1. Preparing and Cleaning your Data
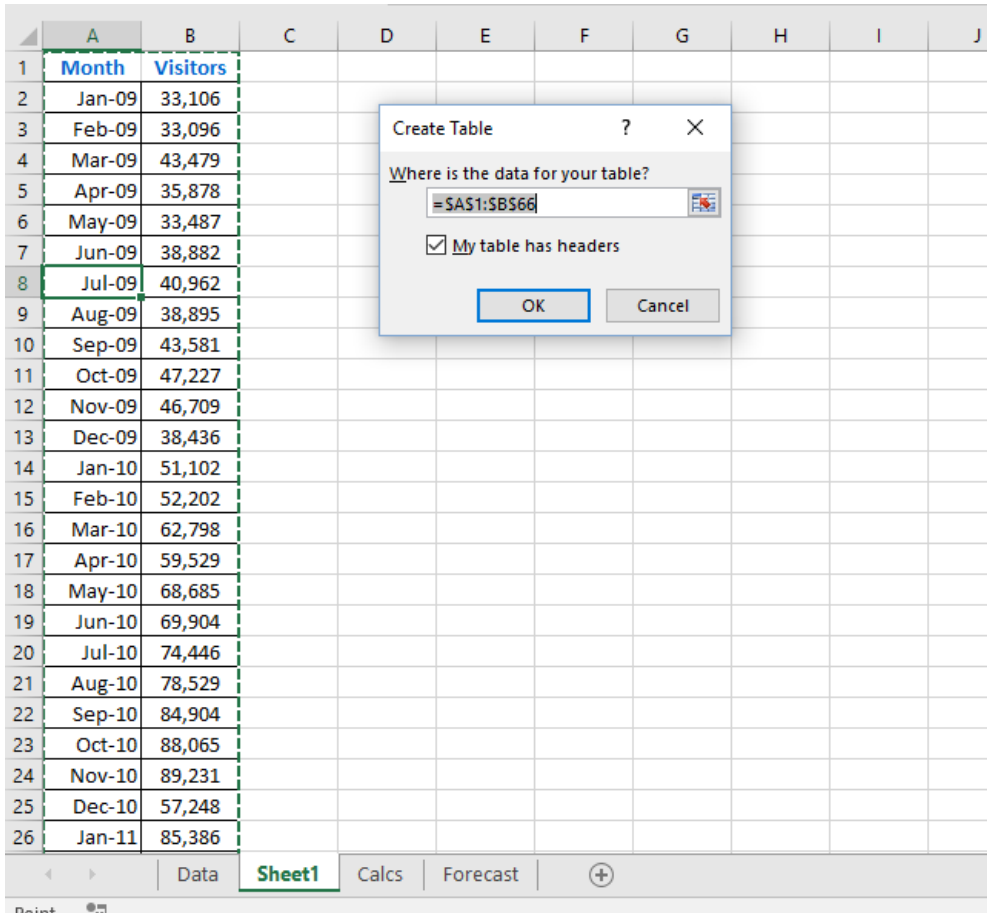
2. PivotTables

3. Charting and Correlation

4. The Analysis Toolpak and Solver

5. Useful Formulas

Preparing your Data
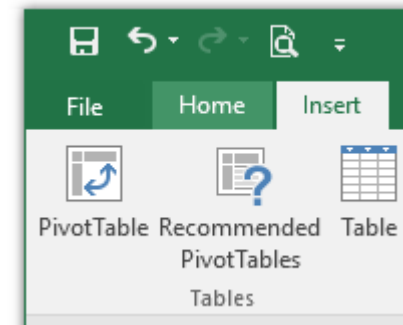
Use Tables, in their own worksheets, to hold your data

	A	B	C	D	E	F	G	H	I	J
1	**Month**	**Visitors**								
2	Jan-09	33,106								
3	Feb-09	33,096								
4	Mar-09	43,479								
5	Apr-09	35,878								
6	May-09	33,487								
7	Jun-09	38,882								
8	Jul-09	40,962								
9	Aug-09	38,895								
10	Sep-09	43,581								
11	Oct-09	47,227								
12	Nov-09	46,709								
13	Dec-09	38,436								
14	Jan-10	51,102								
15	Feb-10	52,202								
16	Mar-10	62,798								
17	Apr-10	59,529								
18	May-10	68,685								
19	Jun-10	69,904								
20	Jul-10	74,446								
21	Aug-10	78,529								
22	Sep-10	84,904								
23	Oct-10	88,065								
24	Nov-10	89,231								
25	Dec-10	57,248								
26	Jan-11	85,386								

Create Table   ?   ×

Where is the data for your table?

=$A$1:$B$66

☑ My table has headers

OK   Cancel

Data | **Sheet1** | Calcs | Forecast | ⊕

Point

Keyboard Shortcut = Ctrl T

Or Insert, Table

File | Home | Insert

PivotTable Recommended Table
PivotTables

Tables

Always keep Data and Calculations separate in your Workbooks

Dashboard Diva

Give your Table a name and it can be referenced in formulas and PivotTables

Cleaning your Data

Make use of the Text Import Wizard to bring in external data
- particularly for specifying dates

Use Flash Fill to complete datasets
  - particularly for dates in text format

	A	B	C	D	E
1	20080603	03/06/2008			
2	19700721	21/07/1970			
3	19451012	12/10/1945			
4	19980514				
5	20011605				
6	19940508				
7	19820609				
8					
9					
10					

