$16,818  | \$40,344  | \$25,000  | \$15,344  |          | \$64,978  | \$15,081  | \$49,897  | \$7,694,540     | \$892,464       | \$62,076    |
| Services                                                              | \$8,167,749           | \$3,868,141  | \$4,299,608 | \$61,182  | \$477,690 | \$14,119  | \$527,216 | \$483,770 | \$13,446  |          | \$693,908 | \$611,819 | \$82,089  | \$7,639,791     | \$7,390,117     | \$249,674   |
| Investment                                                            | \$388,720             | \$395,620    | -\$6,900    | \$26,000  | \$26,750  | -\$740    | \$12,412  | \$26,750  | -\$13,338 |          | \$11,751  | \$12,100  | -\$349    | \$329,939       | \$326,360       | \$3,579     |
| Total income                                                          | \$11,710,324          | \$11,048,076 | \$662,248   | \$746,078 | \$578,440 | \$167,625 | \$655,582 | \$534,520 | \$121,062 |          | \$865,674 | \$737,799 | \$127,875 | \$9,746,104     | \$9,290,791     | \$555,313   |
| Expenses                                                              |                       |              |             |           |           |           |           |           |           |          |           |           |           |                 |                 |             |
| Expenses                                                              | \$8,083,574           | \$6,116,399  | \$1,967,175 | \$419,228 | \$896,416 | \$23,812  | \$407,744 | \$406,640 | \$1,104   |          | \$700,864 | \$411,792 | \$289,072 | \$8,083,574     | \$6,116,399     | \$1,967,175 |
| Profit                                                                | \$3,626,750           | \$4,931,679  | \$1,305,423 | \$326,850 | \$101,024 | \$19,147  | \$247,638 | \$138,980 | \$108,642 |          | \$164,811 | \$326,007 | \$161,196 | \$1,761,076     | \$3,278,332     | \$1,517,256 |

91

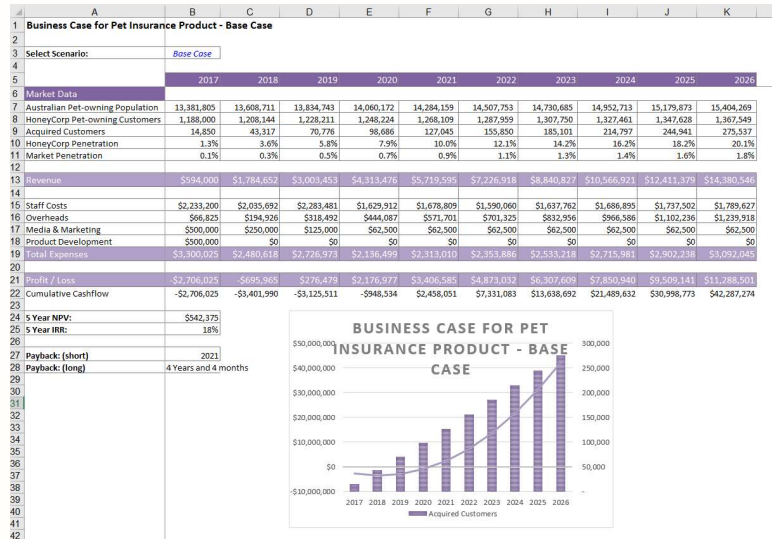
## WHAT IS WRONG WITH THIS TABLE?

ANSWER IN THE "CHAT"

| State | Salesperson | %   | Amount sold | Target | Variance to Target |
|-------|-------------|-----|-------------|--------|--------------------|
| NSW   | J Brown     | 12% | 40936       | 45000  | - 4,064            |
| QLD   | B Mason     | 10% | 35782       | 45000  | - 9,218            |
| NSW   | M Ferry     | 13% | 45030       | 45000  | 30                 |
| VIC   | Z Suzik     | 8%  | 28626       | 30000  | - 1,374            |
| QLD   | D Sherwood  | 14% | 49533       | 45000  | 4,533              |
| QLD   | E Joseph    | 6%  | 22900       | 45000  | - 22,100           |
| VIC   | S Noble     | 15% | 54486       | 45000  | 9,486              |
| NSW   | S Banjo     | 5%  | 18320       | 45000  | - 26,680           |
| VIC   | F Smith     | 17% | 59934       | 45000  | 14,934             |

