atomcamp

MICROSOFT POWER BI MANUAL FOR DESKTOP

Visualizing Data

Visualizing Data

Three Key Questions

1. What **TYPE OF DATA** are you working with?
   - Geospatial? Time-series? Hierarchical? Financial?
2. What do you want to **COMMUNICATE**?
   - Comparison? Composition? Relationship? Distribution?
3. Who is the **END USER** and what do they need?
   - Analyst? Manager? Executive? General public?

Three Key Questions

1. What **TYPE OF DATA** are you working with?

- TIME SERIES
- FINANCIAL
- GEOSPATIAL
- TEXTUAL
- CATEGORICAL
- FUNNEL
- HIERARCHICAL
- SURVEY

The type of data you're working with often determines **which type of visual will best represent it**; for example, using maps to represent geospatial data, line charts for time-series data, or tree maps for hierarchical data

Three Key Questions

2. What do you want to **COMMUNICATE**?

COMPARISON

Used to **compare values over time or across categories**

Common visuals:

- Column/Bar Chart
- Clustered Column/Bar
- Data Table/Heat Map
- Radar Chart
- Line Chart *(time series)*
- Area Chart *(time series)*

COMPOSITION

Used to **break down the component parts of a whole**

Common visuals:

- Stacked Bar/Column Chart
- Pie/Donut Chart
- Stacked Area *(time series)*
- Waterfall Chart *(gains/losses)*
- Funnel Chart *(stages)*
- Tree Map/sunburst *(hierarchies)*

DISTRIBUTION

Used to **show the frequency of values within a series**

Common visuals:

- Histogram
- Density Plot
- Box & Whisker
- Scatter Plot
- Data Table/Heat Map
- Map/Choropleth *(geospatial)*

RELATIONSHIP

Used to **show correlation between multiple variables**

Common visuals:

- Scatter Plot
- Bubble Chart
- Data Table/Heat Map
- Correlation Matrix

Keep it simple! While there are hundreds of charts to choose from, basic options like bars and columns, line charts, histograms and scatterplots often tell the simplest and clearest story

Three Key Questions

3. Who is the **END USER** and what do they need?

THE **ANALYST**

Likes to see details and understand exactly what's happening at a granular level

- Tables or combo charts
- Granular detail to support root-

THE **MANAGER**

Wants summarized data with clear, actionable insights to help operate the business

- Common charts & graphs
- Some detail, but only when it

THE **EXECUTIVE**

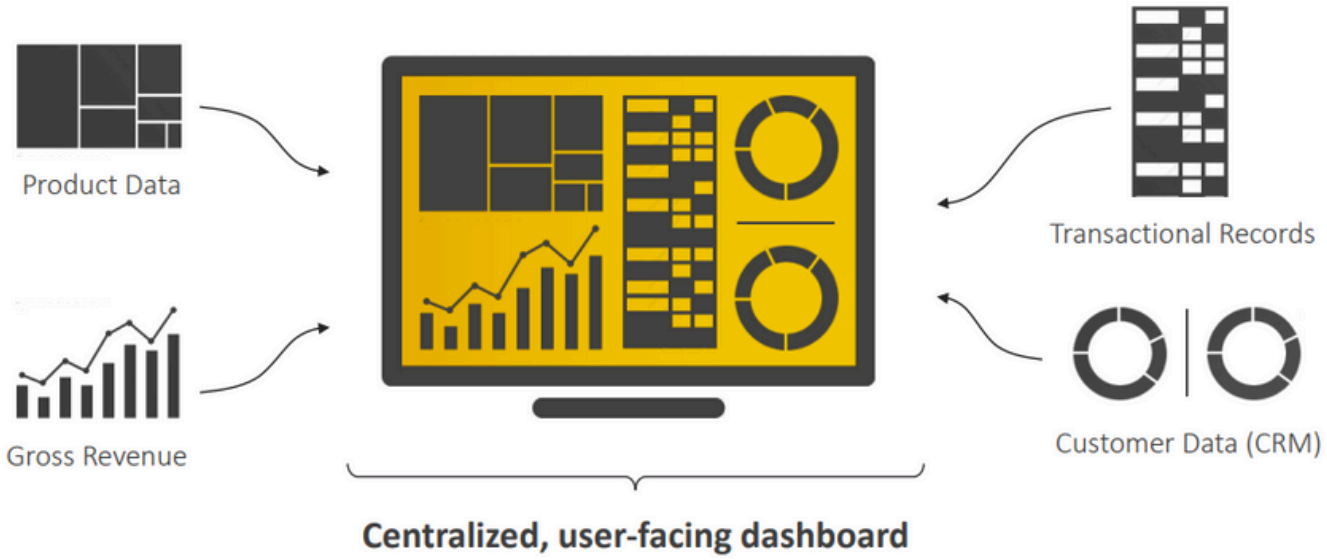
Needs high-level, crystal clear KPIs to track business health and topline performance