Keyboard Shortcut
= Ctrl E

Try it to clean email addresses
  e.g. a name before a . or before the @

Dashboard Diva
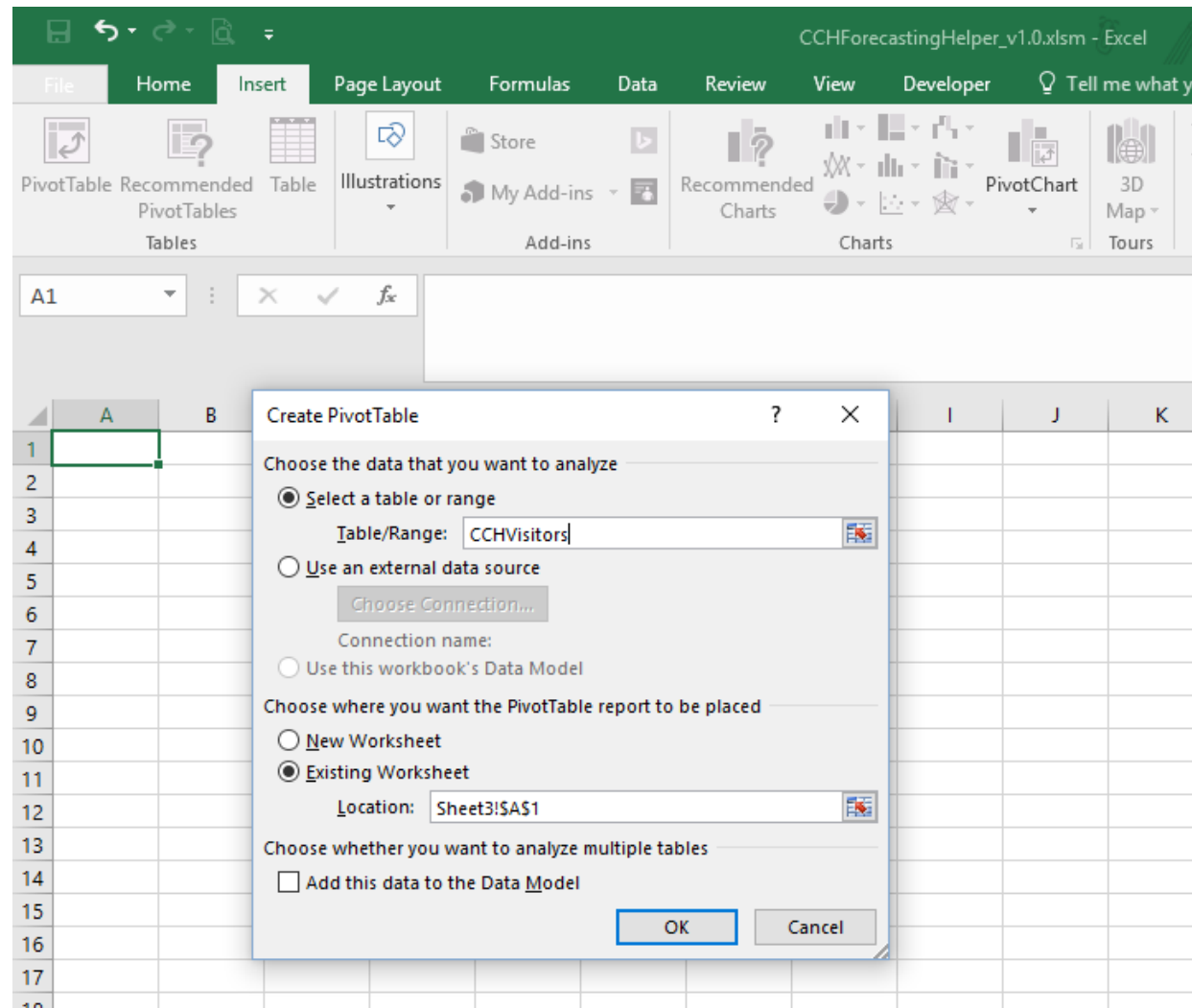
Use PivotTables

Combine and control your Data without a single formula

Fields from your Table are here.
Drag the ones you want to the Row, Column and Value areas

Using a date field automatically results in grouping by Years, Quarters and Months

Expand Years to see
sum for each Quarter
or month

If you don't want Quarters
drag Quarters out of the
rows area

	A15	fx	Qtr4							
	A	B	C	D	E	F	G	H	I	J
1	Row Labels ▼	Sum of Visitors								
2	⊟2009									
3	⊟Qtr1									
4	Jan	33106								
5	Feb	33096								
6	Mar	43479								
7	⊟Qtr2									
8	Apr	35878								
9	May	33487								
10	Jun	38882								
11	⊟Qtr3									
12	Jul	40962								
13	Aug	38895								
14	Sep	43581								
15	⊟Qtr4									
16	Oct	47227								
17	Nov	46709								
18	Dec	38436								
19	⊞2010	836643								
20	⊞2011	1010234								
21	⊞2012	1747325								
22	⊞2013	2043027								
23	⊞2014	942183								
24	Grand Total	7053150								
25										
26										

PivotTable Fields ▼ ✕

Choose fields to add to report: ⚙ ▼

Search 🔍

☑ Month
☑ Visitors
☑ Quarters
☑ Years

MORE TABLES...

Drag fields between areas below:

▼ FILTERS   ▥ COLUMNS

≡ ROWS   Σ VALUES

Years ▼   Sum of Visitors ▼
Quarters ▼
Month ▼

☐ Defer Layout Update   UPDATE

Data | Sheet1 | Sheet3 | Calcs | Fore ...

Ready   100%

Row Labels	Sum of Visitors
2009	
Qtr1	
Jan	33106
Feb	33096
Mar	43479
Qtr2	
Apr	35878
May	33487
Jun	38882
Qtr3	
Jul	40962
Aug	38895
Sep	43581
Qtr4	
Oct	47227
Nov	46709
Dec	38436
	836643
	1010234
	1747325
	2043027
	942183
Total	7053150

PivotTable Fields

Choose fields to add to report:

Search

☑ **Month**
☑ **Visitors**
☑ **Quarters**
☑ **Years**

MORE TABLES...

