



Curso de
**Principios de
Visualización de
Datos para
Business Intelligence**

Luis Novelo

—

¿Qué es la visualización de datos?

¿Qué es la visualización de datos?

- **Input:** información (data).
- **Output:** revelaciones (Insights) e historias.



¿Para qué?

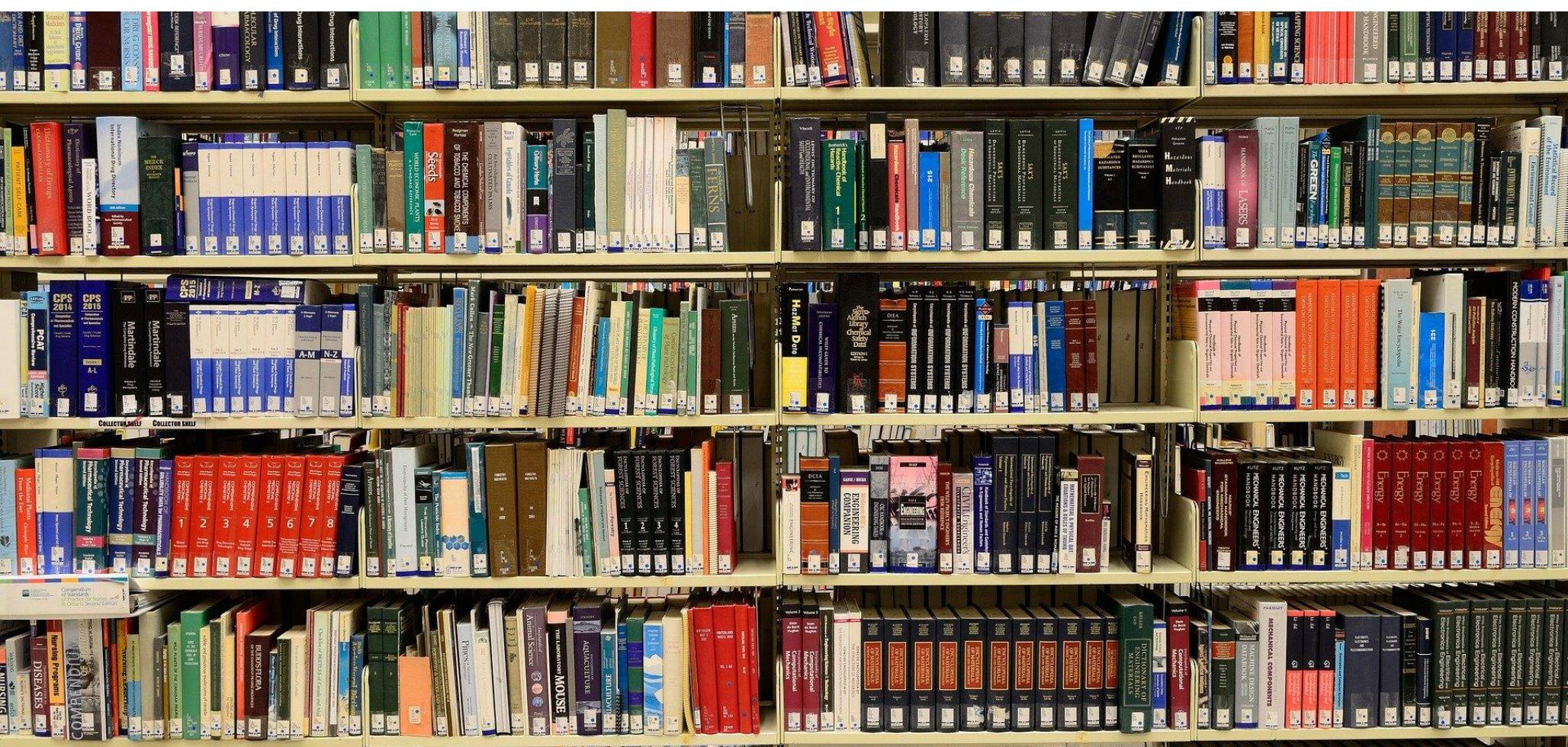


El data visualization no es tema nuevo





La era de la información

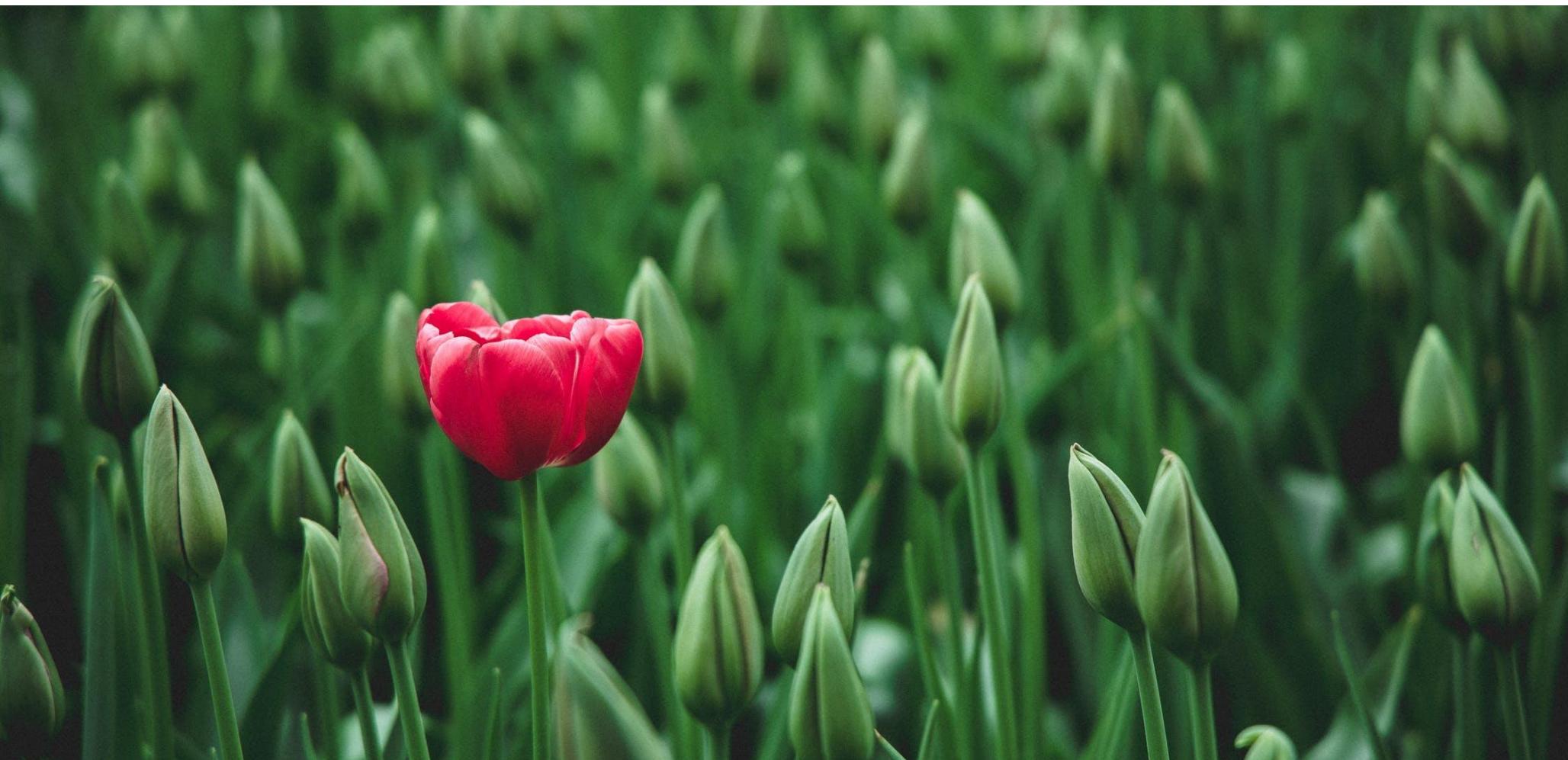


Reto: Florence Nightingale



Importancia de la visualización de datos

Importancia de la visualización de datos



¿Cuántos “2” puedes encontrar en este conjunto de números?

11254544

32144352

75372142



Carga cognitiva



¿Y ahora?

11254544

32144352

75372142



Nos ayuda a entender nuestra información



“

**Visualization gives you
answers to questions you
didn't know you had.**

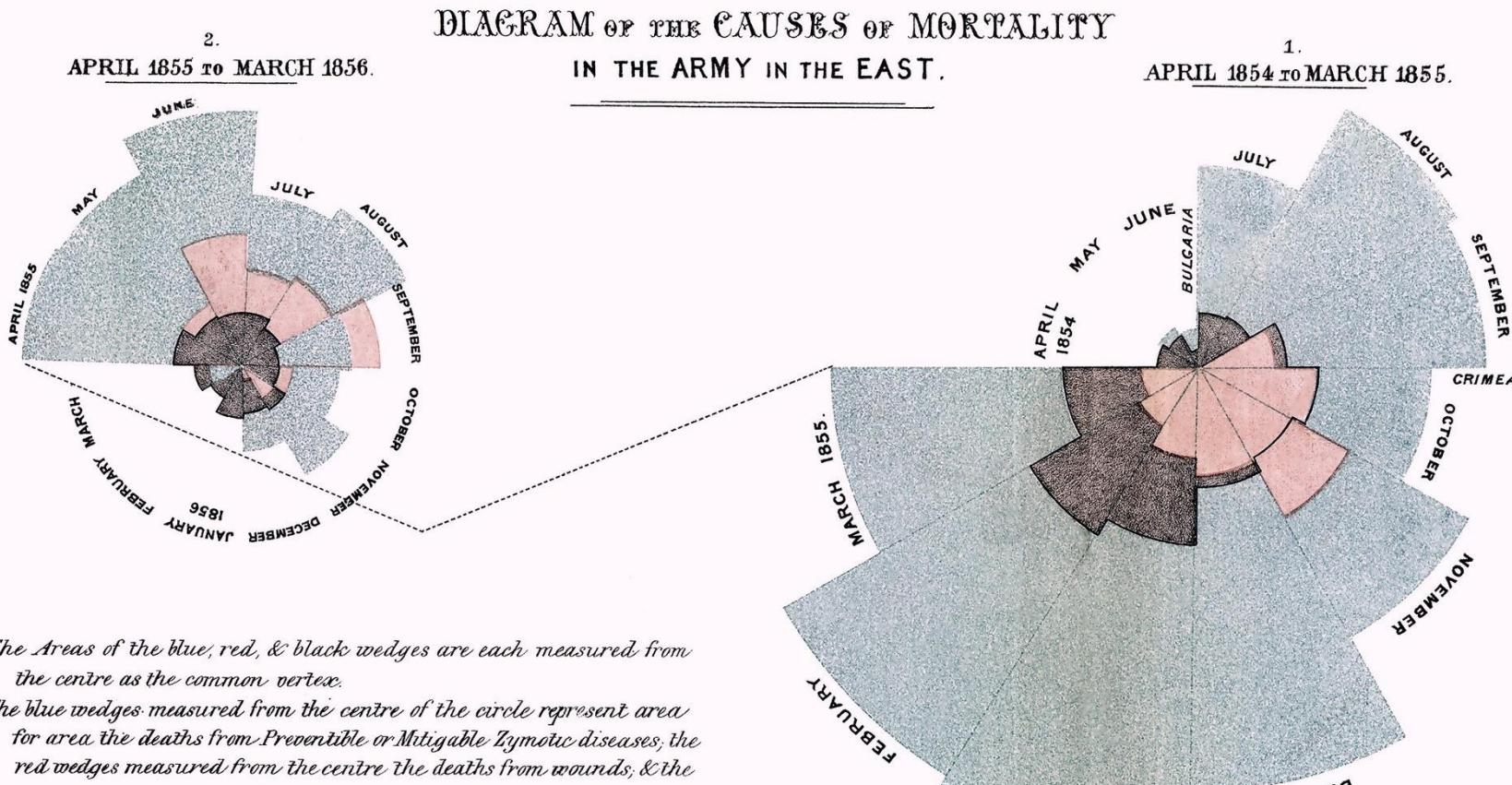
”

Ben Shneiderman

Comunicar mejor



Reto: grandes visualizaciones de datos



Herramientas más comunes

Herramientas más comunes

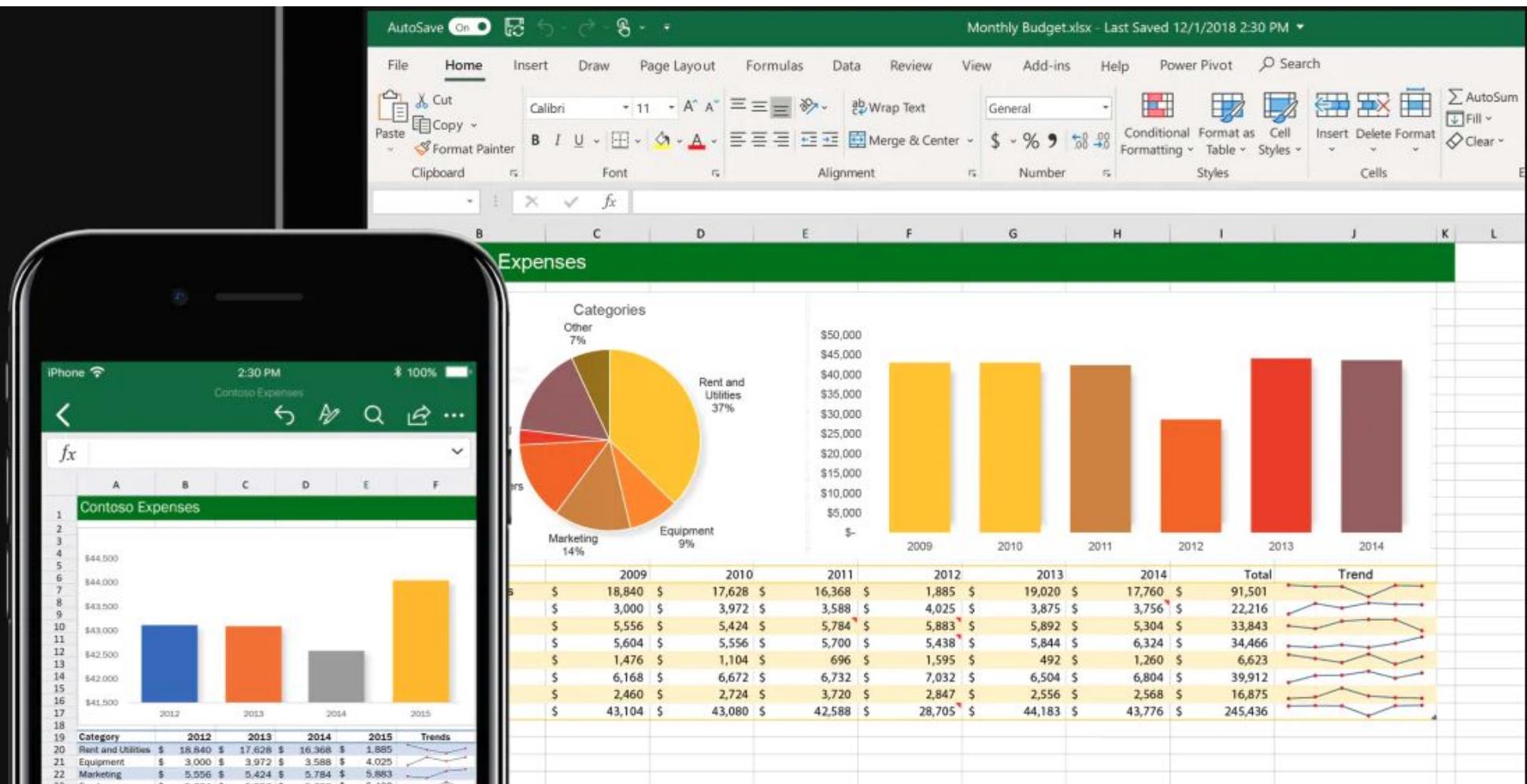


Ejemplos

- Excel
- Tableau
- Power BI
- Google Analytics
- Google Data Studio



Excel



Tableau

Performance Indicat...

Home

Explore

Favorites

Recents

Users

Groups

Schedules

Tasks

Site Status

Settings

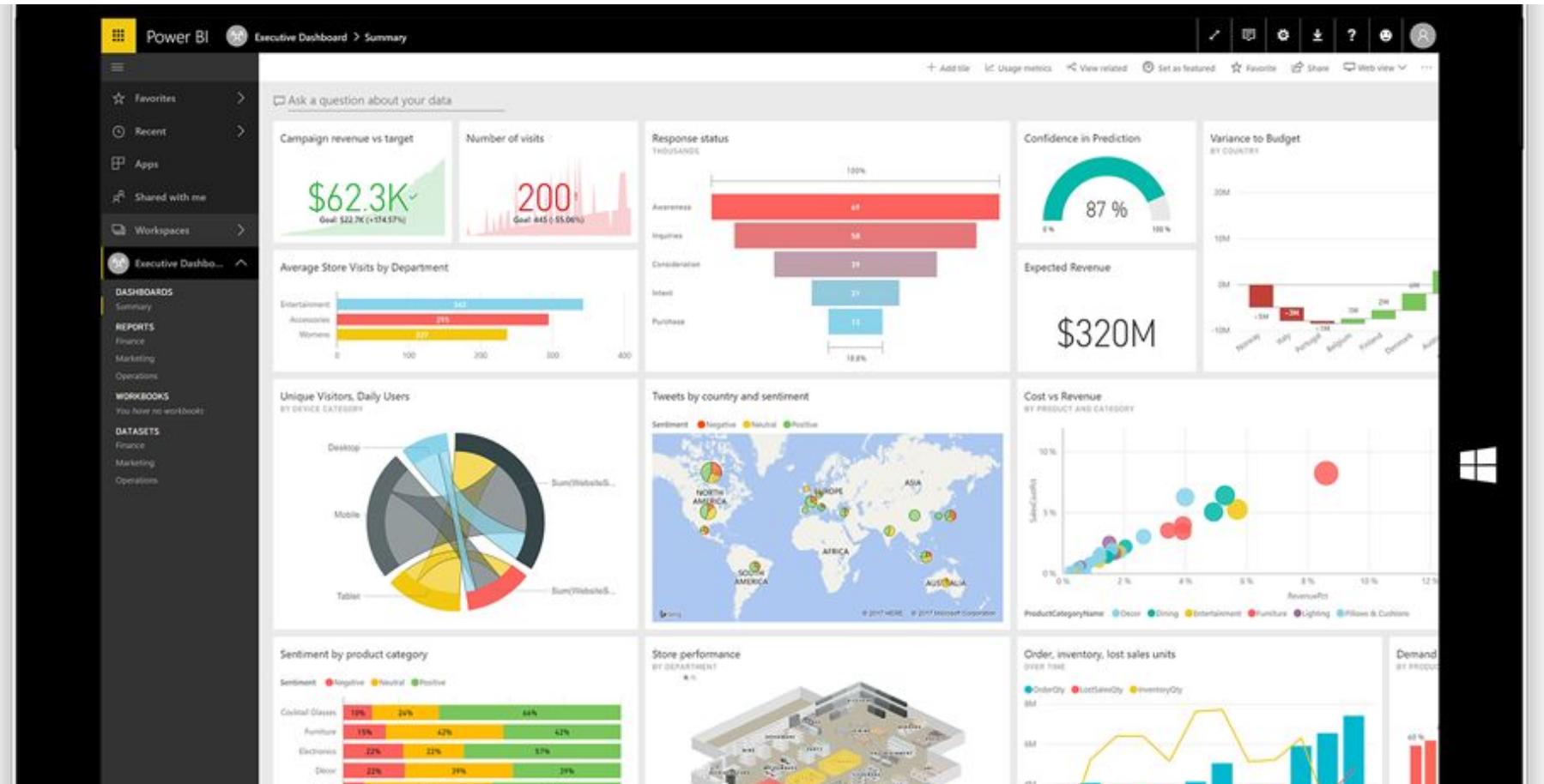
Campaigns and Retention

Owner: Emily Chen

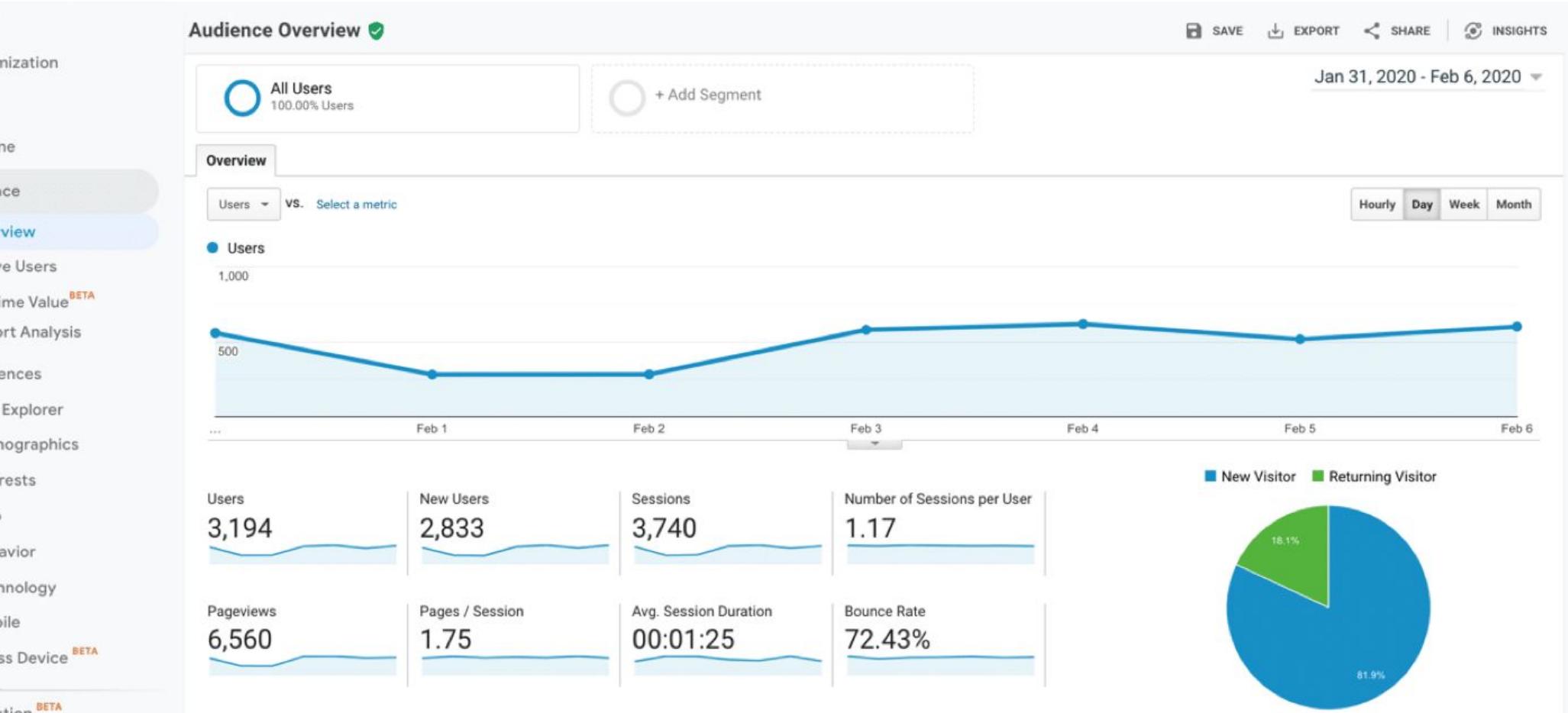
Create Select All Content type: Show all Sort by: Type

The screenshot shows the Tableau interface with a sidebar on the left containing navigation links like Home, Explore, Favorites, and Settings. The main area displays a dashboard titled 'Campaigns and Retention' owned by 'Emily Chen'. The dashboard includes several visualizations: 'Facebook Content Performance' (a bubble chart), 'Email Performance Overview' (a grid of charts including bar and line graphs), 'Google Analytics' (a map of China with traffic trends), and other charts at the bottom including a heatmap and a treemap.

Power BI



Google Analytics



Google Data Studio

Welcome to Data Studio! (Start here)

Páginas <

Interact with a report

- Copy and edit a report
- Edit and add charts
- Date range and filter properties
- Connect to your data
- You want charts? We got charts!
- Share reports and data sources
- Measure reports with Google Analytics
- Let anyone see their data in your reports
- Next steps

1

Interact with charts and tables

In view mode, mouse over charts to show more detail. You can sort tables and scroll through the data.

Try mousing over this chart to see the data points...

2

Set the date and filter your data

Change the time frame using the date range control. The checkboxes in a filter controls let you refine the data according to the dimension values you select.

31 oct 2020 - 29 nov 2020

Sessions 65.711

Try changing the date to show the

Sessions

4 mil
3 mil
2 mil

12 nov 17 nov 22 nov 27 nov

Source

1. (direct)
2. (not set)
3. google

Click on a column header to sort the table by that column.

User Type

- Returning Visitor
- New Visitor

what percentage of returning users were iPhone users?

54

Reto: ¿conoces otra herramienta?



Ejemplos de visualizaciones

Ejemplos de buenas visualizaciones





Fries



Coronavirus Riskiest Activities

According to 500+ epidemiologists & health professionals

risk factors to consider

- people how many?
- space how close is the contact?
- time how long the exposure?
- location inside or outside?
- surfaces lots of high touch?
- area high number of cases?
- covidicity how likely is compliance?

LOW RISK



MEDIUM RISK



HIGH RISK



Risk reduced by [wearing a mask](#), [social distancing](#) & [washing hands](#)

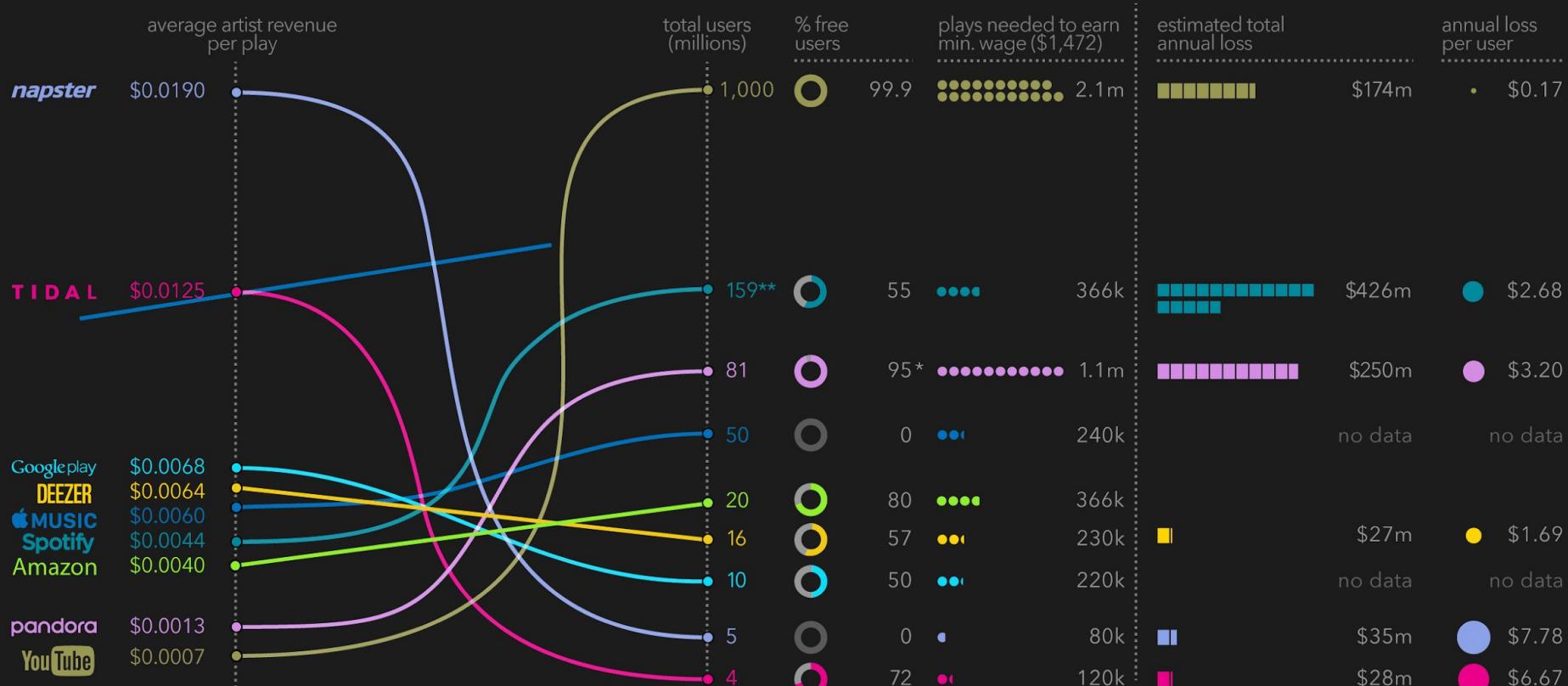
informationisbeautiful

sources: New York Times, Reuters, NPR, SF Gate & others

→ INCREASING RISK →

Money Too Tight to Mention?

