

# Power BI



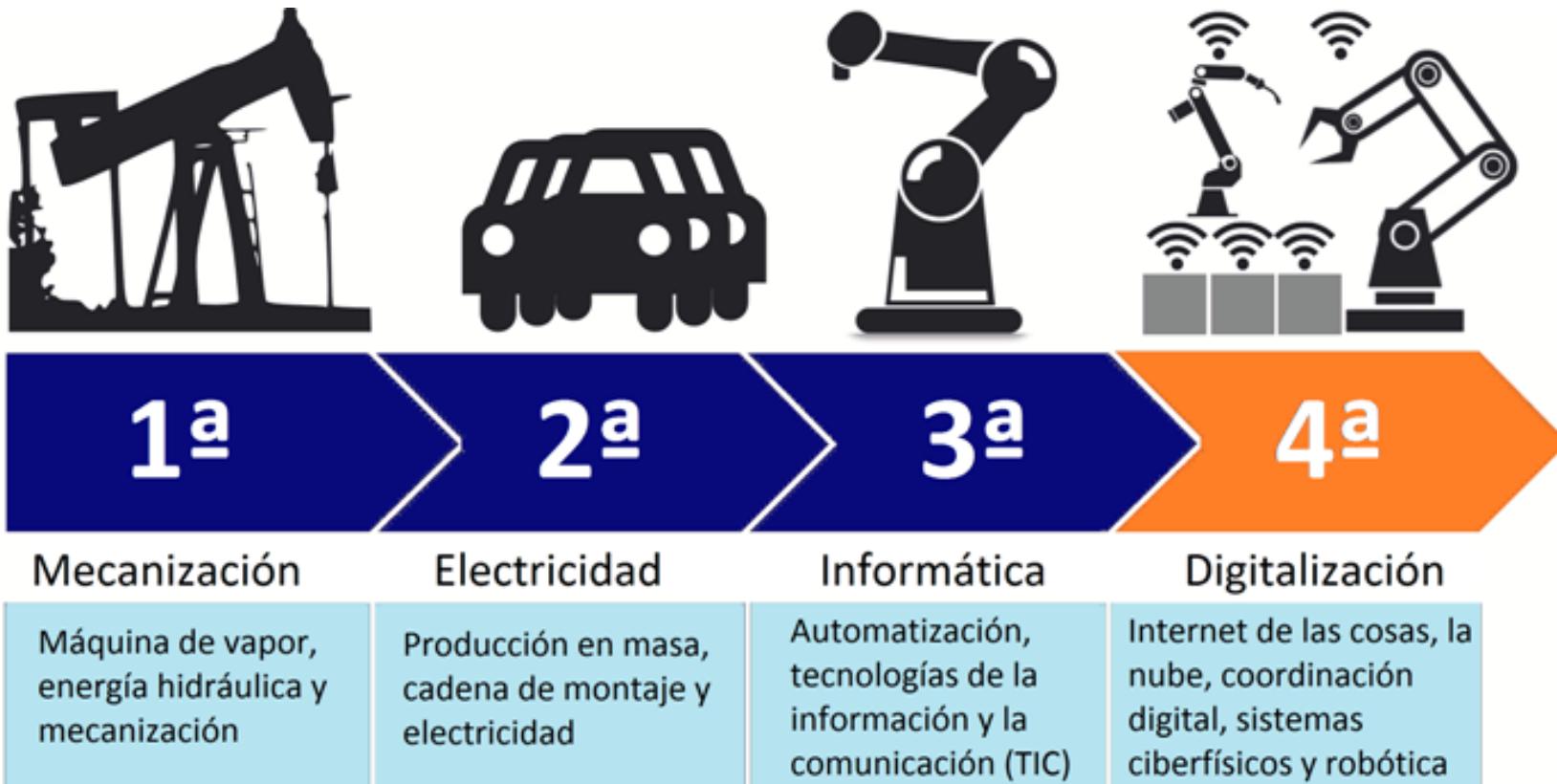
**PRESENTACIONES**



# ¿QUÉ ES BI?



# REVOLUCIÓN INDUSTRIAL



# ¿QUÉ ES POWER BI?



Power BI Desktop

# COMPETIDORES





Power BI

vs



Tableau

vs



Qlik

# POWER PLATFORM



**Microsoft Power Platform**

The low code platform that spans Microsoft 365, Azure, Dynamics 365, and standalone apps.



**Power BI**  
Business analytics



**Power Apps**  
App development



**Power Automate**  
Process automation



**Power Virtual Agents**  
Intelligent virtual agents



**Power Pages**  
External-facing websites



**Data  
connectors**

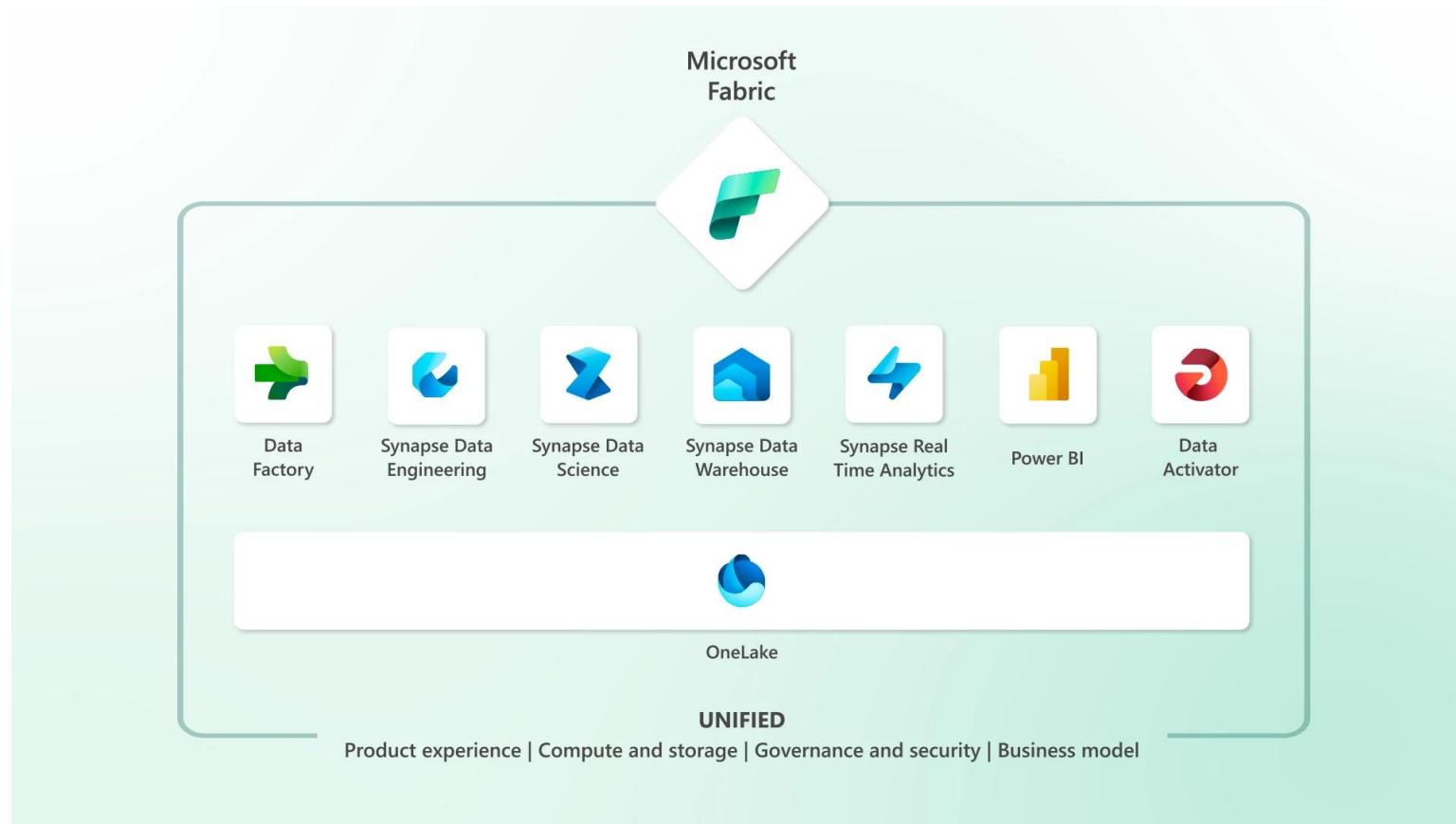


**AI Builder**



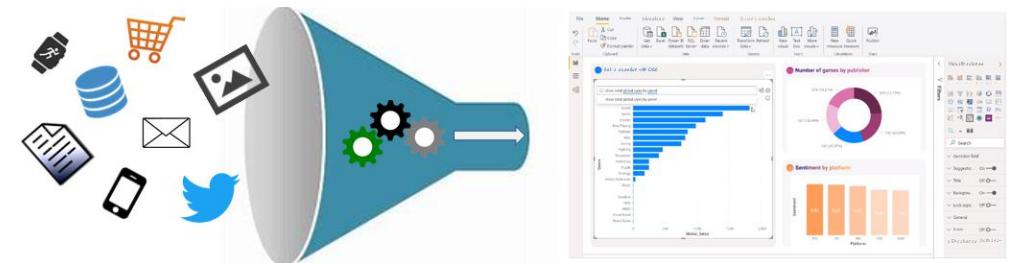
**Dataverse**

# MICROSOFT FABRIC



# CASOS DE USO

- Seguimiento del inventario
- Identificación de hábitos de compra
- Detección de tendencias y patrones de usuarios
- Recomendación de compras
- Definición de optimizaciones de precios
- Identificación y detención del fraude