Drag fields between areas below:

▼ FILTERS   ▥ COLUMNS

☰ ROWS   Σ VALUES

Years	
Quarters	
Month	

Sum of Visitors ▼

Move Up
Move Down
Move to Beginning
Move to End
▼ Move to Report Filter
☰ Move to Row Labels
▥ Move to Column Labels
Σ Move to Values
✕ Remove Field
Value Field Settings...

☐ Defer Layout Updat

Value Field Settings   ?   ✕

Source Name: Visitors

Custom Name: Sum of Visitors

Summarize Values By   Show Values As

Summarize value field by

Choose the type of calculation that you want to use to summarize data from the selected field

| Sum |
| Count |
| Average |
| Max |
| Min |
| Product |

Number Format   OK   Cancel

| Data | Sheet1 | **Sheet3** | Calcs | Fore ... | ⊕ |

Change how to treat your data by choosing "Value Field Settings" from the dropdown by your field in the Values area

Dashboard Diva

Forecasting with Charts

Make use of line charts and x-y scatter plots

Current Values
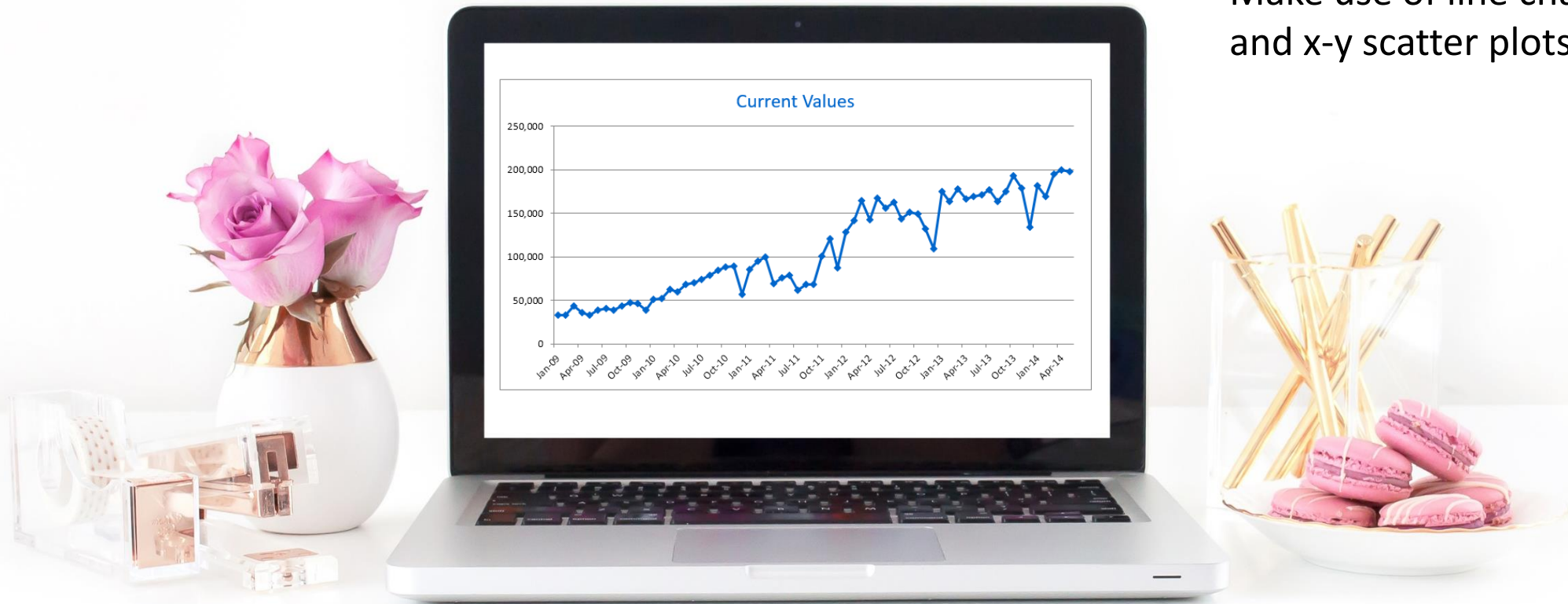
Keyboard Shortcut = Ctrl 1

for quickly formatting the chart element you have selected (works in cells too – borders, colour etc)

Dashboard Diva

Forecasting how many units
we will sell if we choose
a certain price…

Plot Sales on the y axis
Unit cost on the x axis

	A	B
1	Cost per unit	Sold units
2	13.51941191	624
3	14.87508752	892
4	16.58679424	2808
5	18.40991318	528
6	19.41688642	2528
7	20.93207827	3325
8	22.93053529	966
9	24.22713413	1248
10	25.2338145	3481
11	27.21842149	1332
12	28.7949144	4224
13	30.53148495	1765
14	32.07520009	1821
15	33.21884958	4801
16	34.36103318	3726
17	35.75629399	2279
18	37.28886408	3975
19	38.59360797	2663
20	39.80605533	4451
	41.10672954	3009
	42.55896572	4624
	44.43052521	5335
	45.52732616	5733
	46.63233841	4773
	47.96423491	5597
	49.2530199	4531
	50.34288686	5918
	51.62248307	4039
	53.41253204	4688
	54.73027717	6332
	56.45219156	4543
	58.1386993	5525
	59.7793152	6578
	61.73585346	5794
	62.93397071	7556
	64.62047483	6067
	66.42061592	6333
	68.03881395	6906
	69.64639752	6333