92

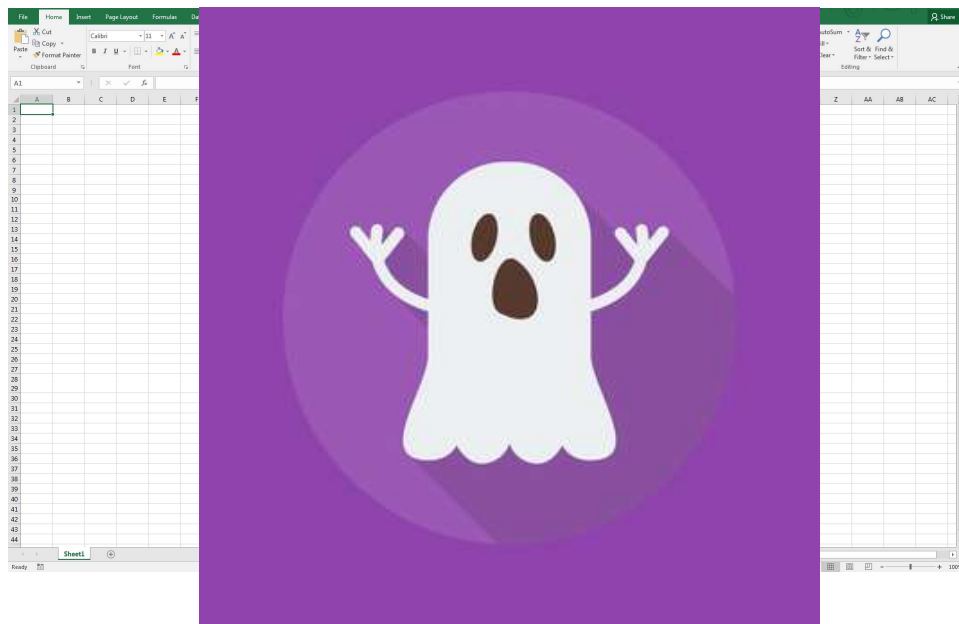
## DON'T EMBED A SPREADSHEET



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## Spreadsheets are Scary!

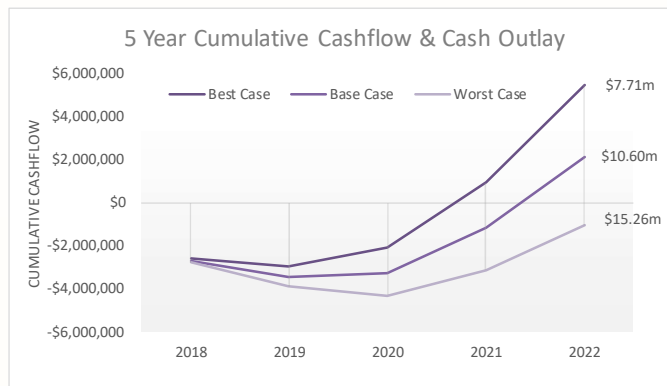


94

## DO SUMMARISE KEY POINTS

Business Case for Pet Insurance Product - Scenario Analysis

|             | Best Case    | Base Case    | Worst Case   |
|-------------|--------------|--------------|--------------|
| 5 Year NPV: | \$2.51m      | \$0.30m      | -\$1.75m     |
| 5 Year IRR: | 38%          | 15%          | -9%          |
| Payback:    | 3 Yrs 9 mths | 4 Yrs 5 mths | 5 Yrs 5 mths |



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## FORMATTING

- **Use commas**; eg. \$23,460,000 is much easier to read than 23460000!
- **Always** use currency symbols – avoids errors in mixing units with dollar values
- **Suppress zeros** – makes your report less cluttered
- Truncate numbers to required level of precision

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## FOR EXAMPLE – WHICH COLUMN?

POLL: Which column would you present?

| Region           | Annual Sales \$    | Annual Sales \$'000 | Annual Sales \$m | Annual Sales \$m | Annual Sales \$m |
|------------------|--------------------|---------------------|------------------|------------------|------------------|
| Sydney           | \$1,245,423        | \$1,245             | \$1.25           | \$1.2            | \$1              |
| Parramatta       | \$1,923,012        | \$1,923             | \$1.92           | \$1.9            | \$2              |
| Campbelltown     | \$946,450          | \$946               | \$0.95           | \$0.9            | \$1              |
| Northern Beaches | \$1,174,327        | \$1,174             | \$1.17           | \$1.2            | \$1              |
| <b>Total</b>     | <b>\$5,289,212</b> | <b>\$5,289</b>      | <b>\$5.29</b>    | <b>\$5.3</b>     | <b>\$5</b>       |

Check your totals!

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## WHEN SHOULD WE USE A TABLE?

- When you need to use it for reference or precision
- If you don't need to see the data visually, e.g. see trend or visually interpret the data
- But..... **tables should not be used in a live presentation** (verbal vs. visual processing)

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## CONSIDER USING CHARTS IN A TABLE

| Region           | Staff Costs | Operating Costs |
|------------------|-------------|-----------------|
| Sydney           | \$1.62      | \$0.94          |
| Parramatta       | \$2.41      | \$1.37          |
| Campbelltown     | \$1.04      | \$0.11          |
| Northern Beaches | \$0.61      | \$0.31          |
| Total            | \$5.68      | \$2.73          |

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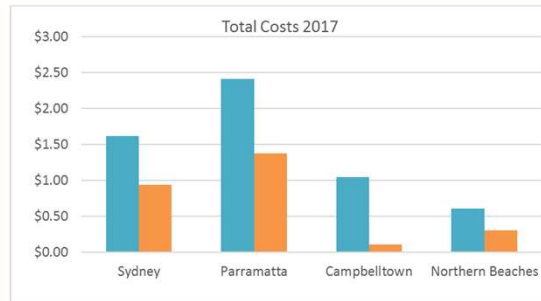
## CONSIDER USING CHARTS IN A TABLE

| Region           | Staff Costs | Operating Costs |
|------------------|-------------|-----------------|
| Sydney           | \$1.62      | \$0.94          |
| Parramatta       | \$2.41      | \$1.37          |
| Campbelltown     | \$1.04      | \$0.11          |
| Northern Beaches | \$0.61      | \$0.31          |
| Total            | \$5.68      | \$2.73          |

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## OR.... TABLES IN A CHART



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101

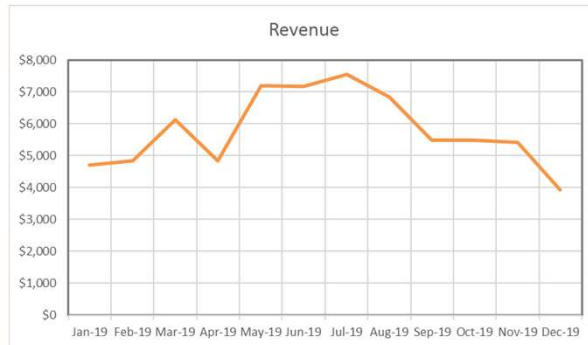
## OR.... TABLES IN A CHART



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## Visual vs. Verbal Processing



The brain processes visuals ~~60,000~~ times faster than text & ~~90%~~ of the information transmitted to the brain is visual

Visual information is interpreted more quickly

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## Using Dates

Words are always easier to read.