# TIPOS DE ANÁLISIS

- Descriptivo
- Diagnóstico
- Predictivo
- Prescriptivo
- Cognitivo





Preparación

Modelo

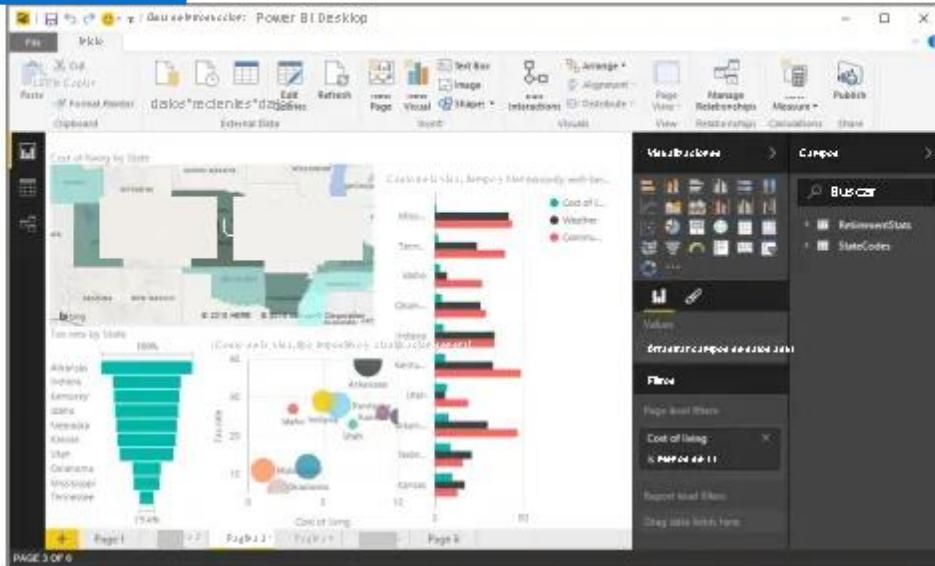
Visualización

Análisis

Administración

TAREAS

## Power BI Desktop



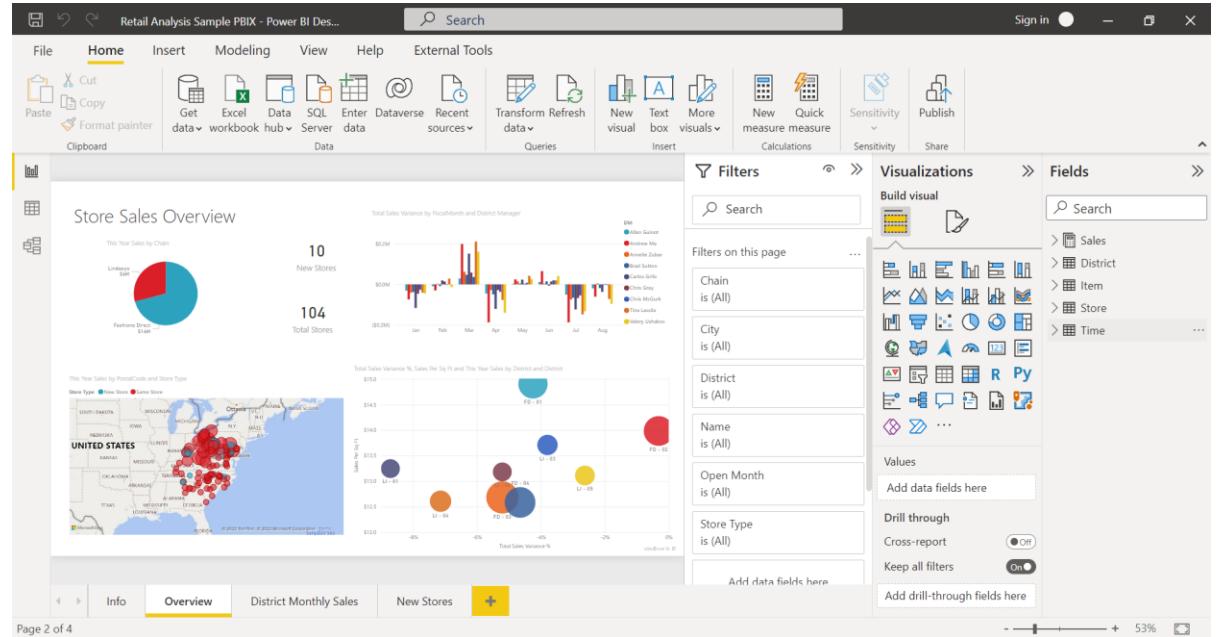
## Servicio Power BI



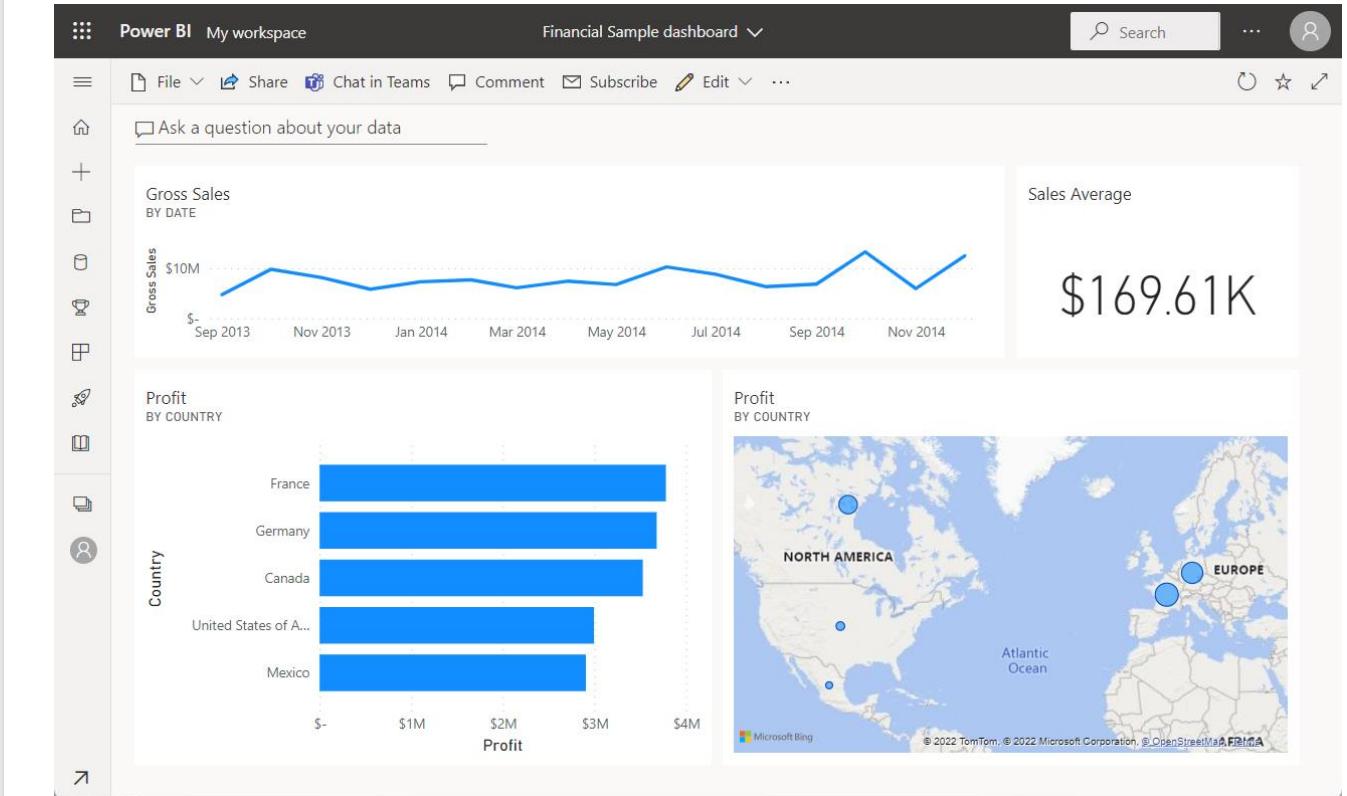
## Power BI Mobile

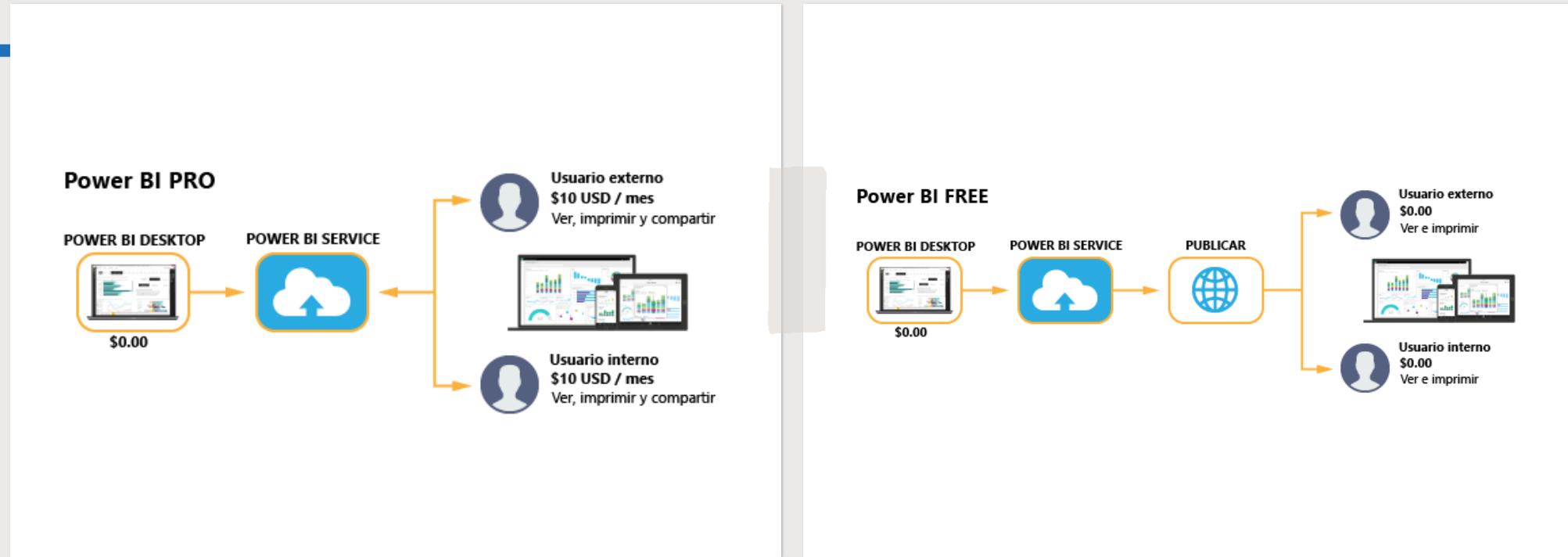


# POWER BI DESKTOP

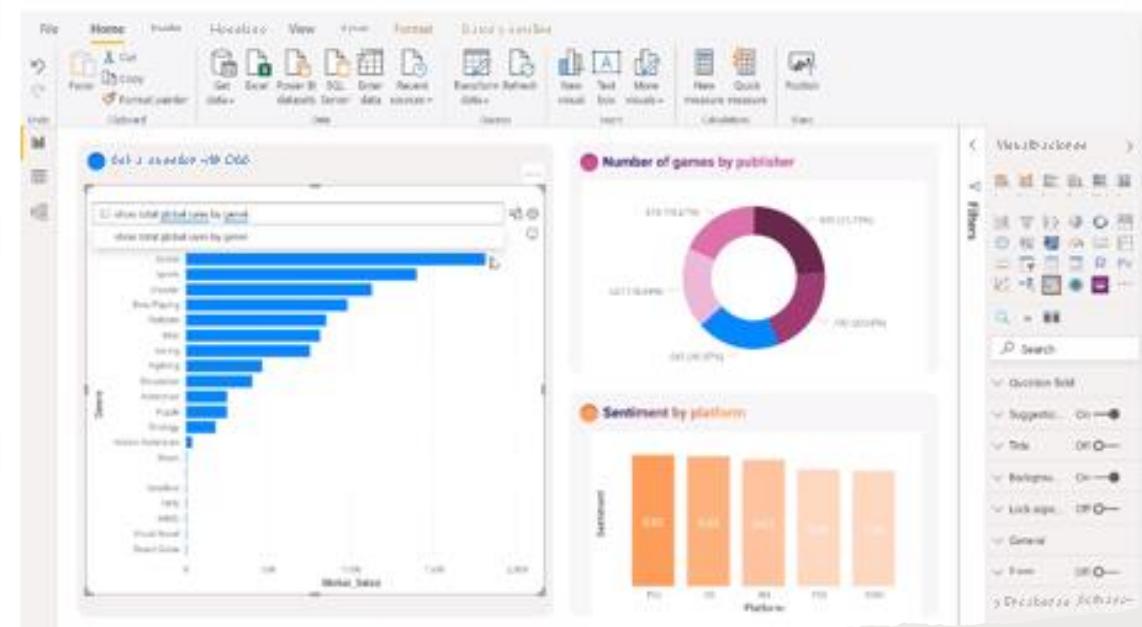


# POWER BI SERVICE



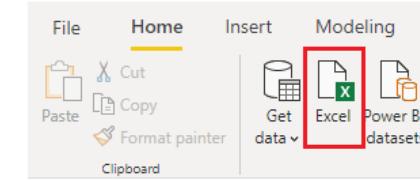
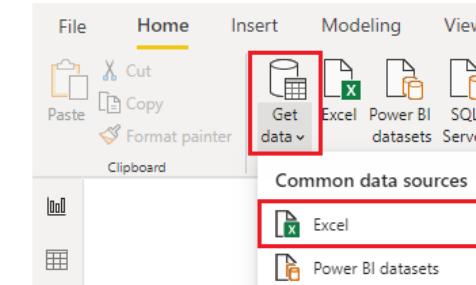


# LICENCIAS



# FUENTES DE DATOS

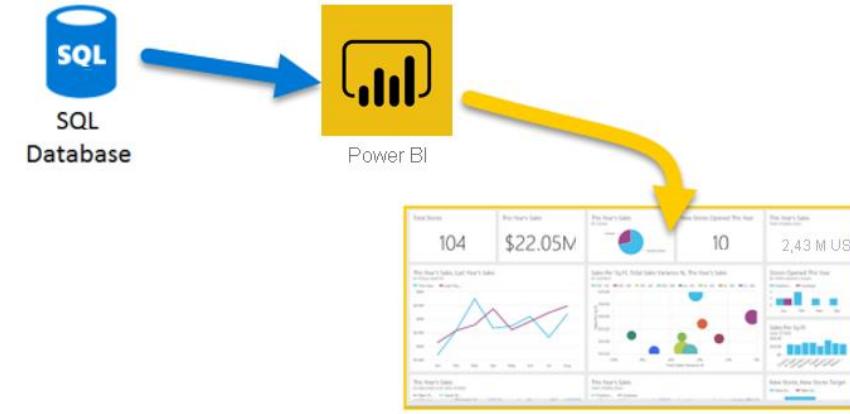
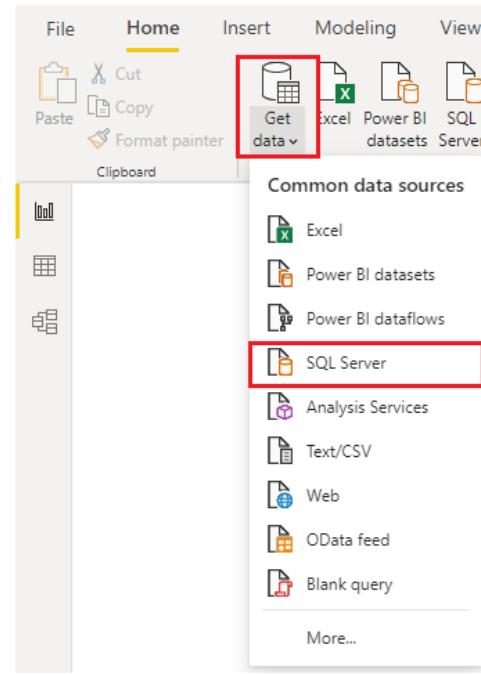
- Obtención de datos de archivo.
- Obtención de datos de orígenes de datos relacionales
- Obtención de datos de una base de datos NoSQL
- Obtención de datos de servicios en línea



