

Topic 9

More on Data, Colour, Storytelling



Data Semantics and Data Types (Munzner 2014)

Many aspects of visualisation design are driven by the data type.

- Semantics of the data is its real world meaning (context?).
- The type of the data is its structural or mathematical interpretation.
- Tableau is built around the distinction between Key attributes (dimensions) and value attributes (measures). [in statistics independent and dependent]
- A key attribute acts as index that is used to look value attributes.



What can be visualized: data, datasets, and attributes.

Tell stories with six lessons (Nussbaumer Knaflic 2019)

STEP 1: UNDERSTAND the CONTEXT

WHO is your audience?
WHAT do you need them to do?
HOW will data help make your point?

ARTICULATE your BIG IDEA



CREATE a STORYBOARD



→ brainstorm
→ edit
→ get feedback

STEP 4: DRAW ATTENTION where you WANT it

Use **POSITION**, **SIZE**, and **COLOR** to
FOCUS your AUDIENCE'S ATTENTION

Use the
"where are
your eyes
drawn?"
test



CLOSE
EYES...



then
OPEN
EYES



WHAT do
you SEE FIRST?

STEP 2: CHOOSE an APPROPRIATE VISUAL

DRAW IT!



then... CREATE it in
your TOOL



iterate and
look at your data
different ways

SEEK FEEDBACK from others



STEP 5: THINK LIKE a DESIGNER

FIRST FUNCTION

think about what you want your
audience to DO with the data



ANALYZE
fine detail



COMMUNICATE
key trends

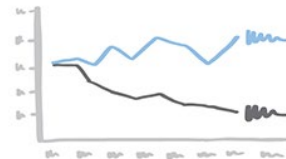
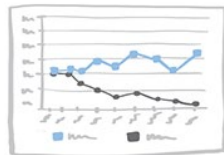
SECOND FORM

create a visualization that
will make this easy

→ Affordances
→ Accessibility
→ Aesthetics
→ Acceptance

STEP 3: ELIMINATE CLUTTER

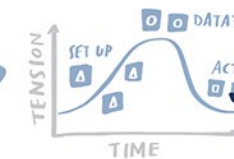
IDENTIFY UNNECESSARY ELEMENTS and REMOVE THEM



→ Leverage white space
→ Align elements
→ Avoid diagonal components

STEP 6: TELL a STORY

RETURN to your STORYBOARD



Where and how
will data fit into
the story?

Use the narrative arc to plan
your story and form a pithy, repeatable
phrase to help your message stick

Understand the context

Who is my audience (persona)? What do they care about?

Knowing the audience and their needs help successfully communication with data.

We can narrow our target audience by

- being specific about what we learned through the data
- being clear on the action we are recommending
- acknowledging what point we're at in time (what needs to happen now) and
- identifying a specific decision maker.

Choose an appropriate visual

New client tier share

Tier	# of Accounts	% Accounts	Revenue (\$M)	% Revenue
A	77	7.08%	\$4.68	25%
A+	19	1.75%	\$3.93	21%
B	338	31.07%	\$5.98	32%
C	425	39.06%	\$2.81	15%
D	24	2.21%	\$0.37	2%

New client tier share

Tier	# of Accounts	% Accounts	Revenue (\$M)	% Revenue
A+	19	2%	\$3.9	21%
A	77	7%	\$4.7	25%
B	338	31%	\$6.0	32%
C	425	39%	\$2.8	15%
D	24	2%	\$0.4	2%
All other	205	19%	\$0.9	5%
TOTAL	1,088	100%	\$18.7	100%

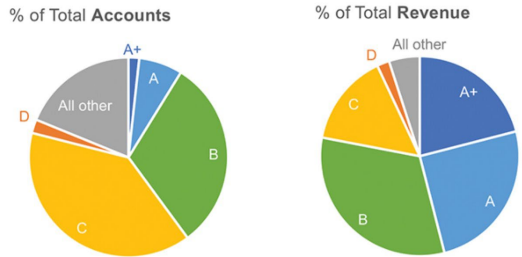
New client tier share

TIER	ACCOUNTS		REVENUE	
	#	% OF TOT	\$M	% OF TOT
A+	19	2%	\$3.9	21%
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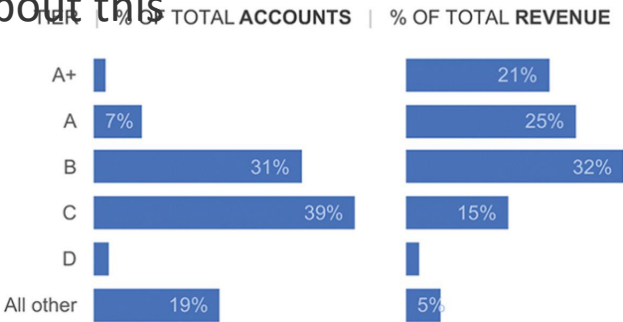
New client tier share

