POWER BI PROJECT

BIKE SHOP

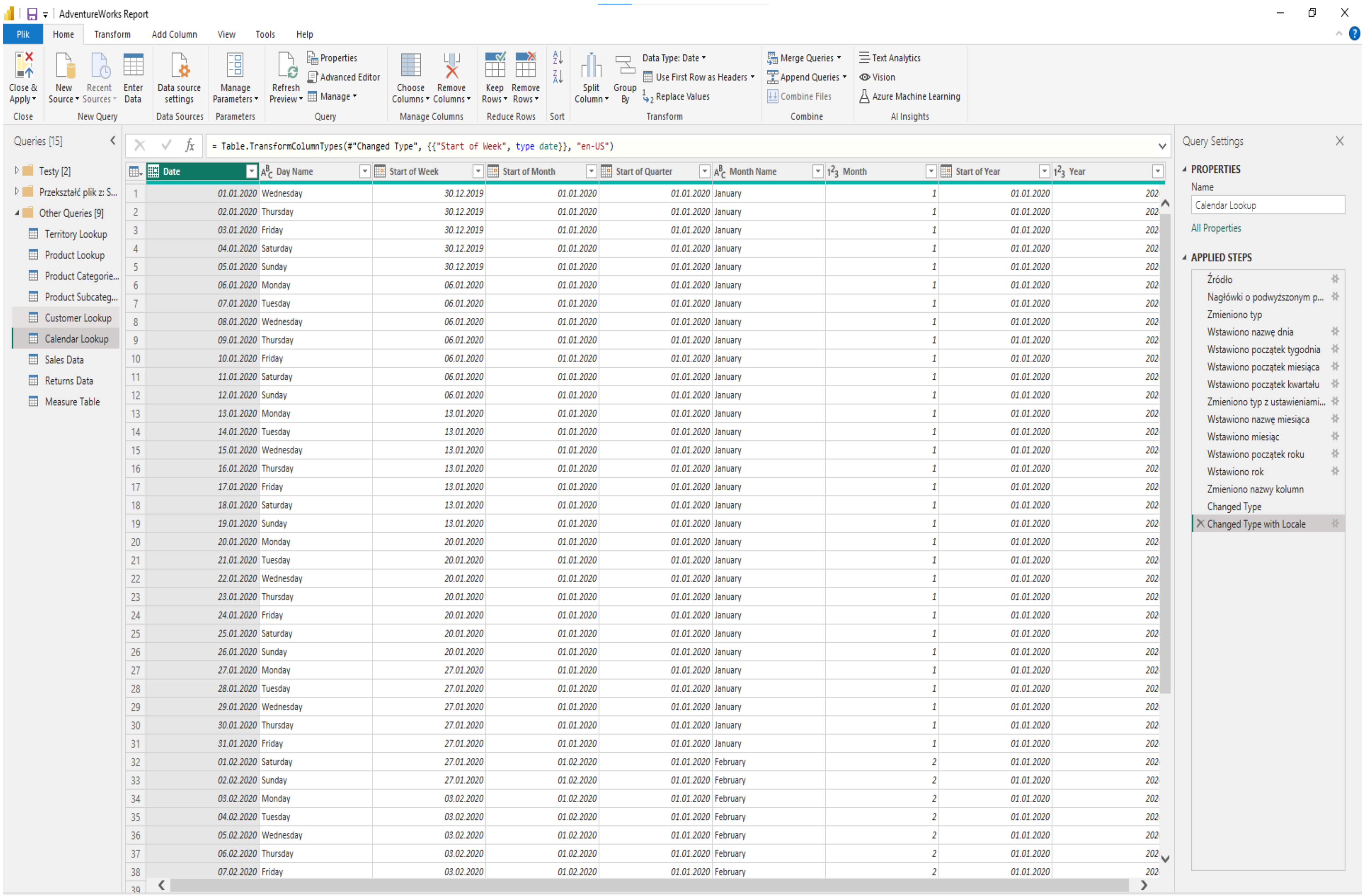
Marcin Kościółek

1. Project overview.

The management team needs a way to track KPIs (sales, revenue, profit, returns), compare regional performance, analyze product-level trends, and identify high-value customers.