# OBTENCIÓN DE DATOS DE ARCHIVO

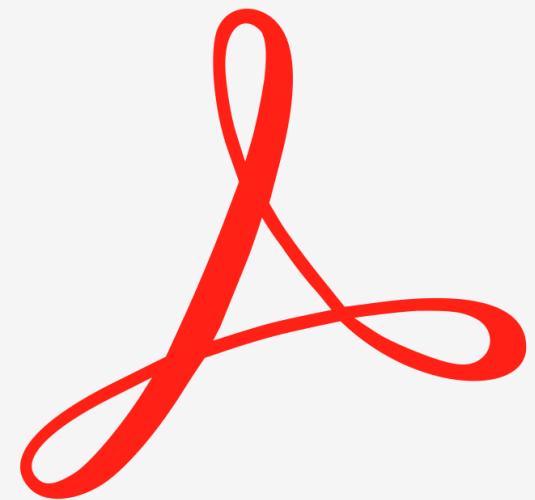
# CONEXIÓN A WEB





# SQL

PDF

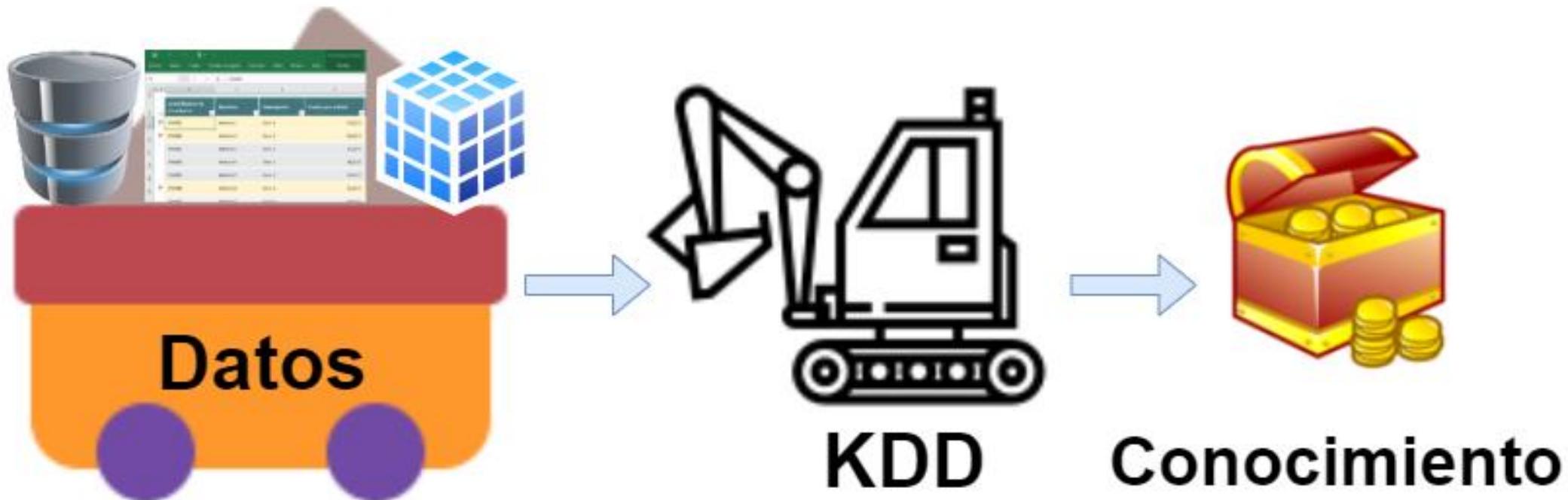


PDF

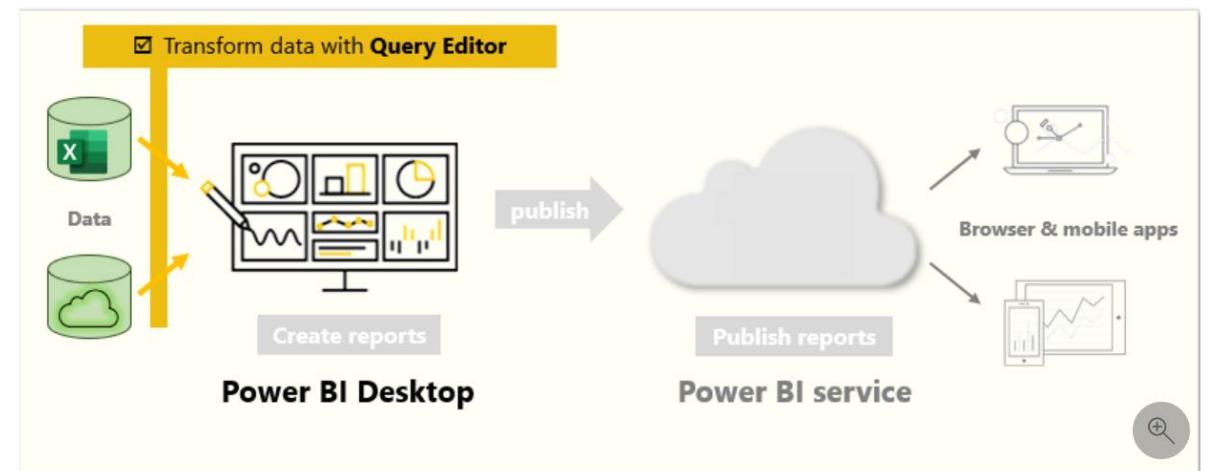
# EJERCICIO

- Consume los datos de esta web <https://www.worldometers.info/world-population/population-by-country/>
- Haz un gráfico de barras simple para ver los habitantes por país y comprobar que has ingestado correctamente los datos.

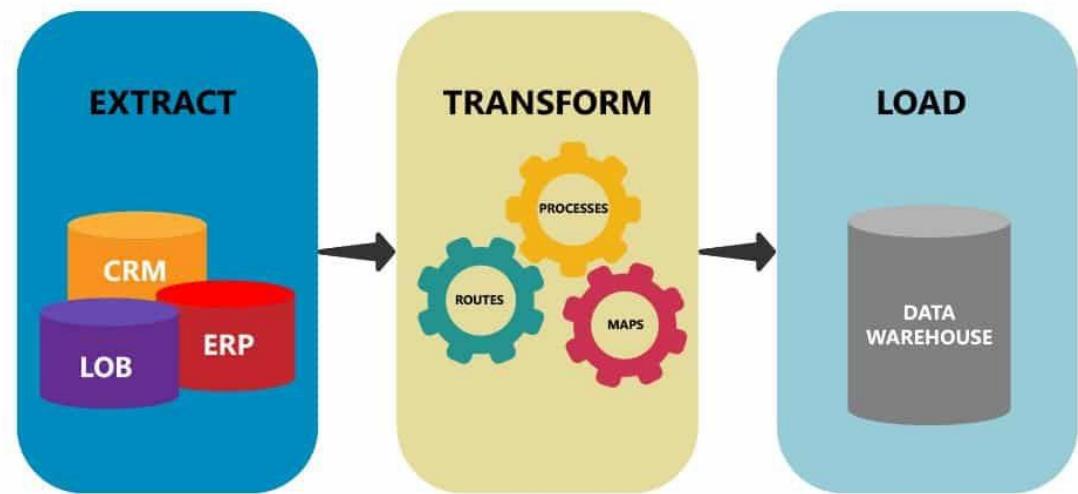
# PREPROCESAMIENTO



# POWER QUERY



# ETL



ETL - Extract, Transform, Load

Search

Display options ▾

 Invoices Order\_Details Order\_Details\_Extendeds Order\_Subtotals Orders Orders\_Qries Product\_Sales\_for\_1997 Products Products\_Above\_Average Products\_by\_Categories Regions Sales\_by\_Categories Sales\_Totals\_by\_Amounts Shippers Summary\_of\_Sales\_by...

## Suppliers

SupplierID	CompanyName	ContactName	ContactTitle	Address
1	Exotic Liquids	Charlotte Cooper	Purchasing Manager	49 Gilbert St.
2	New Orleans Cajun Delights	Shelley Burke	Order Administrator	P.O. Box 78934
3	Grandma Kelly's Homestead	Regina Murphy	Sales Representative	707 Oxford Rd.
4	Tokyo Traders	Yoshi Nagase	Marketing Manager	9-8 Sekimai Musashino-shi
5	Cooperativa de Quesos 'Las Cabras'	Antonio del Valle Saave...	Export Administrator	Calle del Rosal 4
6	Mayumi's	Mayumi Ohno	Marketing Representative	92 Setsuko Chuo-ku
7	Pavlova, Ltd.	Ian Devling	Marketing Manager	74 Rose St. Moonie Ponds
8	Specialty Biscuits, Ltd.	Peter Wilson	Sales Representative	29 King's Way
9	PB Knäckebröd AB	Lars Peterson	Sales Agent	Kaloadagatan 13
10	Refrescos Americanas LTDA	Carlos Diaz	Marketing Manager	Av. das Americanas 12.890
11	Heli Süßwaren GmbH & Co. KG	Petra Winkler	Sales Manager	Tiergartenstraße 5
12	Plutzer Lebensmittelgroßmärkte AG	Martin Bein	International Marketing M...	Bogenallee 51
13	Nord-Ost-Fisch Handelsgesellschaft m...	Sven Petersen	Coordinator Foreign Mark...	Frahmredder 112a
14	Formaggi Fortini s.r.l.	Elio Rossi	Sales Representative	Viale Dante, 75
15	Norske Meierier	Beate Vileid	Marketing Manager	Hatlevagen 5
16	Bigfoot Breweries	Cheryl Saylor	Regional Account Rep.	3400 - 8th Avenue Suite 210
17	Svensk Sjöföda AB	Michael Björn	Sales Representative	Brovallavägen 231
	's-Statiques	Guylène Nodier	Sales Manager	203, Rue des Francs-Bourgeois
		Robb Merchant	Wholesale Account Agent	Order Processing Dept. 2100 Paul Re
		Leka	Owner	471 Serangoon Loop, Suite #402
			Sales Manager	Lyngbysild Fiskebakken 10

VENTAJAS

Cancel

Create

# EDITOR AVANZADO

## Sales Orders

Display Options...

```
let
    Source = Sql.Database("localhost", "tsqlv4"),
    Sales_Orders = Source{[Schema="Sales",Item="Orders"]}[Data],
    #"Split Column by Delimiter" = Table.SplitColumn(Sales_Orders, "shipaddress", Splitter.SplitTextByDelimiter(",", QuoteStyle.Csv), {"shipaddress.1", "shipaddress.2"}),
    #"Changed Type" = Table.TransformColumnTypes(#"Split Column by Delimiter",{{"shipaddress.1", type text}, {"shipaddress.2", type text}})
in
    #"Changed Type"
```

No syntax errors have been detected.

Done Cancel

Power Query - Edit queries

1

Add column View Help

Manage parameters Refresh Advanced editor Choose columns Remove columns Keep rows Remove rows Sort Data type: Text Use first row as headers Split column Group by Merge queries Append queries Combine files Map to entity CDM AI insights

Parameters Query Manage columns Reduce rows Sort Transform Combine CDM Insights

Source{[Name = "Customers", Signature = "table"]}[Data]

	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region
1	ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57	Berlin	null
2	ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constitución 2222	México D.F.	null
3	ANTON	Antonio Moreno Taquería	Antonio Moreno	Sales Representative	Mataderos 2312	México D.F.	null
4	AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.	London	null
5	BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8	Luleå	null
6	BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57	Mannheim	null
7	BLONP	Blondesddsl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber	Strasbourg	null
8	BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67	Madrid	null
9	BONAP	Bon app'	Laurence Lebihan	Owner	12, rue des Bouchers	Marseille	null
10	BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	23 Tswassen Blvd.	Tswassen	BC
11	BSBEV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circus	London	null
12	CACTU	Cactus Comidas para llevar	Patricia Simpson	Sales Agent	Cerrito 333	Buenos Aires	null
13	CENTC	Centro comercial Moctezuma	Francisco Chang	Marketing Manager	Sierras de Granada 9993	México D.F.	null
		Chop-suey Chinese		Owner	Hauptstr. 29	Bern	null
					Av. dos Lusíadas, 23	Sao Paulo	SP
					Berkeley Gardens 12 Brewery	London	null
					21	Aachen	null
					Stanes	Nantes	null

Query settings

Name: Customers

Entity type: Custom

Applied steps:

- Source
- Navigation

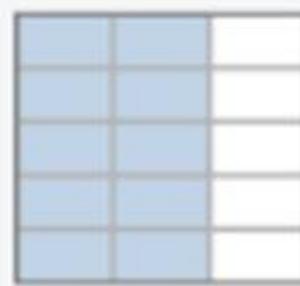
Step Cancel Save

# EDITOR DE POWER QUERY

# ADMINISTRAR COLUMNAS



Power BI



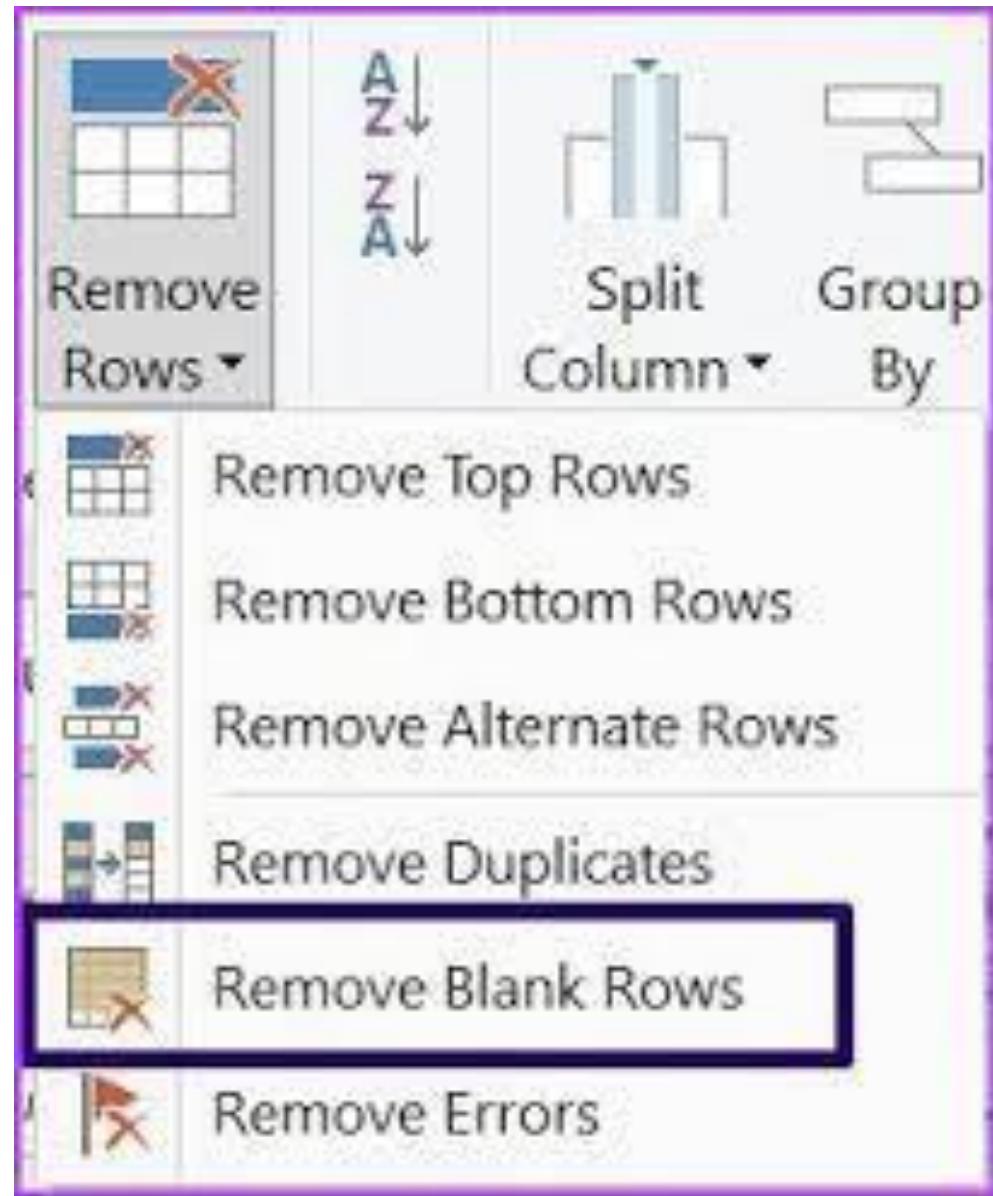
Elegir  
columnas ▾    columnas ▾



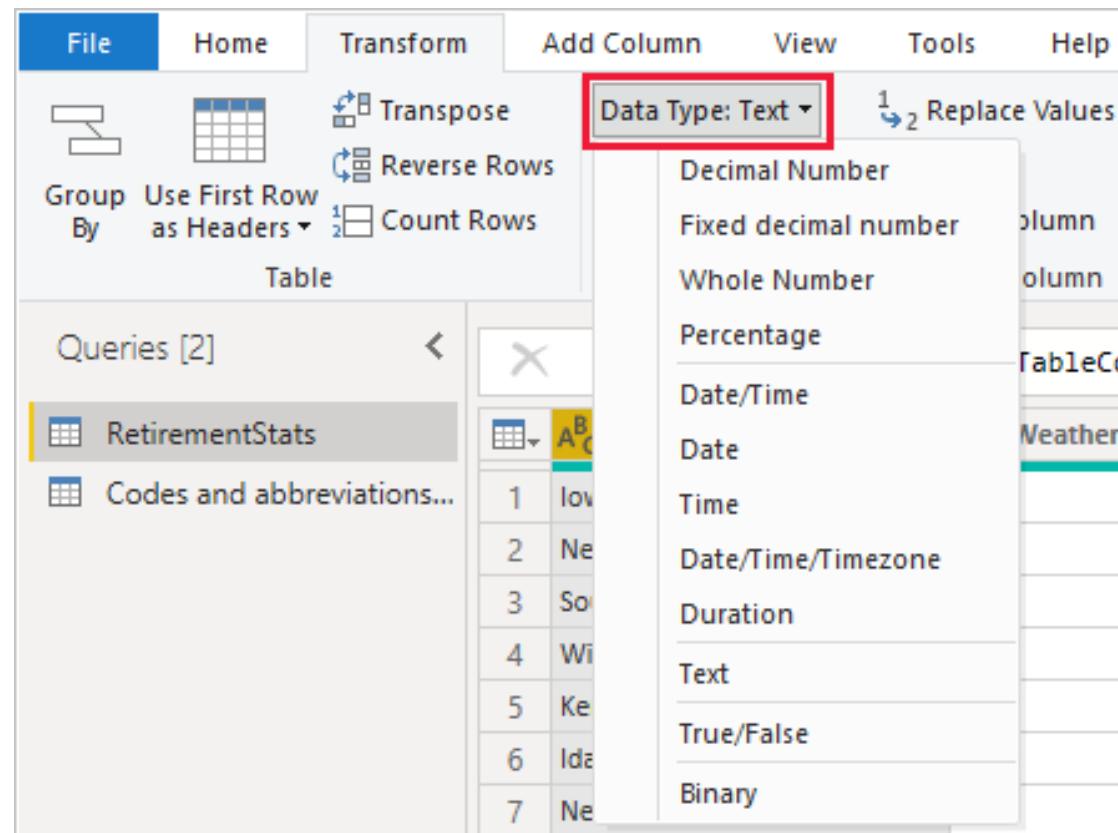
Quitar  
columnas

ELIMINAR COLUMNAS

# ELIMINAR FILAS



# CONVERTIR TIPO DE DATOS



# DIVIDIR COLUMNAS

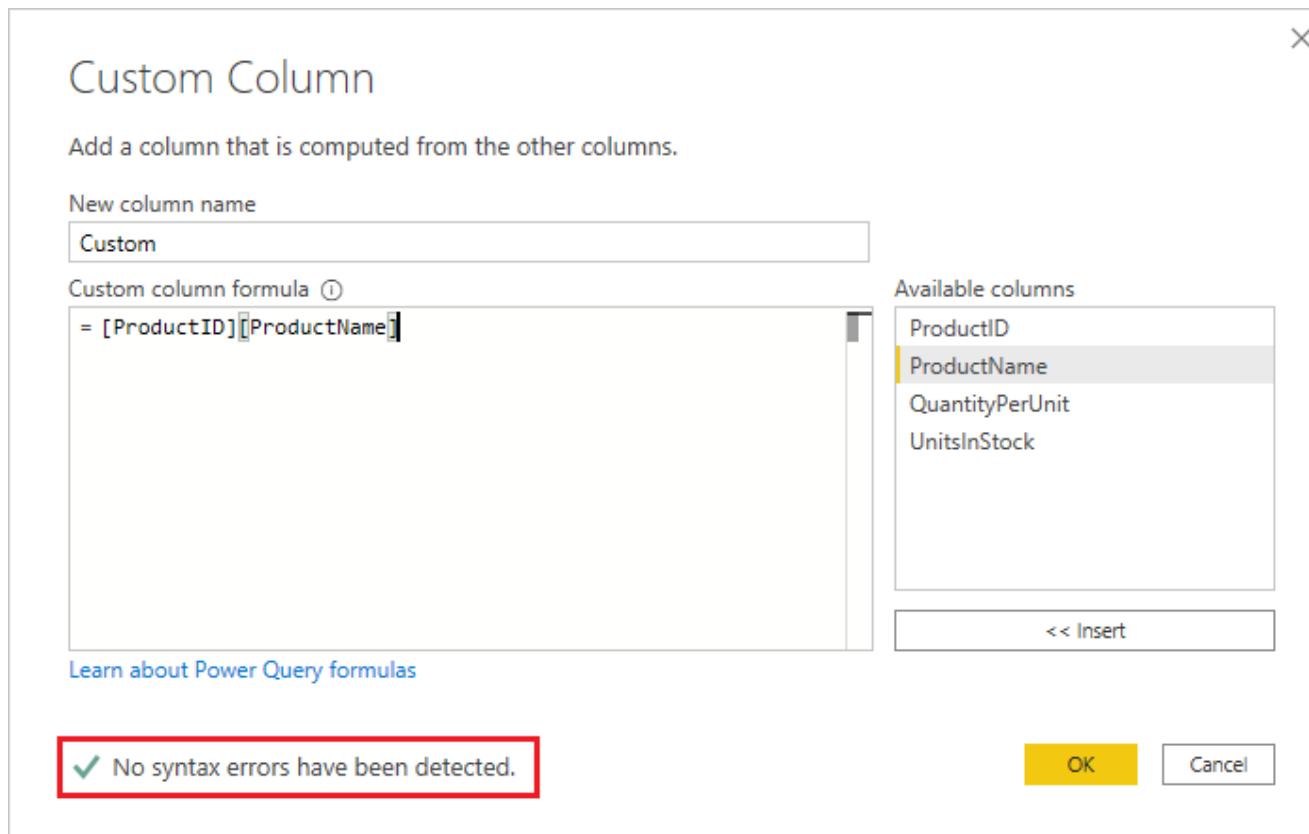
The screenshot shows the Microsoft Power Query Editor interface. The top navigation bar includes File, Home, Transform (selected), Add Column, View, Tools, and Help. The Transform tab has several icons: Group By, Use First Row as Headers, Transpose, Reverse Rows, Count Rows, Detect Data Type, Fill, Move, Rename, Pivot Column, Unpivot Columns, Convert to List, Split Column, Format, Merge Columns, Extract, and Parse. The main area displays a table with four rows and one column labeled "Column1". The formula bar shows the query: `= Table.FromRows(Json.Document(Binary.Decompress(Binary.FromText`. A context menu is open over the "Split Column" icon, listing options: By Delimiter, By Number of Characters, By Positions (which is highlighted with a red box), By Lowercase to Uppercase, By Uppercase to Lowercase, By Digit to Non-Digit, and By Non-Digit to Digit.

Column1
PA000420190504150
US94242019112487489
PA4144202001123758
US84292020031467895

= Table.FromRows(Json.Document(Binary.Decompress(Binary.FromText

- By Delimiter
- By Number of Characters
- By Positions
- By Lowercase to Uppercase
- By Uppercase to Lowercase
- By Digit to Non-Digit
- By Non-Digit to Digit

# COLUMNA PERSONALIZADA



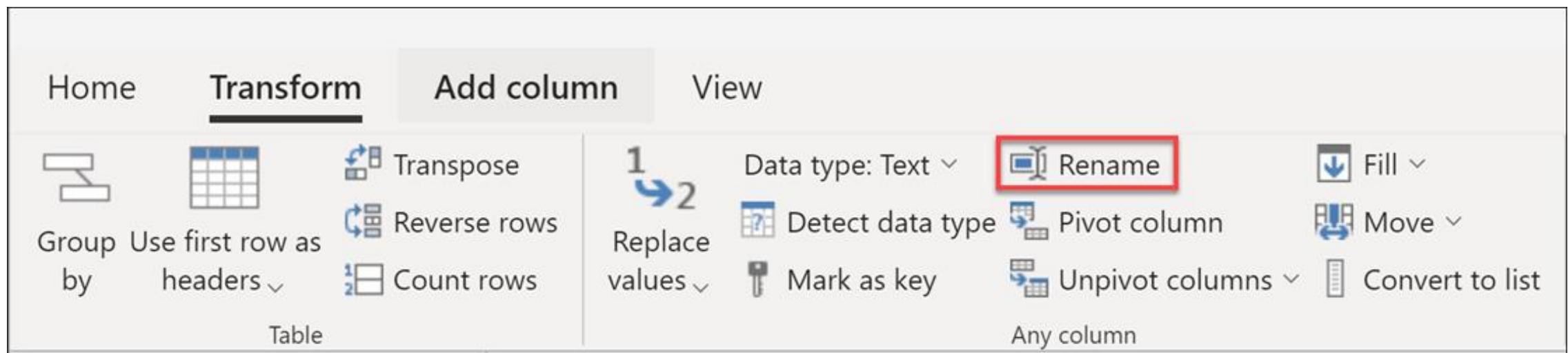
# REEMPLAZAR VALORES

The screenshot shows the Power BI Data Editor interface. A context menu is open over a table containing four rows of data. The table has three columns: Account ID, Category Name, and Sales Goal. The data is as follows:

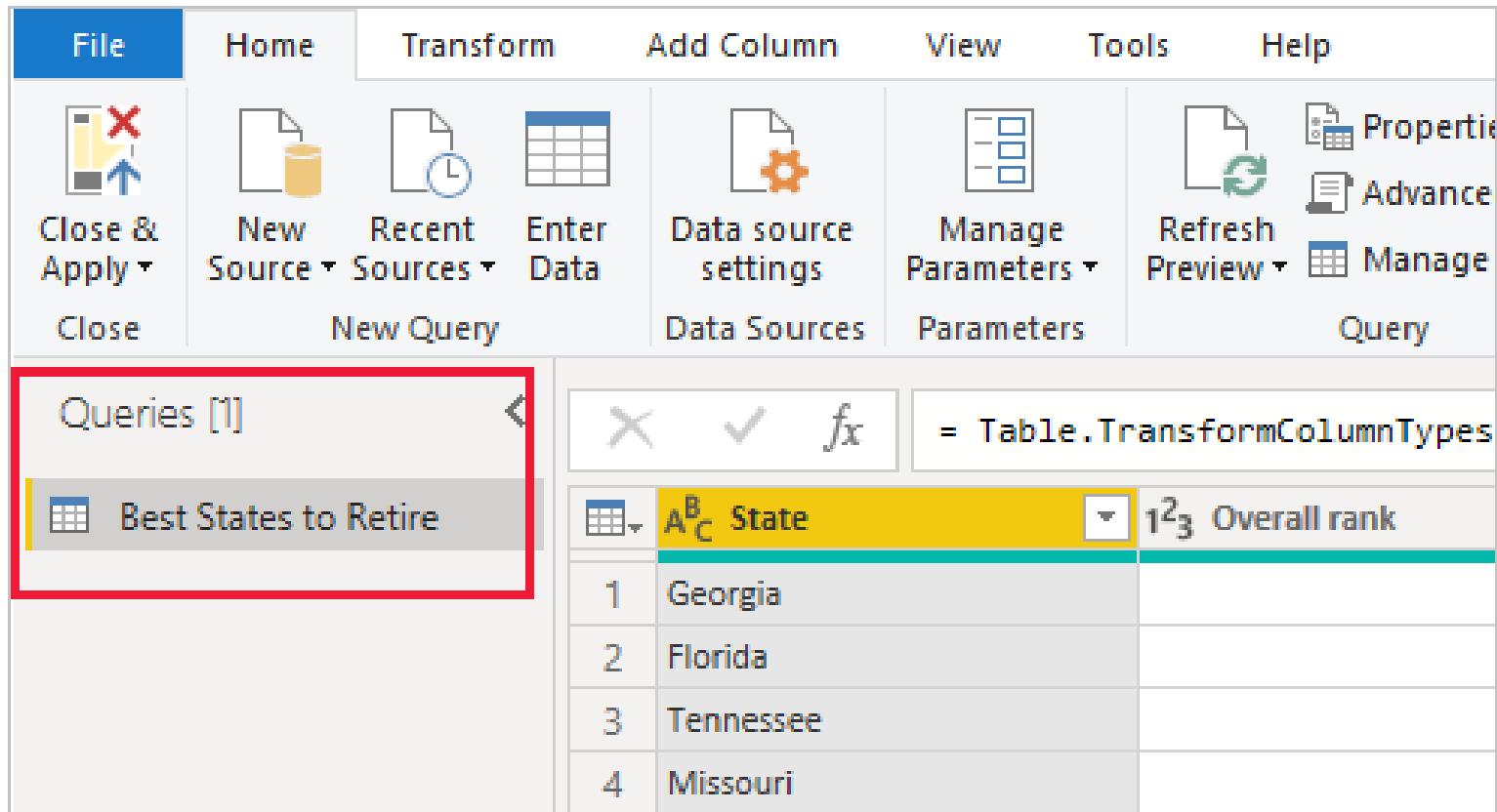
Account ID	Category Name	Sales Goal
1	120024 Category Name: Prime	
2	120025 Category Name: Main	
3	120026 Category Name: Base	
4	120027 Category Name: Lower	

The context menu, located on the right side of the screen, includes various options such as Copy, Remove, Duplicate Column, Add Column From Examples..., Remove Duplicates, Remove Errors, Change Type, Transform, Replace Values..., Replace Errors..., Group By..., Fill, Unpivot Columns, Unpivot Other Columns, Unpivot Only Selected Columns, Rename..., Move, Drill Down, and Add as New Query. The 'Replace Values...' option is highlighted with a red box.