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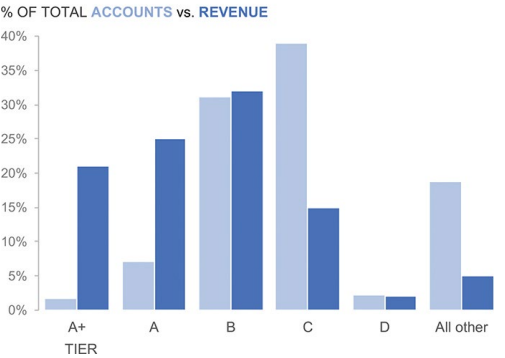
New client tier share



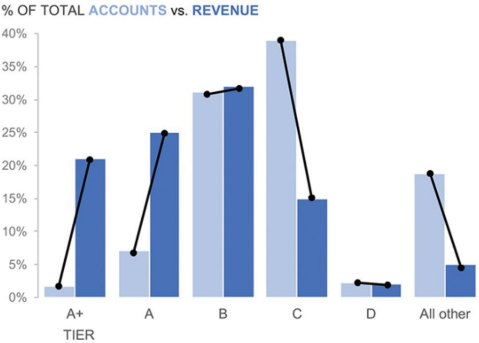
make any assumptions
New client tier share
have about this



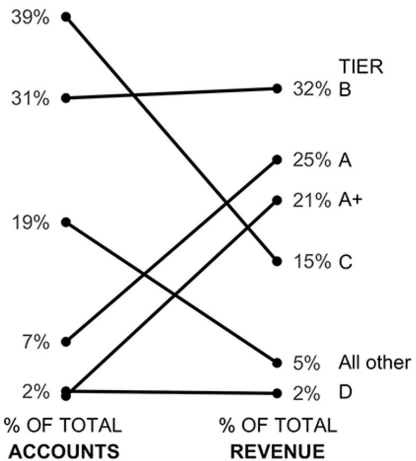
New client tier share



New client tier share



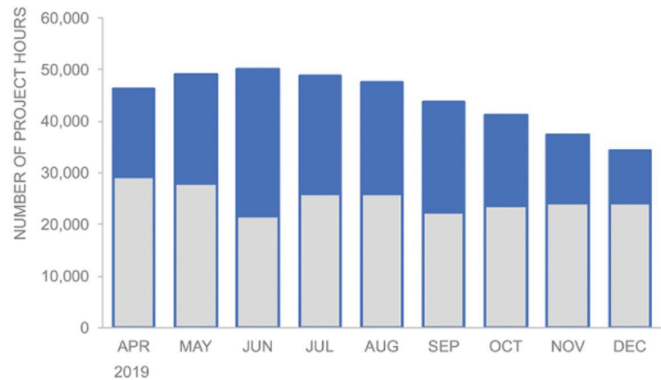
New client tier share



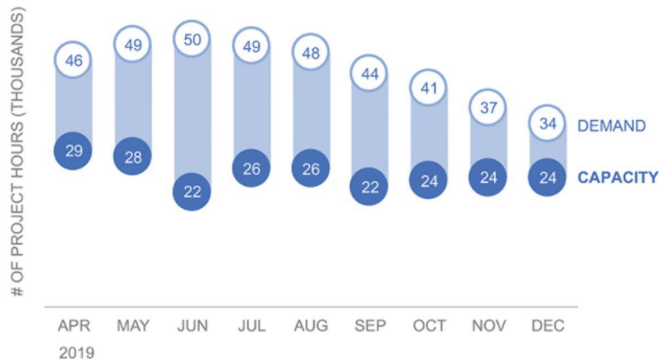
Choose an appropriate visual ...