For example, **2-Dec-22** is more legible than **02/12/2022**

### Beware of:

- US date formatting
- Sometimes Excel does not accept data as a date



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## 3. USING POWER QUERY AND BUILDING A DASHBOARD IN POWER BI

1. Open Power BI, go to Home > Get Data > Excel
2. Find the “Fatalities” tab in your exercise file
3. Go to “Transform Data” instead of Load to go to Power Query. Make any changes.
4. Close & Apply to go to Power BI
5. Go to the Report tab and create your dashboard

BREAK OUT GROUPS  
(5 min demo + 5 min on your own  
+ 5 min discussion)



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## CREATING RELATIONSHIPS

1. To load in more data, go to Home > Get Data > Excel
2. Find the “Regions” tab in your exercise file
3. Go to “Transform Data” to go to Power Query. Promote headers if necessary.
4. Close & Apply to go to Power BI
5. Go to relationships tab and check join
6. Go to the Report tab and add regions

BREAK OUT GROUPS  
(3 min demo + 3 min on  
your own  
+ 3 min discussion)



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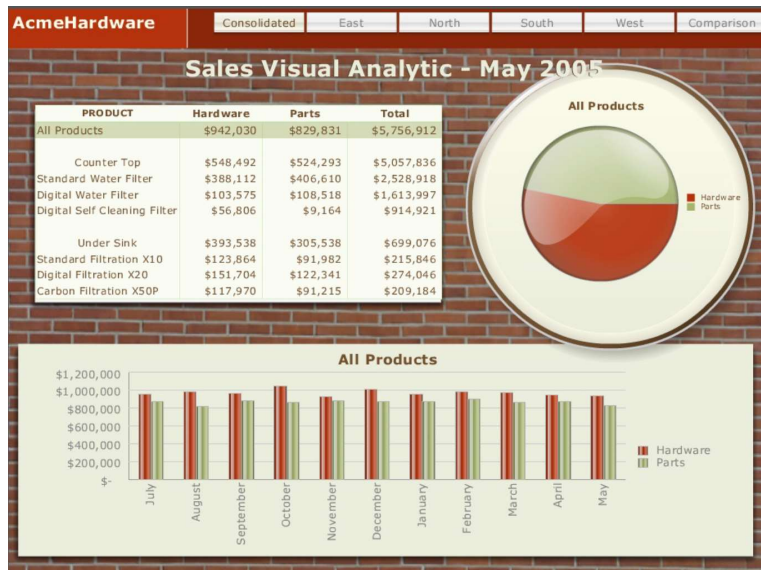
## DASHBOARDS REPORTING IN MODERN EXCEL

1. Use **visuals**, not data
2. Data Analysis in **Modern** Excel
3. Power **Excel** Tools
4. Choose the chart to get your **message** across
5. Find the **story**. Tell the story.
6. Charts **vs.** Tables
7. Dashboard **Critique**
8. The **Rules** of Visual Perception

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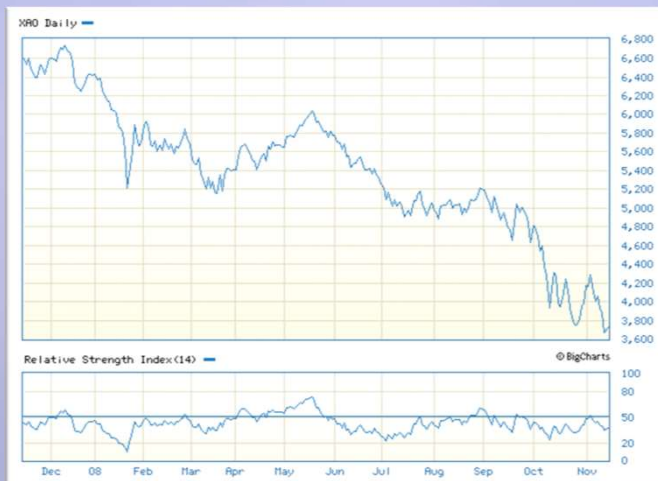
## POOR DASHBOARD DESIGN



