

# Curso de Data Analytics con Power BI

## Clase Introductoria

Por Ignacio  
Sampedro

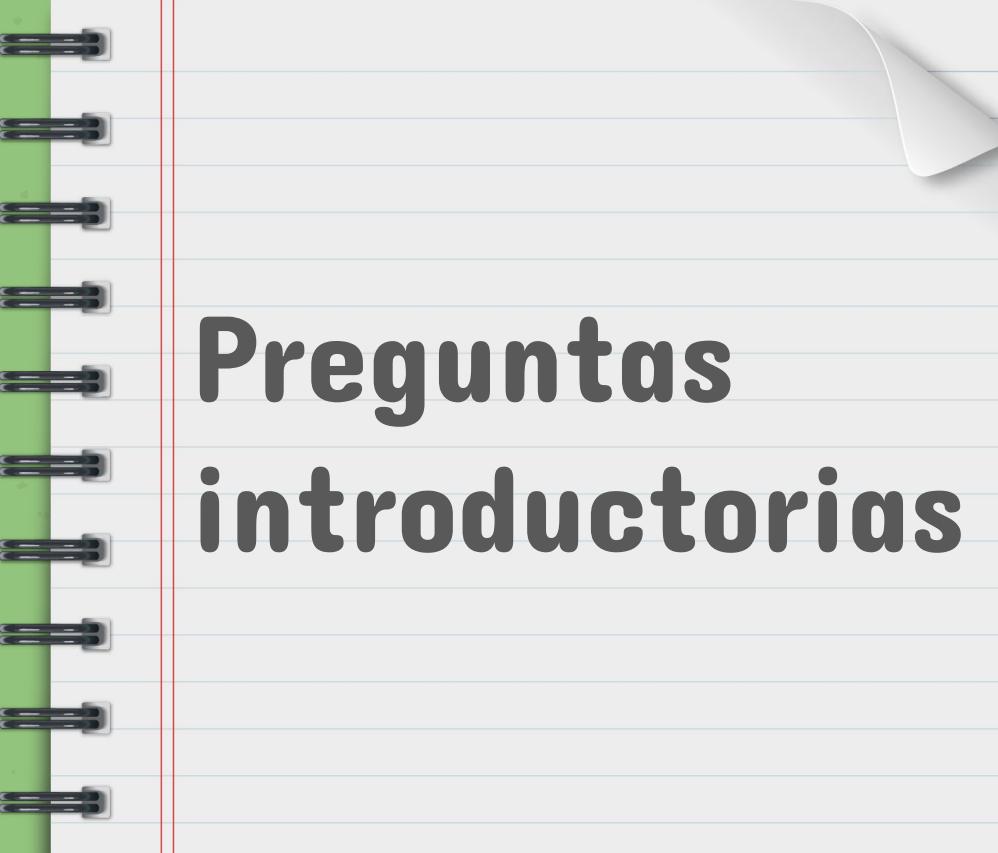
[isampedro@itba.edu.ar](mailto:isampedro@itba.edu.ar)



# Instalando PBI

- ★ Dirigirse a la [Microsoft Store](#)
- ★ Buscar [Power BI Desktop](#)
- ★ Click en Obtener/Instalar
- ★ Listo para usar ✓





# Preguntas introductorias

# Qué es Data Analytics?

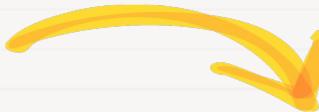
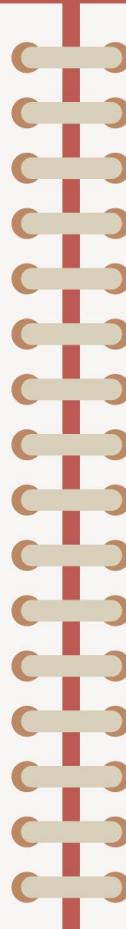
## Recolectar Datos

Buscar un conjunto de datos relevante



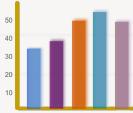
## Limpiar Datos

Quedarse únicamente con la información que puede llegar a servir



## Transformar Datos

En nuestro caso sería generar múltiples vistas

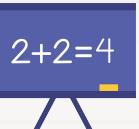


## Toma de decisiones

Se debe poder tomar decisiones a partir de la visualización provista



# Por qué Power BI?



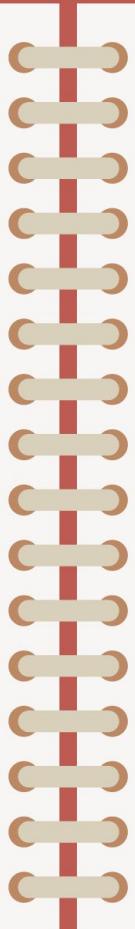
## Es simple

Los nuevos usuarios tardan poco tiempo en entenderlo



## Es completo

Permite realizar las 4 etapas del análisis de datos



## Es de fácil personalización

Permite personalizar el origen de los datos, las visualizaciones, crear y obtener nuevos gráficos

## Las empresas buscan técnicos en Power BI

Con el florecer de los analistas de datos, en todas las empresas quieren poder visualizar información



# Qué es un dataset?



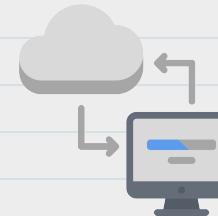
- ★ Una colección de datos
  - ★ Tiene uno o más registros
  - ★ Tiene un propósito
  - ★ Ejemplo: compras del super