Major music streaming services compared



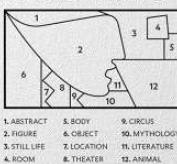
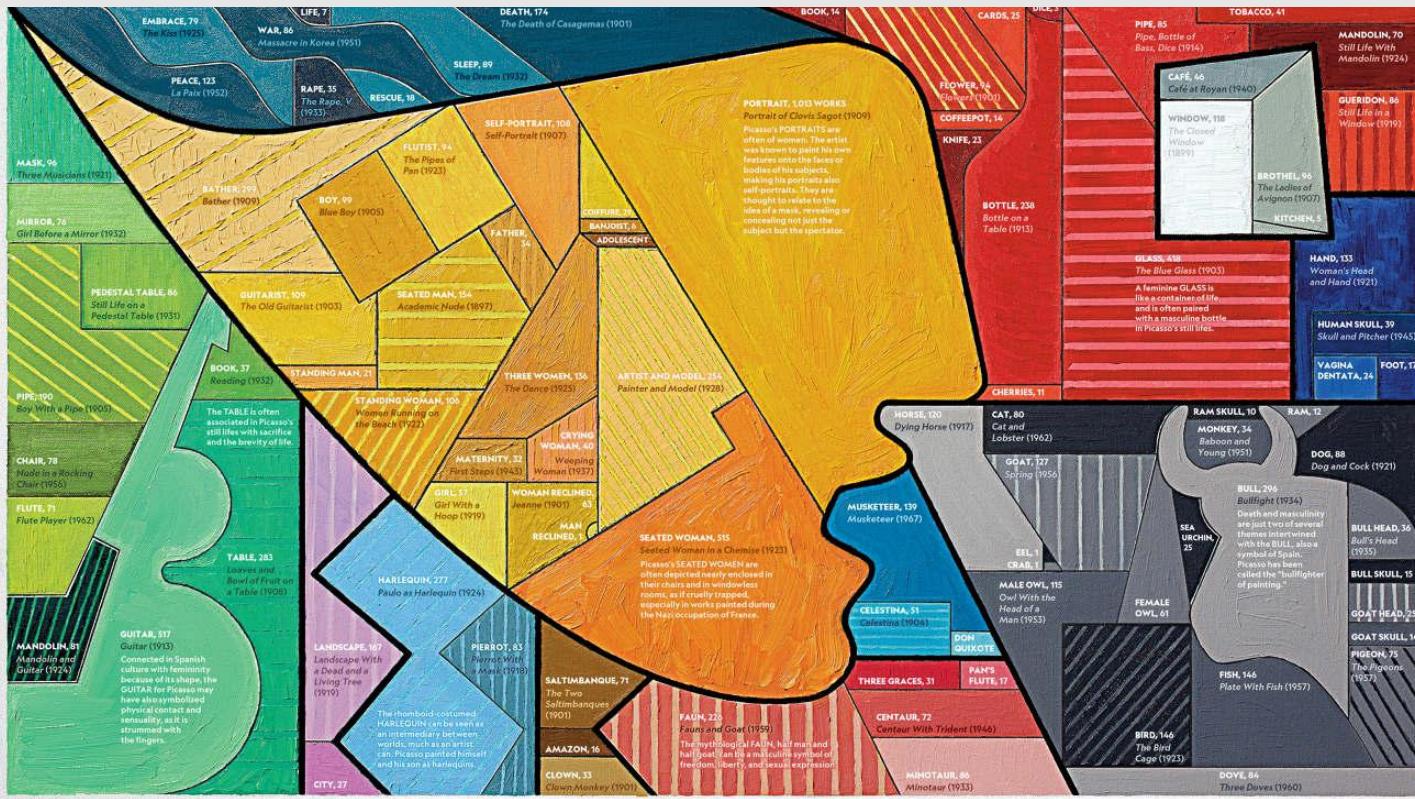
Last Update: 3rd Mar 2018 * based on 5% of standard Pandora users taking up their new on-demand service

** Spotify count every person on a family plan as a separate user

data: bit.ly/KIB_stream

informationisbeautiful.net

Bonus: Picasso Visualization



GRAPHIC AND ART: IDUN ON CANVAS. MY WEINBERG; ALBERTO LUCAS LÓPEZ, NGM STAFF. TEXT: EVE CHAMON, NGM STAFF. PHOTO (PRINTINGS): MARK THIessen, NGM STAFF. SOURCES: ENRIQUE MALLÓN, ONLINE PICASSO PROJECT; PARÍS PICASSO: A RETROSPECTIVE, MUSEUM OF MODERN ART, NEW YORK. A PIECE CAN BE INCLUDED IN SEVERAL CATEGORIES. AREA SIZES ARE APPROXIMATE.

Reto: una visualización fantástica

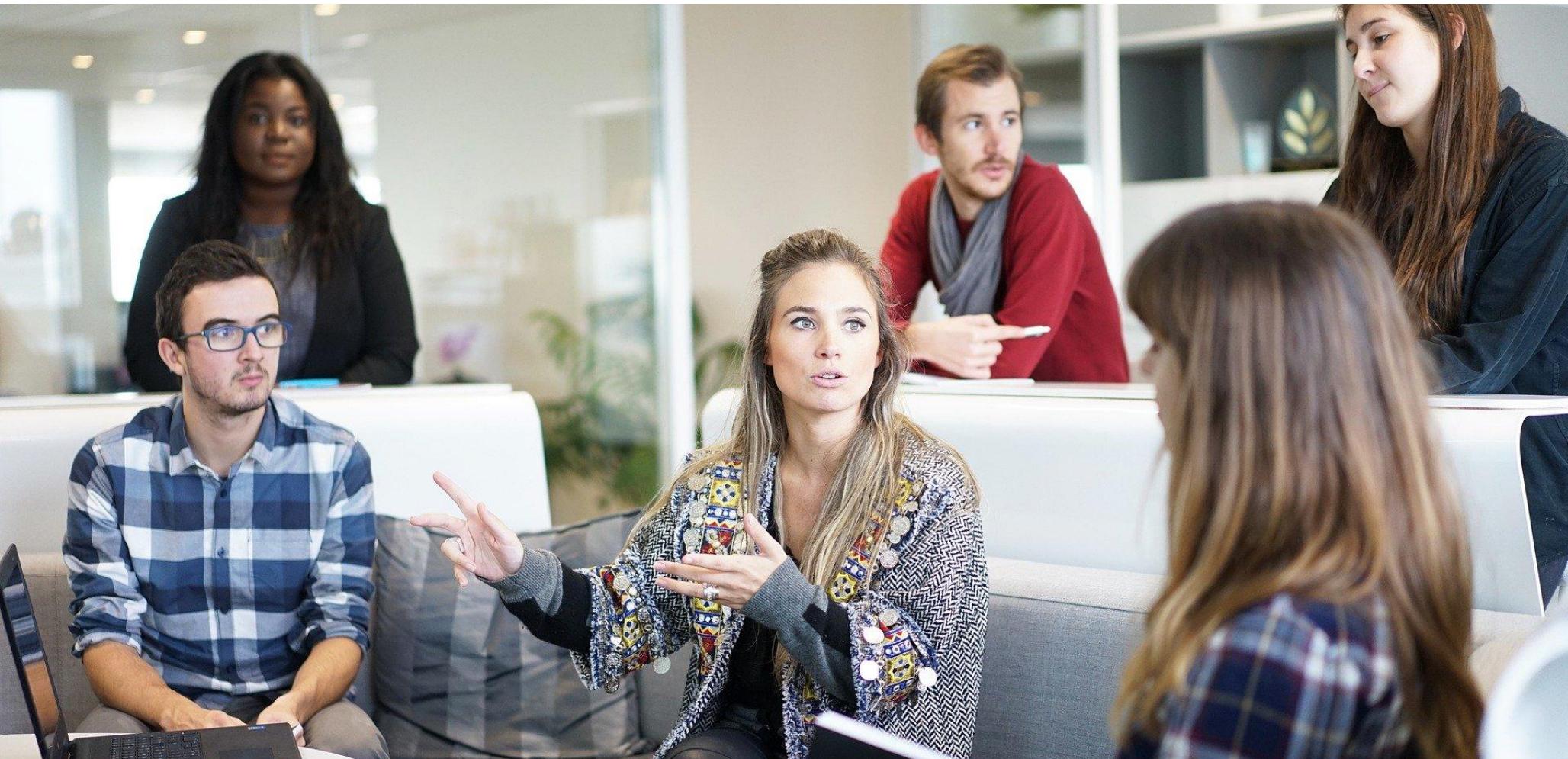


Buenas prácticas

Buenas prácticas



Define una audiencia y motivo

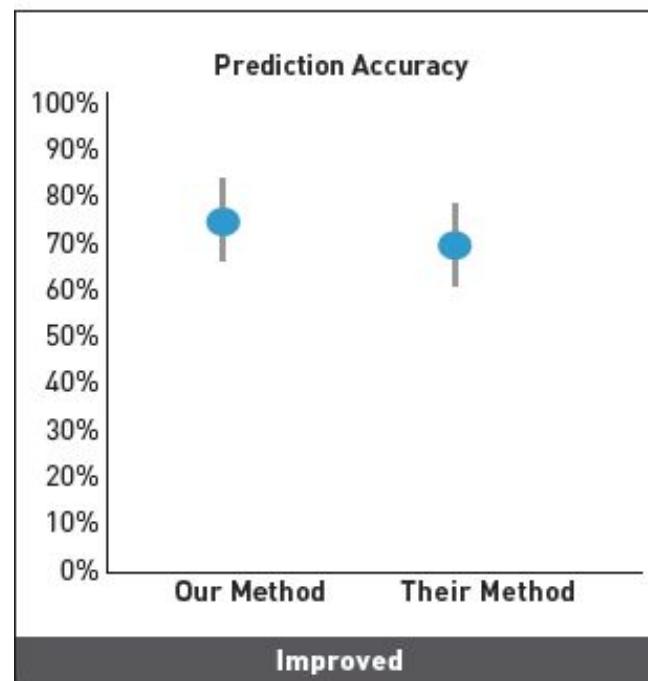
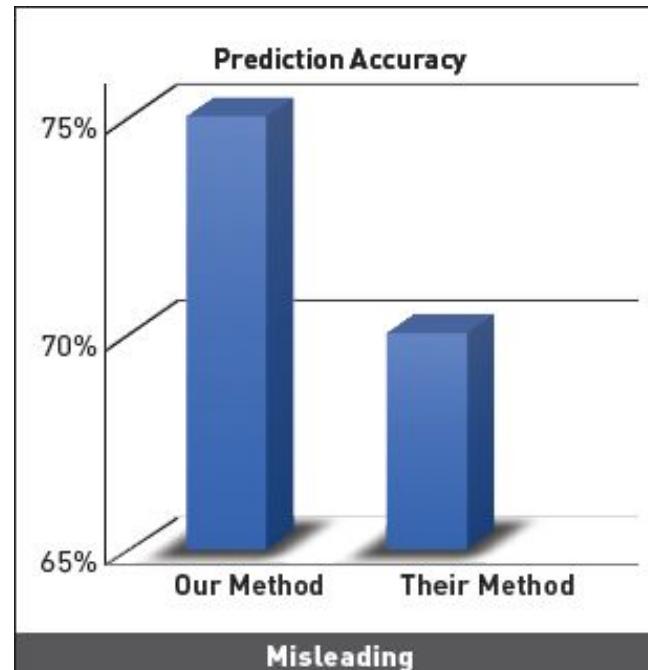


Utiliza la percepción visual

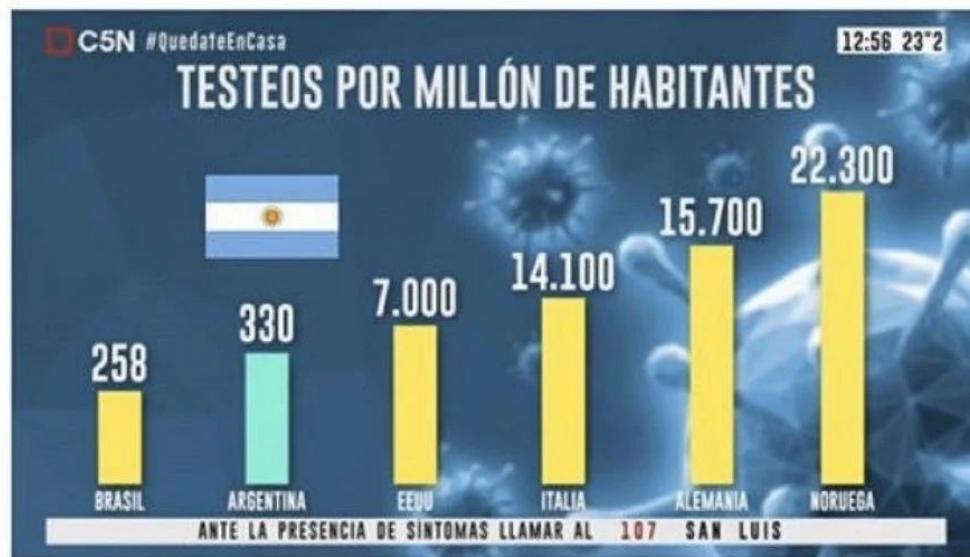


Estandariza

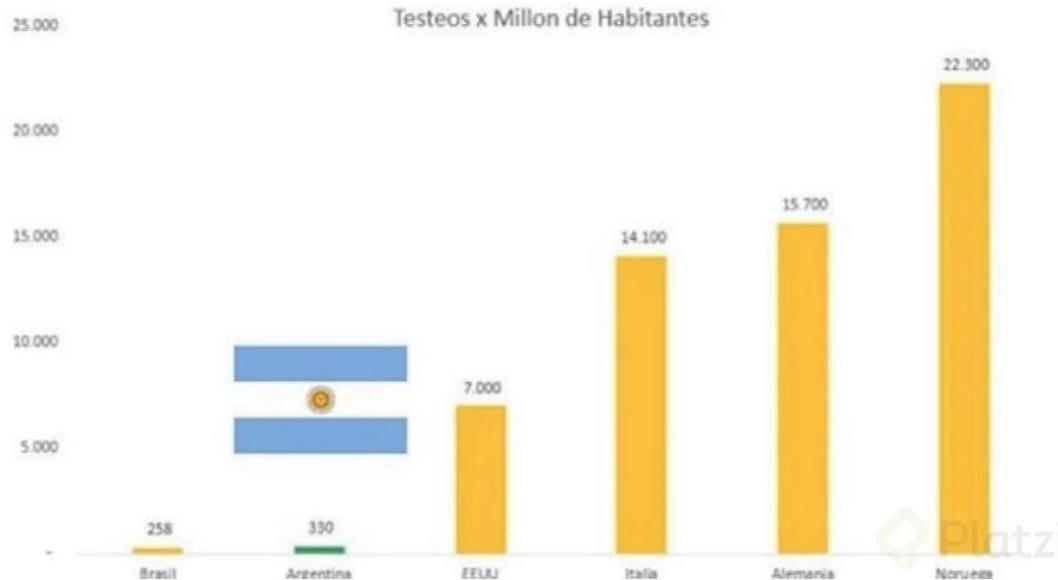
- Usa mismas medidas.
- No cortes los axis.
- Alinea siempre.



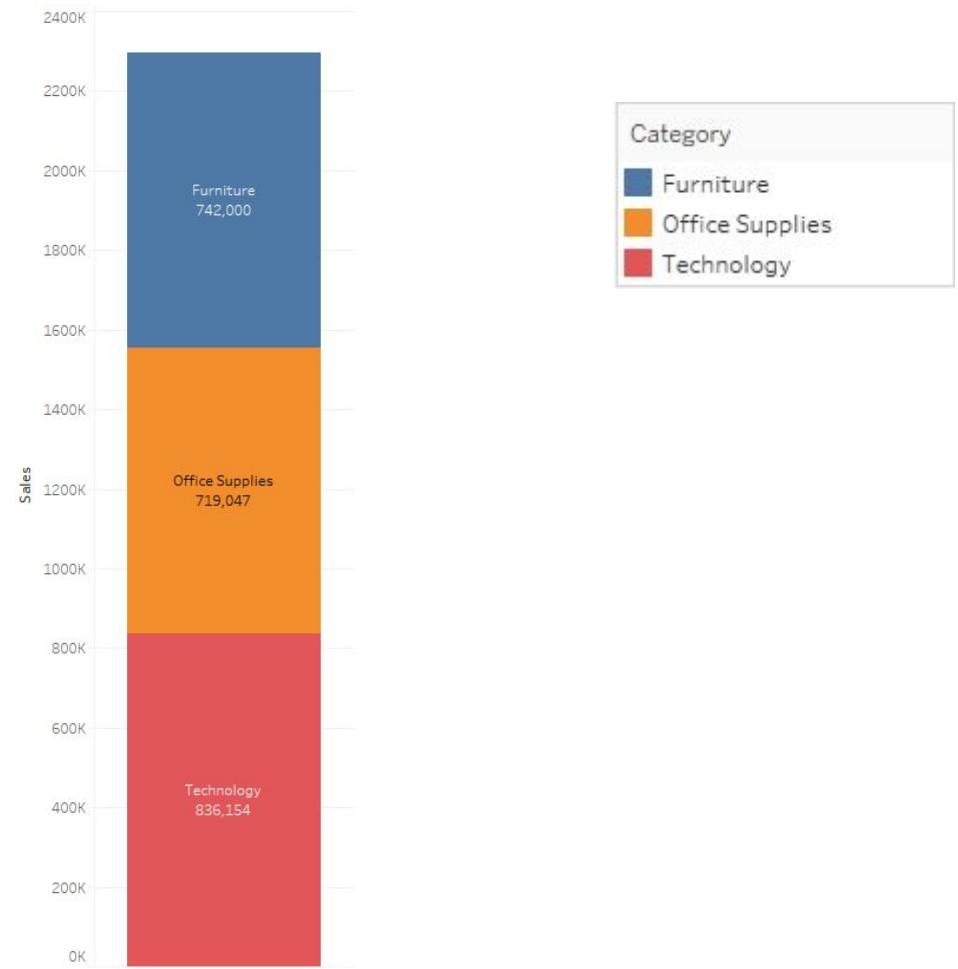
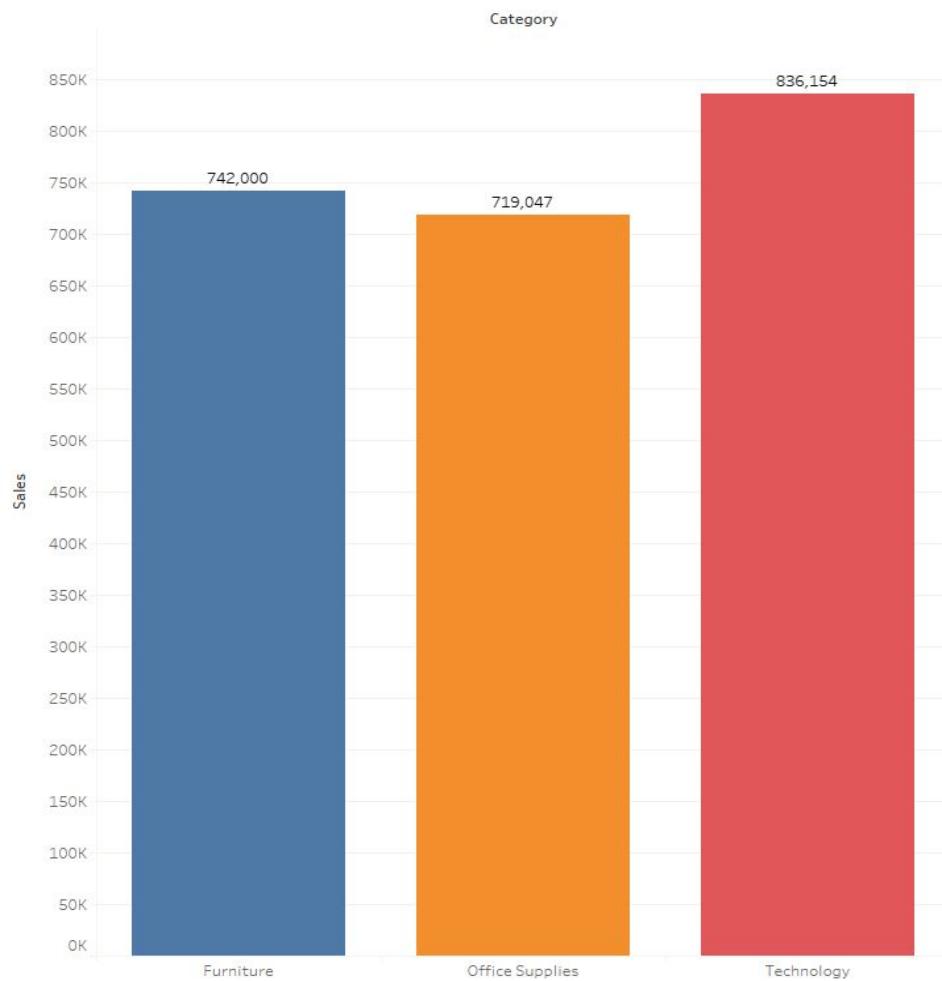
EL GRÁFICO DE C5N



EL GRÁFICO EN ESCALA REAL



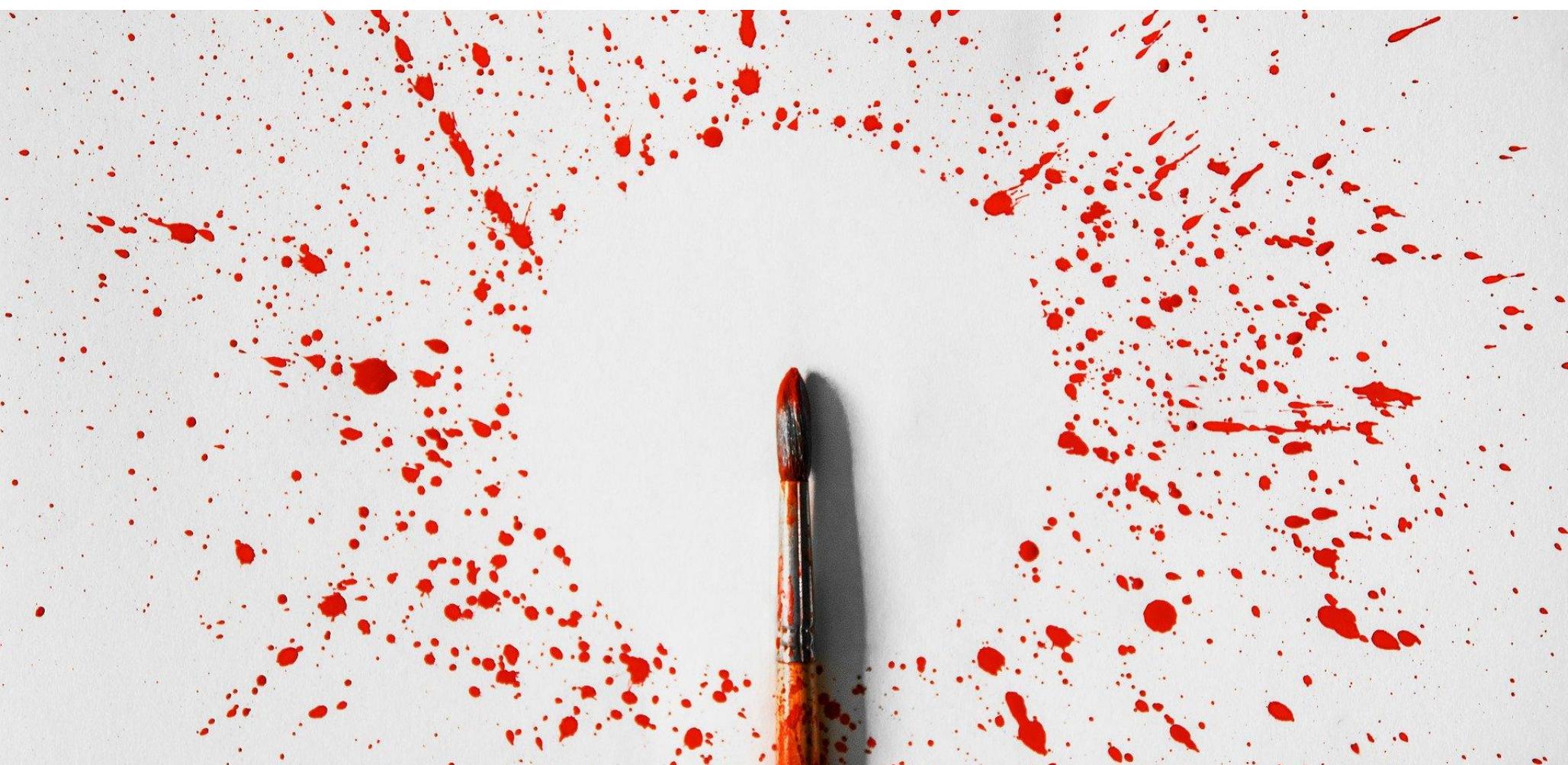
Simplifica pero no recortes



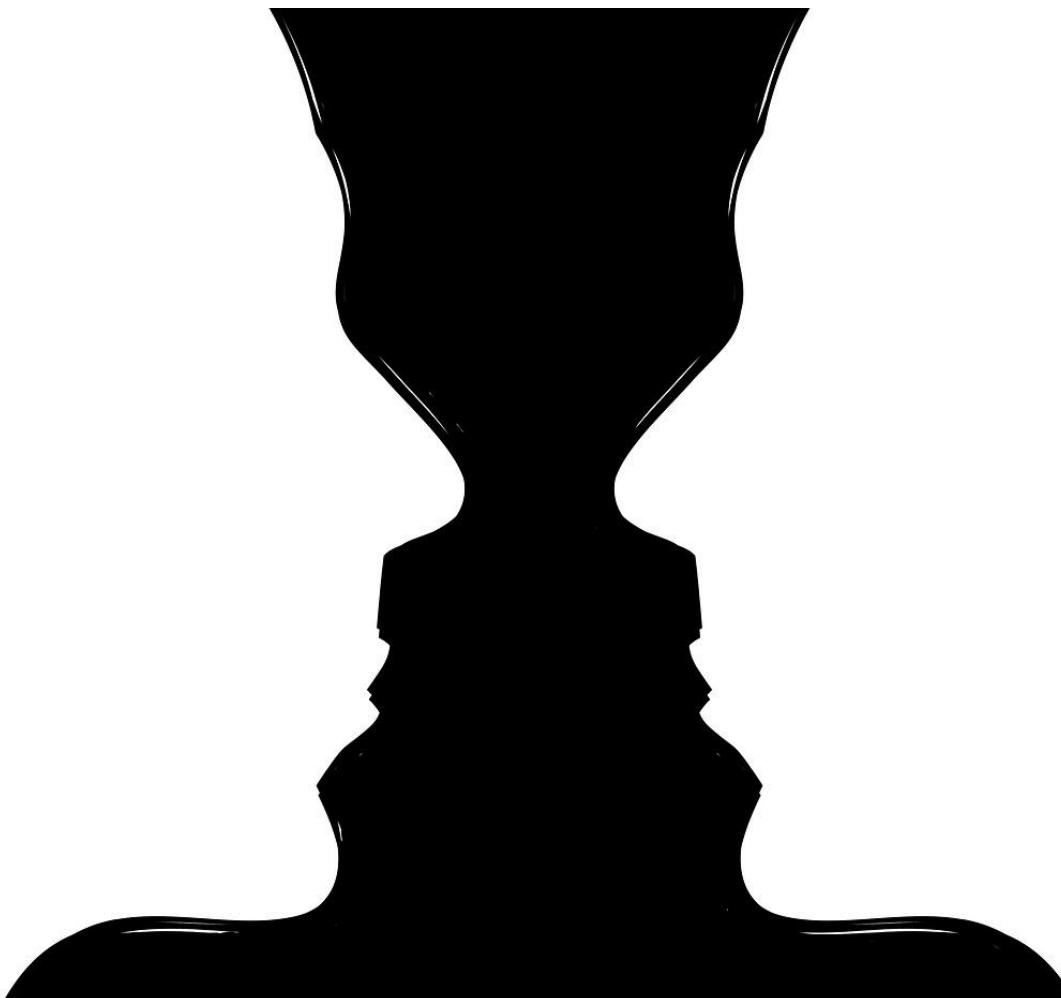
Disminuye el sesgo (bias): NO al cherry-picking



