Creating Vibrant Dashboards

A **Skillwave** **Product**
with content from

X GURU
www.excelguru.ca

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Workshop Goals

What they aren't:
- Remember everything
- Master every aspect of the tools

What they are:
- Familiarity with the toolset
- Comfort in working with the tools
- Understanding of key concepts, theories and methods
- Providing you with techniques to apply to your scenarios

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What We Will Cover

What are Dashboards?

Dashboarding Tools

Putting it all together

Getting help

Demo of Excel "Power" tools

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Who's Ken?

FCPA, FCMA

Owner of Excelguru.ca website, blog & forum

Microsoft MVP

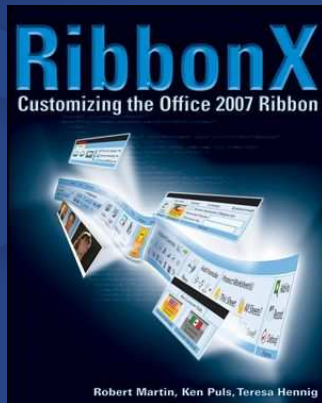|	
2006-2015	Excel
2016-2019	Data Platform
2019-current	Office Apps & Services

Software Developer

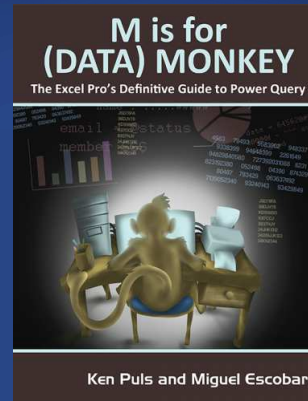Monkey Tools Add-in for Excel

https://xlguru.ca/monkeytools

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Ken's Publications

RibbonX

M is for Data Monkey

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Our Services

Conferences | Live Training | Online Courses | Mentoring | Consulting

Make you aware

Teach You

Help you if you need it

consult@excelguru.ca

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Data Visualization Overview

Data Visualization Overview

Goals of data visualization

| Turn Data into Information | Let Users Spot Key Info Quickly | Increase User Engagement |

Method

Illustrate your story

Caveat

Always review your completed work!

Dashboarding

What is a dashboard?
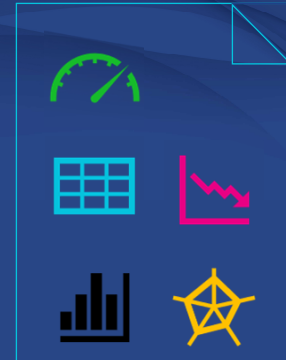
- Visual summary
- Collection of key information in one place
- Should show your most important stats
- Often (but not always) includes a variety of charts

Overall intent

- _**Quick**_ consumption of _**Key**_ indicators

The Dashboard's Purpose

~~Provide solutions~~

Expose problems

Dashboarding Tools

Conditional Formatting

Cell Based Visualizations

Custom Number Formats

Charts

Interactivity tools

A word on Colour...

Question 1:

What colours do we use to signify bad/good?

Answer:

Red/Green

Question 2:

What is the most common form of colour blindness?

Answer:

Red/Green

Know your audience and customize your visualizations if needed!

Conditional Formatting

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Conditional Formatting

Great for
- Data comparison
- Visualization of outliers
- Adding engagement

Types
- Cell highlighting
- Colour scales
- Icon sets
- Data bars

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Color Scales

Great for
Identifying Outliers

Caution
Can be overwhelming

Suggested Modifications

Limit your colours
Use a rule with a white mid-point

Modifying your colours
Home → Conditional Formats -> Manage
Select your rule → Edit

Start From:
Colour Scales - Begin.xlsx

22

Data Bars

Great for
Quickly identify proportion
Showing value related to others
Identify outliers

Suggested Modifications

Modifying Displays
Home → Conditional Formats -> Manage
Select your rule → Edit

Available Modifications
Axis position
Negative bar colours

Start From:
Data Bars - Begin.xlsx

24

Icon Sets

Great for
- Highlighting states/thresholds
- Adding engagement

Challenges
- No "align to right"

Suggested Modifications

Mix and match
- Home → Conditional Formats → Manage
- Select your rule → Edit
- Mix and match the icons
- Mix and match the rules as needed

Display icon only
- Toggle in the Manage Rule section
- Allows hiding the data for the cell