LISTA DE LA COMPRA DE PRIMAVERA		
FRUTA	LÁCTEOS	REFRIGERADO
<input type="checkbox"/> Fresas <input type="checkbox"/> Mandarinas <input type="checkbox"/> Nectarinas <input type="checkbox"/> Níjaros <input type="checkbox"/> Cerezas <input type="checkbox"/> Naranjas <input type="checkbox"/> Plátanos <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Leche <input type="checkbox"/> Yogur <input type="checkbox"/> Queso <input type="checkbox"/> Mantequilla <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Cobrada vegetal <input type="checkbox"/> Huevos <input type="checkbox"/> Jamon cocido <input type="checkbox"/> Jamón serrano <input type="checkbox"/> Pavo <input type="checkbox"/> Hummus <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
VERDURA	DESPENSA	CARNE Y PESADO
<input type="checkbox"/> Puerros <input type="checkbox"/> Habas <input type="checkbox"/> Espinacas <input type="checkbox"/> Brócoli <input type="checkbox"/> Berenjenas <input type="checkbox"/> Calabacín <input type="checkbox"/> Patatas <input type="checkbox"/> Coliflor <input type="checkbox"/> Apio <input type="checkbox"/> Ajetes <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> Legumbres <input type="checkbox"/> Arroz integral <input type="checkbox"/> Avocados <input type="checkbox"/> Lentejas <input type="checkbox"/> Pasta integral <input type="checkbox"/> Harina <input type="checkbox"/> Frutos secos <input type="checkbox"/> Cenillas <input type="checkbox"/> Aceite / vinagre / sal <input type="checkbox"/> Especias <input type="checkbox"/> Café / té / infusiones <input type="checkbox"/> Conservas <input type="checkbox"/> Chocolate	<input type="checkbox"/> Pollo <input type="checkbox"/> Pavo <input type="checkbox"/> Ternera <input type="checkbox"/> Cerdo <input type="checkbox"/> Atún <input type="checkbox"/> Lomo <input type="checkbox"/> Boquerones <input type="checkbox"/> Merluza <input type="checkbox"/> Rodaballo <input type="checkbox"/> Langostino <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
OTROS		
		

# Qué es una API?

- ★ Es un programa
- ★ Corre en un servidor
- ★ Permite que le realicen “preguntas”



## Eligiendo un dataset

A la hora de elegir un dataset, recordá que:

- ❖ Pueden ser hobbies o actividades habituales
- ❖ Tenes que poder obtener esos datos
- ❖ Te puedas hacer preguntas sobre esos datos



# Algunas ideas de datasets

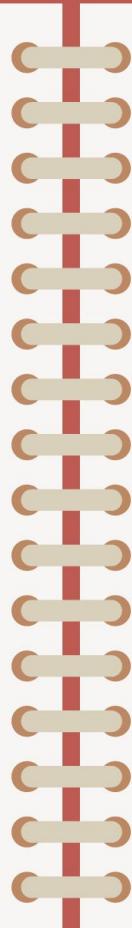
## Actividades de Strava

Salidas a andar en bici por las ciudades que visito



## Actividad de Netflix

Películas y series vistas en la plataforma



## Datos de Steam

Juegos que tengo y juego dentro de la plataforma

## Materias de la facu

Listado de materias de la carrera, cant. créditos, aprobados, desaprobados, notas



Dates

05/04/2021 29/06/2021



12.23

Min Distance (km)

26.70

Average Distance per Ride (km)

69.23

Max Distance (km)

Aggregated distance over time (km)



Distance per day

Distance (km) 12.23 69.23





# Nuestro primer Dataset

Datos de prueba de Microsoft:

[Financial Sample Excel](#)

