Data Visualization Tips for Oracle BICS and DVCS

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About Me

- Computer Engineer, BI and Data Integration specialist
- Over 19 years of Consulting and Project Management experience in Oracle technology.
- Co-founder and Vice President of Uruguayan Oracle User Group (UYOUG)
- Director of Community of LAOUC
- Co-founder of AWEN Consulting.
- Business Intelligence articles published on OTN site
- Frequent speaker at international conferences:
  - Collaborate, OTN Tour LA, UKOUG Tech & Apps, OOW, Rittman Mead BI Forum
- Oracle ACE Director

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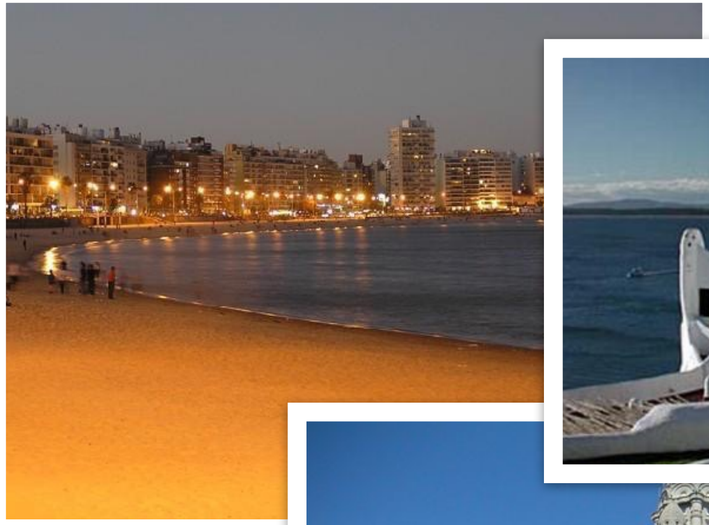

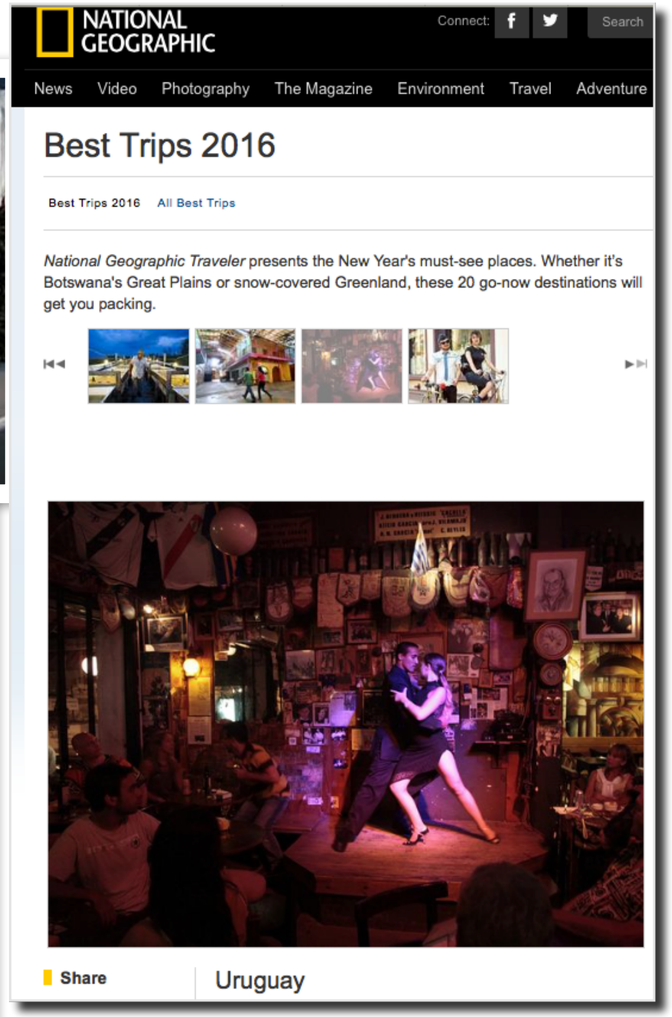
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Agenda

- What is the Objective of Data Visualization?
- Why Choosing the Right Data Visualization is important?
- How to Choose the Right Visualization
- Graph Examples
- Visualisation Tips
  - How OBICS & DVCS can help?
- Filtering Data
- Adding Text
- Storytelling
- Conclusions

What is the Objective of Data Visualization?

- “The real purpose of quantitative displays (tables and graphs) is to provide the reader with important, meaningful and useful insights”

- Data visualization is the use of visual representations to explore, make sense of, and communicate data

- *Stephen Few*

Why Choosing the Right Data Visualization is important?

- The message that you deliver through a data visualization should be clear and effective

  - A confusing message could:
    - Lead to wrong conclusions and decisions
    - Give the idea that the data is not trustable

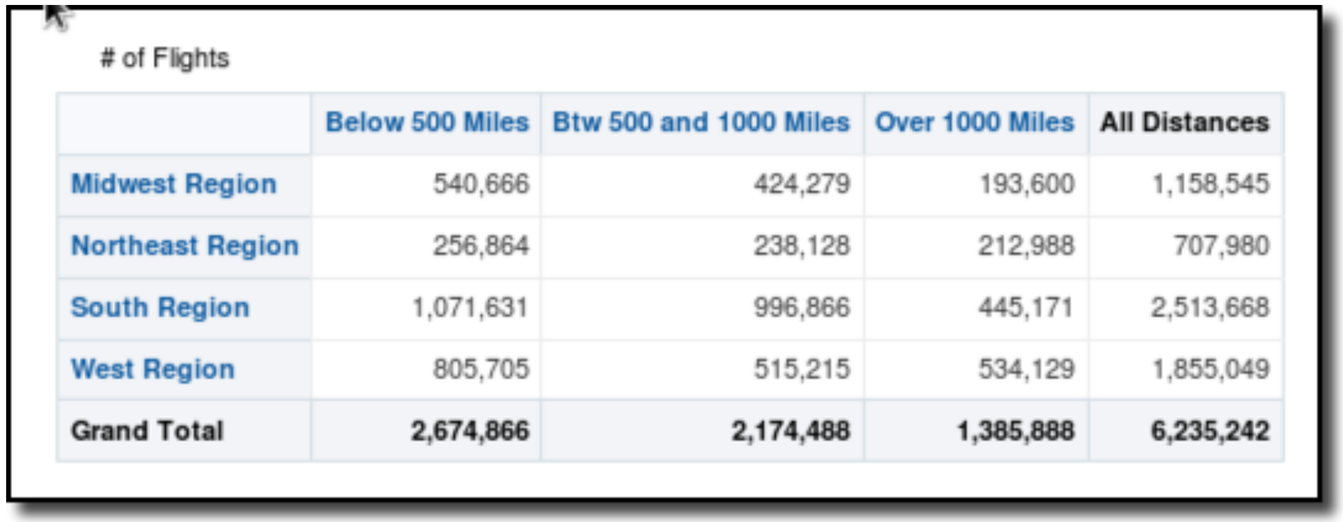
Steps to Choose the Right Data Visualization?

- Not every data visualisation will work for any type of data

- First choice: Select between Tables and Graphs
- Second Choice: For Graphs, you need to choose among a wide range of different types

Choosing Between Tables & Graphs

- Use **Tables** when:
  - Need to present precise values
  - Compare individual values
  - Need to show totals and detail values
  - Need to use different measure units

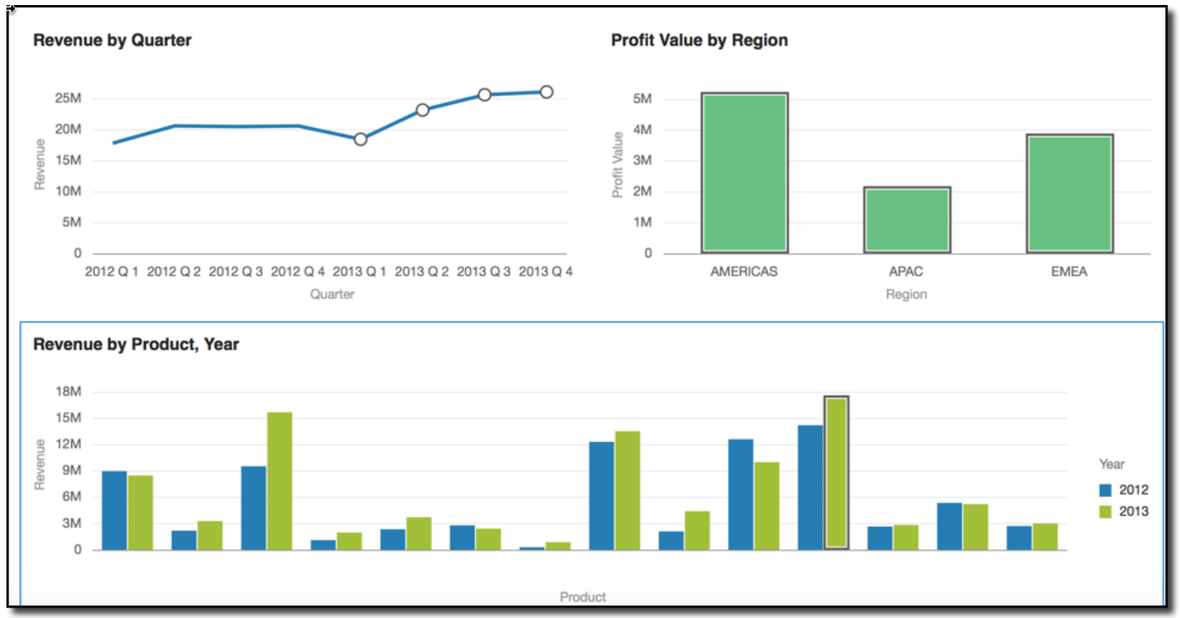


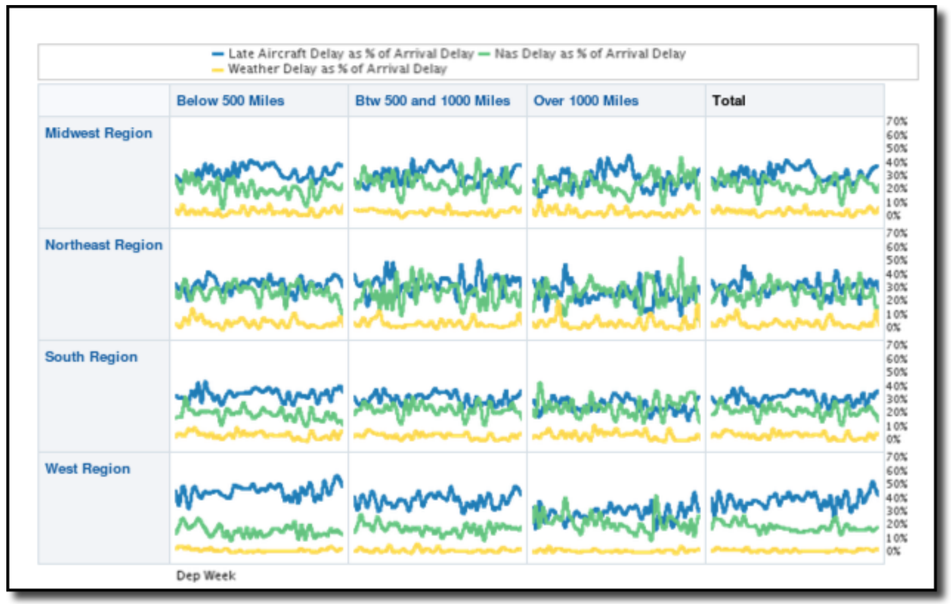
# of Flights

	Below 500 Miles	Btw 500 and 1000 Miles	Over 1000 Miles	All Distances
Midwest Region	540,666	424,279	193,600	1,158,545
Northeast Region	256,864	238,128	212,988	707,980
South Region	1,071,631	996,866	445,171	2,513,668
West Region	805,705	515,215	534,129	1,855,049
Grand Total	**2,674,866**	**2,174,488**	**1,385,888**	**6,235,242**

Choosing Between Tables & Graphs

- Use **Graphs** when:
  - Need to show relationships among data like patterns, trends, and exceptions
  - Work with larger sets of data
  - Want to reveal relationships among whole sets of values





Data Visualization Tips for Tables

- Use clear grey gridlines or eliminates them
- Use small amount of data to avoid scrolling
- Use space to separate or group data
- Standardise how to show specific datatypes:
  - Numbers aligned to the right
  - Use decimal and thousand separators
  - Text aligned to the left

Region	Product Type	# of Customers	Revenue
AMERICAS	Accessories	3,239	2,732,681.43
	Audio	3,577	11,318,318.57
	Camera	3,798	17,500,000.00
	Fixed	3,893	3,701,171.14
	Phones	4,152	12,720,731.55
	Portable	4,580	15,500,828.86
	Smart Phones	2,903	6,476,268.45
AMERICAS Total		**4,843**	**69,950,000.00**
APAC	Accessories	1,723	1,493,871.11
	Audio	1,956	5,938,128.89
		2,271	9,247,000.00
		1,914	1,998,308.99
		2,223	6,611,677.96
		2,478	8,227,691.01
		1,710	3,383,322.04
		2,902	**36,900,000.00**