Start From:
Icon Sets - Begin.xlsx

Highlighting Cells

Great for
- Highlighting states/thresholds
- Layering with other rules

Advanced
- Custom rules based on formulas

Easy to Implement Configurations

Highlight cells
- Greater than, less than, equal to, etc..
- Highlight duplicates

Top/Bottom Rules
- Top/Bottom x
- Top/Bottom x%
- Above/Below Average

Are you getting a mixture of two rules?
Read this: https://www.excelguru.ca/content.php?278

Start From:
Highlight Cells - Begin.xlsx

Cell Based Visualizations

Content Created by XGURU
www.excelguru.ca

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Sparklines

Great for
- Quick trend indicators
- Presenting general shape of variation
- Locating right inline with the data

Caution
- Not intended to provide answers
- Limited formatting options

Suggested Modifications

Change types
- Columns show data points better than lines

Point Highlighting
- Highlight high point/low point
- Style gallery updates to reflect options

Clustering multiple sparklines provides a "small multiples" effect

Start From:
Sparklines - Begin.xlsx

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Formula Based Charting

Great for

- Building progress indicators

How do you do it?

- Leverage the REPT() function
- Use the following fonts:
  - Webdings
  - Wingdings, Wingdings2, Wingdings3

Start From:
Formula Charts - Begin.xlsx

Custom Number Formats

Great for

- Making numbers more readable

Are These Variances Good or Bad?

	April		
	Actual	Budget	Variance ($)
Revenues			
Alcoholic Beverages	15,747.28	25,012.00	(9,264.72)
Food & Non-Alc Beverages	34,523.71	44,740.00	(10,216.29)
Other	237.79	3,867.00	(3,629.21)
Total Revenues	50,508.78	73,619.00	(23,110.22)

What the Symbols Mean

F is for Favourable	U is for Unfavourable
Revenues > Budget	Revenues < Budget
Expenses < Budget	Expenses > Budget

Aren't These Easier to Read?

	April		
	Actual	Budget	Variance ($)
Revenues			
Alcoholic Beverages	15,747.28	25,012.00	9,265 U
Food & Non-Alc Beverages	34,523.71	44,740.00	10,216 U
Other	237.79	3,867.00	3,629 U
Total Revenues	50,508.78	73,619.00	23,110 U
Expenses			
Cost of Sales	21,977.81	24,296.00	2,318 F
Labour & Benefits	35,166.60	45,327.25	10,161 F
Other Operational	10,830.99	13,210.00	2,379 F
Total Expenses	67,975.40	82,833.25	14,858 F
Net Income (Loss)	(17,466.62)	(9,214.25)	8,252 U

Start From:
Custom Number Formats-Begin.xlsx

Custom Number Format Quick Reference

The Custom Number Format String

Declare up to four formats:

`<positive>;<negative>;<zero>;<text>`

Formats can be omitted from the right side
Missing formats will default to <positive>

Creating the Favourable/Unfavourable Variance

Select the cells you wish to format
Right click → Format Cells → Number → Custom
Enter one of the following formats:

```
#,##0 F;[Red]#,##0 U;"-  "
#,##0.00 F;[Red]#,##0.00 U;"-  "
```
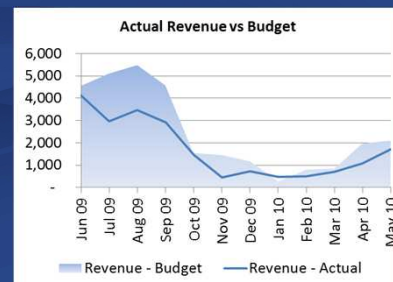
Click OK

Symbol	Use
0	Always show a value
#	Show values but supress 0's
,	Thousands separator
.	Decimal separator
;	Separates positive, negative, text elements
( )	Parenthesis
" "	Wrap text in quotes
[Red]	Sets colour (only certain colours permitted)

The world's best article on Custom Number Formats:
https://peltiertech.com/Excel/NumberFormats.html

Introduction to Effective Charting

Content Created by **XGURU**
www.excelguru.ca

Built-in Chart Types

Recommended		Avoid	
Column		Pie	
Bar		Doughnut	
Line		Bubble	
Area		Hierarchy	
XY (Scatter)		Surface	
Box & Whisker, Stock		Radar	
Histogram		Anything in 3D!	
Waterfall & Funnel			