Source: Stephen Few

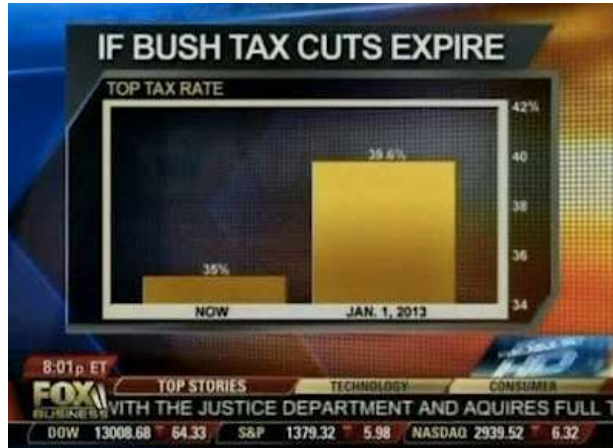
109

## SHOW YOUR MESSAGE



110

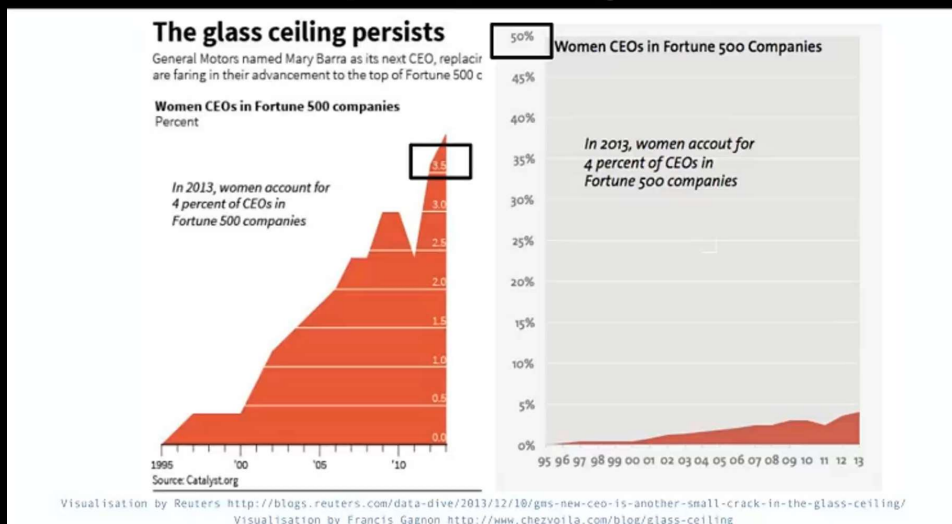
## Should Bar Charts start at Zero?