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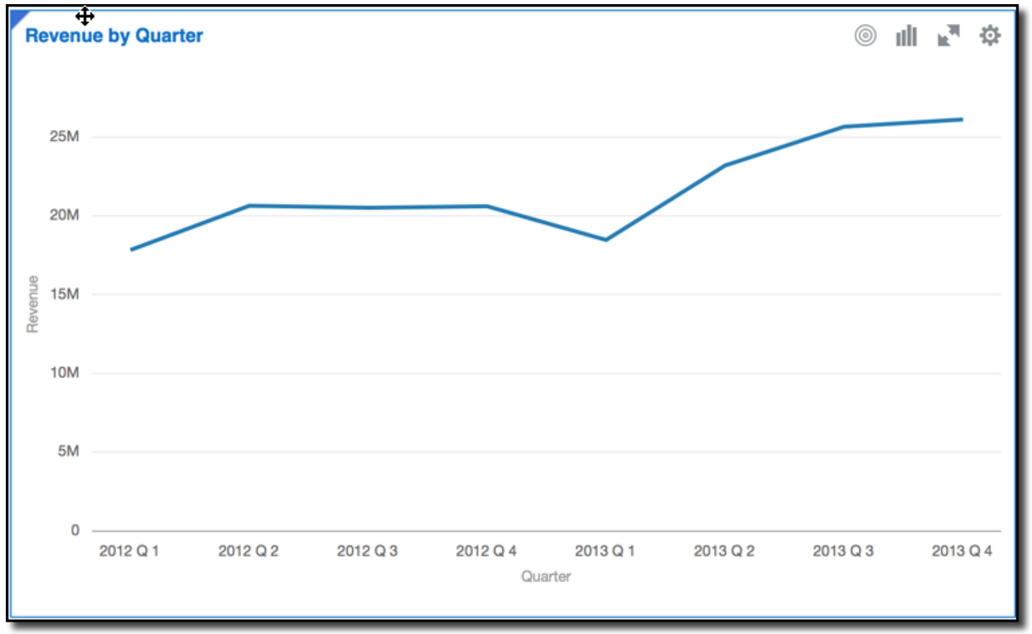
Choosing the Right Graph

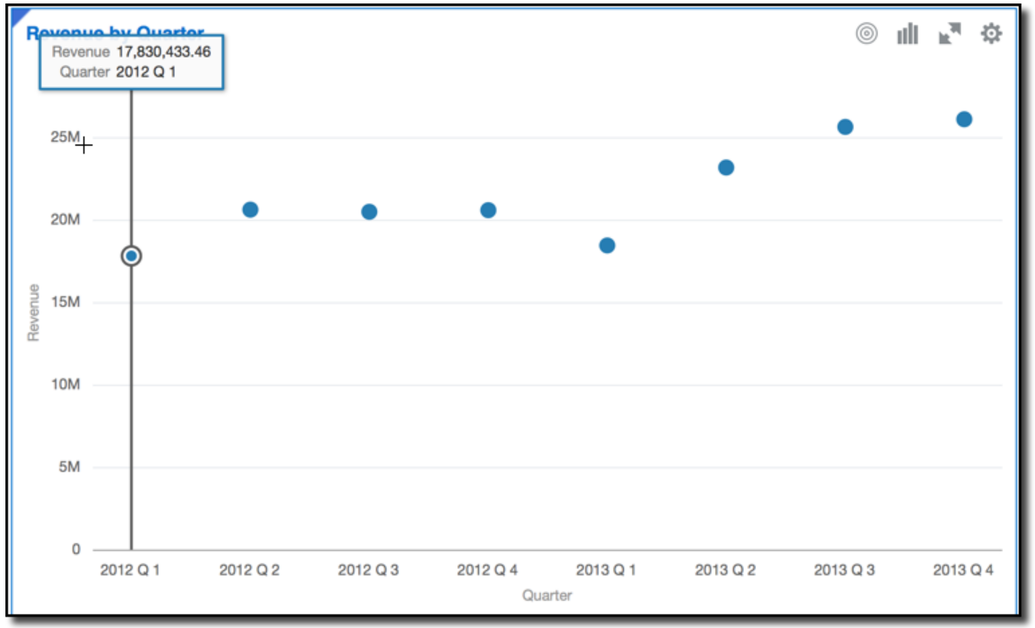
- To choose a graph consider:
  - The relationship between measures (quantitative data)
  - The relationship between measures and attributes (categorical items)
  - The task of this visualisation: compare, find a pattern, etc.

- Need some help?
  - Graph Selection Matrix by Stephen Few
    http://www.perceptualedge.com/articles/misc/Graph_Selection_Matrix.pdf

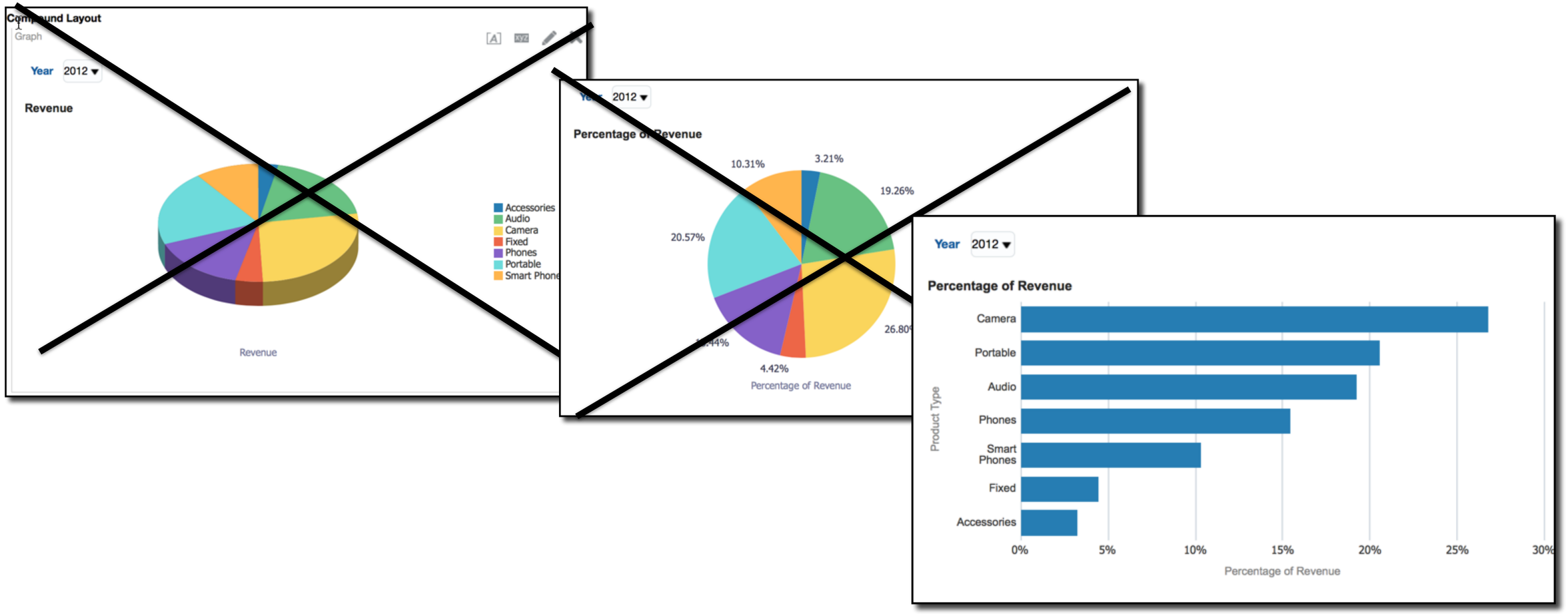
Choosing the Right Graph: Time Series



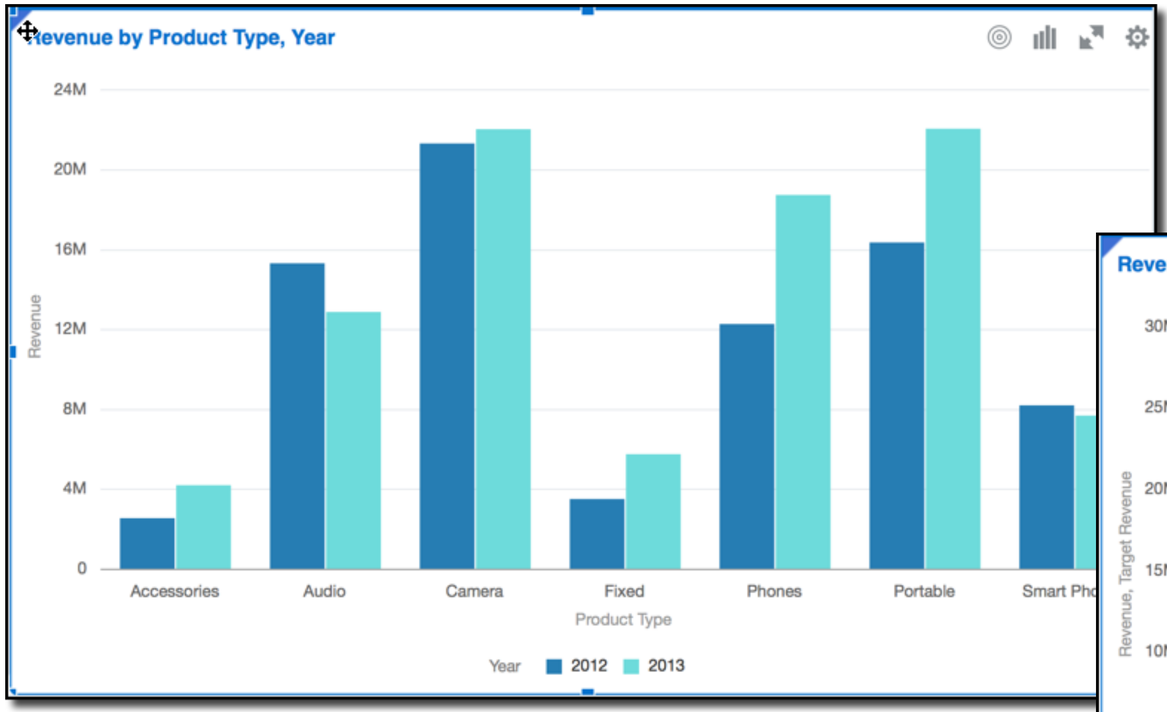
- Time should be always on the horizontal axis