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Custom Chart Types
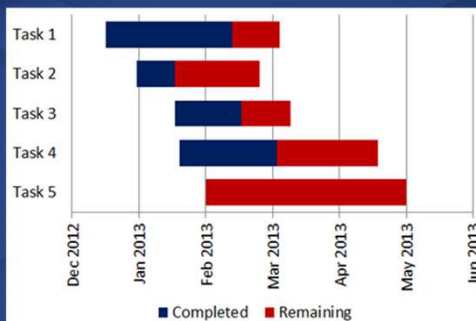
Gantt	Combination
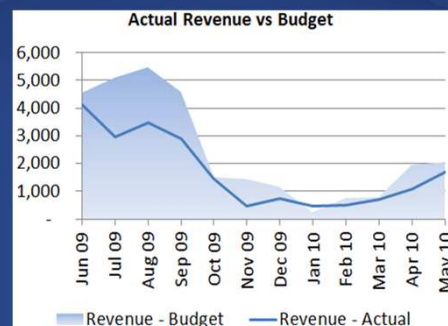
© Skillwave Training

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Custom Chart Types

Bullet	Waterfall

Sales vs Budget To Date
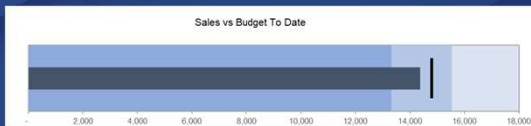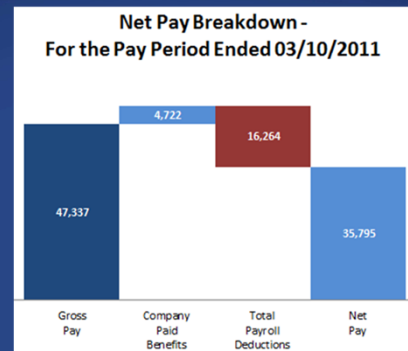
Net Pay Breakdown -
For the Pay Period Ended 03/10/2011

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5 Rules of Effective Charting

Rule # 1: Every chart should tell a story

Purpose of charting:
    To turn data into information
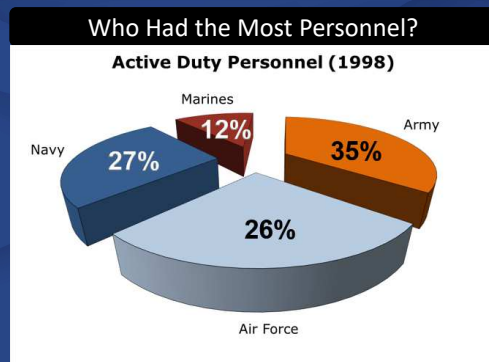   To be consumed as quickly as possible

5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

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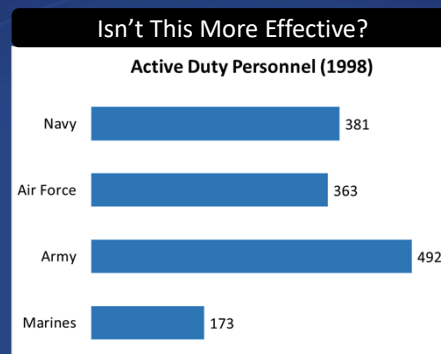# 5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

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5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

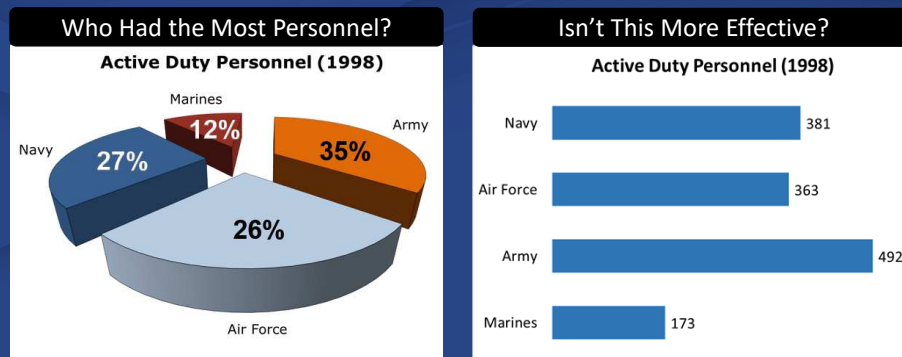## Who Had the Most Personnel?

Active Duty Personnel (1998)

Marines 12%
Army 35%
Navy 27%
26%
Air Force

Isn't This More Effective?