# CAMBIAR NOMBRE DE COLUMNAS



# APLICAR CAMBIOS



The screenshot shows the Microsoft Power BI desktop interface. The ribbon menu at the top includes File, Home, Transform, Add Column, View, Tools, and Help. Below the ribbon, there are several icons: Close & Apply, New Source, Recent Sources, Enter Data, Data source settings, Manage Parameters, Refresh Preview, Properties, Advance, and Manage. The 'Home' tab is currently selected. In the bottom left, a 'Queries [1]' list contains one item: 'Best States to Retire'. This item is highlighted with a red border. To the right of the list is a preview pane showing a table with four rows. The columns are labeled 'Overall rank', 'State', and 'Overall rank'. The data is as follows:

Overall rank	State	Overall rank
1	Georgia	
2	Florida	
3	Tennessee	
4	Missouri	

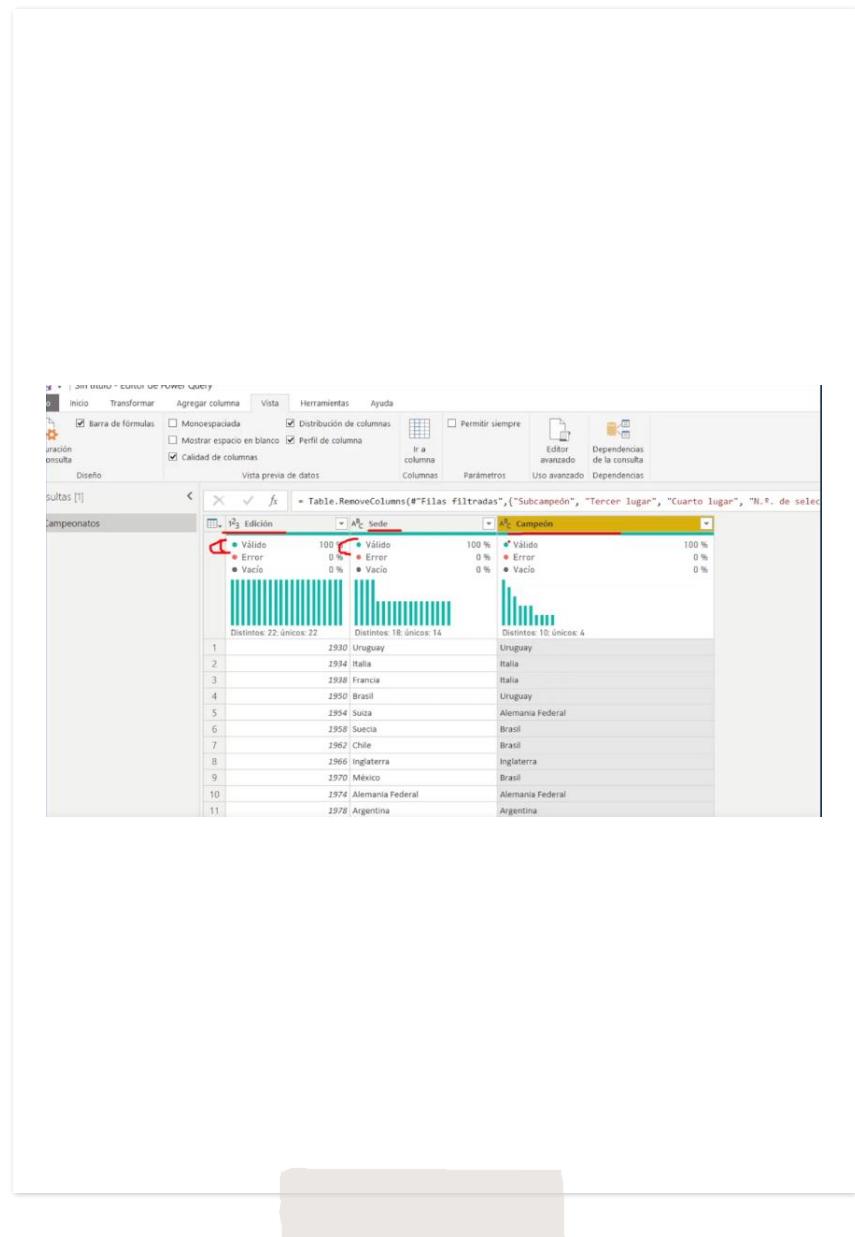
# EJERCICIO

Obtener información de esta url:  
[https://es.wikipedia.org/wiki/Copa\\_Mundial\\_de\\_F%C3%BAtbol](https://es.wikipedia.org/wiki/Copa_Mundial_de_F%C3%BAtbol) e importar la tabla de campeonatos. Generar una base de datos que permita identificar el equipo con mas campeonatos y la sede con mas mundiales realizados, debe de quedar como la adjunta

Los requisitos de la tabla son:

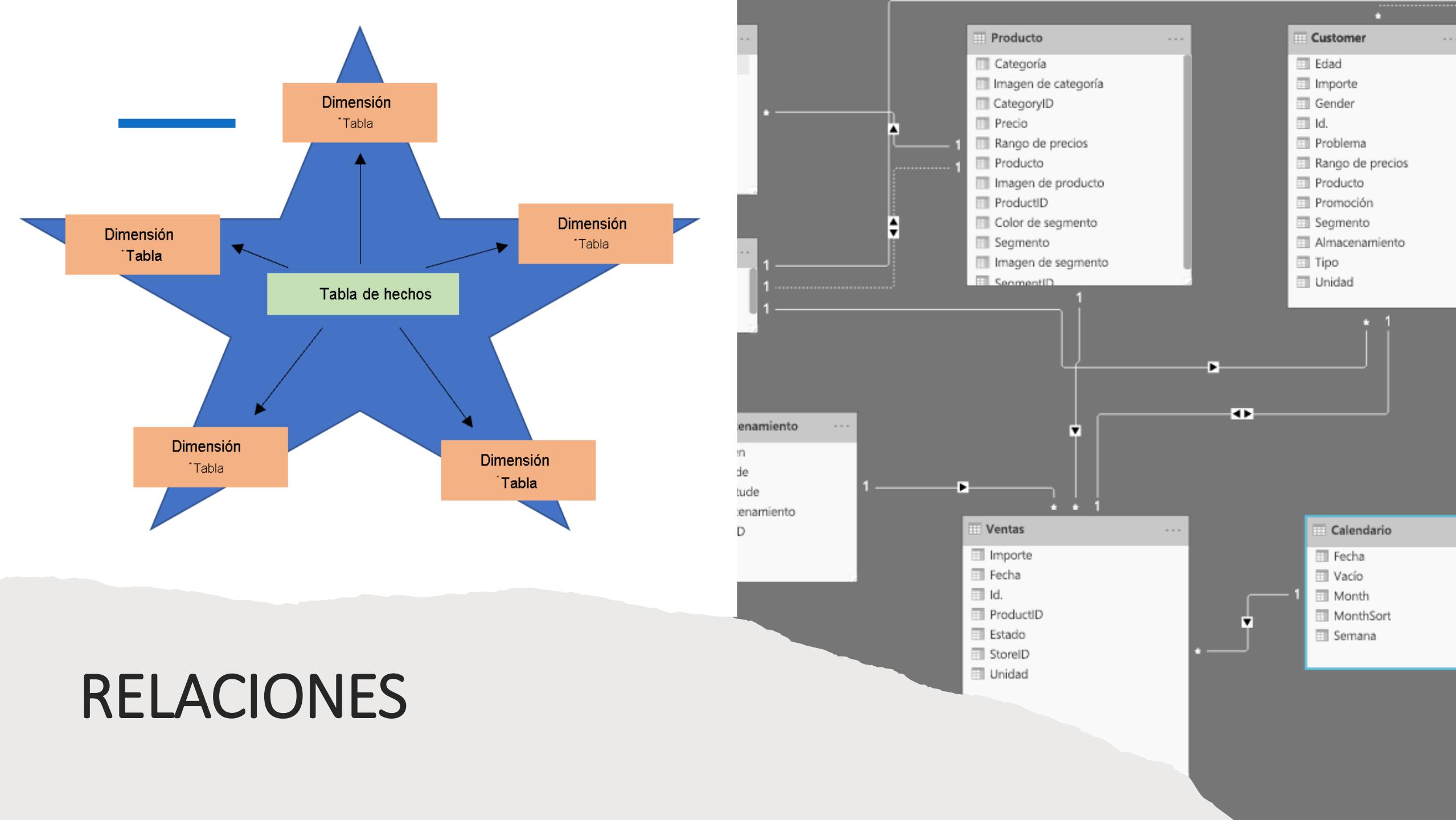
- La calidad de las columnas > 90%
- No deben haber columnas ni registros vacíos
- Eliminar columnas innecesarias
- Garantizar que los datos están de acuerdo a su tipo
- Reemplazar valores
- Cambiar nombre de columnas

Como plus, podeis generar un grafico con cada una de esas informaciones



An aerial photograph of a large cargo ship sailing on a deep blue ocean. The ship is filled with numerous shipping containers stacked in several rows along its side. The containers are various colors, including shades of brown, blue, and white. The ship's wake is visible in the water behind it.

Carga de datos en Power BI



Date

Año

Trimestre

Month

Día

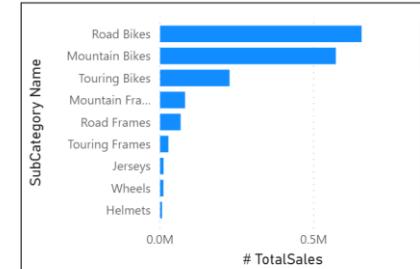
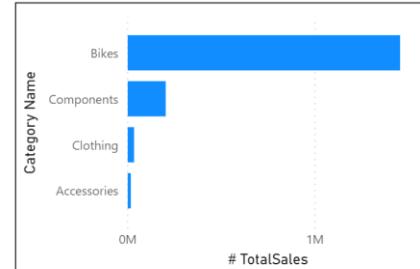
✓ ✗

✗

✗

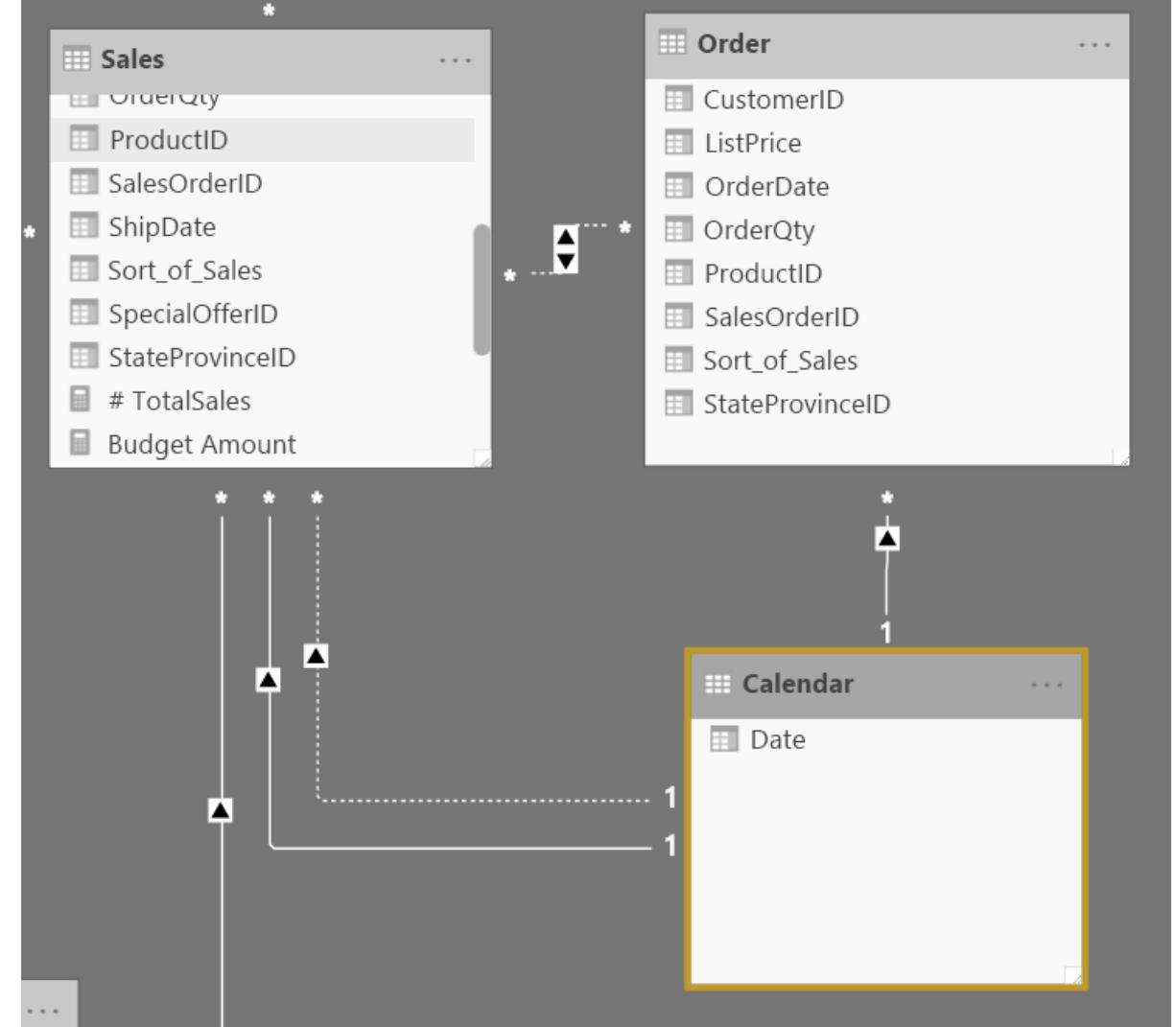
✗

✗

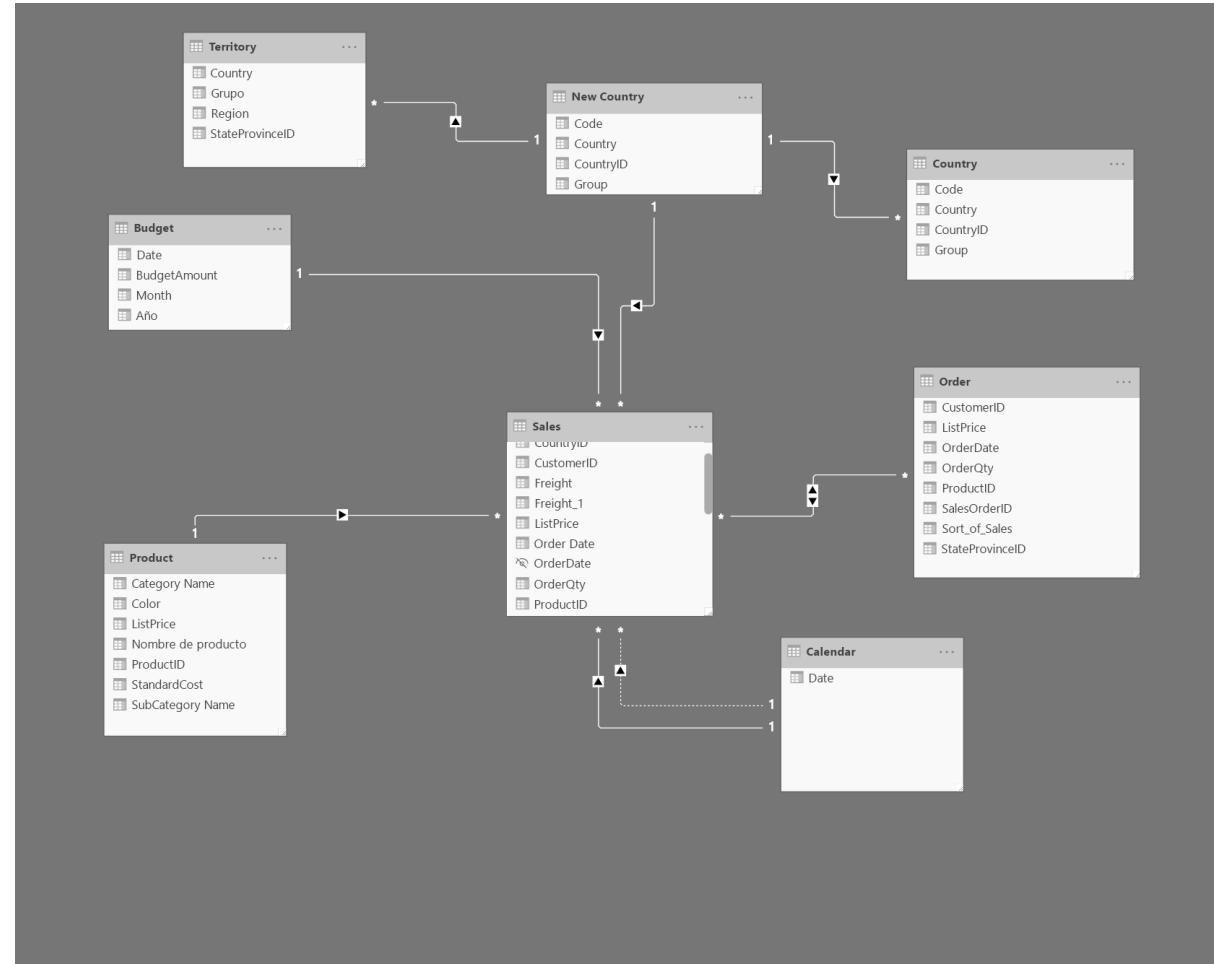


# JERARQUIAS

# DIMENSIONES REALIZADORAS DE ROLES



# CARDINALIDAD



# DIRECCIÓN DE FILTRO CRUZADO

Con una dirección de filtro cruzado única:

- Solo se puede usar una tabla de una relación para filtrar los datos. Por ejemplo, la Tabla 1 se puede filtrar por la Tabla 2, pero la Tabla 2 no se puede filtrar por la Tabla 1.
- En el caso de una relación de uno a varios o de varios a uno, la dirección del filtro cruzado será desde el lado "uno", lo que significa que el filtrado se producirá en la tabla que tiene muchos valores.

