



Introduction to Data Visualization: Part 2

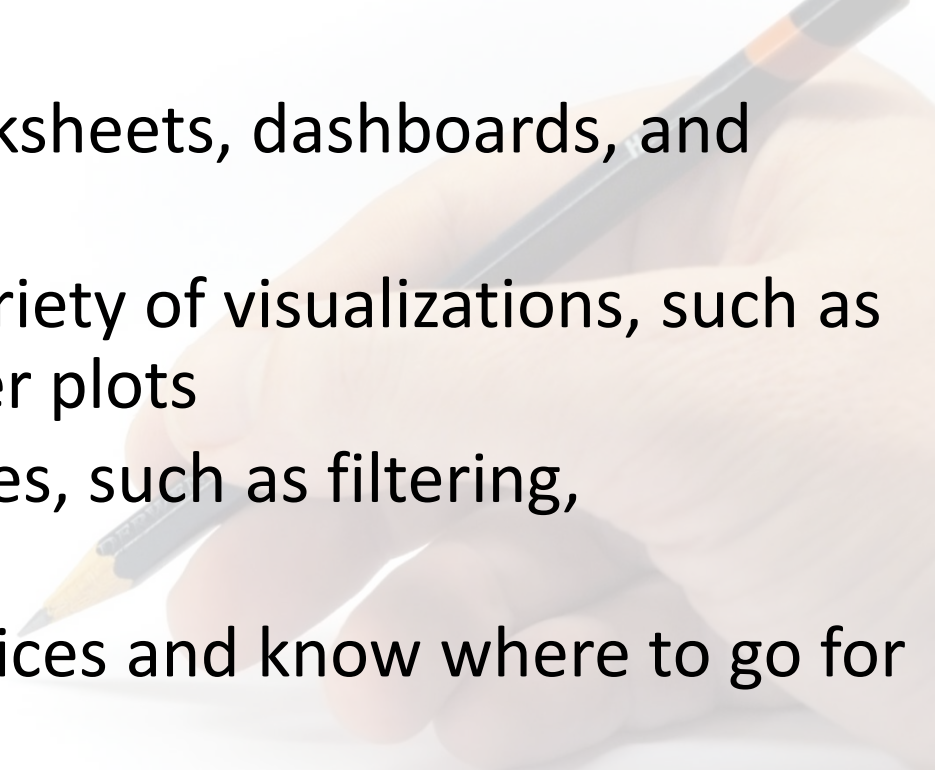
Practice with Tableau

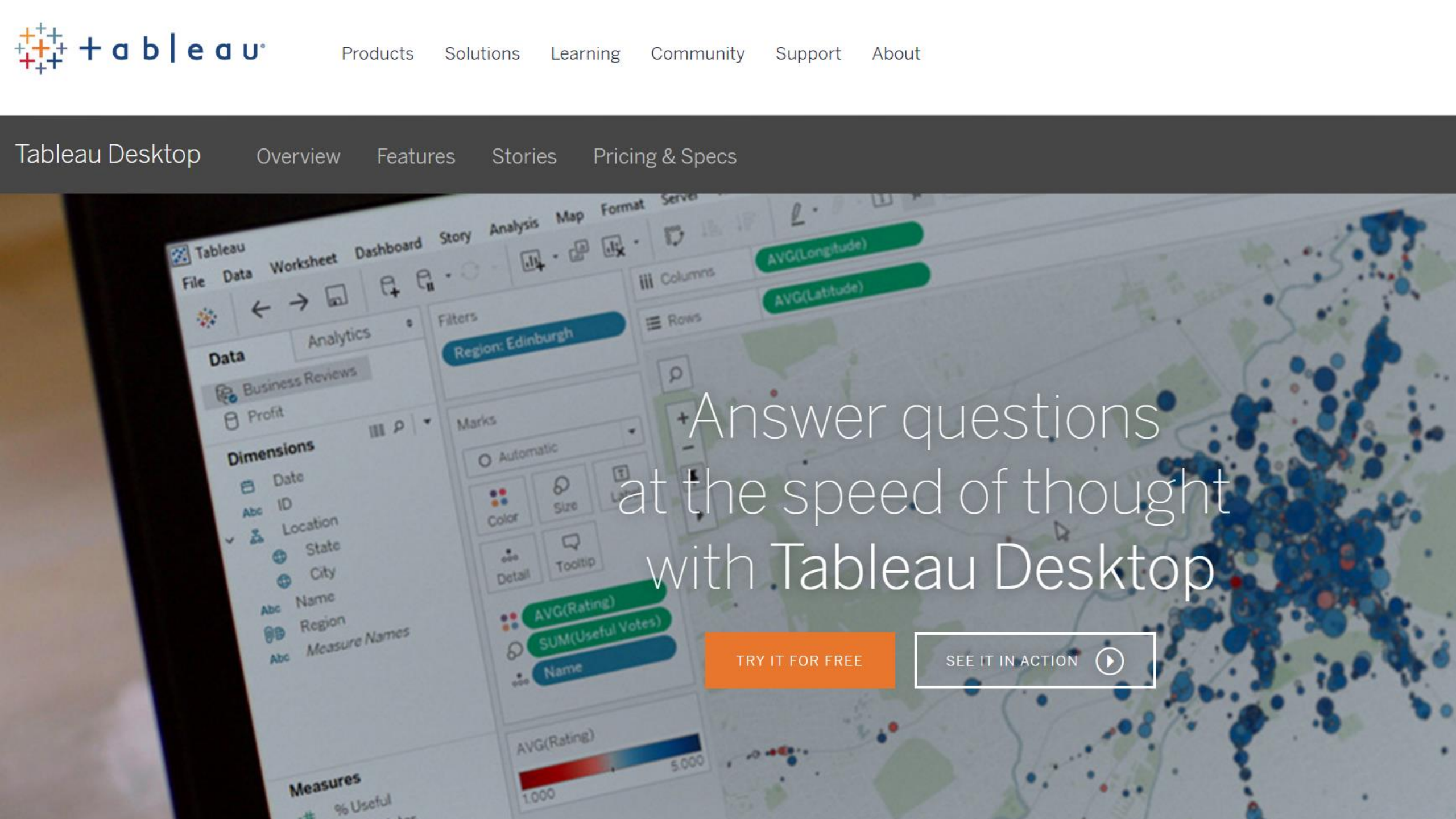
Kelly Schultz, Data Visualization Librarian