Active Duty Personnel (1998)

Navy	381
Air Force	363
Army	492
Marines	173

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5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

Who Had the Largest Increase in Troop Volume?

1990
Marines 11%
Navy 33%
Army 27%
Air Force 29%

1998
Marines 12%
Navy 27%
Air Force 26%
Army 35%

5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

Isn't This More Effective?

Active Duty Personnel

---

5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

Who Had the Largest Increase in Troop Volume?

1990
- Marines 11%
- Navy 33%
- Army 27%
- Air Force 29%

1998
- Marines 12%
- Navy 27%
- Army 35%
- Air Force 26%

Isn't This More Effective?

Active Duty Personnel
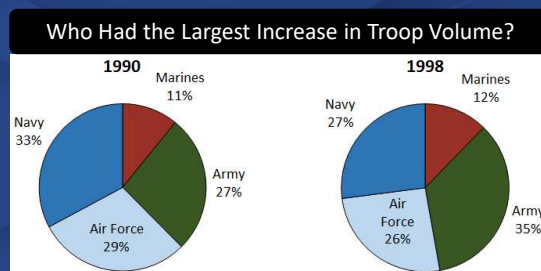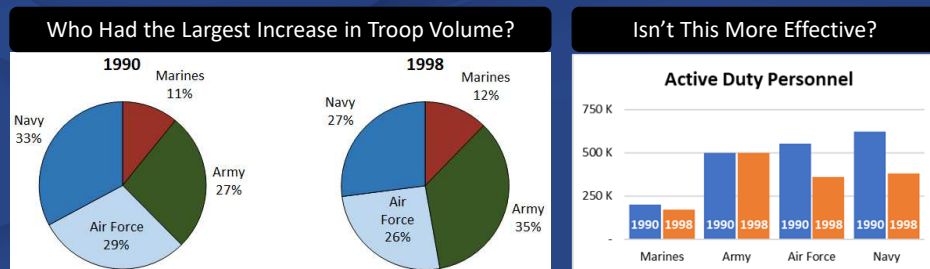
5 Rules of Effective Charting

Rule # 2: Pick the RIGHT chart type

Remember:

- The human brain has trouble with angles
- Bar and column charts are intuitive
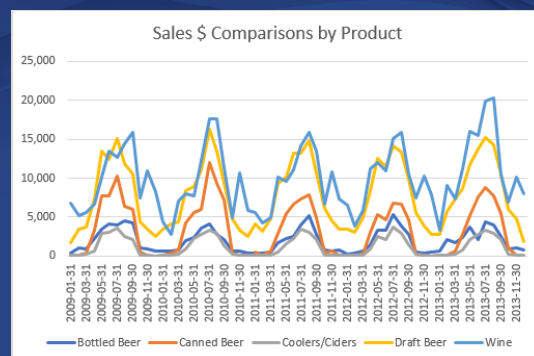- Try to avoid pie charts
- Always skip 3D charts