- KPI cards or simple charts
- Minimal detail, unless it adds

How you visualize and present your data is a function of **who will be consuming it**; a fellow analyst may want to see granular details, while managers and executives often prefer topline KPIs and clear, data-driven insight

Analytics Dashboards

Dashboards are analytics tools designed to consolidate data from multiple sources, track key metrics at a glance, and facilitate data-driven storytelling and decision making



Dashboard Design Framework

1. Define the purpose
2. Choose the right metrics
3. Present the data effectively
4. Eliminate clutter & noise
5. Use layout to focus attention
6. Tell a clear story

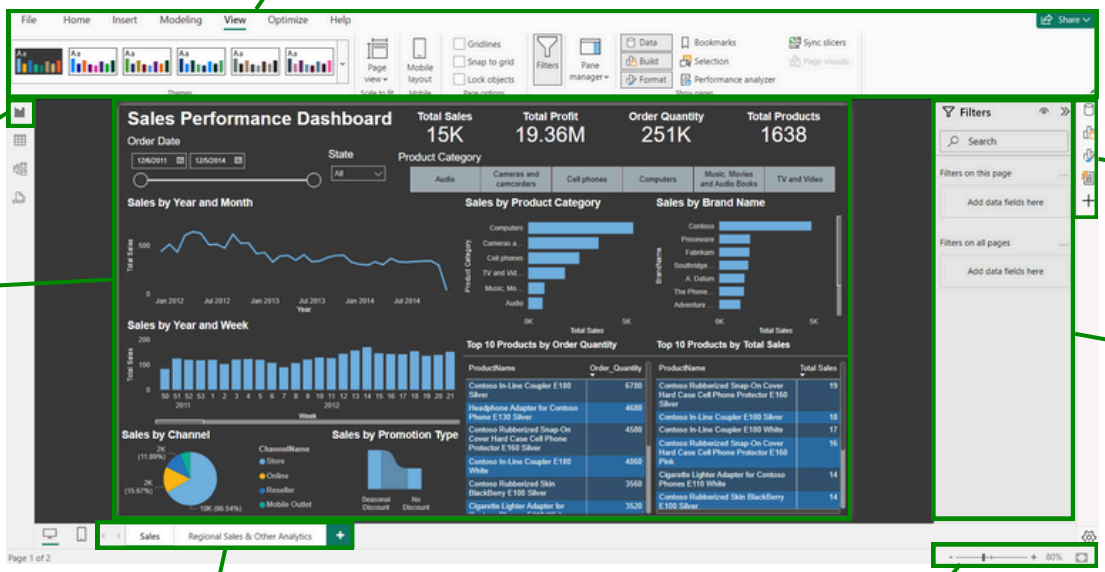
A well-designed dashboard should **serve a distinct purpose for a distinct audience**, use **clear and effective metrics and visuals**, and **provide a simple, intuitive user experience**.

Key questions to consider:

- Who are the **end-users** of your dashboard?
- What are their **key business goals** and objectives?
- What are the **most important questions** they need answers to?
- How can I present information **as clearly as possible**?

The Report View

Insert Menu (Add pages, visuals, buttons, shapes, images, etc.)