Source: *Storytelling with Data, Blog, Cole Nussbaumer Knaflic*

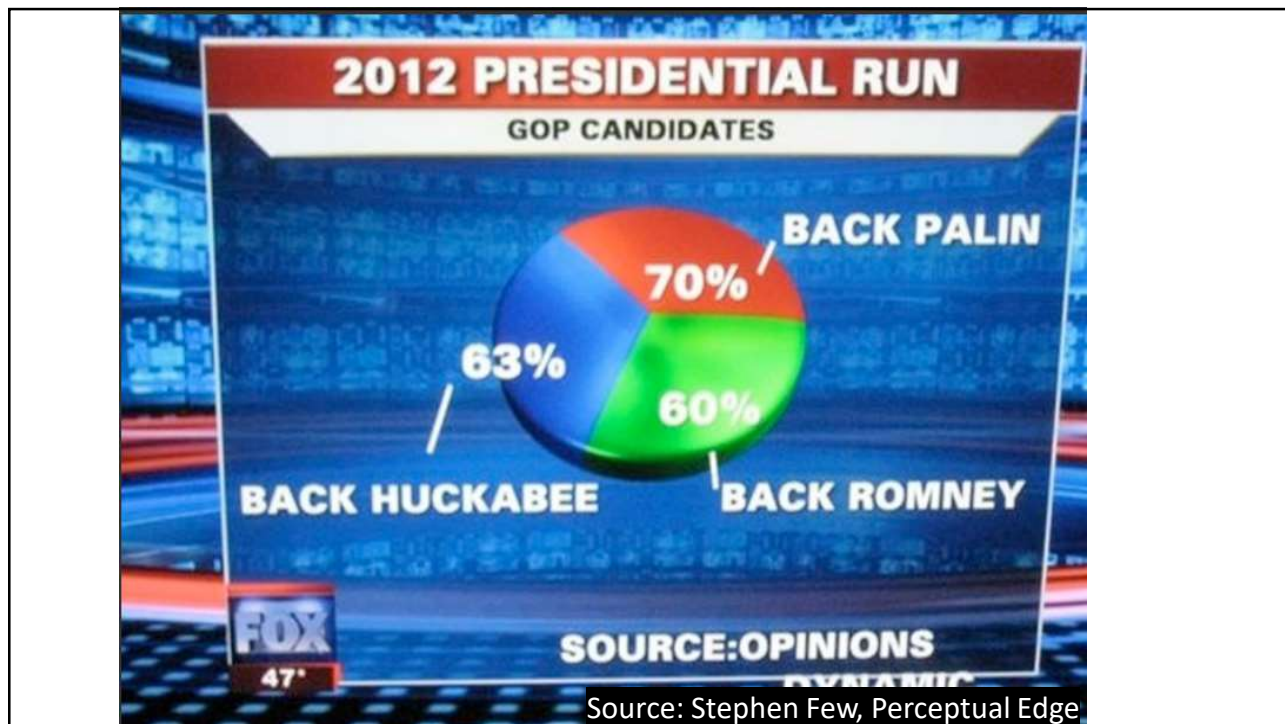
111

## Emptiness for scaling effect



Source: Andy Kirk, VisualisingData.com

112



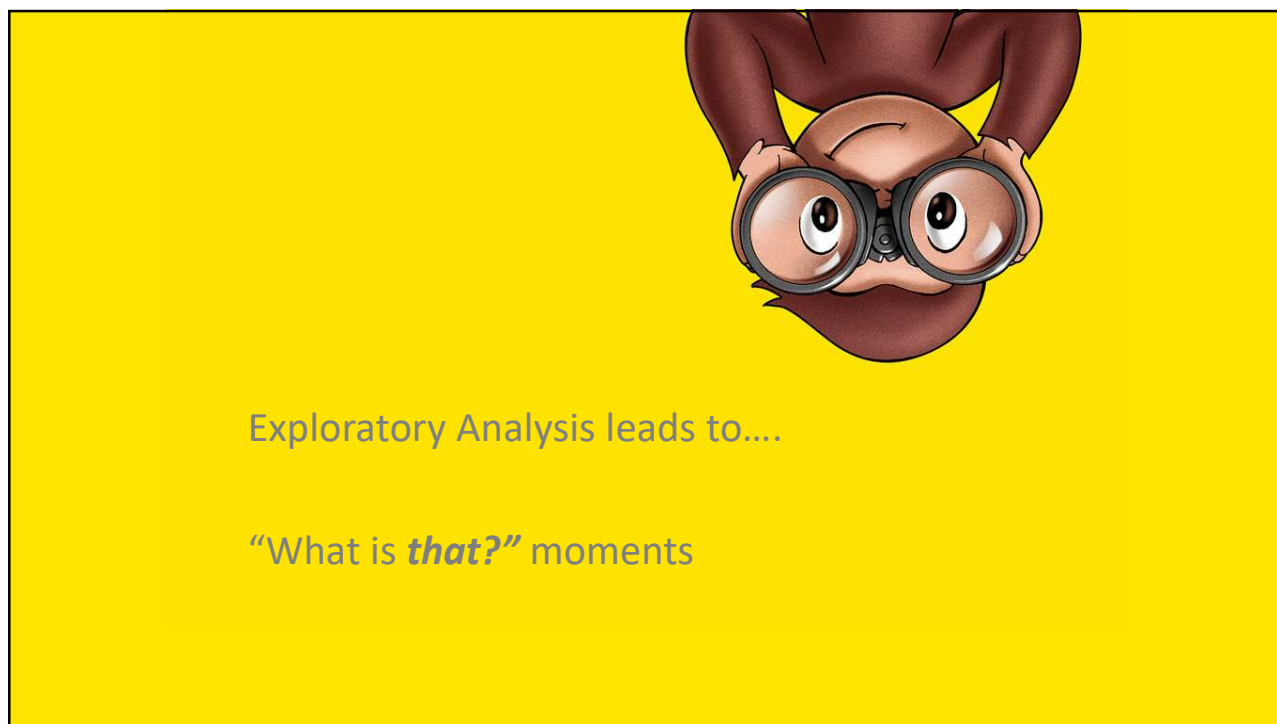
113

## DATA VISUALISATION

- Two types of data visualisation;
  1. Exploration (find the story)
  2. Explanation (tell the story)
- Show large quantities of data coherently
- Discern relationships

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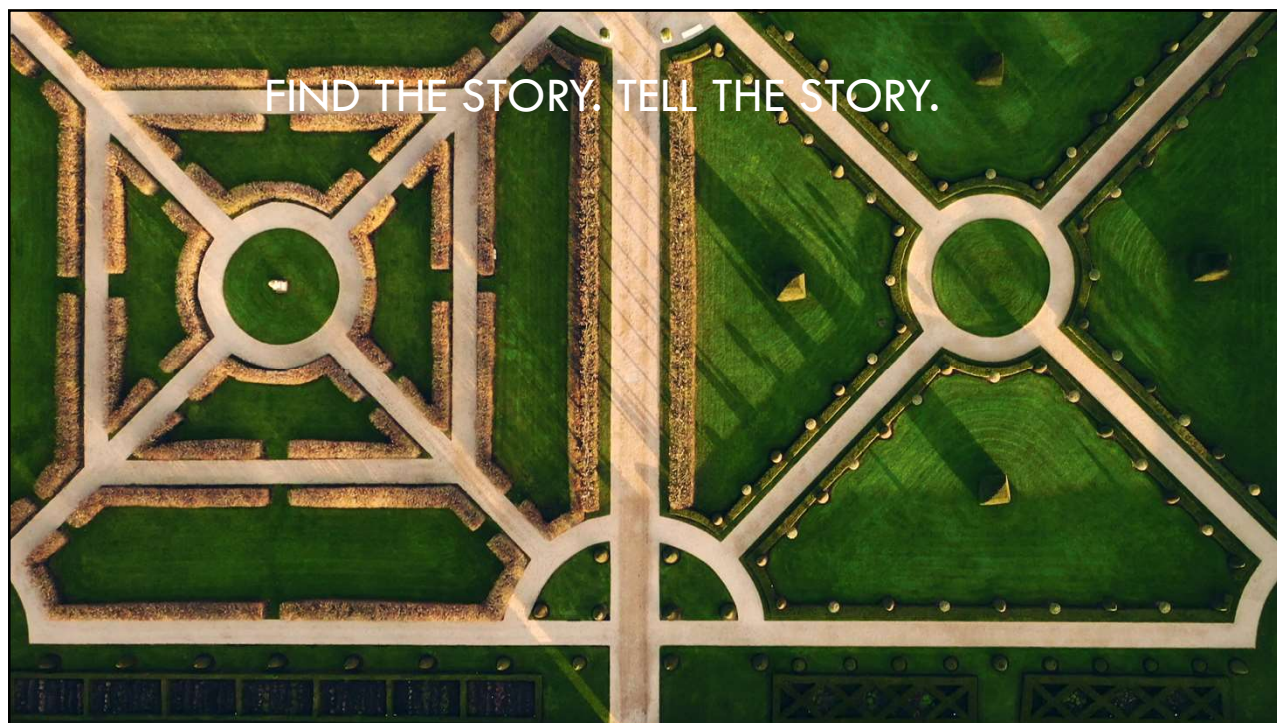
114



Exploratory Analysis leads to....