Sold units

Right click on the chart and choose "Trendline"
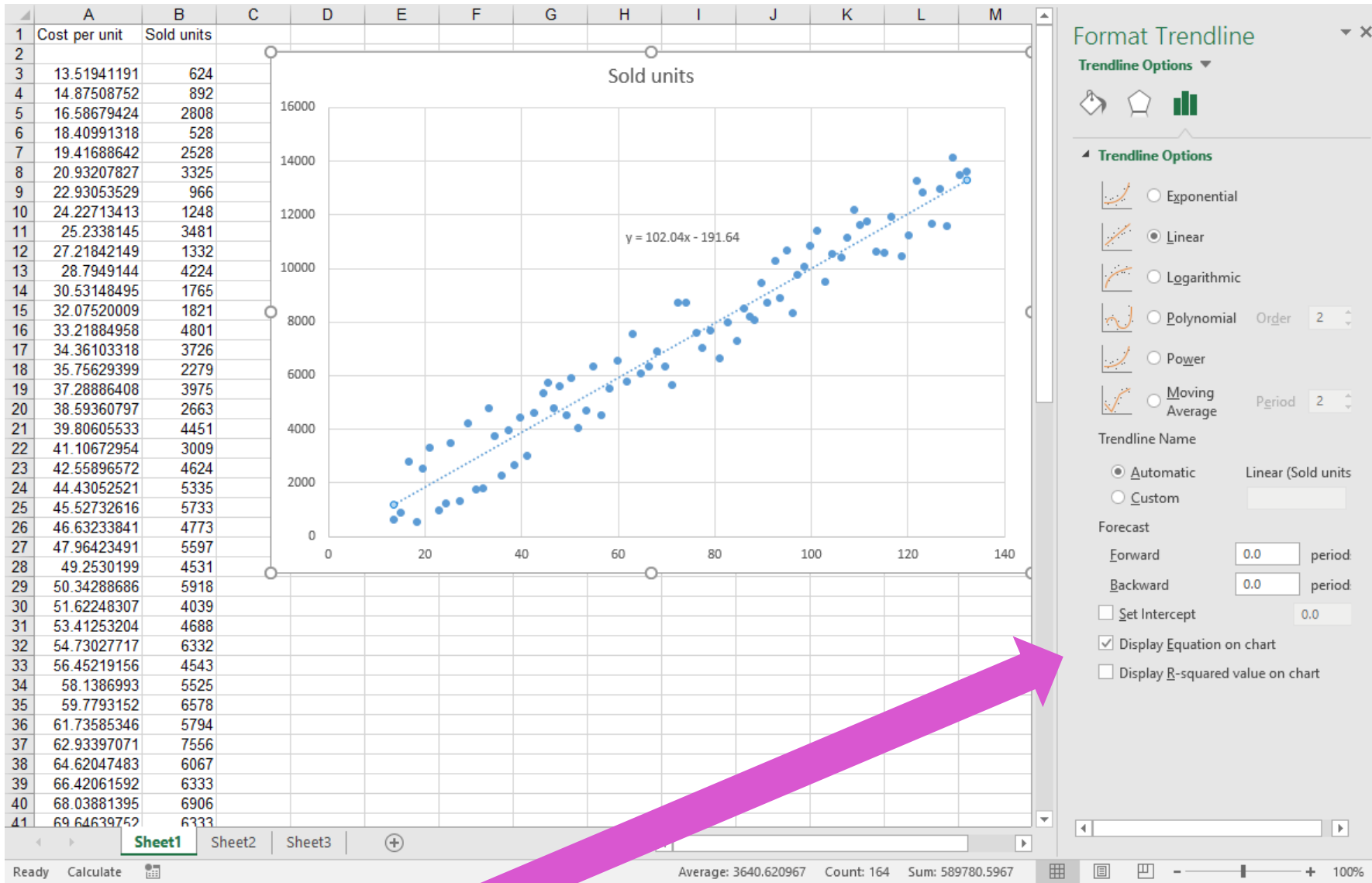
Display Equation on chart

Correlation

How strongly are your variables related?

=CORREL(A2:A83,B2:B83)

Correlation is not Causation

Per capita cheese consumption

correlates with

Number of people who died by becoming tangled in their bedsheets

Correlation: 94.71% (r=0.947091)

