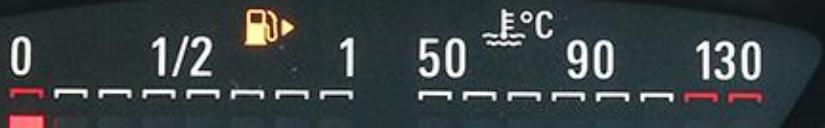


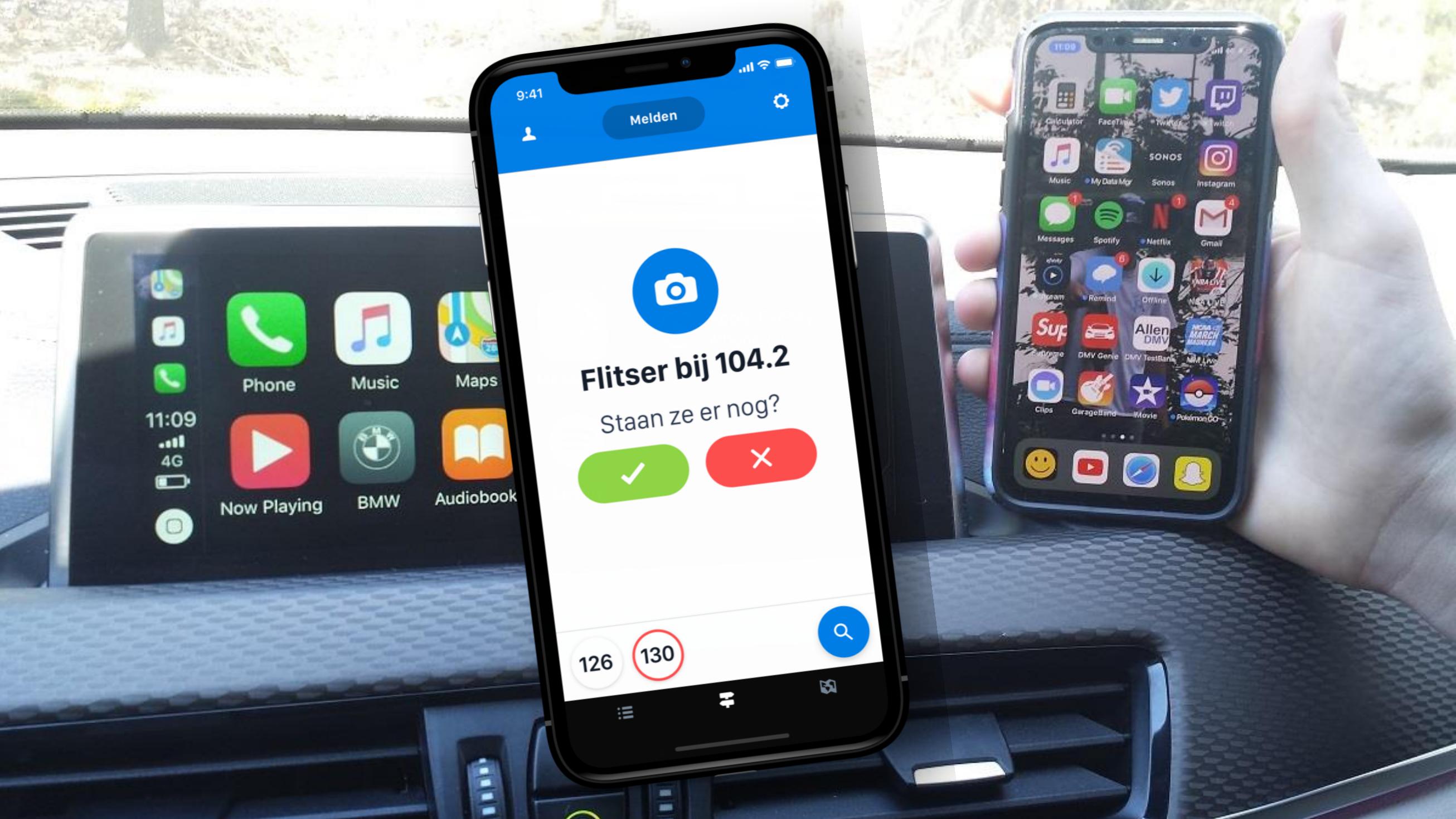
Storytelling & interactive reporting

with Power BI bookmarks and drillthrough











Marc Lelijveld

Data & Analytics Consultant
Macaw Netherlands



@MarcLelijveld



[LinkedIn.com/in/Marc-Lelijveld/](https://www.linkedin.com/in/Marc-Lelijveld/)



<https://Data-Marc.com>

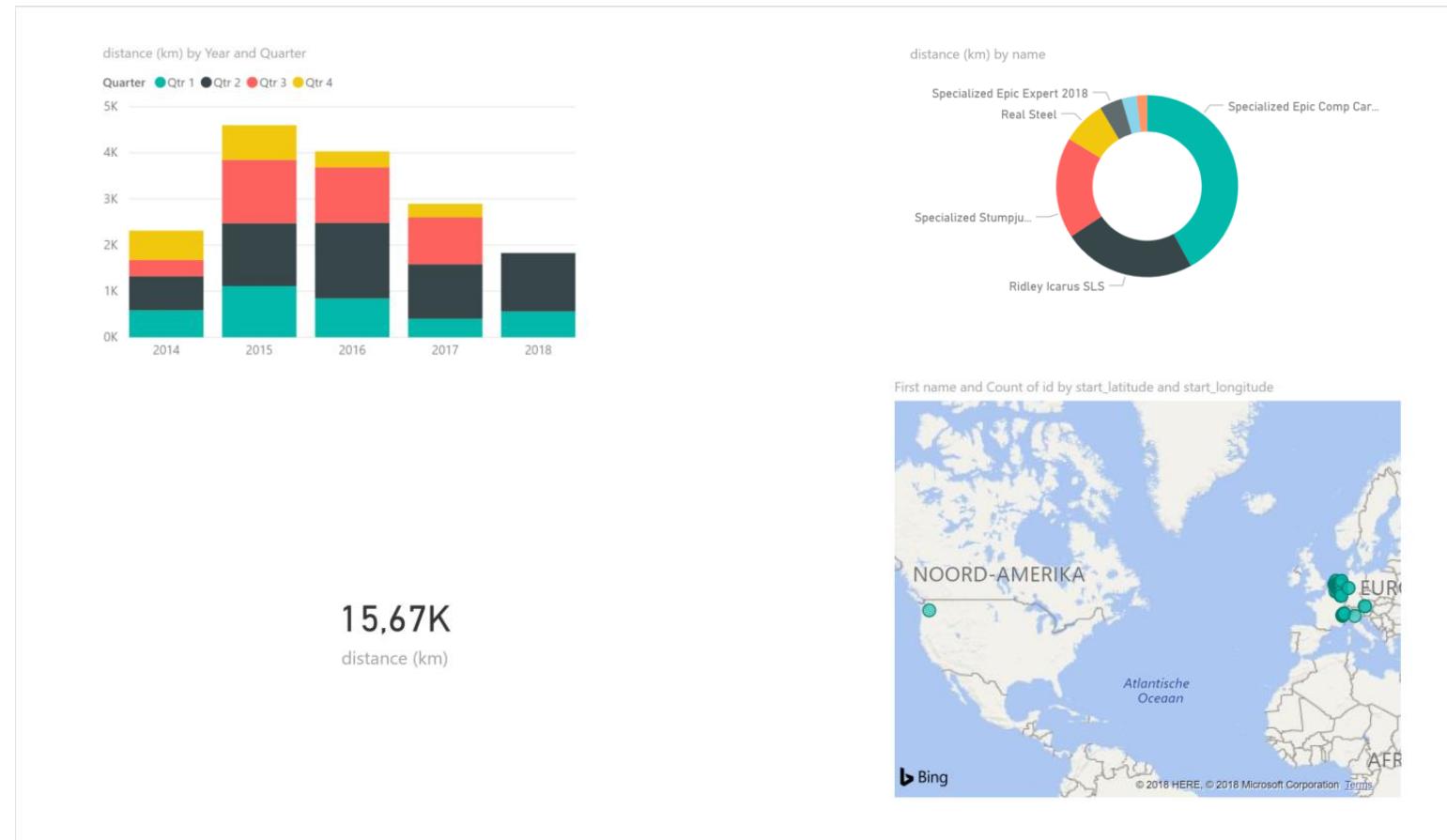
- **Why storytelling?**
- **Practical use & tips**
- **Storytelling features**
- **Demo!**



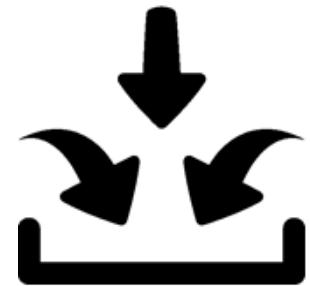
Why storytelling?