“What is *that?*” moments

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FIND THE STORY. TELL THE STORY.

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## DASHBOARDS REPORTING IN MODERN EXCEL

1. Use **visuals**, not data
2. Data Analysis in **Modern** Excel
3. Power **Excel** Tools
4. Choose the chart to get your **message** across
5. Find the **story**. Tell the story.
6. Charts **vs.** Tables
7. Dashboard **Critique**
8. The **Rules** of Visual Perception

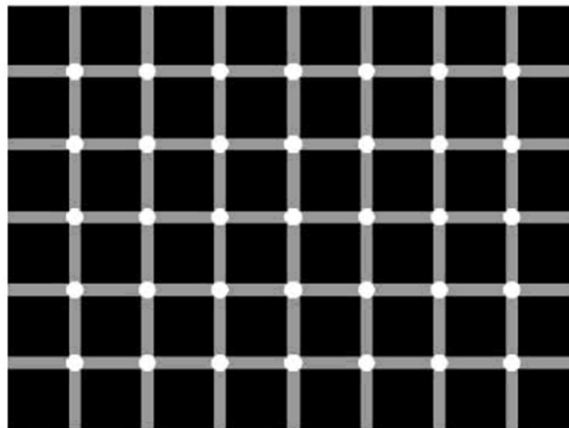
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### Data Visualisation:

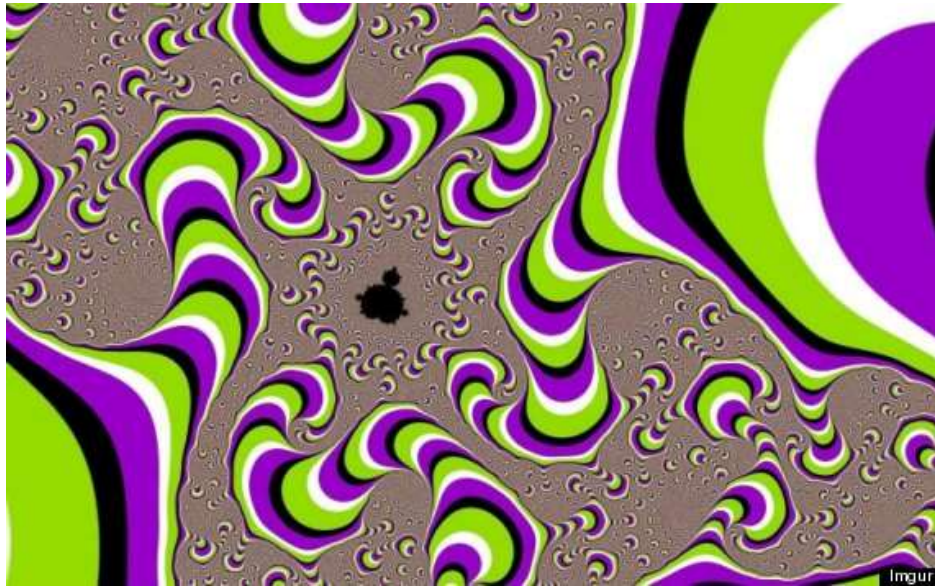
*70% of sensory receptors are in the eye*

How many black dots do you see? There are none...



CollegeBoredom.com

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[imgur](#) via [reddit](#).

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## How many 5s?

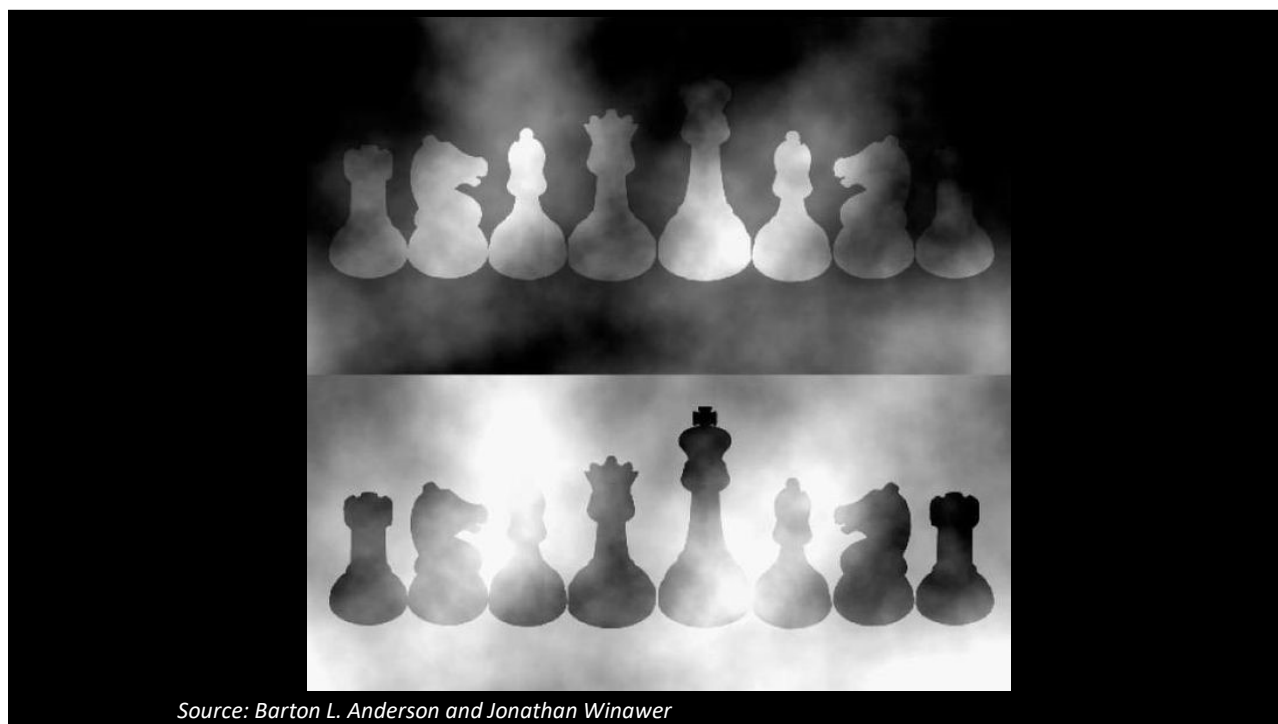
Information visualisation should cause what is meaningful to stand out