Con **ambas direcciones de filtro cruzado** o el **filtrado cruzado bidireccional**:

- Una tabla de una relación se puede usar para filtrar la otra. Por ejemplo, se puede filtrar una tabla de dimensiones a través de la tabla de hechos y las tablas de hechos se pueden filtrar a través de la tabla de dimensiones.
- Es posible que el rendimiento sea menor al usar el filtrado cruzado bidireccional con relaciones de varios a varios.

# Modelado de datos en Power BI

# COLUMNAS CALCULADAS

The screenshot shows a data grid interface with a toolbar at the top featuring tabs for 'Estructura' (Structure), 'Formato' (Format), 'Propiedades' (Properties), and 'Ordenar' (Sort). A search bar labeled 'Columna =' is positioned above the grid. The grid displays six rows of data with four columns each. The columns are represented by icons: a document icon for the first column, a magnifying glass for the second, a chart for the third, and a dollar sign for the fourth. The data is as follows:

10248	11	12	\$14
10248	42	10	\$9.8
10248	72	5	\$34.8
10249	14	9	\$18.6
10249	51	40	\$42.4
10250	41	10	\$7.7

# MEDIDA RAPIDA

The screenshot shows the Power BI interface with three main panes:

- Filtros (Filters):** Displays various filters applied to the page, such as Chain, City (Ciudad), District, Nombre, Open Month, and Store Type.
- Visualizaciones (Visualizations):** Shows a grid of visualization icons.
- Campos (Fields):** Lists fields like Ventas, District, Elemento, and Store. A context menu is open for the 'Average Sellin.' field, with the 'Nueva medida rápida' (Quick measure) option highlighted.

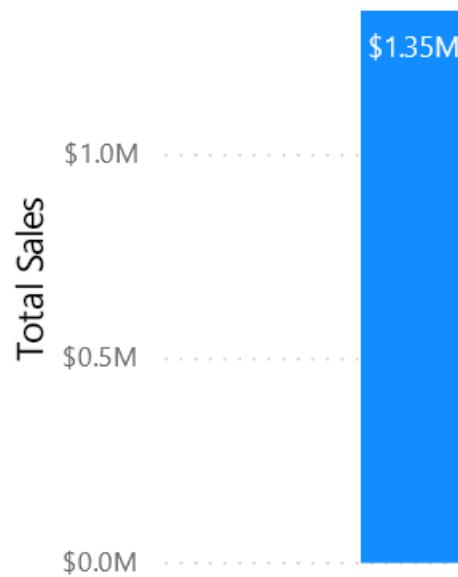
A pink box highlights the 'Nueva medida rápida' option in the context menu.