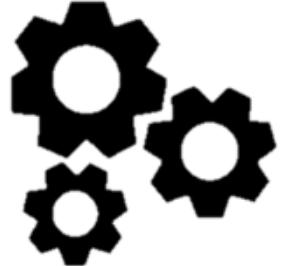
Classic reports



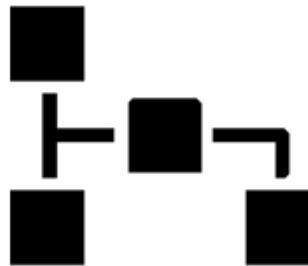
What we used to do



Collect



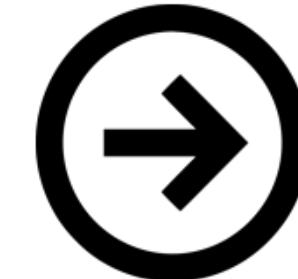
Transform



Model



Analyze



Define

Storytelling, How and why?

```
("input")?"val":"html";r==>"Text",r.resetText||n.data("resetText",n[i]()),n[i](r[e]);|this.opt  
e=="loadingText"?n.addClass(t).attr(t,t).removeAttr(t).removeAttribute(t),t.prototype.to  
.closest("[data-toggle='buttons-radio']").find(".active").removeClass("active"),this.$el  
e.fn.button;e.fn.button=function(n){return this.each(function(){var r=e(this),i=r.data("bu  
.data("button"),i=new t(this,s),n=="toggle"?i.toggle():n&&i.setState(n)}),e.fn.button.defau  
.button.Constructor=t,e.fn.button.noConflict=function(){return e.fn.button=n,this},e[documen  
"[data-toggle='button']",function(t){var n=e(t.target);if(n.hasClass("btn"))(n=n.closest(".bt  
,!function(e){use strict;var t=function(t,a){this.$element=e(t),this.$indicators=this.$ele  
.options.on._this.options.pause=="hover"&&!this.$element.on("mouseenter",e.proxy(this.pause,[  
this]));t.prototype={cycle:function(t){return t||{this.paused=1},this.interval&&clearInterval  
,interval&!this.paused&(this.interval.setInterval(e.proxy(this.next,this),this.options.int  
(return this.$active=this.$element.find(".item.active"),this.$items=this.$active.parent().ch  
.$active),to:function(t){var n=this.getActiveIndex(),r=this;if(t>this.$items.length-1)t=0  
this.$element.one("slid",function(t){r.to(t);n=t?this.pause():cycle();this.slide(t||"next"  
(t)?return t:(this.paused=0),this.$element.find(".next,.prev").length&e.support.transition  
&e.support.transition.end,this.cycle(0)),clearInterval(this.interval),this.interval=null,th  
return;return this.slide("next")},prev:function(){if(this.sliding)return;return this.slide("p  
rvious"),this.$element.find(".item.active"),i=i||r[t]),s>this.$interval,o=t=="next"?left:right,  
this.sliding=0,s&&this.pause(),i>length?i>this.$element.find(".item")|[]|,f=e.Event("sl  
if(i.hasClass("active"))return;this.$indicators.length&&(this.$indicators.find(".active").re  
("slid",function(){var t=e(a,$indicators.children()).getActiveIndex());t&&t.addClass("act  
,$element.hasClass("slide")))(this.$element.trigger(f);if(f.isDefaultPrevented())return;i.ad  
,i.addClass(o),this.$element.one(e.support.transition.end,function(){i.removeClass([t,o].jo  
removeClass(["active",o].join(" ")),a.sliding=1,setTimeout(function(){a.$element.trigger("c  
f);if(f.isDefaultPrevented())return;r.removeClass("active"),i.addClass("active"),this.slide  
return s&&this.cycle(),this);var n=e.fn.carousel;e.fn.carousel=function(n){return this.eac  
("carousel"),s=e.extend({},e.fn.carousel.defaults,{type:n=="object"?n,o:typeof n=="strin  
t(this,s),typeof n=="number"?i.toIn(o||{}).s.interval&&i.pause().cycle()},e.fn.carousel  
pause:"hover"),e.fn.carousel.Constructor=t,e.fn.carousel.noConflict=function(){return e.fn.c  
.carousel.data-api","[data-slide],[data-slide-to]",function(t){var n=e(this),r,i=e(n.attr("  
.replace(/\w+=#\w+/g,"")),s=e.extend({},i.data(),n.data()),o;i.carousel(s),(o.attr("c  
.pause).to(o).cycle,t.preventDefault()))}(window.jQuery),!function(e){use strict;var t  
.options=e.extend({},e.fn.collapsible.defaults,n),this.$options.parent&&(this.$parent=e(this.opt  
.toggle());t.prototype={constructor:t,dimension:function(){var t=this.$element.hasClass("wid  
show:function(){var t,n,r,i;if(this.transitioning||this.$element.hasClass("in"))return;t=this  
[t].join("-"),r=this.$parent&&this.$parent.find(> .accordion-group > .in");if(r&r.length)i  
,transitioning{return;r.collapse("hide"),i.r.data("collapse",null))}this.$element[t](0),this  
."shown"),e.support.transition&&this.$element[t](0),this.$element.trigger("shown");i.h  
.hasClass("in"))return;t=this.dimension(),this.reset(this.$element[t](0)),this.transition("re  
this.$element[t](0)),reset:function(e){var t=this.dimension();return this.$element.removeClass(  
offsetWidth,this.$element[e=="null"? "addClass": "removeClass"]("collapse"),this).transition(  
n.type=="show"?i.reset(),i.transitioning=0,i.$element.trigger(r));this.$element.trigger(n
```



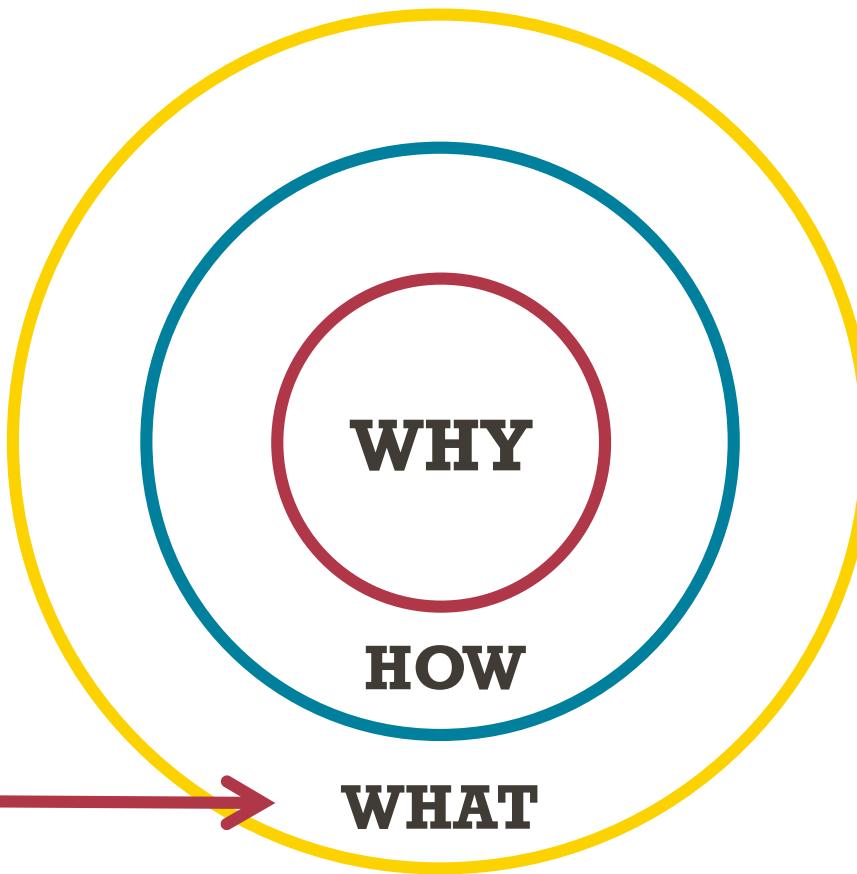
How = Usage of data

Why = Business understanding

What as a starting-point

We are good at:

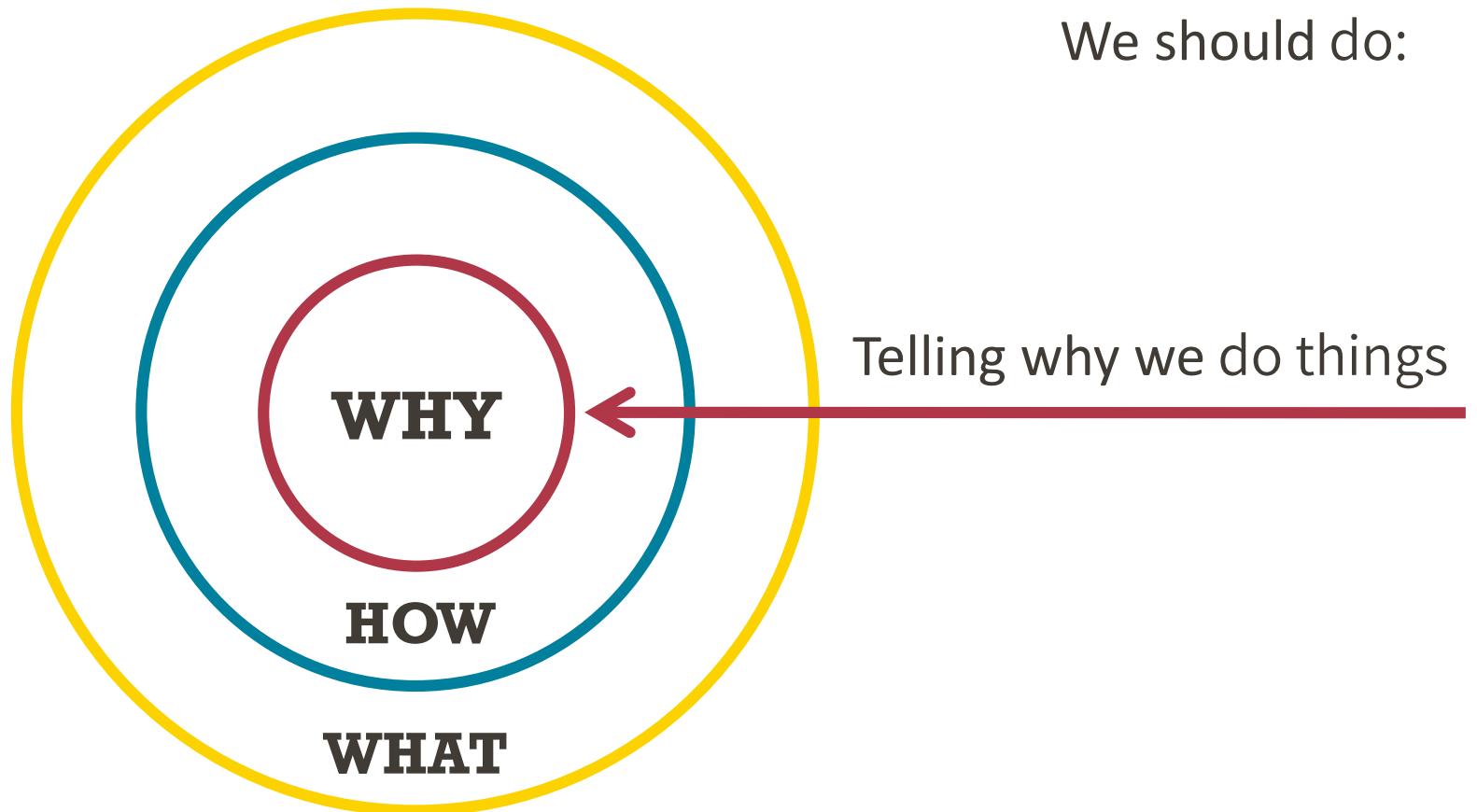
We should do:



Telling what we do

Why as a starting-point

We are good at:



The definition of storytelling

Data storytelling is the process of translating data analyses into layman's terms in order to influence a **business decision** or **action**.

Once upon a time... <sob>



Goals of storytelling

- Transfer of information which is interpreted correctly
- The origin of the question
- Possibility to answer the next question
- Motivation for data-driven decisions
- Connected to business processes



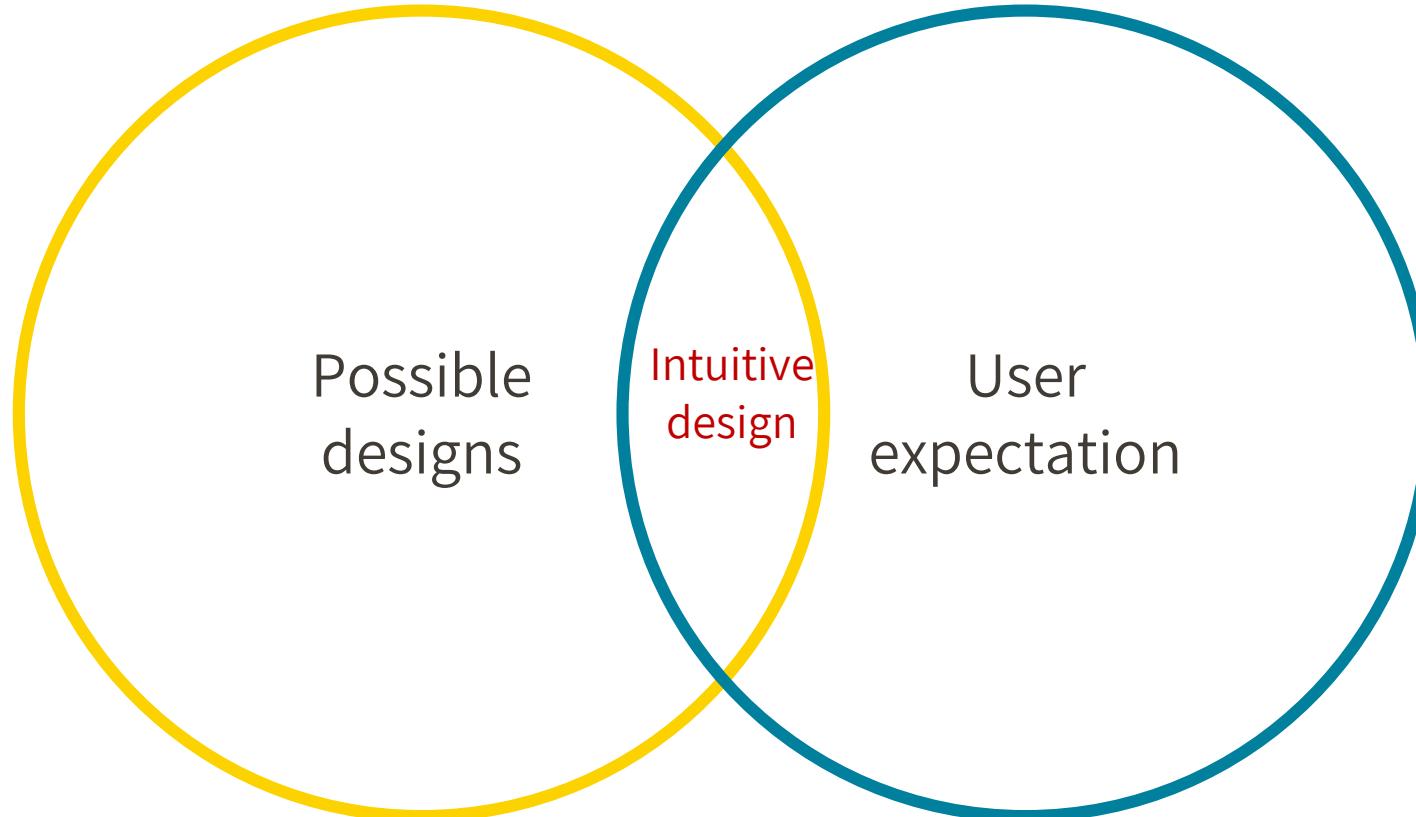
Practical use & some additional features