Recuerda: principios Gestalt



Reto: ejemplo de principios de Gestalt



Ética

Ética en la visualización de datos



Nuestro papel ante la audiencia



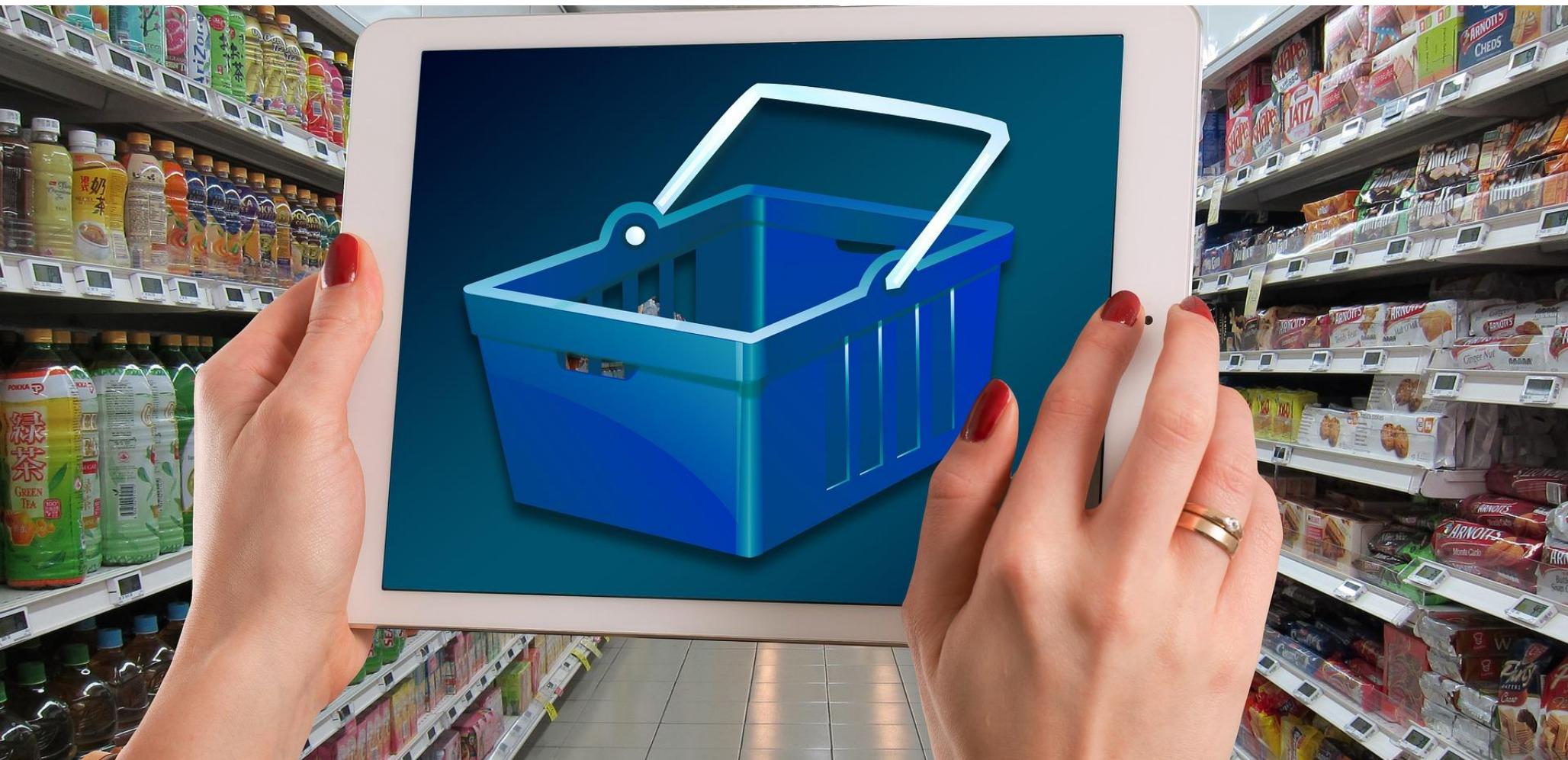
Credibilidad y mensaje



Caso: Target



Segmentación



Resultado

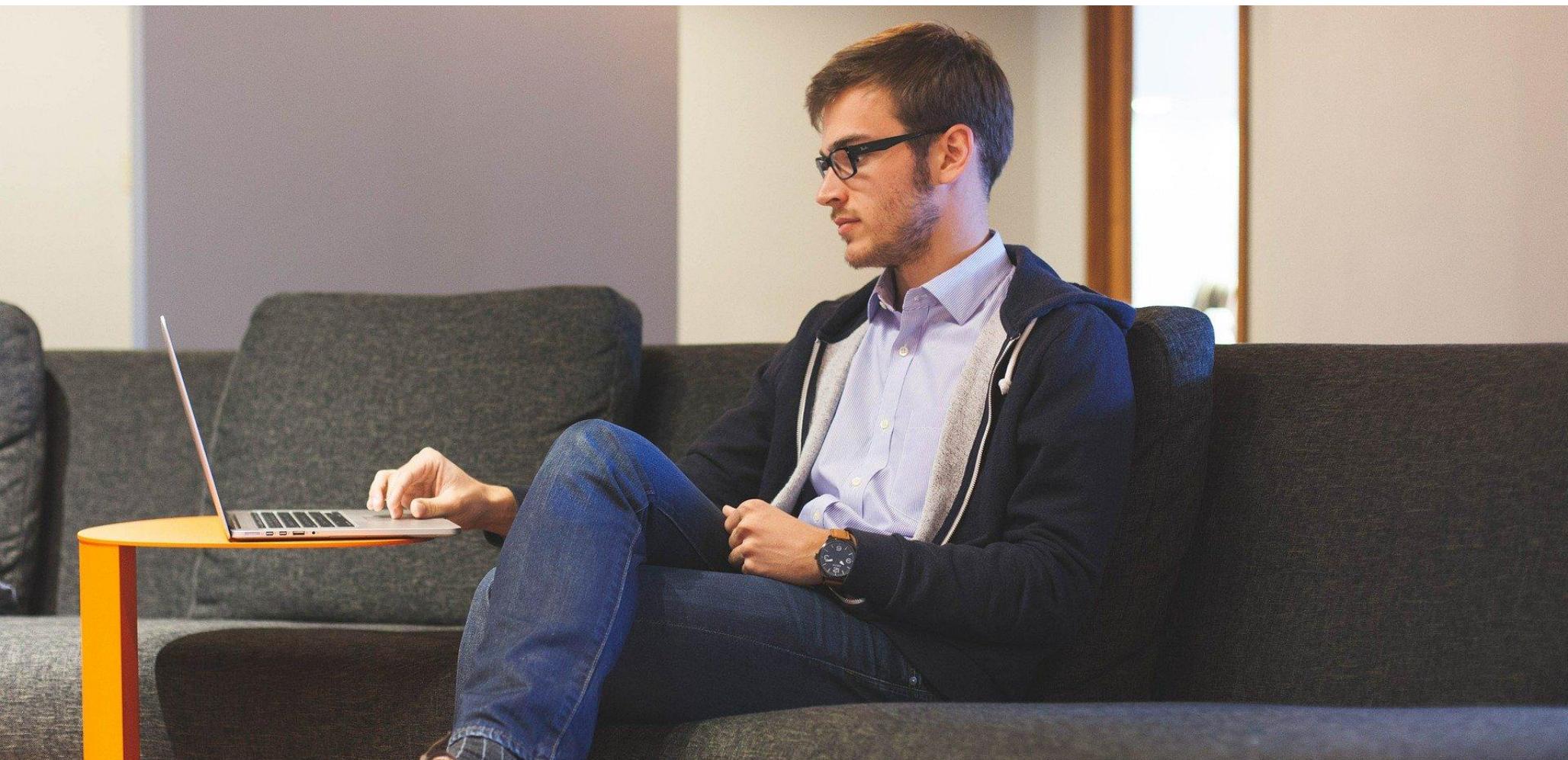


Reto: tu opinión

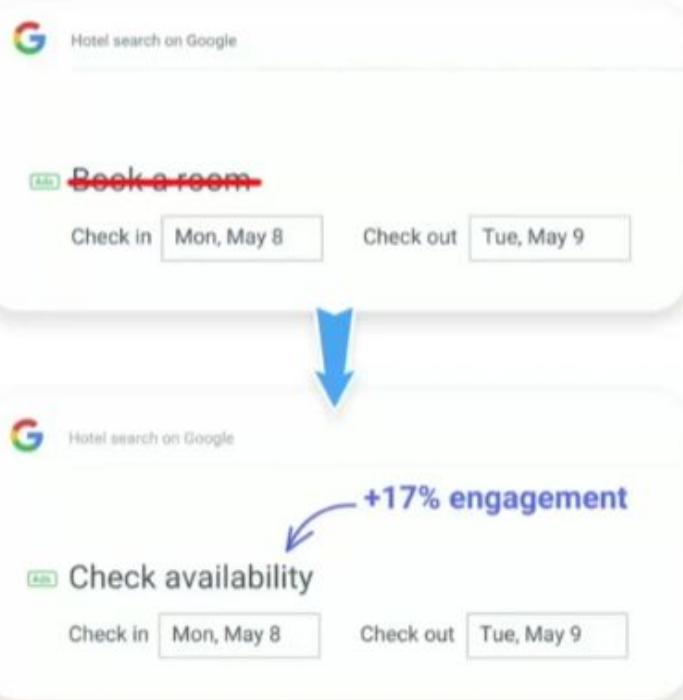


Gráfica de barras

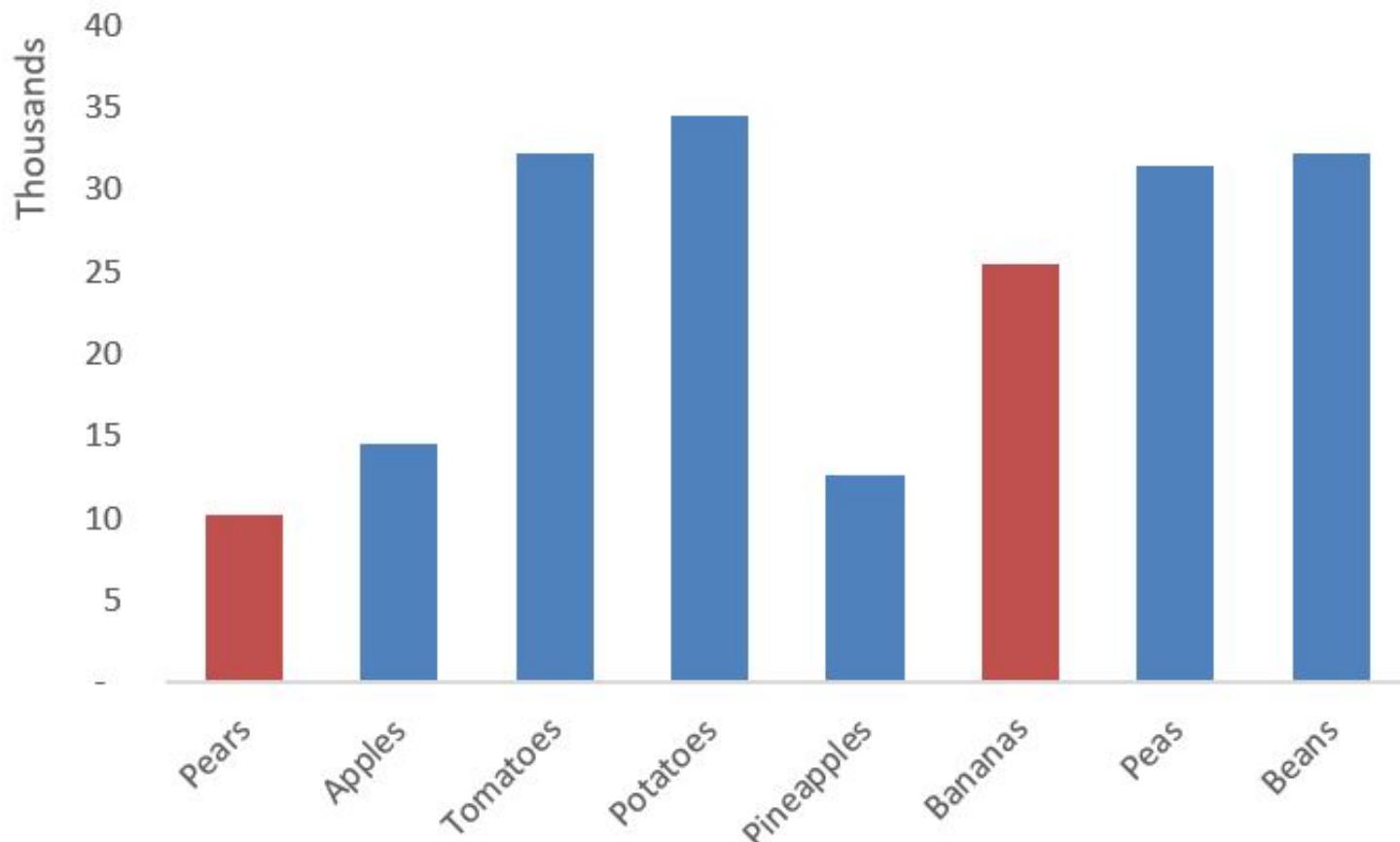
Intro a los Data Viz



Dato: caso de incremento Google Reservation

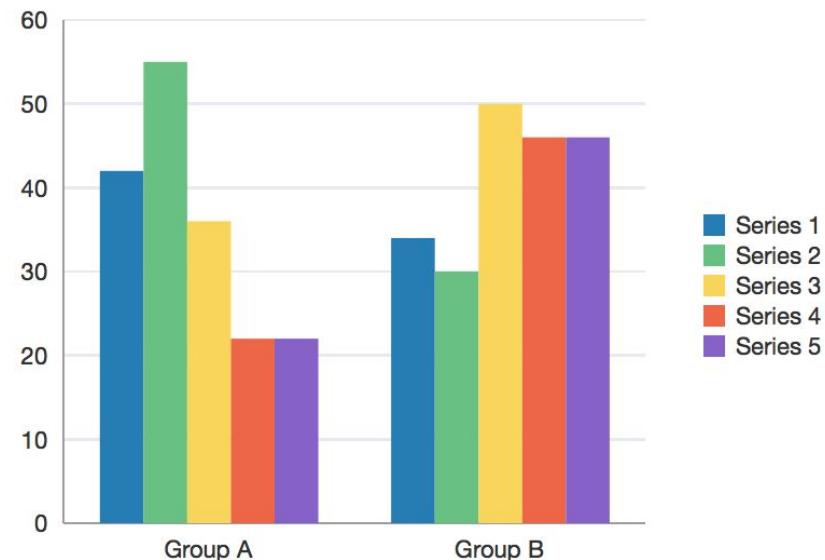


¿Qué es una gráfica de barras?

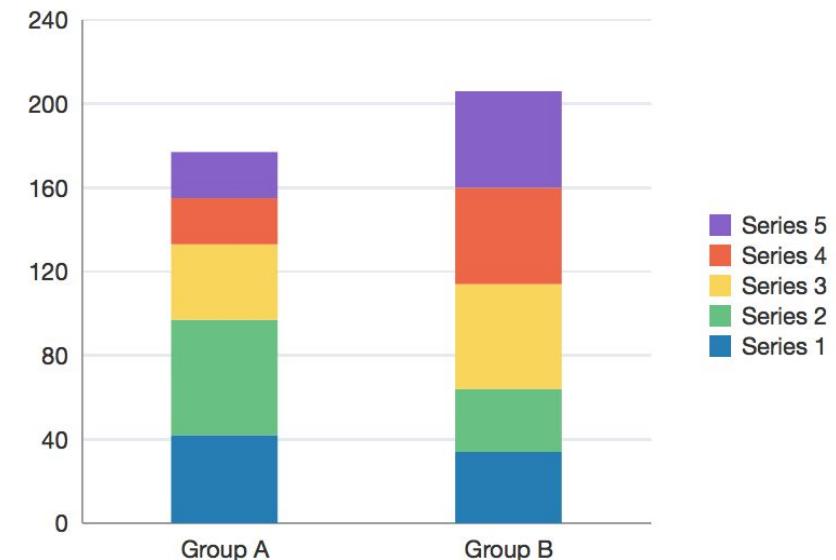


¿Qué hacer?

Bar Chart

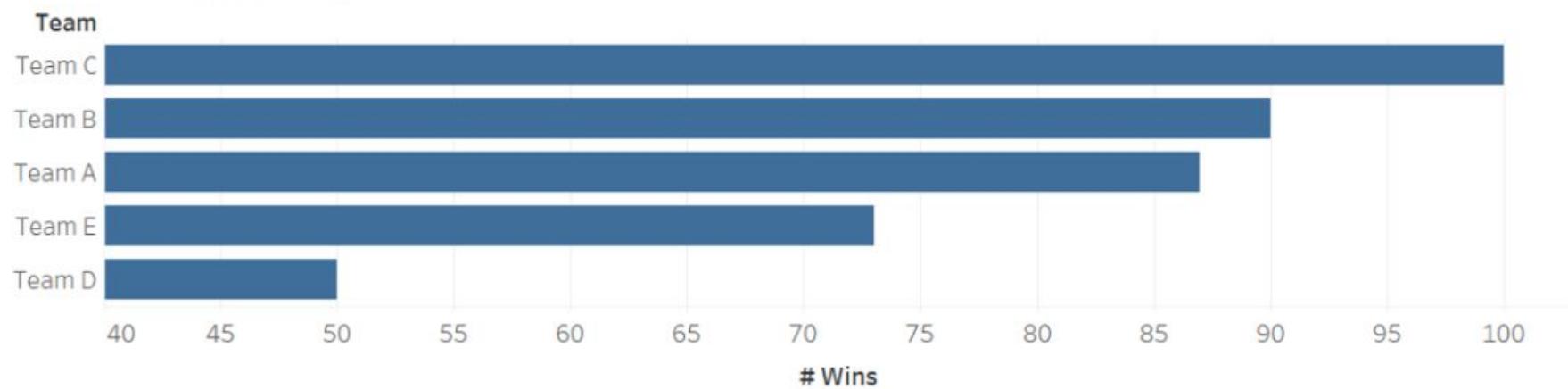


Stacked Bar Chart

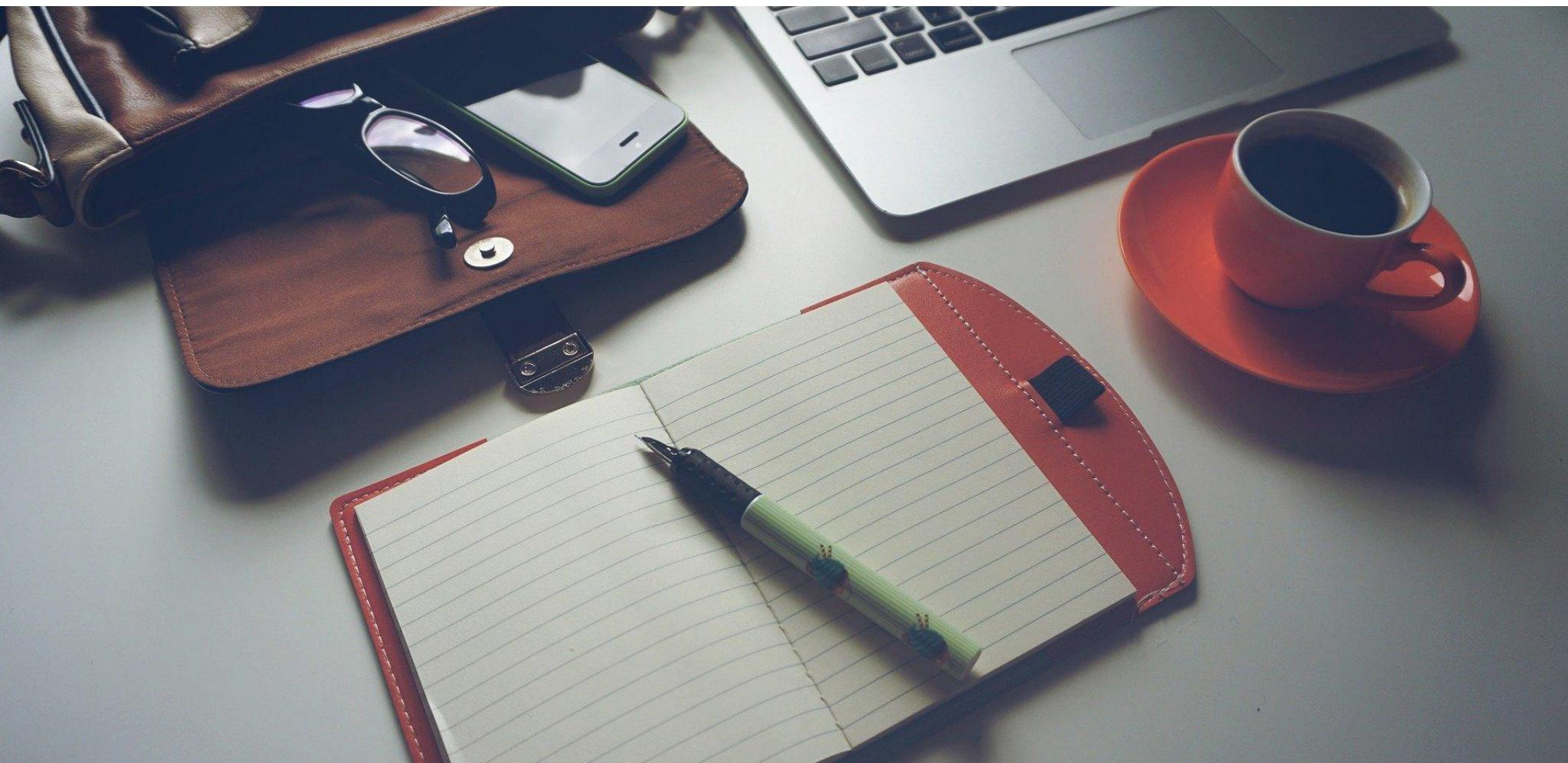


Qué NO hacer

Number of Wins by Team

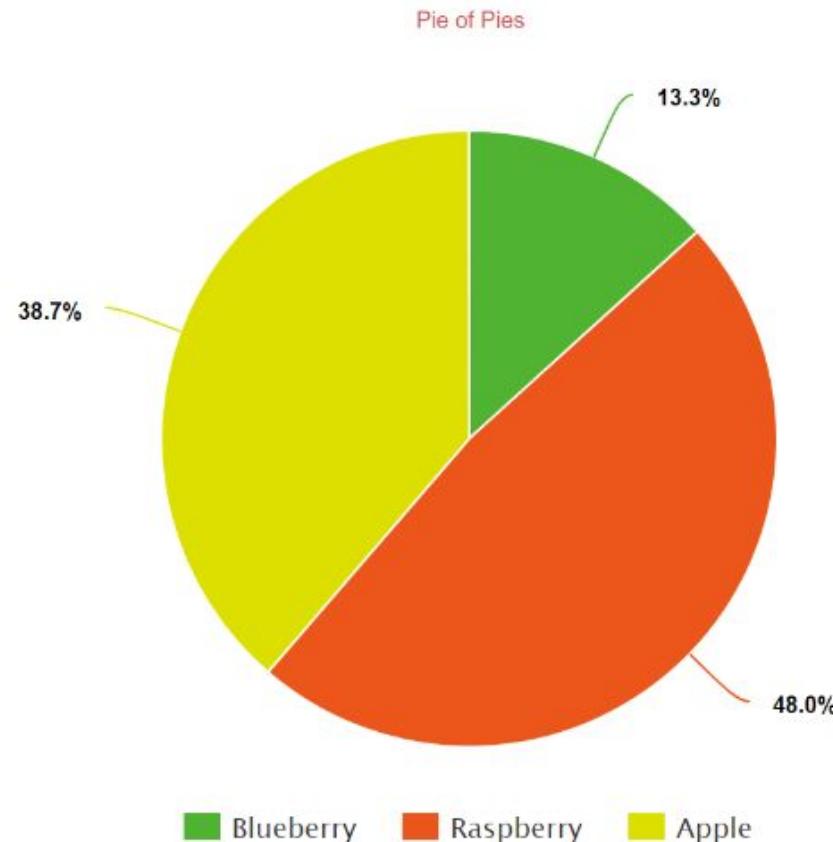


Reto: gráfica de barras



Gráfica de pie

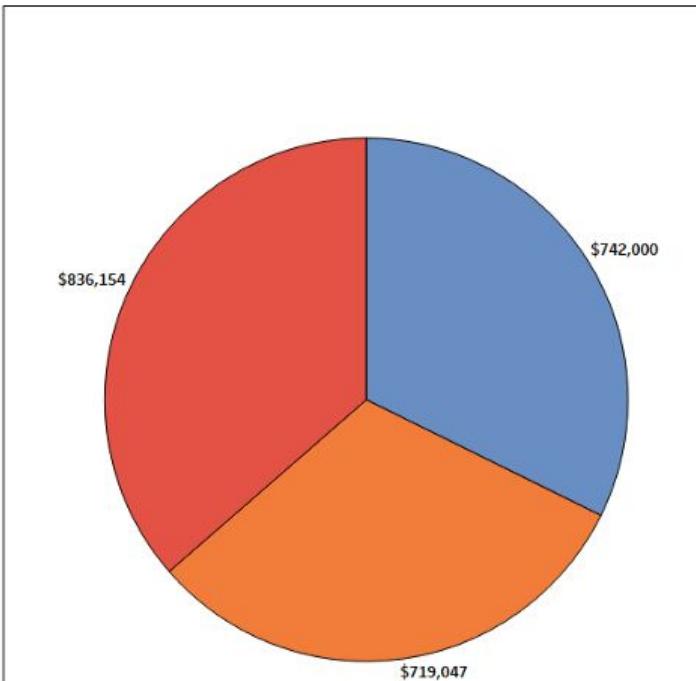
¿Qué es una gráfica de pie o pie chart?