# Antes de comenzar...

Segment	Country	Product	Dimension Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Units	COGS	Profit	Date	Month Number	Month Name	Year
Government	Germany	Cereals	None	1232	350	526550	0	525950	293180	286170	01 June 2014	6	June	2014	
Government	Germany	Peso	None	1206	10	350	352100	0	352100	261360	90540	01 June 2014	6	June	2014
Government	Canada	Peso	None	1725	10	350	601750	0	601750	448500	152250	01 December 2013	11	November	2013
Government	Germany	Peso	None	1511	10	350	529550	0	529550	393180	186770	01 December 2014	12	December	2014
Government	United States of America	Veo	Low	1206	10	350	362100	0	362100	261360	90540	01 June 2014	6	June	2014
Government	France	VTT	None	1527	290	350	534450	0	534450	397020	177900	01 September 2013	9	September	2013
Government	France	Amarilla	None	2750	280	350	962500	0	962500	735000	247500	01 February 2014	2	February	2014
Government	Mexico	Cereales	Low	1220	5	350	422500	4215	422505	314900	10465	02 March 2014	3	March	2014
Government	Germany	Cereals	Low	1207	10	350	468500	4685	468500	370000	98500	01 October 2014	10	October	2014
Government	France	Cereals	Low	2153	8	350	754250	7542.3	746707.3	565000	186470.3	01 December 2014	12	December	2014
Government	France	Peso	Low	2155	10	350	754250	7542.3	746707.3	565000	186470.3	01 December 2014	12	December	2014
Government	Canada	VTT	Low	843.5	290	350	330325	3020.25	289209.75	245320	81612.75	01 April 2014	4	April	2014
Government	Mexico	VTT	Low	1397	290	350	468850	4688.5	468850	363220	125630.5	01 October 2014	10	October	2014
Government	United States of America	Cereales	Low	1203	5	350	962500	9625	962500	735000	247500	01 February 2014	2	February	2014
Government	Canada	Peso	Low	2852	10	350	998200	1998.4	978256	741520	265752	01 December 2014	12	December	2014
Government	Germany	Veo	Low	2966	120	350	1038300	20782	1017388	771160	246778	01 October 2013	10	October	2013
Government	Germany	Veo	Low	2877	120	350	1006950	20139	986812	648020	289792	01 October 2014	10	October	2014
Government	Germany	VTT	Low	2977	290	350	1006950	20139	986812	594050	112845	01 October 2014	10	October	2014
Government	United States of America	VTT	Low	2664	290	350	841000	8410.00	822800	612300	20978	01 December 2013	12	December	2013
Government	Mexico	VTT	Low	1940	290	350	676900	15780	655420	504400	16120	01 December 2013	12	December	2013
Government	Germany	Amarilla	Low	2988	290	350	1058300	20782	1017388	771160	246778	01 October 2013	10	October	2013
Government	Germany	Montana	Low	1797	5	350	626500	18868.8	180281.5	407220	124881.5	01 September 2013	9	September	2013
Government	United States of America	Veo	Low	1642	120	350	974900	20782	1017388	771160	246778	01 October 2013	10	October	2013
Government	United States of America	Cereales	Low	274	10	350	974900	8898	85094	71240	20824	01 December 2014	12	December	2014
Government	United States of America	Peso	Low	3450	10	350	1207500	1207500	1159200	897095	262200	01 July 2014	7	July	2014
Government	United States of America	Peso	Low	274	10	350	859000	8588	85094	71240	20824	01 December 2014	12	December	2014
Government	United States of America	Peso	Low	2777	120	350	763390	50478	751475	566000	15452	01 October 2014	10	October	2014
Government	United States of America	Peso	Low	349	120	350	1231000	117240	1159200	897095	262200	01 July 2014	7	July	2014
Government	France	VTT	Low	2777	290	350	763390	50478	751475	566000	15452	01 October 2014	10	October	2014
Government	Mexico	Amarilla	Low	1865	280	350	652750	26110	626640	484950	147740	01 February 2014	2	February	2014
Government	Germany	Amarilla	Low	1507	290	350	667450	26598	640752	405520	149932	01 September 2014	9	September	2014
Government	Germany	Montana	Low	1779	290	350	626500	12200	119800	407220	124881.5	01 September 2013	9	September	2013
Government	France	Montana	Medium	1384.5	5	350	468875	24208.75	450942.50	258970	100718.25	01 January 2014	1	January	2014
Government	Mexico	Montana	Medium	720	5	350	252000	22600	259400	187200	52200	01 September 2014	9	September	2014
Government	United States of America	Peso	Medium	602	10	350	210700	20531	200185	158520	49645	03 June 2014	6	June	2014
Government	Canada	Peso	Medium	1229	10	350	422800	22490	408310	319280	89030	02 October 2013	11	October	2013
Government	United States of America	Veo	Medium	602	120	350	210700	105957	200185	256520	49645	01 June 2014	6	June	2014
Government	Germany	Peso	Medium	1392	100	350	47250	27621	488375	317000	27275	01 October 2014	10	October	2014

★ Ver los nombres de las columnas para saber qué datos tenemos

★ ¿Hace falta algún dato más?

★ Vamos a generarnos preguntas sobre estos datos..

# Preguntas sobre nuestro dataset

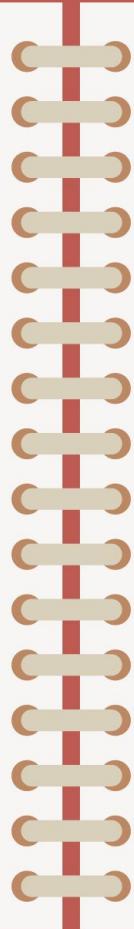
Cuántas son las ventas por mes?



Cuántas son las ventas por país?

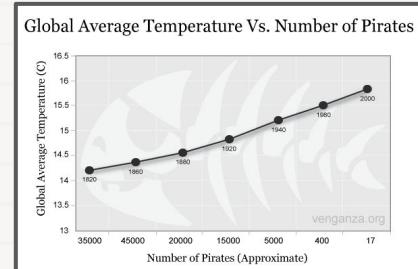


Cuál es el total de unidades vendidas?

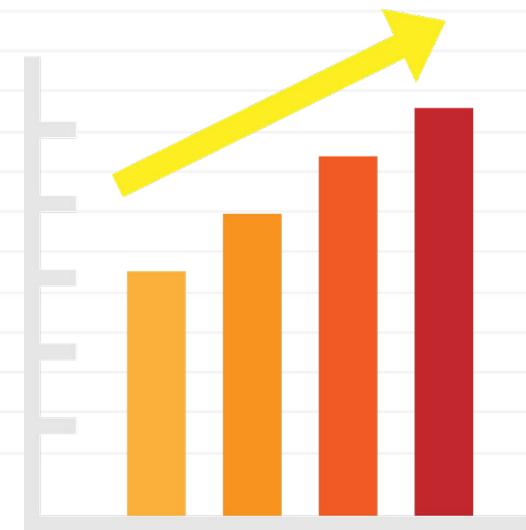


Cuál es el país con mayores ventas y cuántas ventas logró?

Cuál es la relación que hay entre cada producto y los lobos marinos?

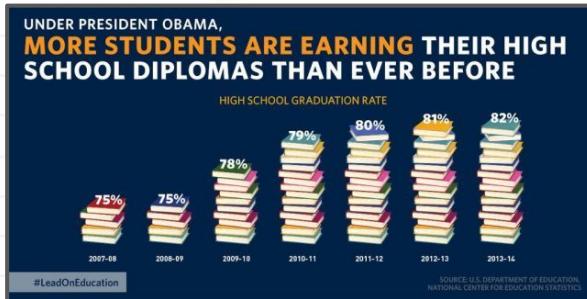


# Nuestro mejor amigo, el Bar Chart



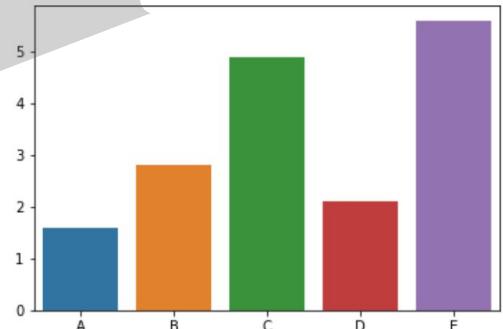
Sirven para comparar medidas/cantidades contra, generalmente, periodos o conjuntos

La idea es que queden en claro las magnitudes



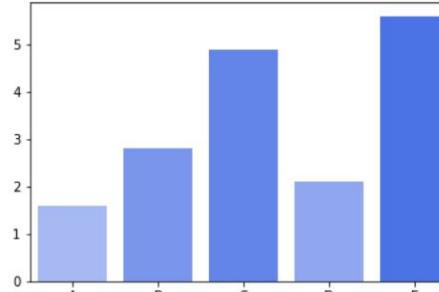
¡Tiene que ser a escala!

