VISUALIZING DATA

VISUALIZING DATA

In this section we'll **build dynamic interactive reports**, introduce visualization best practices, and explore features like bookmarks, drillthrough filters, parameters, tooltips, and more

TOPICS WE'LL COVER:

Data Viz Best Practices	Formatting & Filtering
Bookmarks	Report Interactions
User Roles	Parameters
Custom Tooltips	Mobile Layouts

GOALS FOR THIS SECTION:

- Review frameworks and best practices for visualizing data and designing effective reports and dashboards

- Explore tools and techniques for inserting, formatting and filtering visuals in the Power BI Report view

- Add interactivity using tools like bookmarks, slicer panels, parameters, tooltips, and report navigation

- Learn how to configure row-level security with user roles

- Optimize reports for mobile viewing using custom layouts

THREE KEY QUESTIONS

1 What **TYPE OF DATA** are you working with?
- Geospatial? Time-series? Hierarchical? Financial?

2 What do you want to **COMMUNICATE**?
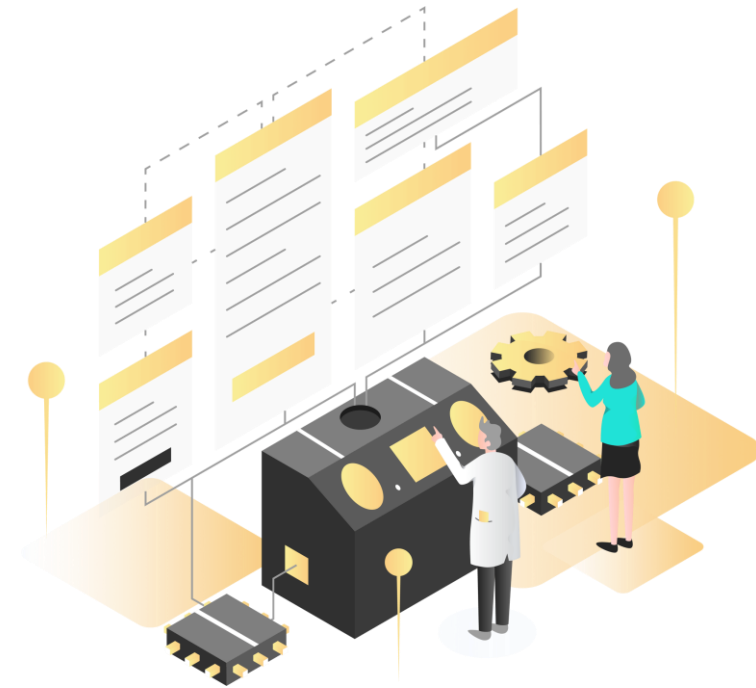- Comparison? Composition? Relationship? Distribution?

3 Who is the **END USER** and what do they need?
- Analyst? Manager? Executive? General public?

1

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

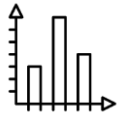|	
📈 Time-series	💵 Financial
🗺 Geospatial	📄 Textual
📊 Categorical	⌄ Funnel
🗂 Hierarchical	💬 Survey

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

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)*
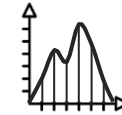
COMPOSITION

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)*
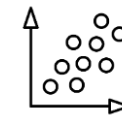- Tree Map/sunburst *(hierarchies)*

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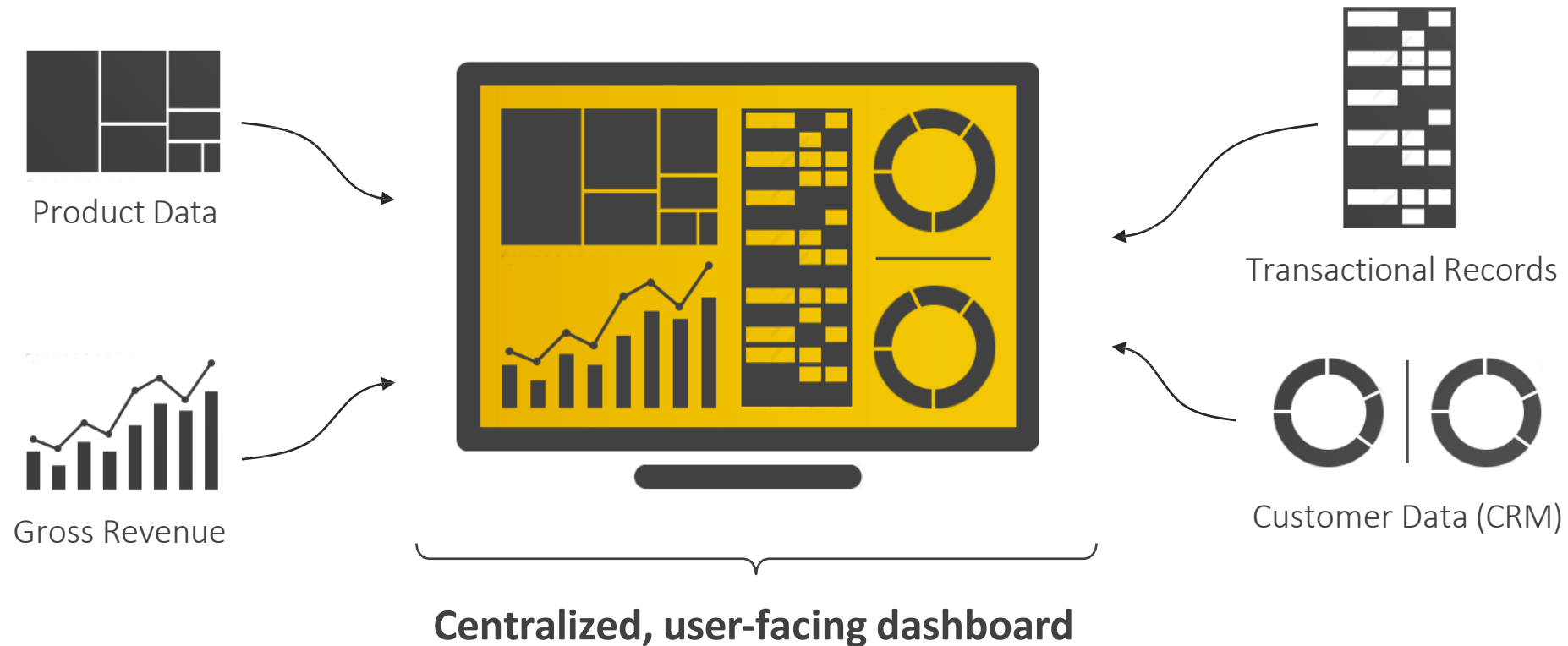
3 Who is the **END USER** and what do they need?

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-cause analysis

THE **MANAGER**

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

- Common charts & graphs
- Some detail, but only when it supports a specific insight

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 critical context to KPIs

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 insights

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

Product Data

Gross Revenue

Transactional Records

Customer Data (CRM)

Centralized, user-facing dashboard

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**?*

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

Antoine de Saint-Exupery

THE REPORT VIEW

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

File   Home   Insert   Modeling   View   Optimize   Help

New page   New visual   More visuals   Q&A   Key influencers   Decomposition tree   Smart narrative   Paginated report   Power Apps   Power Automate (preview)   Text box   Buttons   Shapes   Image   Add a sparkline

Pages   Visuals   AI visuals   Power Platform   Elements   Sparklines

Report View

Report Canvas

ADVENTUREWORKS BIKE SHOP

| $24.9M REVENUE | $10.5M PROFIT | 25.2K ORDERS | 2.2% RETURN RATE |

Weekly Revenue

$0.5M
$0.4M
$0.3M
$0.2M
$0.1M

Jan 2020   Jul 2020   Jan 2021   Jul 2021   Jan 2022

Orders by Category

Accessories — 17.0K
Bikes — 13.9K
Clothing — 7.0K

Top 10 Products	Orders	Revenue	Return %
Water Bottle - 30 oz.	3,983	$39,755	1.95%
Patch Kit/8 Patches	2,952	$13,506	1.61%
Mountain Tire Tube	2,846	$28,333	1.64%
Road Tire Tube	2,173	$17,265	1.55%
Sport-100 Helmet, Red	2,099	$73,444	3.33%
AWC Logo Cap	2,062	$35,865	1.11%
Sport-100 Helmet, Blue	1,995	$67,112	3.31%
Fender Set - Mountain	1,975	$87,041	1.36%
Sport-100 Helmet, Black	1,940	$65,262	2.68%
Mountain Bottle Cage	1,896	$38,062	2.02%

Monthly Revenue
$1.83M⌄
Prev Month: $1.77M (+3.31%)

Monthly Orders
2,146!
Prev Month: 2165 (-0.88%)

Monthly Returns
166⌄
Prev Month: 169 (+1.78%)

Most Ordered Product Type:
Tires and Tubes

Most Returned Product Type:
Shorts

Filters

Search

Filters on this page   ...

Add data fields here

Filters on all pages   ...