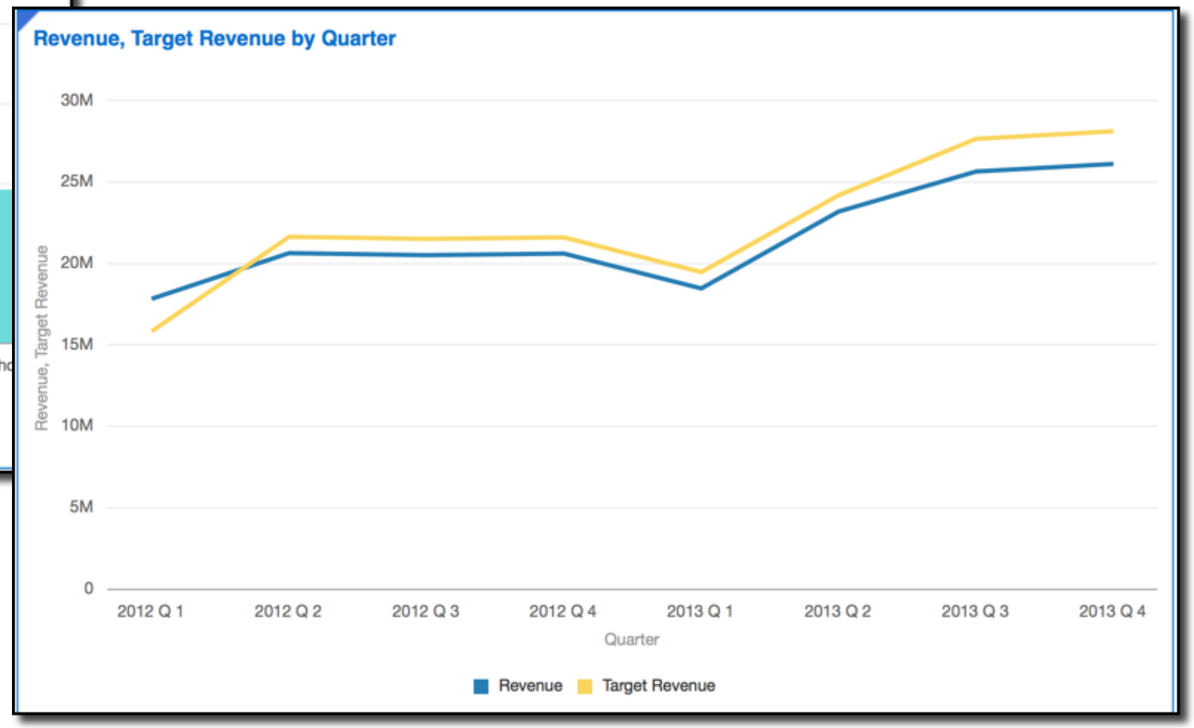
Choosing the Right Graph: Part-to-Whole



Choosing the Right Graph: Comparison

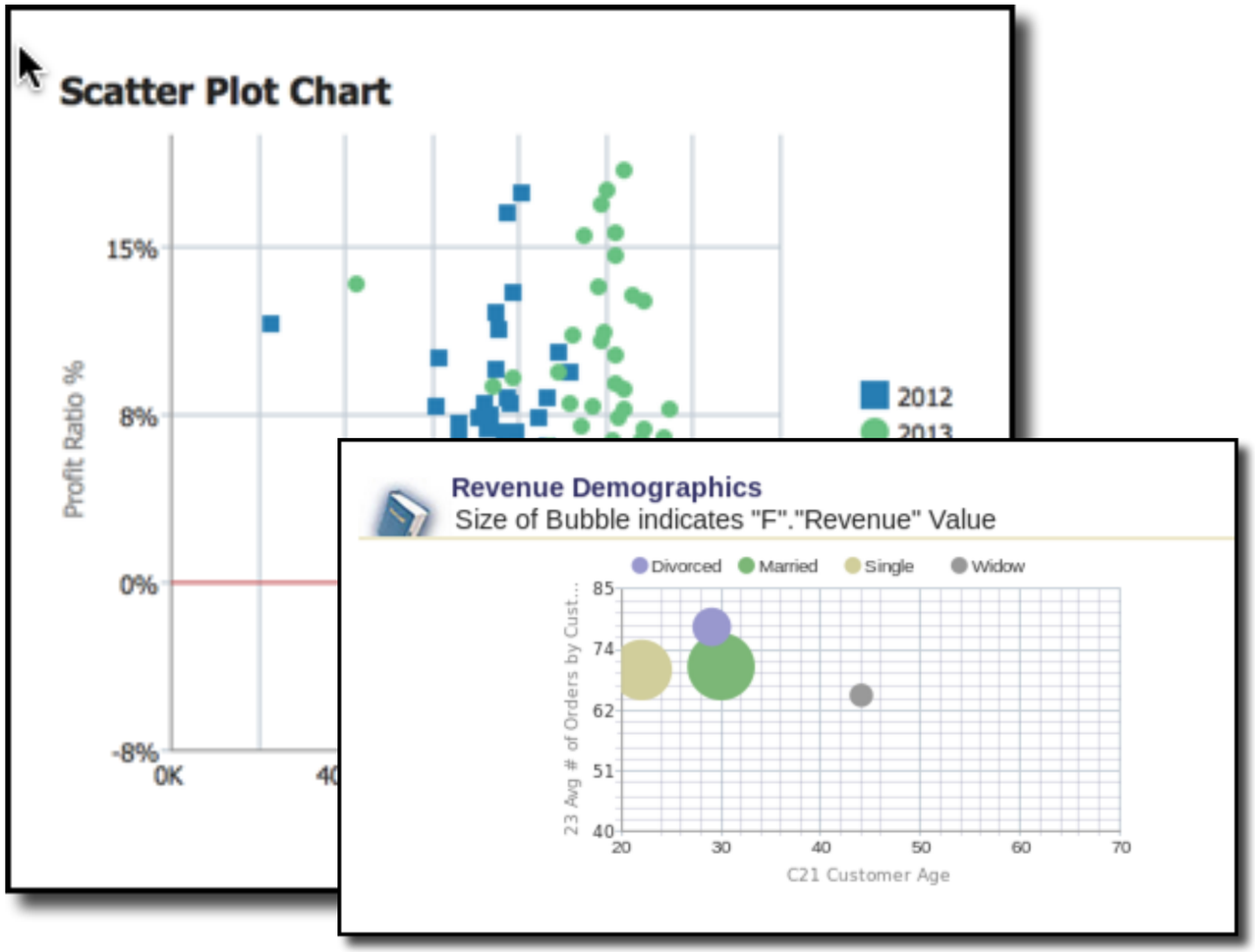


- Use Line Graphs to compare measures against time



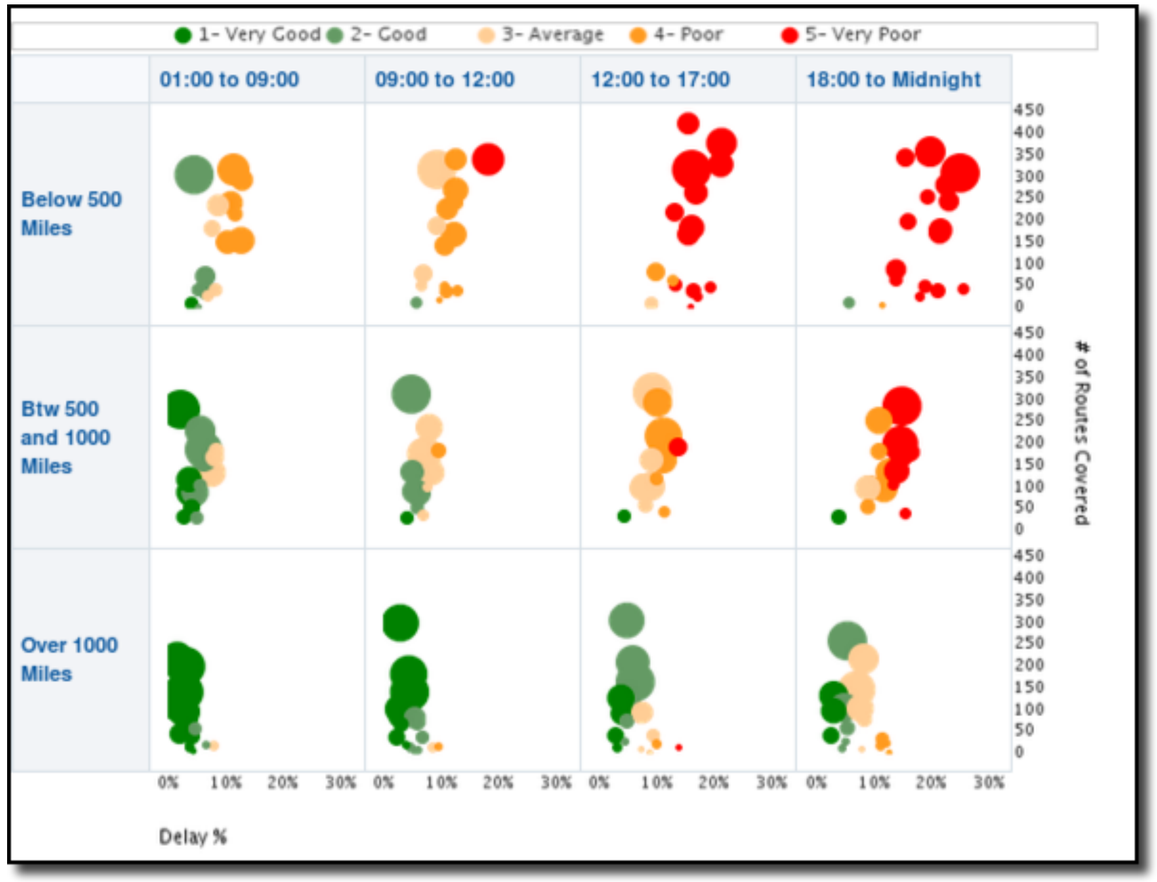
Graph Examples: Scatter Plot

- Can manage large volumes of data
- Useful visualisation for data discovery
- Reveal correlation patterns between two measures
- Easily identification of outliers
  - Data Points that are separated from the rest
- To show correlation between three measures use bubbles



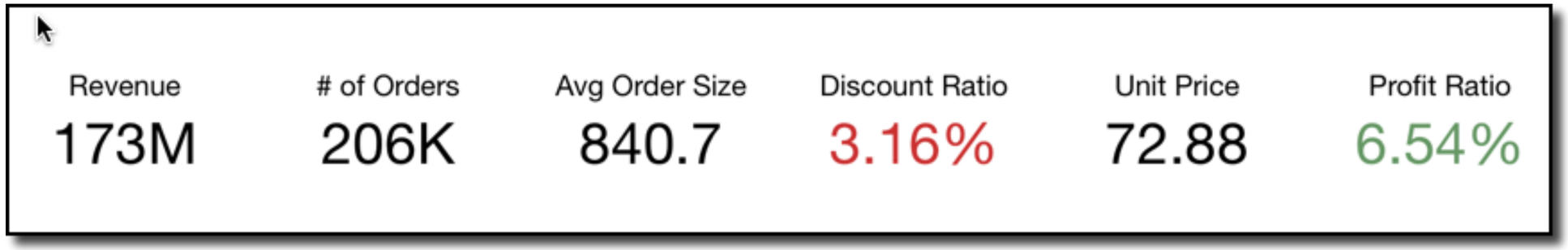
Graph Examples: Trellis

- Trellis is like a matrix or visual pivot table of graphs
- Good to discover trends in detailed data
- Helpful to explore complex and multiple dimension relationships.



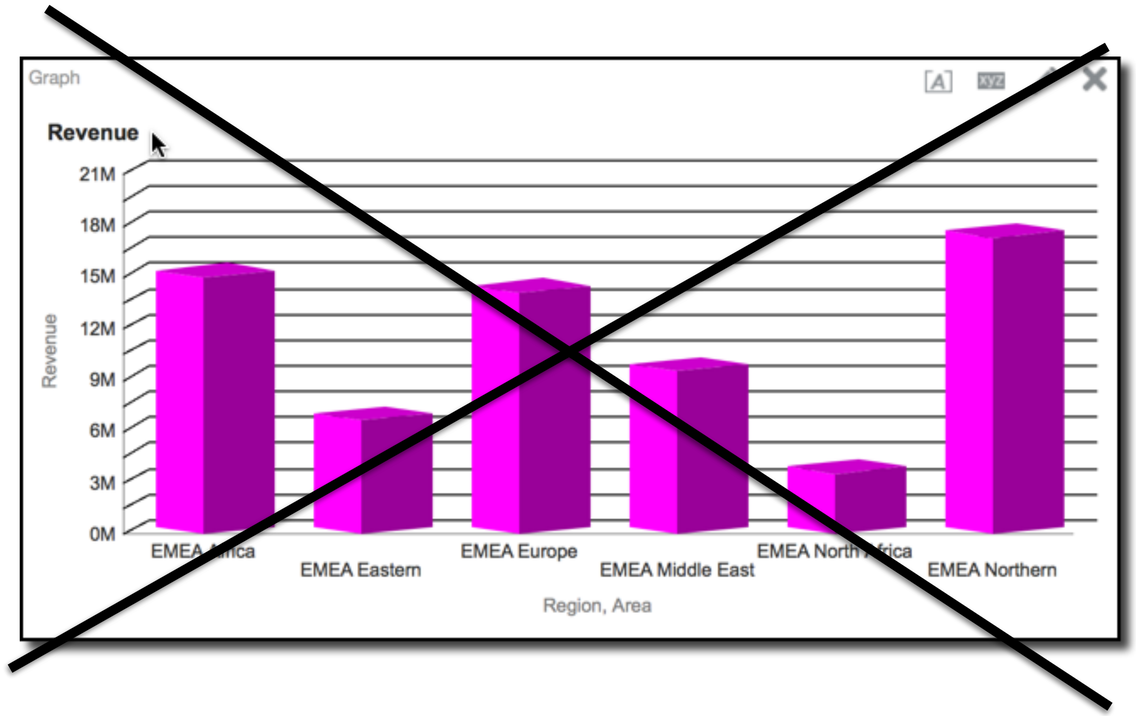
Graph Examples: Performance Tiles

- Performance Tiles are ideal to show aggregate data at a glance
  - Visually engaged
  - It takes a small amount of screen space



Keep it Simple

- Things to **AVOID** using in Graphs:
  - 3D, perspective and shadow effects
  - Bold colours for everything or Highlight everything
  - Dark grids
  - Fill patterns.
    - Use fill colors instead



- Also:
  - Be clear with the scale used in graphs
  - Use mouse rollovers in graphs allow users to see individual values.

About the Use of Colour

- Use a pastel colour palette.
  - Examples: *http://www.colorbrewer2.org* or *http://colourco.de*

- Use bold colours only to highlight important information

- Use colour for a purpose.
  - Identify the function of a particular colour
  - Example: Always use the same colour to represent the same measure

Oracle BI in the Cloud

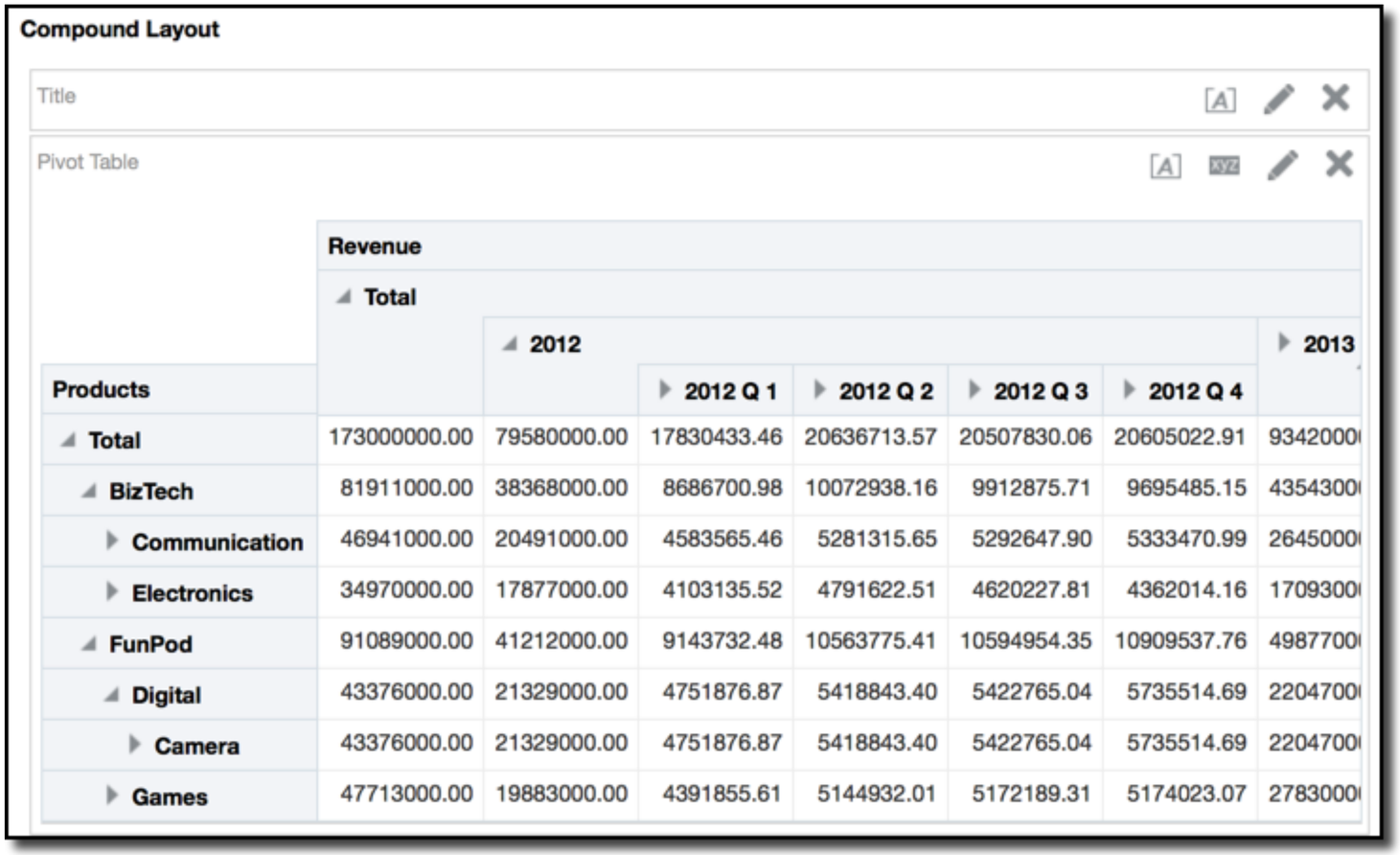
- Oracle offers two main BI products in the Cloud
  - OBICS (Oracle Business Cloud Service)
  - DVCS (Oracle Data Visualization Cloud Service)