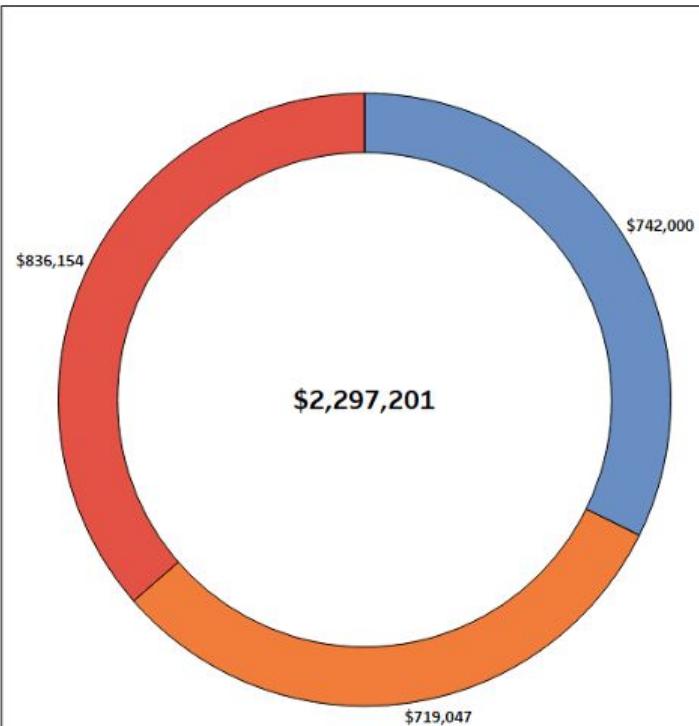
Qué hacer

Sales by Category

Before

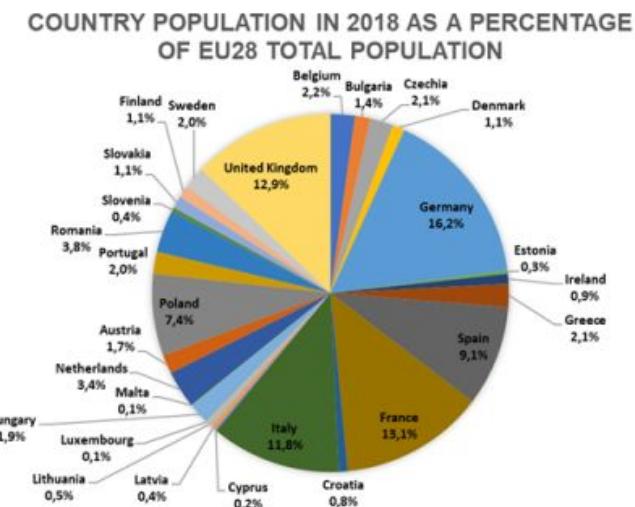
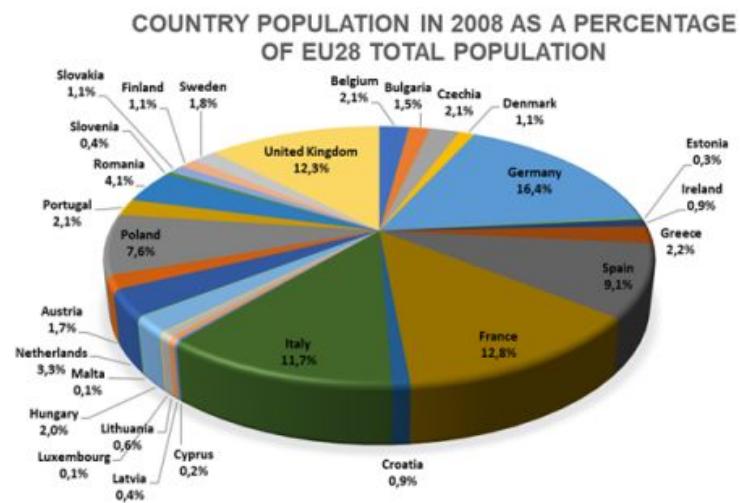


After



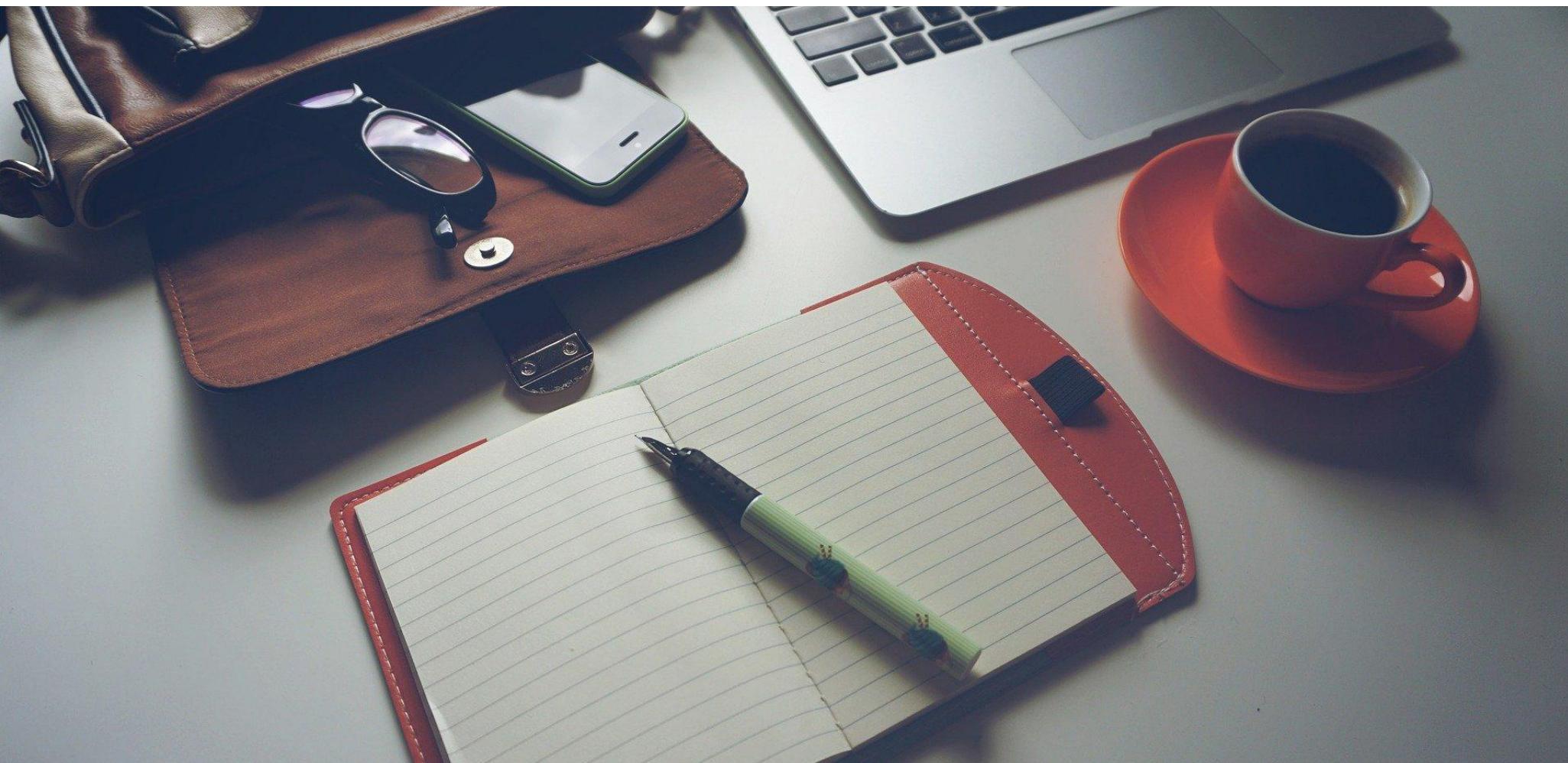
Qué NO hacer

“Using data visualizations’
bad guy: pie charts



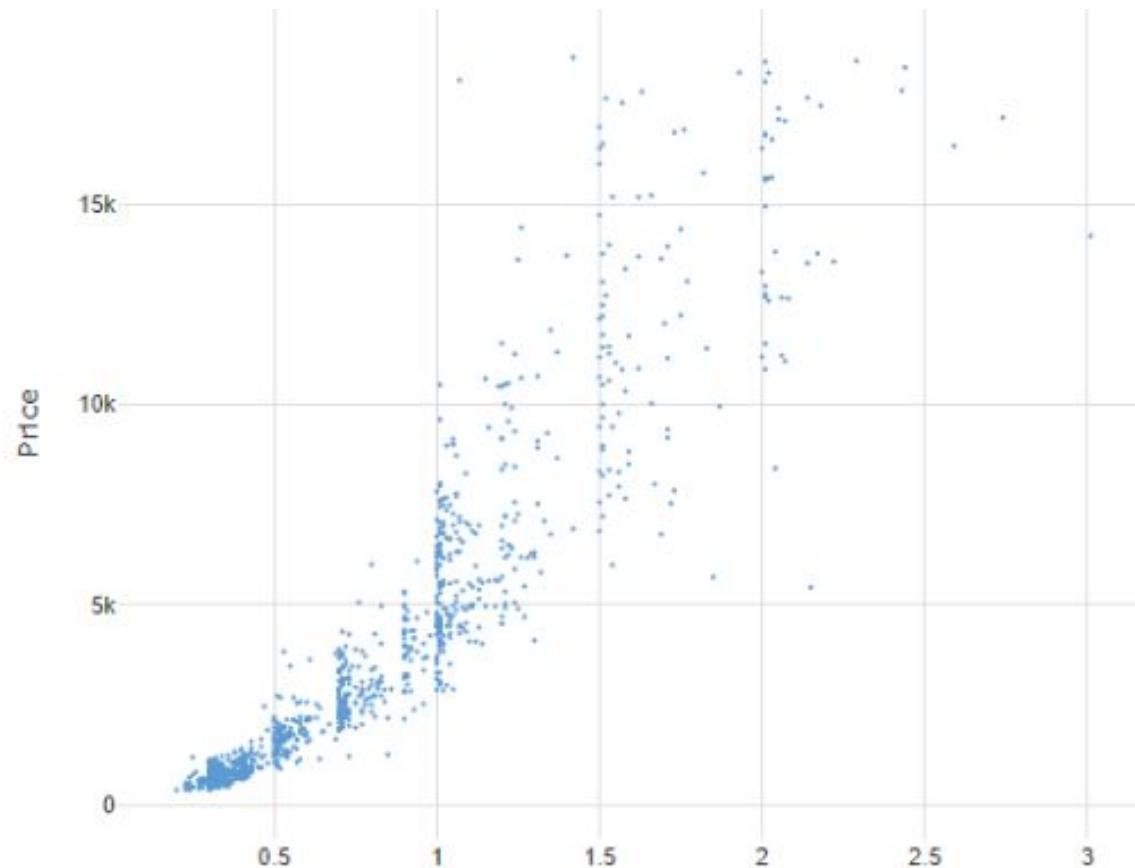
www.datavizcatalogue.com

Reto: gráfica de pie



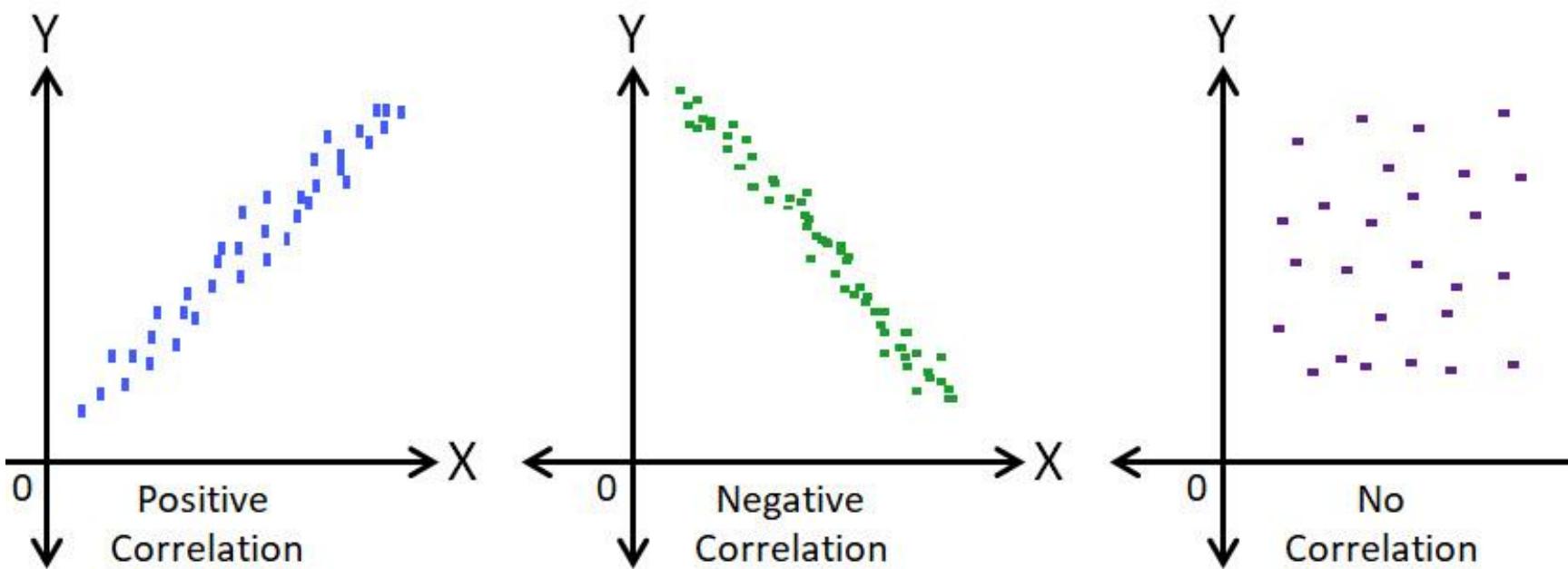
Gráfica de dispersión

¿Qué es una gráfica de dispersión o scatter plot?

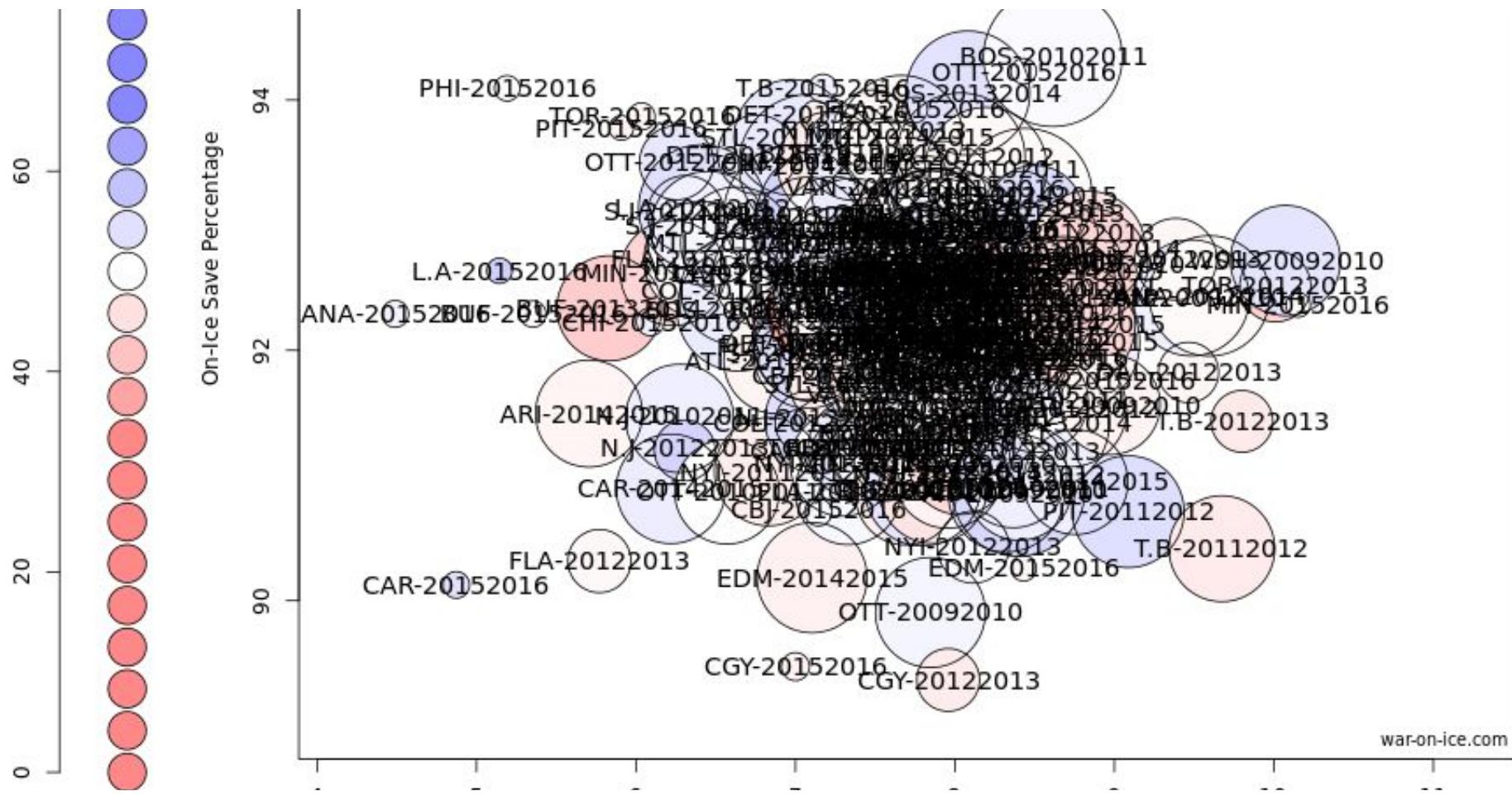


Qué hacer

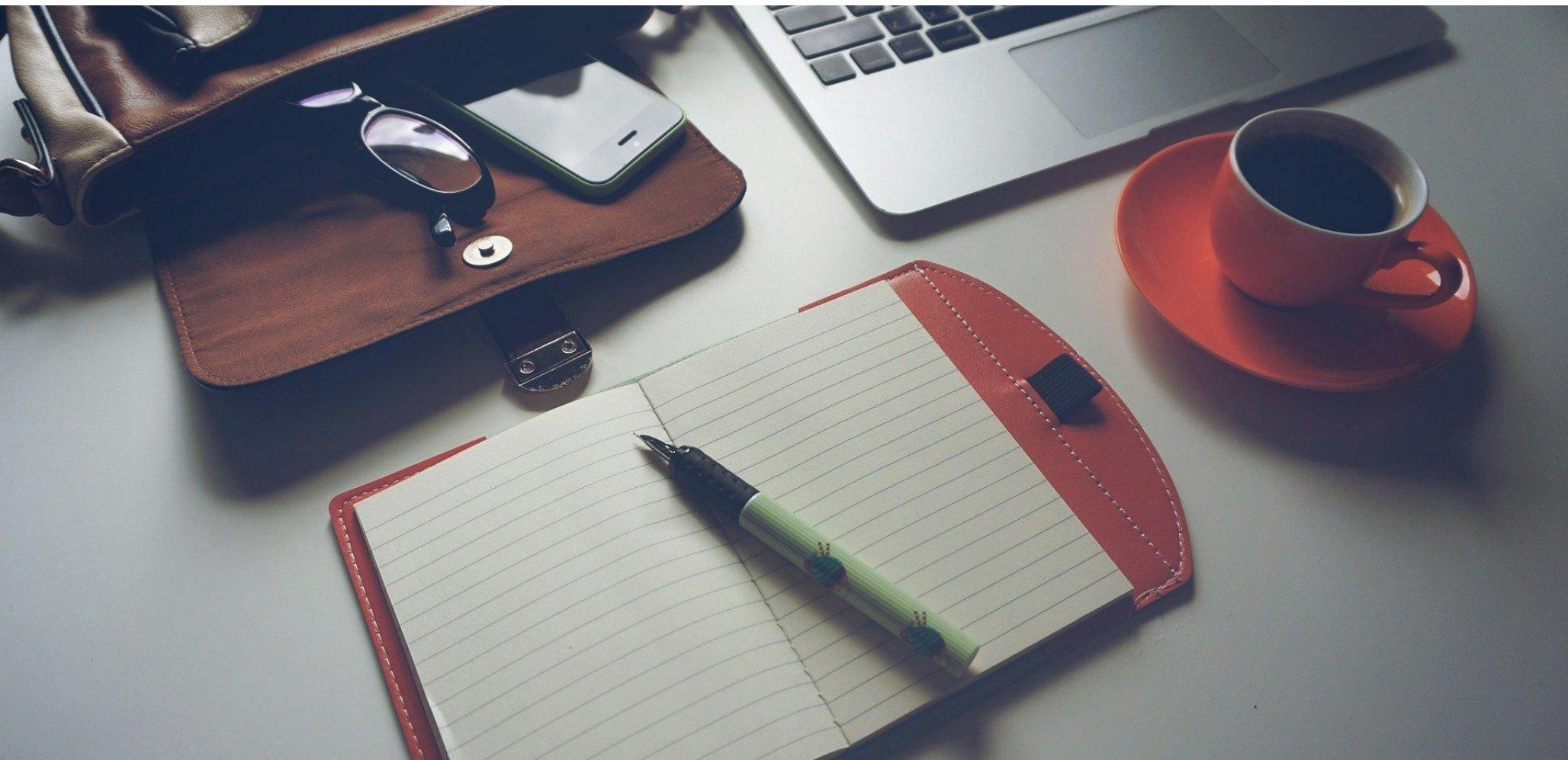
Scatter Plots & Correlation Examples



Qué NO hacer

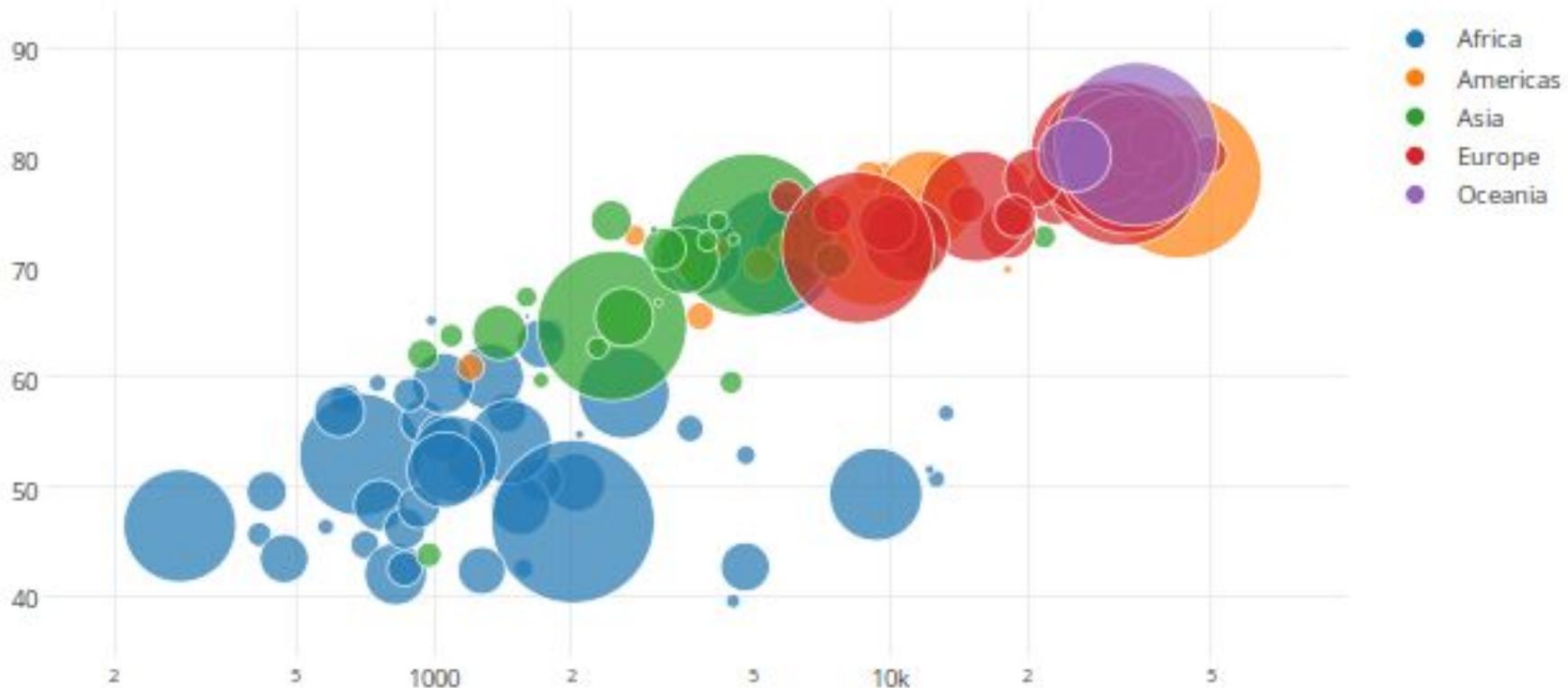


Reto: gráfica de dispersión



Gráfica de burbujas

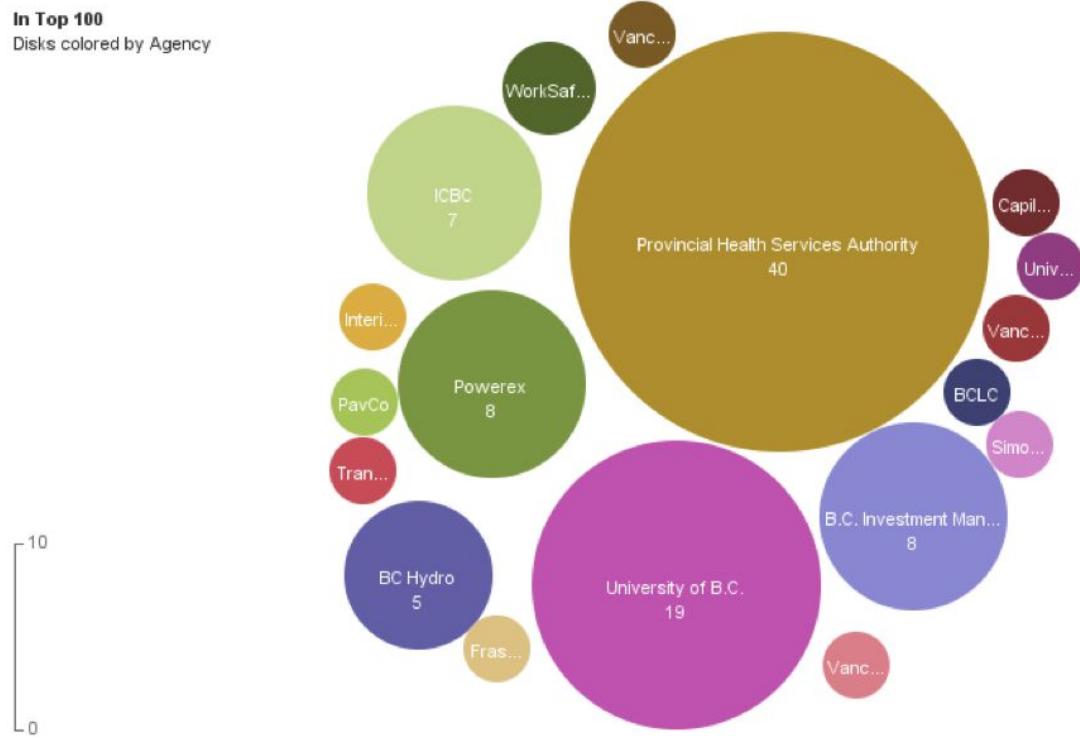
¿Qué es una gráfica burbujas o bubble chart?