Add data fields here

Panes

(Data, Format, Bookmarks, Selection)

Filter Pane

(Page-level, report-level, visual-level filters)

Exec Dashboard | Map | Product Detail | Customer Detail | Category Tooltip | AI: Q&A | AI: Decomposition Tree | AI: Key Influencers | +

Page 1 of 8

88%

Report Pages *(each tab is a blank report canvas)*

View Options *(Zoom, fit to page)*

ASSIGNMENT: CARDS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Let's get visual!**

Hey there!

We've kicked off the visualization work for our Power BI dashboard, and I'm hoping you can help.

For now I'd love for you to focus on building out the **Customer Detail** report. Can you start by adding some KPIs to show total customers and revenue per customer?

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. Insert a **card** in the **Customer Detail** report page to show **Total Customers**, and rename the field "UNIQUE CUSTOMERS"

2. Add a background shape and match the formatting of the cards in the **Exec Dashboard** tab

3. Copy and paste to create a second card showing **Average Revenue per Customer**, and rename the field "REVENUE PER CUSTOMER"

SOLUTION: CARDS

NEW MESSAGE

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-Vic

Reply   Forward

Solution Preview

17.4K
UNIQUE CUSTOMERS

$1,431
REVENUE PER CUSTOMER

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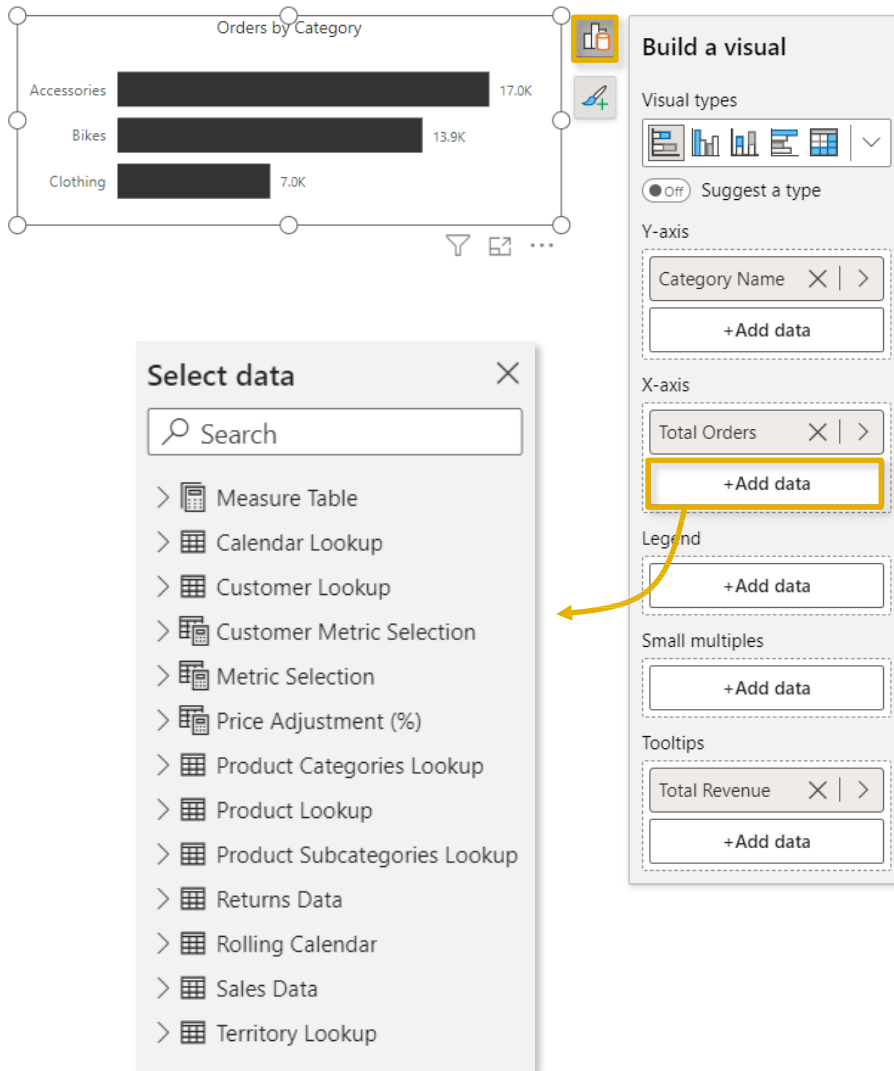
The **Build** menu allows you to change the visual type, auto-suggest visuals, and add data to customize chart components *(x-axis, y-axis, legend, tooltips, etc.)*

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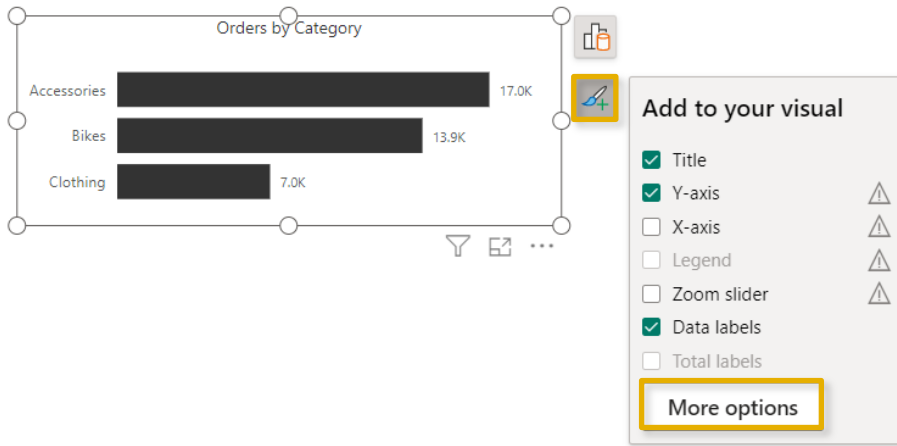
The **Format** menu allows you to quickly add common chart elements *(title, axis labels, data labels, legends, etc.)* and access additional options and properties in the Format pane

- This is a **contextual menu**, so you will only see options which are relevant to the selected visual
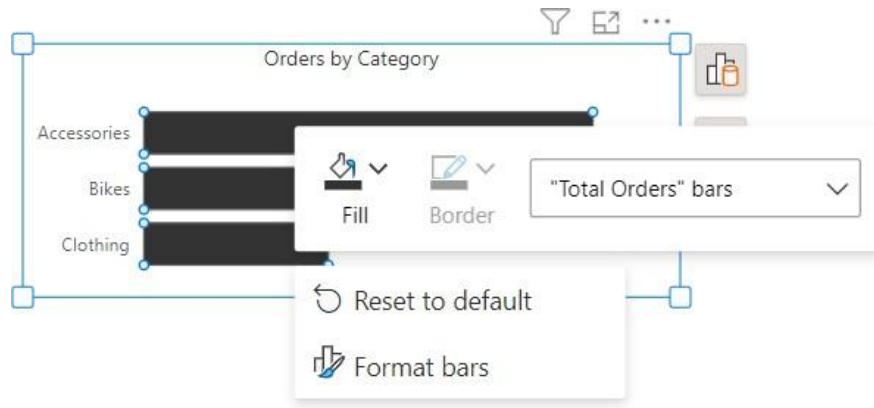
Enable **on-object formatting** by double-clicking the chart object *(or right-click > format)*, which allows you to select and edit individual chart elements

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

ASSIGNMENT: LINE CHARTS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Customer count by week**

Nice work on those cards!

Next up let's add a weekly line chart to show how our customer base is trending over time.

Please add a zoom bar to make it interactive, and format the tooltips to match the line chart in the Exec Dashboard.

Thanks!

-Vic

⬅ Reply   ➡ Forward

Key Objectives

1. Add a **line chart** to the **Customer Detail** report showing **Total Customers** by week

2. Add a **trend line** and a **zoom slider** to the x-axis

3. Enable **tooltips**, and format to match line chart in the **Exec Dashboard** tab

SOLUTION: LINE CHARTS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

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Next up let's add a weekly line chart to show how our customer base is trending over time.

Please add a zoom bar to make it interactive, and format the tooltips to match the line chart in the Exec Dashboard.

Thanks!

-Vic

Reply   Forward

Solution Preview

FILTERING OPTIONS

There are **3 types of filters** accessible from the **Filters** pane*:

1. **Visual-level** filters apply to specific visuals

2. **Page-level** filters apply to all visuals on the report page

3. **Report-level** filters apply to all visuals across all report pages

__Drillthrough__ filters can be configured in the page formatting pane – more on that later!

Basic Options   *Top N Options*   *Advanced (Values)*   *Advanced (Text)*

Filters can be configured using basic **selections**, **logical operators**, or **Top N** conditions

ASSIGNMENT: DONUT CHARTS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Customer demographics**

Good morning!

Just got a note from Ethan to see if we can build some demographic info into the customer report.

Let's add a couple donut charts to show the composition of customers by income level and occupation. We'll want to limit to just a few segments (maybe 3?) and do some formatting to match the rest of the dashboard.

Thanks, you rock!