## Colores (y cómo usarlos)



**Los colores son importantes,  
pero hay que ser prudente**

Muchos colores sin un sentido  
ayudan a desorientar al que  
ve el gráfico



**En muchas ocasiones es bueno  
usar un degradé**

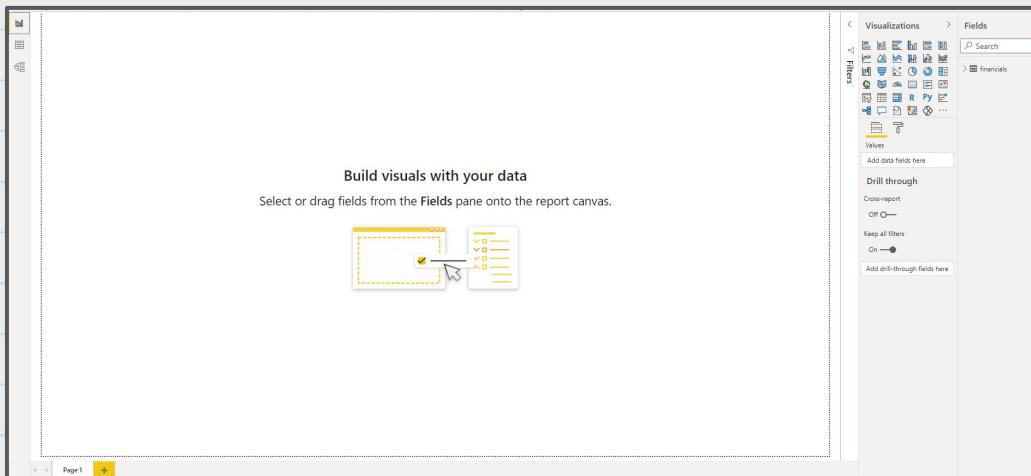
Los degradés sirven para  
resaltar la diferencia  
de magnitudes o  
intensidades

# Manos a la obra!!

1. *Get Data* para buscar un nuevo *data source* para un proyecto
2. Seleccionar Excel y clickear *Connect*
3. Seleccionamos el dataset elegido
4. Clickeamos en *Load*

# Vista: Report

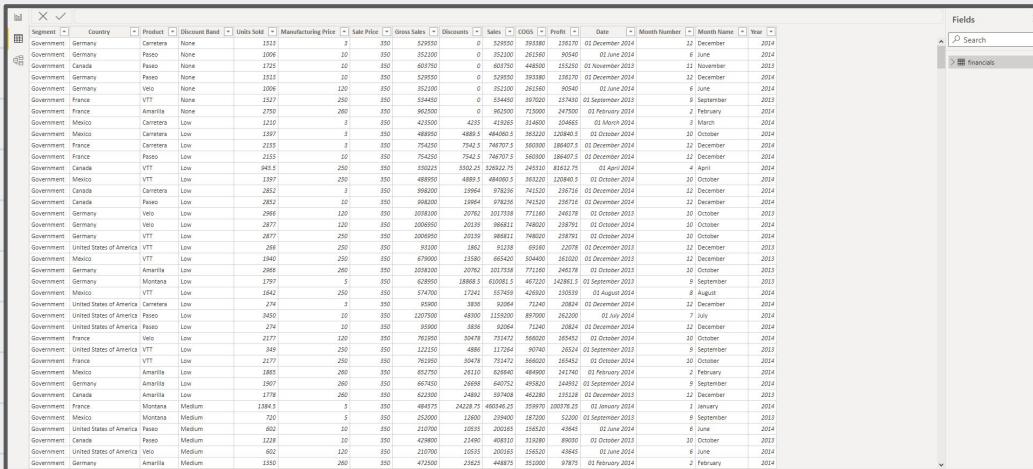
Acá van a estar todos los gráficos que hagamos.



# Vista: Data

Son vistas de una tabla

Se pueden seleccionar las tablas a la derecha



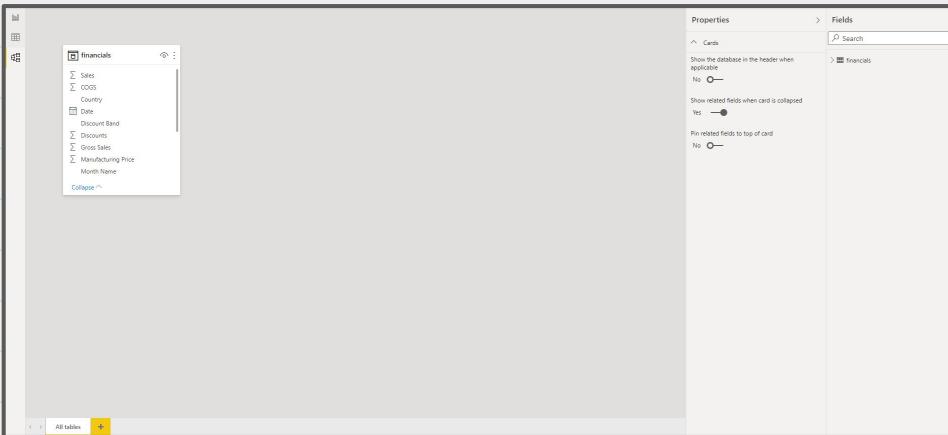
The screenshot shows the Power BI ribbon with the 'Data View' tab selected. Below the ribbon, a table titled 'financials' is displayed. The table has columns for Segment, Country, Product, Discount Band, Units Sold, Manufacturing Price, Sale Price, Gross Sales, Discounts, Sales, COGS, Profit, Date, Month Number, Month Name, Year, and Fields. The 'financials' table is highlighted with a blue border. A search bar labeled 'Search' is located at the top right of the table area. The 'Fields' section on the right side of the ribbon also lists 'financials'.