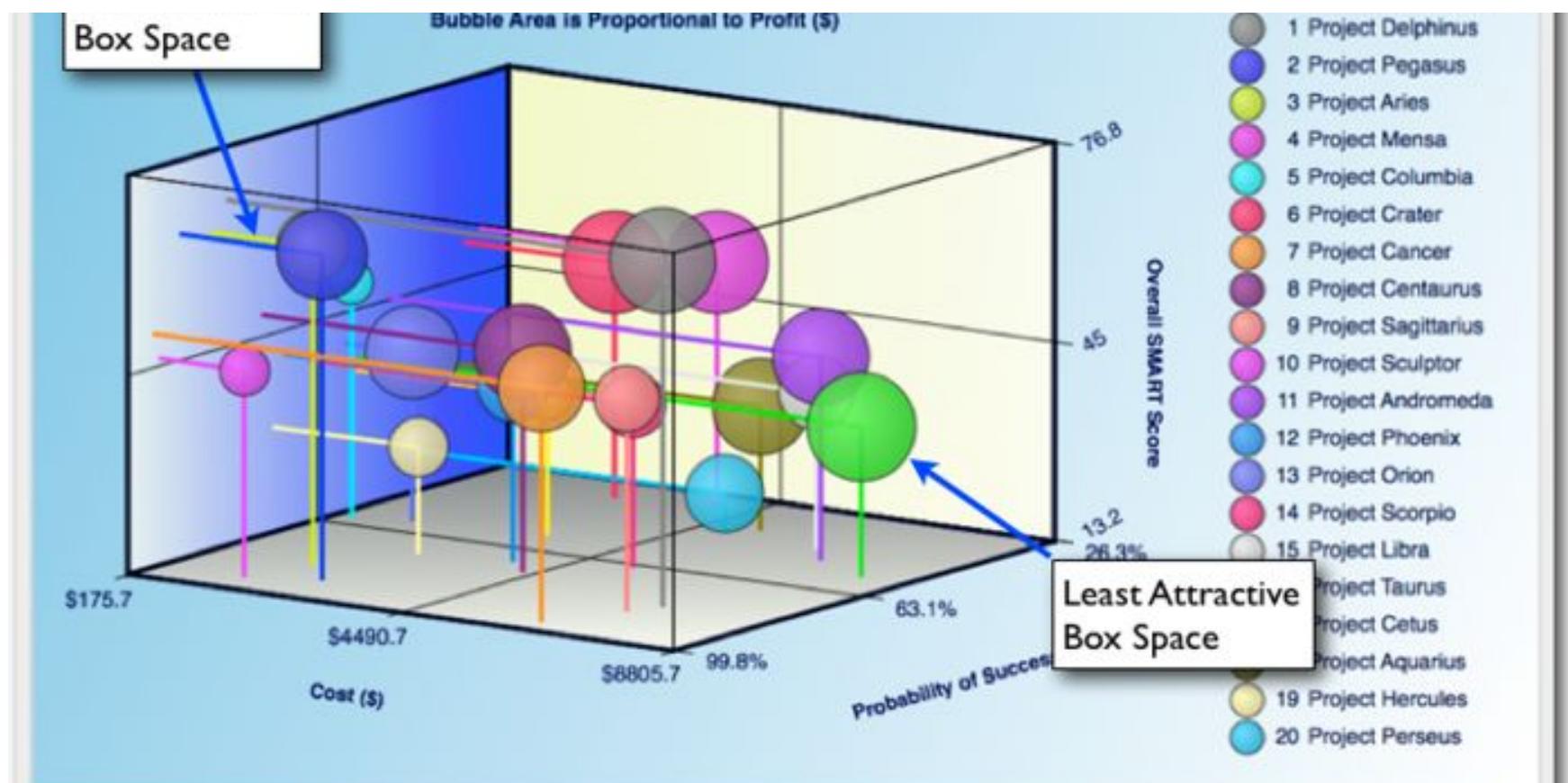
Qué hacer

Where B.C.'s 100 highest paid public servants work

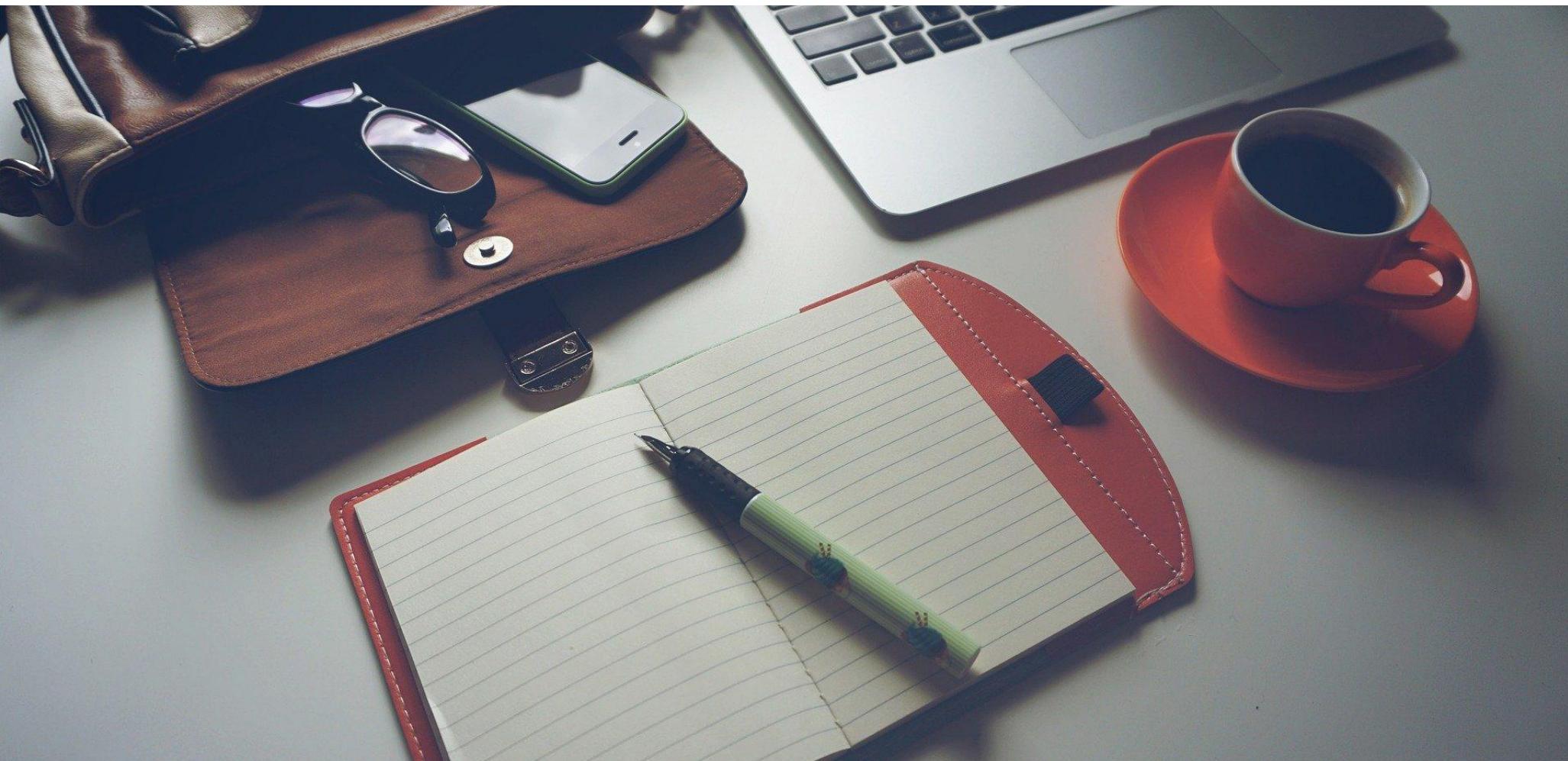
Created at: May 23 2012



Qué NO hacer

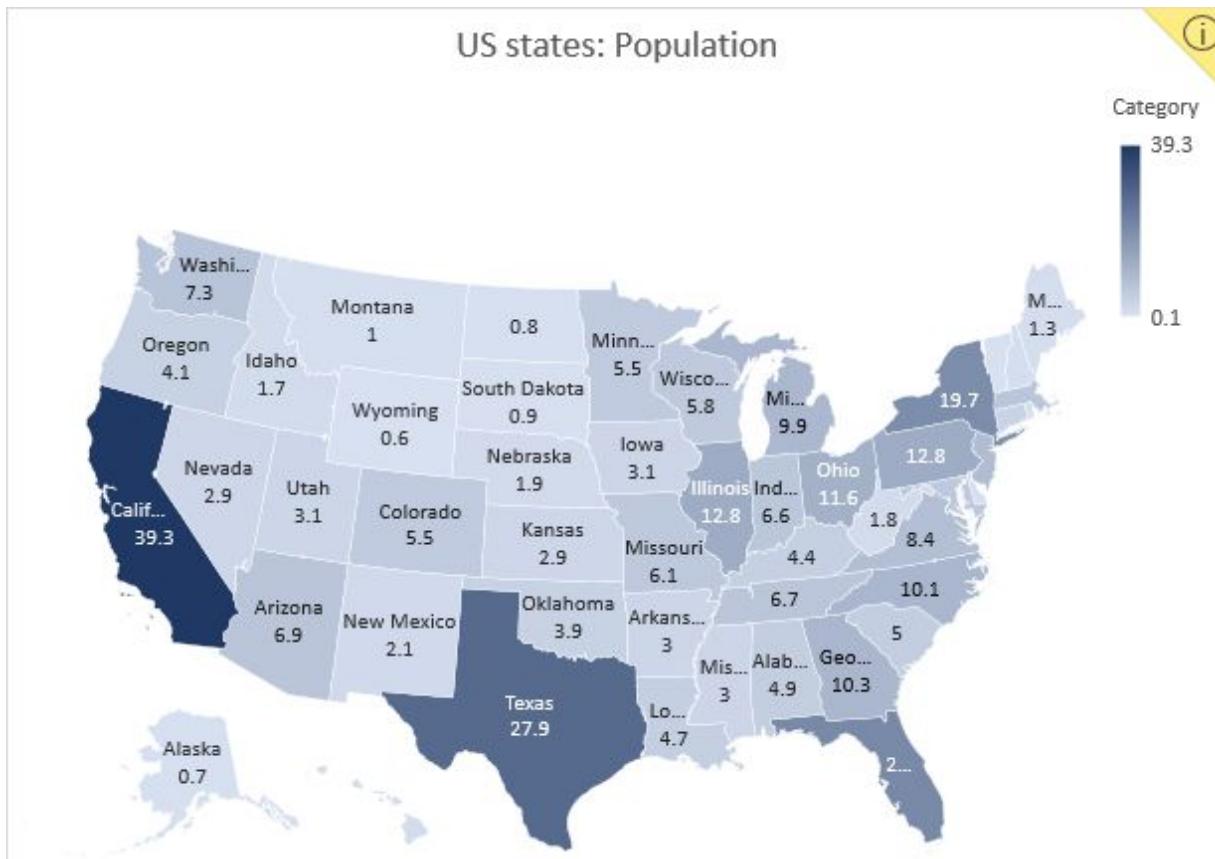


Reto: gráfica de burbujas

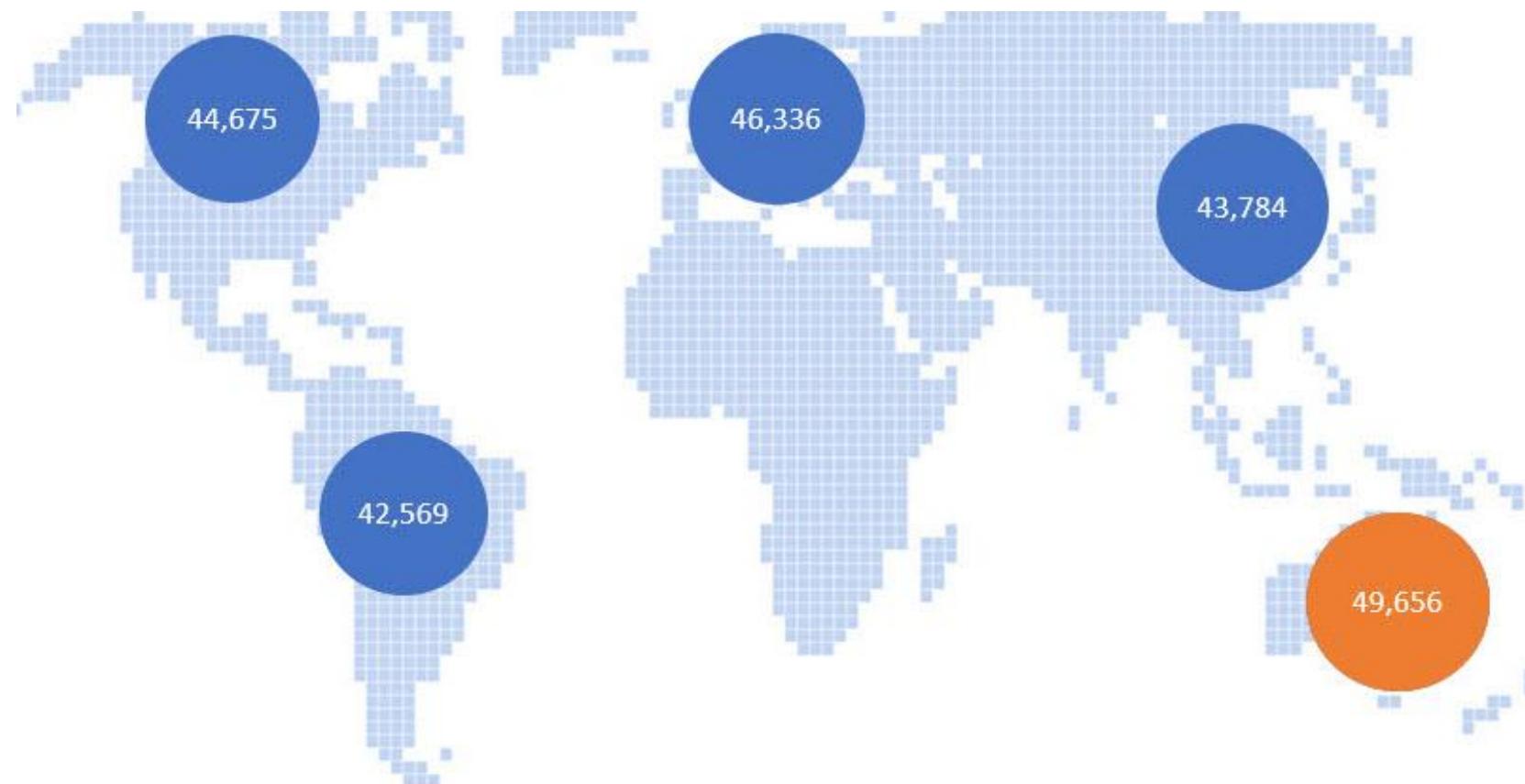


Mapas

¿Qué es una gráfica de mapa?



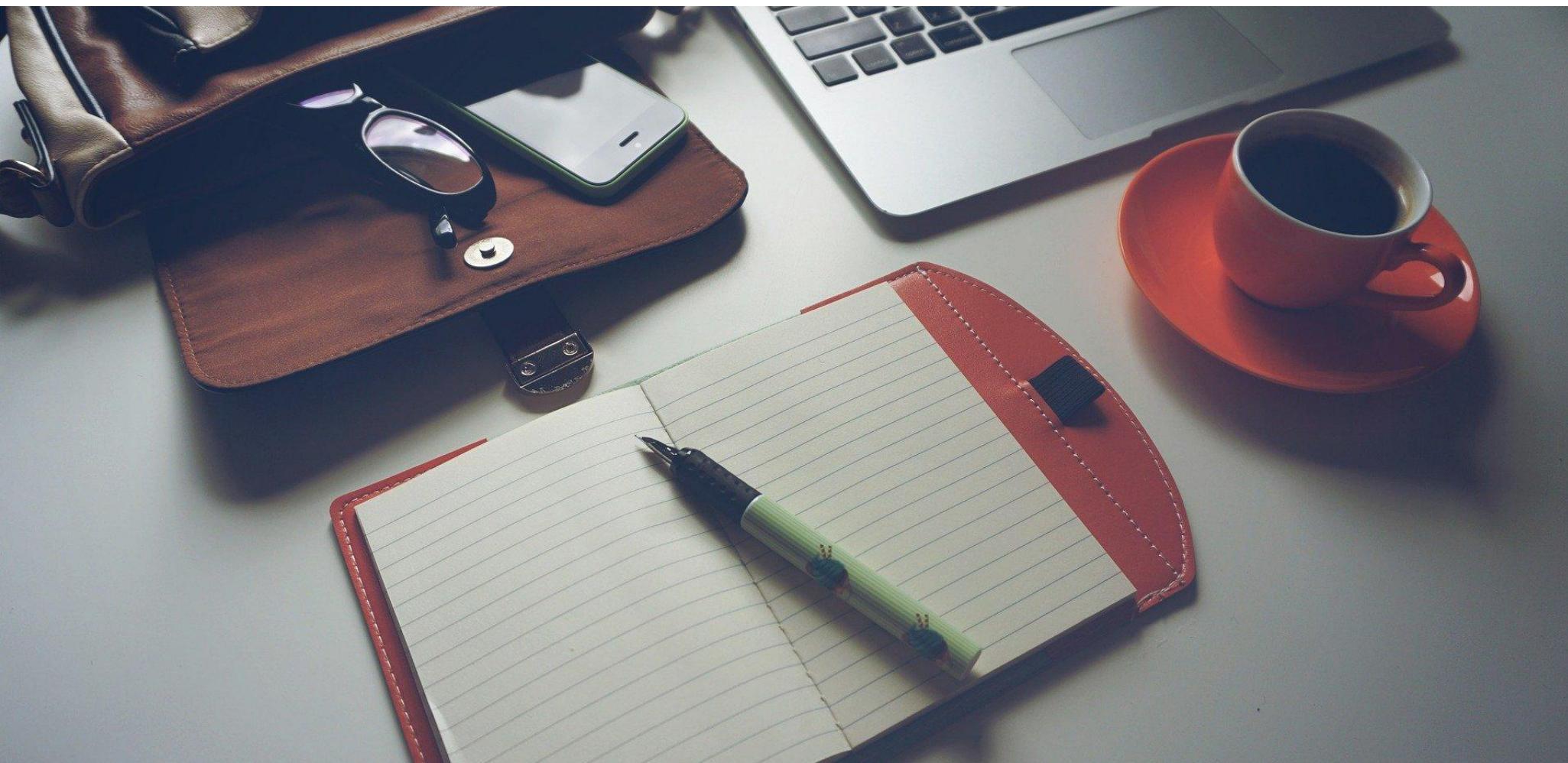
Qué hacer



Qué NO hacer



Reto: gráfica de mapa



Mapas de calor

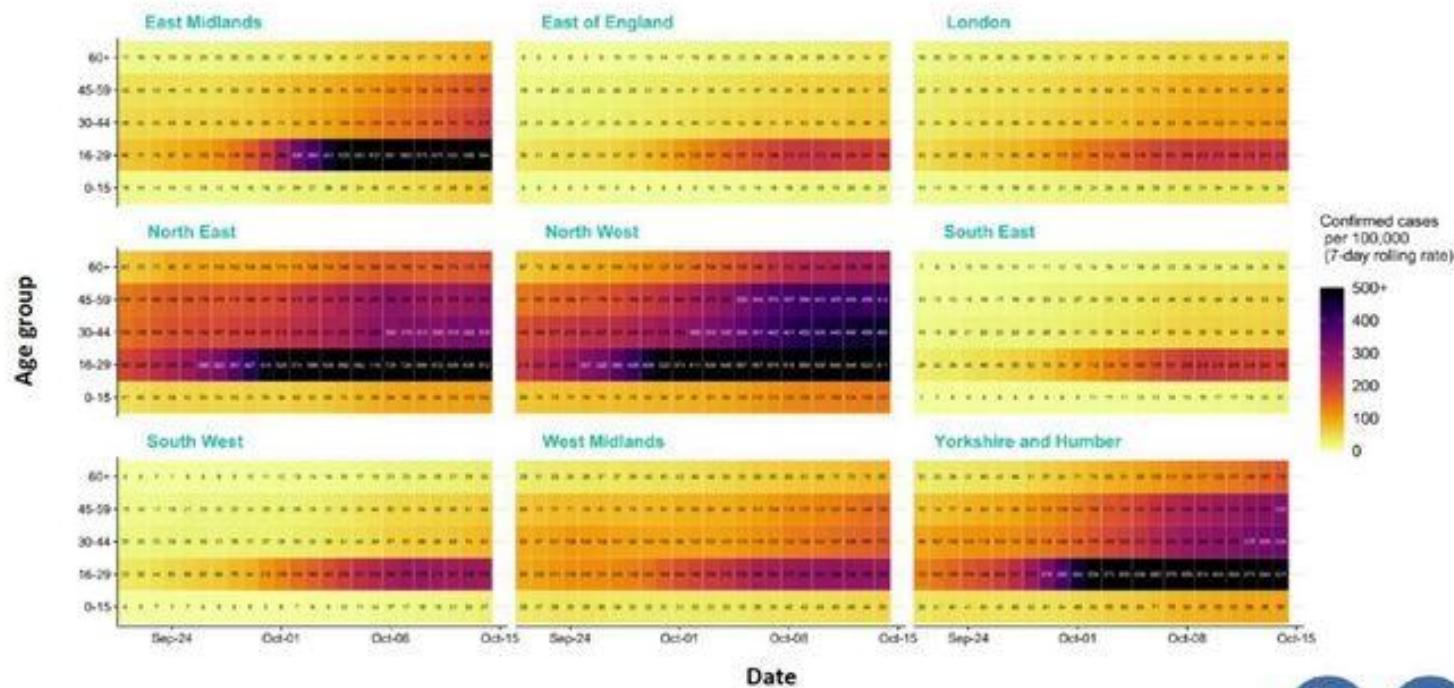
¿Qué es una gráfica de mapa de calor?



Qué hacer

SKY NEWS

COVID-19 positive case heat maps for England by age group and region

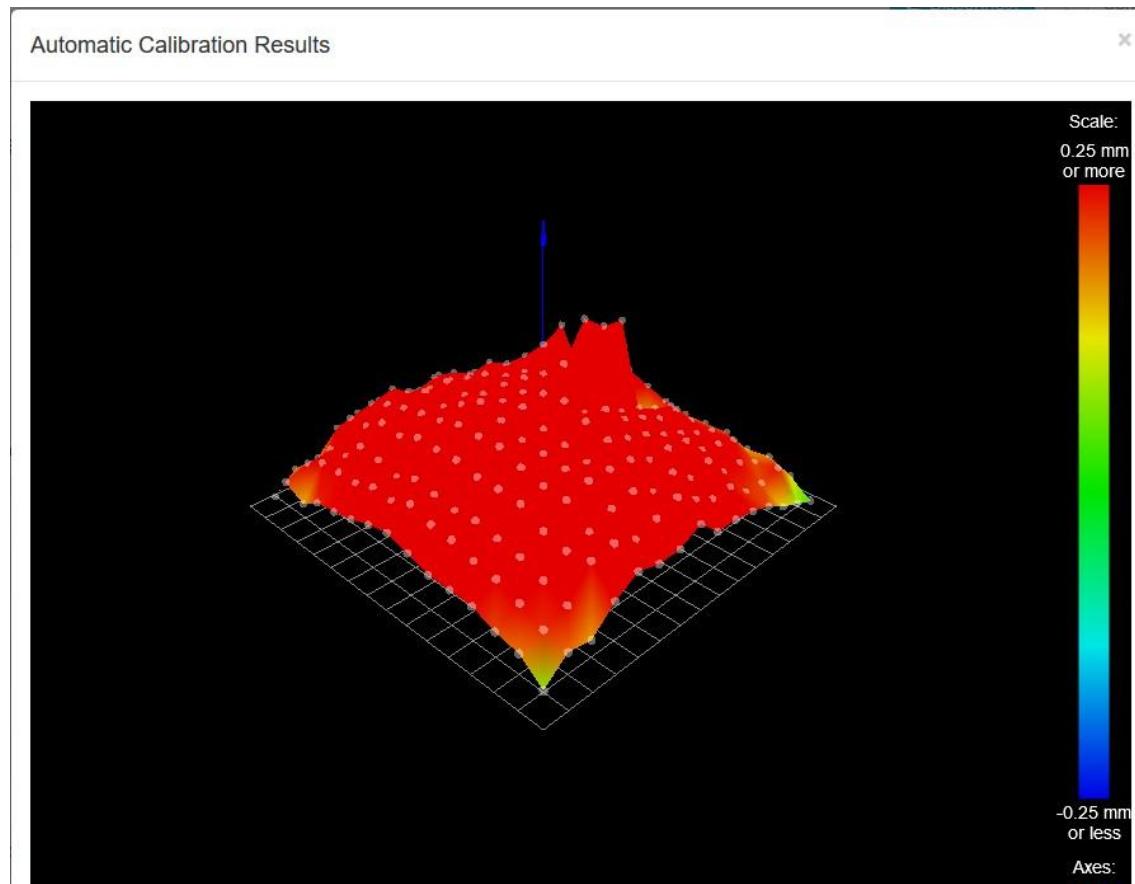


Source: Case data from SGSS. Produced by Outbreak Surveillance Team, PHE.
Contains National Statistics data © Crown copyright and database right 2020.

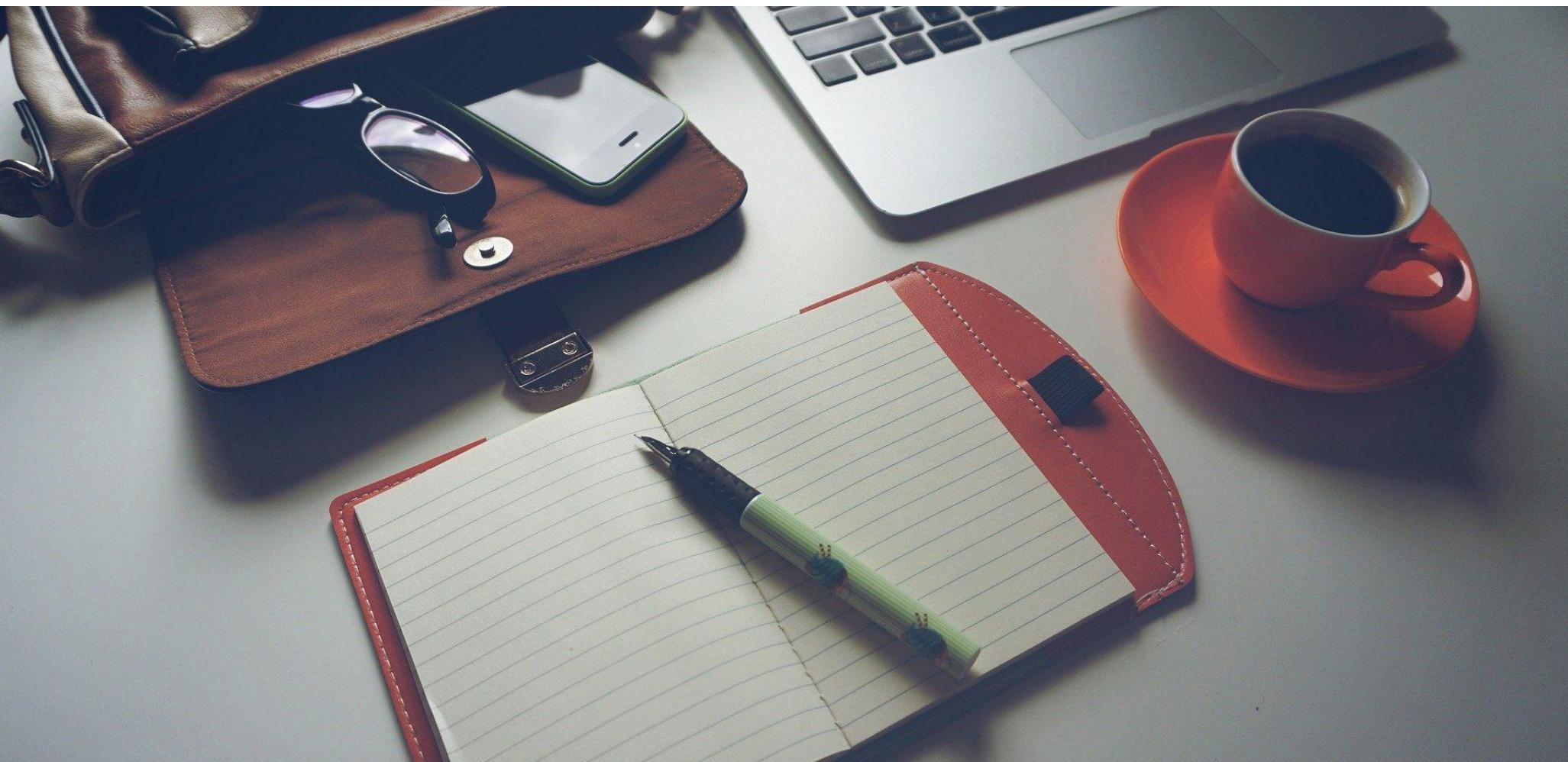
ABC CORR



Qué NO hacer



Reto: gráfica de mapa de calor en tiendas



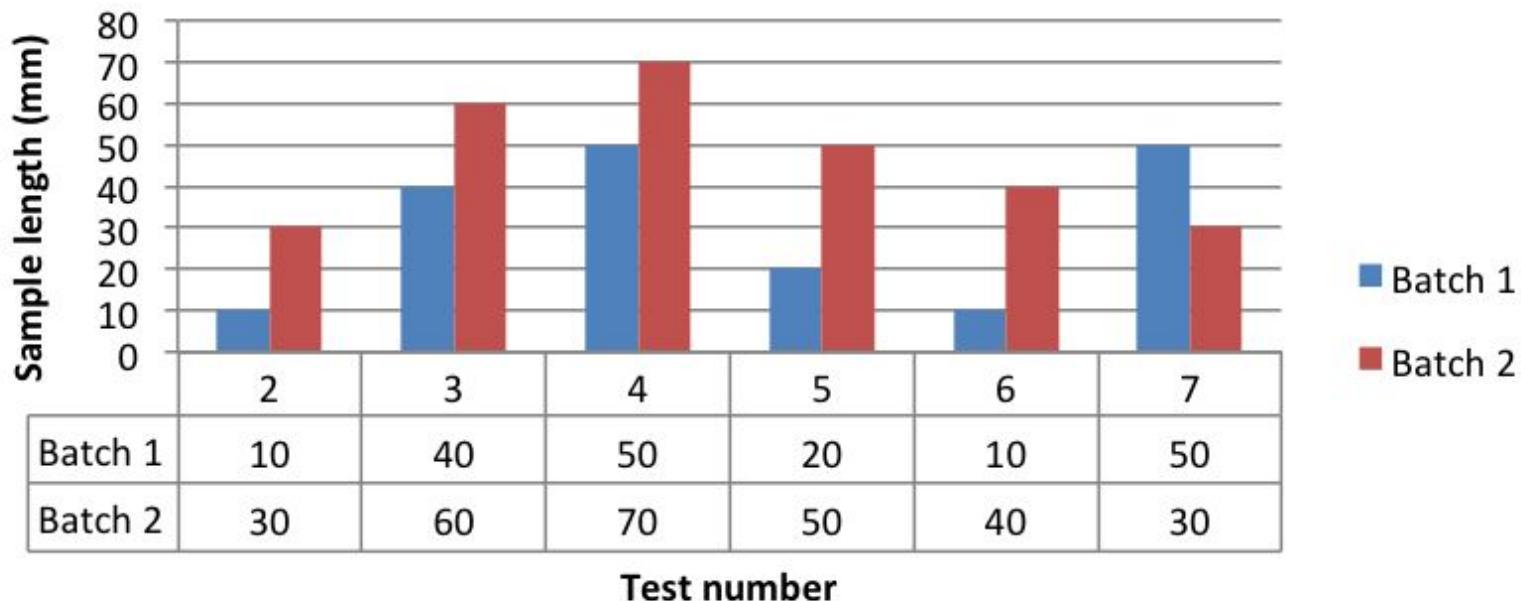
Tablas

¿Qué es una gráfica de tabla?