2. Data Preparation

The first step was to import and shape the data in Power Query Editor to prepare it for modeling and analysis. The data was added using a CSV file, then I checked that all parameters had been loaded correctly. In addition, in the calendar lookup table, I have added several columns such as start of the week, start of the month, and start of the quarter to allow visualization of the results over time. I have disabled refreshing for some tables in order to optimize the report.



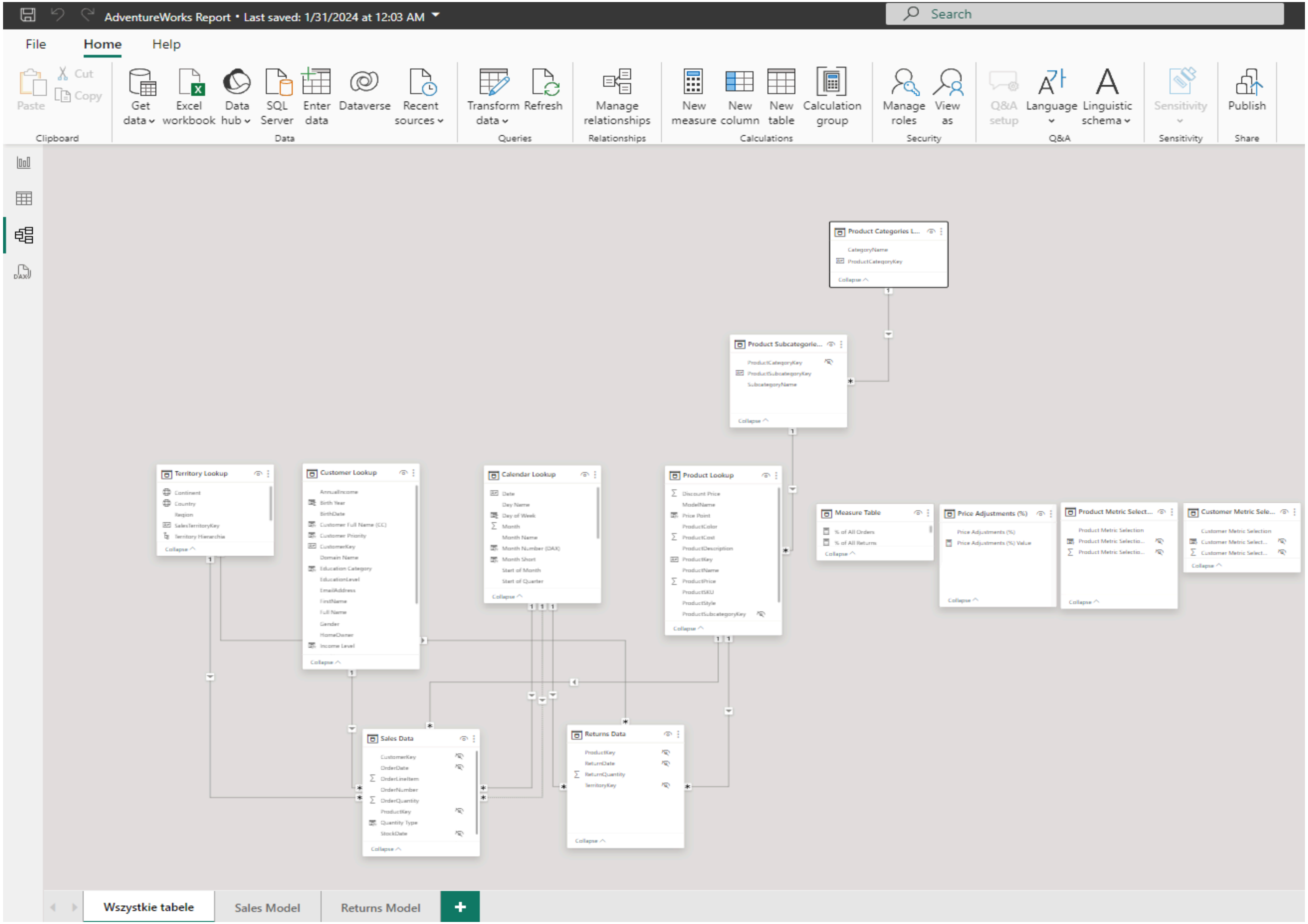
```
= Table.TransformColumnTypes(#"Changed Type", {{"Start of Week", type date}}, "en-US")
```