Demand vs capacity over time

CAPACITY | UNMET DEMAND



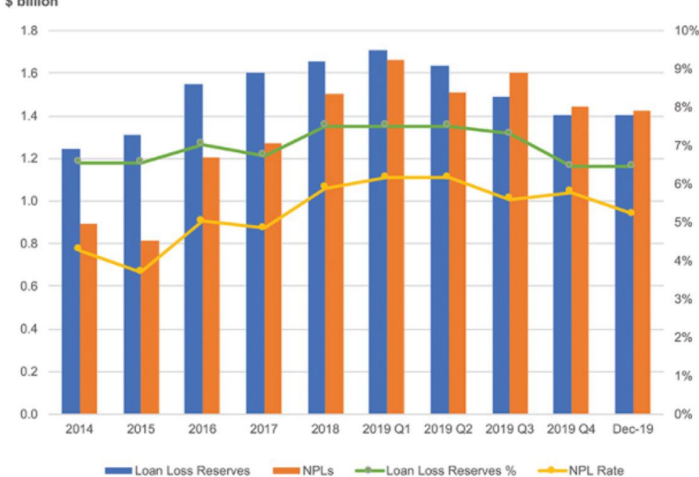
Demand vs capacity over time



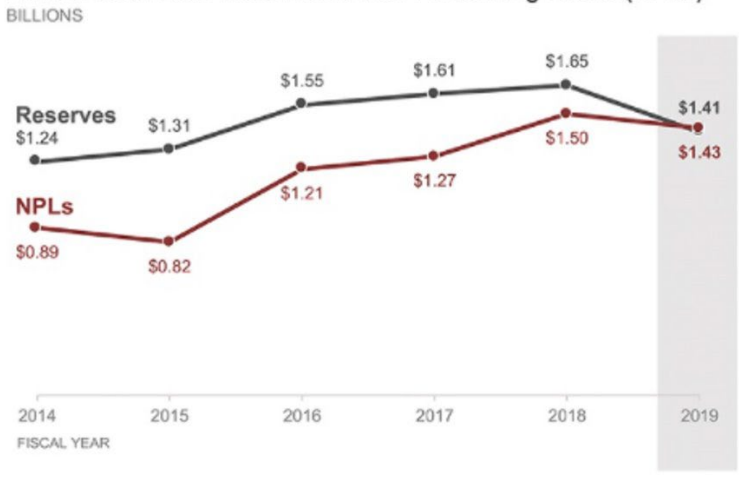
Unmet demand over time



NPLs and Loan Loss Reserves



Annual Loan Loss Reserves & Non-Performing Loans (NPLs)



2019 quarterly view



Visualize the Right Data (Dykes 2019)

There are many meaningful ways to express the same insight.

FIVE DATA VARIATIONS TO CONSIDER

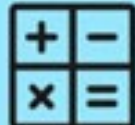
Totals

% Change

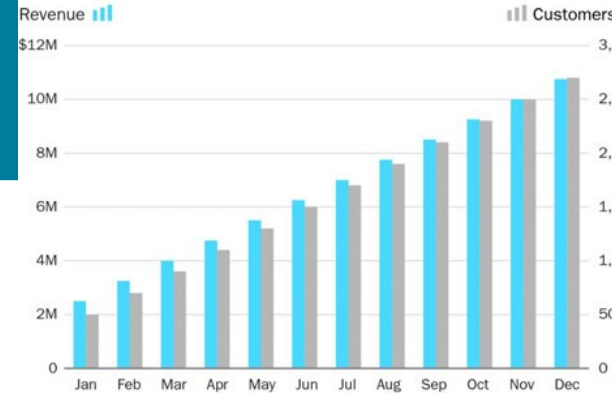
Calculated
Metric (Ratio)