Agenda

- Learning Objectives
- What is Tableau?
- Tableau's Data Format Expectations
- Follow Along Demo: Tableau
- Where you can go for more help

Learning Objectives

- Participants will be:
 - ✓ Able to use Tableau to create worksheets, dashboards, and stories
 - ✓ Able to use Tableau to create a variety of visualizations, such as bar graphs, line graphs, and scatter plots
 - ✓ Able to use Tableau special features, such as filtering, calculations, and parameters
 - ✓ Aware of Map & Data Library services and know where to go for more help
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- A faint, artistic background image of a hand holding a pen, poised to write on a piece of paper. The hand is light-skinned and the pen is dark with a gold-colored tip. The image is semi-transparent, allowing the text to be read over it.



Answer questions
at the speed of thought
with Tableau Desktop

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	A	B	C	D	E	F	G
1	Table 1: Spending on services						
2	Prepared March 14, 2016						
3							
4	OECD Countries						
5			Spending (\$ Millions)				
6	Country	Identifier	2012-01	2013-01	2014-01	2015-01	Total
7	Canada	124	7.5	7.7	9	8.4	32.6
8	Germany	276	4.2	4.1	4.4	4.7	17.4
9							
10	Non-OECD Countries						
11			Spending (\$ Millions)				
12	Country	Identifier.Code	2012-01	2013-01	2014-01	2015-01	Total
13	China	156	7.9	7.5	7.7	7.6	30.7
14	Costa Rica	188	9.5	9	9.2	8	35.7
15							