5 Rules of Effective Charting

Rule # 3: Make it a SHORT story

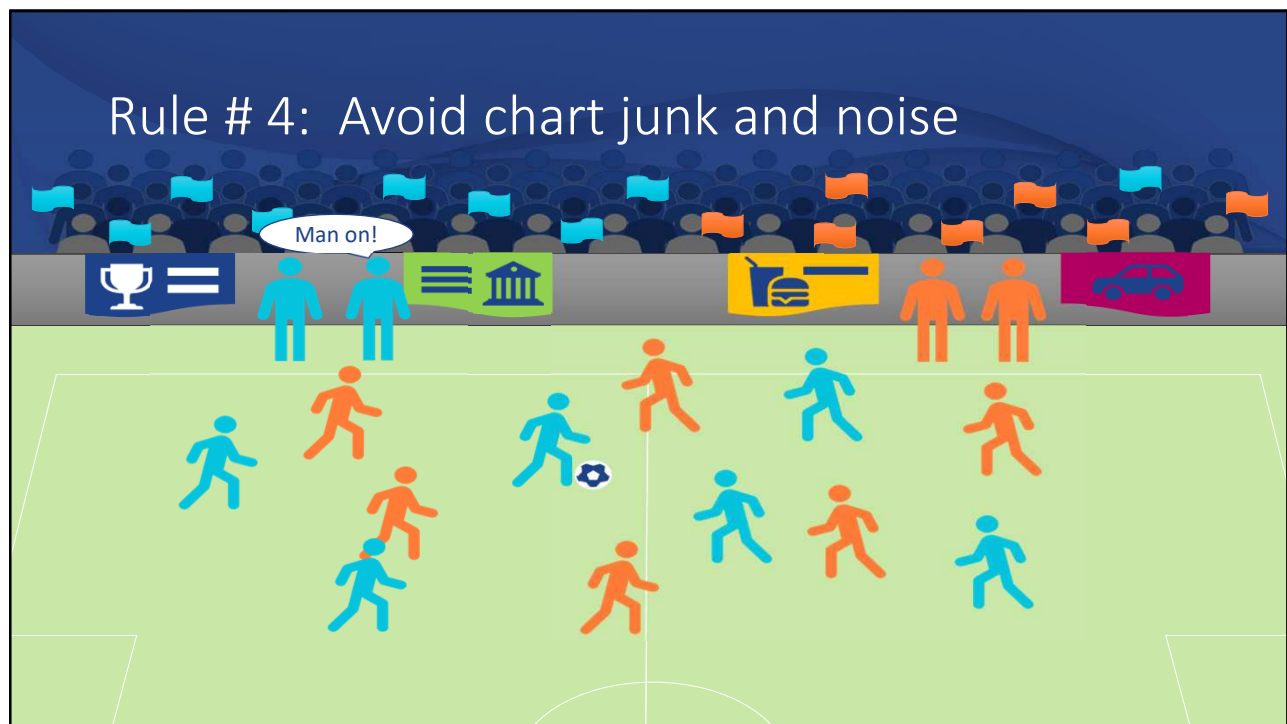Design Tips:

- Focus on the story you want to tell!
- Don't try to put in too much data
- Don't try to use too many series

Sales $ Comparisons by Product

5 Rules of Effective Charting

Rule # 4: Avoid chart junk and noise

Always:

- Customize your charts
- Remove unnecessary elements
- Always skip the 3D chart options
- Skip adding extraneous elements unless they add value

Chart Junk confuses and distorts the story (sometimes intentionally!)

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5 Rules of Effective Charting

Rule # 5: Review your completed chart

Ask yourself:

Does the chart REALLY tell the story you intended?
Could it be displayed in a better format?
Is it self-explanatory?
Can you review anything to make it more effective?

Perspective

My play was a complete success. The audience was a failure.

-Ashleigh Brilliant

Follow the 5 rules, and you shouldn't end up here!
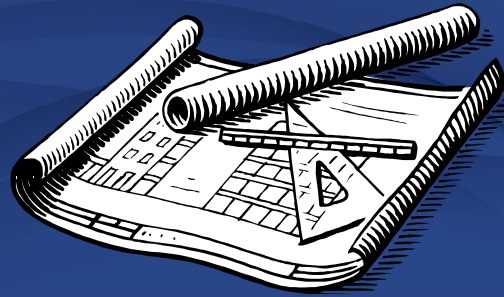
Building Effective Charts

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Pie Charts

VS 12:25

Great for
- Showing one point makes up majority
- Attracting attention

<u>The</u> most overused chart type
- Too hard to interpret
- The brain has a tough time with angles
- Lacks precision
- 3D adds distortion to make it harder

If you **MUST** use a pie chart

Minimize the info
- No more than three data series

Call out the key info
- Label your series

Minimize the noise
- Remove all fill areas

Try an alternate layout for a bar or a column chart. You will probably find it more effective!

Start From:
Pie Chart - Begin.xlsx

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Bar Charts

Great for
Comparing values against each other

Choose over Column Charts when:
Category names are long
All category names are needed

Suggested Modifications

Add precision
Add data labels

Minimize the noise
Remove gridlines
Remove the X axis

Start From:
Bar Charts - Begin.xlsx

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Column Charts

Great for
Comparing values against each other

Choose over Bar Charts when:
Category names are short
Category names can be implied

Suggested Modifications

Add precision
Add data labels

Minimize the noise
Remove gridlines
Remove the Y axis

Start From:
Column Charts - Begin.xlsx

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Line Charts

Great for

Comparing values over time

Caution

Lines imply data where it doesn't exist

Used curved lines sparingly

Don't add too many series

Suggested Modifications

Add precision

Add markers

Add data labels to a single series

Make better use of space

Plot date axis on tick marks

Consider controlling Y axis boundaries

If your data is always close to target, consider plotting the variance from target versus a 0 axis.