Report View

Report Canvas

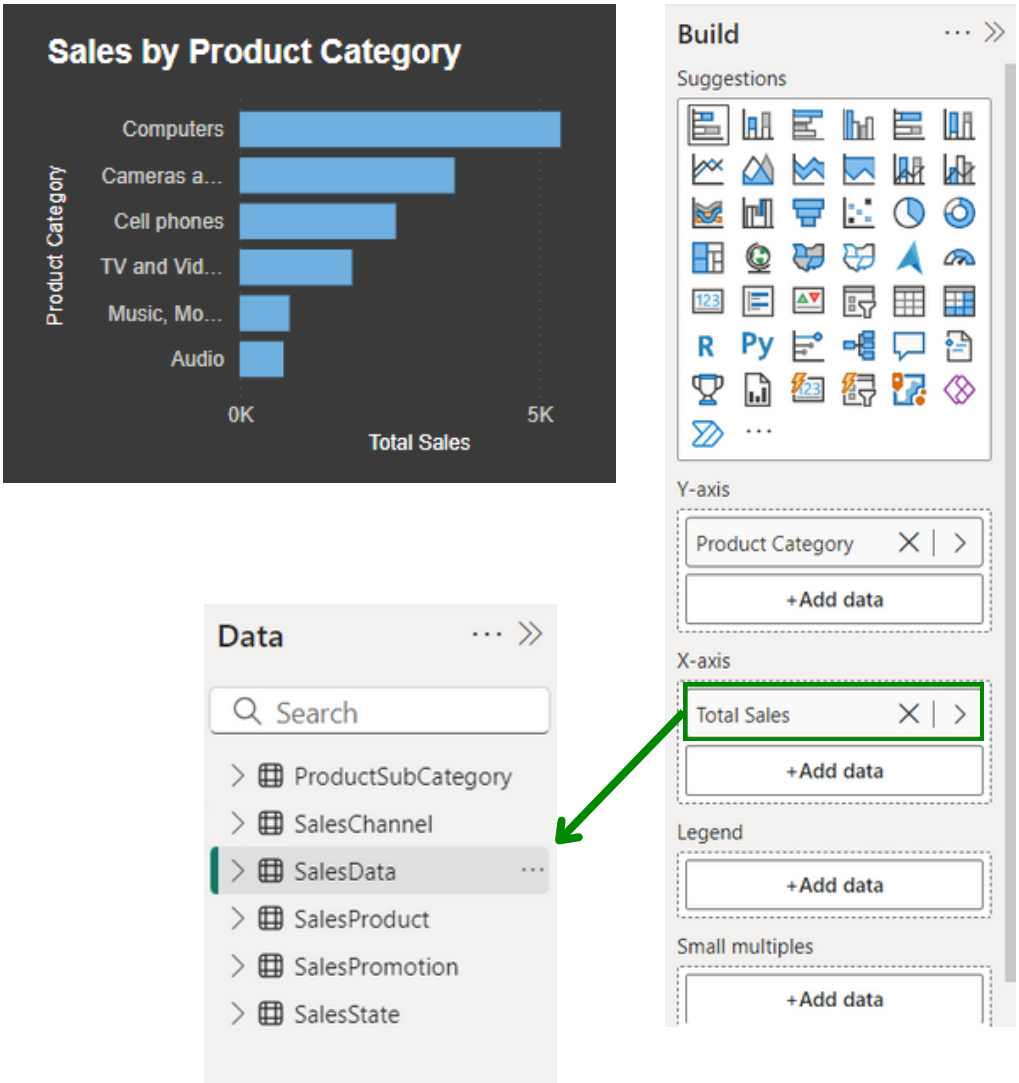
Panes (Data, Format, Bookmarks, Selection)

Filter Pane (Page-level, report-level, Visual-level filters)

Report Pages (each tab is a blank report canvas)

View Options(Zoom, fit to page)