Segment	Country	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	COGS	Profit	Date	Month Number	Month Name	Year	Fields	
Government	Germany	Cameras	None	1511	3	390	595950	0	330950	305180	180760	01 December 2014	12	December	2014		
Government	Germany	Peso	None	1006	10	390	352100	0	352100	261590	90540	01 June 2014	6	June	2014		
Government	Canada	Peso	None	1723	10	390	653750	0	603750	488500	155250	01 November 2013	11	November	2013		
Government	Germany	Peso	None	1511	10	390	529550	0	529550	395380	134170	01 December 2014	12	December	2014		
Government	Germany	Veho	None	1006	120	390	351200	0	351200	261580	90540	01 June 2014	6	June	2014		
Government	France	VTT	None	1217	250	390	534250	0	534250	470200	124050	02 September 2013	9	September	2013		
Government	France	America	Low	2750	200	390	962500	0	962500	715000	247500	01 February 2014	1	February	2014		
Government	Mexico	Cameras	Low	1210	3	390	423500	423500	314400	104890	0	01 March 2014	3	March	2014		
Government	Mexico	Cameras	Low	1397	3	390	488950	488950	363220	120840	51020	01 October 2014	10	October	2014		
Government	France	Cameras	Low	2155	3	390	754250	754250	744707	744707	560000	01 December 2014	12	December	2014		
Government	France	Pfoto	Low	2155	10	390	754250	2542	744707	560000	186407	01 December 2014	12	December	2014		
Government	France	VTT	Low	1841	250	390	833250	833250	588200	403200	185020	01 December 2014	12	December	2014		
Government	Mexico	VTT	Low	1397	290	390	488950	488950	404007	563220	120840	01 October 2014	10	October	2014		
Government	Canada	Cameras	Low	2852	3	390	998200	998200	199680	494400	504720	01 December 2014	12	December	2014		
Government	Canada	Peso	Low	2852	10	390	998200	998200	199680	474520	253672	01 December 2014	12	December	2014		
Government	Germany	Veho	Low	2968	120	390	1098300	1098300	10701938	771160	246170	01 October 2013	10	October	2013		
Government	Germany	Veho	Low	2877	120	390	1098300	1098300	1068512	769810	246170	01 October 2013	10	October	2013		
Government	Germany	Veho	Low	2877	250	390	1098300	1098300	1068512	769810	246170	01 October 2014	10	October	2014		
Government	United States of America	VTT	Low	298	290	390	93100	1862	91218	69160	20797	01 December 2013	12	December	2013		
Government	Mexico	VTT	Low	1940	250	390	679000	15880	656450	504400	151600	01 December 2013	12	December	2013		
Government	Germany	America	Low	298	290	390	1059300	1059300	10701938	771160	246170	01 October 2013	10	October	2013		
Government	Germany	Montana	Low	1797	5	390	620000	1862	603150	603150	467000	01 September 2013	9	September	2013		
Government	United States of America	VTT	Low	1642	250	390	974000	974000	974000	524800	450200	01 April 2014	4	April	2014		
Government	United States of America	Cameras	Low	274	3	390	891900	891900	82064	72240	10824	01 December 2014	12	December	2014		
Government	United States of America	Peso	Low	3450	10	390	1207500	1207500	11550200	897900	262200	01 July 2014	7	July	2014		
Government	United States of America	Peso	Low	274	10	390	89900	89900	8880	92064	72240	01 December 2014	12	December	2014		
Government	France	Veho	Low	2177	120	390	761390	30478	71472	566020	155420	01 October 2014	10	October	2014		
Government	United States of America	VTT	Low	349	250	390	122120	488950	117200	117200	307470	01 September 2013	9	September	2013		
Government	France	Veho	Low	2177	250	390	761390	761390	754250	566020	155420	01 October 2014	10	October	2014		
Government	Mexico	America	Low	1885	290	390	652750	28110	629500	494990	147160	01 February 2014	2	February	2014		
Government	Germany	America	Low	1907	280	390	667450	26860	640752	495820	148512	01 September 2014	9	September	2014		
Government	Canada	America	Low	1778	290	390	622300	24882	597408	462280	235320	01 December 2013	12	December	2013		
Government	France	Montana	Medium	1384.5	5	390	484774	242827.5	460412.5	159500	200200	25200	01 January 2014	1	January	2014	
Government	United States of America	Peso	Medium	700	3	390	250000	250000	250000	250000	0	01 September 2013	9	September	2013		
Government	United States of America	Peso	Medium	602	10	390	217300	10593	202155	156120	45464	01 June 2014	6	June	2014		
Government	Canada	Peso	Medium	1228	10	390	428000	21490	408510	315380	89010	01 October 2013	10	October	2013		
Government	United States of America	Veho	Medium	602	120	390	210700	10583	200255	156520	45464	01 June 2014	6	June	2014		
Government	Germany	America	Medium	1350	260	390	472500	23623	448875	351200	97875	01 February 2014	2	February	2014		