	Date	Day Name	Start of Week	Start of Month	Start of Quarter	Month Name	Month	Start of Year	Year
1	01.01.2020	Wednesday	30.12.2019	01.01.2020	01.01.2020	January	1	01.01.2020	202
2	02.01.2020	Thursday	30.12.2019	01.01.2020	01.01.2020	January	1	01.01.2020	202
3	03.01.2020	Friday	30.12.2019	01.01.2020	01.01.2020	January	1	01.01.2020	202
4	04.01.2020	Saturday	30.12.2019	01.01.2020	01.01.2020	January	1	01.01.2020	202
5	05.01.2020	Sunday	30.12.2019	01.01.2020	01.01.2020	January	1	01.01.2020	202
6	06.01.2020	Monday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
7	07.01.2020	Tuesday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
8	08.01.2020	Wednesday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
9	09.01.2020	Thursday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
10	10.01.2020	Friday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
11	11.01.2020	Saturday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
12	12.01.2020	Sunday	06.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
13	13.01.2020	Monday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
14	14.01.2020	Tuesday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
15	15.01.2020	Wednesday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
16	16.01.2020	Thursday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
17	17.01.2020	Friday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
18	18.01.2020	Saturday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
19	19.01.2020	Sunday	13.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
20	20.01.2020	Monday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
21	21.01.2020	Tuesday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
22	22.01.2020	Wednesday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
23	23.01.2020	Thursday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
24	24.01.2020	Friday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
25	25.01.2020	Saturday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
26	26.01.2020	Sunday	20.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
27	27.01.2020	Monday	27.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
28	28.01.2020	Tuesday	27.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
29	29.01.2020	Wednesday	27.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
30	30.01.2020	Thursday	27.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
31	31.01.2020	Friday	27.01.2020	01.01.2020	01.01.2020	January	1	01.01.2020	202
32	01.02.2020	Saturday	27.01.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
33	02.02.2020	Sunday	27.01.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
34	03.02.2020	Monday	03.02.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
35	04.02.2020	Tuesday	03.02.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
36	05.02.2020	Wednesday	03.02.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
37	06.02.2020	Thursday	03.02.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
38	07.02.2020	Friday	03.02.2020	01.02.2020	01.01.2020	February	2	01.01.2020	202
39									

- Źródło
- Nagłówki o podwyższonym p...
- Zmieniono typ
- Wstawiono nazwę dnia
- Wstawiono początek tygodnia
- Wstawiono początek miesiąca
- Wstawiono początek kwartału
- Zmieniono typ z ustawieniami...
- Wstawiono nazwę miesiąca
- Wstawiono miesiąc
- Wstawiono początek roku
- Wstawiono rok
- Zmieniono nazwy kolumn
- Changed Type
- Changed Type with Locale

3. Data Modeling

Then I proceeded to create the data model. I identified the primary keys and foreign keys of the tables, and then started to create relationships between the tables according to one-to-many cardinality and one-way filters.



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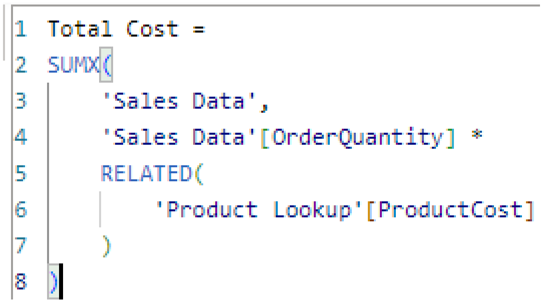
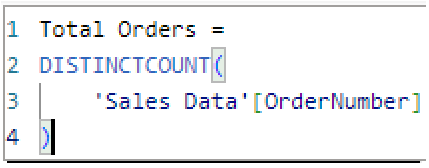
Calculating fields with DAX

The next step was to use the DAX language to calculate measures that helped visualize key values and optimize the analysis process.