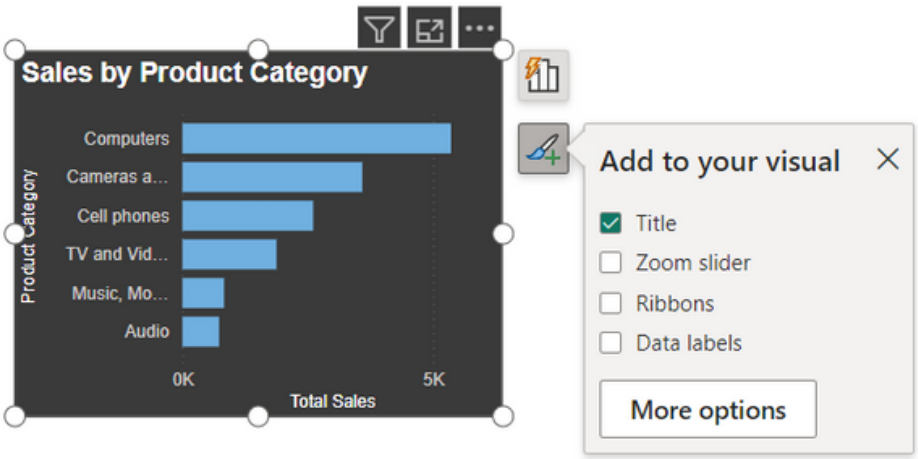
Building & Formatting Charts



The **Build** menu allows you to change the visual type, auto-suggest visuals, and add data to customize chart components (x-axis, y-axis, legend, tooltips, etc.)

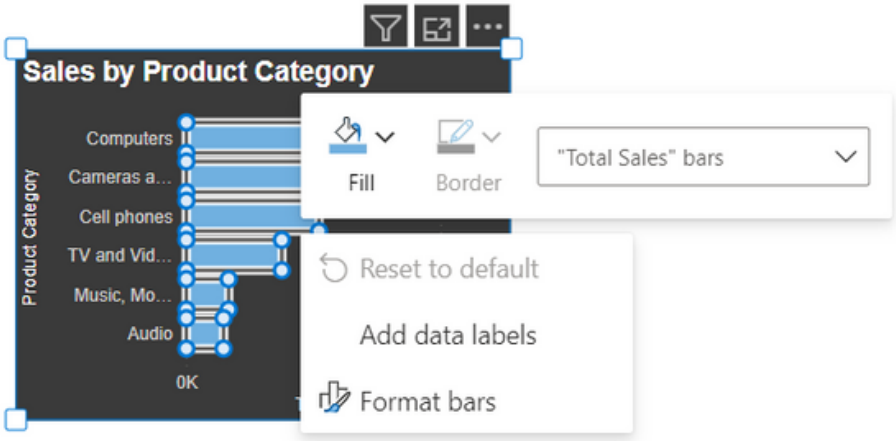
- This is a **contextual menu**, so you will only see options which are relevant to the selected visual
- You can build visuals by either inserting a specific chart type and adding data, or by dragging a field from the Data pane onto the canvas

Building & Formatting Charts



The **Format** menu allows you to quickly add common chart elements (title, axis labels, data labels, legends, etc.) and access additional options and properties in the Format pane

- This is a **contextual menu**, so you will only see options which are relevant to the selected visual