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. Add a **donut chart** to the **Customer Detail** report showing **Total Orders** by **Income Level**

2. Add a **chart title**, turn off the **legend**, and update the **data labels** to show the category and value (font size 8, 1 decimal place)

3. Update the colors of the slices to match the screenshot in the solution preview

4. Add a **visual-level filter** to exclude customers with a "Very High" income level

5. Copy the chart to show **Total Orders** by **Occupation**, and add a **visual-level filter** to display the three occupations with the most orders *(bonus points if you use a Top N filter!)*

SOLUTION: DONUT CHARTS

NEW MESSAGE

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Subject: **Customer demographics**

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Let's add a couple donut charts to show the composition of customers by income level and occupation. We'll want to limit to just a few segments (maybe 3?) and do some formatting to match the rest of the dashboard.

Thanks, you rock!

-Vic

↩ Reply   ➡ Forward

Solution Preview

Orders by Income Level

High 2.8K
Average 11.6K
Low 10.3K

Orders by Occupation

Management 4.4K
Professional 7.9K
Skilled Manual 6.0K

CONDITIONAL FORMATTING

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

ASSIGNMENT: TABLES

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Top customer table**

Hey there, this customer report is really coming together!

Since the management team needs a way to identify high-value customers, let's add a table to our report showing customer keys, full names, orders, and revenue.

Probably makes sense to add some conditional formatting and limit to the top 100 customers for now.

Thanks!

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. Add a **table** to the **Customer Detail** report to show **Customer Key, Full Name**, **Total Orders** (as "Orders") and **Total Revenue** (as "Revenue")

2. Use conditional formatting to add light gray **data bars** to the orders column and a white > blue **color scale** to the revenue column

3. Add a **visual-level filter (Top N)** to show the 100 customers with the most orders, and add a **chart title** ("Top 100 Customers")

4. **Sort** the table descending by orders

SOLUTION: TABLES

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Thanks!

-Vic

↩ Reply   ➡ Forward

Solution Preview

Top 100 Customers

Customer Key	Full Name	Orders	Revenue
11091	Mr. Dalton Perez	26	$1,513
11223	Mrs. Hailey Patterson	26	$1,616
11300	Mr. Fernando Barnes	26	$1,839
11330	Mr. Ryan Thompson	26	$1,597
11331	Mrs. Samantha Jenkins	26	$1,740
11185	Mrs. Ashley Henderson	25	$1,717
11200	Mr. Jason Griffin	25	$1,614
11176	Mr. Mason Roberts	24	$1,526
11262	Mrs. Jennifer Simmons	24	$1,465
11277	Mr. Charles Jackson	24	$1,777
11287	Mr. Henry Garcia	24	$1,443
11566	Ms. April Shan	24	$1,424
11711	Mr. Daniel Davis	24	$1,404
11276	Mrs. Nancy Chapman	23	$1,111
11203	Mr. Luis Diaz	17	$1,002
11215	Mrs. Ana Perry	17	$1,336
11078	Ms. Gina Martin	16	$991
Total		**1,272**	**$615,328**

ASSIGNMENT: TOP N TEXT CARDS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Top customers by revenue**

Hey,

Ethan is loving the customer report so far – great job!

He mentioned that he'd like to highlight top customers based on *revenue* as well, so I'm thinking we could add some text cards to show the top customer name, along with total revenue and the number of orders placed.

We'll be offering some coupons based on how much customers have spent in the past, so accuracy is critical here!

-Vic

Reply   Forward

Key Objectives

1. Add a **card** to the **Customer Detail** report to show **Full Name**

2. Add a **visual-level filter (Top N)** to show the top customer (Full Name) in terms of **Total Revenue**

   - What do you notice when you filter the report for low income customers? (**Hint**: *check your value against the table*)

   - How could you modify the Top N filter to correct this?

2. Copy and paste the card (x2) to show **Total Orders** and **Total Revenue** for the top customer

3. Add **text boxes** for titles and adjust formatting to match the solution preview

SOLUTION: TOP N TEXT CARDS

NEW MESSAGE

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We'll be offering some coupons based on how much customers have spent in the past, so accuracy is critical here!

-Vic

↩ Reply   ➡ Forward

Solution Preview

Top Customer (by revenue):

Mr. Maurice Shan

Orders:

6

Revenue:

$12.4K

MAP VISUALS

🌐 Map

🗺️ Filled map

🗺️ Shape map
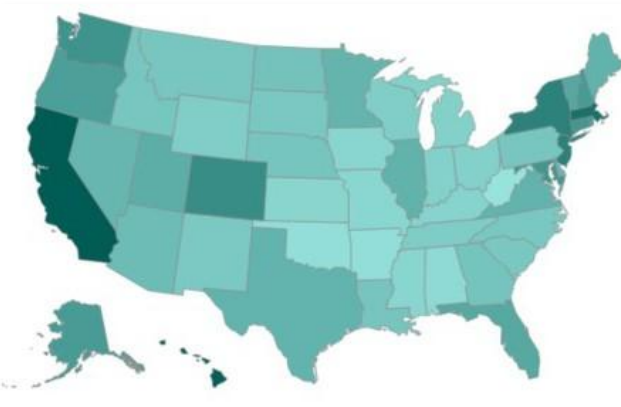
📍 Azure map
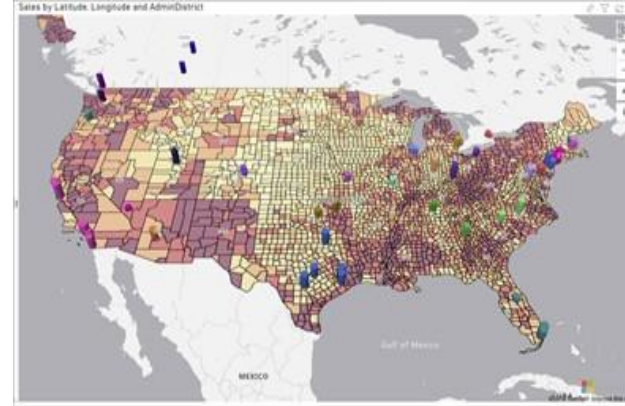
Power BI includes several types of **map visuals** powered by Bing Maps

Tips for creating accurate maps:

1. Assign **categories** to geospatial fields
2. Add **multiple location** fields
3. Use **latitude/longitude** when possible

⚠️ **HEY THIS IS IMPORTANT!**

An administrator may need to **enable maps in your tenant settings** in order to use them in Power BI Service

ArcGIS maps require a separate account, and are not pictured here

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

***Categorical/Text* options**

***Date/Time* options**

***Numeric Range* options**

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

ASSIGNMENT: SLICERS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Year slicer for customer report**

Hey there, quick request when you get a sec...

Could you please add a slicer to the customer report, so that users can filter the entire page by year?

No preference for which specific type of slicer you use, as long as managers can filter customers for a specific year or across multiple years.

Thanks!

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. Add a **slicer** to filter the **Customer Detail** report page by **Year**

2. Add a **visual-level filter** to exclude blanks

3. Choose any **slicer style** that allows users to filter individual years or across multiple years

SOLUTION: SLICERS

Solution Preview

NEW MESSAGE

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Could you please add a slicer to the customer report, so that users can filter the entire page by year?

No preference for which specific type of slicer you use, as long as managers can filter customers for a specific year or across multiple years.

Thanks!

-Vic

↩ Reply   ➡ Forward

2020   2022

Top Customer (by revenue):

Mr. Maurice Shan

Orders:

6

Revenue:

$12.4K

DRILL UP & DRILL DOWN
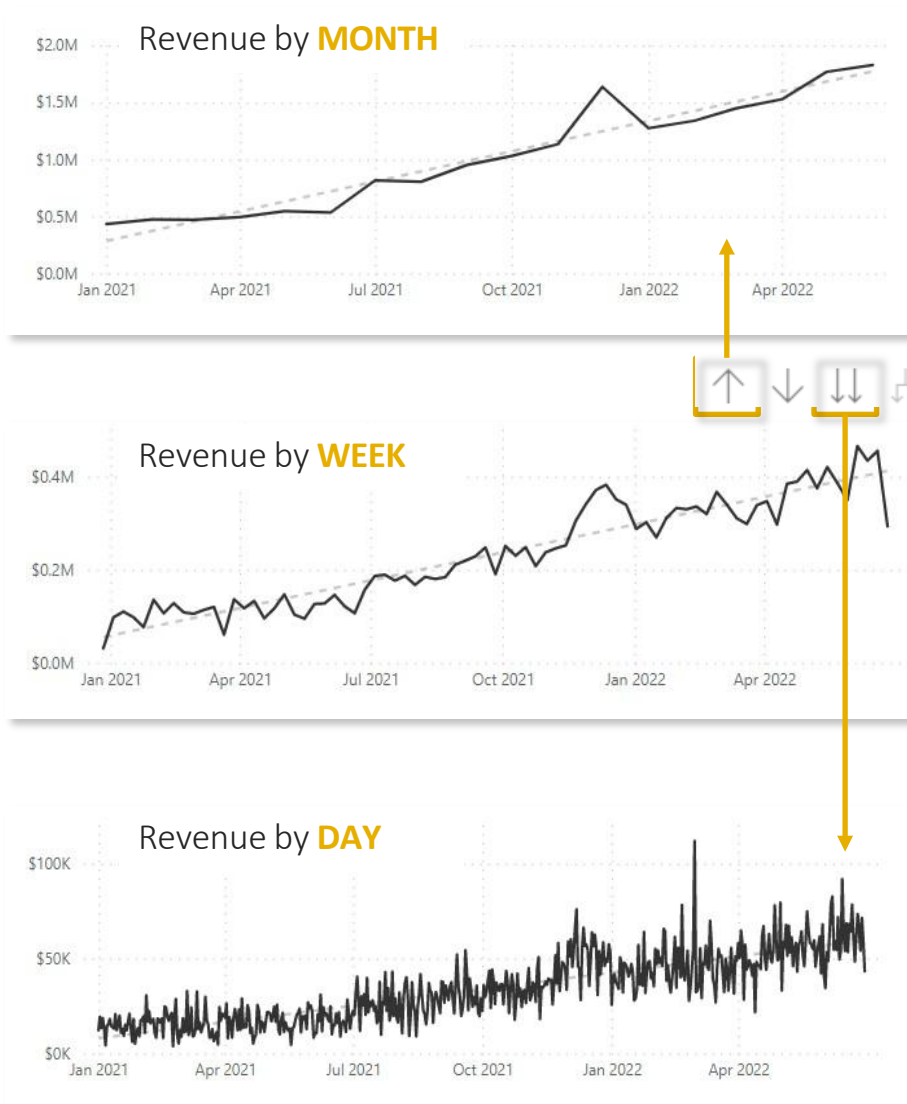
Drill Up and **Drill Down** tools allow you to switch between different levels of granularity

