

IFC-Bank of Italy Workshop on “Data Science in Central Banking: Applications and tools”

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Leveraging the power of visualization for data exploration and insights communication - visual analytics with Tableau¹

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¹ This contribution was prepared for the workshop. The views expressed are those of the authors and do not necessarily reflect the views of the Bank of Italy, the BIS, the IFC or the other central banks and institutions represented at the event.



Leveraging the power of visualization for data exploration and insights communication

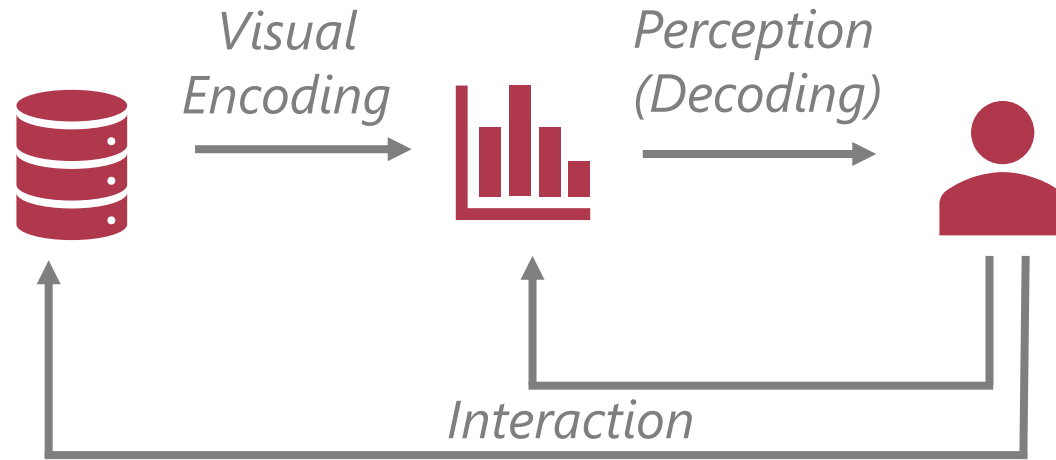
Visual analytics with Tableau

Zunaira Rasheed

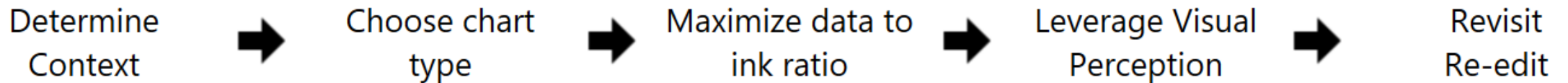
Tableau at BIS

- Tableau is being used for,
 - Business intelligence (Reports/Dashboards/Storyboards)
 - Self-service data discovery and exploration
 - Interactive graphs linked BIS research publications
- Tableau was introduced at the Bank in 2016 and since then adoption increased significantly
- In addition to the platforms, the centralized Data & Analytics also offers,
 - Center of excellence related to Tableau issues
 - Data visualization community platform to engage and discuss
 - Best practices and visual standards for BIS Tableau content
 - Tools and process for managing Tableau governance

Defining Visualization



Our Visualization Process



Determine Context

Who?

What?

How?

Choose chart type

Maximize data to ink ratio

Leverage Visual Perception

Revisit Re-edit

Deviation

Diverging bar
Diverging stacked bar
Spine
Surplus/deficit filled line

Correlation

Scatterplot
Column + line timeline
Connected scatterplot
Bubble
XY heatmap

Ranking

Ordered bar
Ordered column
Ordered proportional symbol
Dot strip plot
Slope
Lollipop
Bump

Flow

Sankey
Waterfall
Chord
Network

Distribution

Histogram
Dot plot
Dot strip plot
Barcode plot
Boxplot
Violin plot
Population pyramid
Cumulative curve
Frequency polygons

Change over Time

Line
Column
Column+ line timeline
Slope
Area chart
Candlestick
Fan chart
Connected scatterplot
Calendar heatmap
Seismogram
Streamgraph