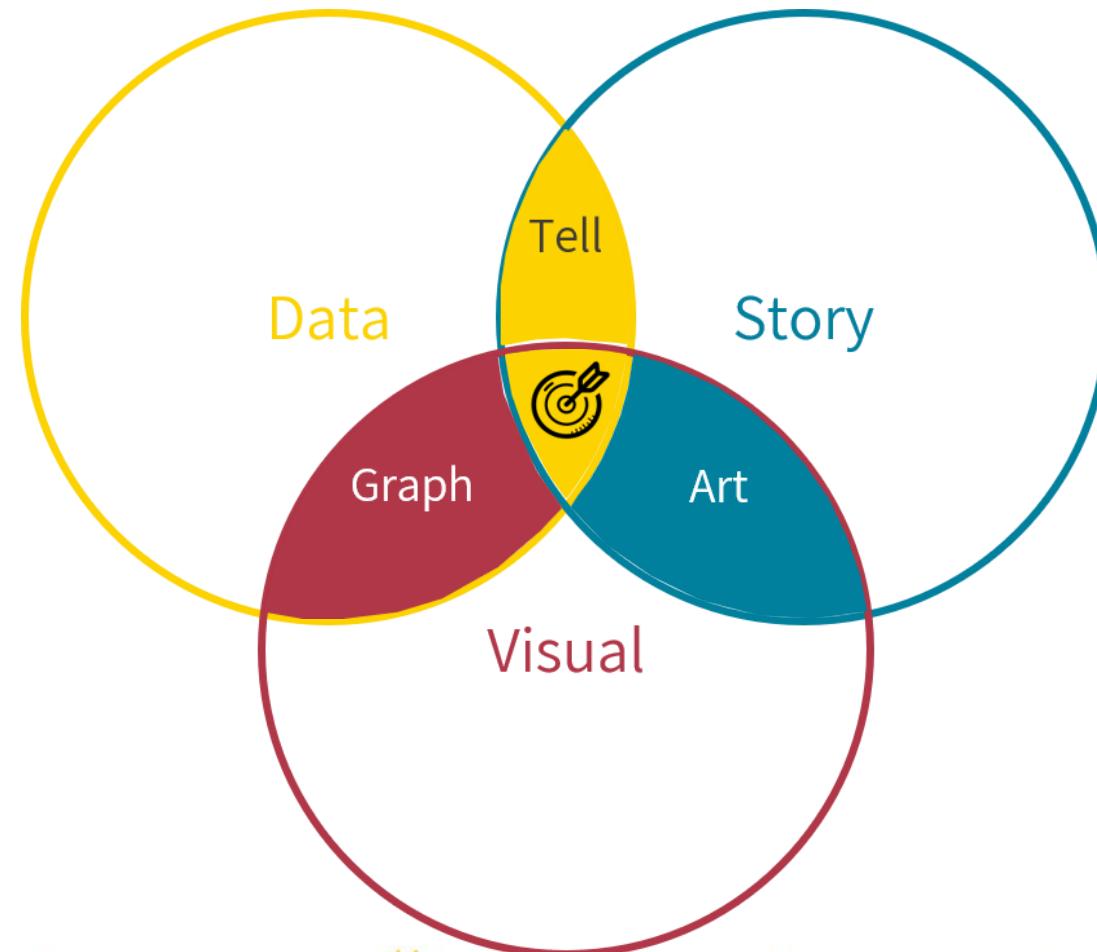
Add context



Make it intuitive



Find the right balance



Define your type of storytelling



Describe



Declare



Explore

Define your route (click-path)



Think about your start & end-point



Remove all bullshit!



Visualization

Export von Bananen in Tonnen von 1994-2005

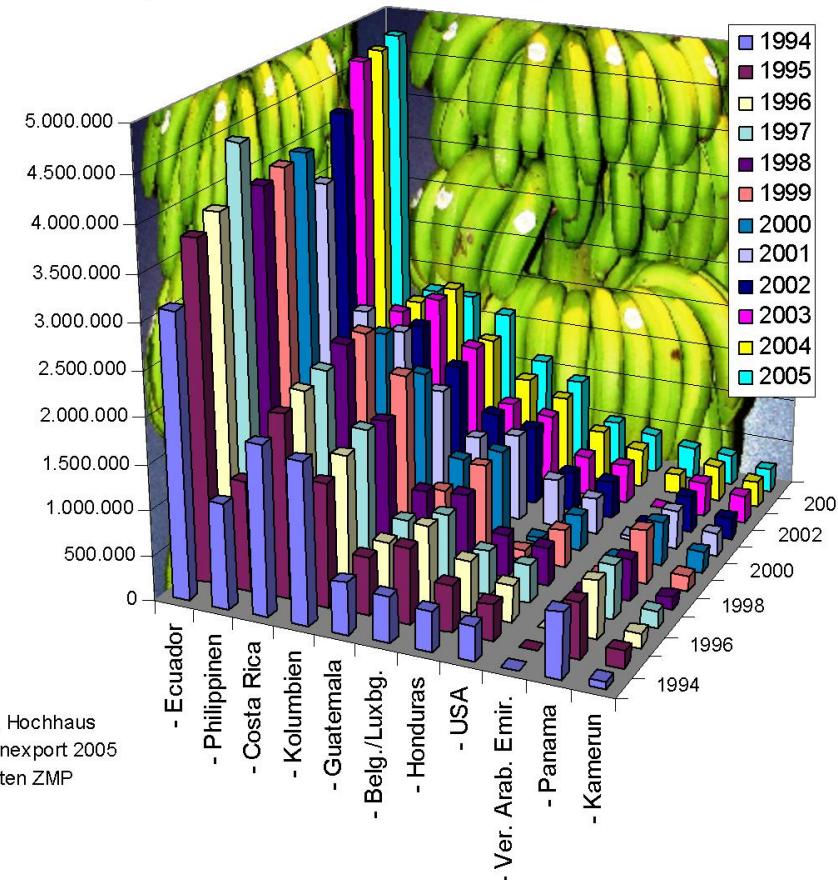
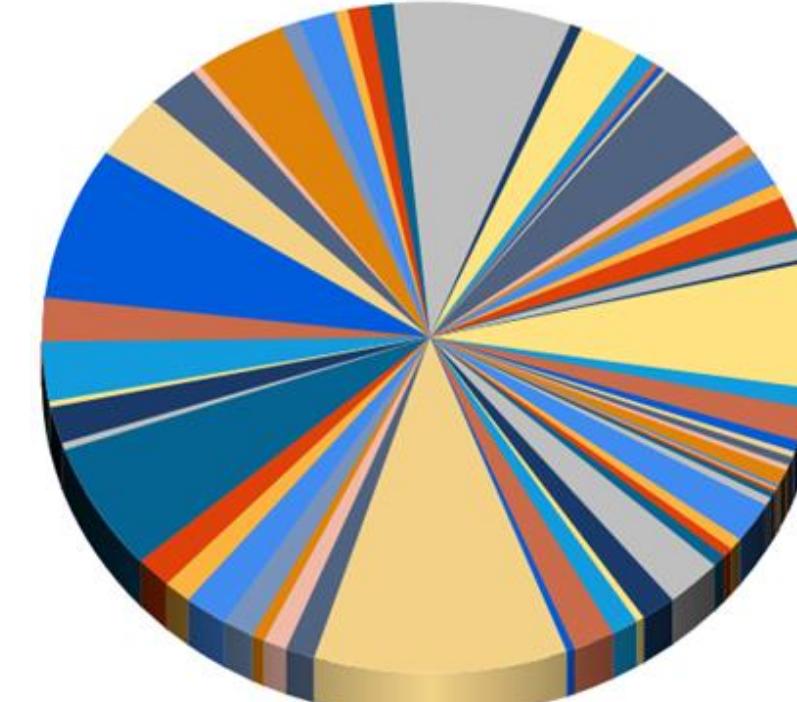
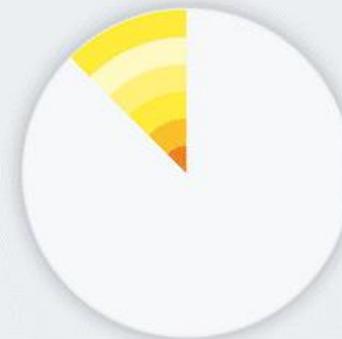


Chart Title



Ohio	Alabama
Virginia	Washington
New Hampshire	Montana
Massachusetts	Oregon
Michigan	Wyoming
New York	Rhode Island
Connecticut	Connecticut
Indiana	Manitoba
Maine	Brunswick
Idaho	New South Wales
California	South Australia
Nevada	Victoria
Colorado	Queensland
New Mexico	Hamburg
Utah	Hessen
Arizona	Saarland
Minnesota	Bayern
Missouri	Nordrhein-Westfalen
Texas	Brandenburg
South Dakota	England
Illinois	Essonne
Wisconsin	Seine (Paris)
Quebec	Loiret
Alberta	Seine Saint Denis
Ontario	Seine et Marne
British Columbia	Val d'Oise
Tennessee	Hauts de Seine
South Carolina	Gers
Florida	Pas de Calais
Mississippi	Val de Marne
Georgia	Nord
Kentucky	Garonne (Haute)
North Carolina	Loir et Cher