- 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)

PRO TIP:

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

ASSIGNMENT: DRILL DOWN

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Dynamic time periods**

Hey again, just got some feedback from the managers about our customer report.

Chad loves the weekly trending chart, but Thad wants to see the data by *day* and Vlad was hoping for an *annual* breakdown.

Instead of building multiple versions of the same line chart, could you please make it interactive so that Chad, Thad and Vlad get the views they want?

Thanks!

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. In the **Customer Detail** report, update the X-axis of the line chart to pull in **Date Hierarchy**

2. Use the chart header to **drill up** and **drill down** to explore trends at each level of granularity

3. Test **drill mode** to change the granularity by selecting individual data points in the chart

   • Why do some weeks look very low?

4. Turn off drill mode and show the chart at a weekly level of granularity by default

SOLUTION: DRILL DOWN

NEW MESSAGE

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Chad loves the weekly trending chart, but Thad wants to see the data by *day* and Vlad was hoping for an *annual* breakdown.

Instead of building multiple versions of the same line chart, could you please make it interactive so that Chad, Thad and Vlad get the views they want?

Thanks!

-Vic

↩ Reply   ➡ Forward

Solution Preview
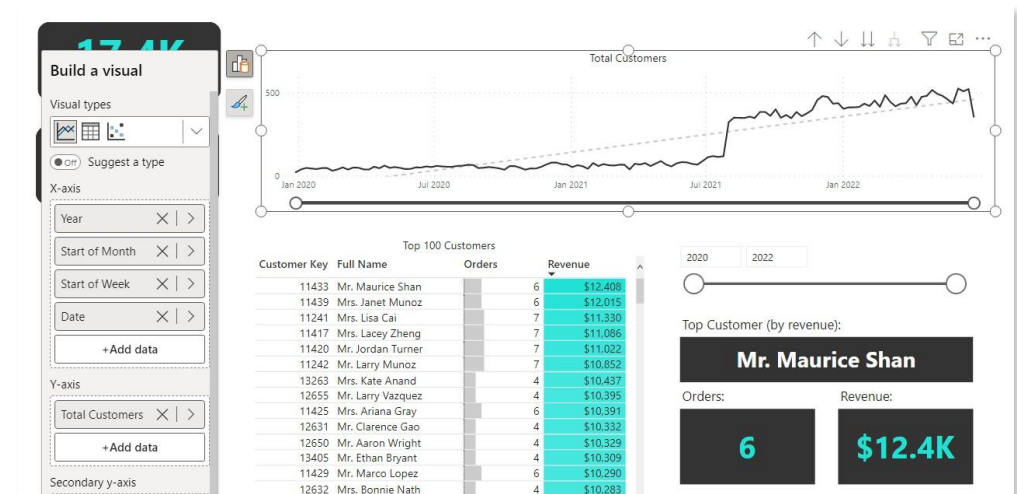
DRILL THROUGH FILTERS

Drill through filters allow users to navigate to a specific report page, pre-filtered on the item selected

- Here we've created a **Product Detail** page, set the type to **Drillthrough**, and configured drill through from **Product Name**
- This means that users can right-click any instance of product name (i.e. in a matrix visual) and use the Drill through option to navigate straight to the Product Detail report filtered on that product (in this case "Mountain Tire Tube")

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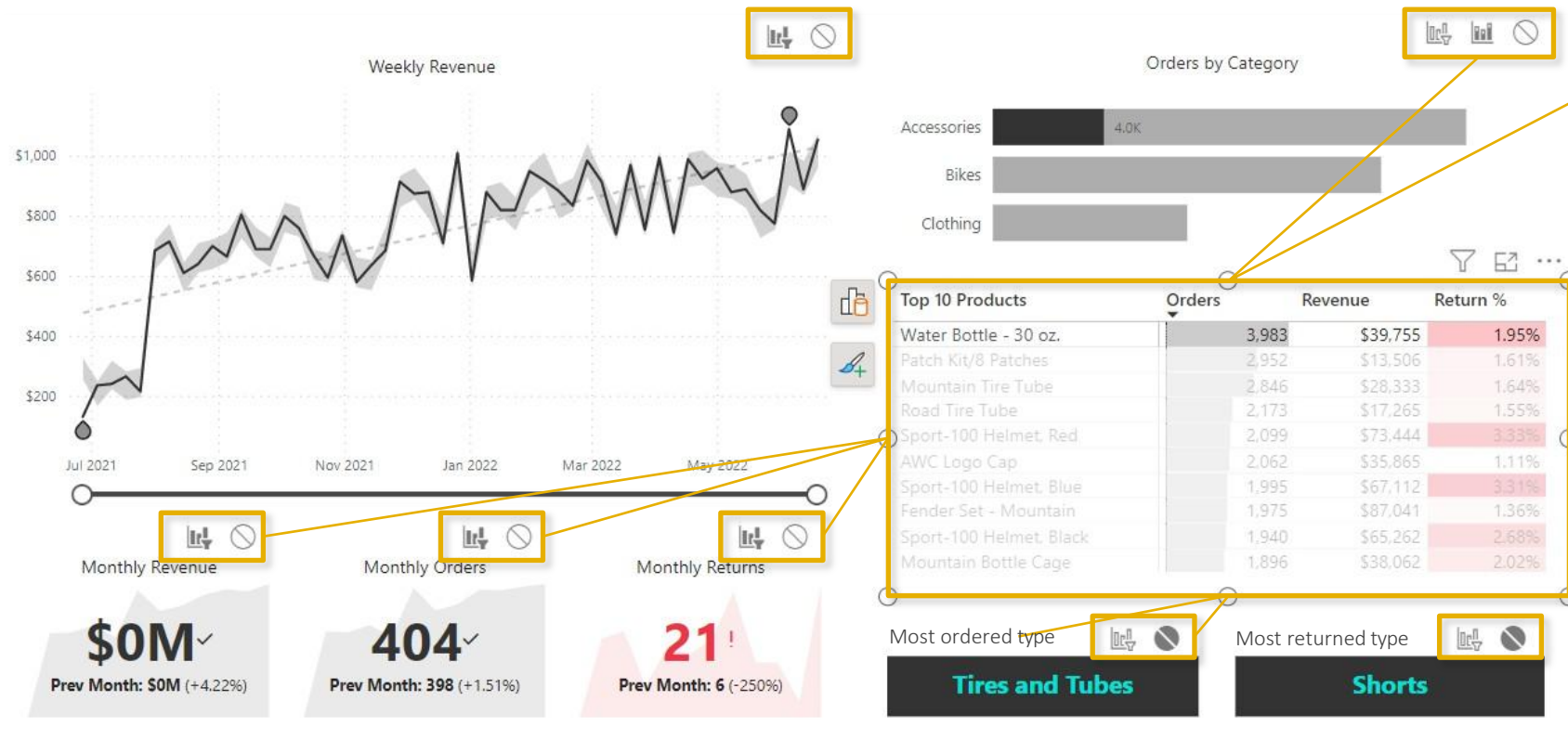
In this example, selecting a product in the matrix visual:

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

ASSIGNMENT: REPORT INTERACTIONS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Weird report interactions**

Hey there,

I was playing with the customer report this morning and noticed some odd visual interactions. For example, selecting a specific customer shouldn't filter the line chart, and probably shouldn't filter the donut charts either.