Part-to-whole

Stacked column/bar
Marimekko
Pie
Treemap
Voronoi
Arc
Gridplot
Venn
Waterfall

Magnitude

Column
Bar
Paired column
Paired bar
Marimekko
Proportional symbol
Isotype
Lollipop
Radar
Parallel coordinates
Bullet

Spatial

Basic choropleth
Proportional symbol
Flow map
Contour map
Dot density
Heap map

Determine
Context



Choose chart
type



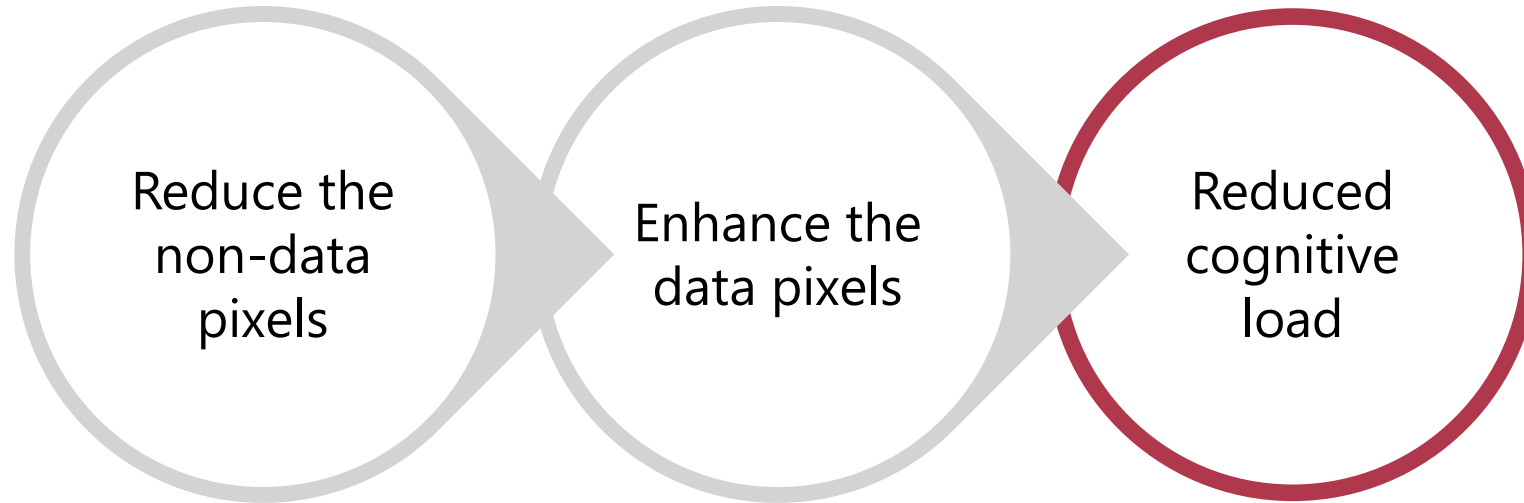
Maximize data to
ink ratio



Leverage Visual
Perception



Revisit
Re-edit



- Eliminate all unnecessary non-data pixels
- De-emphasize and regularize the non-data pixels that remain

- Eliminate all unnecessary data pixels
- Highlight the most important data pixels that remain

*Edward Tufte – The Visual Display of Quantitative Information
Stephen Few – Information Dashboard Design*