University	No. of FTE Students	No. of students per staff	International Students
University of Oxford	20409	11.2	38%
University of Cambridge	18389	10.9	35%
California Institute of Technology	2209	6.5	27%
Stanford University	15845	7.5	22%
Massachusetts Institute of Technology	11177	8.7	34%
Harvard University	20326	8.9	26%
Princeton University	7955	8.3	24%

Qué hacer

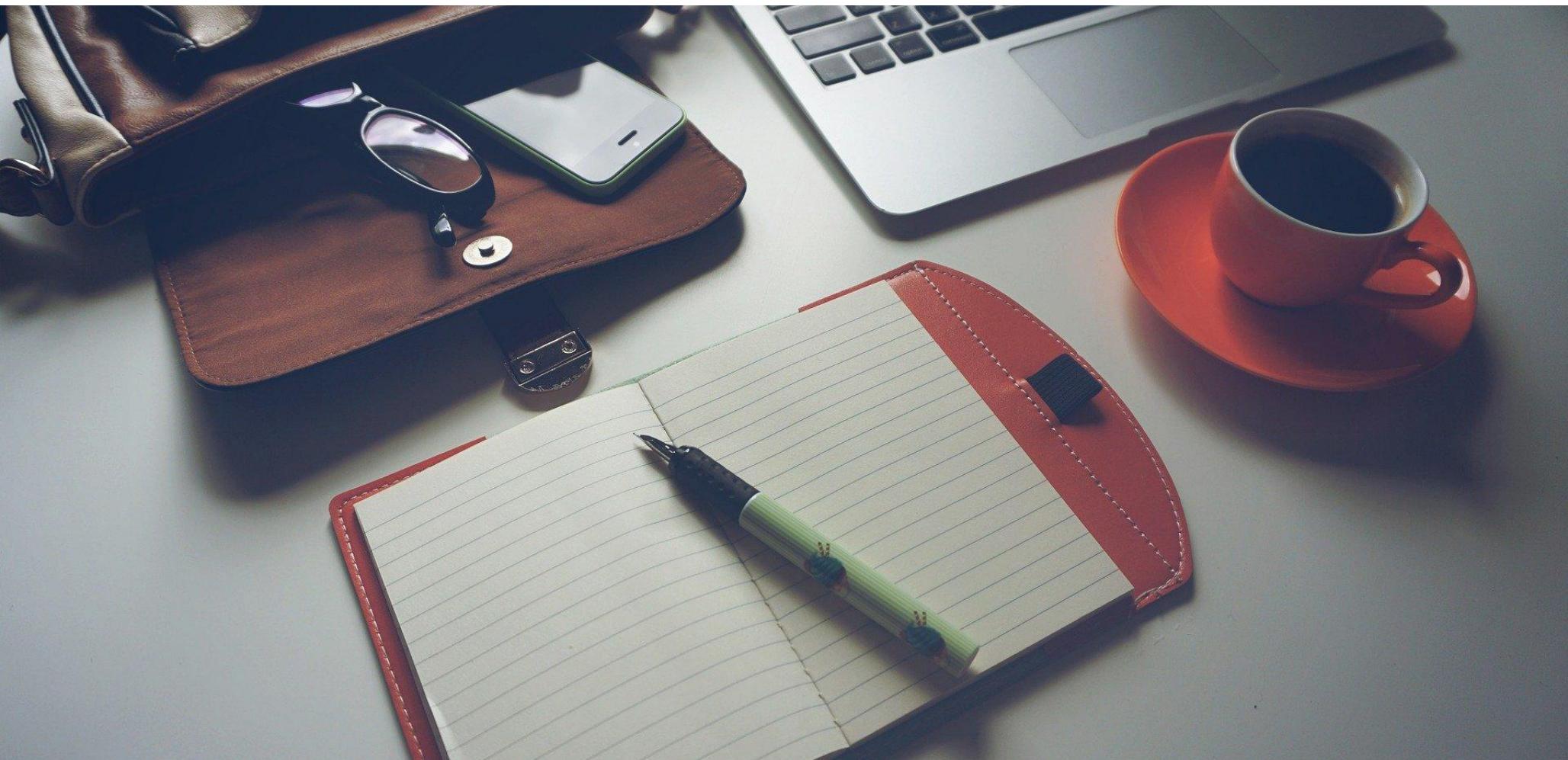
Chart with Data Table



Qué NO hacer

No.	P	UCL	CL	LCL
1	0.019947	0.035558	0.02254	0.009522
2	0.022977	0.034794	0.02254	0.010286
3	0.022734	0.033994	0.02254	0.011086
4	0.021593	0.035438	0.02254	0.009642
5	0.021133	0.0356	0.02254	0.00948
6	0.015759	0.034626	0.02254	0.010454
7	0.023819	0.036405	0.02254	0.008676
8	0.026438	0.035547	0.02254	0.009533
9	0.022701	0.035699	0.02254	0.009381
10	0.032862	0.037955	0.02254	0.007125
11	0.027307	0.036536	0.02254	0.008544

Reto: gráfica de tabla



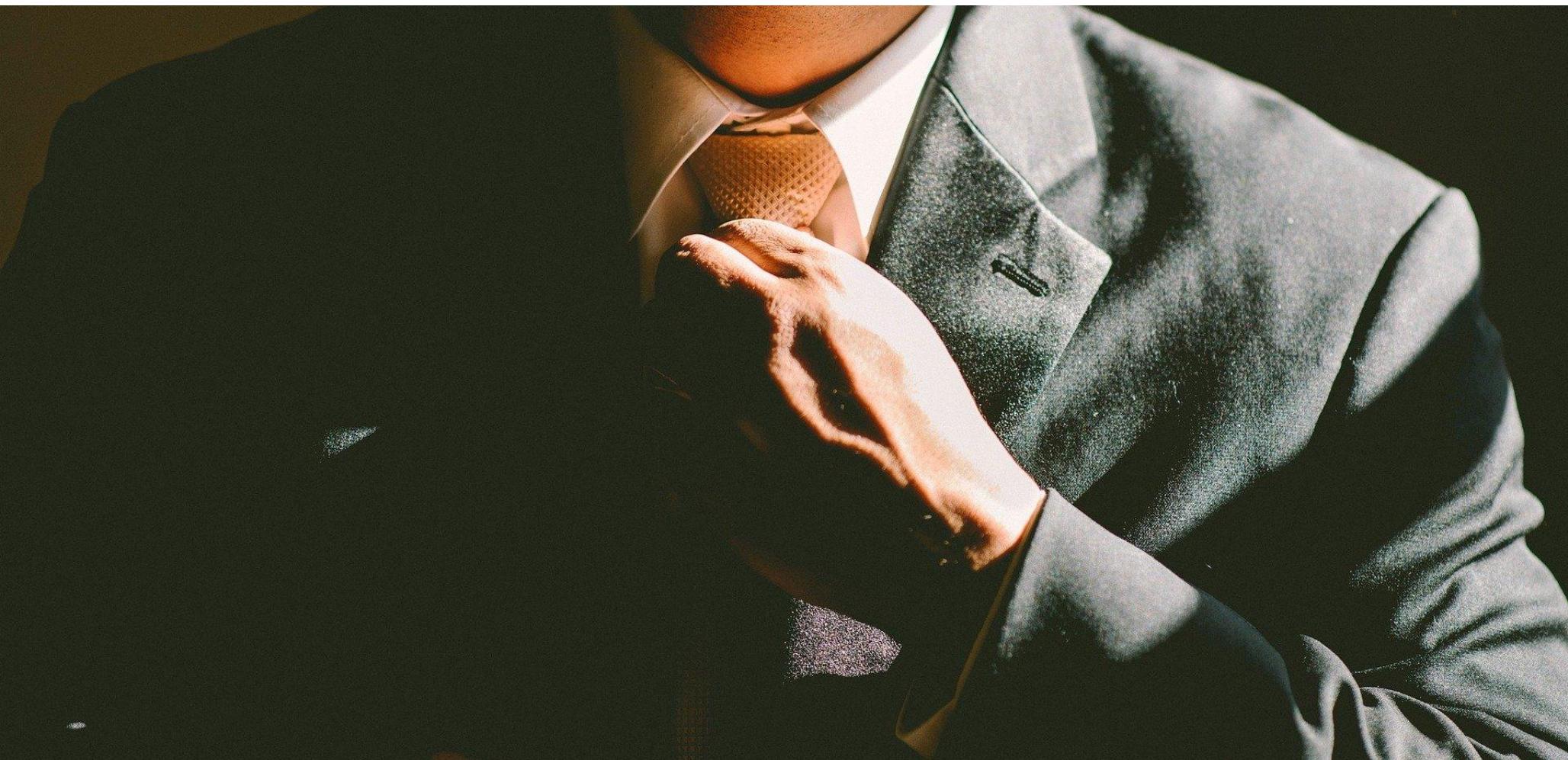
Lectura de Storytelling

Reto: identificación de gráfica



Data Viz for Business

¿Qué papel juegan los data viz en los negocios?



Dirección y gerencia



Comunicación



Eficiencia y mejora



Reto: data viz en business

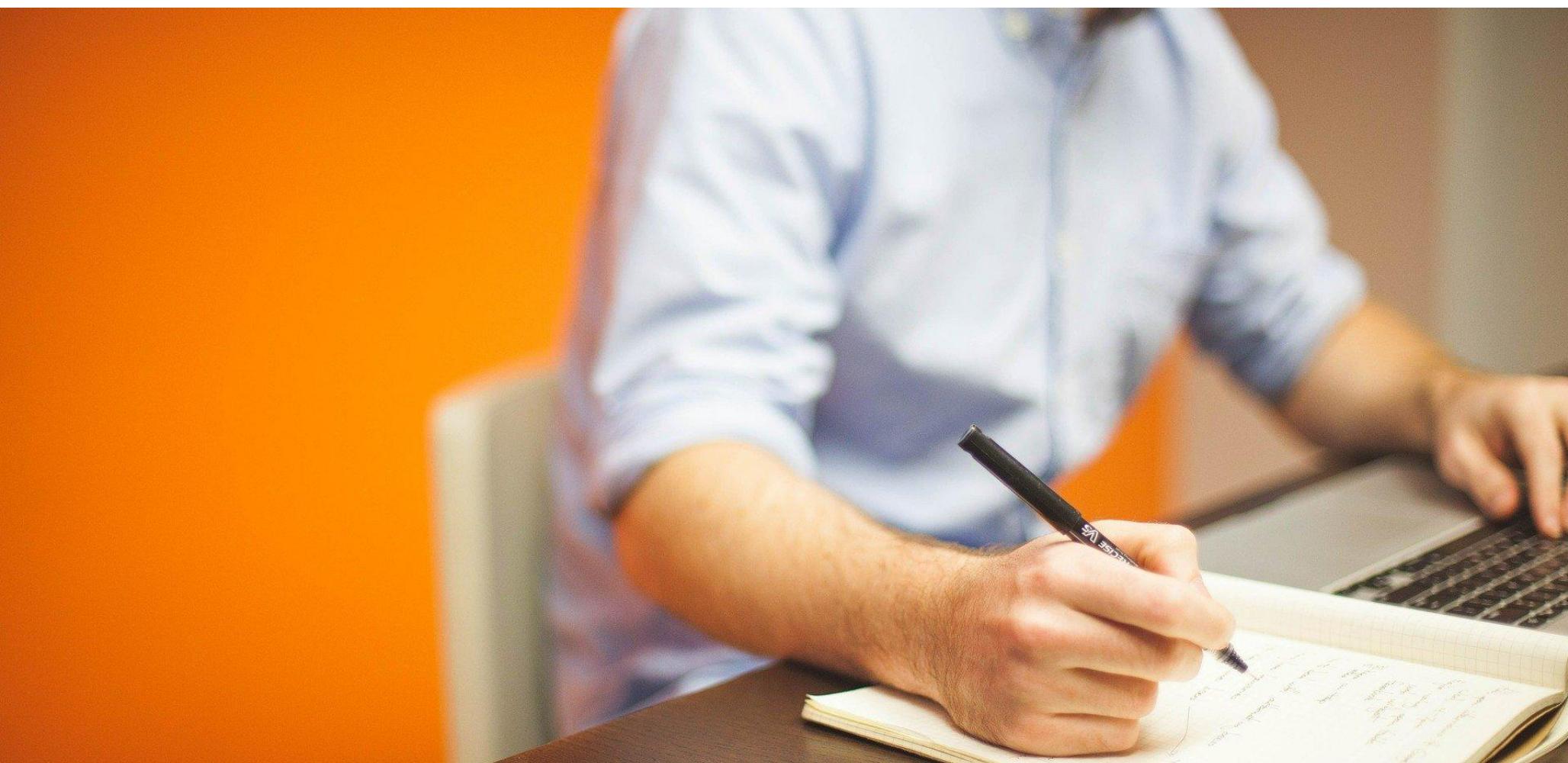


Agregar valor utilizando datos

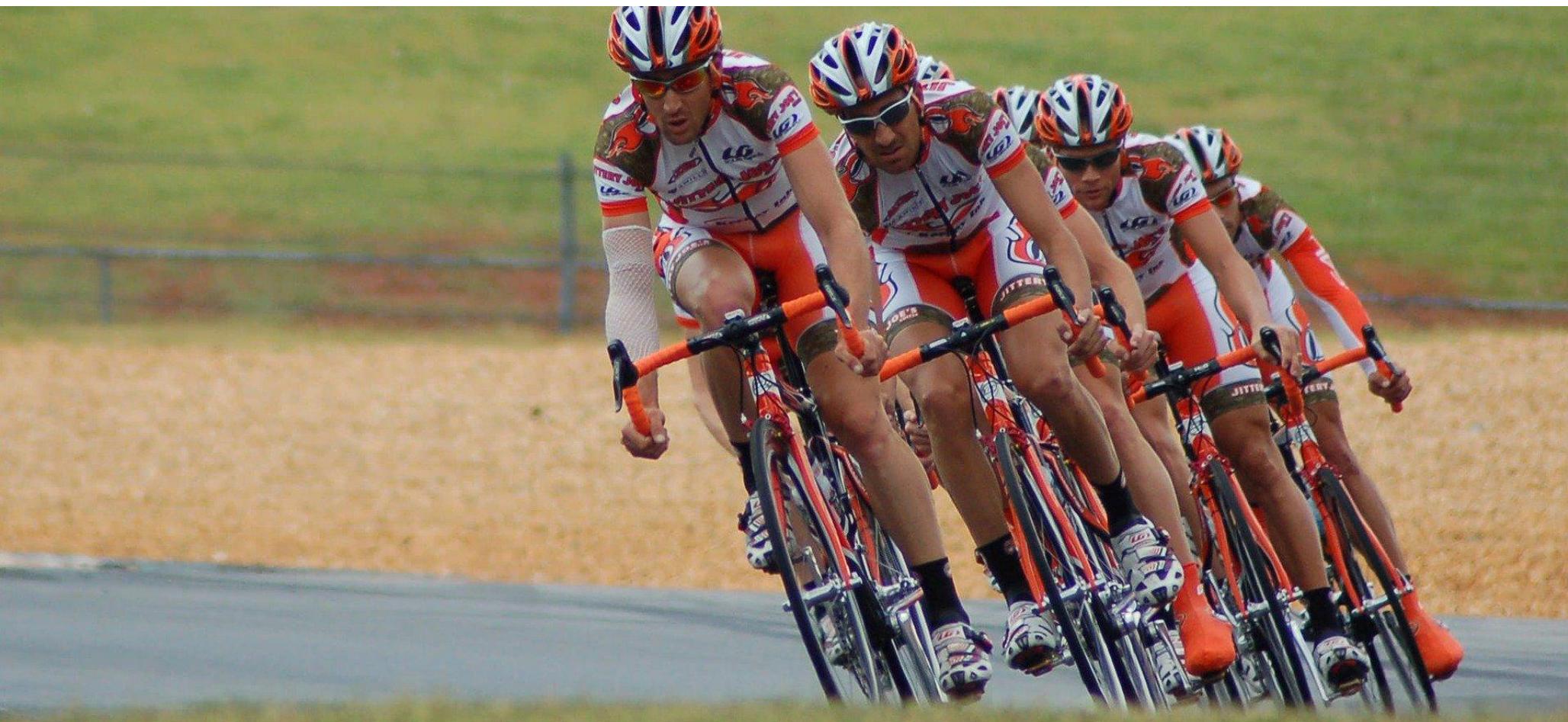
¿Cómo agregamos valor con datos?



Explora, descubre, pregunta



Trabaja en equipo



Toma decisiones

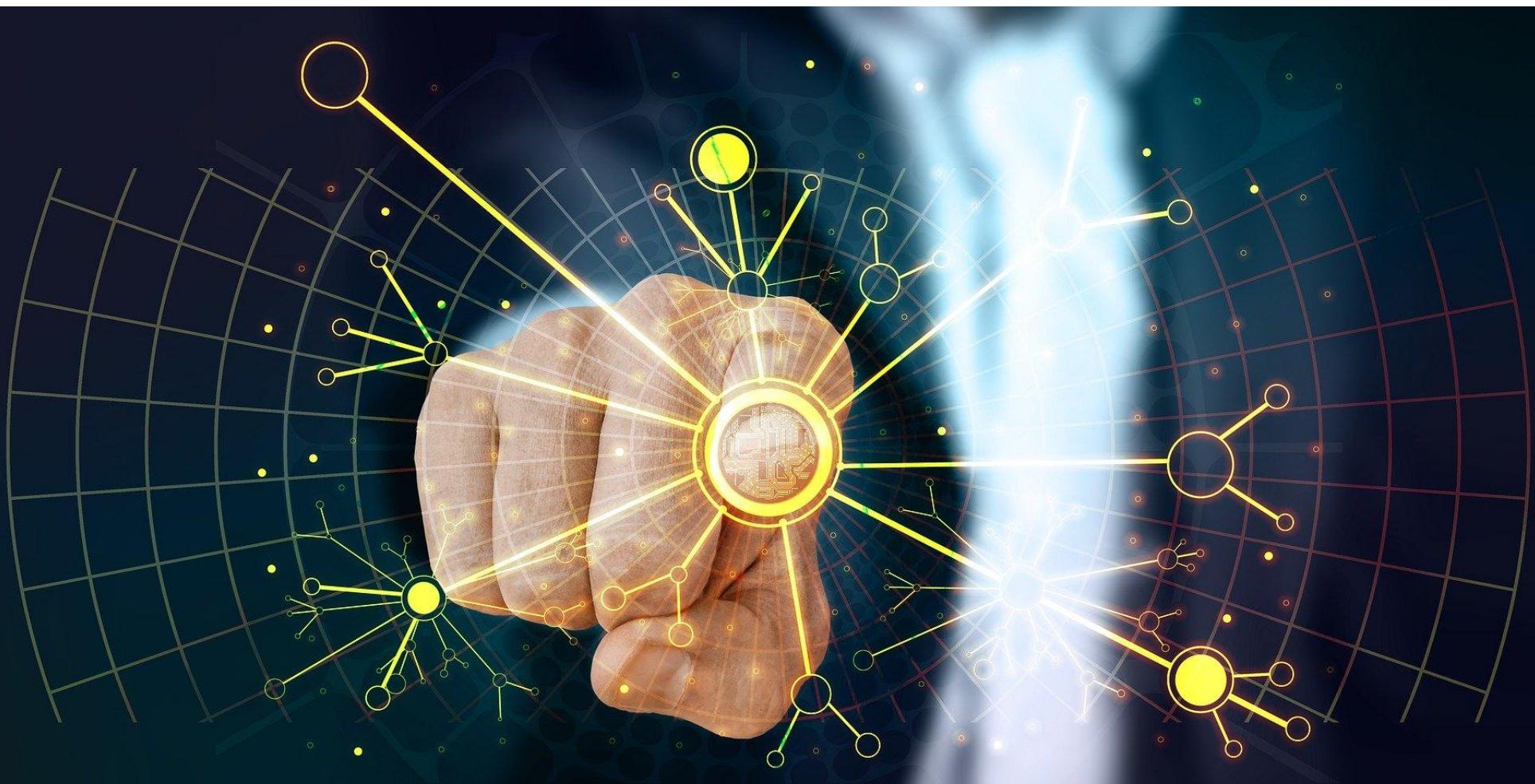


Reto: descubrimientos

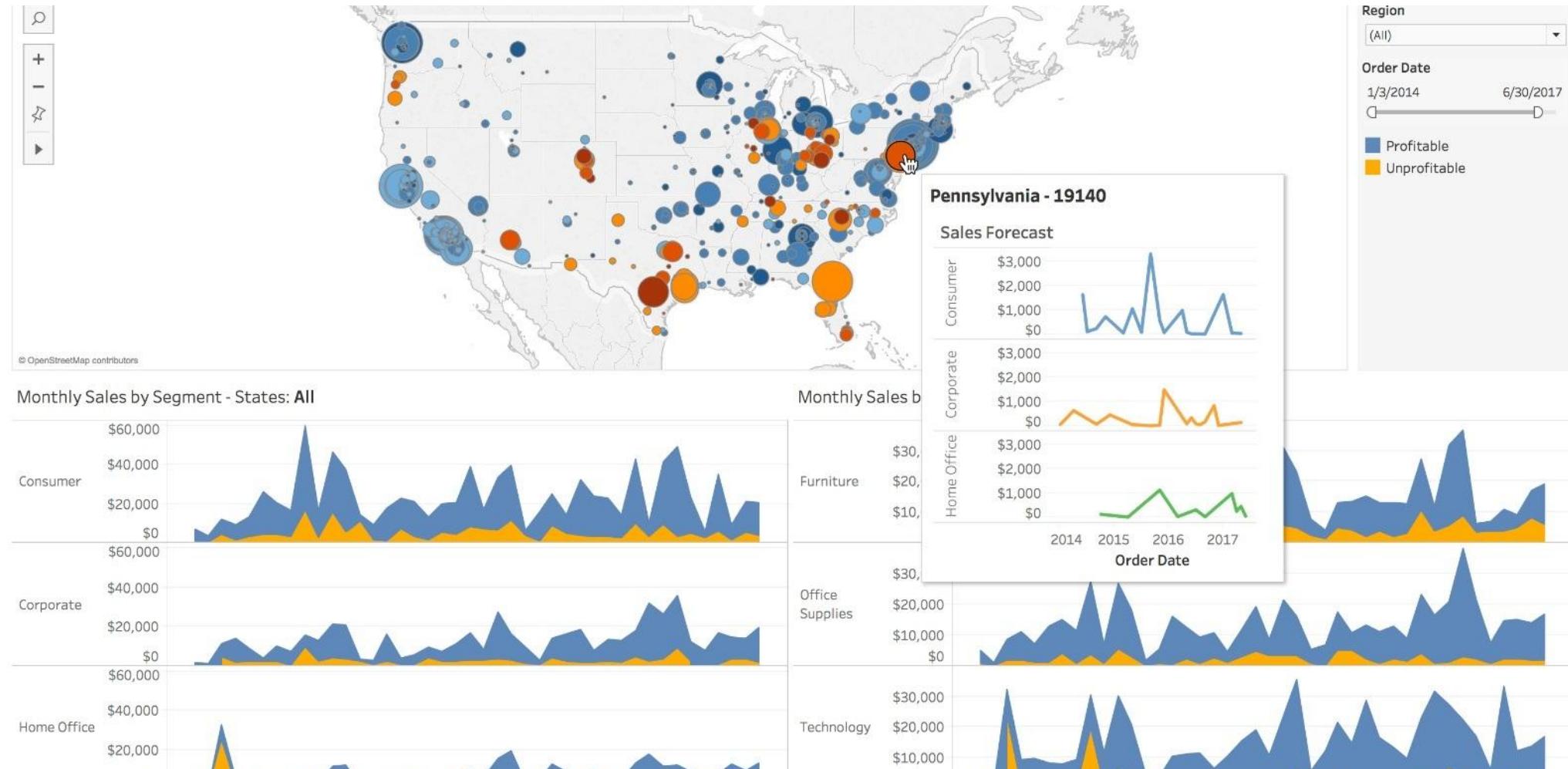


Business Intelligence

¿Qué es Business Intelligence (BI)?



Data Visualization y BI



“Know how” del negocio



BI en el Data Science



Caso: Walmart



Reto: define BI



Recolección de datos

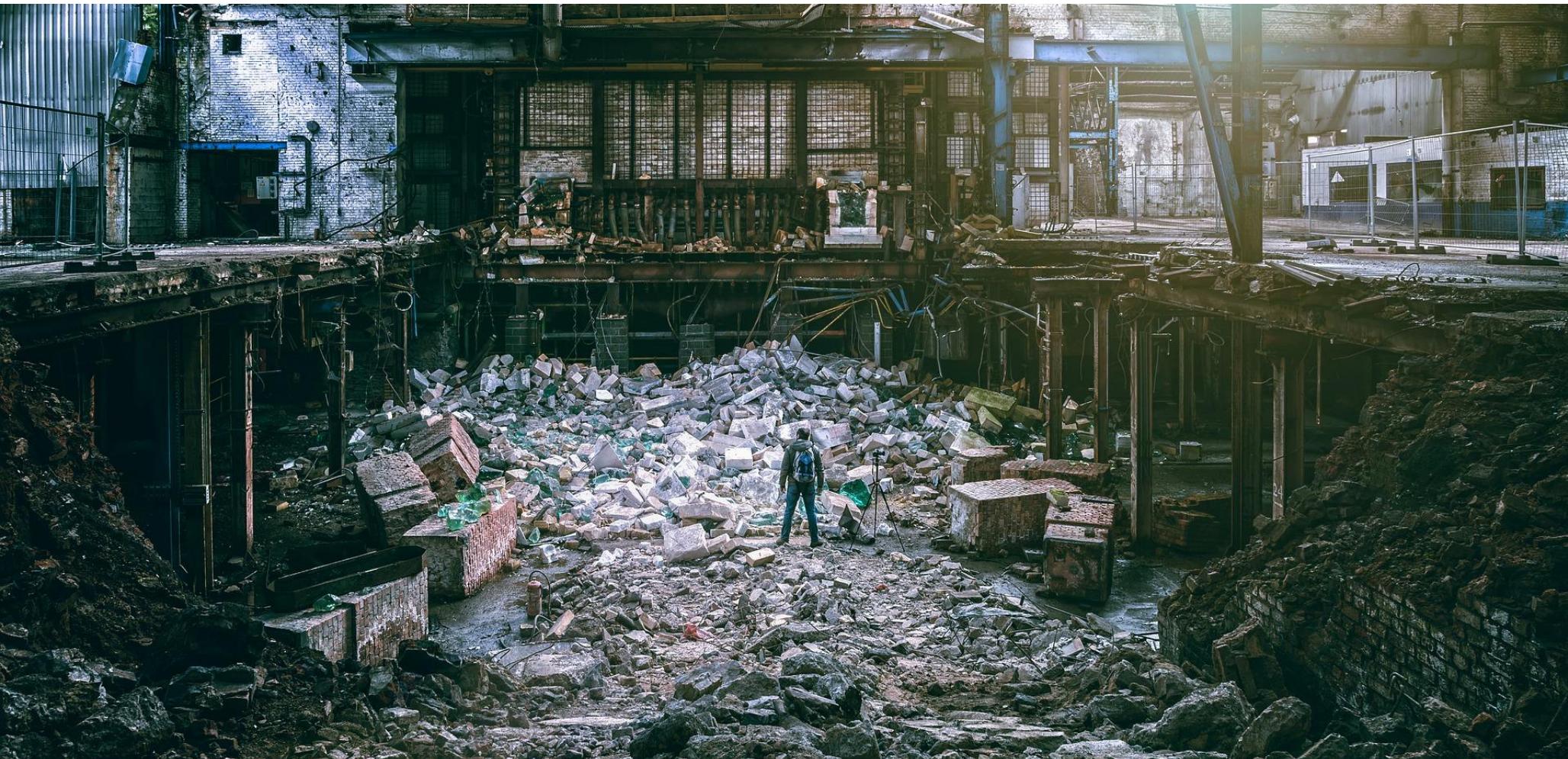
Diversidad



Bases públicas o privadas



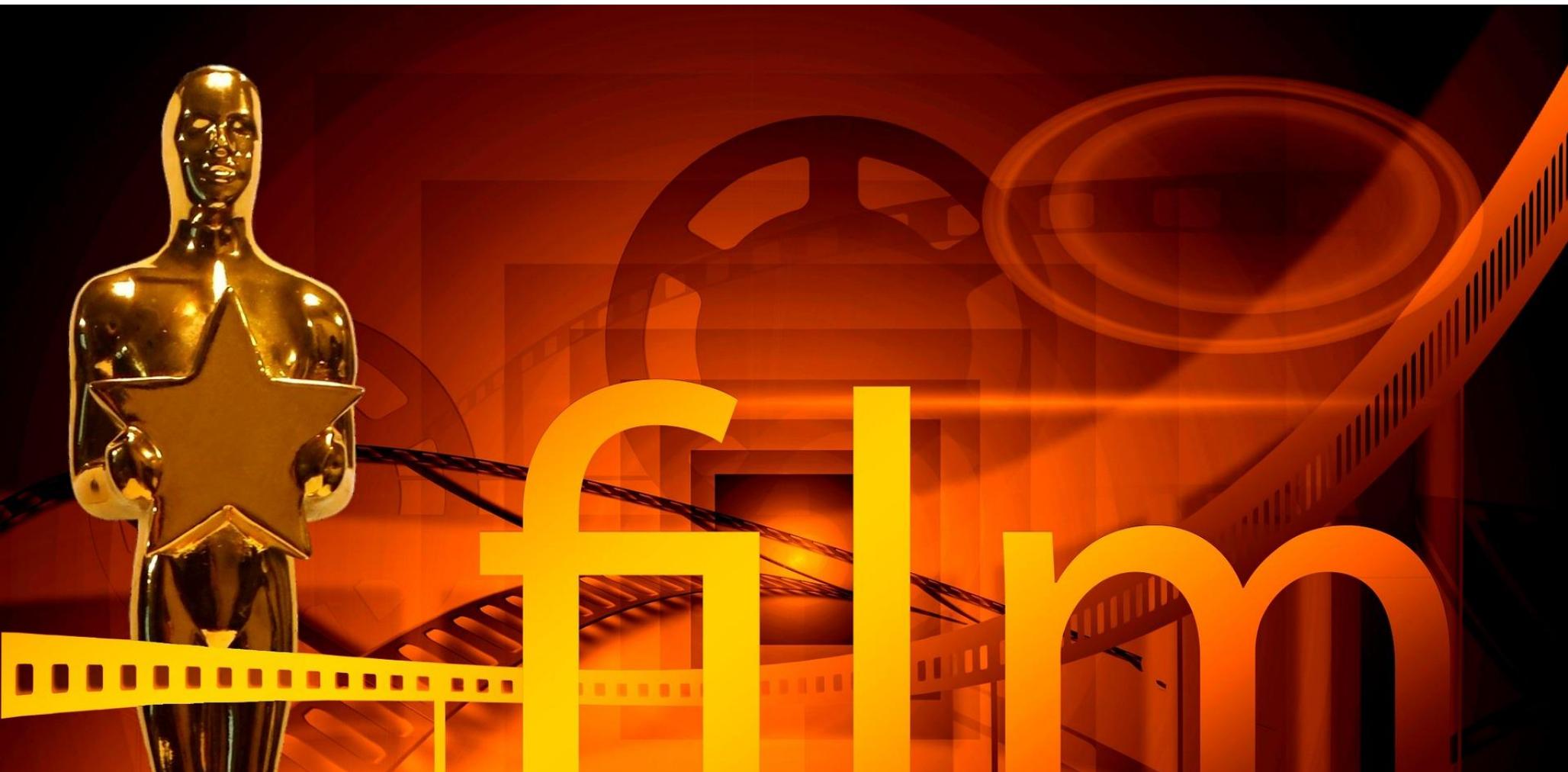
Información estructurada y no estructurada