Spurious Correlations - http://tylervigen.com/
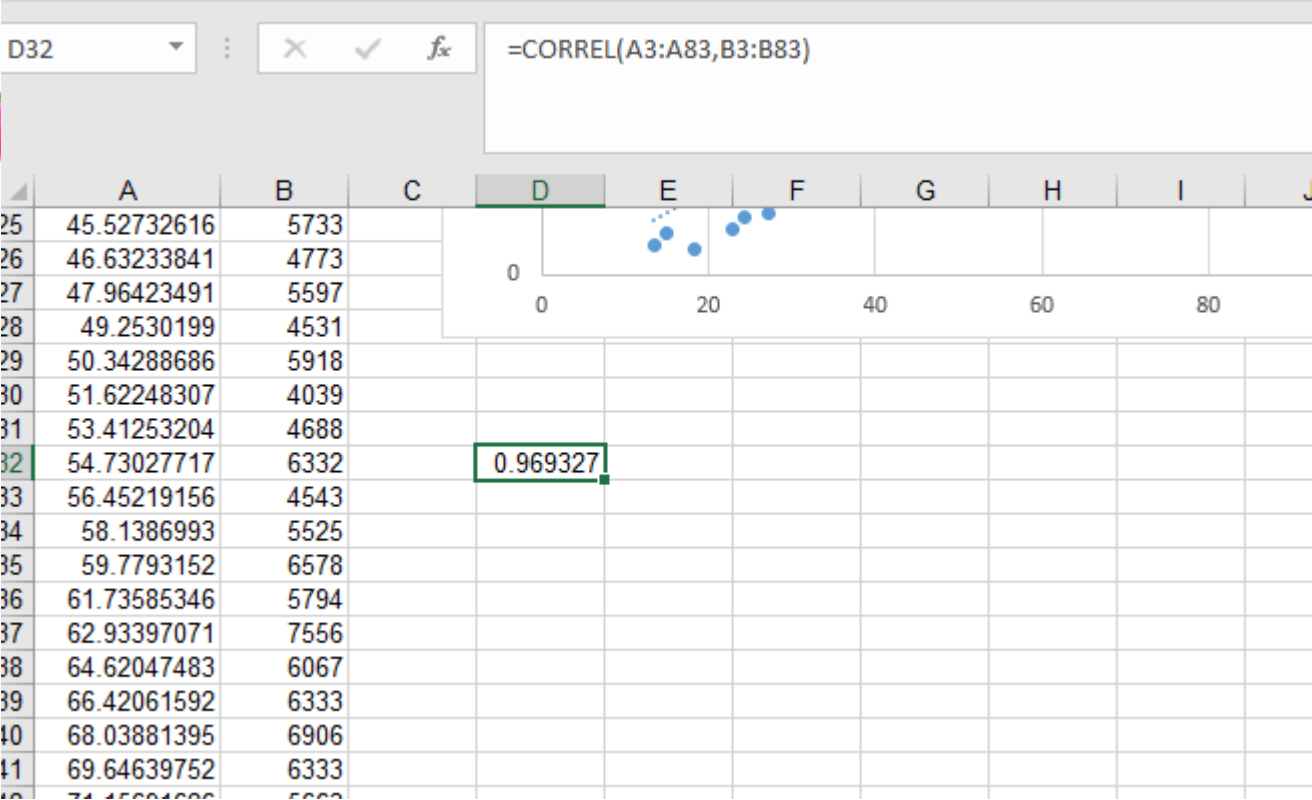
Correlation is not Causation