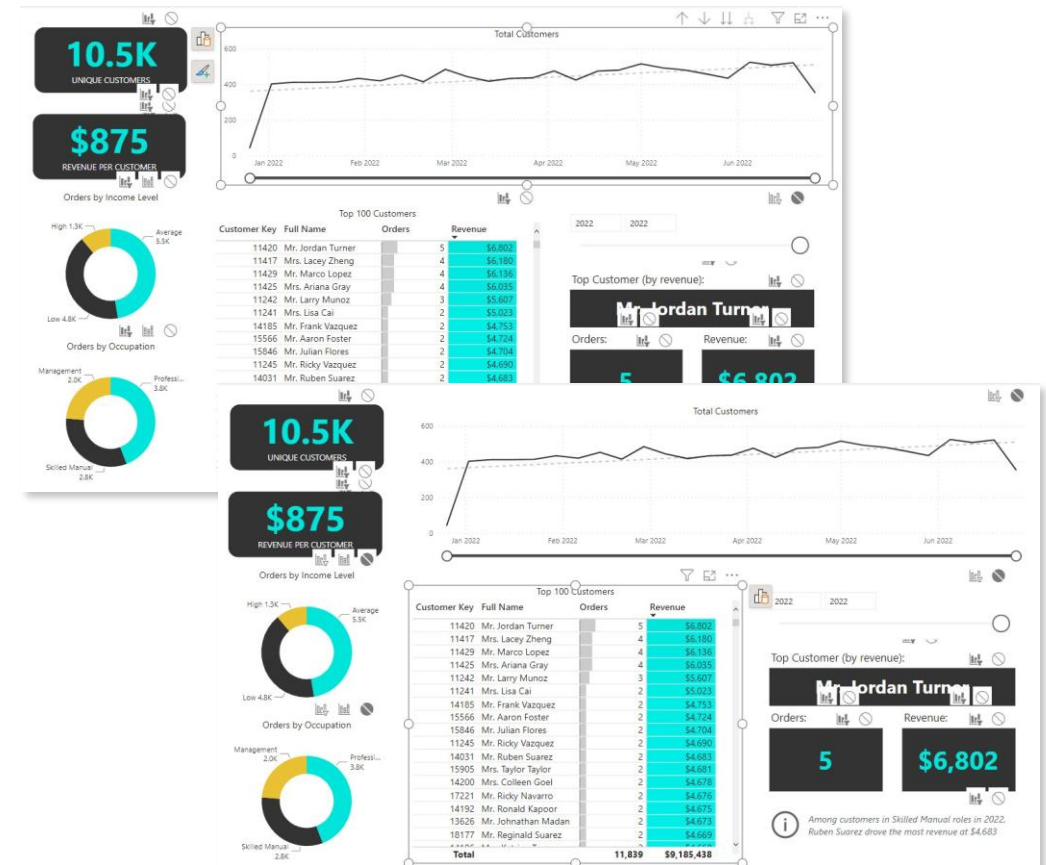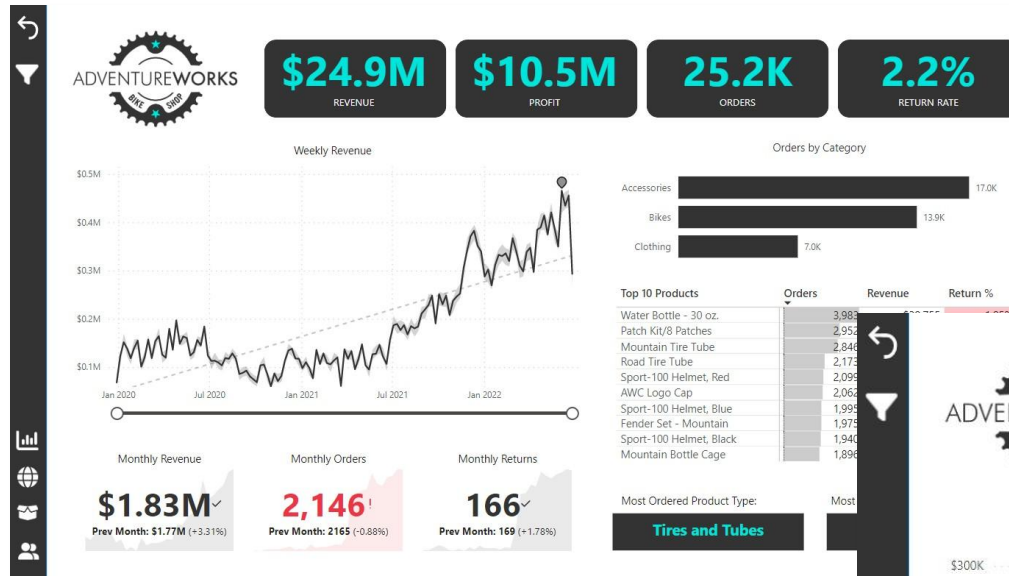Could you please take a pass through the report interactions and update any that seem off?

Thanks!

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. On the **Customer Detail** tab, edit the **report interactions** based on the following logic:

   - When a filter is applied to the line chart, the donut charts should **filter** (not highlight)

   - When a filter is applied to the table, the line chart and donuts should **not filter**

   - The slicer should **filter all visuals** on the report page

SOLUTION: REPORT INTERACTIONS

NEW MESSAGE

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Could you please take a pass through the report interactions and update any that seem off?

Thanks!

-Vic

Reply   Forward

Solution Preview

BOOKMARKS

Bookmarks capture the current state of a page, and allow users to return to that state using report actions

- Bookmarks are commonly used for clearing filters, highlighting specific insights, navigating reports, etc.

🔖 **Bike sales in Europe (1H 2022)**
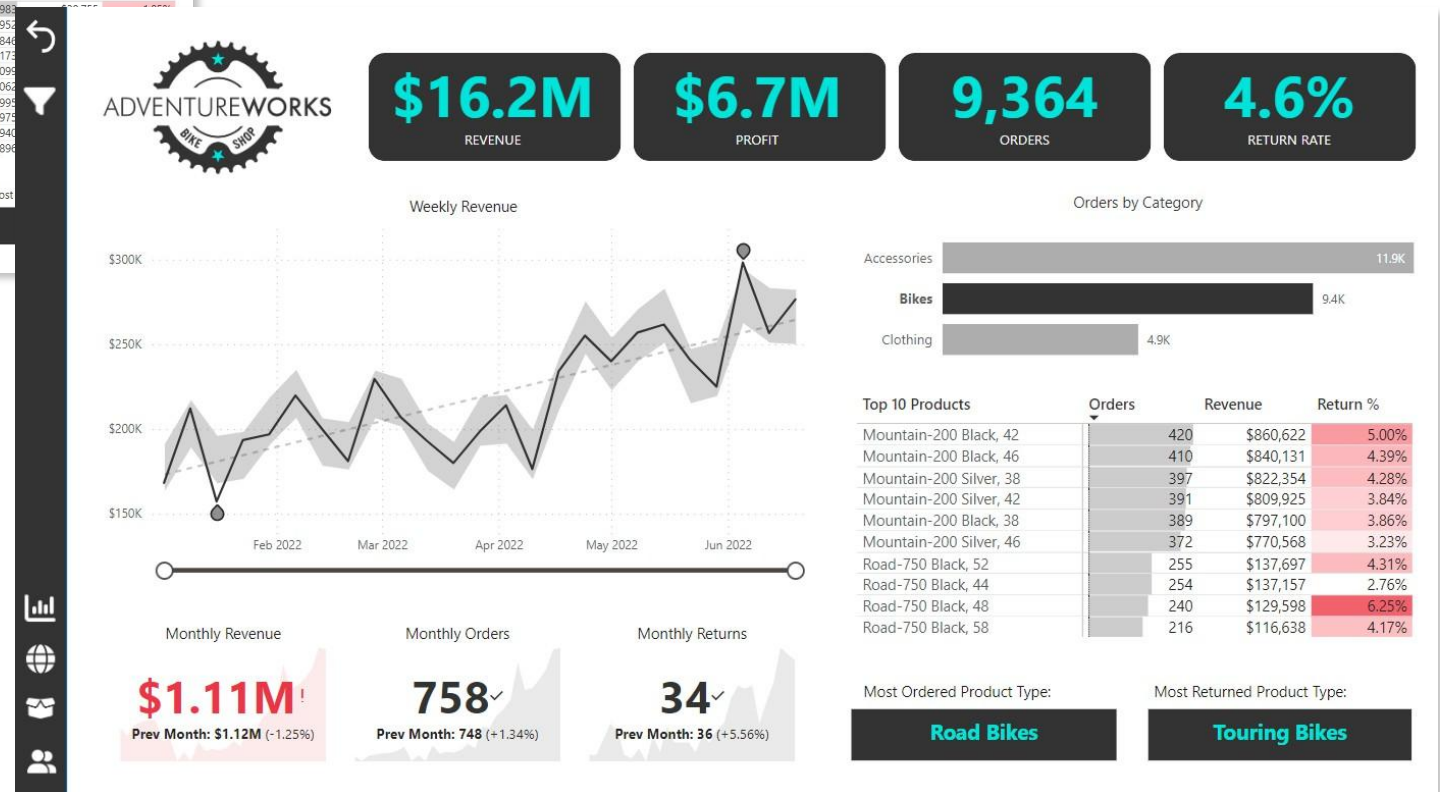
ASSIGNMENT: BOOKMARKS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Finding anything interesting?**

Hey,

Now that you're getting pretty familiar with our customer data, are you noticing any interesting insights or trends that might be worth explicitly calling out in the report?