Distintos tipos de archivos y fuentes



Reto: base de datos

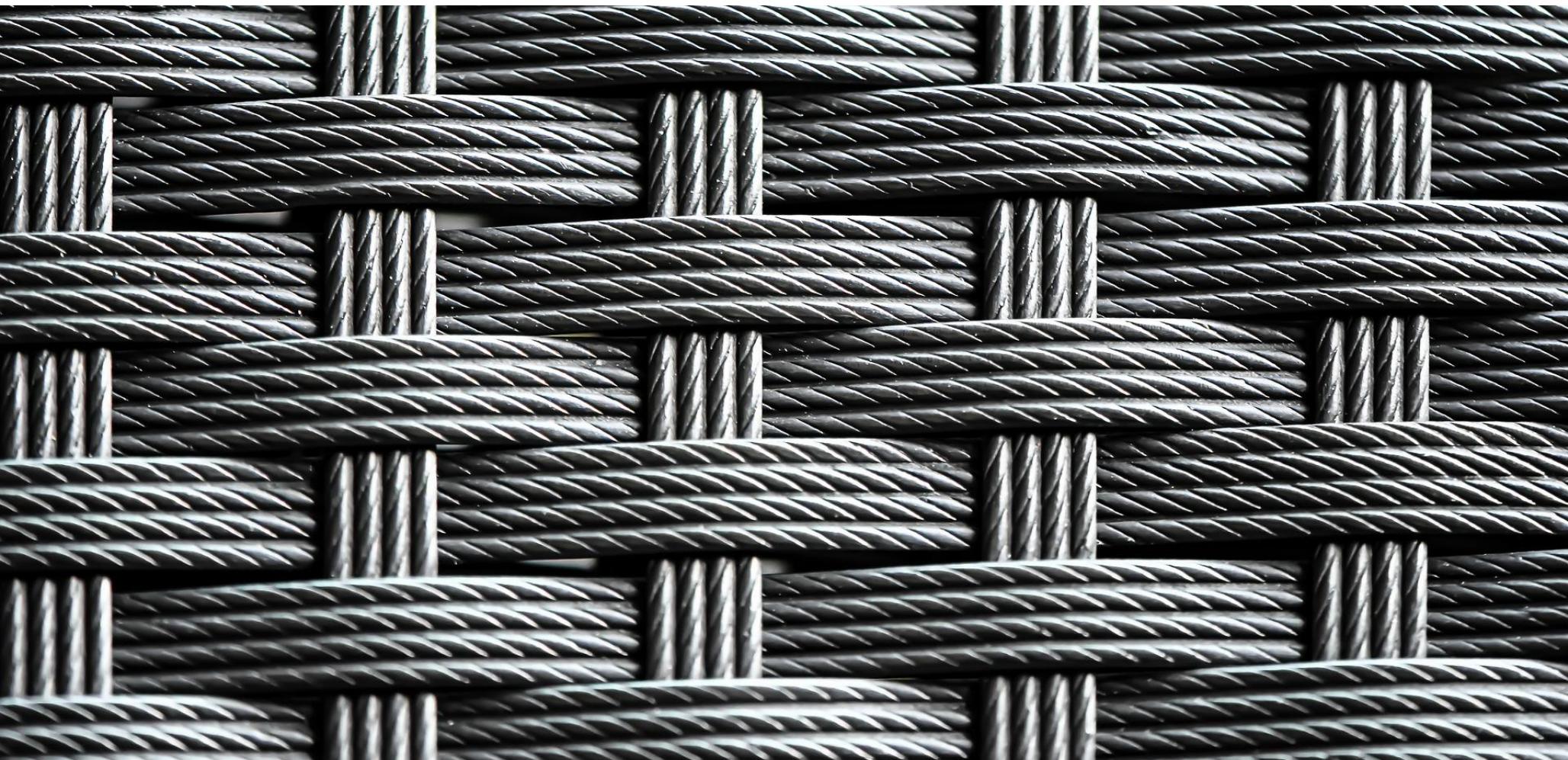


Limpieza de datos

Importancia de la limpieza de datos



Estandarizar formato



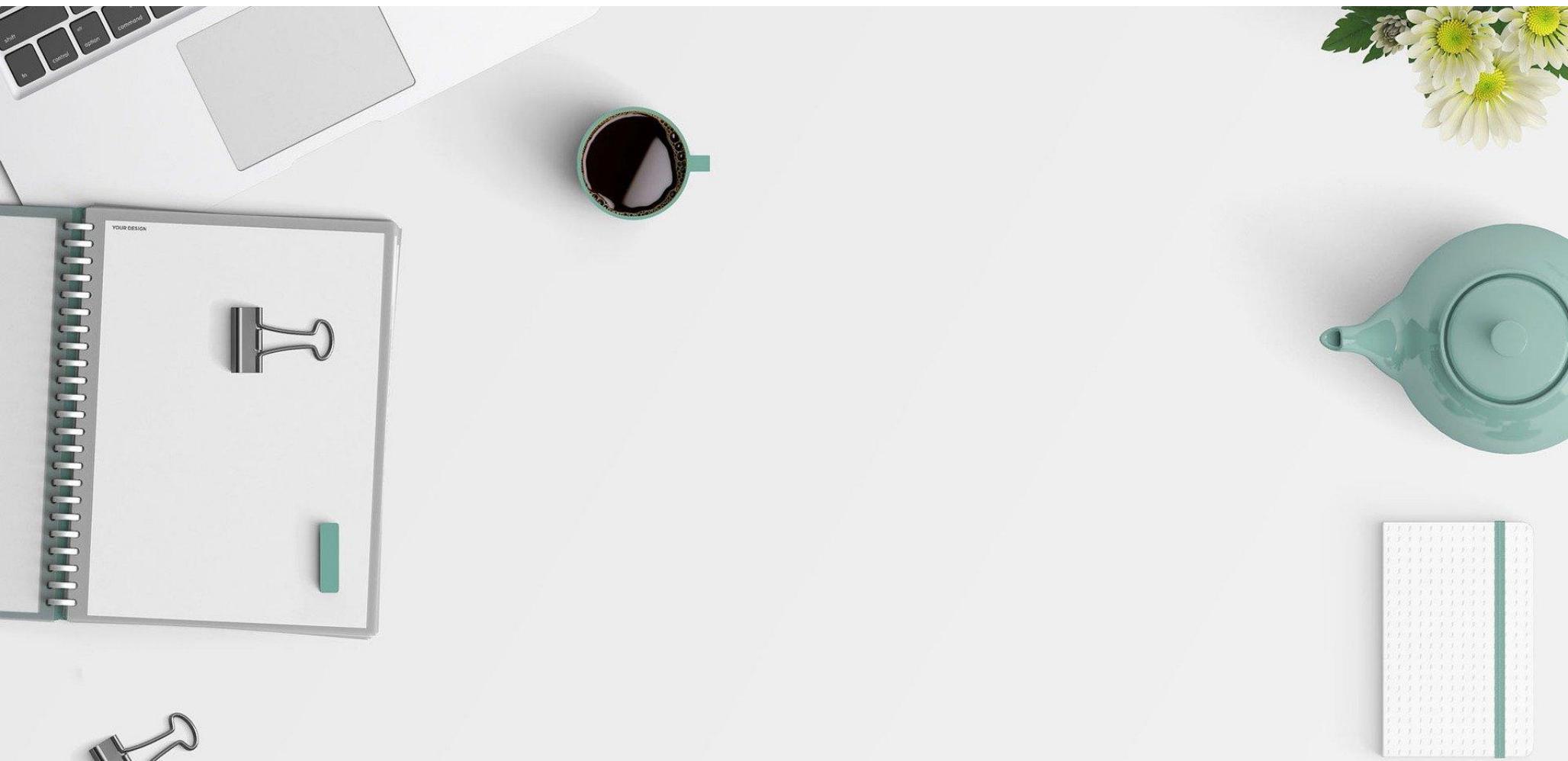
GIGO / RIRO



Preparación



Reto: herramienta de limpieza



Exploración de datos

¿Por qué explorar datos?

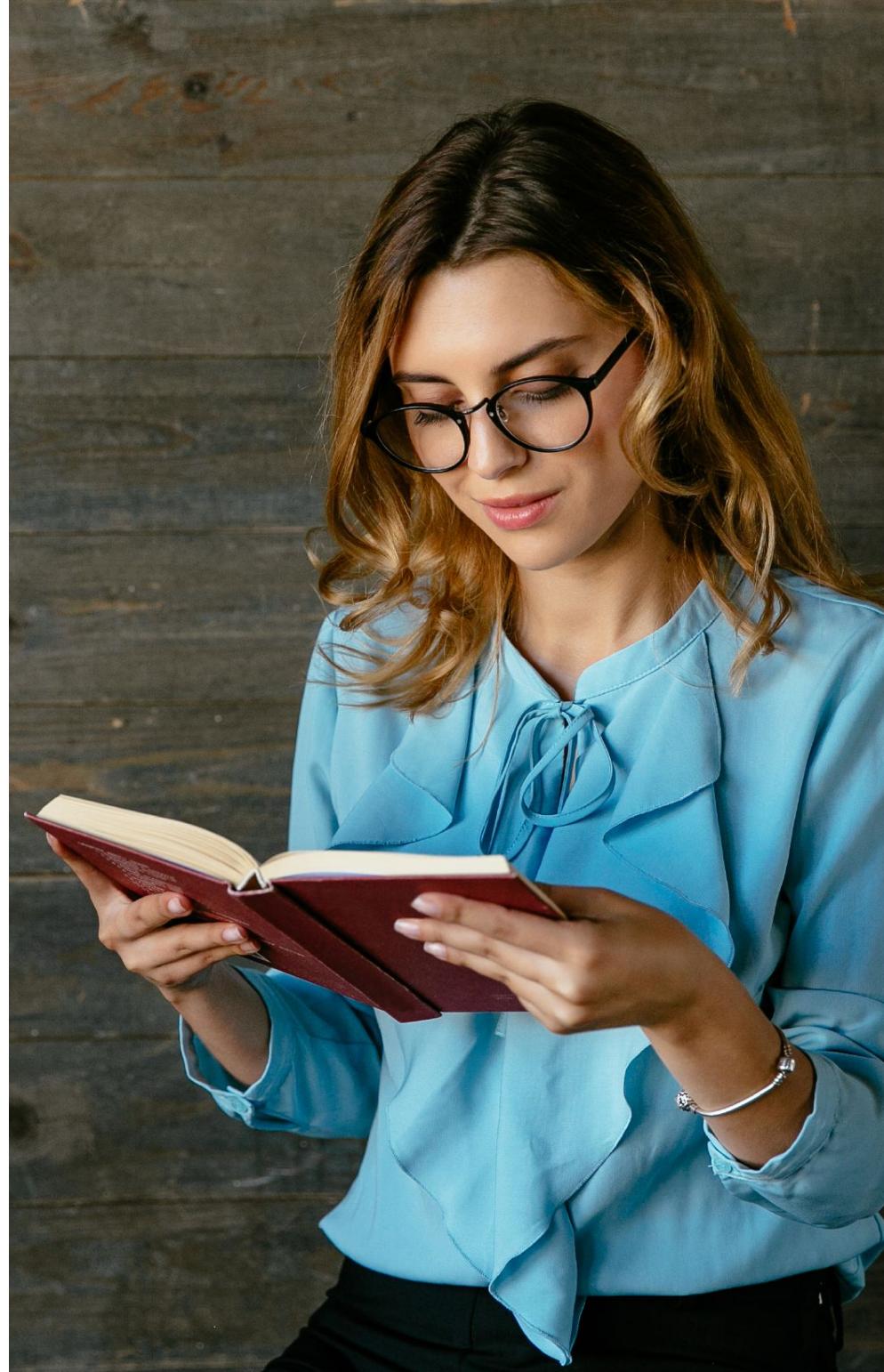


Descubre, pregunta, reformula, analiza



Cuenta historias

Los datos sin historias
son sólo números.



Evita errores



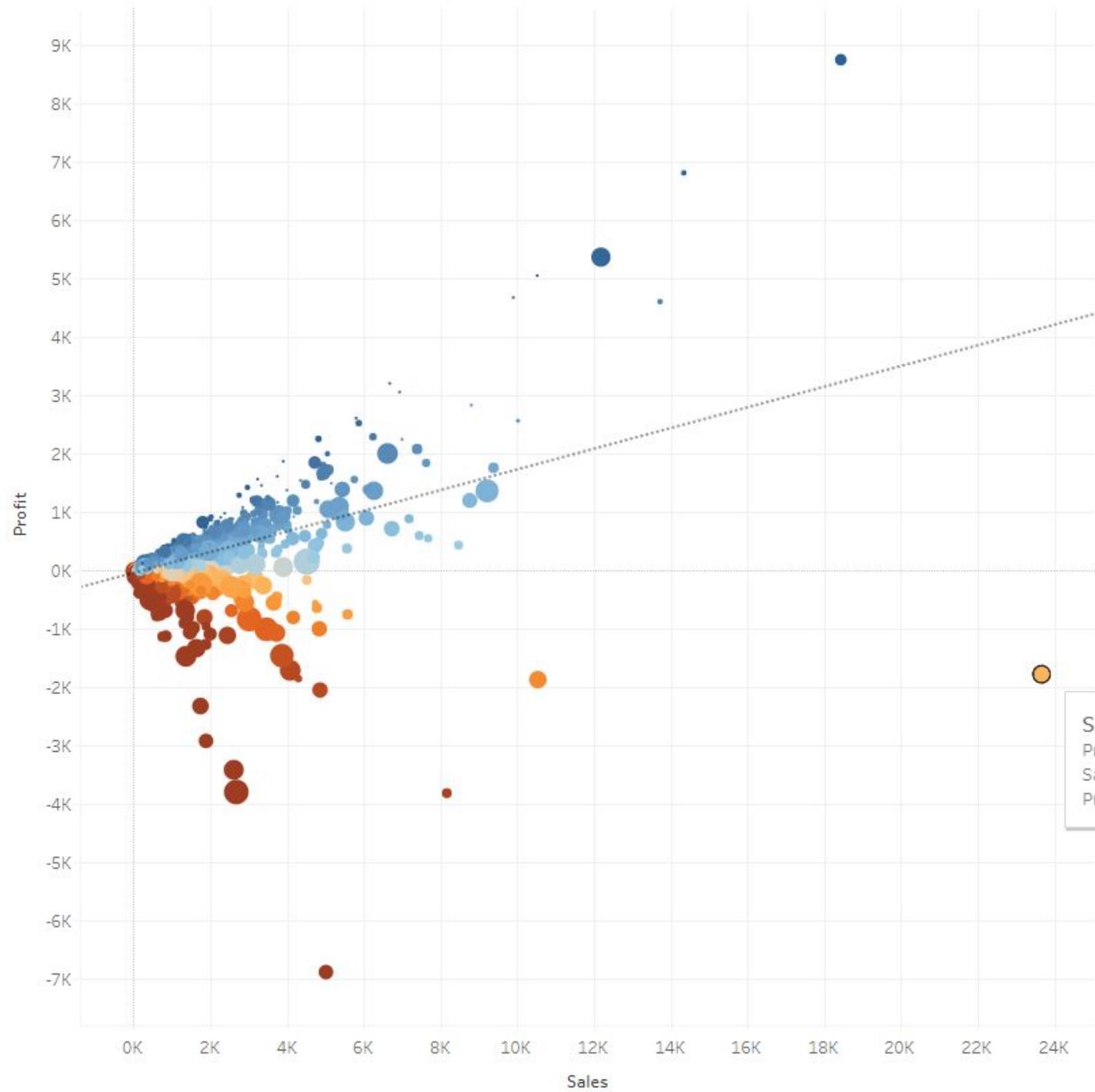
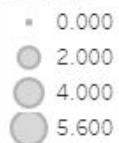
Resultados de la exploración de datos

- Aumentar las ventas no siempre aumenta las ganancias.
- La razón: los descuentos.
- Gráfica de burbujas con correlación.
- Agregar líneas de referencia.

Profit Ratio



Discount



Sean Miller
Profit Ratio: -7.6%
Sales: \$23,668
Profit: \$-1,787

Reto: explora datos

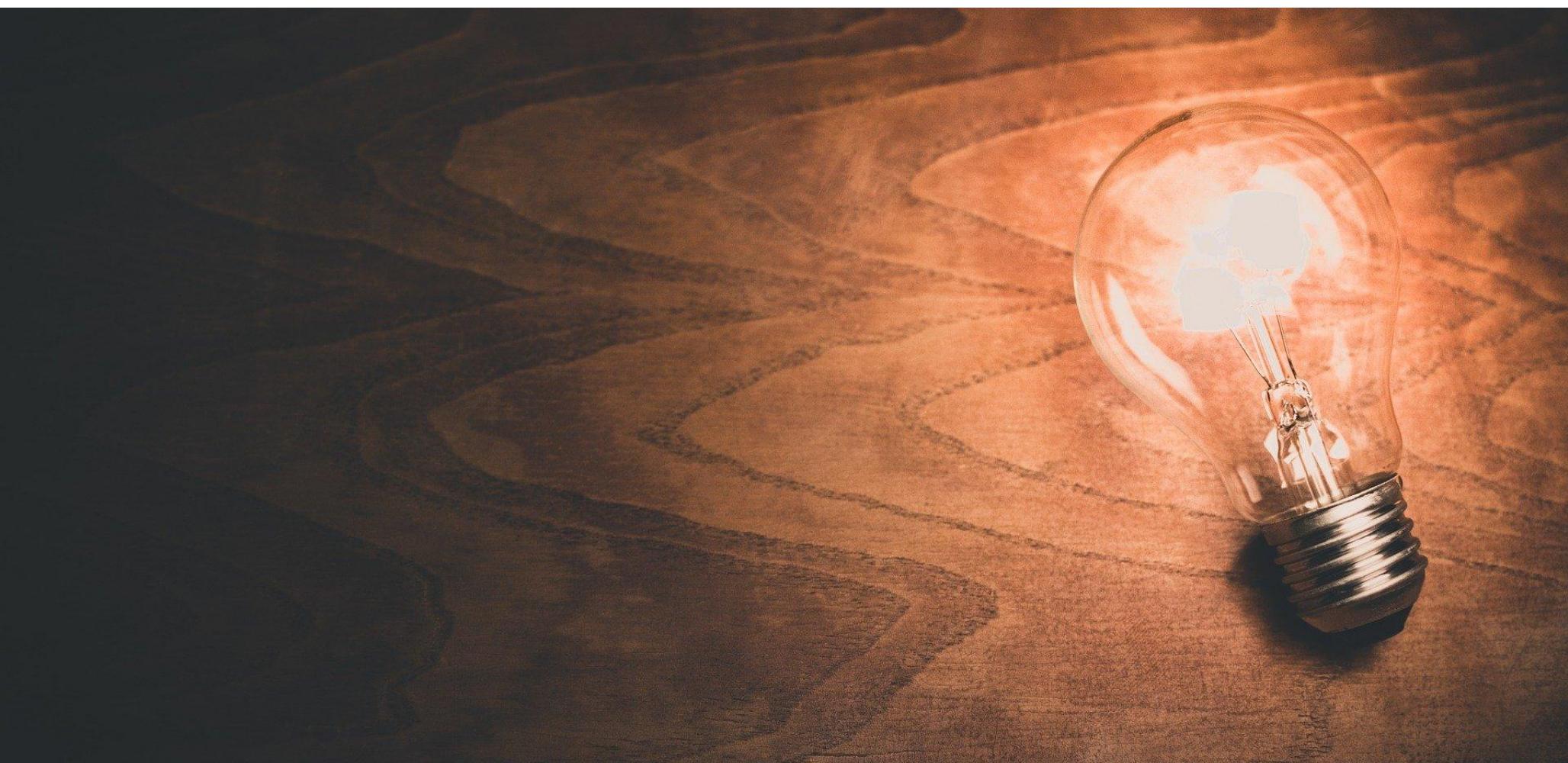


Creación de gráficas

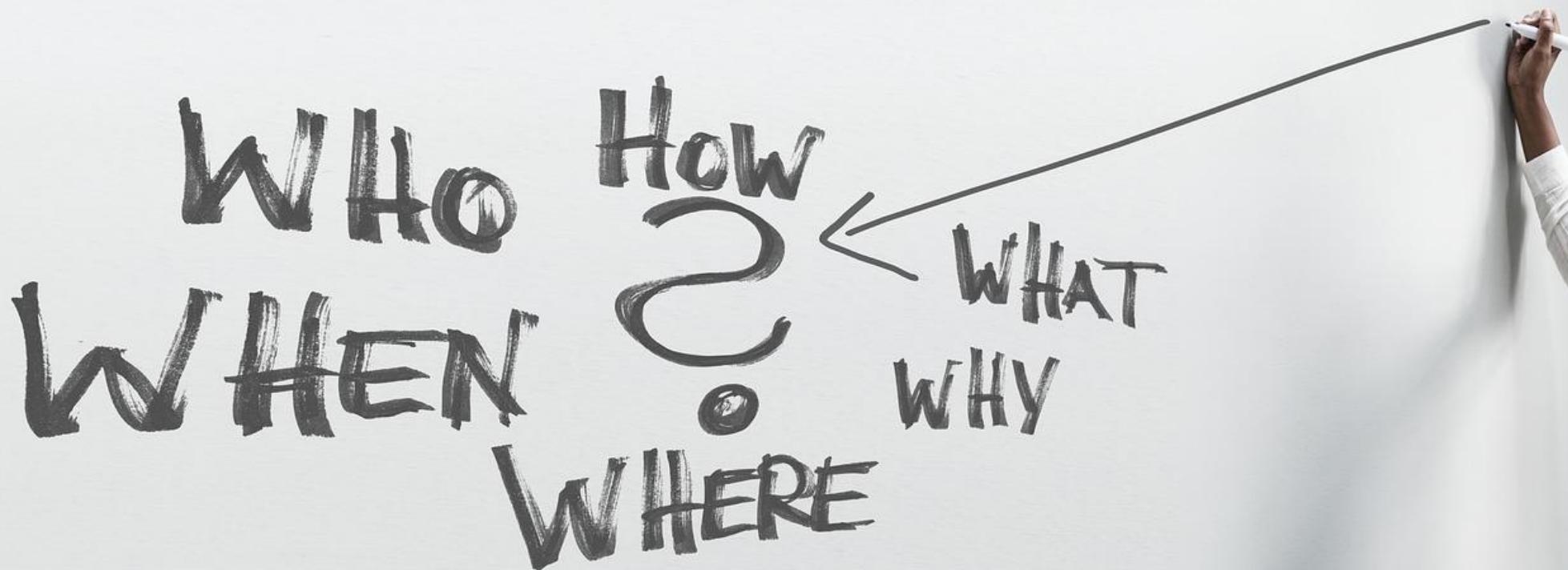
¿Qué quiero comunicar?

WHAT'S YOUR
STORY

¿Qué se adapta mejor a mi mensaje?



¿Quién es mi audiencia?

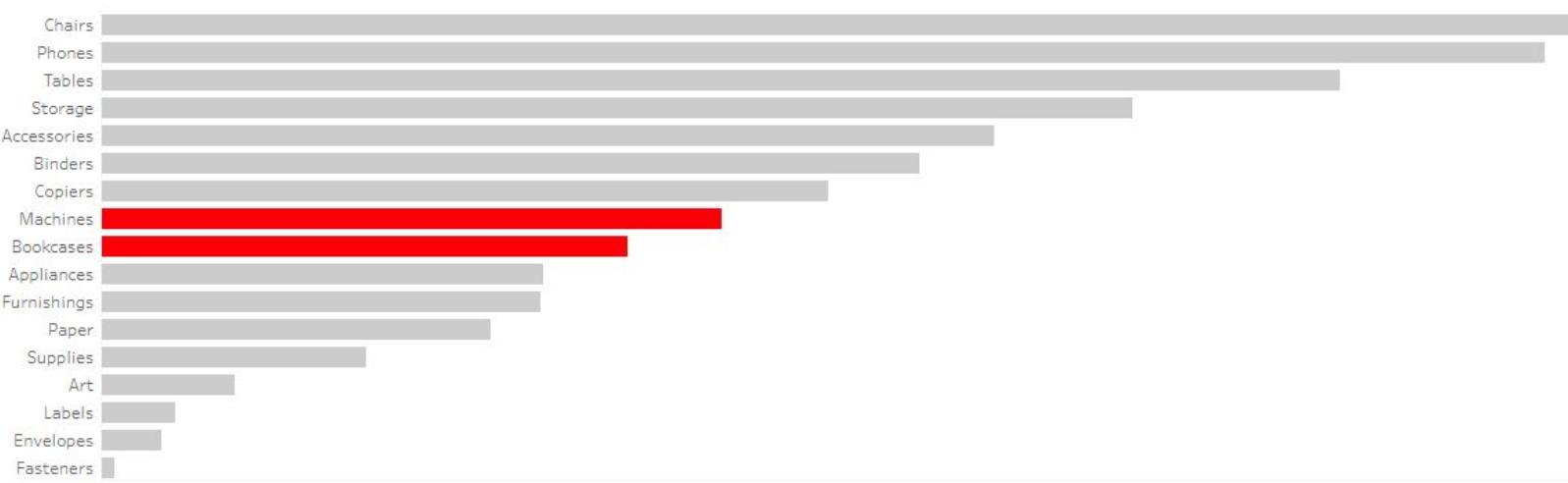


No olvides las buenas prácticas



Subcategories Sales

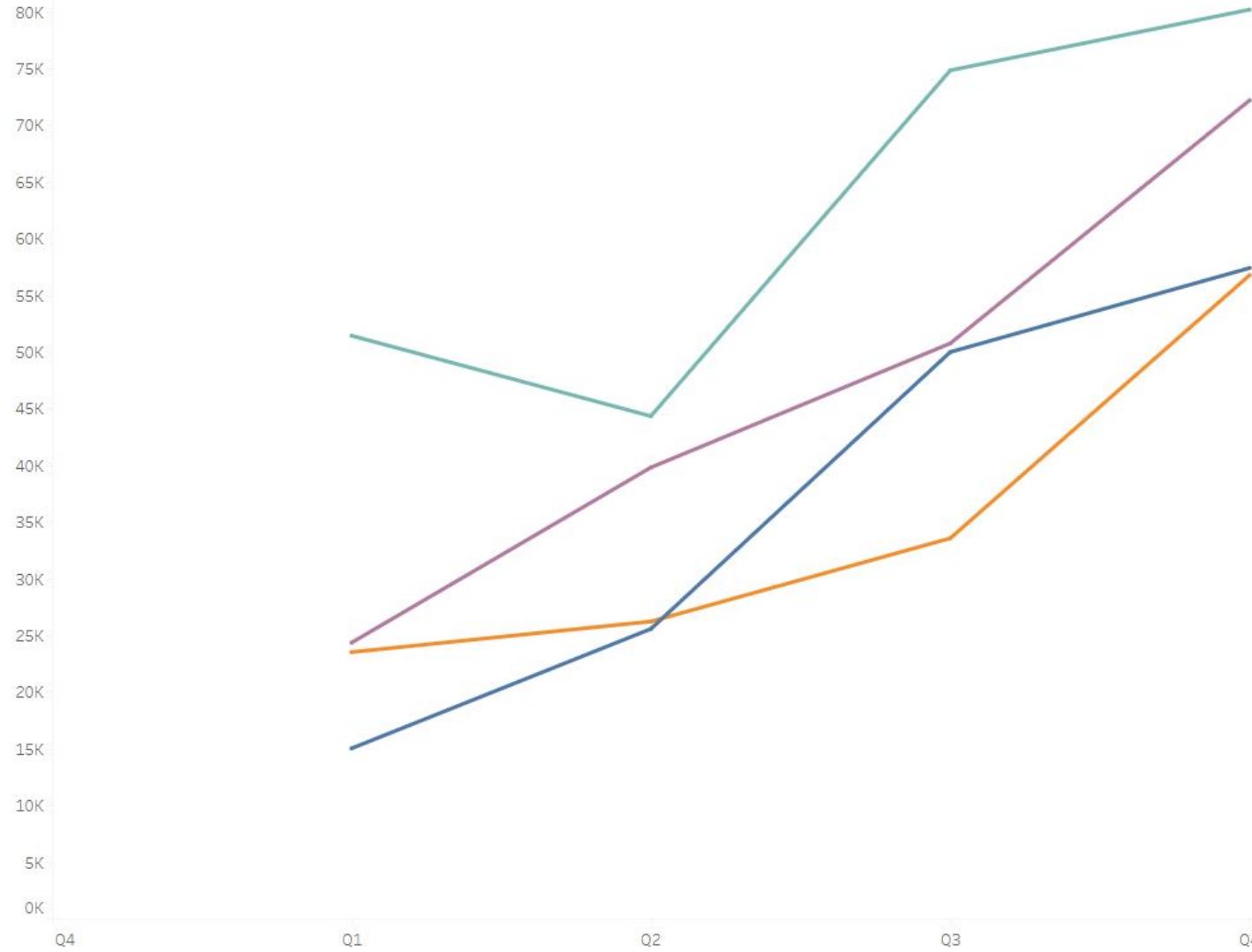
Avg. Profit
-773 773



Sales by Season

Year of Order Date

- 2011
- 2012
- 2013
- 2014



Top Products

Canon imageCLASS 2200 ..	14,000
High Speed Automatic Ele..	13,101
Global Troy Executive Lea..	10,021
Fellowes PB500 Electric P..	8,135
GuestStacker Chair with C..	8,030

Bottom Products

GuestStacker Chair with C..	8,030
Fellowes PB500 Electric P..	8,135
Global Troy Executive Lea..	10,021
High Speed Automatic Ele..	13,101
Canon imageCLASS 2200 ..	14,000

Reto: ¿qué gráficas escogerías?