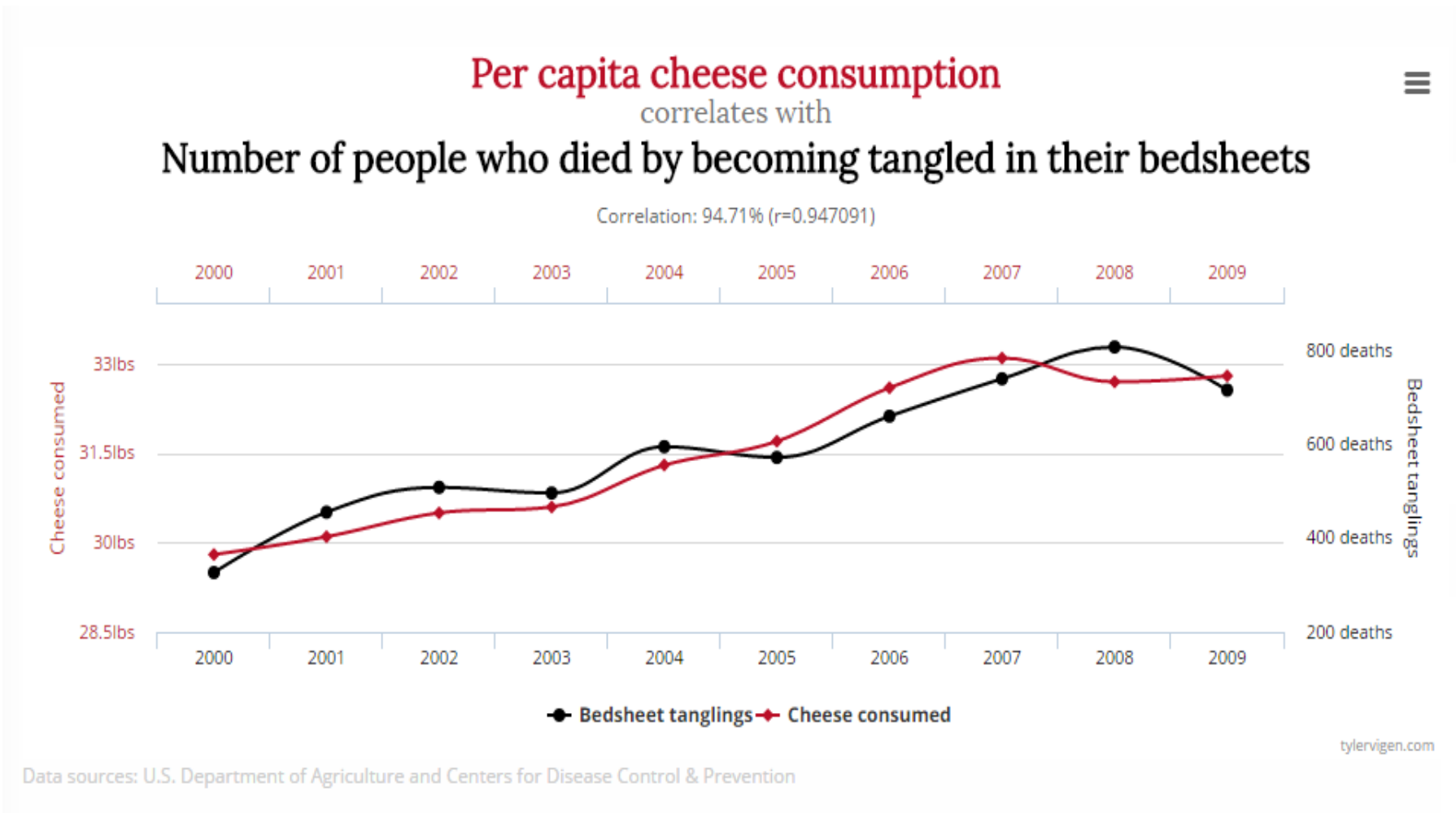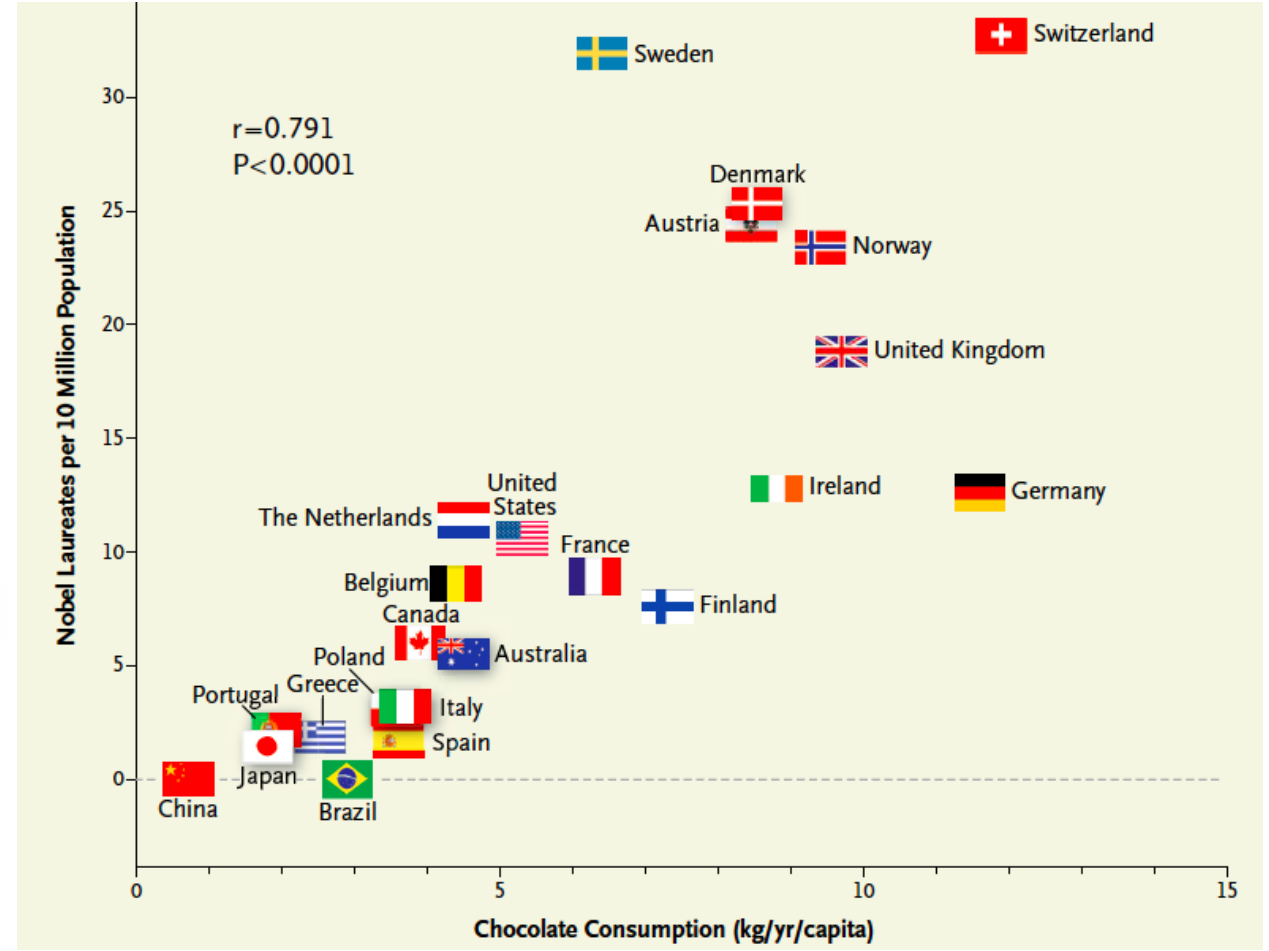
New England Journal Of Medicine: 2012