This could be a great way for us to use bookmarks to draw attention to some specific stories in the dashboard. While we're at it, let's add another one to clear all filters from the page.

Let me know what you think!

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. Explore the **Customer Detail** report by adjusting filters until you find an interesting insight or trend *(this can be anything you choose!)*

2. Add a new **bookmark** to capture the current state of the report, and name it "Customer Insight"

3. Insert an **Information button** and add text to the button style to summarize what you've found

4. Assign a **bookmark action** to the button, and link to the Customer Insight bookmark you created

5. Create a second bookmark named "Clear all Customer Filters" which returns the page to an unfiltered state, and link it to a **Reset button**

6. Test both bookmarks using **CTRL-click**

SOLUTION: BOOKMARKS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **Finding anything interesting?**

Hey,

Now that you're getting pretty familiar with our customer data, are you noticing any interesting insights or trends that might be worth explicitly calling out in the report?

This could be a great way for us to use bookmarks to draw attention to some specific stories in the dashboard. While we're at it, let's add another one to clear all filters from the page.

Let me know what you think!

-Vic

↩ Reply   ➡ Forward

Solution Preview

Example: *Among customers in Skilled Manual roles in 2022, Ruben Suarez drove the most revenue at $4,683*
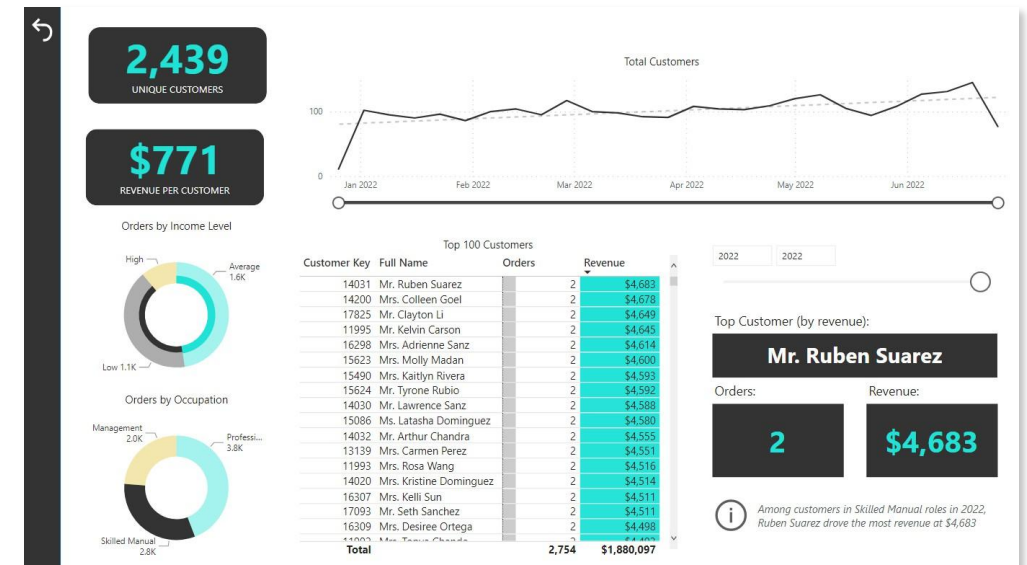
PARAMETERS

Parameters allow you to create variables which can be referenced in measures and controlled via slicers

Numeric range parameters

Typically used for scenario testing, where users adjust numerical inputs to see the impact on a given output

Fields parameters

Typically used to allow users to dynamically change the metrics or dimensions displayed in a report visual

EXAMPLE: NUMERIC RANGE PARAMETER

Parameters ✕

Add parameters to visuals and DAX expressions so people can use slicers to adjust the inputs and see different outcomes. Learn more

What will your variable adjust?

Numeric range

Name

Price Adjustment (%)

Data type

Decimal number

Minimum	Maximum
-1	1

Increment	Default
0.1	0

When you create a numeric parameter, Power BI generates **two new measures**: one to define the parameter and another to capture the selected value:

```
Parameter = GENERATESERIES(-1, 1, 0.1)
```

```
Parameter Value = SELECTEDVALUE(Parameter[Parameter], 0)
```

Here we've created a parameter named **Price Adjustment %**, added it as a slicer, and created measures to calculate **Adjusted Profit** based on the parameter value

Price Adjustment (%)

0.20

● Total Profit   ● Adjusted Profit

Start of Week
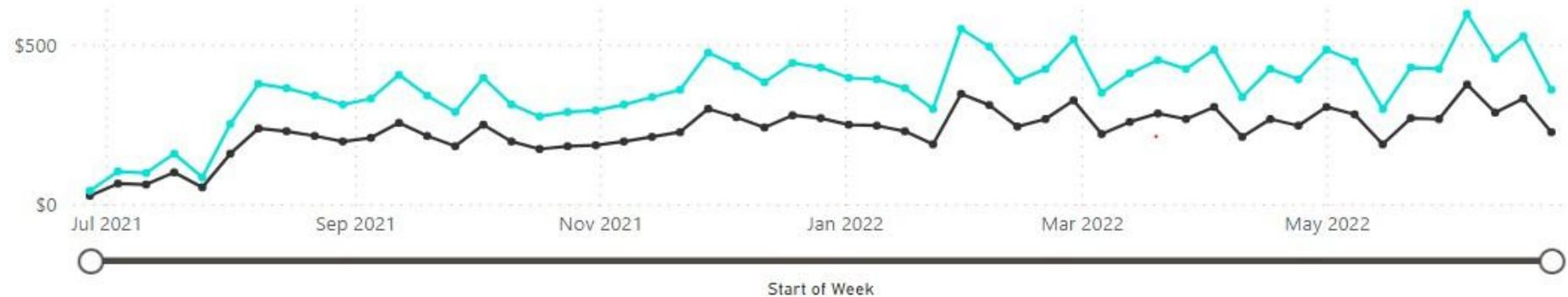
EXAMPLE: FIELDS PARAMETER

Parameters

Add parameters to visuals and DAX expressions so people can use slicers to adjust the inputs and see different outcomes. Learn more

What will your variable adjust?

Fields

Name

Metric Selection

Add and reorder fields

Total Orders	✕
Total Revenue	✕
Total Profit	✕
Total Returns	✕
Return Rate	✕

Fields

🔍 Search

> 📄 Measure Table
> ▦ Calendar Lookup
> ▦ Customer Lookup
> ▦ Customer Metric Selection
> ▦ Metric Selection
> ▦ Price Adjustment (%)
> ▦ Product Categories Lookup
> ▦ Product Lookup
> ▦ Product Subcategories Lookup
> ▦ Returns Data
> ▦ Rolling Calendar
> ▦ Sales Data

☑ Add slicer to this page

Create **Cancel**

When you create a fields parameter, Power BI **adds a report slicer** and **generates a new measure** to capture the selected value:

```
1  Metric Selection = {
2      ("Total Orders", NAMEOF('Measure Table'[Total Orders]), 0),
3      ("Total Revenue", NAMEOF('Measure Table'[Total Revenue]), 1),
4      ("Total Profit", NAMEOF('Measure Table'[Total Profit]), 2),
5      ("Total Returns", NAMEOF('Measure Table'[Total Returns]), 3),
6      ("Return Rate", NAMEOF('Measure Table'[Return Rate]), 4)
7  }
```

Here we've created a parameter named **Metric Selection** and added it to the Y-axis to let users dynamically change the metric shown
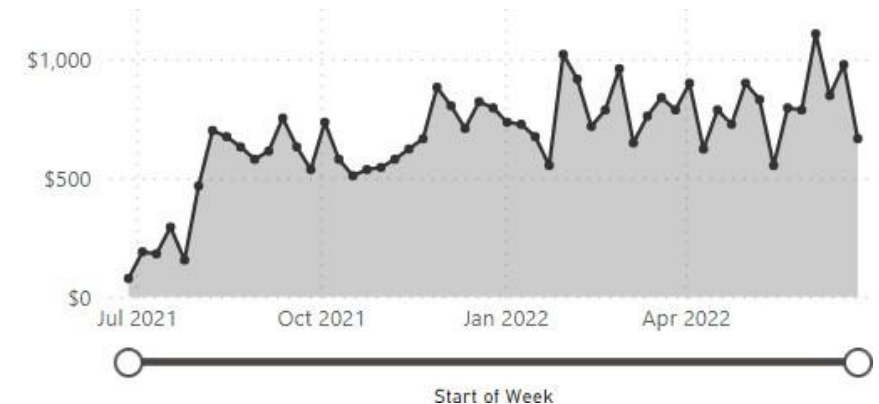
Metric Selection
☐ Total Orders
■ Total Revenue
☐ Total Profit
☐ Total Returns
☐ Return Rate

ASSIGNMENT: FIELDS PARAMETERS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **More line chart updates**

Good news and bad news...

The good news is that Chad, Thad and Vlad LOVE the drill options in the line chart – nice work!

The bad news is that now they can't align on what's the best metric to show. Chad likes seeing total customers, but Vlad is pushing for revenue per customer.

What do you think we should do?