Differences between OBICS and DVCS

	BICS	DVCS
Front-End Tools	Visual Analyzer, Analyses, Dashboards	Visual Analyzer
Data Sources	Database Cloud, Excel Files and Oracle Apps	Excel Files and Oracle Apps
Model Required	Yes, Star Schema model required	No
Database Schema Included	Yes	No

OBI Analyses

- Useful to create complex ad-hoc analyses
- Allow to work with hierarchy items columns and groups
  - OLAP Style
- Can navigate to other OBI Content or Websites
- Can be included in Dashboards



Compound Layout

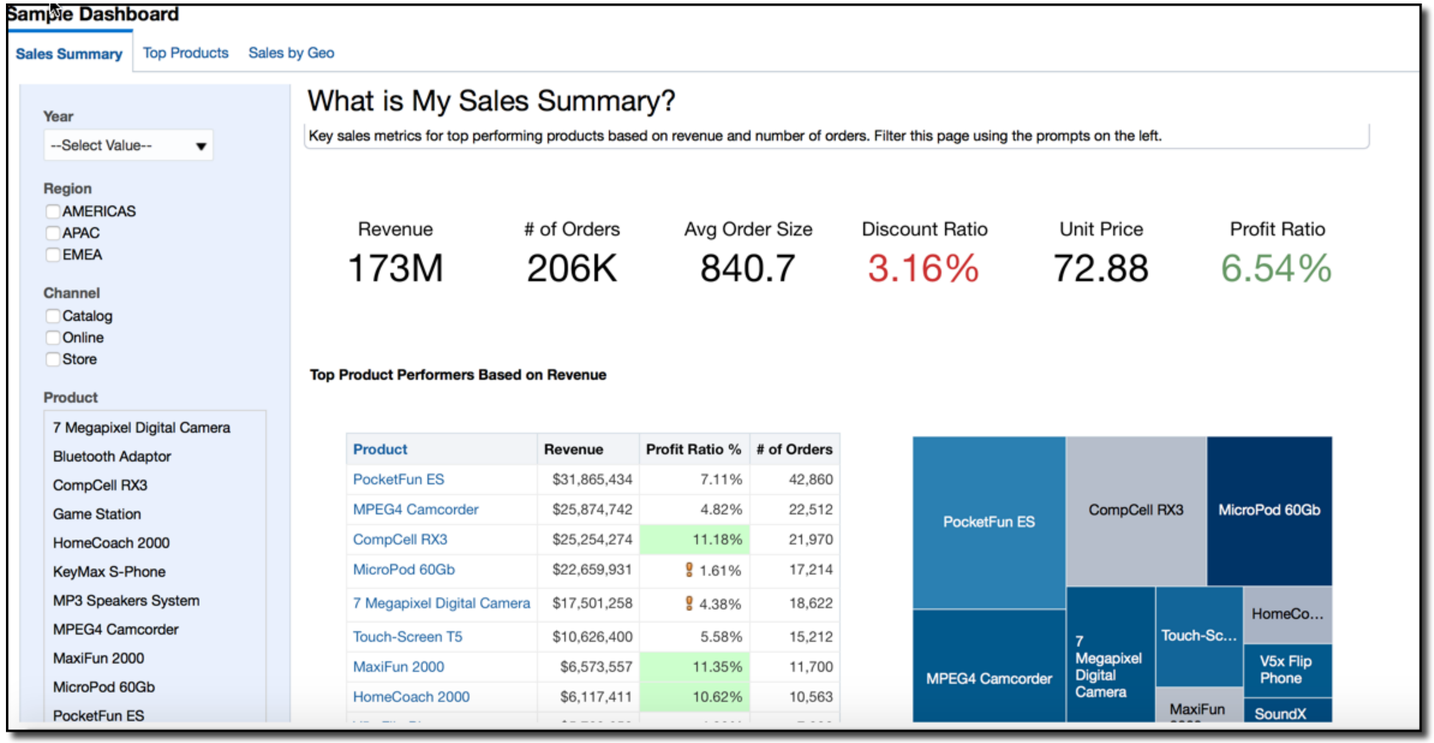
Title

Pivot Table

Products	Revenue						
	Total						
		2012					2013
			2012 Q 1	2012 Q 2	2012 Q 3	2012 Q 4	
Total	173000000.00	79580000.00	17830433.46	20636713.57	20507830.06	20605022.91	9342000
BizTech	81911000.00	38368000.00	8686700.98	10072938.16	9912875.71	9695485.15	4354300
Communication	46941000.00	20491000.00	4583565.46	5281315.65	5292647.90	5333470.99	2645000
Electronics	34970000.00	17877000.00	4103135.52	4791622.51	4620227.81	4362014.16	1709300
FunPod	91089000.00	41212000.00	9143732.48	10563775.41	10594954.35	10909537.76	4987700
Digital	43376000.00	21329000.00	4751876.87	5418843.40	5422765.04	5735514.69	2204700
Camera	43376000.00	21329000.00	4751876.87	5418843.40	5422765.04	5735514.69	2204700
Games	47713000.00	19883000.00	4391855.61	5144932.01	5172189.31	5174023.07	2783000

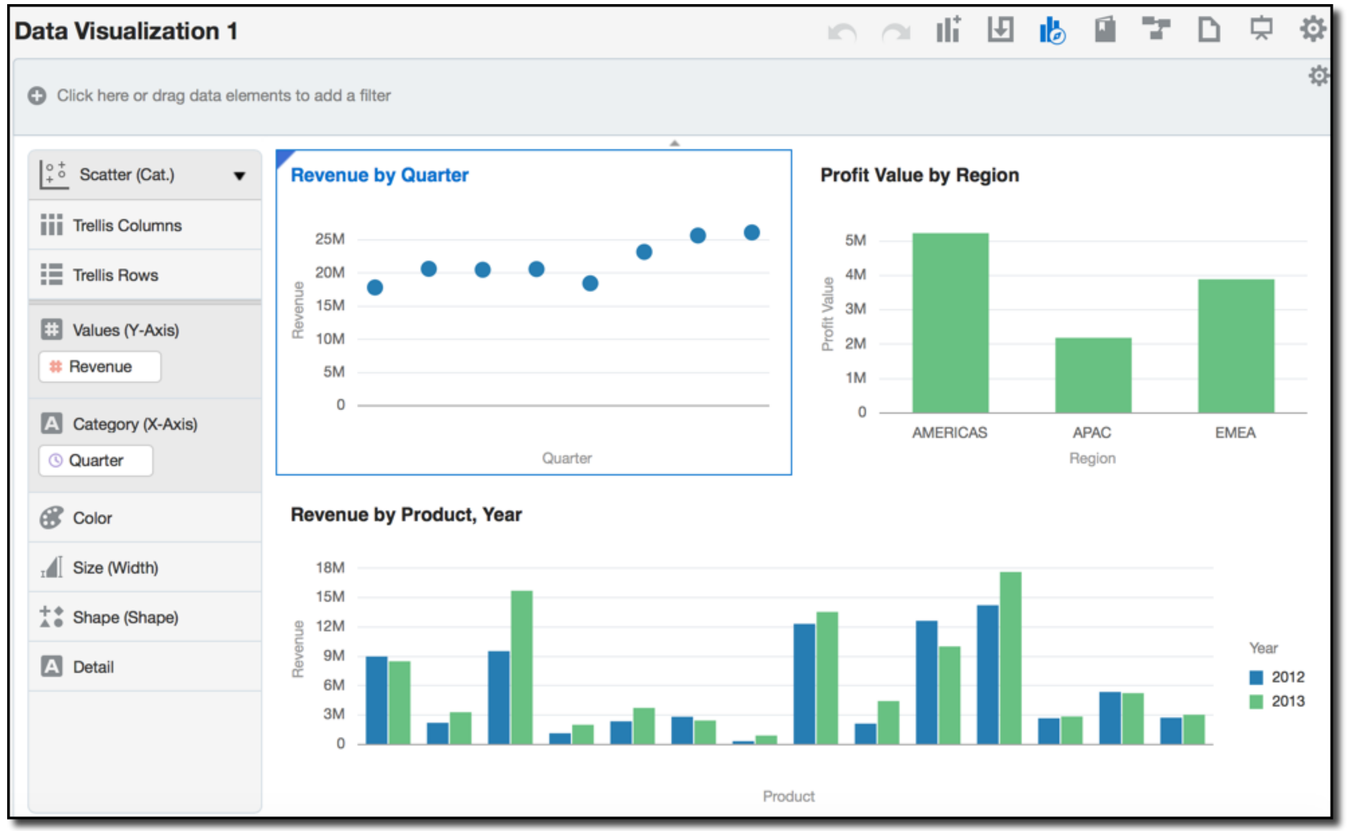
Dashboards

- Visual display where you can arrange your analyses to show a specific business topic in a single screen
- Can have many pages
- Prompts can be added to make it more reusable and give more flexibility to the user
- Allow customization



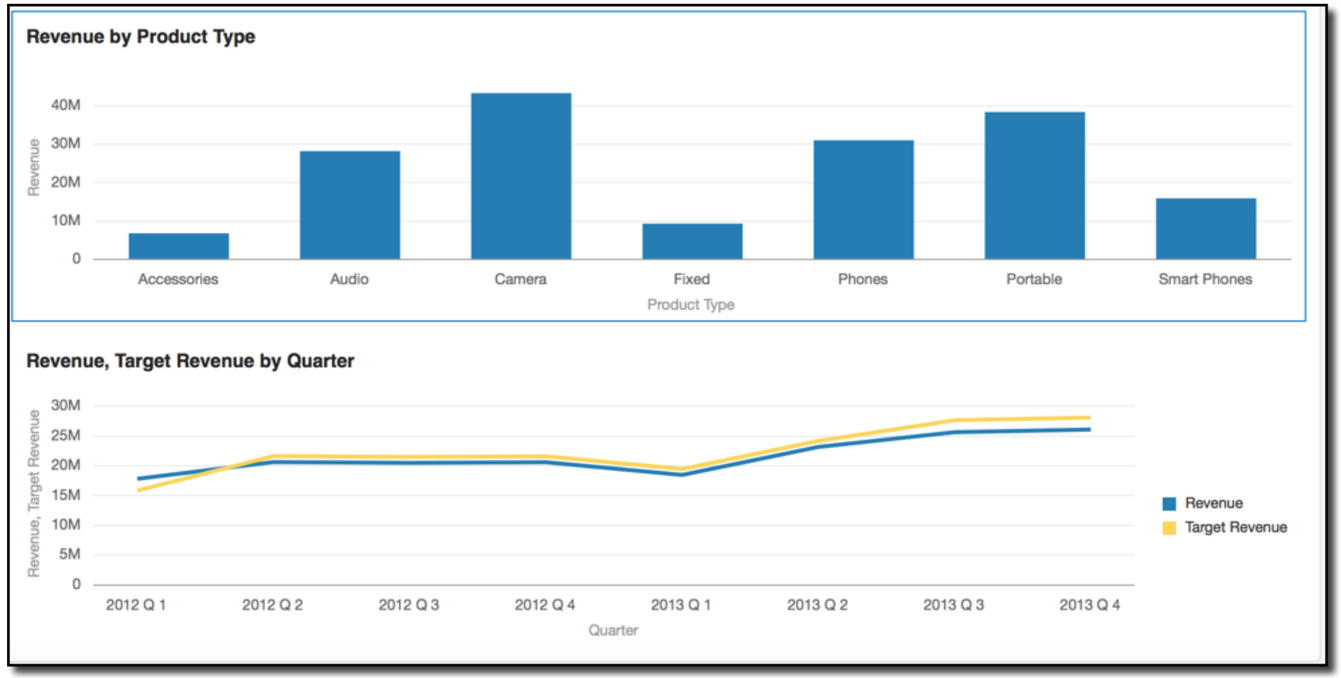
Visual Analyzer

- Visual Analyzer is a very intuitive and interactive web-based tool to explore and analyse your data
- Oriented to business users
  - Self-service oriented
  - Easy to use
- Cannot work with hierarchy columns and groups
- A complement to Answers and Dashboards for data exploration and discovery patterns