Added
Context

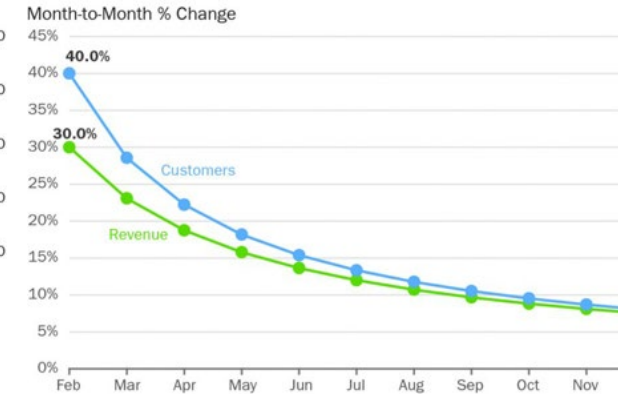
Variance



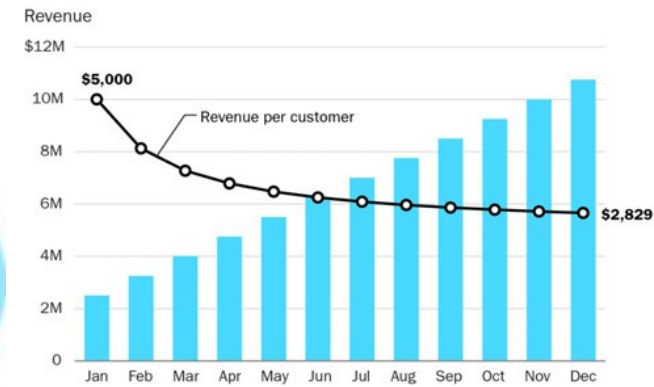
TOTAL VALUES MAY NOT COMMUNICATE YOUR POINTS AS EFFECTIVELY



PERCENT CHANGE PUTS DIFFERENT METRICS ON THE SAME % AXIS



CALCULATED METRICS MAY HELP CLARIFY A PROBLEM

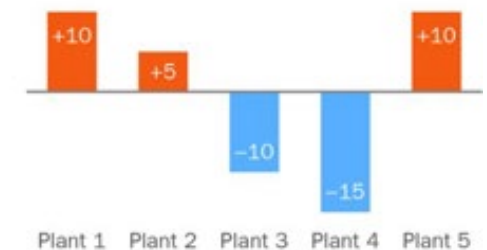


VARIANCE: DO THE MATH FOR YOUR AUDIENCE

Safety Incidents by Plant
■ 2017 ■ 2018



Year-to-Year Variance in Safety
Incidents by Plant (2017-2018)



Facet (split): Juxtapose, Partition & Superimpose (Munzner 2014)

Multiple views:

- Juxtapose them side by side, leading to many choices of how to coordinate these views with each other.
- Superimpose the views as layers on top of each other.
- When view show different data, set of choices cover how to partition the data across multiple views.

Facet

➔ Juxtapose and Coordinate Multiple Side-by-Side Views

➔ Share Encoding: Same/Different

➔ Linked Highlighting



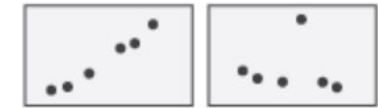
➔ Share Data: All/Subset/None



➔ Share Navigation



➔ Partition into Side-by-Side Views



➔ Superimpose Layers



		Data		
		All	Subset	None
Encoding	Same	Redundant	Overview/ Detail 	Small Multiples
	Different	Multiform	Multiform, Overview/ Detail 	No Linkage

Colour

Colour play a multiple roles in visualisation. Thus can be confusing. It is used as a magnitude, sometime as a identity.

Colour is best understood in terms :



What to do about colourblindness issue?

Storytelling: A structured Approach (data, visuals and narrative (Dykes 2019)

When **visuals** are applied to **data**, they can **enlighten** the audience to insights that they wouldn't see without charts or graphs. Many interesting patterns and outliers in the data would remain hidden in the rows and columns of data tables without the help of data visualizations.

When **narrative** is coupled with **data**, it helps to **explain** to your audience what's happening in the data and why a particular insight is important. Ample context and commentary are often needed to fully appreciate an insight. The narrative element adds structure to the data and helps to guide the audience through the meaning of what's being shared.



Dykes (2019)



Dykes (2019)

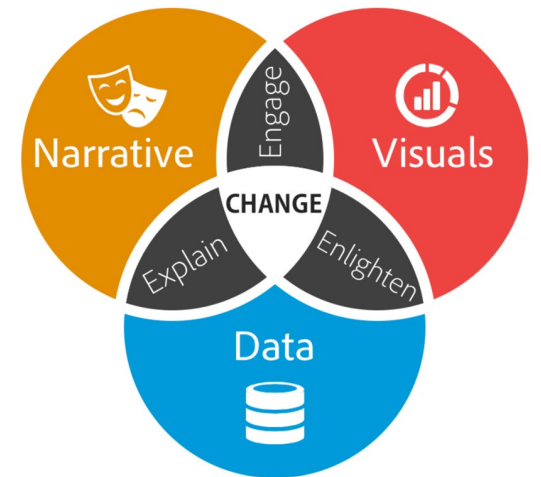
Storytelling: A structured Approach (data, visuals and narrative (Dykes 2019) ...

When **narrative** and **visuals** are merged together, they can **engage** or even **entertain** an audience. Much of our learning and entertainment is based on a combination of narratives and visuals (books and movies...etc.)

Each element is individually powerful (a thought-provoking statistic, a compelling narrative, or stunning visualisation). However, when you combine the right visuals and narrative with the right data, you have a data story that can influence and drive **change**.



Dykes (2019)



Dykes (2019)