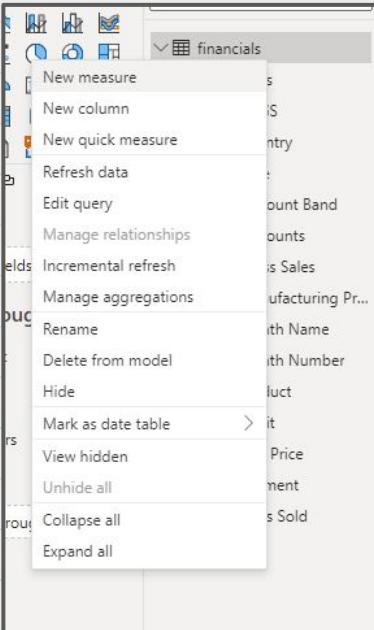
# Vista: Model

Este es nuestro modelo de relaciones

Acá se hacen las relaciones entre datasets



# Ingresos Netos



Measure

X ✓ 1 Net Income = `SUM(financials[ Sales]) - SUM(financials[COGS])`

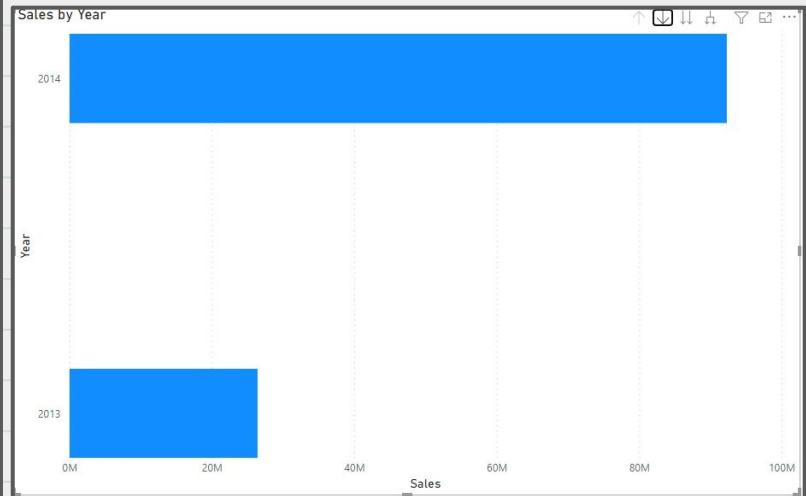
Funciones de agregación

# Primer Visualización: Ventas por Mes

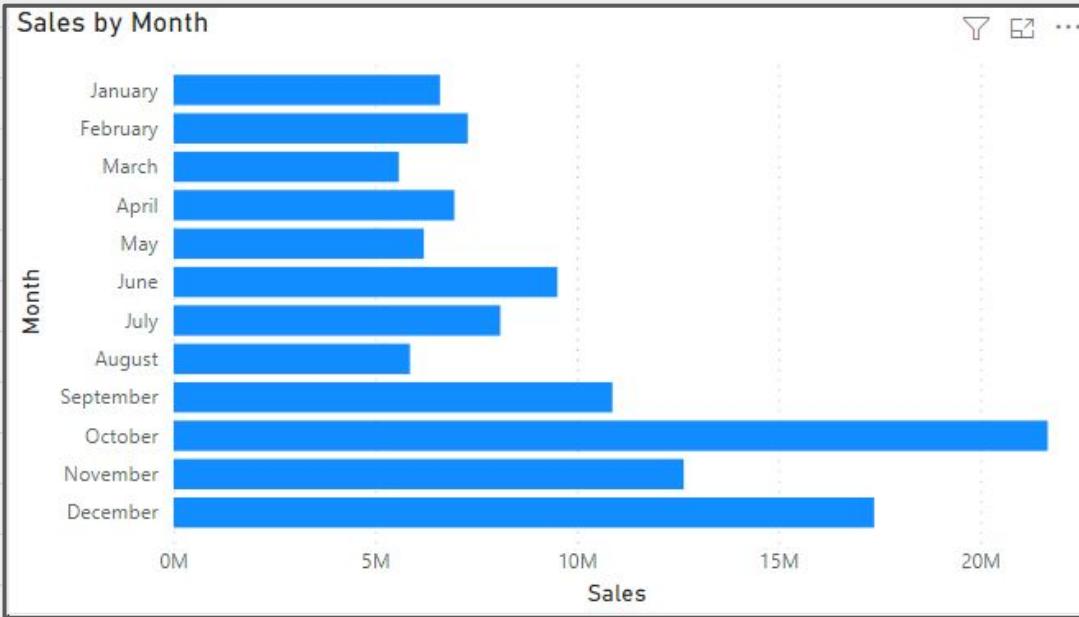
The screenshot shows the Tableau interface with three numbered callouts:

- 1**: A red circle highlights the 'Visualizations' icon in the top navigation bar.
- 2**: A green oval surrounds the 'Date' field under the 'financials' category in the 'Fields' pane.
- 3**: A blue oval surrounds the 'Year' field in the 'Axis' section of the visualization pane.

Clickear la flecha hacia abajo (seleccionada en la foto), para permitir desplegar cada año