Determine
Context



Choose chart
type



Maximize data to
ink ratio



Leverage Visual
Perception



Revisit
Re-edit

Shape



Enclosure



Line Width



Saturation



Color



Size



Markings



Orientation



Position



3D



Length



Curvature



Density



Closure

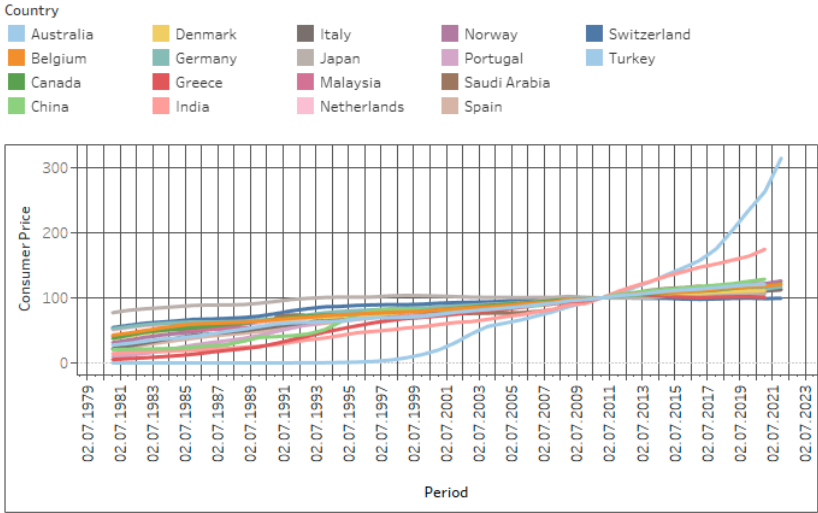
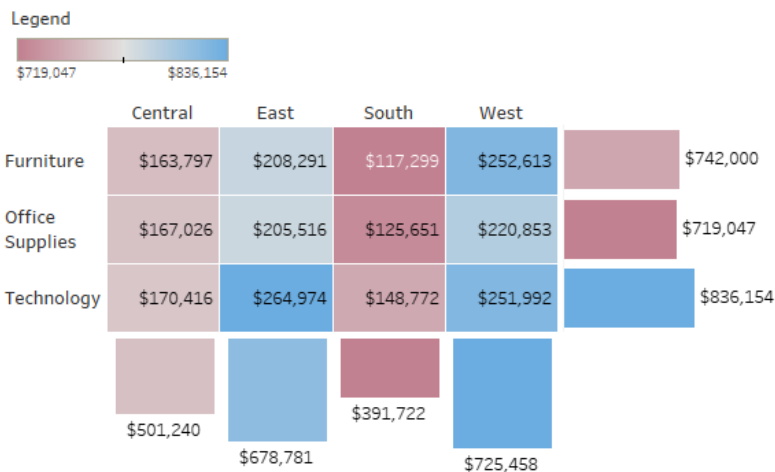


Sharpness

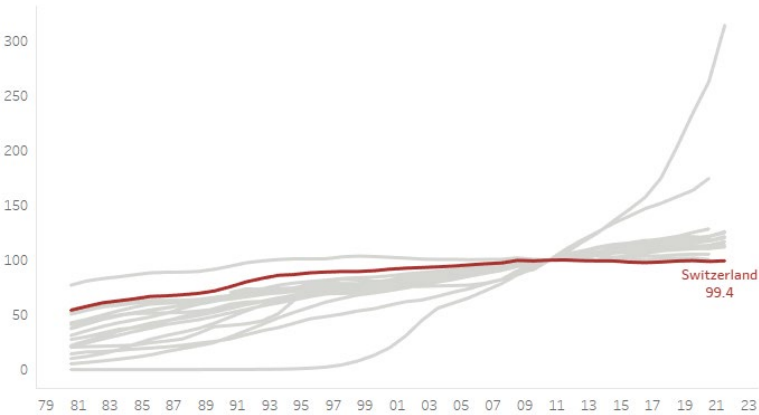


Bringing it all together - Examples

Category	Region				Grand Total
	Central	East	South	West	
Furniture	\$163,797	\$208,291	\$117,299	\$252,613	\$742,000
Office Supplies	\$167,026	\$205,516	\$125,651	\$220,853	\$719,047
Technology	\$170,416	\$264,974	\$148,772	\$251,992	\$836,154
Total	\$501,240	\$678,781	\$391,722	\$725,458	\$2,297,201



Consumer Price data for **Switzerland** from 1980 to 2020



Tools we use for facilitating the visualization process

Server Infrastructure

Deployment
Monitoring
Maintenance

Standardization - Style Guide

Corporate Identity
Template
Typography
Units & Abbreviations
Iconography
Colour

DataViz Community

Communication
Support
Meetups
Webinar
Competition
Trainings

Future Plans

Chart Glossary
Tableau Champions Program
Additional communication
& support channels



Thank you