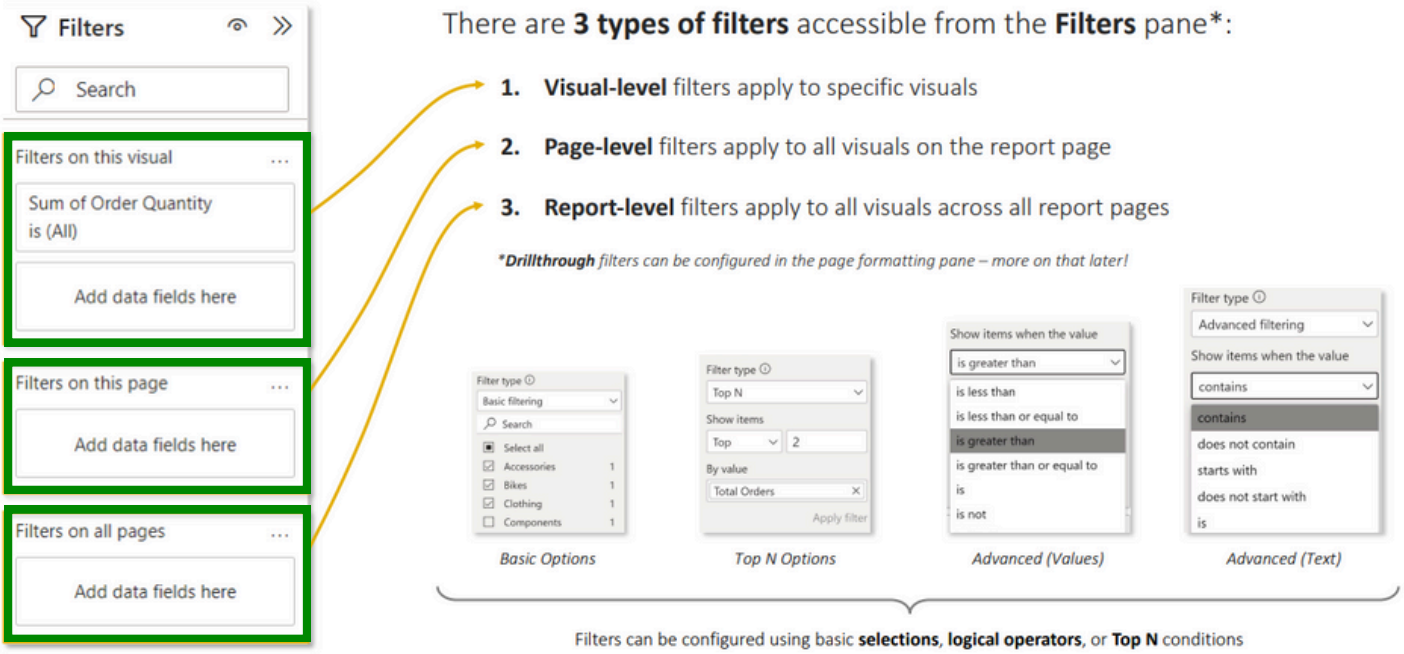


Enable **on-object formatting** by double-clicking the chart object (or right-click > format), which allows you to select and edit individual chart elements

- On-object formatting is only available for certain visuals (bar, column, line, area, combo & scatter