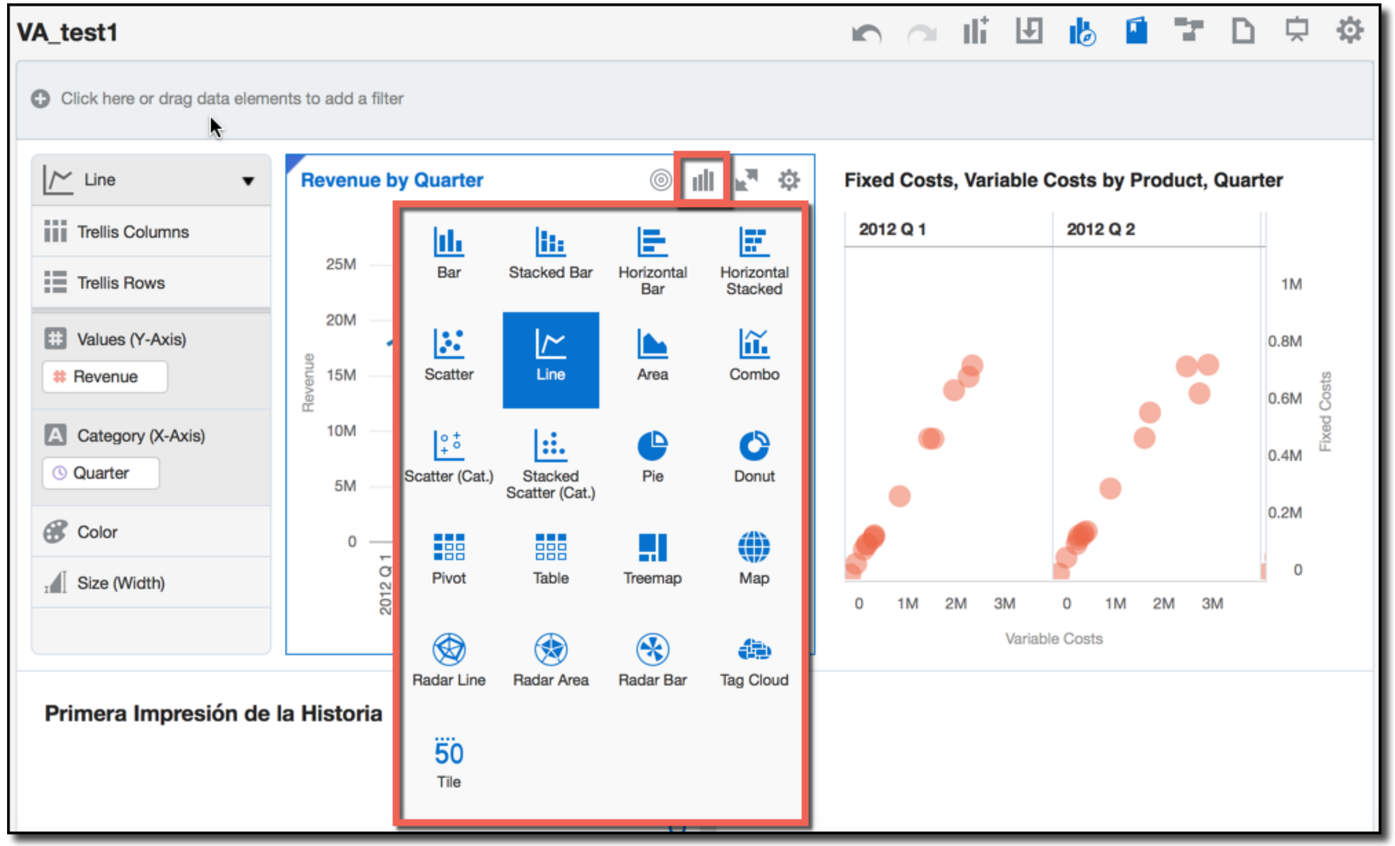
Visualisation Tips Included in Visual Analyzer

- Included in Visual Analyzer
  - No 3D or perspective
  - No shadow effects
  - Use of pastel colours
  - Clear or not gridlines
    - Makes easier to read the graph
  - Consistent use of colour:
    - Same measure -> Same color



Suggested Visualizations in Visual Analyzer

- When you drag data to the canvas, Visual Analyzer chooses the best visualisation
  - The visualisation type can be changed at any time.



Suggested Visualization for Analyses (Answers)

- In addition to all the visualizations type, there are two more options
  - Best Visualization
  - Recommended Visualization for specific task
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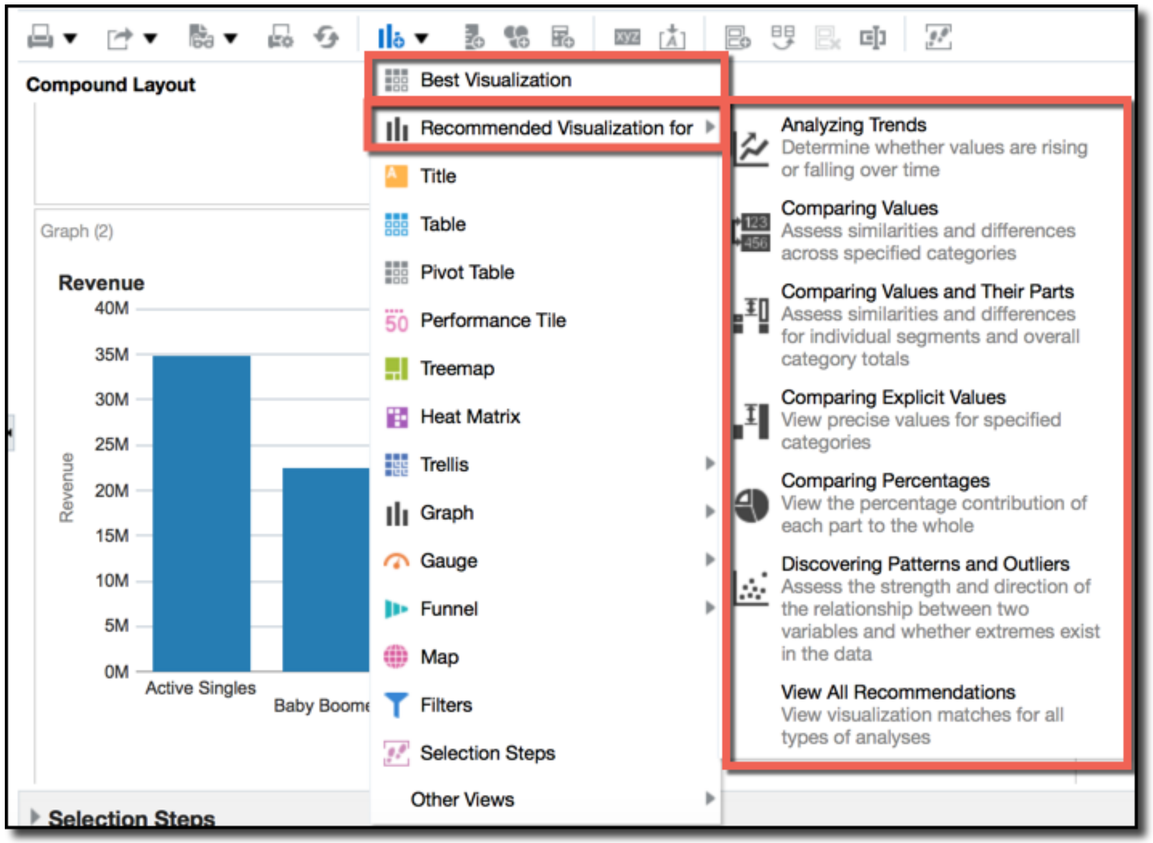
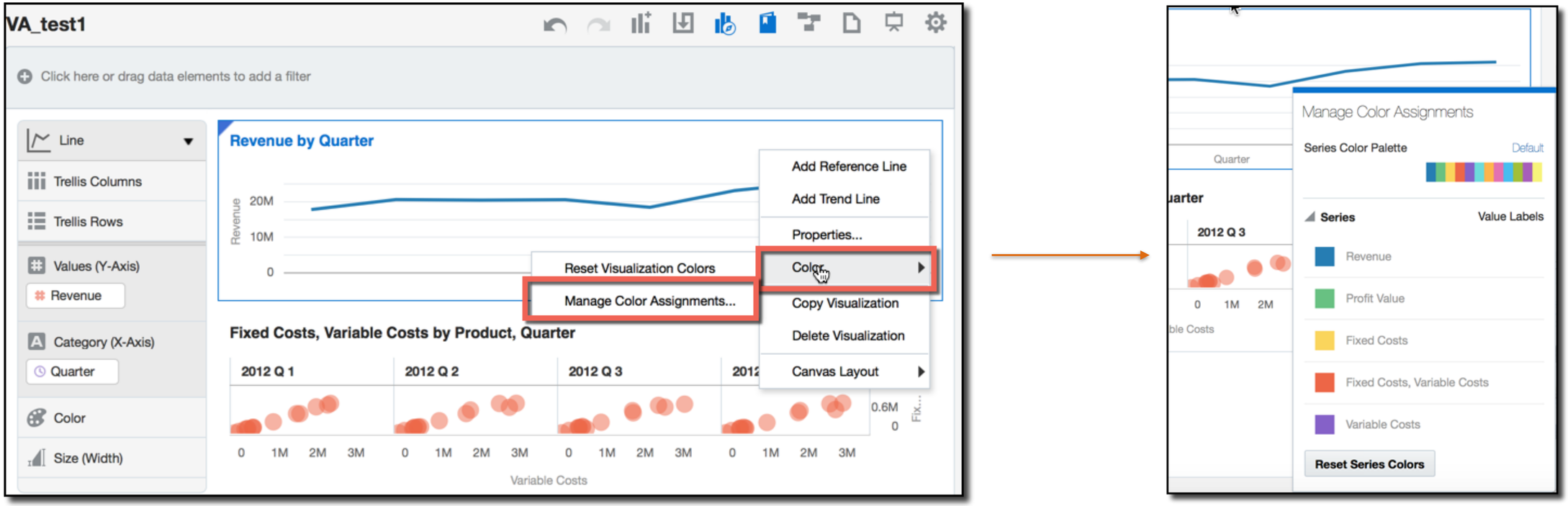
  - Best Visualization
  - Recommended Visualization for specific task



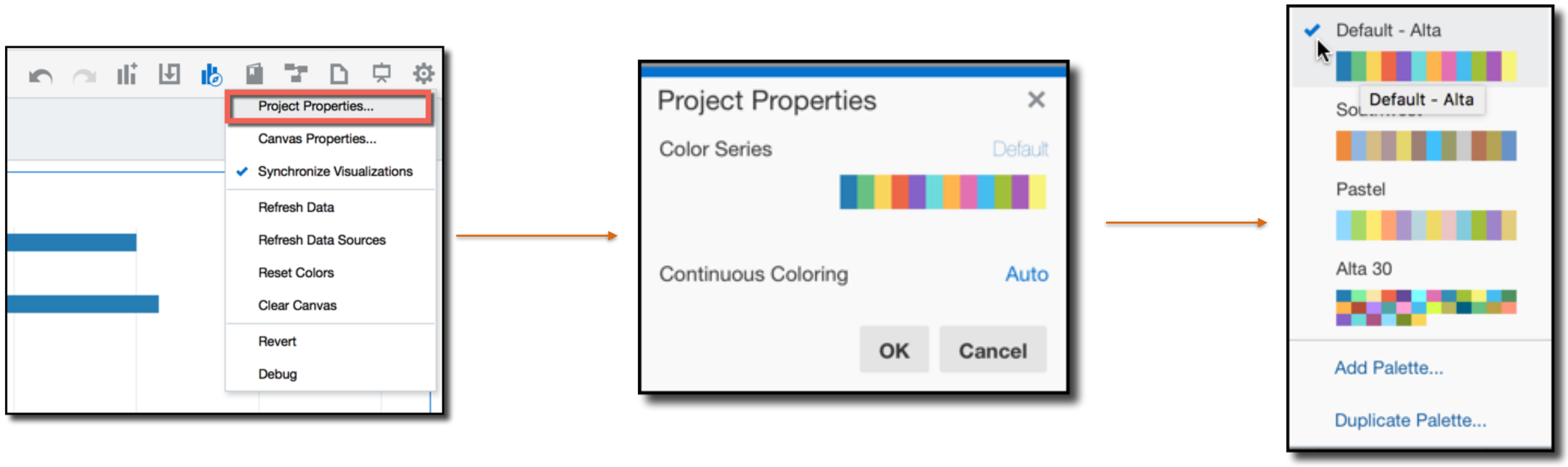
Setting Colors in Visual Analyzer

- You can change the default palette for visualizations or change the color for a particular visualization or even for specific measure



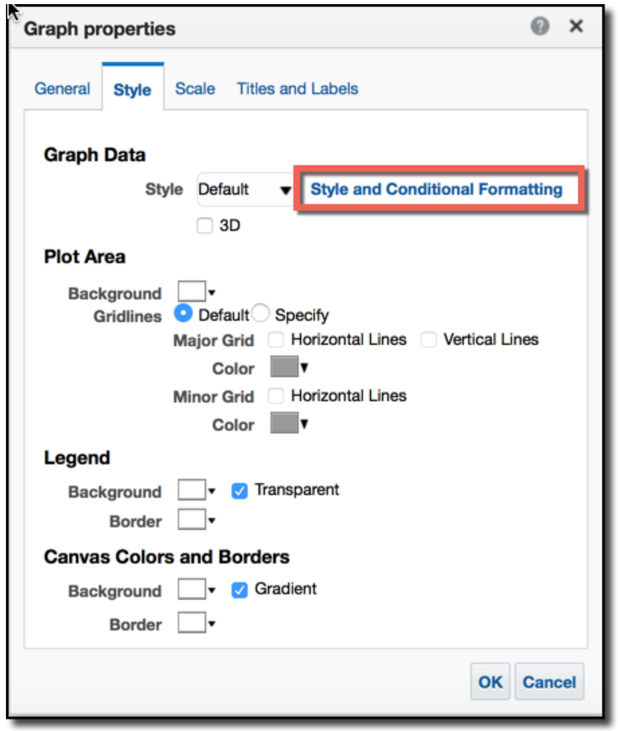
Setting Colors in Visual Analyzer

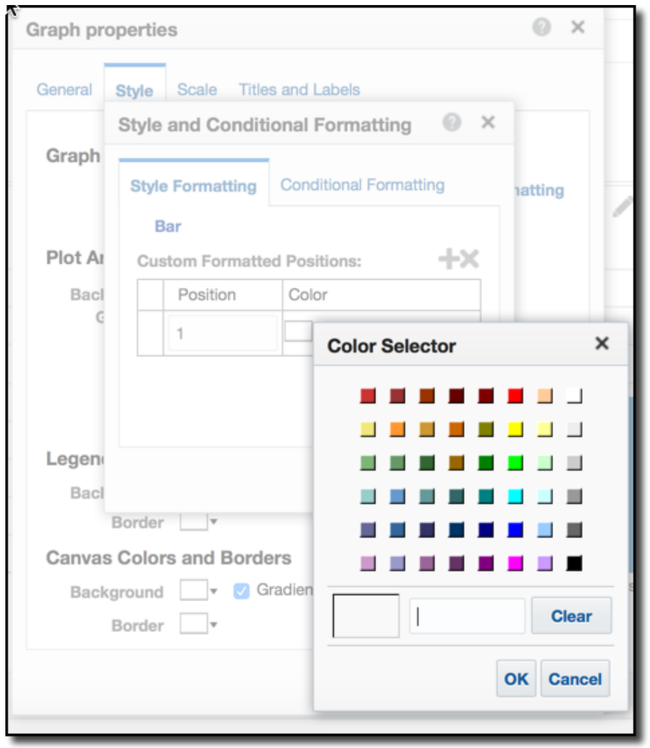
- Changing the complete palette of VA, modifying the Project Properties