38**5**720939823728196837293827  
3829123**5**8383492730122894839  
9090201020328937**5**9273091428  
93830976296**5**817431869241024

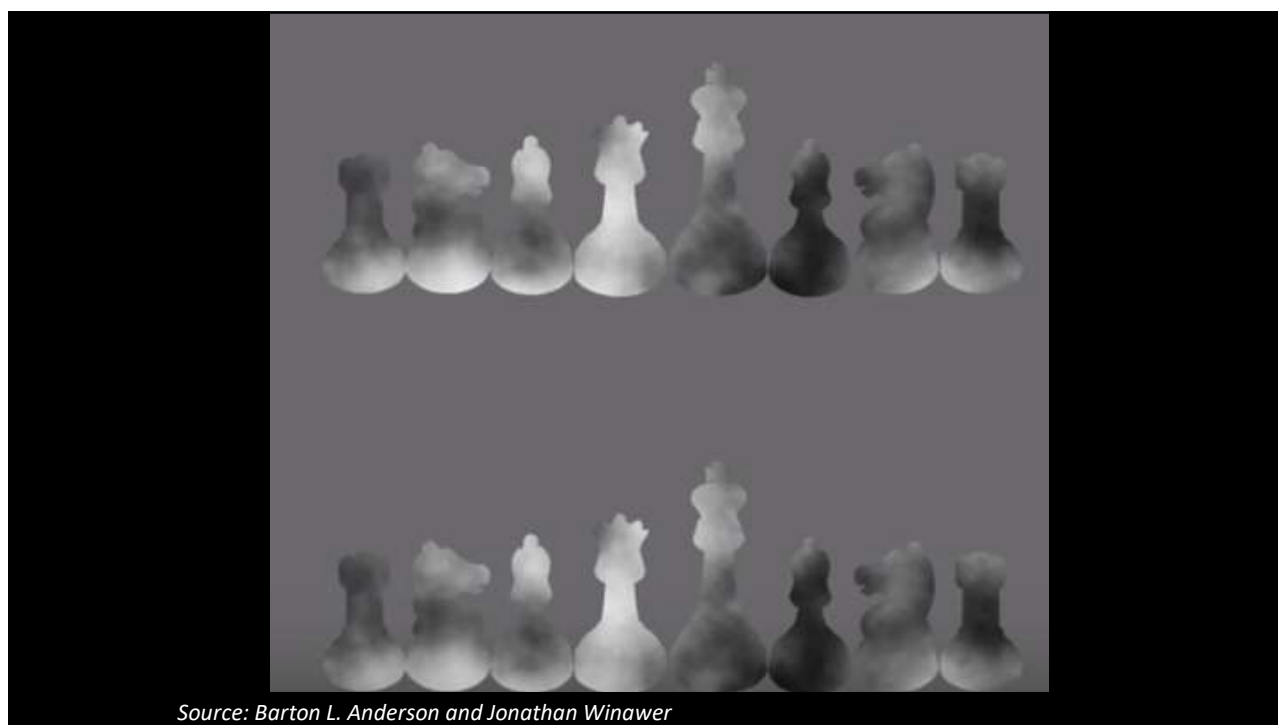
Source: Cecilia R. Aragon UC Berkeley

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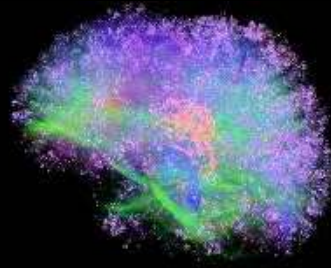


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## THE HUMAN BRAIN

- The human visual system is a pattern seeker BUT it has its own perception-based rules.
- By following these rules, we can present our data so that the important and informative patterns stand out.
- If we disobey the rules, our data will be incomprehensible or misleading



(Information Visualization: Perception for Design, Second Edition, Colin Ware, Morgan Kaufmann Publishers, 2004, page xxi)

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## If You Can Raed Tihs, You Msut Be Raelly Smrat

Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy, it deosn't mttar in waht oredr the ltteers in a wrod are, the olny iprmoatnt tihng is taht the frist and lsat ltteers be at the rghit pclae. The rset can be a toatl mses and you can sitll raed it wouthit porbelm. Tihs is bcuseae the huamn mnid deos not raed ervey lteter by istlef, but the wrod as a wlohe