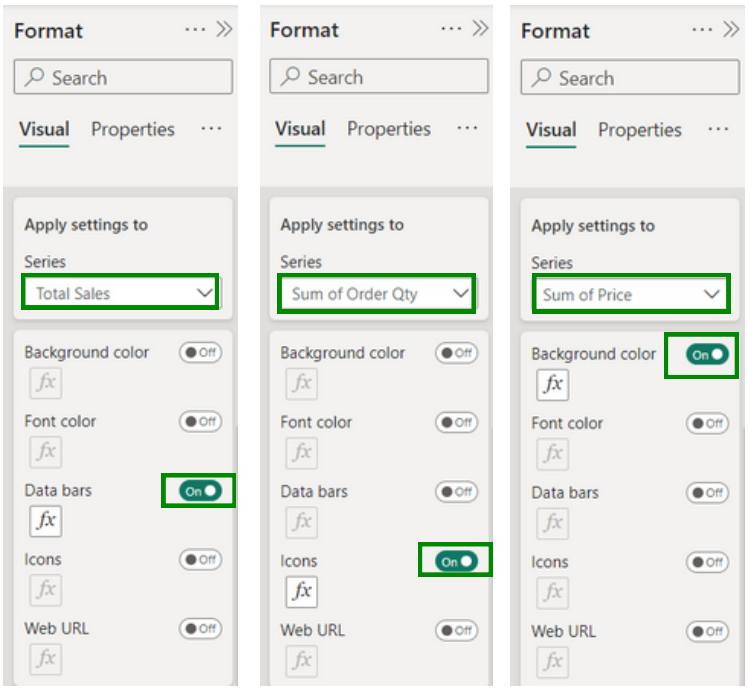
atomcamp

Filtering Options



Conditional Formatting

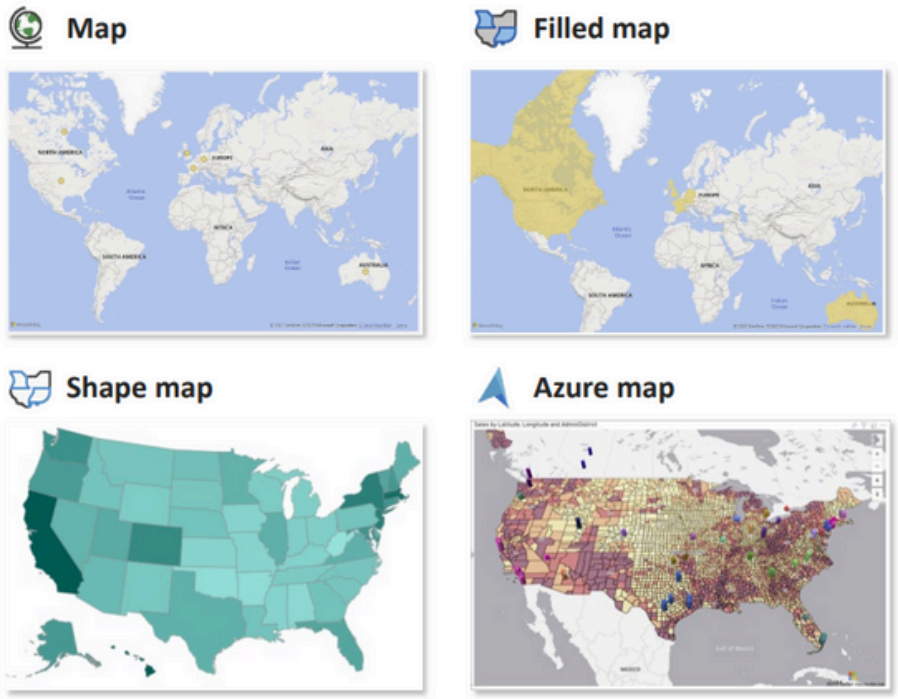
Product Category	Total Sales	Sum of Order Qty	Sum of Price
Computers	5359	69425	1,662,306.59
Cameras and camcorders	3590	43893	1,420,948.32
Cell phones	2609	96074	427,749.17
TV and Video	1878	22714	765,763.13
Music, Movies and Audio Books	832	9953	87,464.14
Audio	732	9067	83,489.10
Total	**15000**	**251126**	**4,447,720.45**



Conditional formatting allows you to dynamically format Table or Matrix visuals based on cell values

- Conditionally formatting options can be found in the **Format** pane, under **Cell elements**
- Options include background color, font color, data bars, icons, or Web URL