Style and Conditional Formatting for Analyses

- Changing color in a graph is less intuitive.
- Can also define conditional formatting to highlight or grouping information depending on conditions

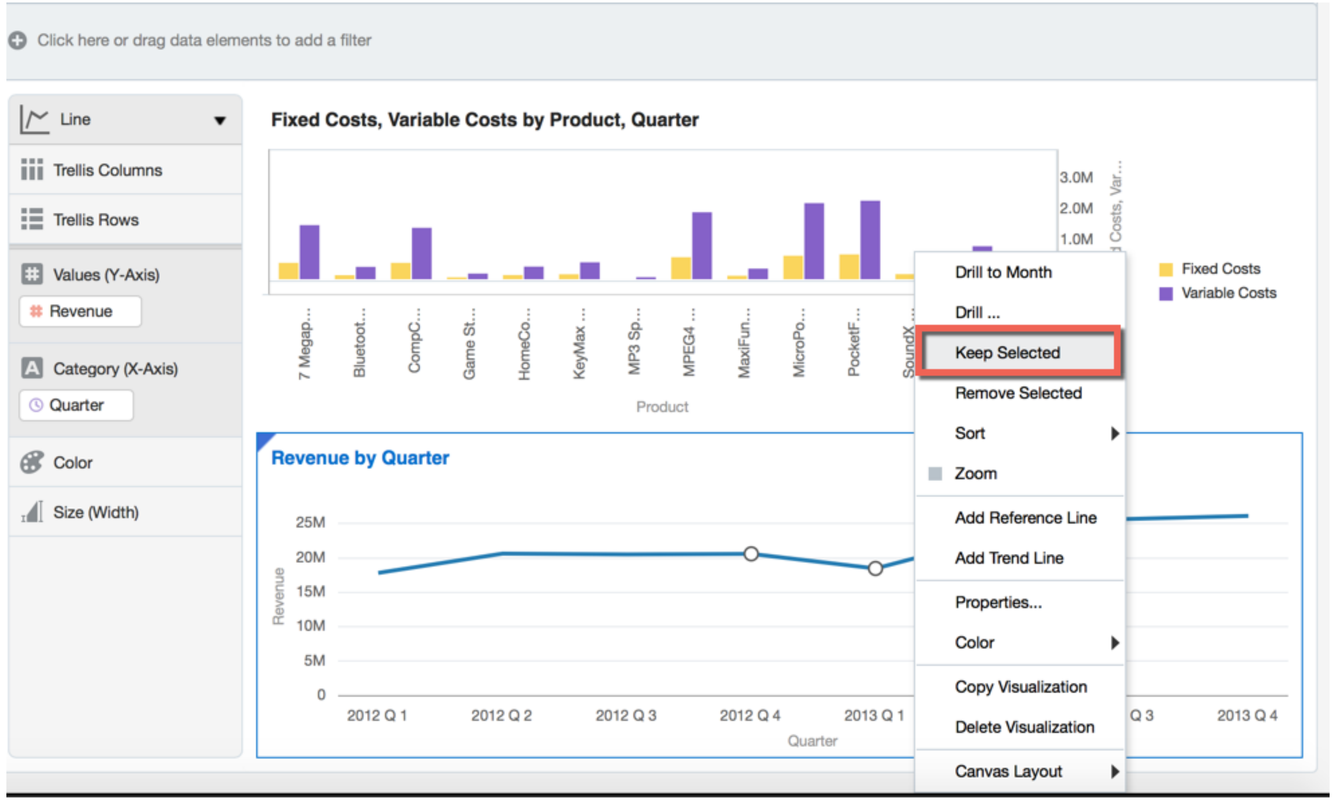




Filtering Data

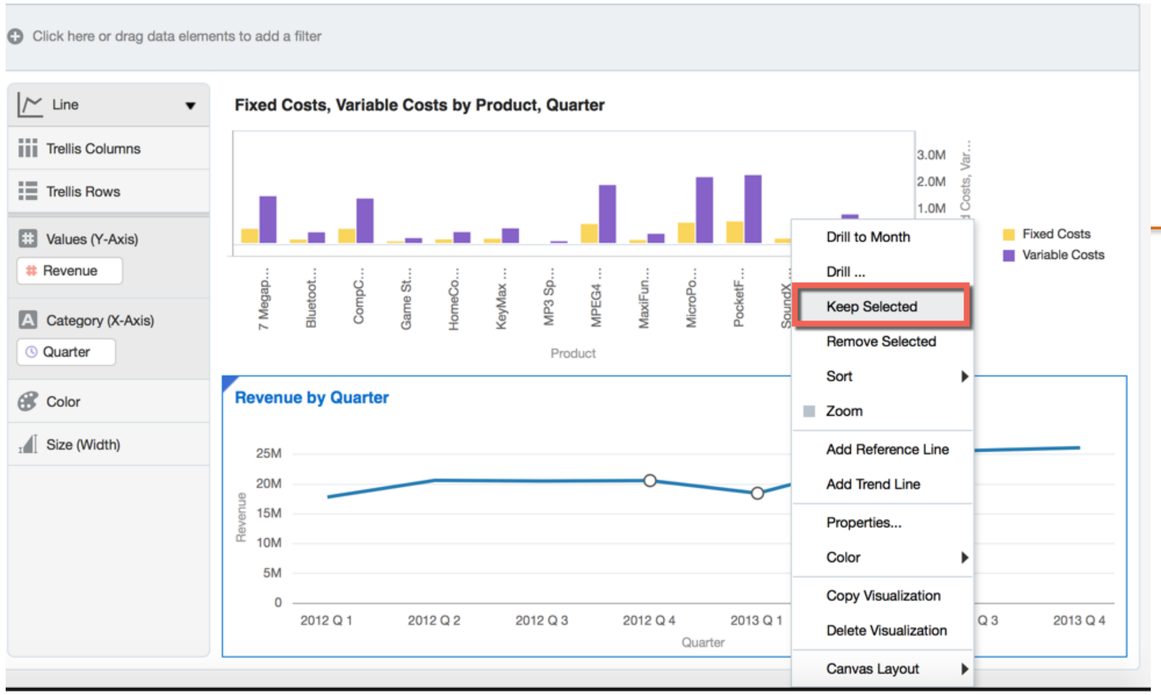
- Filtering data allow you to show only the information that is important for your data story.

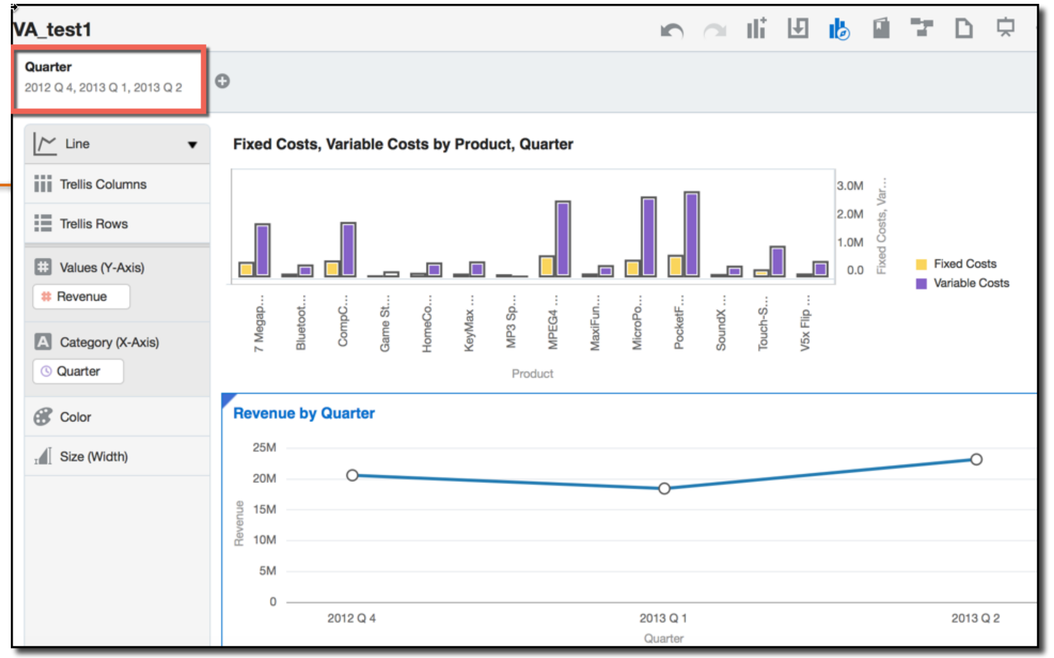
- In Visual Analyzer:
  - Using the Keep Selected option
  - (implicit filter)
  - Creating filters (explicitly)
    - Filter options
    - Expression filter



Using Keep Selected in VA

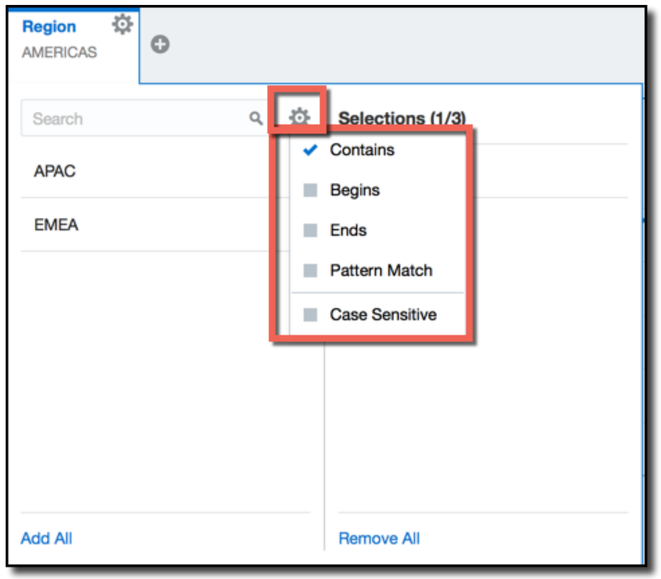
- Select values from a graph and right-click on the selection.
- Choose keep selected implicitly creates a filter

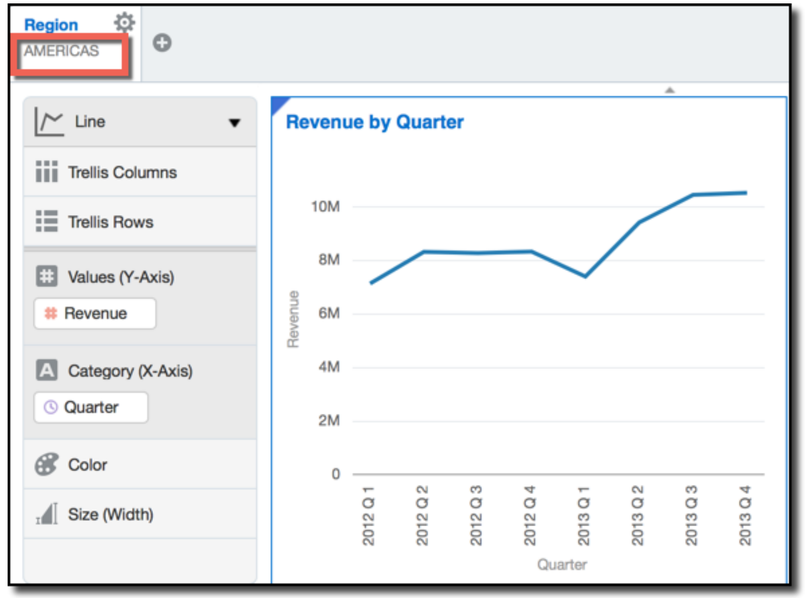




Creating a Filter in VA

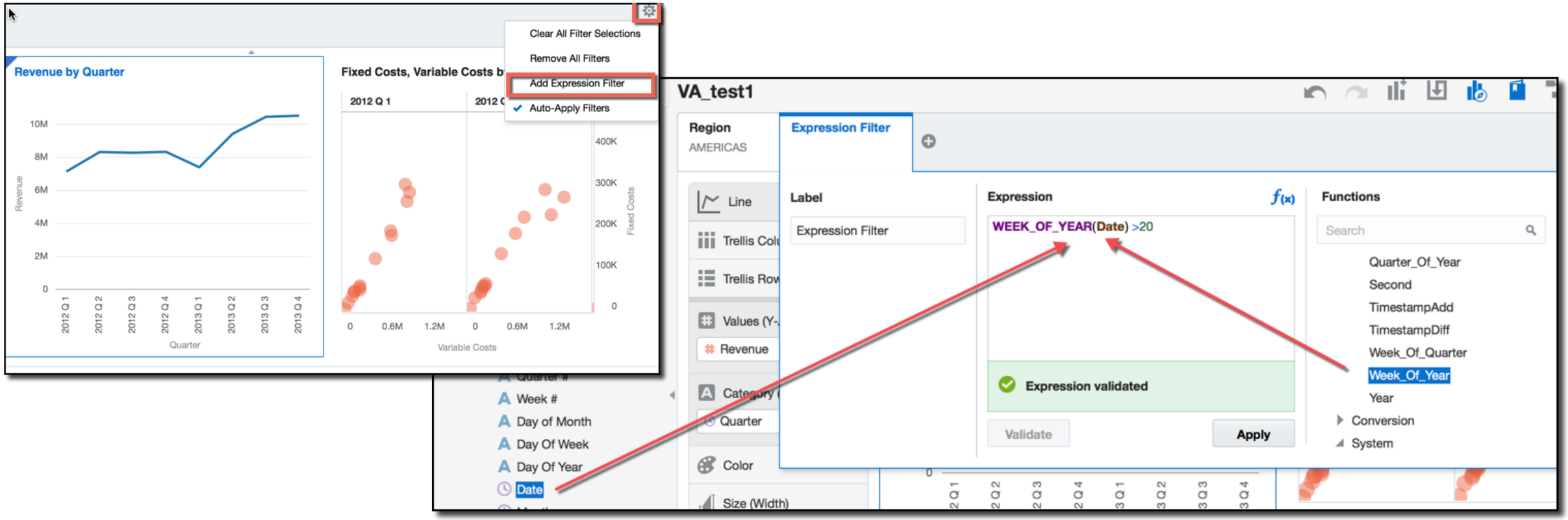
- Define filters in VA adding fields into the Filter area
- Then select the operator and the required values for this condition