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Start From:
Line Charts - Begin.xlsx

Combination Charts

Great for

Showing different data in best format

Telling different stories in one chart

Creating engagement

Changing a "flat" chart to a Combo Chart

Select any series on your chart

Right click the series

Go to Change Series Chart Type

Combination charts are the secret to "black magic" charting in Excel
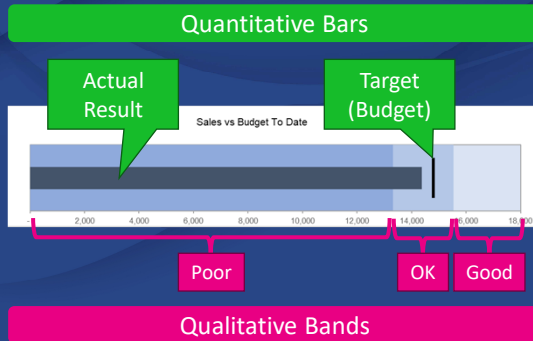
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Start From:
Combination Charts - Begin.xlsx

Bullet Charts

The elements of a Bullet Chart

Quantitative Bars

Actual Result

Target (Budget)

Sales vs Budget To Date

2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000

Poor   OK   Good

Qualitative Bands

Copy the template from:
Templates\Bullet Template.xlsx

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Bullet Chart Recipe

Copy the template into your file
- Open the template file
- Copy the chart into your solution
- Close the template

Link the chart to your data
- Link all data as described
- Copy the chart to your dashboard
- Hide the worksheet with the charts on it

Do this for each bullet chart you need

Start From:
Bullet Charts - Begin.xlsx

Waterfall Charts

Reading a Waterfall Chart

+250

-500

1,000

750

Copy the template from:
Templates\Waterfall Template.xlsx

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Waterfall Chart Recipe

Copy the template into your file
- Open the template file
- Copy the chart into your solution
- Close the template

Link the chart to your data
- Link all data as described
- Copy the chart to your dashboard
- Hide the worksheet with the charts on it

Do this for each waterfall chart you need

Catch-up Point:
Waterfall Charts - Begin.xlsx

Adding Interactivity

Adding Interactivity

Method overview
- Change an input
- Restate the dashboard source data

Plumbing
- Base dashboard fields/charts off a dynamic source
- Drive inputs from dashboard controls

Controls To Drive Dashboards

Any dashboard
- Data Validation lists
- Form Controls

PivotTables
- Slicers (Excel 2010+)
- Timelines (Excel 2013+)

> An awesome walkthrough of data validation lists (including write-ups and videos can be found at http://www.contextures.com/xlDataVal01.html

> My article on using Form controls can be found at:
> https://www.excelguru.ca/content.php?151

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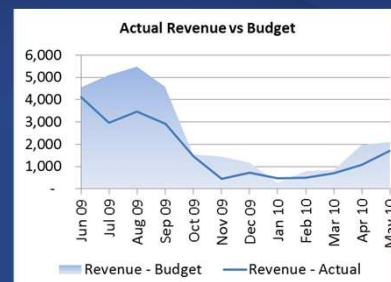# "Dynamicizing" Sales To Budget

Converting Sales to Budget to be dynamic

Toggle between livestock categories

Update all dashboard items at once

Actual Revenue vs Budget

Revenue - Budget   Revenue - Actual

Start From:
Dynamicizing - Begin.xlsx

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Interactive Pictures

VLOOKUP for pictures
- Create a "picture" table
- Name the picture cells
- Name a "driver" cell
- Adjust the named formula to use the INDIRECT() function
- Create a linked picture
- Update the picture's formula
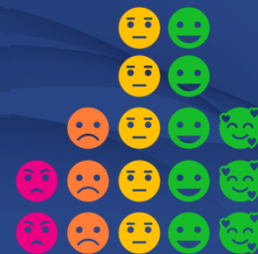
Full steps to accomplish this can be found at
https://www.excelguru.ca/content.php?279

Start From:
Interactive Pictures-Begin.xlsx

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Infographics

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Infographics

What is an Infographic?
- Collections of Graphics in one place
- Usually an illustrated story

The Purpose of an Infographic
- Tell a story
- Engage the user
- Hold the user's attention

Building Infographics

Create individual "Info Pieces"
- Create a chart
- Add shapes
- Group them together

Add more "Info Pieces"