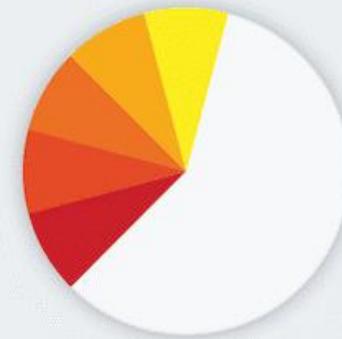
Color usage



MONOCHROMATIC



COMPLEMENTARY



ANALOGOUS



TRIADIC



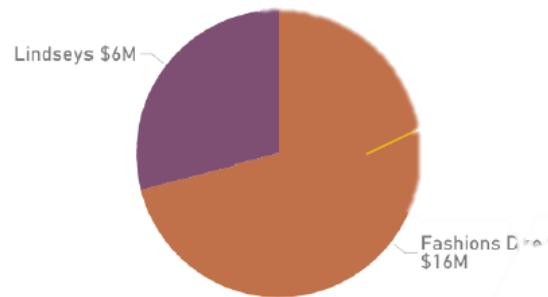
MARIOKART DELUXE

TM

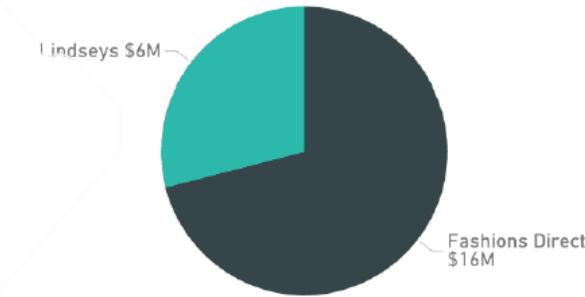
1	King Boo	45
2	Lakitu	32
3	Villager	30
4	Shy Guy	27
5	Iggy	23
6	Ludwig	21
7	Roy	16
8	Peach	15
9	Cat Peach	14
10	Villager	10
11	Luigi	7
12	Mario	6

Consistency

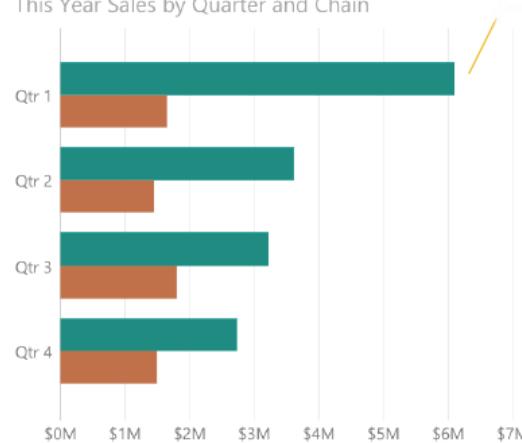
This Year Sales by Chain



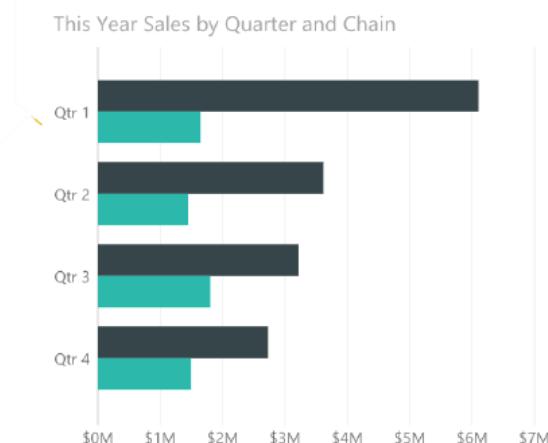
This Year Sales by Chain



This Year Sales by Quarter and Chain



This Year Sales by Quarter and Chain



A photograph of a mountain biker from behind, wearing a blue jacket, black shorts, and a white helmet, standing on a rocky ledge. A white mountain bike with red water bottles is leaning against the rock. The background features a majestic range of mountains with patches of snow and ice under a bright blue sky.

**Send your users
on an adventure!**

Storytelling features



Provide easy navigation



MEDIA DISCUSSION**CALLOUT PAGES**

Opiod Crisis Investigation

Media Discussion

Reimbursements by State

Take Action

Published Date

Last 1 Years

4/18/2017 - 4/17/2018

Source**Reimbursements by Product**

● Medicaid Amount Reimbursed ● Non Medicaid Amount Reimbursed



An Osteoarthritis Drug May Be the Answer to America's Opioid Crisis
futurism.com • Mar. 2, 2018
A drug developed to treat osteoarthritis pain has shown promise as a method of preventing opioid tolerance and physical dependence. With the opioid epidemic still



A telling anecdote about Trump and the opioid abuse crisis
www.vox.com • Mar. 2, 2018
originally from prescription opioids but increasingly now from heroin and fentanyl ? have emerged as an increasingly grave social issue, steadily worsening over

WATCH LIVE: White House to highlight administration anti-opioid efforts
fox61.com • Mar. 2, 2018

The White House is hosting a summit to highlight Trump administration efforts to combat the opioid crisis. First lady Melania Trump is scheduled to

Labeler Name	Medicaid Amount Reimbursed
Purdue Pharma	\$65,537,207
Rhodes Pharmaceuticals	\$13,386,981
Alvogen	\$11,685,277
Kvk-Tech	\$10,564,303
Aurobindo Pharma	\$4,453,260
Amneal Pharmaceuticals	\$3,724,979
Ranbaxy Pharmaceuticals	\$3,554,774
Zydus Pharmaceuticals	\$3,484,614
Epic Pharma	\$1,801,086
Sun Pharmaceutical Industries	\$1,630,451
Mayne Pharma	\$1,007,351
Par Pharmaceutical	\$804,096
Lubrizol Valley Technologies	\$470,072



White House To Give Status Update On Opioid Emergency
wypr.org • Mar. 2, 2018
ET Since President Trump declared the opioid epidemic a national public health

Wyoming Prepares To Grapple With Opioid Crisis
www.wbur.org • Mar. 2, 2018
discuss the country's opioid epidemic. Rural coal mining states like West Virginia and



White House to host opioid summit and highlight Trump administration's efforts
www.pbs.org • Mar. 2, 2018
The White House is hosting a summit to highlight Trump administration efforts to