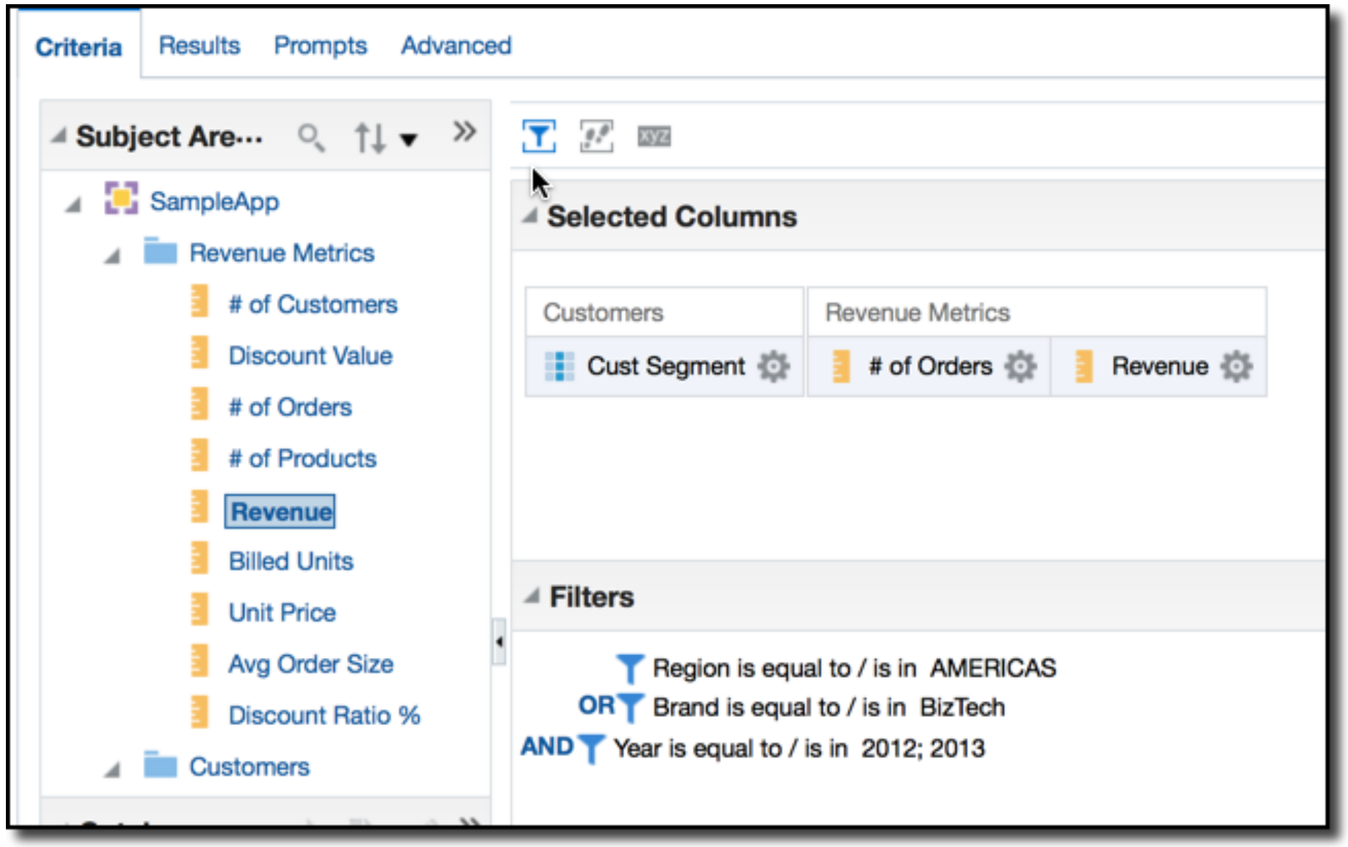
Using Expression Filter in VA

- Use the Expression Filter to create more complex filters using functions



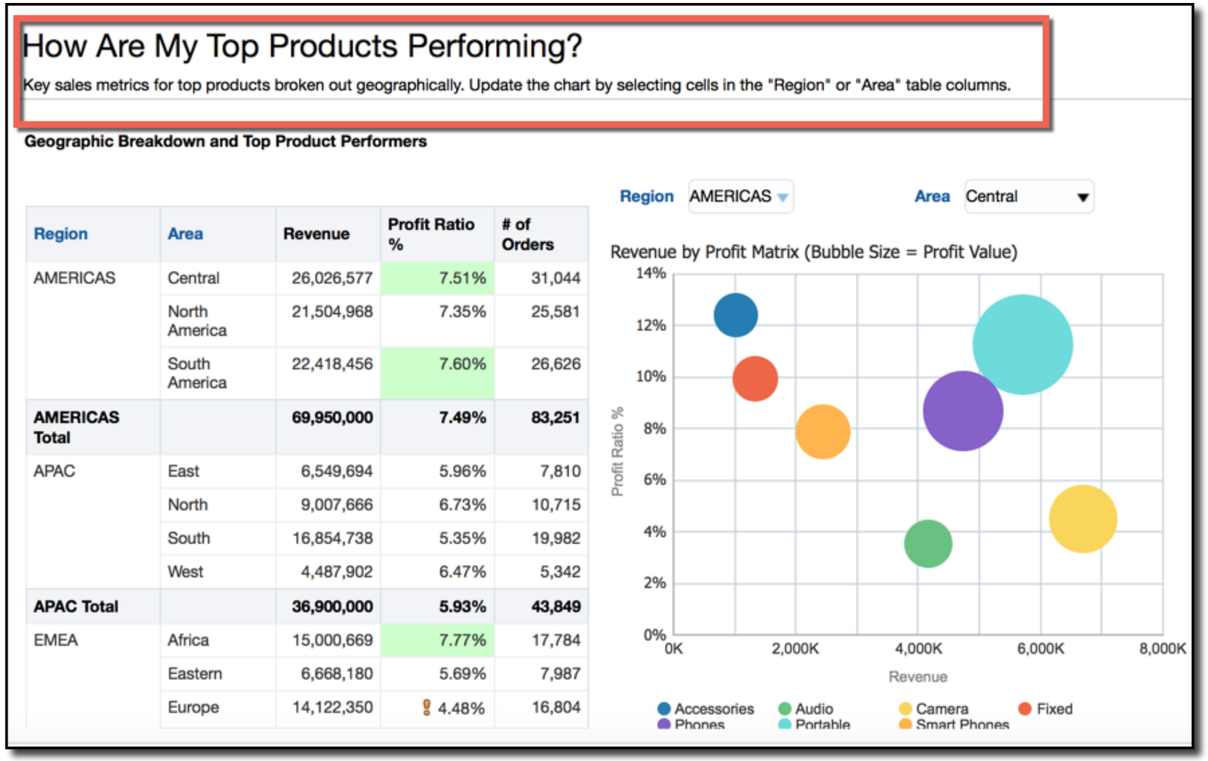
Filtering Data in an Analysis

- More complex filters can be created.
  - Combination of conditions with AND and OR operators.
  - Nested conditions



Adding Text

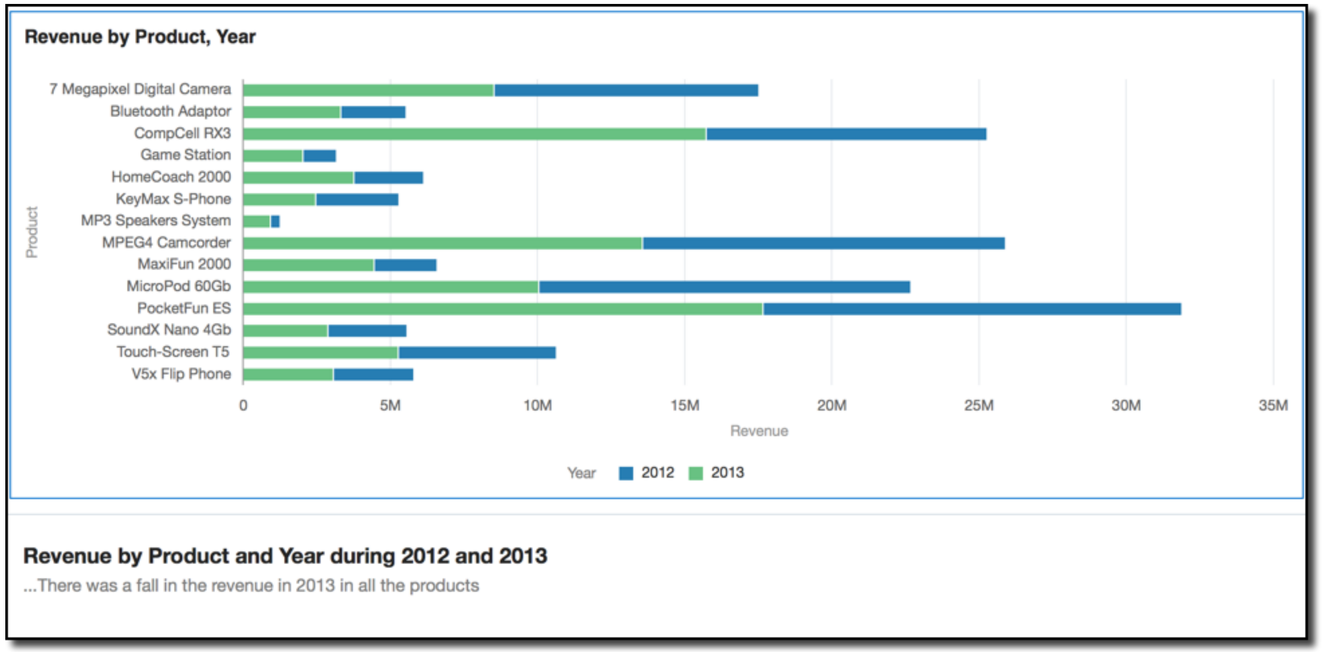
- Text can be a powerful ally and can be used to
  - Label
    - Be clear with the Axis name
    - Add title that reflects the objective of the visualization
  - Introduce
    - What is this analysis for?
    - Useful for newbies
  - Explain or Share insights



Region	Area	Revenue	Profit Ratio %	# of Orders
AMERICAS	Central	26,026,577	7.51%	31,044
	North America	21,504,968	7.35%	25,581
	South America	22,418,456	7.60%	26,626
AMERICAS Total		**69,950,000**	**7.49%**	**83,251**
APAC	East	6,549,694	5.96%	7,810
	North	9,007,666	6.73%	10,715
	South	16,854,738	5.35%	19,982
	West	4,487,902	6.47%	5,342
APAC Total		**36,900,000**	**5.93%**	**43,849**
EMEA	Africa	15,000,669	7.77%	17,784
	Eastern	6,668,180	5.69%	7,987
	Europe	14,122,350	4.48%	16,804

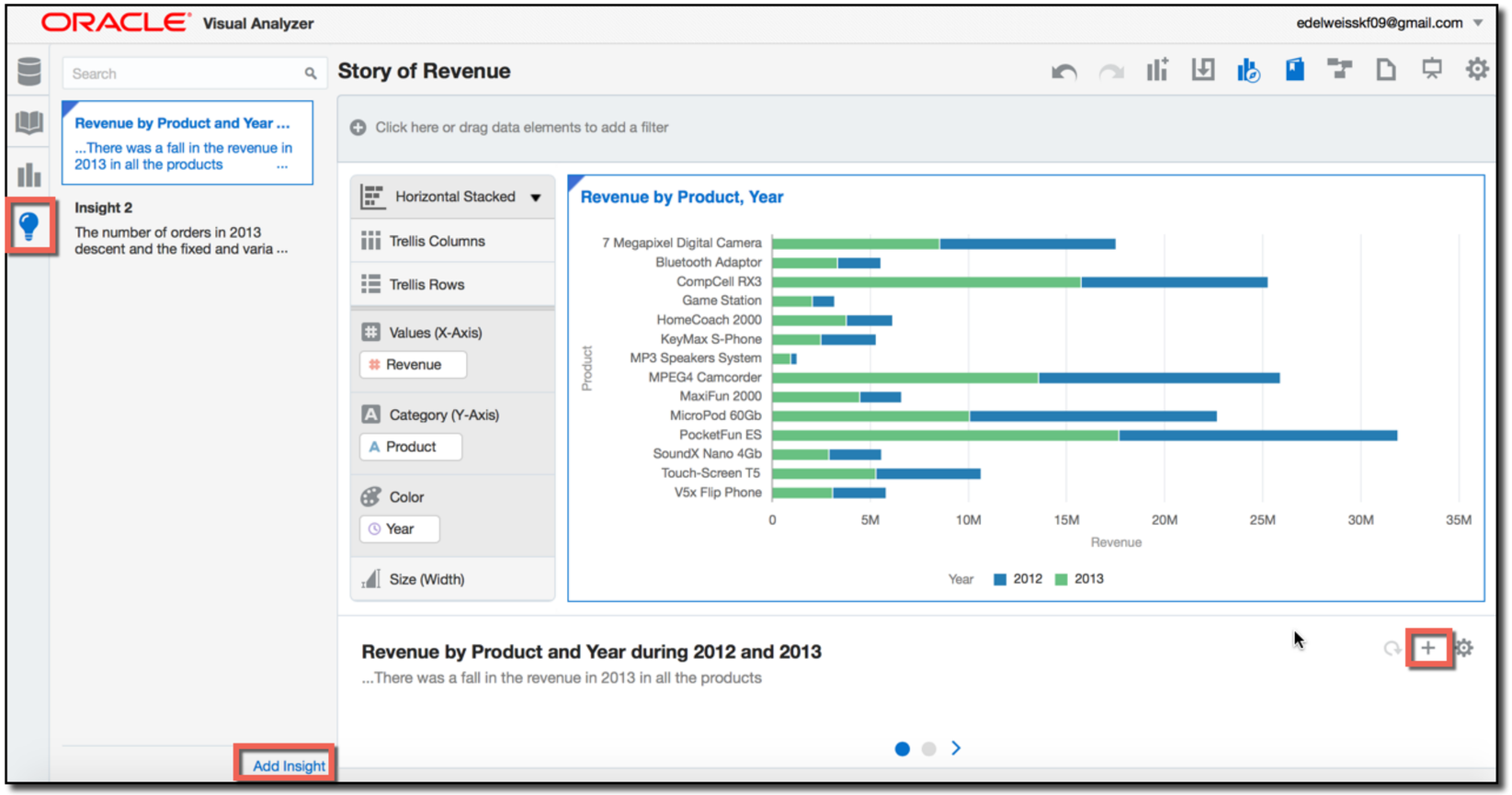
Sharing Insights: Storytelling

- Visual Analyzer offers a new feature for Storytelling in a Project
  - Define visualizations and add text as Insight.
  - Then, you can add more visualizations or start from scratch and create another insight.