Generación de reportes

¿Qué son los reportes?



¿Para qué son los reportes?



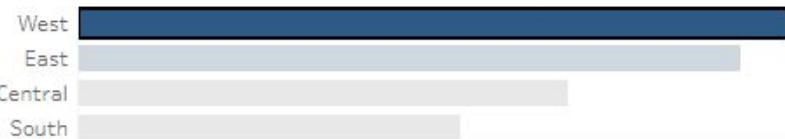
Concentra tus resultados



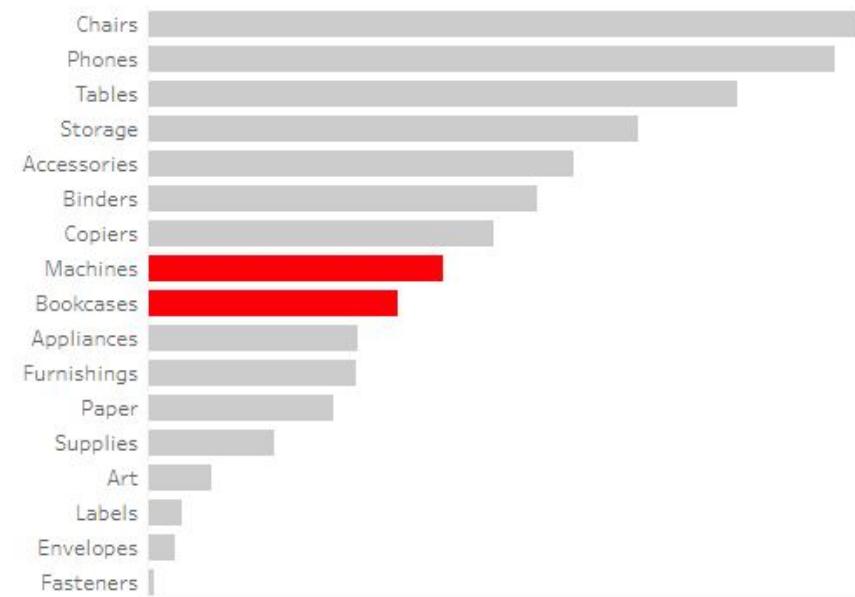
+ Retención - Esfuerzo



Sales by Region



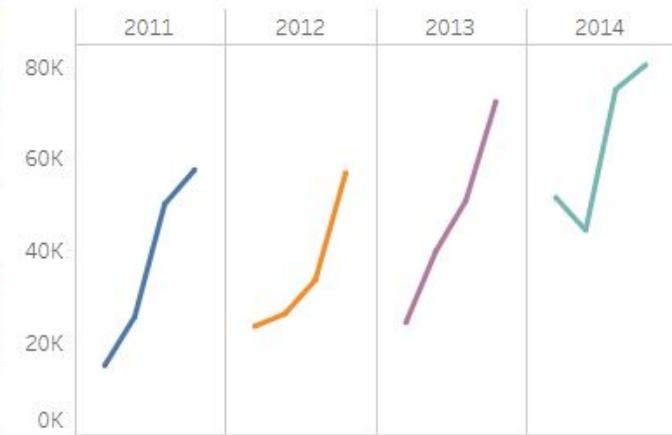
Subcategories Sales



Top Products

Canon imageCLASS 22..	14,000
High Speed Automatic..	13,101
Global Troy Executive ..	10,021
Fellowes PB500 Electr..	8,135
GuestStacker Chair wi..	8,030

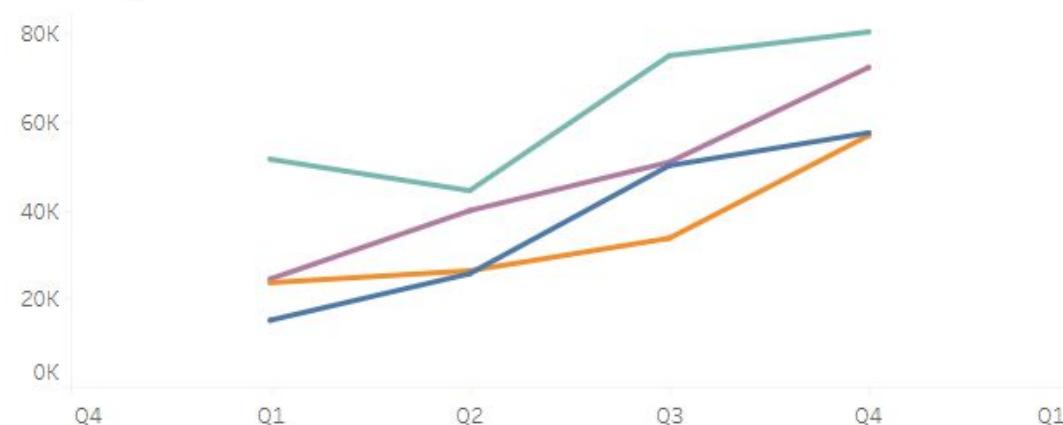
Sales over time



Bottom Products

GuestStacker Chair wi..	8,030
Fellowes PB500 Electr..	8,135
Global Troy Executive ..	10,021
High Speed Automatic..	13,101
Canon imageCLASS 22..	14,000

Sales by Season



Red Flags Dashboard for Super Store Data

Please select your Region, State or City for data filtering and set your KPIs in order to trigger the red flags.

Filters

Region	Central	State	(All)	City	(<input type="button" value="▼"/>)	BEP	\$0.00	Discount T...	32.07%	<input type="button" value="O"/>
--------	---------	-------	-------	------	--------------------------------------	-----	--------	---------------	--------	----------------------------------

Profit Overview

Category	Year o.. F	J	F	M	A	M	J	J	A	S	O	N	D
Furniture	2014	-255	-328	678	-4	398	299	-512	-80	-555	-723	-517	319
	2013	208	-87	-522	213	479	-513	-308	55	-864	-192	-137	1,415
	2012	-755	-20	79	-203	486	-572	-245	-61	781	-544	621	203
	2011	21	64	-305	-244	-400	324	-273	59	-253	-91	-239	233
Office Supplies	2014	1,725	-606	464	-84	1,013	651	709	331	-130	675	-1,836	-2,816
	2013	119	-57	-529	-1,978	707	294	473	-75	-278	1,541	784	5,394
	2012	68	-88	-368	393	198	-137	-23	89	20	-46	1,245	426
	2011	89	0	-227	180	-257	987	-3,814	201	3,667	198	-609	212
Technology	2014	1,396	-64	1,067	132	285	326	698	181	1,996	587	887	1,255
	2013	147	1	447	432	219	367	341	515	586	9,307	841	556
	2012	85	440	338	800	281	288	575	1,004	763	640	1,394	3,558
	2011	10	228	258	293	152	-67	34	368	-1,993	1,235	59	443

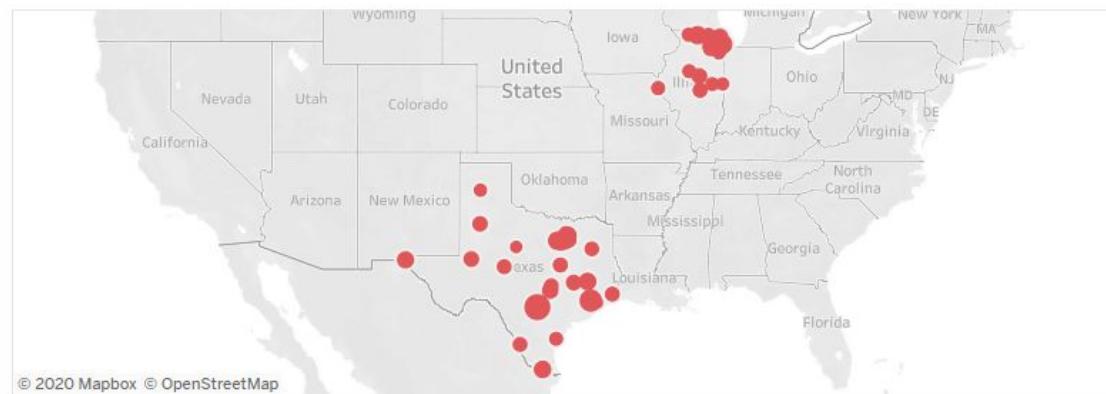
Profit with Break Even Point reference



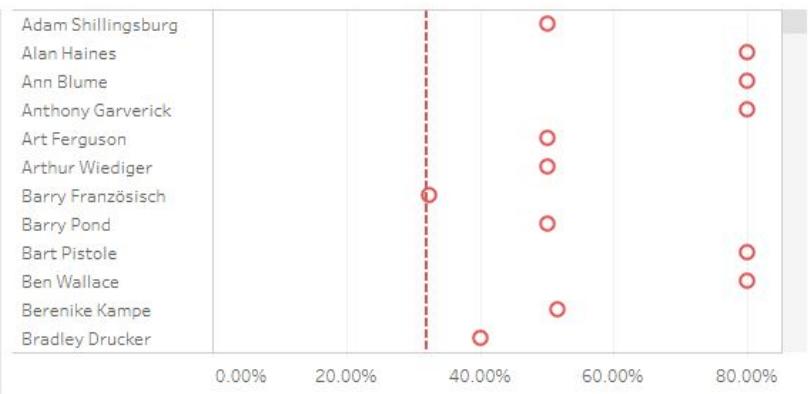
Sales



Red Flags for Discount Policy



Red Flags for Customers



Reto: reporte



KPIs

Key Performance Indicator



¿Qué es un KPI?



Recuerda S.M.A.R.T.

-S: específicos

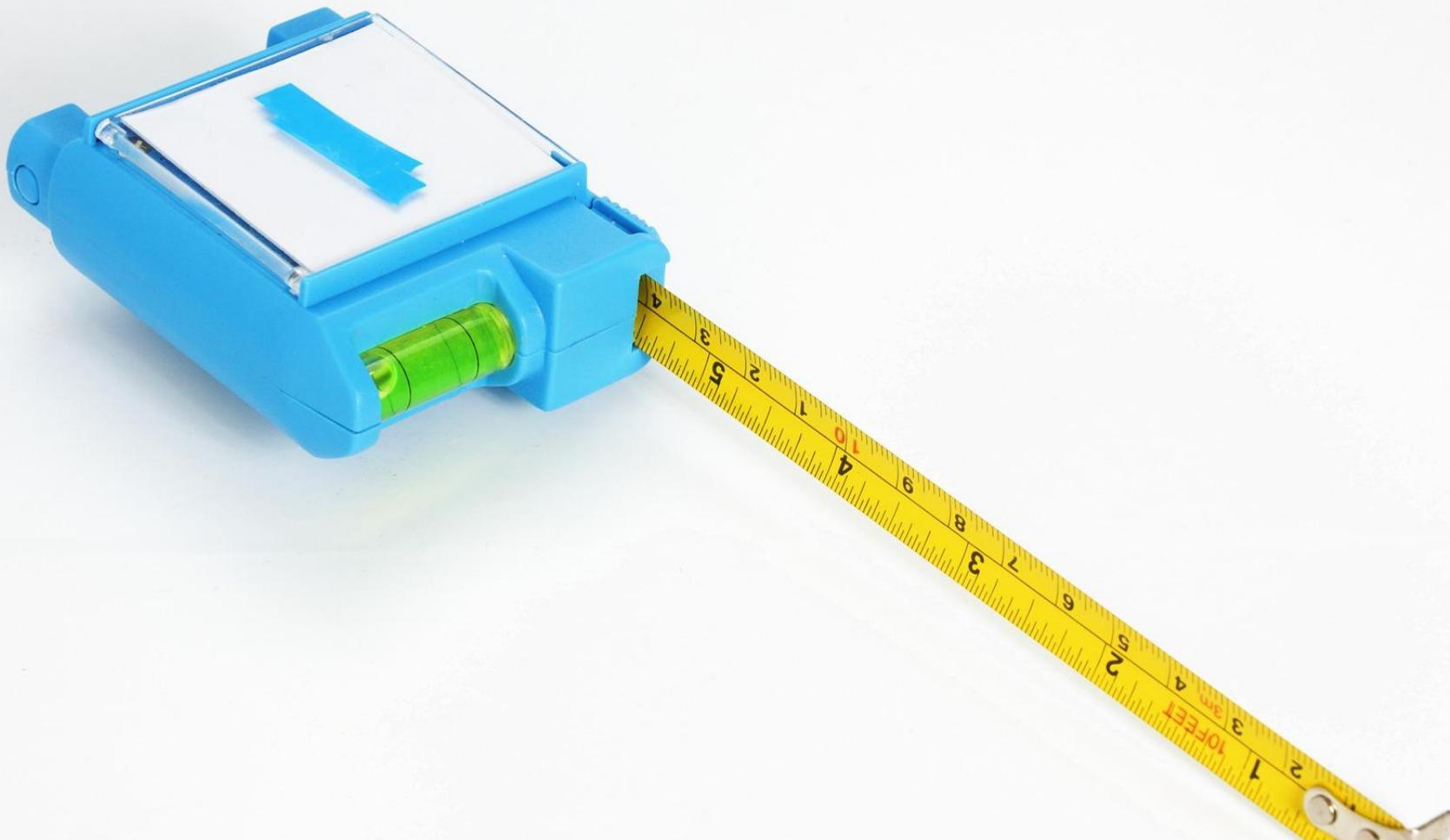
-M: medible

-A: alcanzables

-R: relevantes

-T: escalable en el tiempo

¿Para qué sirve?



Ejemplos y usos en reportes

Questions to Ask

What is your desired outcome?

How does this outcome help achieve your vision of success?

How will you know you've achieved your outcome?

Is this a leading indicator of performance, or a lagging indicator of performance?

Anatomy of a KPI

KPI: 1,000 New Customers by the End of FY2020

Data Source: CRM System

Frequency: Monthly

Owner: VP of Sales



Did You Get It Right?

Oportunidades del Departamento

Carga de trabajo	■
Falta de control sobre el trabajo	■
Interferencia relación trabajo Familia	■
Violencia	■
Condiciones en el ambiente de trabajo	■
Insuficiente sentido de pertenencia e inestabilidad	■
Jornada de trabajo	■
Liderazgo	■
Reconocimiento del desempeño	■
Relaciones en el trabajo	■

Influencia de las responsabilidades familiares	!
Falta de control y autonomía sobre el trabajo	!
Condiciones peligrosas e inseguras	✓
Jornada de trabajo extensas	✓
Trabajos peligrosos	✓

Empleados

Ana María



Israel



Karen



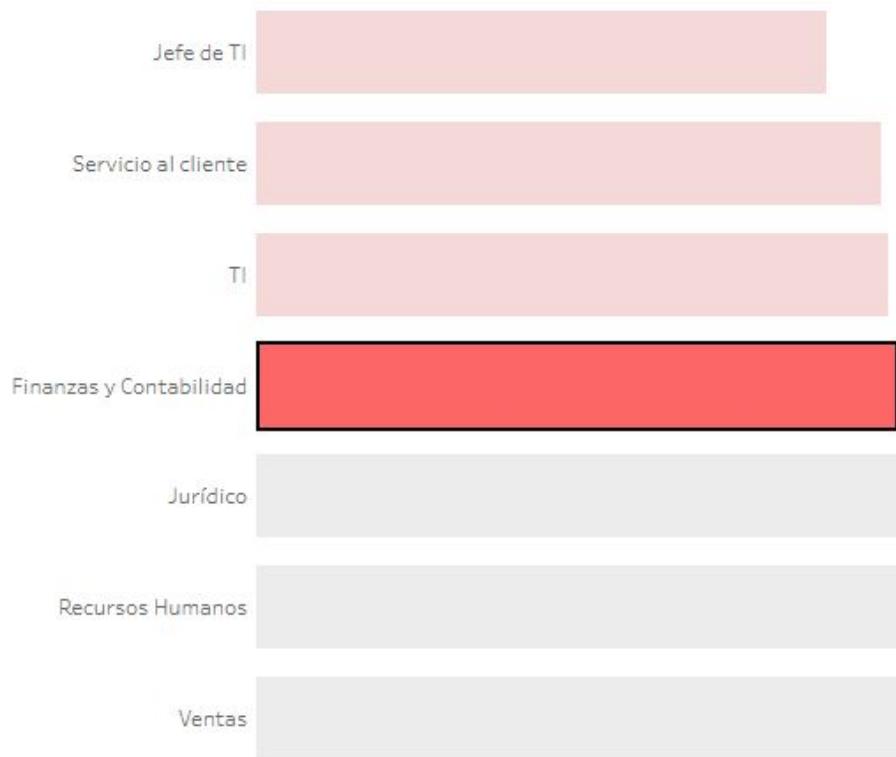
Luis



Cuadro de control para oportunidades

Seleccione un departamento para más información

Departamento



Empleados

Ana María

Israel

Karen

Luis

Oportunidades del Departamento

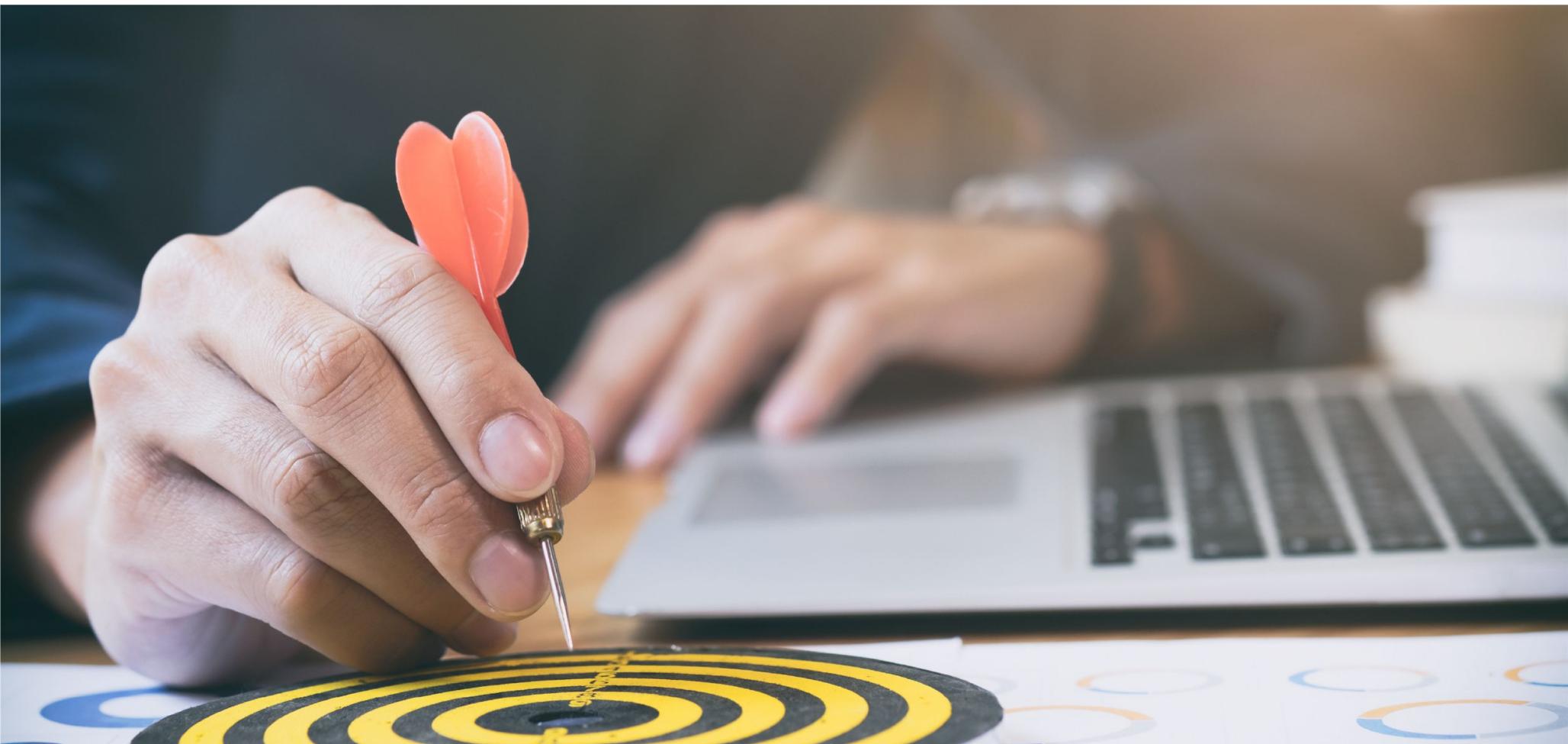
Carga de trabajo	■	Influencia de las responsabilidades familiares	!
Falta de control sobre el trabajo	■	Falta de control y autonomía sobre el trabajo	!
Interferencia relación trabajo Familia	■	Condiciones peligrosas e inseguras	✓
Violencia	■	Jornada de trabajo extensas	✓
Condiciones en el ambiente de trabajo	■	Trabajos peligrosos	✓
Insuficiente sentido de pertenencia e inestabilidad	■		
Jornada de trabajo	■		
Liderazgo	■		
Reconocimiento del desempeño	■		
Relaciones en el trabajo	■		

Reto: KPIs



Mejora continua

¿Cómo mejorar constantemente?



Realiza reportes



Muestra tus reportes



Crea historias



Caso: Orbitz

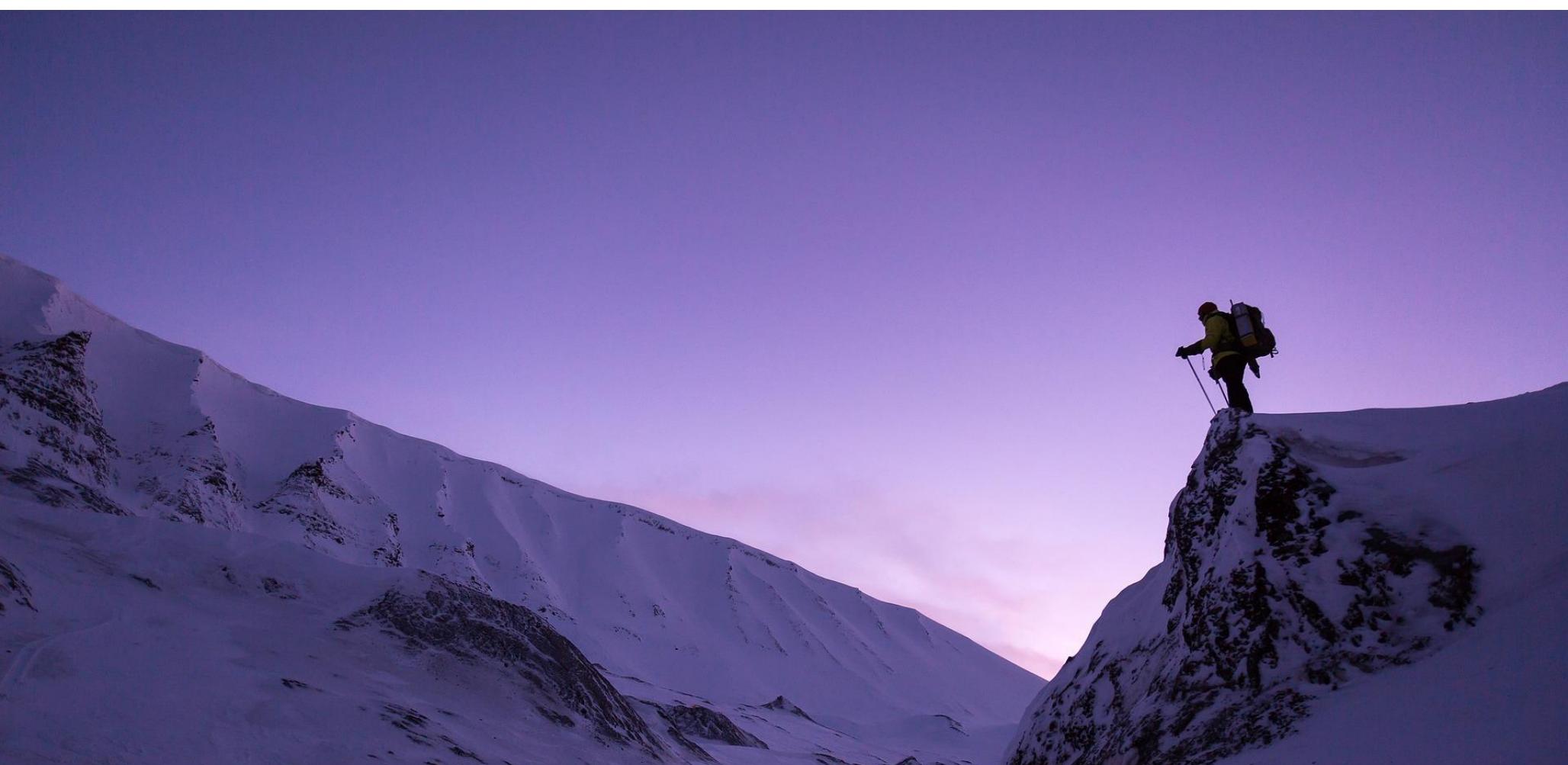


Reto: mejora en el Storytelling



Wrap up

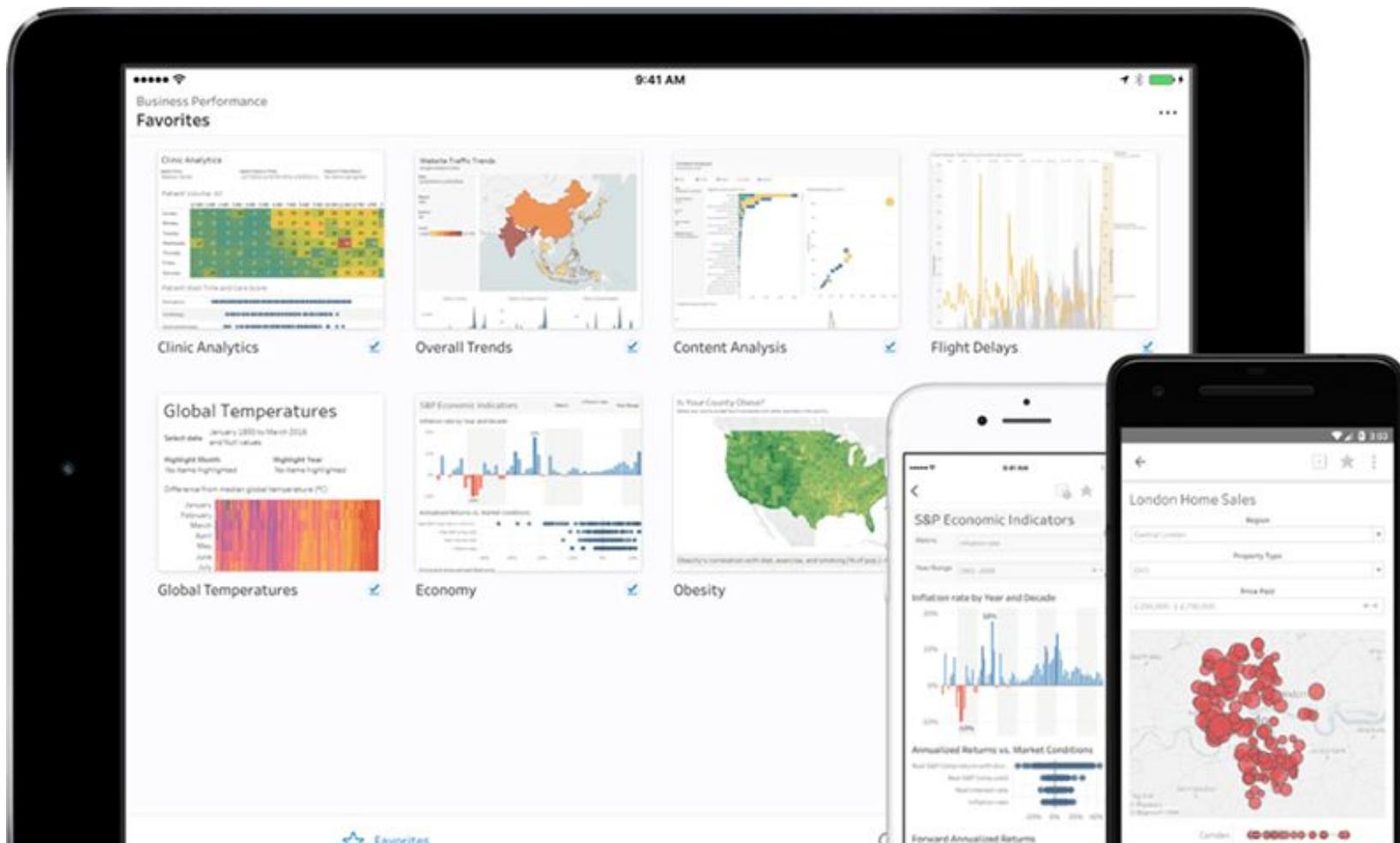
Conclusiones



Evaluación



Siguiente curso



Fin

[View Details](#)