Be dynamic

KPI BREAKDOWN



REGION

All

COUNTRY

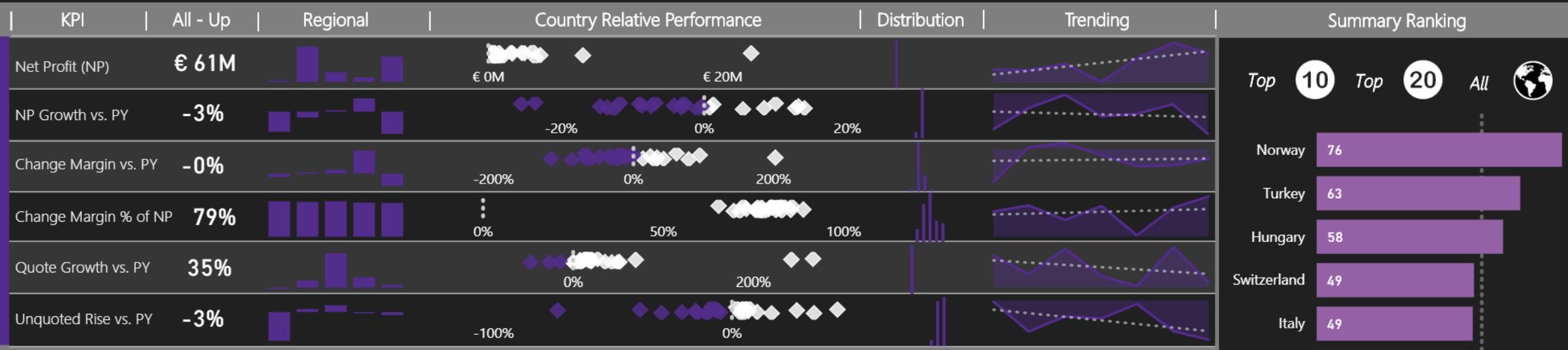
All



Select for FAQ

DecisiveData
insights for decisions

FINANCIAL



MARKET



SUPPLY



Date

6/1/2017 12/1/2017

Summary Ranking

0 91

NP Growth vs PY

-30% 16%

Quote Growth

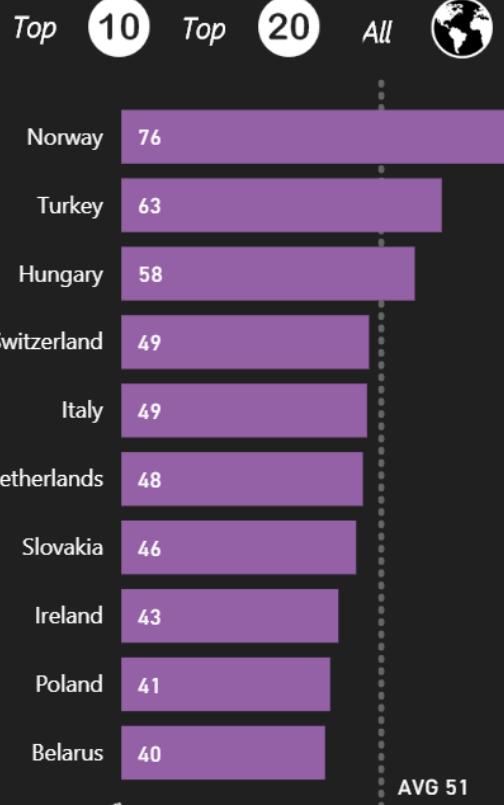
-55% 281%

Market Change Shape

-7% 16%



Filters



Have a guided experience



REIMBURSEMENTS BY STATE

CALLOUT PAGES

Opiod Crisis Investigation

Media Discussion

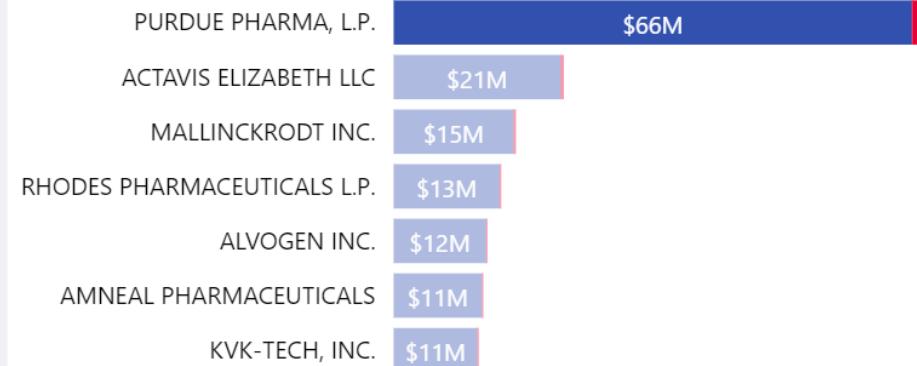
Reimbursements by State

Take Action

Opioid Type

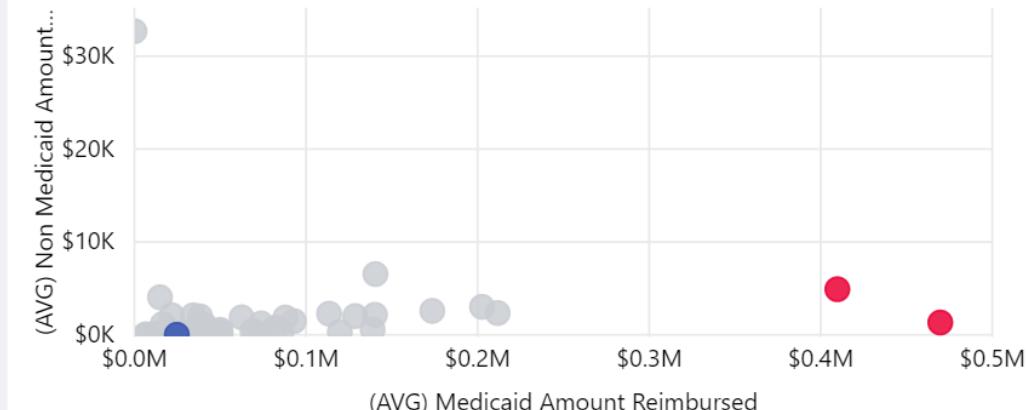
Medicaid Amount Reimbursed and Non Medicaid Amount Reimbursed by Labeler Name

● Medicaid Amount Reimbursed ● Non Medicaid Amount Reimbursed



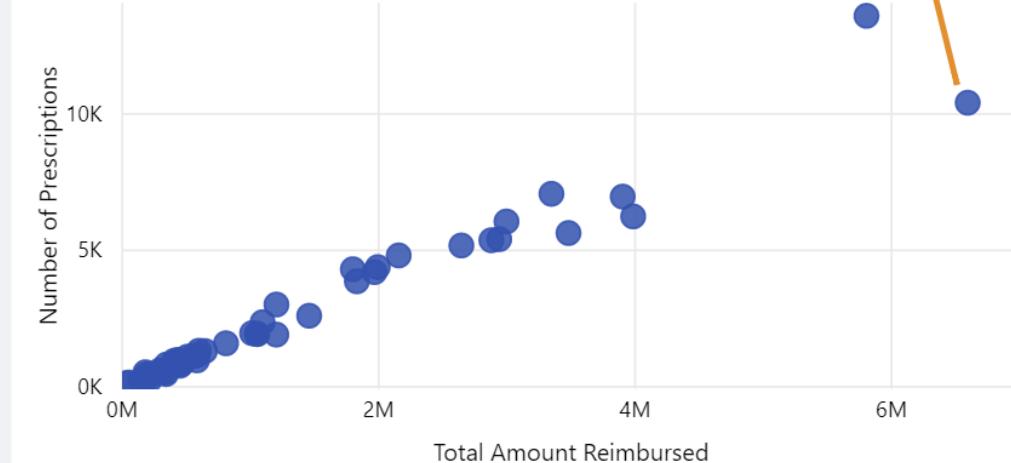
(AVG) Medicaid Amount Reimbursed and (AVG) Non Medicaid Amount Reimbursed by...

● Missouri & North Carolina ● Other ● South Carolina



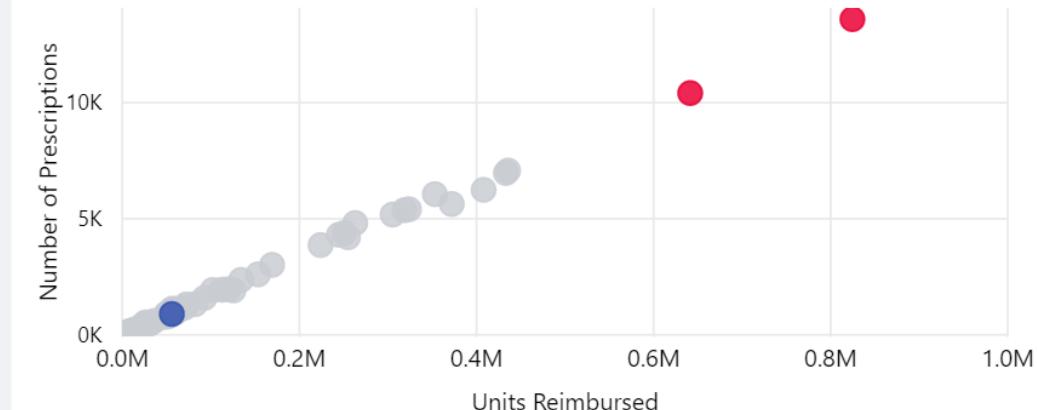
Missouri and North Carolina are at the centre of a lawsuit involving mis-marketing of OxyContin. Purdue settled a lawsuit in 2007 with South Carolina.

Total Amount Reimbursed and Number of Prescriptions by State



Units Reimbursed and Number of Prescriptions by State and State (groups)

● Missouri & North Carolina ● Other ● South Carolina



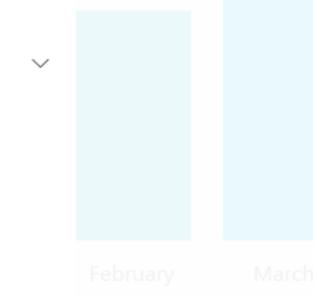


A woman with long dark hair is looking at a large digital screen. The screen displays a virtual museum exhibit for "Dutch Painting". The title "Dutch Painting" is at the top, followed by "See Also POLYCHROME - 1640s". A large image of a painting titled "Landscape with a Windmill (1646)" by Jacob van Ruisdael is shown. Below the painting, the text reads "ON VIEW IN GALLERY 215" and there is a "SAVE ARTWORK" button with a heart icon. The background of the screen is filled with numerous small thumbnail images of various artworks. The bottom of the image features a yellow decorative border.

Have an interactive
experience

Item

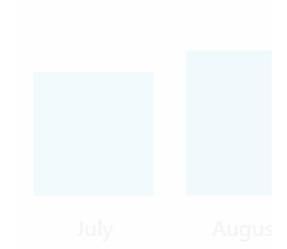
- Slicer 1
- CategoryName
- Beverages
 - Condiments
 - Confections
 - Dairy Products
 - Grains/Cereals
 - Meat/Poultry
 - Produce
 - Seafood



Slicer 2

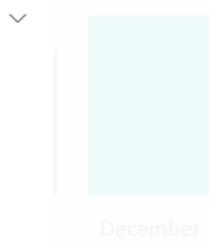
- Country
- Argentina
 - Austria
 - Belgium
 - Brazil
 - Canada
 - Denmark
 - Finland
 - France
 - Germany
 - Ireland
 - Italy
 - Mexico
 - Norway
 - Poland
 - Portugal
 - Spain

Bar Chart



Slicer 3

- City
- Aachen
 - Albuquerque
 - Anchorage
 - Århus
 - Barcelona
 - Barquisimeto
 - Bergamo
 - Berlin
 - Bern
 - Boise
 - Bräcke
 - Brandenburg
 - Bruxelles
 - Buenos Aires
 - Butte
 - Caminas