Add background images/icons

Catch-up Point:
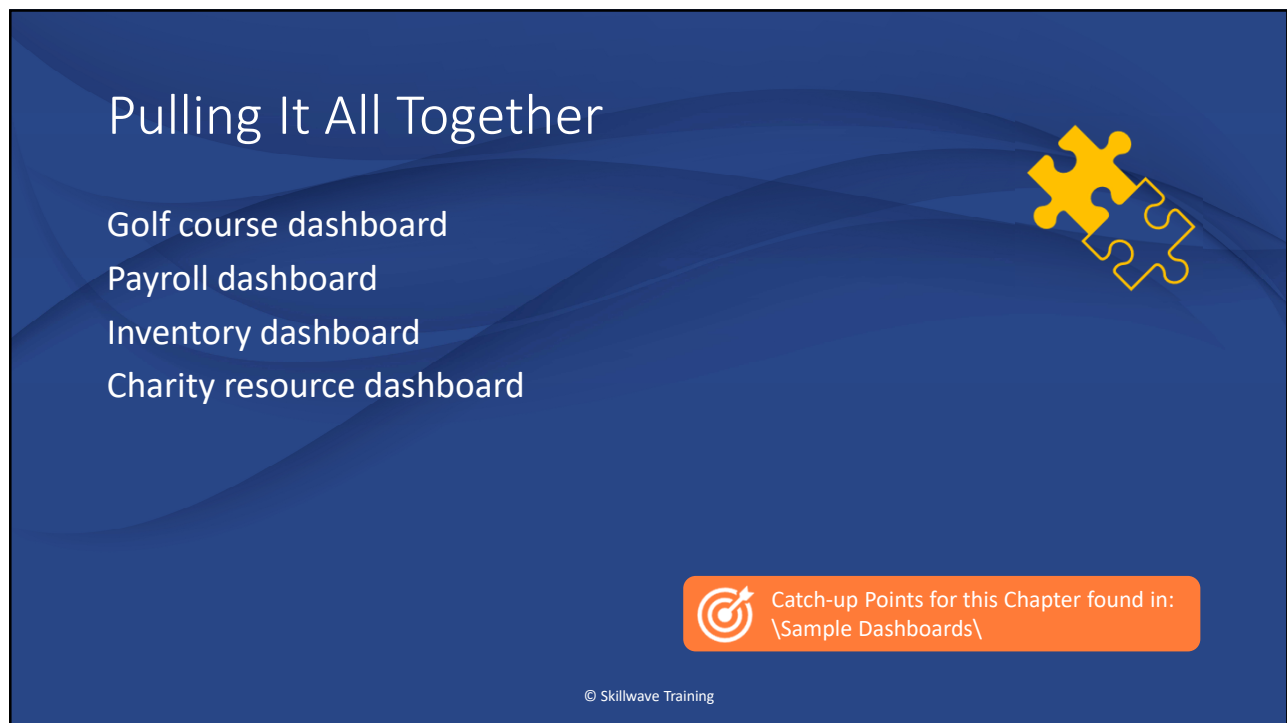Infographics - Begin.xlsx

Sample Dashboards

Pulling It All Together

Golf course dashboard
Payroll dashboard
Inventory dashboard
Charity resource dashboard

Catch-up Points for this Chapter found in:
\Sample Dashboards\

Resources & Reference Materials

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Free Help Forums

Excelguru Forums

Excel, Power Query, Power Pivot, Power BI and more!

http://www.excelguru.ca/forums

What we offer

A world-wide community of volunteer experts

Help with issues in YOUR data!

> We allow you to upload your own data, however…
> forums are public places. Take the time to mock up a small sample!

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Useful Articles

Using Form controls in Excel
    https://www.excelguru.ca/content.php?151

Panel charts
    http://peltiertech.com/Excel/ChartsHowTo/PanelChart1.html

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    Excel, Office 365 & Power BI

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Upcoming Courses & Events

Subject	Date	Location
What's New in Excel (PD Nexus Days Breakout Session)	Fri, October 25, 2019	Kelowna, BC
An End to Manual Effort: The Power Query Effect	Mon, December 9, 2019 Fri, December 13, 209	Coquitlam, BC Victoria, BC
Intro-Mediate Excel Techniques	Tue, December 10, 2019	Vancouver, BC
Optimizing Data for Power Pivot using Power Query	Wed, December 11, 2019	Vancouver, BC

For course details and registration links, visit the Excelguru Course Calendar at
http://xlguru.ca/calendar

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