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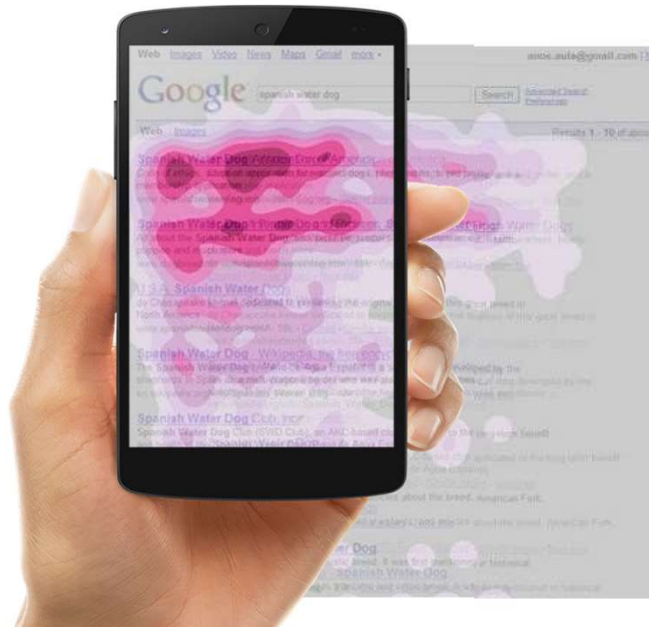
125



RAISE YOUR  
HAND when you  
spot the wildlife

126

## APPLY THE “GOLDEN TRIANGLE”



Source: Google

127

## THE Z READING PATTERN



Menu /  
Key Message

Content

Sources /  
Company Info

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You will read this first

And then read this.

And this.

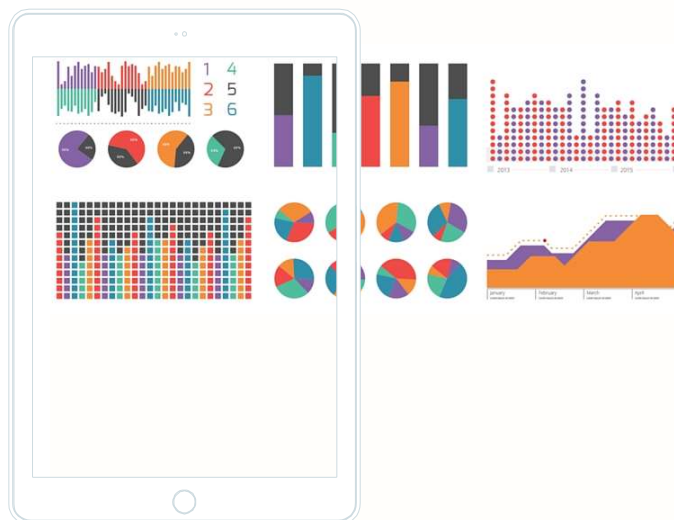
And finally this.

Then, you'll read this.

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## DESIGN FOR DIFFERENT SCREEN TYPES



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## CONSIDER THE DATA TO INK RATIO

"Above all else, show the data"

*Edward Tufte, 1983*

$$\text{Data-ink ratio} = \frac{\text{Data-ink}}{\text{Total ink used to print the graphic}}$$

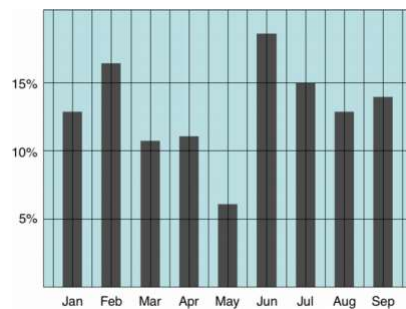
= proportion of a graphic's ink devoted to the non-redundant display of data-information

= 1.0 - proportion of a graphic that can be erased

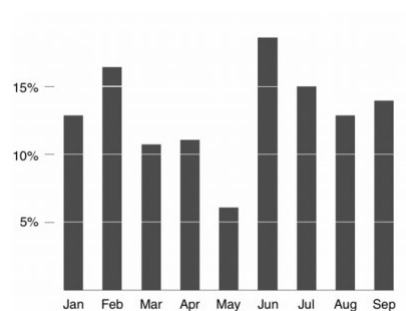
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LOW DATA-INK RATIO



HIGH DATA-INK RATIO



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## OTHER DASHBOARD EXERCISES

1. Employee Data Tutorial  
(“Introduction to Power BI” PDF)
2. Expenditure dashboard
3. Café Model
4. Water Tariffs
5. Building the Financial Model  
Dashboard

Completed versions provided. **Have fun**



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YOU'RE  
INVITED

Next session:  
7<sup>th</sup> & 8<sup>th</sup> Dec  
Book your timeslot

Excel Modelling & Dashboards  
Online Support Clinic Sessions

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## VIRTUAL MEETUPS



- **Wed 18<sup>th</sup> Nov** PARTNER WEBINAR: “Building the Financial Model Dashboard”
- **Wed 25<sup>th</sup> Nov** VIRTUAL CPA DISCUSSION GROUP: “Forecasting Techniques in Excel” Rahim Zulfiqar Ali
- **Wed 25<sup>th</sup> Nov** WOMEN IN FINANCIAL MODELLING: “Financial Modeling World Cup Stage 3 Debrief”
- **Tues 1<sup>st</sup> Dec** VIRTUAL DEBATE: “Power Query versus Excel Formulas” David Benaim & Alan Murray
- **Mon 7<sup>th</sup> Dec** VIRTUAL MEETUP: “Programming and Problem Solving in Excel” Dan Mayoh & Diarmuid Early

[www.plumsolutions.com.au/meetup](http://www.plumsolutions.com.au/meetup)

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# Q&A

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