r=0.791
P<0.0001

Nobel Laureates per 10 Million Population

Chocolate Consumption (kg/yr/capita)

Sweden
Switzerland
Denmark
Austria
Norway
United Kingdom
The Netherlands
United States
Ireland
Germany
Belgium
France
Finland
Canada
Poland
Australia
Portugal
Greece
Italy
Japan
Spain
China
Brazil

The Analysis Toolpak

Some of the heavy lifting done for you

Investigate:
- Moving Averages
- Exponential Smoothing
- Regression

Regression results are shown on another tab
Not as visually clear as charts

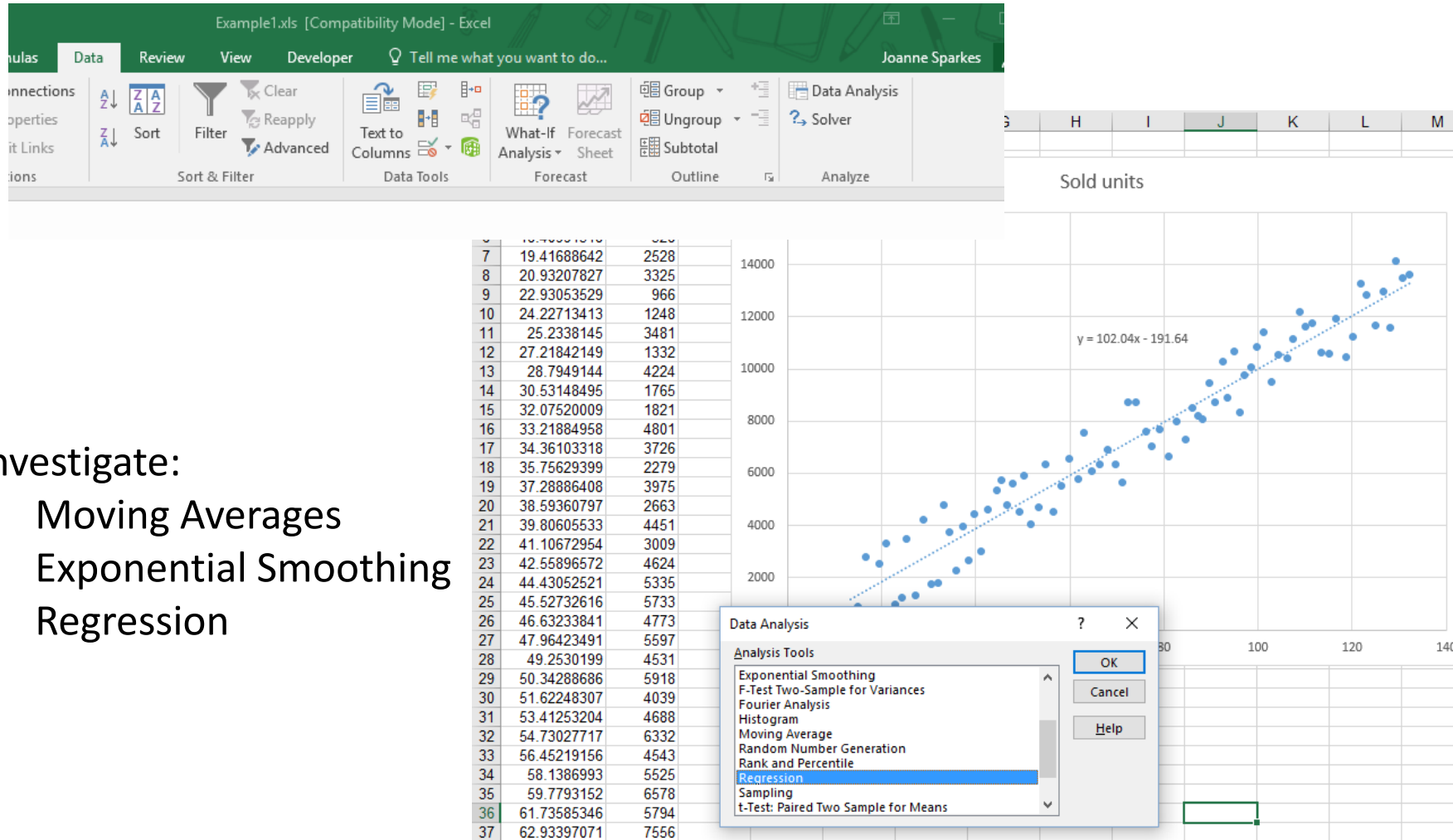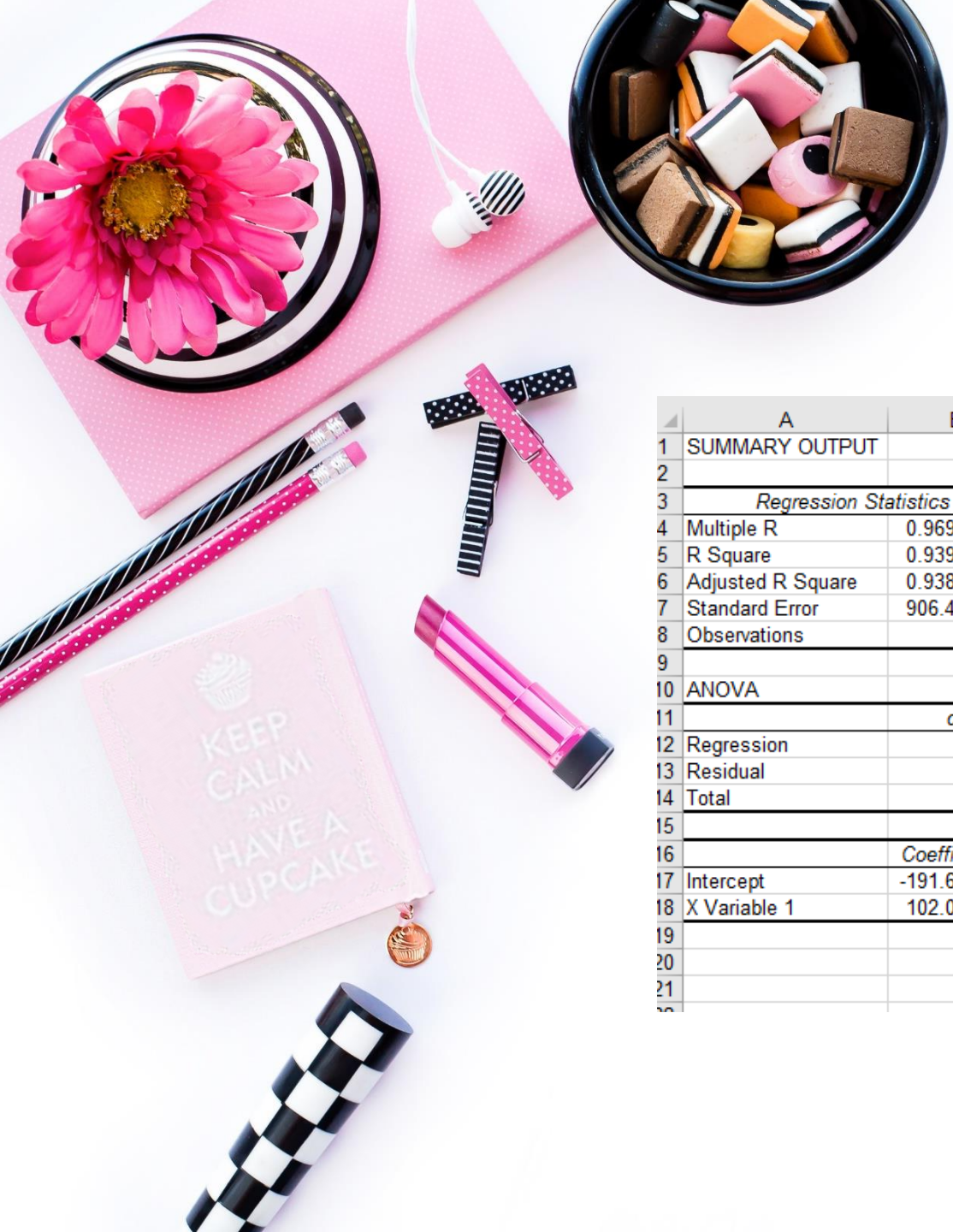|	A	B	C	D	E	F	G	H	I	J
1	SUMMARY OUTPUT									
2										
3	Regression Statistics									
4	Multiple R	0.969326871								
5	R Square	0.939594584								
6	Adjusted R Square	0.938829958								
7	Standard Error	906.4504272								
8	Observations	81								
9										
10	ANOVA									
11		df	SS	MS	F	Significance F				
12	Regression	1	1009670879	1009670879	1228.829742	6.56803E-50				
13	Residual	79	64910537.79	821652.377						
14	Total	80	1074581416							
15										
16		Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%	
17	Intercept	-191.6383909	233.9035035	-0.819305346	0.415077097	-657.2116686	273.9348869	-657.2116686	273.9348869	
18	X Variable 1	102.0374236	2.910808451	35.05466791	6.56803E-50	96.24360429	107.8312429	96.24360429	107.8312429	
19										
20										
21										