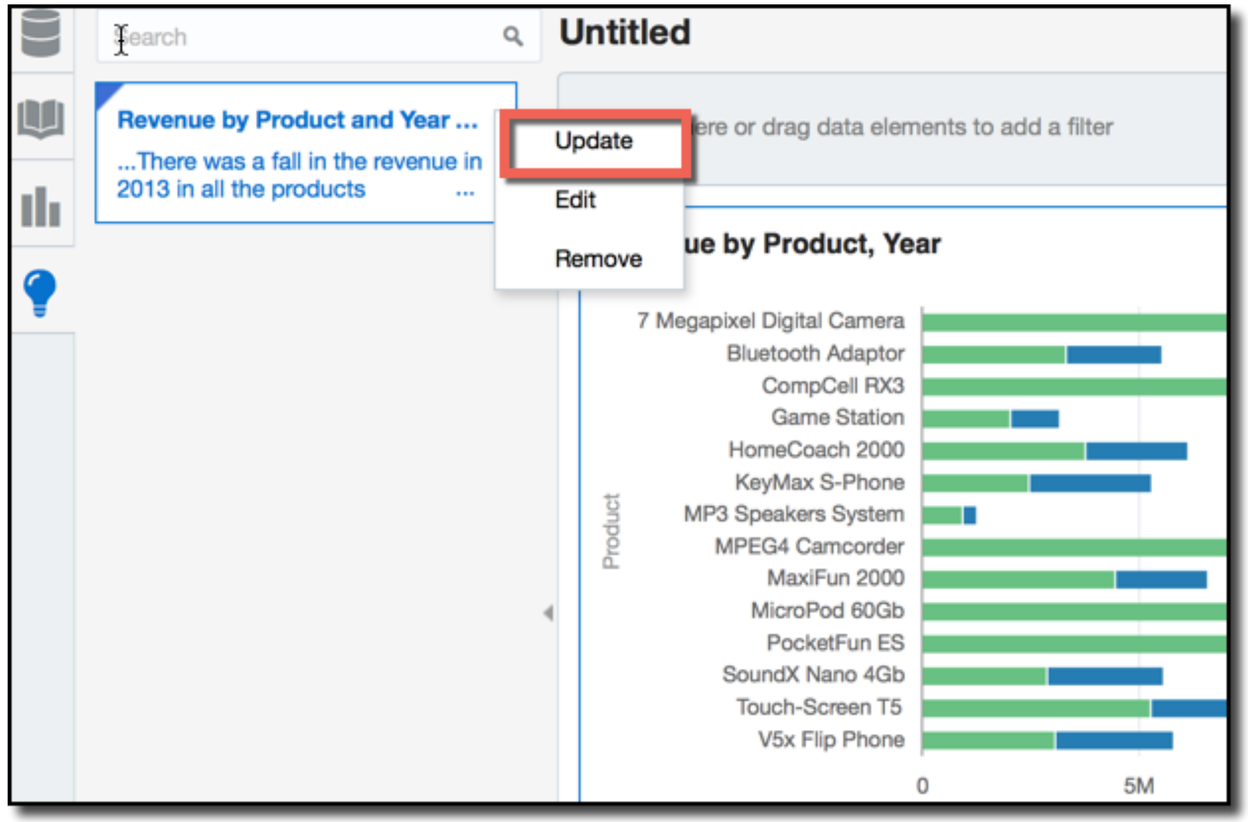
Creating Insights

- Insights can be created in the Story mode or using the Insight icon in the left panel.
  - Title and description can be added



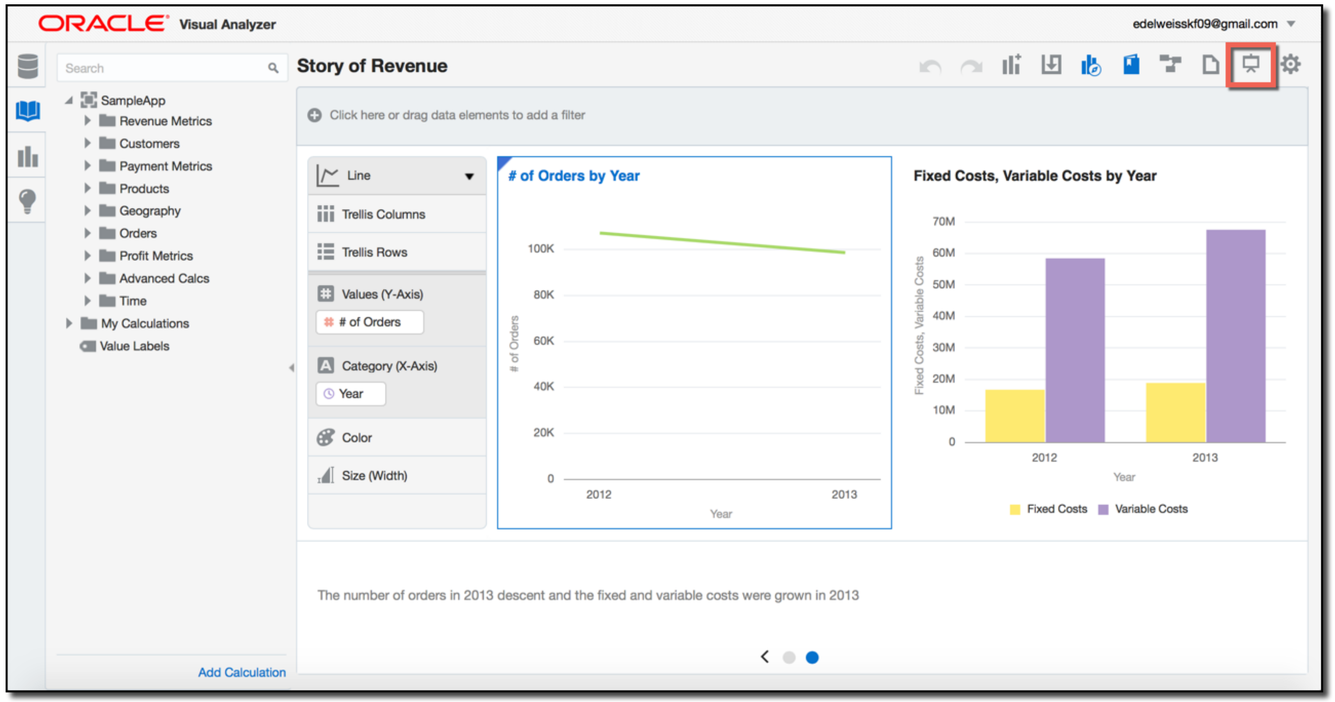
Updating Insights

- Visualizations can be modified and insights can be updated to reflect these changes



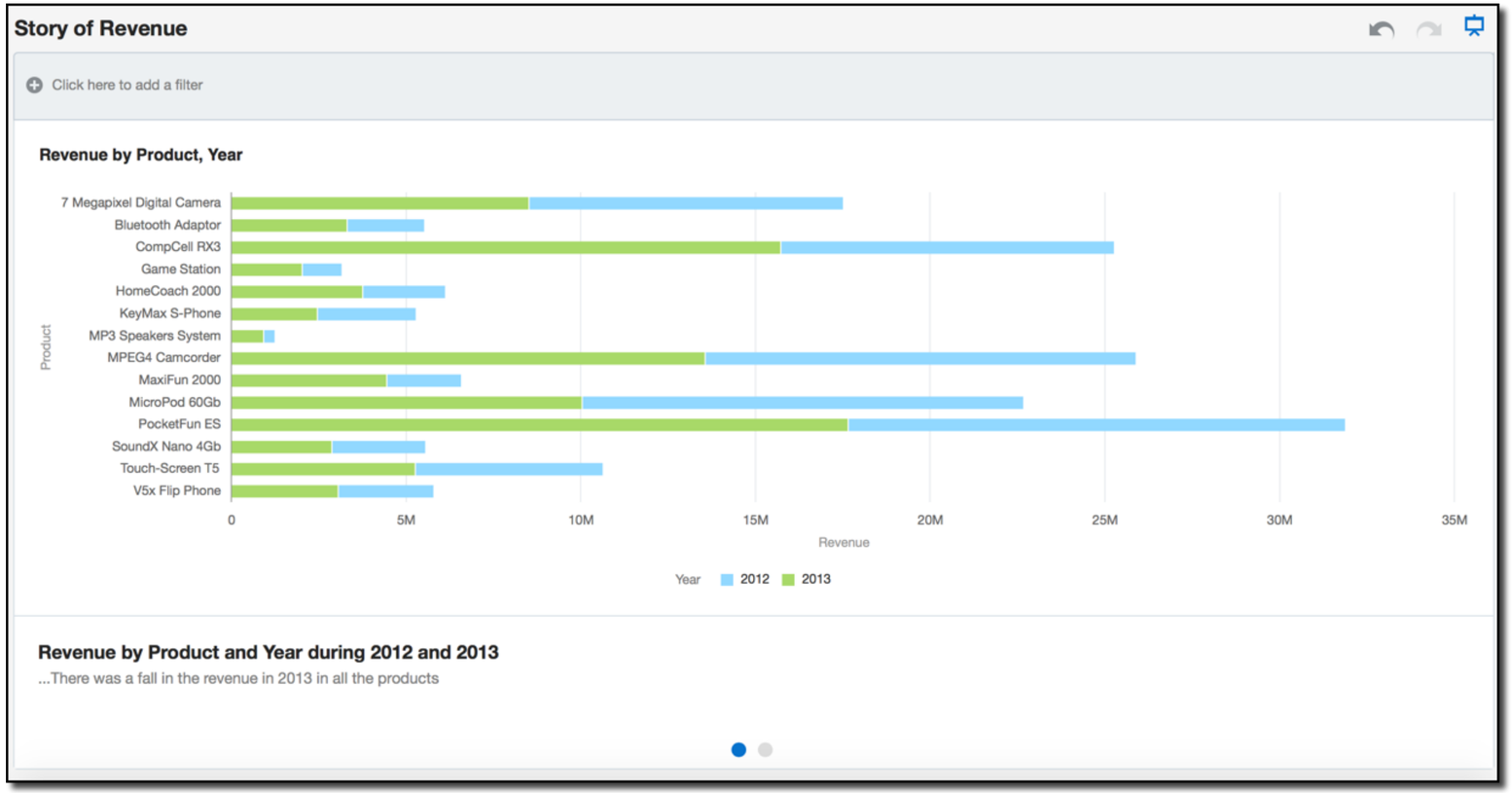
Presentation Mode

- Once you create your insights in the VA Project, you can show it using the Presentation Mode
  - Useful to create a story about the data and the discovery process



Presentation Mode

- In the Presentation Mode, you can navigate through the insights, showing the story of the data



Summary

- Data visualization is the use of visual representations to explore, make sense of, and communicate data
- Choose the appropriate visualization type is important to communicate an effective message (*http://www.perceptualedge.com/articles/misc/Graph_Selection_Matrix.pdf*)
- Visualization tips:
  - Avoid use of 3D, perspective and shadow effects
  - Avoid dark gridlines
  - Use a pastel palette
  - Use colours with a purpose
    - Same measure-> same color
    - Bold colors to highlight information

Further Information

- Oracle Business Analytics Cloud Trials
  https://cloud.oracle.com/en_US/business-analytics?resolvetemplatefordevice=true
- Link to OBICS examples
  http://www.oracle.com/technetwork/middleware/bi-foundation/bics-sample-2283629.html
- ORACLE BI TECHDEMO Youtube Channel
  https://www.youtube.com/channel/UCXpjKAy010SDUXmAA67DILg
- Stephen Few Blog
  http://www.perceptualedge.com/blog/

Books about Data Visualization

- **The Visual Display of Quantitative Information** by *Edward Tufte*
- **Show me the Numbers** by *Stephen Few*
- **Information Dashboard Design** by *Stephen Few*
- **Data Visualization for OBI 11g** by *Dan & Tim Vlamis*

Q & A

Thanks for Attending!

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