Item

Item

Item

Item



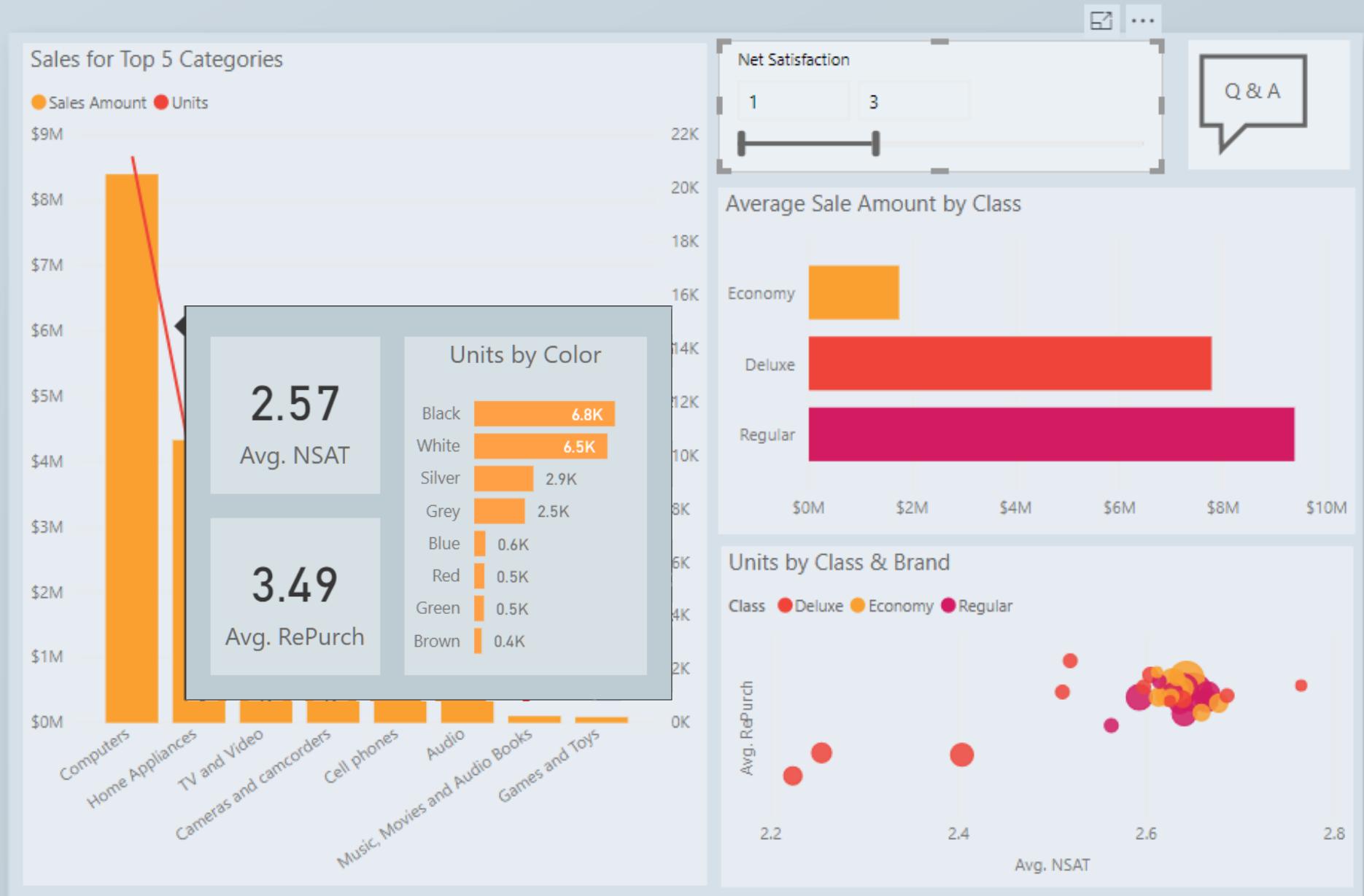
Chart



Ensure consistent context



Progressive disclosure

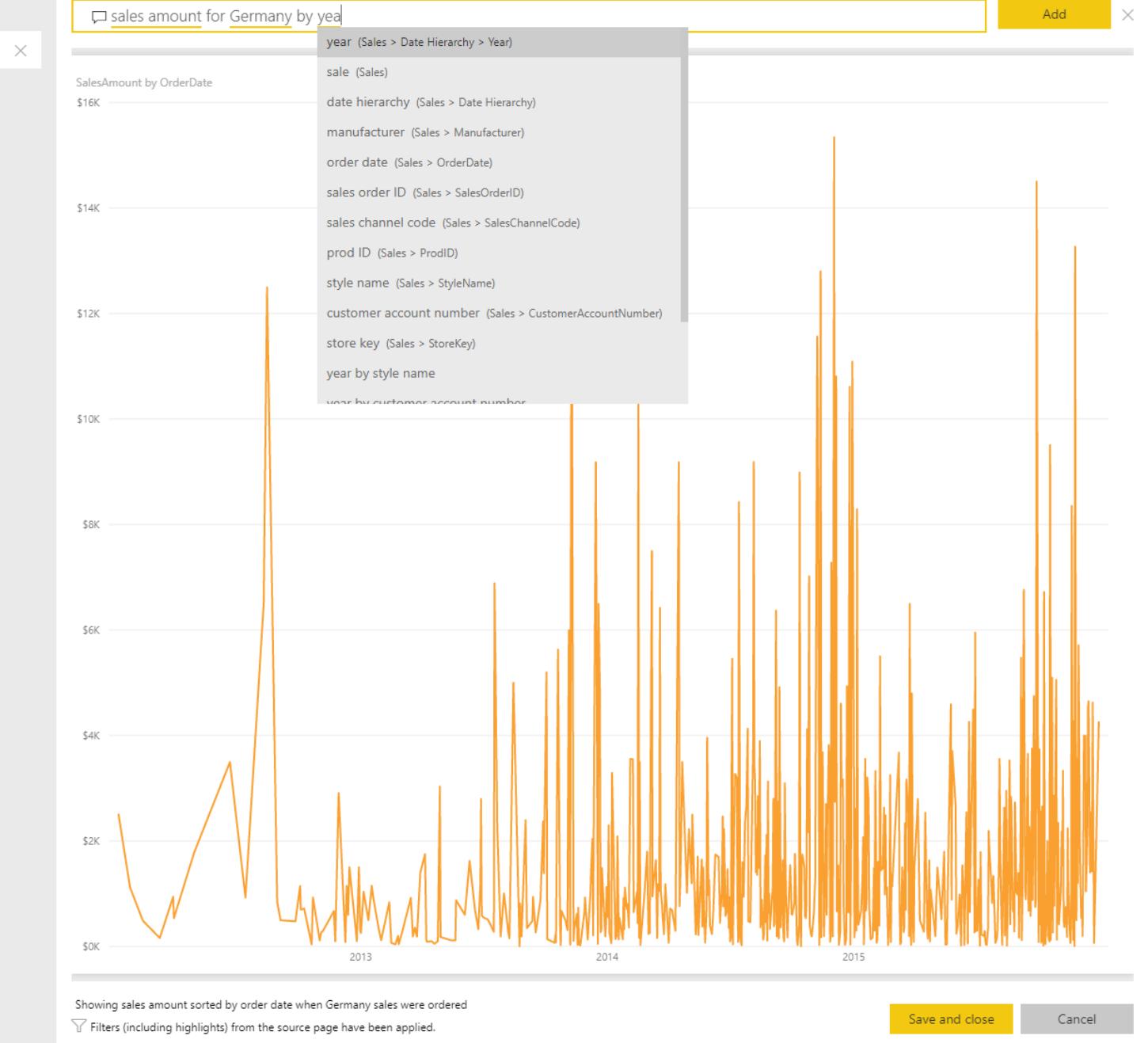




Let them ask questions

SUGGESTED QUESTIONS

sales amount for Germany



Background, theme & wallpaper



Demo strava data – part 1

- Choose a lay-out for your report for be consistent in your presentation
- Create background to limit the amount of objects
- Create theme file and apply your corporate identity
- Add a wallpaper for further customizing the lay-out