Solver

	A	B	C	D	E	F	G	H	I	J
1	Factors	Level	40%	Trend	30%	Seasonal	86%		Average Variance	0.04
2							last row	75		
3	Year	Demand	Month	Adjust Level	Adjust Trend	Average Month (last 12 months)	Monthly Variation from Average Month	Seasonal weighting	Forecast	Forecast
4	Set up initial		June					0.87		
5	seasonal weightings		July					0.87		
6			August					0.85		
7			September					0.90		
8			October					1.00		
9			November					1.00		
10			December					0.75		
11			January					1.08		
12			February					1.11		
13			March					1.25		
14			April	initial level	initial trend			1.11		
15			May	38882.00	2628.00			1.21		
16	Jun-09	38,882	June	42851.39	3031.69		0.79	0.90		
17	Jul-09	40,962	July	46333.16	3167.14		0.83	0.88		
18	Aug-09	38,895	August	48089.95	2742.70		0.79	0.81		
19	Sep-09	43,581	September	49803.94	2433.11		0.89	0.88		
20	Oct-09	47,227	October	50153.80	1806.17		0.96	0.95		
21	Nov-09	46,709	November	49806.53	1158.09		0.95	0.95		
22	Dec-09	38,436	December	51127.73	1207.18		0.78	0.75		
23	Jan-10	51,102	January	50277.70	588.07		1.04	1.03		
24	Feb-10	52,202	February	49406.82	149.00		1.06	1.06		
25	Mar-10	62,798	March	49831.68	232.02		1.28	1.26		
26	Apr-10	59,529	April	51480.26	658.33		1.21	1.15		
27	May-10	68,685	May	53979.12	1212.23	49084.00	1.40	1.26		
28	Jun-10	69,904	June	64185.18	3918.90		0.87	1.06		
29	Jul-10	74,446	July	74654.87	5890.34		0.92	0.98		
30	Aug-10	78,529	August	86948.92	7817.51		0.97	0.89		

Solver Parameters

Set Objective: $JS1

To: ○ Max   ● Min   ○ Value Of: 0

By Changing Variable Cells:

levelsmooth,trendsmooth,seasonalsmooth

Subject to the Constraints:

```
levelsmooth <= 1
seasonalsmooth <= 1
seasonalsmooth >= 0
levelsmooth >= 0
trendsmooth <= 1
trendsmooth >= 0
```

[Add] [Change] [Delete] [Reset All] [Load/Save]

☑ Make Unconstrained Variables Non-Negative

Select a Solving Method: Evolutionary   [Options]

Solving Method

Select the GRG Nonlinear engine for Solver Problems that are smooth nonlinear. Select the LP Simplex engine for linear Solver Problems, and select the Evolutionary engine for Solver problems that are non-smooth.

[Help]   [Solve]   [Close]

Useful Functions

TREND

LINEST

FORECAST

Useful Formulas for Analysis

SUMIFS
=SUMIFS(what you want to sum up, column 1, condition 1, column 2, condition 2…)
=SUMIFS(sales, regions, "A", products, "B", customer types, "C")

INDEX and **MATCH** are faster and more flexible than **VLOOKUP**
=INDEX(list of values, MATCH(what you want to lookup, lookup column, is column sorted?))
=INDEX(customer IDs, MATCH("Jonty Pearce", Customer names, 0))

SMALL and **LARGE Formulas (MAX** and **MIN)**
=SMALL(range of values, n) finds the nth smallest value in a list

IFERROR
= IFERROR(formula, what to do in case of error)

Dashboard Diva

More Help

https://www.facebook.com/groups/spreadsheetsupport

hello@dashboarddiva.co.uk