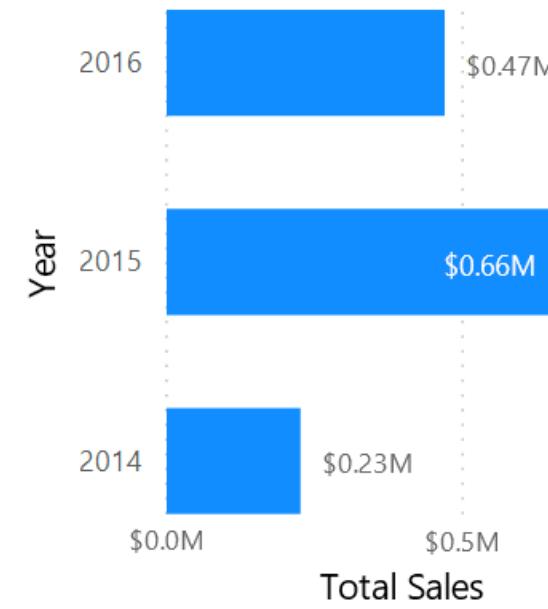
# MEDIDA

# CONTEXTO

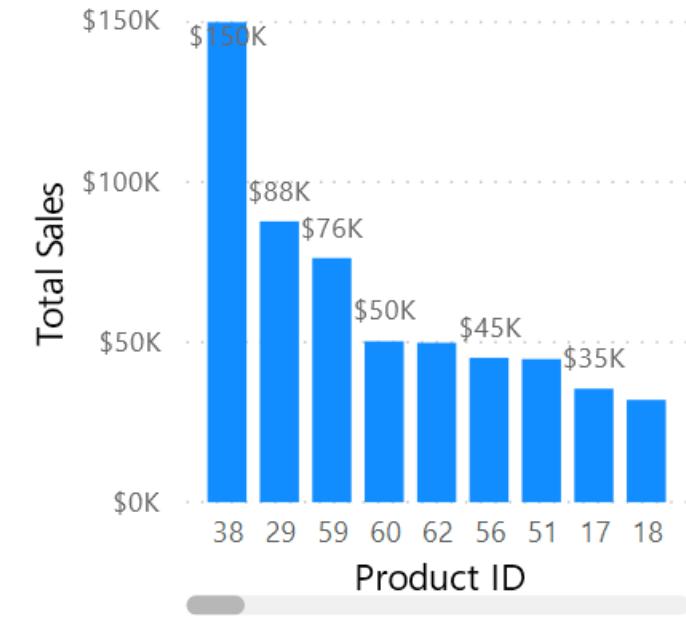
Total Sales



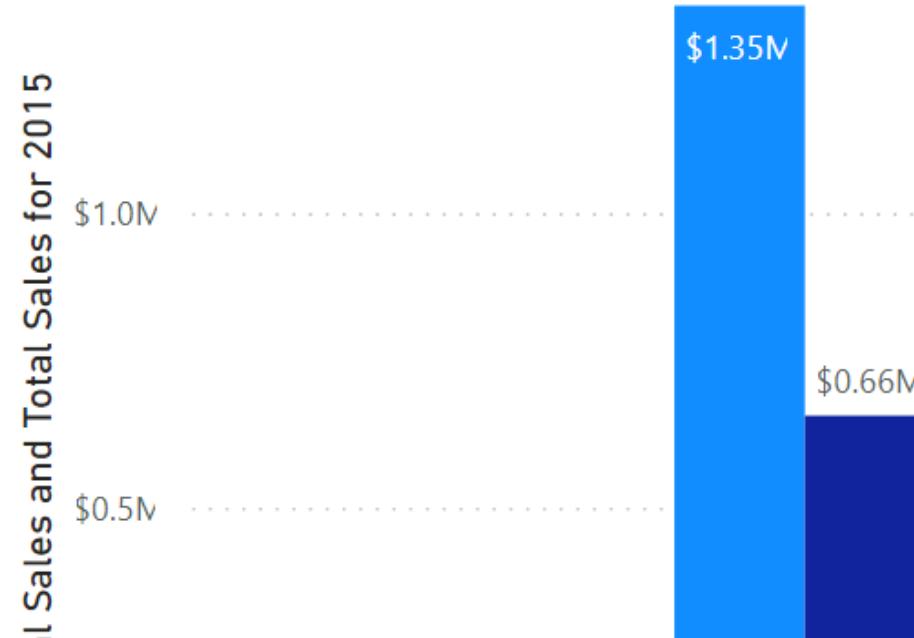
Total Sales by Year



Total Sales by Product ID



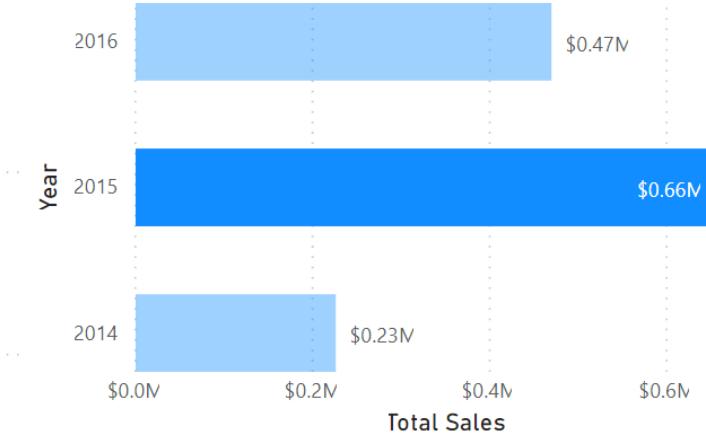
Total Sales Total Sales for 2015



and Total Sales for 2015

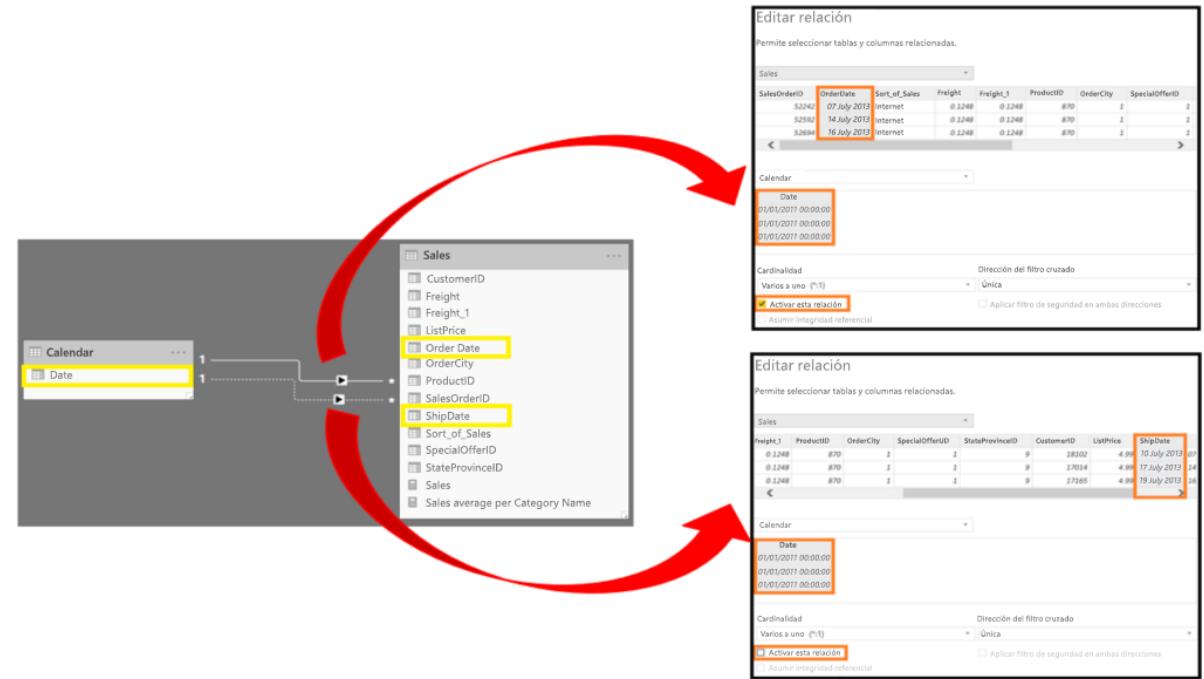
Total Sales for 2015

Total Sales by Year



# CALCULATE

# USERELATIONSHIP





# Creación de cálculos DAX en Power BI

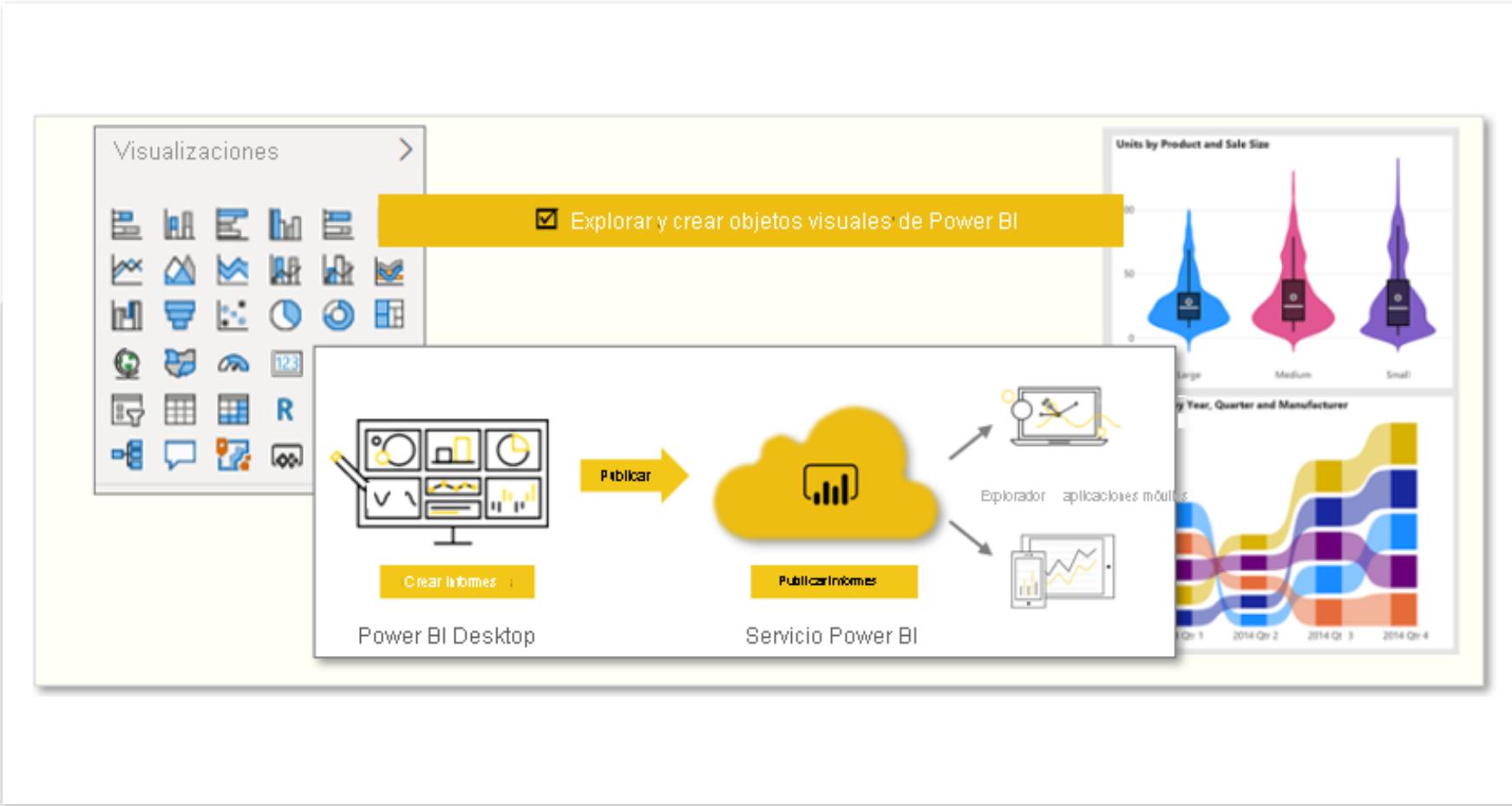
# TIME INTELLIGENCE

Year	Month	Total Sales	Total Sales Previous Month
2015	March	\$39,979.9	\$41,207.2
2015	April	\$55,699.39	\$39,979.9
2015	May	\$56,823.7	\$55,699.39
2015	June	\$39,088	\$56,823.7
2015	July	\$55,464.93	\$39,088
2015	August	\$49,981.69	\$55,464.93
2015	September	\$59,733.02	\$49,981.69
2015	October	\$70,328.5	\$59,733.02
2015	November	\$45,913.36	\$70,328.5
2015	December	\$77,476.26	\$45,913.36

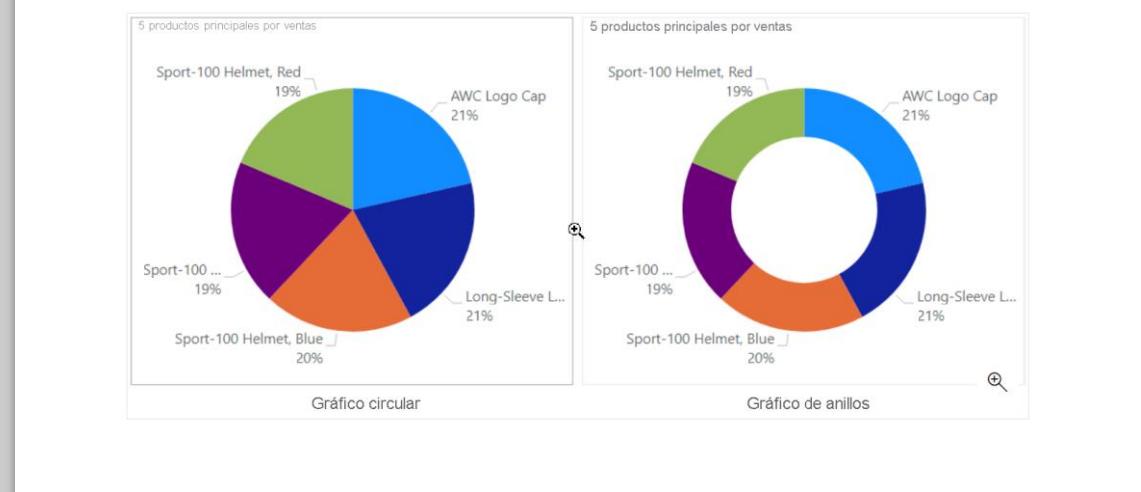
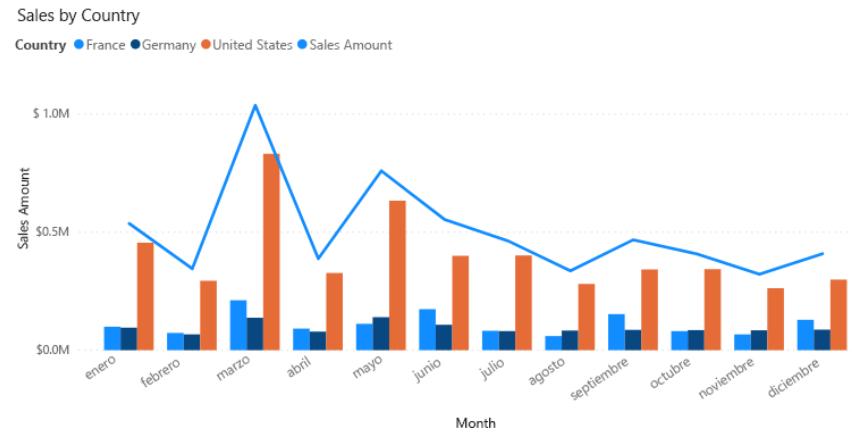
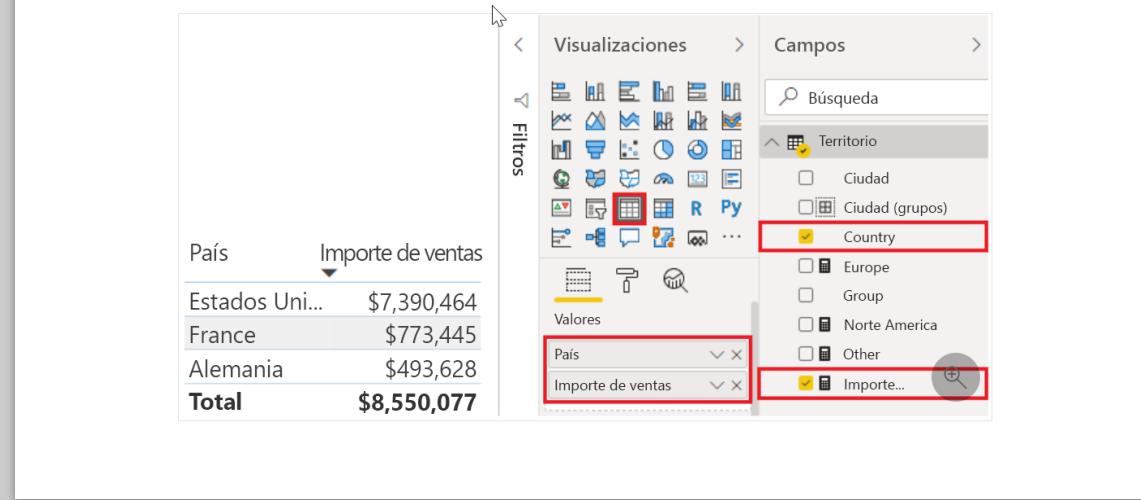
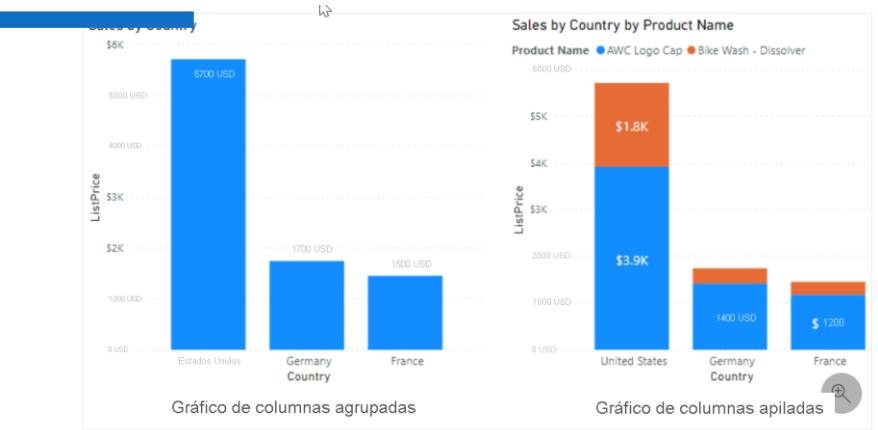
# Creación de cálculos DAX en Power BI II

$$\frac{\partial^2 u}{\partial t^2} = c^2 \frac{\partial^2 u}{\partial x^2}$$

$$\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$$



# VISUALIZACIONES





# FORMATO

The screenshot shows two windows side-by-side. On the left is the 'Visualizations' pane from Power BI, showing various visualization icons and a search bar. A red arrow points from the 'Get more visuals' button in the '...' menu of the pane to the 'Add' button on the right. On the right is the 'AppSource' page for the 'Bullet Chart' app by Microsoft Corporation. The page includes a preview image of the bullet chart, the app title, developer information, a rating section, and tabs for 'Overview' and 'Ratings + reviews'.

Visualizations > Fields

Build visual

Get more visuals

Import a visual from a file

Remove a visual

Restore default visuals

AppSource | Apps for Power BI visuals

< Apps

Bullet Chart

Microsoft Corporation

3.6 (36)

PBI Certified

Overview Ratings + reviews

A bar chart with extra visual elements

# PERSONALIZADO



# R & PYTHON

# Diseño de un informe en Power BI I

# MARCADORES

**TAILWIND TRADERS**

Main Dashboard

Variance Chart

**Categoría de producto:**

**Top 10 Products:**

**Top 10 Customer:**

**Gross Sales by Year to Date:**

**Net Sales by Country:**

Net Sales: \$184.46M  
Gross Sales: \$170.96M  
Cost of Sales: \$13.56M  
Gross Profit: \$49.01K  
Gross Profit YTD: \$16.49M  
Sales by Year: 2014, 2013, 2012, 2011, 2010  
Sales by Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec  
Sales by Quarter: Q1, Q2, Q3, Q4  
Sales by Year: 2014, 2013, 2012, 2011, 2010  
Sales by Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec  
Sales by Quarter: Q1, Q2, Q3, Q4"/>

**Selección**

Crear subcapas Crear subsección Agregar Dorver

Films **Paralíptico** **Hasta el cielo**

Variance chart

Impresión general

Paralíptico

Sig. para U. C. P. d. d. d. d. d.

Reportador en línea

Slicer

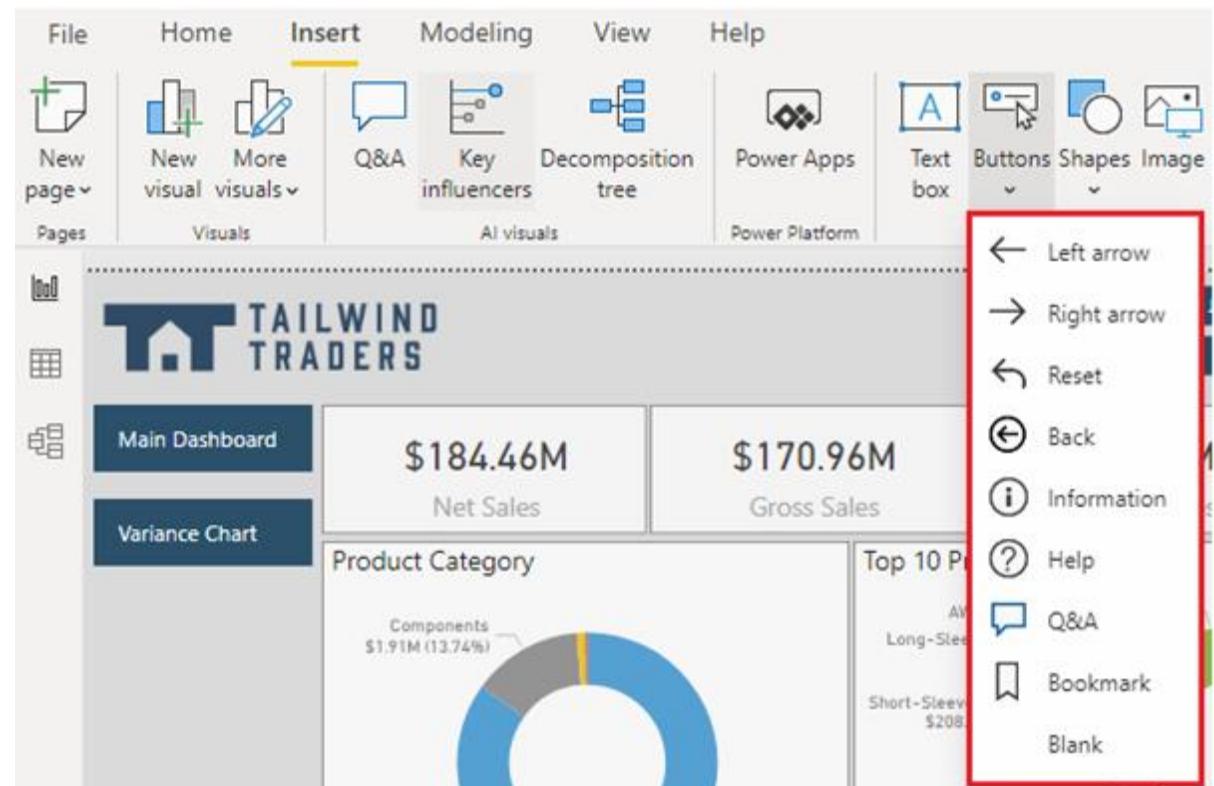
Orden de ventas

Categoría de producto

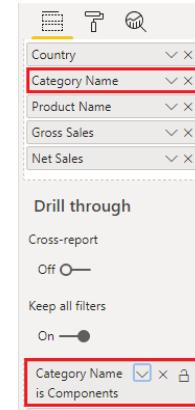
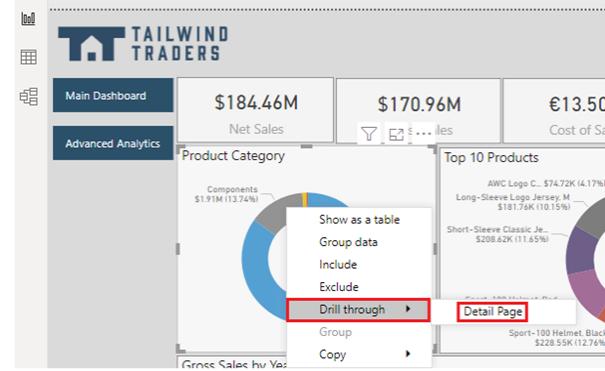
Principales 10 clientes