Conditional formatting



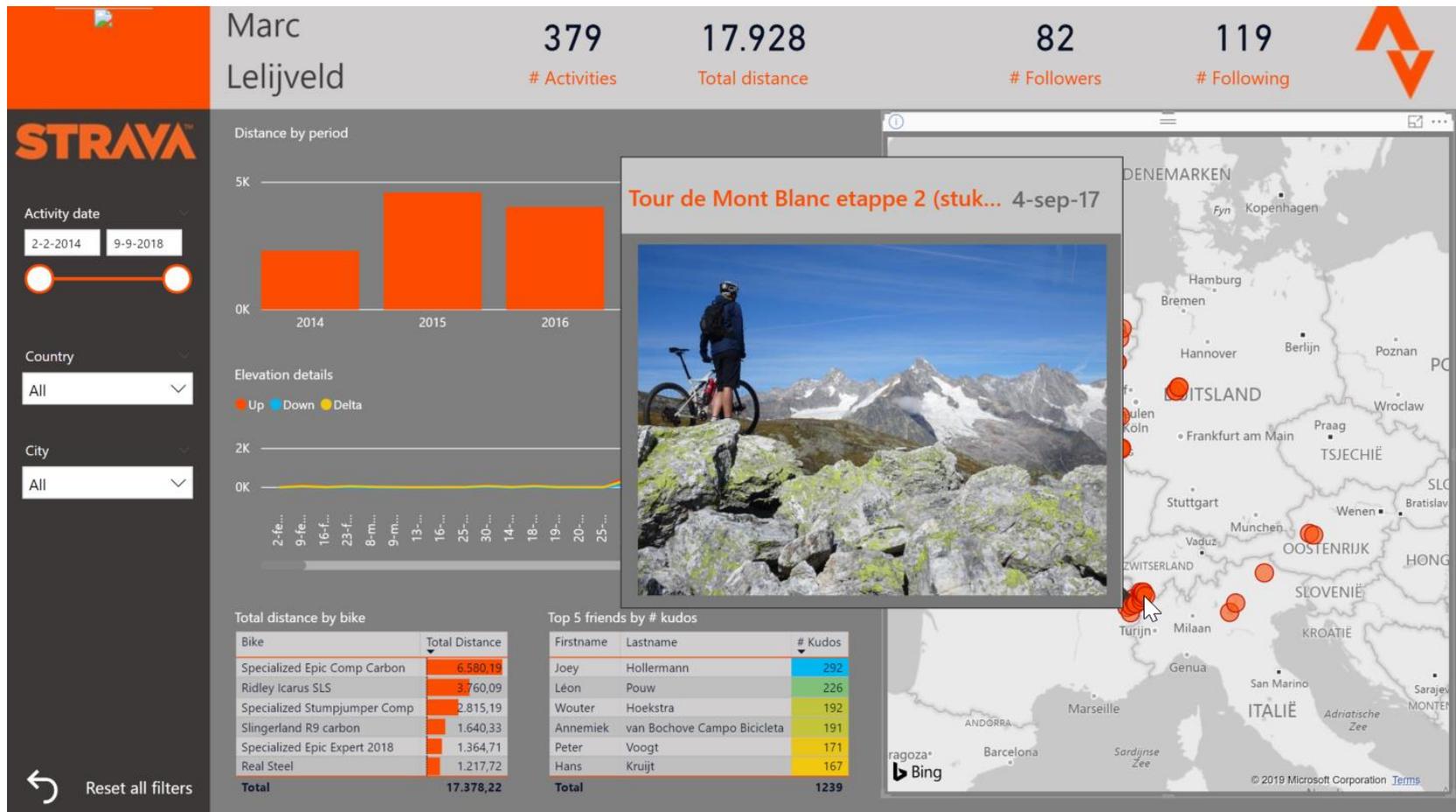
Demo strava data – part 2

- Tables and matrixes look boring and like classic reports!
- Databars, text color and cell color!
- Based on cell value or other measure.

I'm going to tell you a story



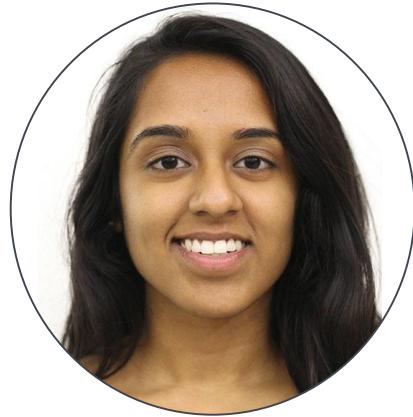
Demo strava data - part 3 (final)



Recap

- Storytelling is not a science; it is an **art**!
- **Understand** your end-user. Facilitate them with data.
- Send your users on an adventure and make them part of **your** story!
- Add your **identity** (corporate or your own) .
- Power BI is full of great features, **make boring data shine!**

Want to know more...?



Sujata Narayana
Program Manager
Microsoft



Charles Sterling
Senior Program Manager
Microsoft

Microsoft Power Series

Advanced Data Visualization &
Storytelling with Power BI Desktop

Thursday, 28 March
17.15 – 18.15

Elicium Ballroom 1

Download for free!

[Https://bit.ly/cheatsheetpbi](https://bit.ly/cheatsheetpbi)



Marc Lelijveld
Data & Analytics Consultant
Macaw Netherlands

@MarcLelijveld



[LinkedIn.com/in/Marc-Lelijveld/](https://www.linkedin.com/in/Marc-Lelijveld/)

<https://Data-Marc.com>

POWER BI CHEAT SHEET

December 2018

<https://bit.ly/cheatsheetpbi>

December 2018

Power Query

Tips & Tricks

- Give every step an explanatory name and merge steps of the same type, for better manageability.
- Give queries and columns user-friendly names (this is also necessary to utilize Q&A).
- Make sure that each column in each table has the correct data type. This will make the data model smaller and (as a result) faster.
- Remove columns you are not going to use in your report. Prefer 'Remove Other Columns' above the 'Remove Column' option, for lower risk that structure changes in your data source break the query.
- Maximize the use of Query Folding for faster and more efficient queries. With Query Folding, multiple transformations are merged as one query and then send to the source. If 'View Native Query' is not available, Query Folding has stopped before that step.
- Structure your queries in folders. For example: Facts, Dimensions, Functions, Misc.
- You can copy and paste Queries easily between files. Dependencies will be included (parameters/queries/functions), and Data Sources will be automatically listed.
- Turn off 'Enable Load' for queries/tables that you don't need in the Data Model.
- Prefer 'reference' over "duplicate" of a query.
- Re-use Power Query code and lower impact on your data source by using Power BI dataflows.
- Turn on the Formula Bar so you get familiar with Power Query (M) code. M is an easy way to quickly make small adjustments.
- In general, prefer "Import" over "DirectQuery". Unless the amount of data is too large to Import, or when there are other requirements (like real-time insights).
- Did you know you can transform your data by using Python and R in the Power BI Query Editor?

Code examples (don't forget that Power Query / M is case-sensitive)

- If T > 0 then A else B
- try A/B otherwise 0
- #table[{"X", "Y"}, {{1, 2}, {3, 4}}]
- Date.Time.LocalNow()
- Date.From(Date.Time.LocalNow())
- Excel.Workbook(Web.Contents("url/[filename].xlsx"), null, true)

Resources

- Power Query M Formula Reference: <http://bit.ly/PQMReference>.
- NotePad++ Power Query support by Lars Schreiber: <http://bit.ly/PQinNotePad>.

Data Model

Tips & Tricks

- Always use a separate Date table in your data model. Mark it as a Date Table.
- Only use DAX Calculated Columns when it's not possible to create it using Power Query. This improves clarity and manageability of your report as transformations are located where you expect them.
- Hide columns that are needed but are irrelevant for the user. Quick Tip: use Relationships view to hide multiple columns: use SHIFT + DOWN ARROW for selection of columns ▶ SHIFT + F10 for menu ▶ Hide.
- Hide the key at the many side of a many-to-one relation (e.g. [OrderDate] in Revenue table).
- Use the new filter pane and hide your filters for end users to make sure your end-users can't change it.
- For each measure column in your data model, make a DAX Calculated Measure instead of using the 'Default Summarization', then hide the original column. This way all measures will have the same icon. And it enables you to easily change the calculation in the future (e.g. adding a filter condition). Also, it is easier to reference this measure in other DAX calculations.
- Always use the table name when you refer to a column, for example: 'Product'[Category].
- Use DIVIDE() to prevent division by 0, and to improve the speed of your divisions.
- Use ISINSCOPE to get the right hierarchy level in DAX (read all about it in Kasper de Jonge's blog: <https://bit.ly/KasperOnBIMScope>).
- Give measures a prefix (%), #, 4).
- Use standard abbreviations like TD, LY, PY, PP as suffix, to keep the base fields together.
- In DAX: (un)comment DAX lines by pressing Alt + Shift + A or CTRL + /, and Shift + Enter for line breaks.
- Use aggregations to keep your model small and performant, and still have all detailed data available.
- Use Tabular Editor to make changes to your Power BI file (currently unsupported by Microsoft), also check-out the best-practices analyzer.
- Use the new model diagram to break-out complex models by subject area in separate diagrams.
- Bulk edit fields with multi-select in the new model diagram, and to group measures in display folders.
- Combine historical data with live data by using composite models.

I'VE GOT THE POWER BI

macaw



Power Platform **Summit** EUROPE