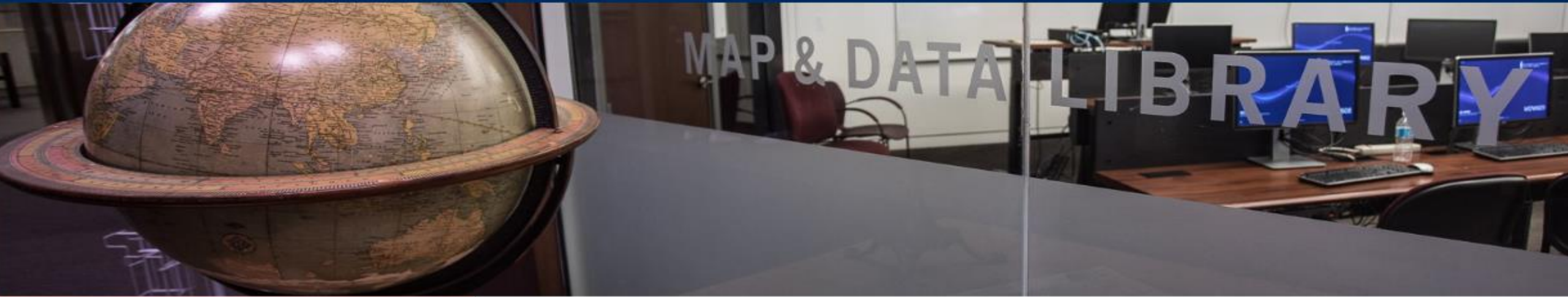


Tableau Data Format

	A	B	C	D	E
1	Country	OECD_Status	Identifier	Date	Spending_on_services
2	Canada	OECD	124	2012-01-01	7500000
3	Canada	OECD	124	2013-01-01	7700000
4	Canada	OECD	124	2014-01-01	9000000
5	Canada	OECD	124	2015-01-01	8400000
6	Germany	OECD	276	2012-01-01	4200000
7	Germany	OECD	276	2013-01-01	4100000
8	Germany	OECD	276	2014-01-01	4400000
9	Germany	OECD	276	2015-01-01	4700000
10	China	Non-OECD	156	2012-01-01	7900000
11	China	Non-OECD	156	2013-01-01	7500000
12	China	Non-OECD	156	2014-01-01	7700000
13	China	Non-OECD	156	2015-01-01	7600000
14	Costa Rica	Non-OECD	188	2012-01-01	9500000
15	Costa Rica	Non-OECD	188	2013-01-01	9000000
16	Costa Rica	Non-OECD	188	2014-01-01	9200000
17	Costa Rica	Non-OECD	188	2015-01-01	8000000
18					

Resources

- Data Visualization Guide: <https://mdl.library.utoronto.ca/dataviz/getting-started>
- Tools & Tutorials: <https://mdl.library.utoronto.ca/dataviz/tools-tutorials>
 - Data Cleaning Tools List: <https://mdl.library.utoronto.ca/dataviz/tools-tutorials#cleaningpreparationtools>
 - Tableau: <https://mdl.library.utoronto.ca/dataviz/tools-tutorials#generalvisualizationtools>
- A few recommended books to get you started with Data Viz theory:
 - *Show Me The Numbers* by Stephen Few: <http://go.utlib.ca/cat/11704623>
 - *Information Dashboard Design* by Stephen Few: <http://go.utlib.ca/cat/12549639>
 - *Visual Insights: A Practical Guide to Making Sense of Data* by Katy Börner and David E. Polley: <http://go.utlib.ca/cat/9161339> & online: <http://go.utlib.ca/cat/11386821>
- A number of the activities in the Tableau Desktop demo were inspired by this Lynda.com course – “Data Visualization Tips and Tricks”: <https://www.linkedin.com/learning/data-visualization-tips-and-tricks/welcome?u=76812730>
- Get Tableau Desktop
 - Students: <https://www.tableau.com/academic/students>
 - Academic Teachers/Researchers: <https://www.tableau.com/academic/teaching>



About MDL

Our collection includes hundreds of geospatial and numeric datasets, over hundreds of thousands of maps, photographs, and more! We provide assistance finding maps and data and using GIS and statistical software.

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Geospatial data

Scholars GeoPortal | Geospatial data | Remote sensing | Air photos

Numeric data

Microdata | Statistics | Census of Canada

Maps and atlases

Scanned maps | Fire insurance plans | Rare maps

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Wrap-Up

- 1) Key lesson?
- 2) Anything unclear?
- 3) Useful workshop?
Why/Why not?

External Data Sources

- Edgar Anderson's Iris Data: <https://stat.ethz.ch/R-manual/R-patched/library/datasets/html/iris.html>
- RomeoAndJulietWordFrequenciesByAct.xls file from the play *Romeo and Juliet* by William Shakespeare full text (acquired via http://shakespeare.mit.edu/romeo_juliet/full.html) and then split into a document per act and run through Voyant tools: <https://voyant-tools.org/>

Image Credits

- **Slide 1:** *Woman Using a Samsung VR Headset at SXSW*, flickr.com/Nan Palmero, <https://flic.kr/p/qJPZEL>
- **Slide 2:** *Manos*, morguefile.com/xololounge, <http://mrg.bz/Yda9Is>
- **Slide 3:** *Drawing and coloring*, FreeImages.com/ Ove Tøpfer, <http://www.freeimages.com/photo/drawing-1313453>
- **Slide 8:** *audience wave*, flickr.com/Gavin Tapp, <https://flic.kr/p/aqvnet>; *Post-it sticker small yellow empty single left up - GIMP 2.8* by User:Mattes (creator), eyeknife (idea) - Own work. Licensed under GFDL via Wikimedia Commons - [https://commons.wikimedia.org/wiki/File:Post-it_sticker_small_yellow_empty_single_left_up - GIMP 2.8.png#/media/File:Post-it_sticker_small_yellow_empty_single_left up - GIMP 2.8.png](https://commons.wikimedia.org/wiki/File:Post-it_sticker_small_yellow_empty_single_left_up_-_GIMP_2.8.png#/media/File:Post-it_sticker_small_yellow_empty_single_left_up_-_GIMP_2.8.png)