MAP Visuals



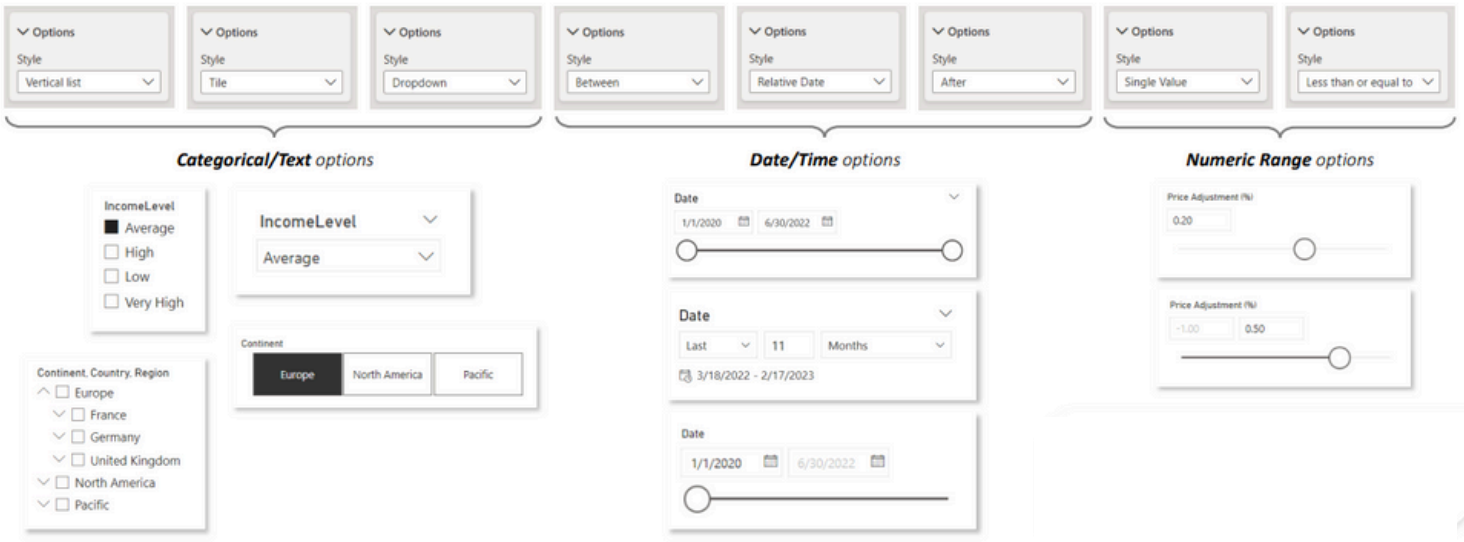
Power BI includes several types of **map visuals** powered by Bing Maps

Tips for creating accurate maps:
1. Assign **categories** to geospatial fields
2. Add **multiple location** fields
3. Use **latitude/longitude** when possibl

Slicers

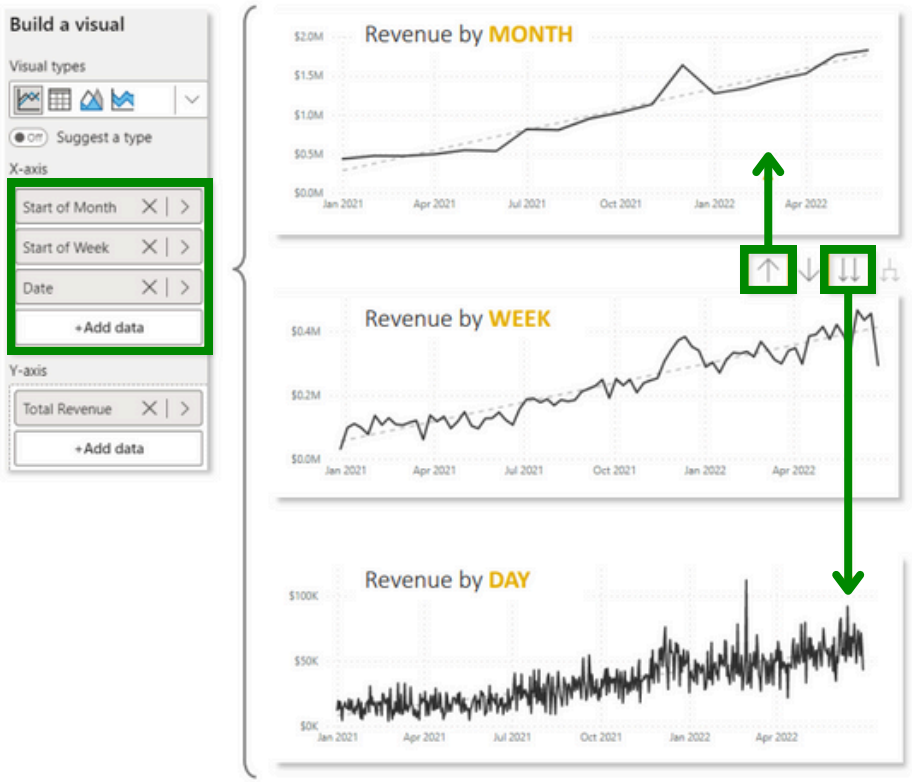
Slicers are visual filters which affect all other visuals on a report page (by default)