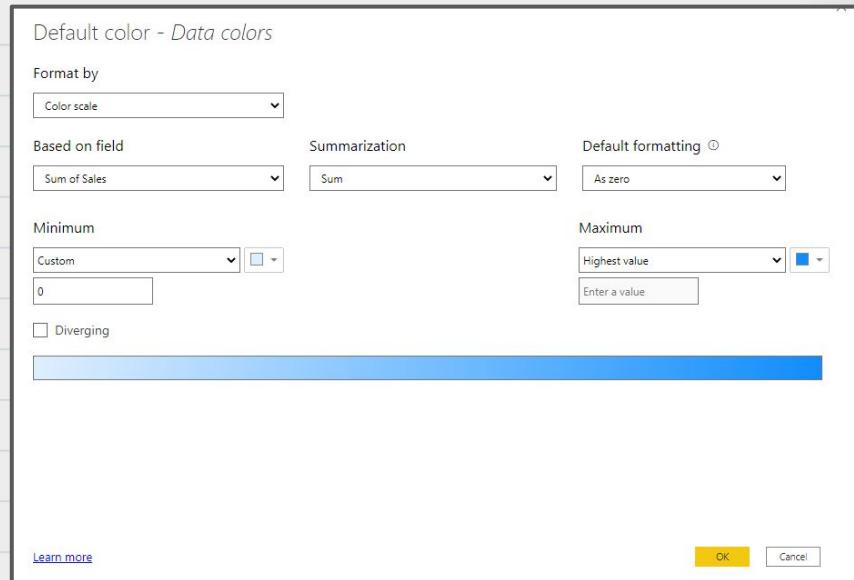
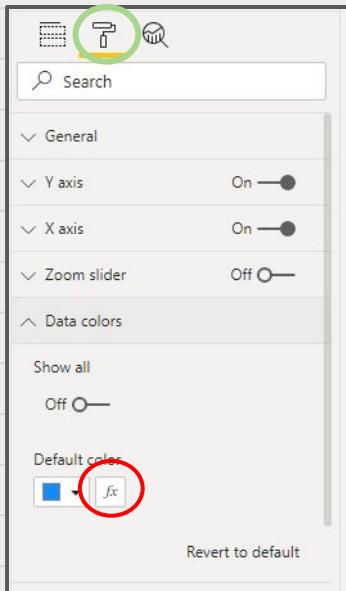
# Primer Visualización: Ventas por Mes



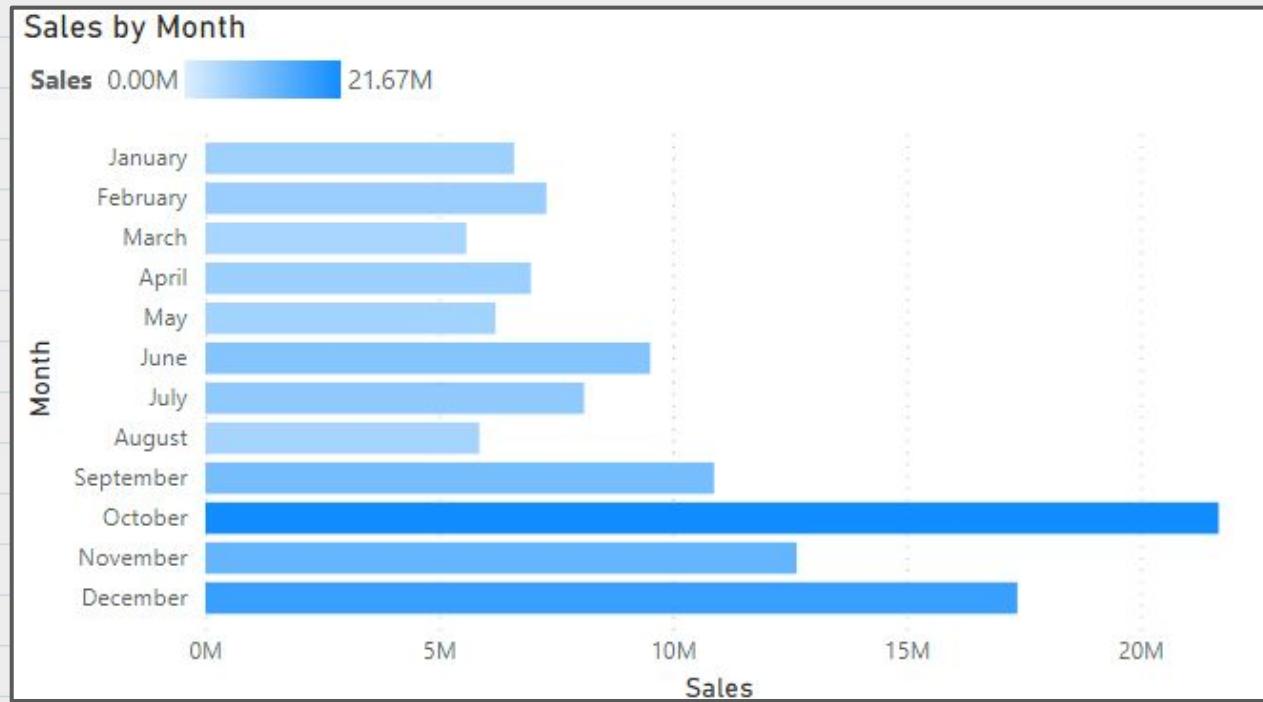
No se entiende mucho!!