-Vic

↩ Reply   ➡ Forward

Key Objectives

1. Add a new **Fields parameter** named "Customer Metric Selection", which includes **Total Customers** and **Average Revenue per Customer**

2. Add the parameter as a slicer to the **Customer Detail** report, change the slicer style to **Tile**, turn off the **header**, update to **single select**, and resize to create a horizontal layout

3. Select the DAX measure automatically created, and update the text from "Average Revenue per Customer" to "Revenue per Customer"

4. Update the line chart Y-Axis to use the **Customer Metric Selection** parameter, remove the chart title, and update the line colors to match the solution preview

SOLUTION: FIELDS PARAMETERS

NEW MESSAGE

From: **Victor Ignatius Zabel** *(BI Analyst)*

Subject: **More line chart updates**

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The bad news is that now they can't align on what's the best metric to show. Chad likes seeing total customers, but Vlad is pushing for revenue per customer.

What do you think we should do?

-Vic

↩ Reply   ➡ Forward

Solution Preview
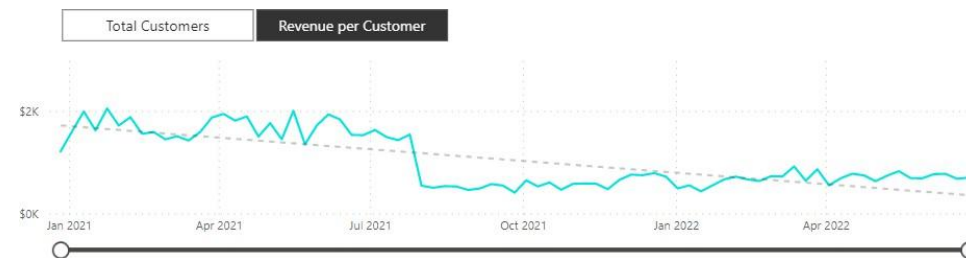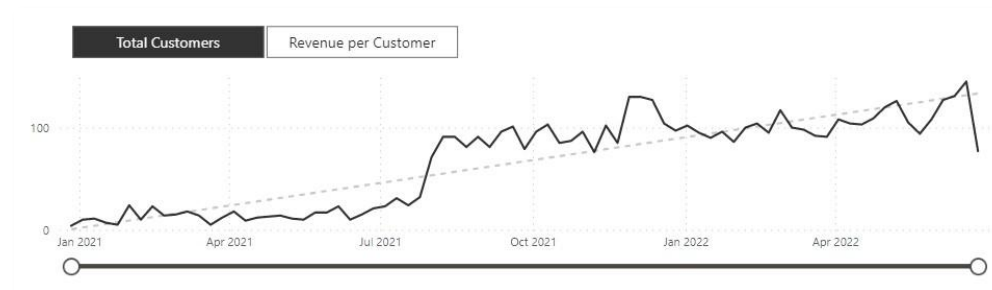
PRO TIP: CUSTOM TOOLTIPS

Create **custom tooltips** by designing a new report page, setting the page type to **Tooltip**, and configuring a visual to use the "Report page" tooltip type
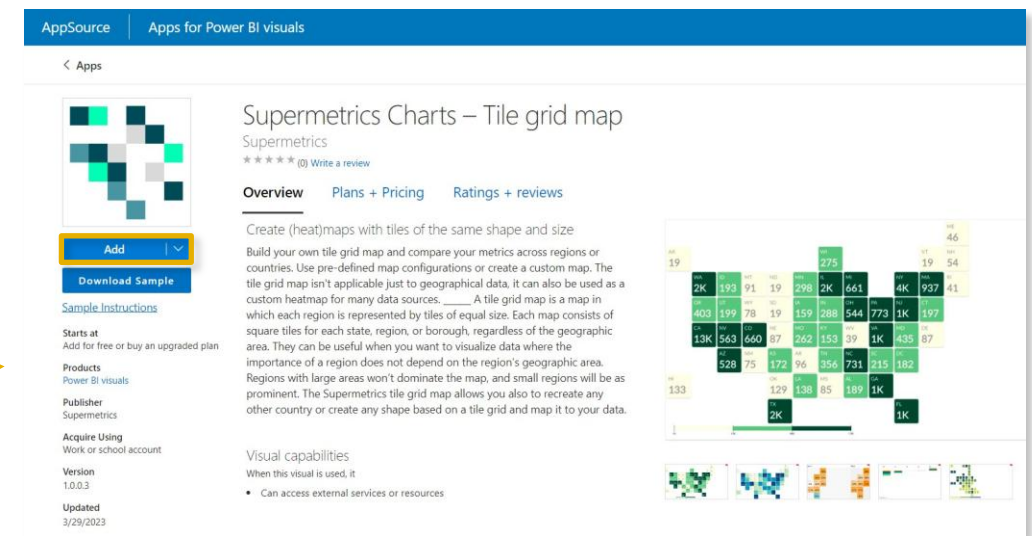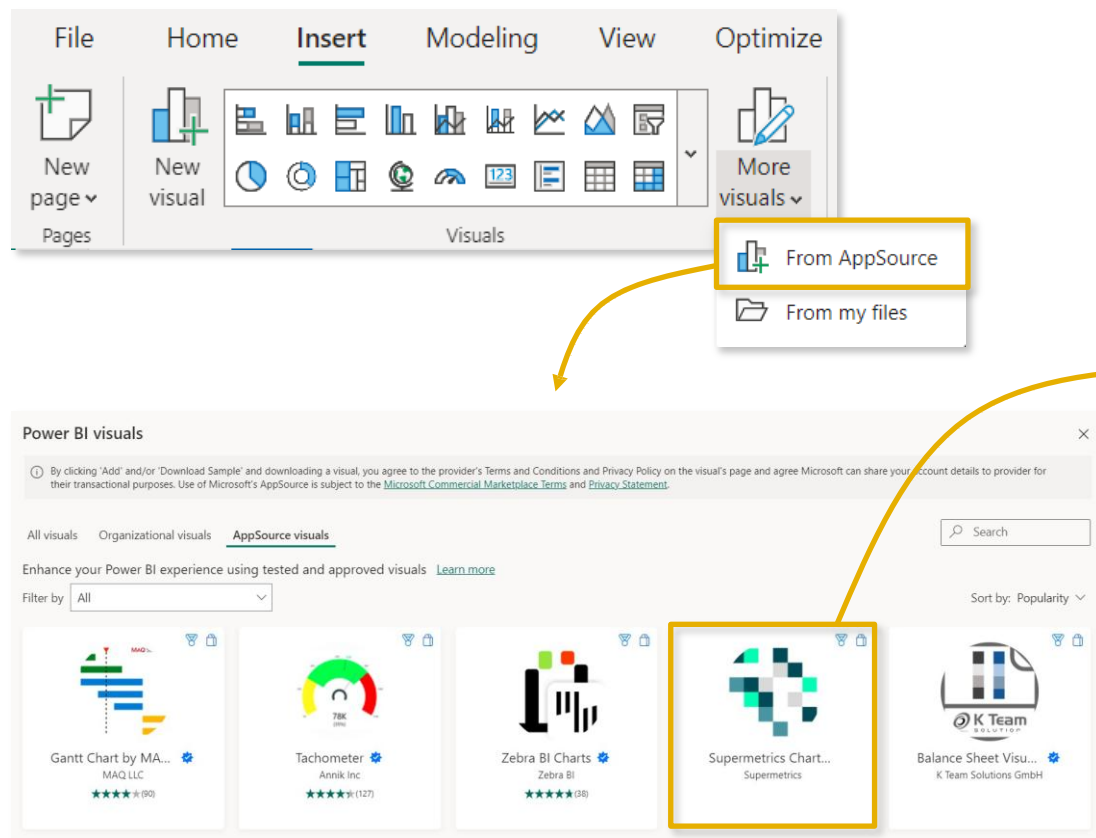

Category Tooltip report page

PRO TIP:
Keep your published reports clean by **hiding your tooltip pages**
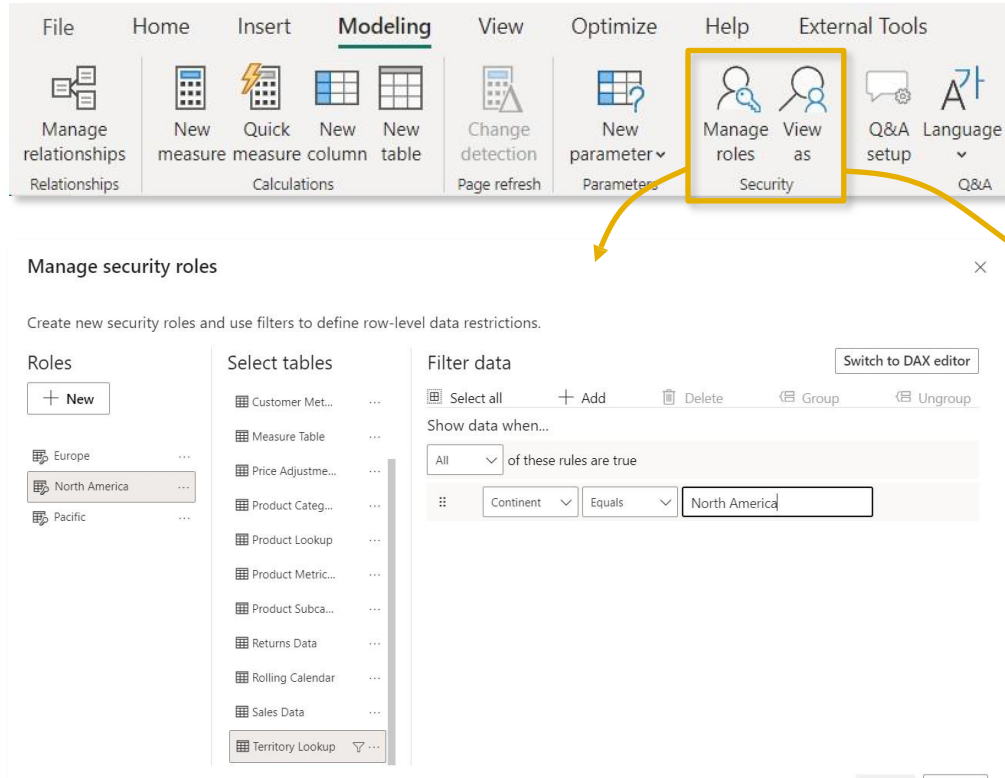
IMPORTING CUSTOM VISUALS

Power BI offers a library of **custom visuals** (via **AppSource**) from Microsoft-certified partners and developers, which can be imported into the visualizations pane

HEY THIS IS IMPORTANT!