Venta neta por país

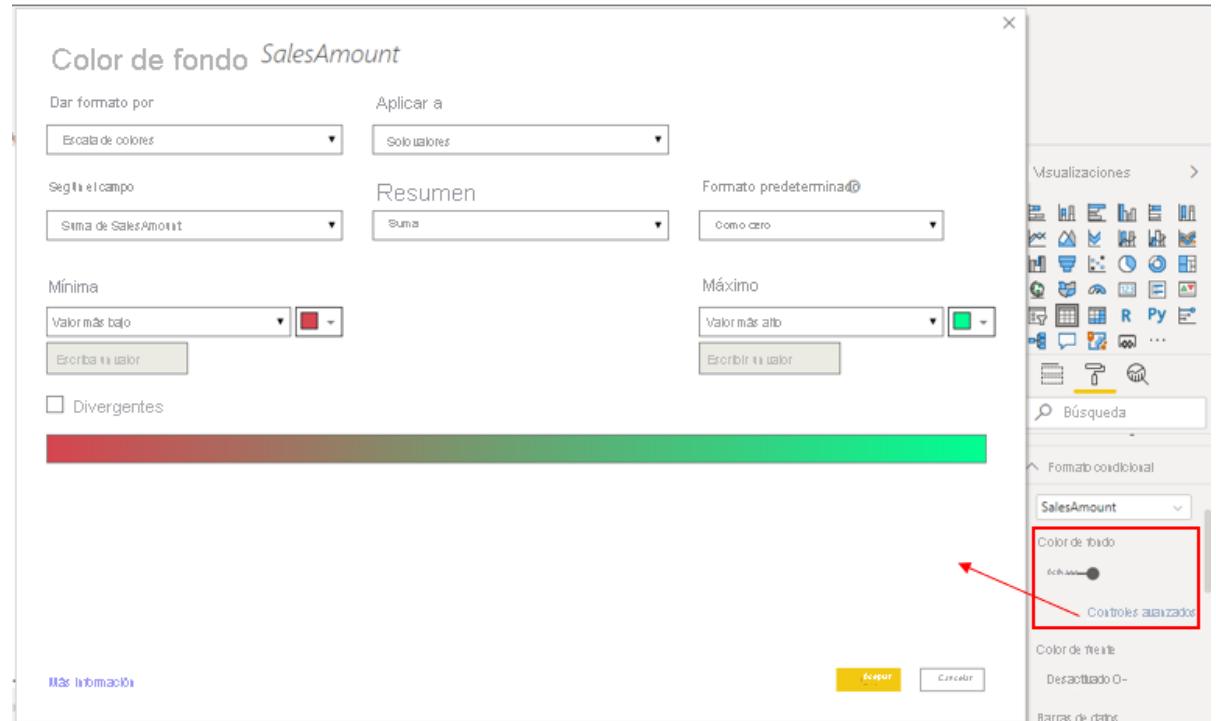
# BOTONES



# OBTENCIÓN DE DETALLES



# FORMATO CONDICIONAL



# FILTROS

The screenshot shows the Power BI 'Filters' pane on the left and the 'Fields' pane on the right.

**Filters (Left):**

- Buscar: Filtros en este objeto visual
- Region es (Todo)
- SalesAmount is (All)
- Agregar campos de datos aquí
- Búsqueda
- Filtros de esta página
- DueDate - Year es (Todo)
  - Tipo de filtro: Filtrado avanzado
  - Mostrar elementos cuando el valor:
  - es mayor que

**Visualizaciones (Top Center):**

Cards, Line, Bar, Stacked Bar, Area, Scatter, Map, Timeline, Heatmap, Radar, Pyramids, ...

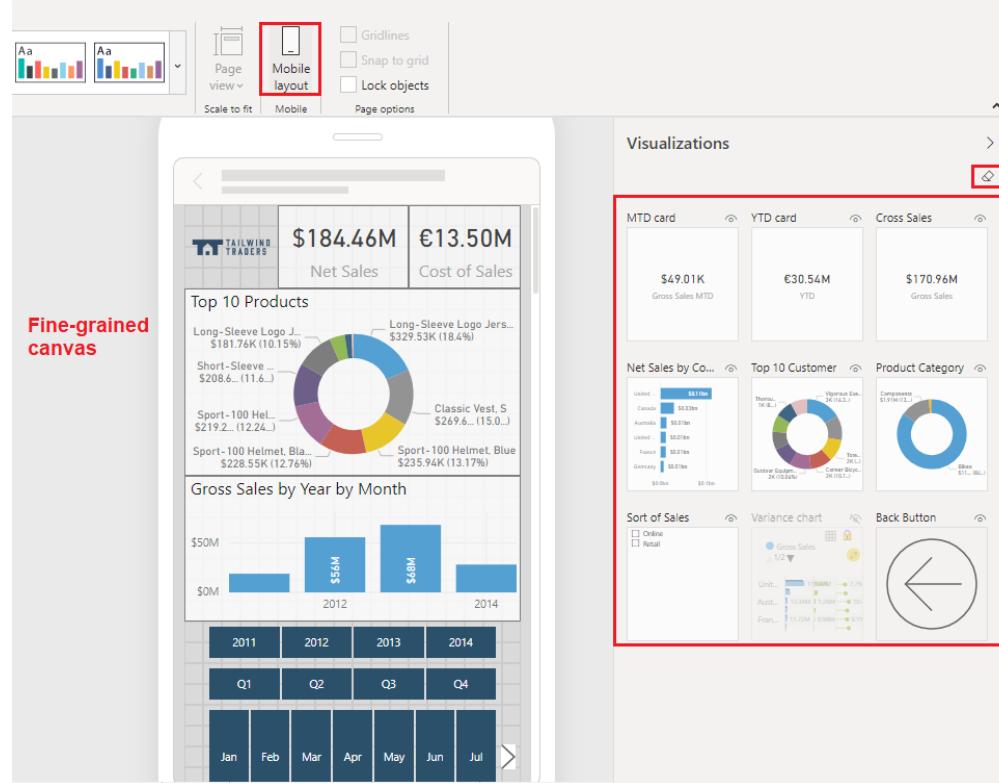
**Fields (Right):**

- SalesDataByRegi... (Selected)
- DueDate
- Date Hier...
- Year (Selected)
- Quarter
- Ous Mes
- Day
- EmployeeKey
- OrderDate
- OrderQuan...
- ProductKey
- PromotionK...
- Region (Selected)
- ResellerKey
- SalesAmount (Selected)
- SalesOrderL...
- SalesOrder...
- SalesTerrito...

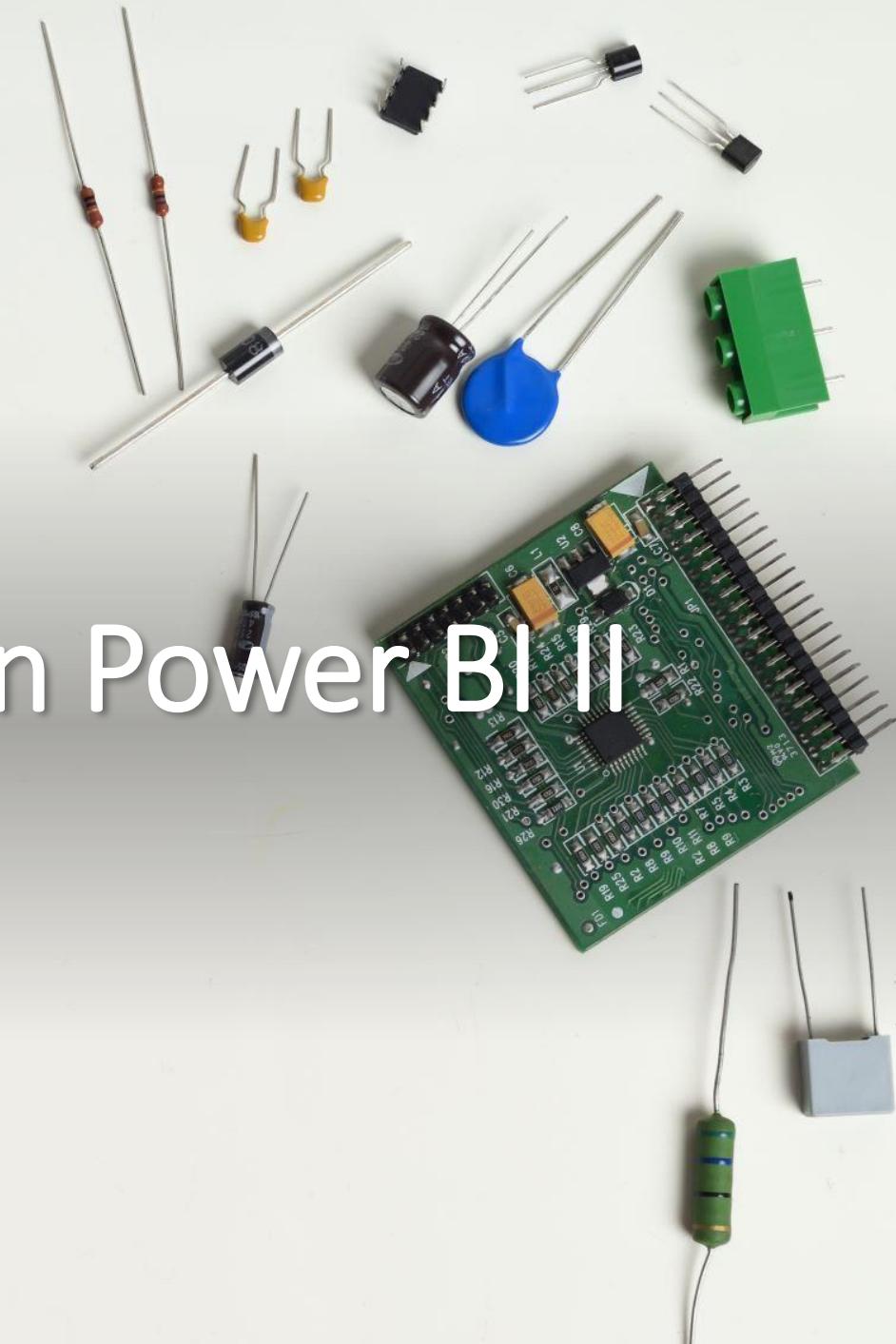
# PUBLICACIÓN



# MÓVILES



# Diseño de un informe en Power BI II



# PANELES



# ANCLAR ICONO

Orders over Time

Count of Sales...

0 200

0 20

Anclar al panel

Seleccione un panel existente o cree uno nuevo.

¿Dónde le gustaría anclarlo?

Panel existente

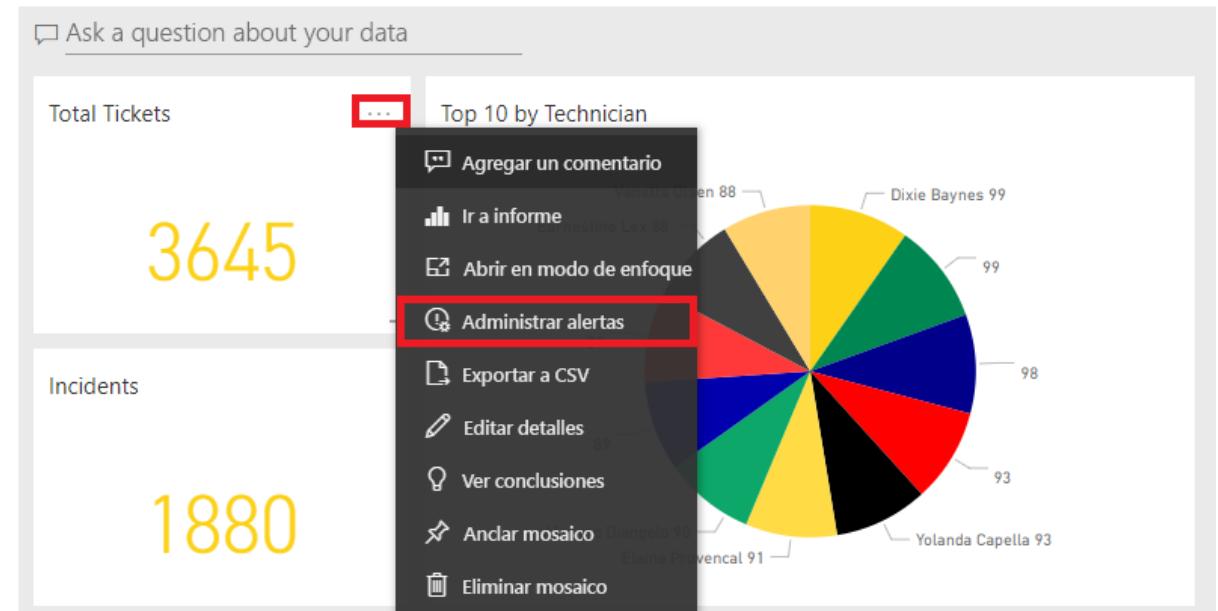
Nuevo panel

Seleccionar el panel existente

Categoría

Anclar Cancelar

# ALERTAS



# Q&A

[⟨ Salir de Preguntas y respuestas](#)

 Nueva experiencia de Preguntas y respuestas activada

 Ask a question about your data

Pruebe una de estas opciones para comenzar

what is the sales by order  
date by product category  
name

show me sales average  
per category name for the  
last year

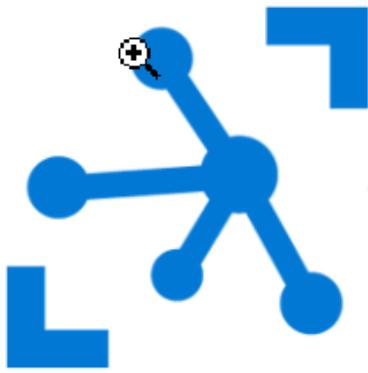
show me sales average  
per category name for the  
last week

top colors by sale sales  
amount

what is the sales by ship  
date by color

top product category  
names by march sales

[Mostrar todas las sugerencias](#)



IoT Hub



Azure Stream Analytics



Power BI

REAL TIME



# Creación de un panel de Power BI

# Análisis de datos en Power BI

61.6 %: 99.19

104.19

86.72



Aplicación de seguridad de nivel de  
fila