- Slicers can take many formats depending on the data type, including **lists, dropdowns, tiles, ranges**, and more



Tip: Use **Apply/Clear All Slicers** buttons for more filtering control

DRILL UP & DRILL DOWN



Drill Up and **Drill Down** tools allow you to switch between different levels of granularity

- In this example users can “drill up” from weekly to monthly, or “drill down” to daily
- The single down arrow activates **drill mode**, allowing users to drill by clicking data points
- The forked down arrow **expands each level** of the hierarchy (used in matrix visuals)

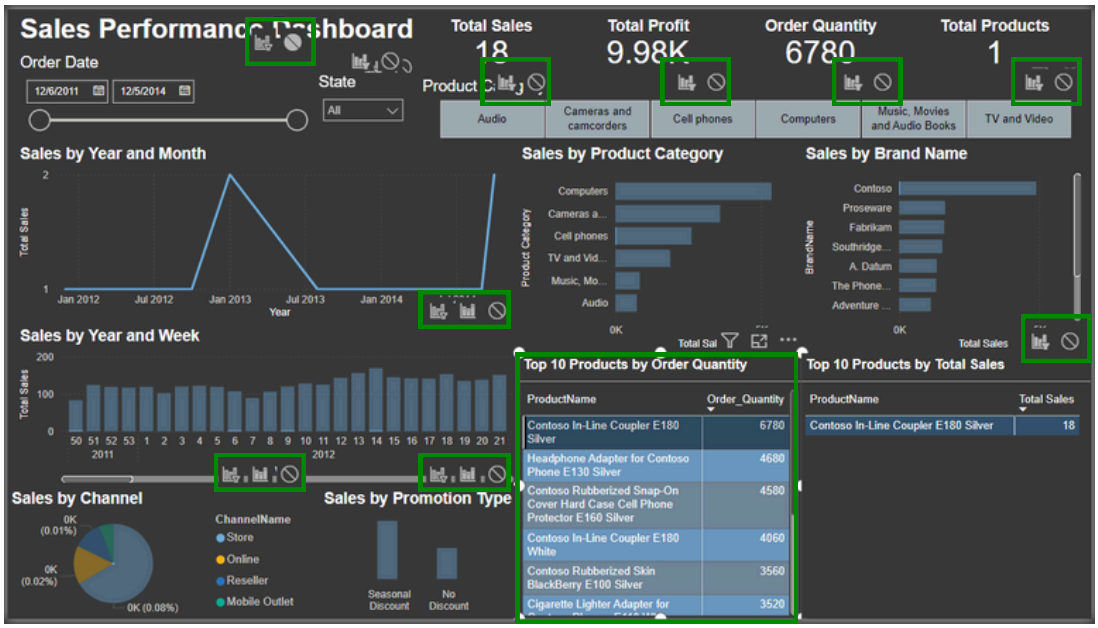
Tip: Use **location hierarchies** and enable drill mode to create interactive map visuals

Report Interactions

Edit **report interactions** to customize how filters applied to one visual impact other visuals on the page

- Cross-filter options include **filter**, **highlight** and **none**, depending on the visual type

Format > ***Edit Interactions***



In this example, selecting a product in the matrix visual:

- **Filters** the line chart & KPIs
- **Highlights** the bar chart
- **Doesn't impact** the text cards

atomcamp

Data Visualization Best Practices

Always ask yourself the three key questions

- *What type of data are you visualizing, what are you communicating, and who is the end user?*

Strive for clarity and simplicity above all else

- *"Perfection is achieved not when there's nothing more to add, but when there's nothing left to take away"*

Focus on creating clear narratives and intuitive user experiences

- *Use bookmarks, drillthroughs, tooltips and navigation buttons to seamlessly guide users through reports*

Create optimized layouts for mobile viewers

- *Create custom mobile layouts if you plan to publish reports to Power BI Service or use the Power BI app*