Le vamos a agregar un degradé

# Primer Visualización: Ventas por Mes



# Primer Visualización: Ventas por Mes

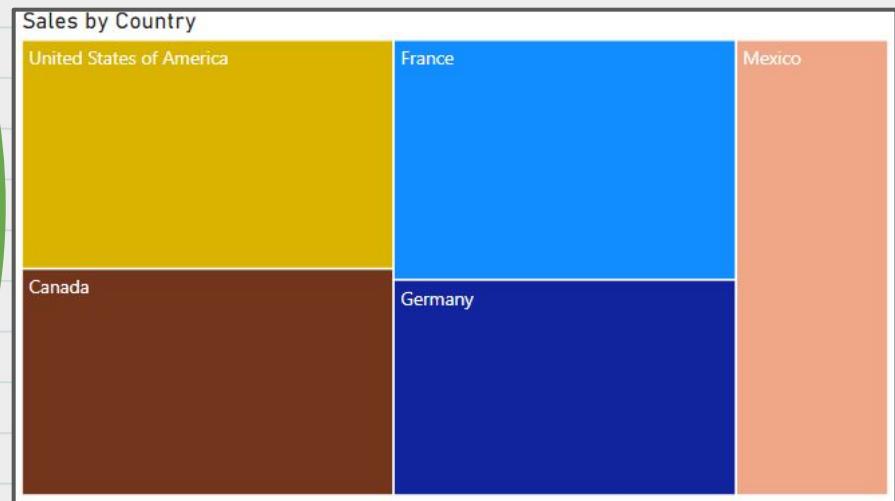


## Segunda Visualización: Ventas por país

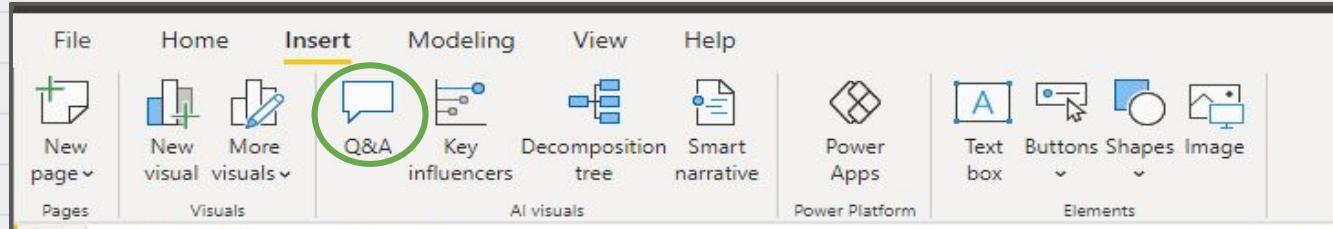
The screenshot shows the Power BI interface with the 'Visualizations' pane open. The 'Treemap' icon (a square divided into four quadrants) is highlighted with a red circle and labeled with a '1'. The 'Fields' pane is open, showing a tree view of data fields under the 'financials' category. A green oval surrounds the 'financials' node and its children. A number '2' is placed next to the 'Date' node in the tree view.

- 1 Search
- financials
  - Sales
  - $\sum$  COGS
  - Country
- 2 Date
  - Discount Ba...
  - $\sum$  Discounts
  - $\sum$  Gross Sales
  - $\sum$  Manufacturing Pr...
  - Month Name
  - $\sum$  Month Number
  - Net Income
  - Product
  - Profit
  - $\sum$  Sale Price

El siguiente es un treemap, y sirve para marcar rápidamente las proporciones de todo



## Tercera Visualización: “Ask a Question”



The screenshot shows the Microsoft Power BI ribbon. The **Insert** tab is highlighted with a yellow bar. A green circle highlights the **Q&A** icon, which is a speech bubble with a question mark. Other icons in the Insert tab include Key influencers, Decomposition tree, Smart narrative, Power Apps, Text box, Buttons, Shapes, and Image.

Ask a question about your data

Try one of these to get started

top countries by net income    what is the net income by country    top segments by net income

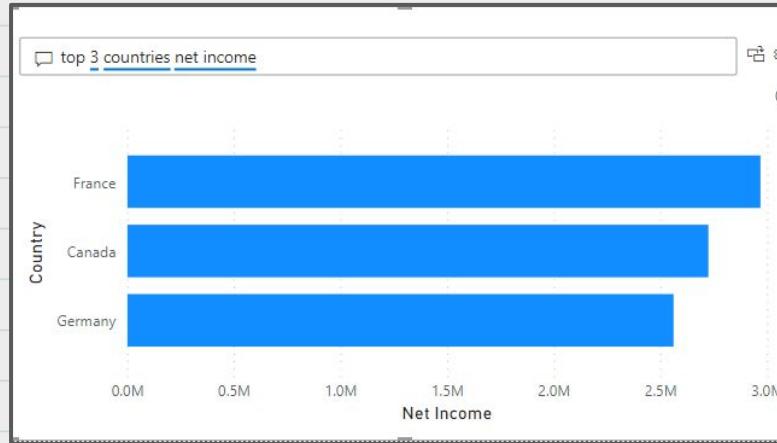
Show all suggestions

## Tercera Visualización: “Ask a Question”

which country has the max net income and how much is the net income

Showing results for which country has the max net income is the net income

France  
2,969,688.61  
Net Income



# Highlights



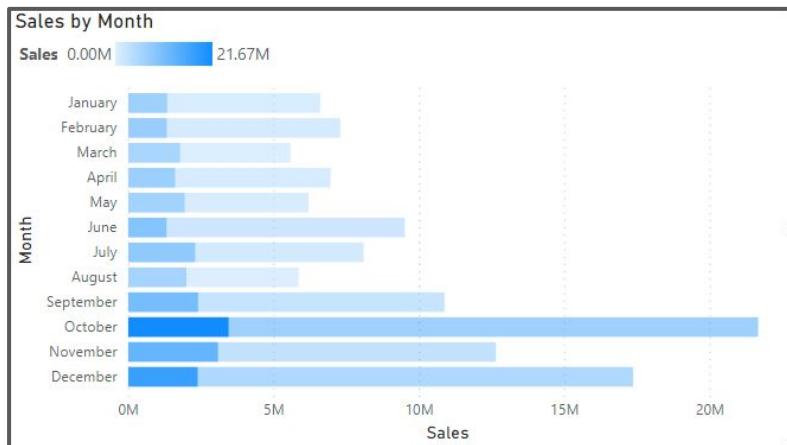
Y si quiero cruzar  
preguntas?

Puedo preguntar cuáles son  
las ventas de un país por  
mes, únicamente con los  
datos ya conseguidos?

Se  
puede!!

# Highlights

Cuáles son las ventas por mes de USA  
comparadas con los demás países?



# La próxima clase vamos a introducir..

***Slicers***

***Data Cleansing***

***Personalización de gráficos***

***Mapas y tipos de mapa***

***Relaciones entre tablas***

# Final de la Clase!!



*Si querés hacer recomendaciones  
sobre la clase o el curso en  
general, contactame al mail:*

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