You need a **Power BI account** to browse or import custom visuals from the AppSource marketplace

MANAGING & VIEWING ROLES

HEY THIS IS IMPORTANT!

Row-level security (RLS) rules are defined in Power BI Desktop, **but actually *applied* in Power BI Service**

Roles allow you to define row-level security rules, and create filtered views to restrict access for specific audiences

- Here we've created views for territory managers (**Europe**, **N. America**, **Pacific**), which filters records in the model
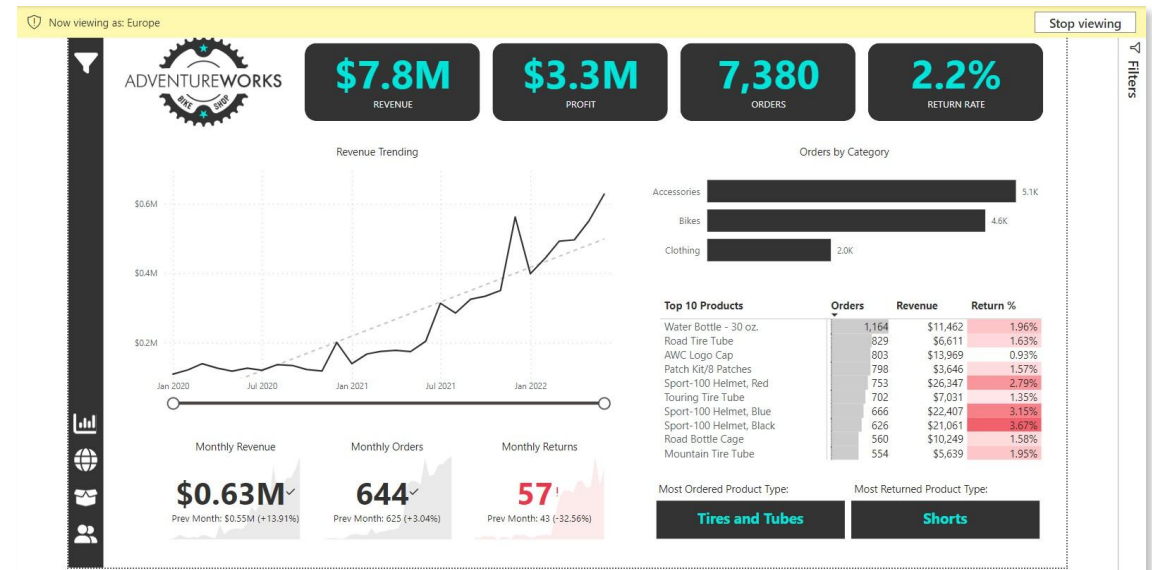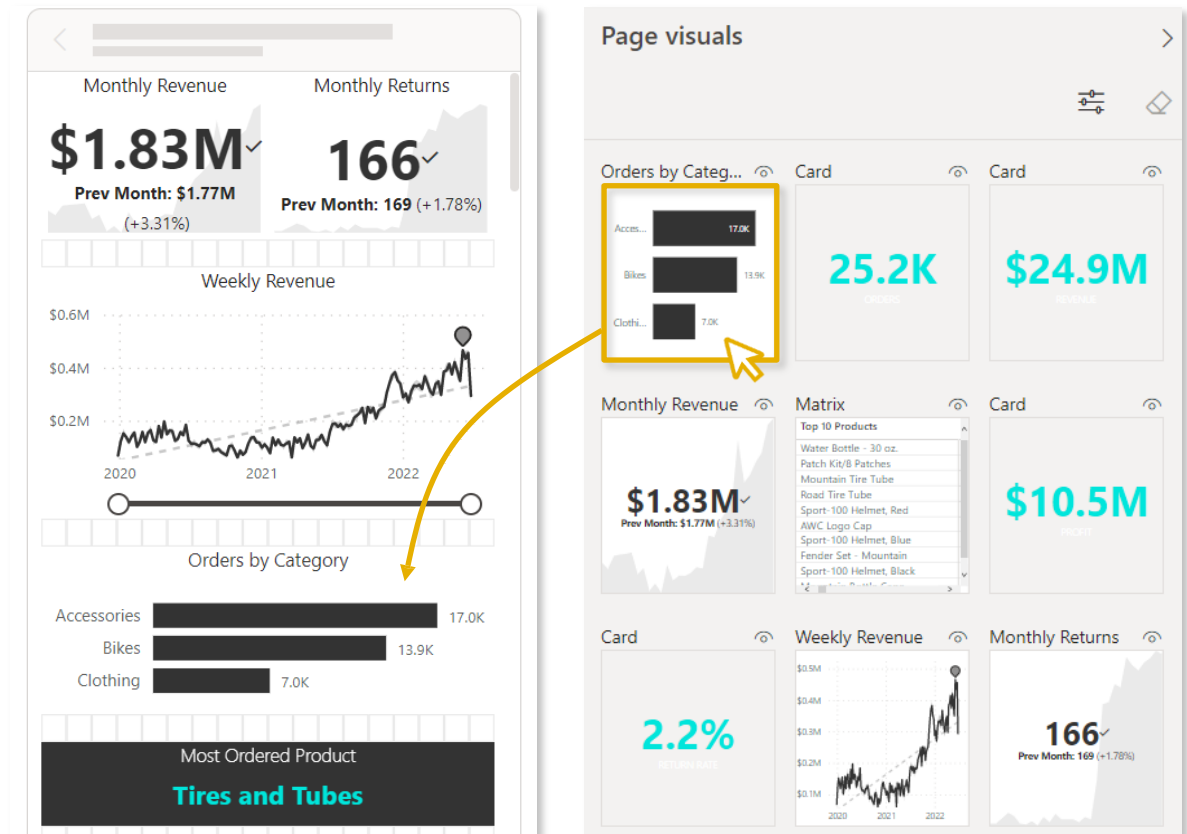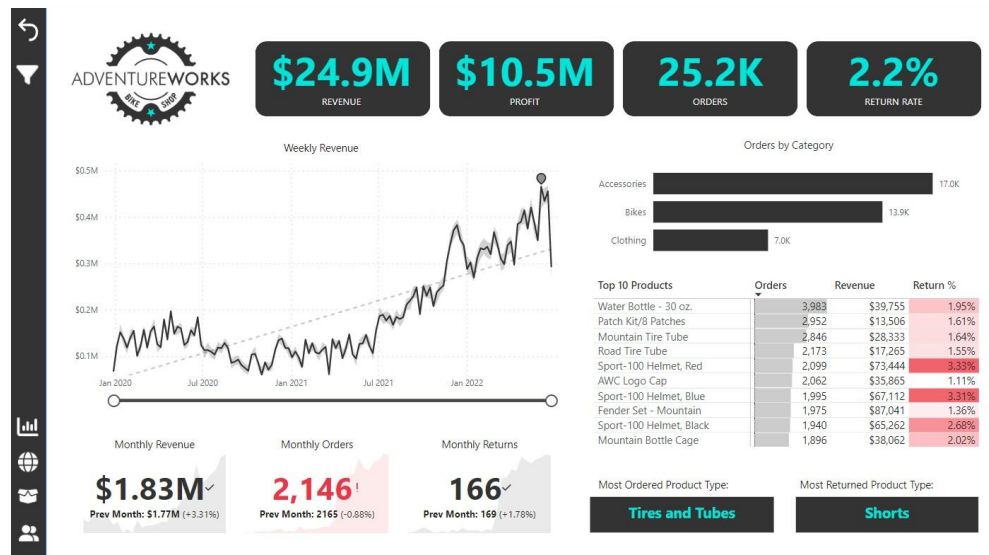
MOBILE LAYOUT

Mobile layout allows you to design mobile-specific versions of report pages by assembling visuals into new layouts

- **NOTE:** This is designed to optimize reports for viewing on the Power BI mobile app (after publishing to Power BI Service)

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*