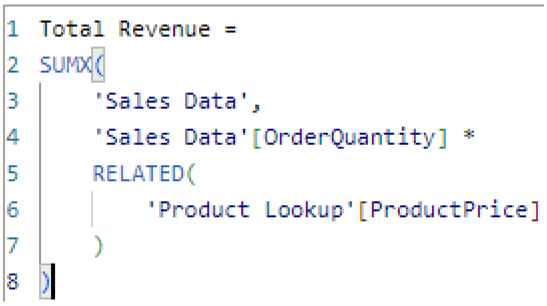
Among others:



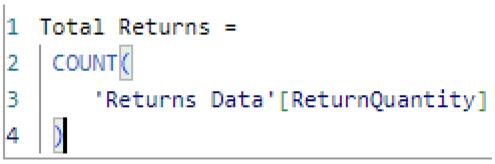
```
Total Cost =
SUMX(
    'Sales Data',
    'Sales Data'[OrderQuantity] *
    RELATED(
        'Product Lookup'[ProductCost]
    )
)
```



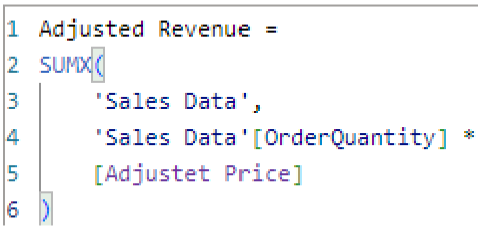
```
Total Orders =
DISTINCTCOUNT(
    'Sales Data'[OrderNumber]
)
```



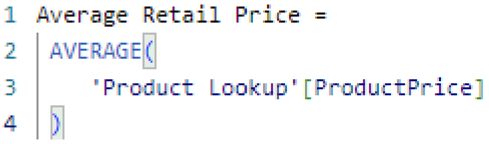
```
Total Revenue =
SUMX(
    'Sales Data',
    'Sales Data'[OrderQuantity] *
    RELATED(
        'Product Lookup'[ProductPrice]
    )
)
```



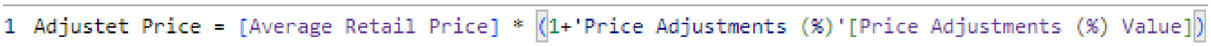
```
Total Returns =
COUNT(
    'Returns Data'[ReturnQuantity]
)
```



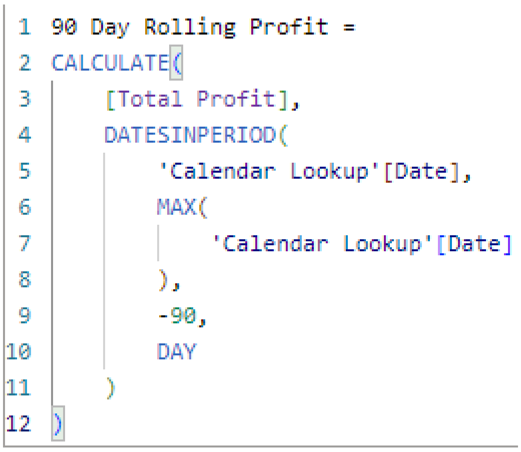
```
Adjusted Revenue =
SUMX(
    'Sales Data',
    'Sales Data'[OrderQuantity] *
    [Adjustet Price]
)
```



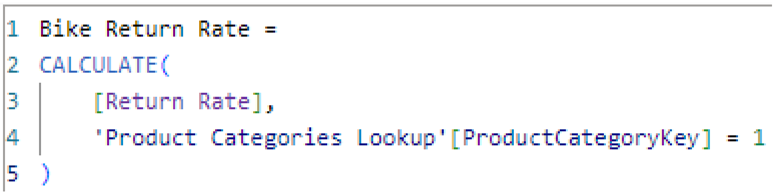
```
Average Retail Price =
AVERAGE(
    'Product Lookup'[ProductPrice]
)
```



```
Adjustet Price = [Average Retail Price] * (1+'Price Adjustments (%)'[Price Adjustments (%) Value])
```



```
90 Day Rolling Profit =
CALCULATE(
    [Total Profit],
    DATESINPERIOD(
        'Calendar Lookup'[Date],
        MAX(
            'Calendar Lookup'[Date]
        ),
        -90,
        DAY
    )
)
```

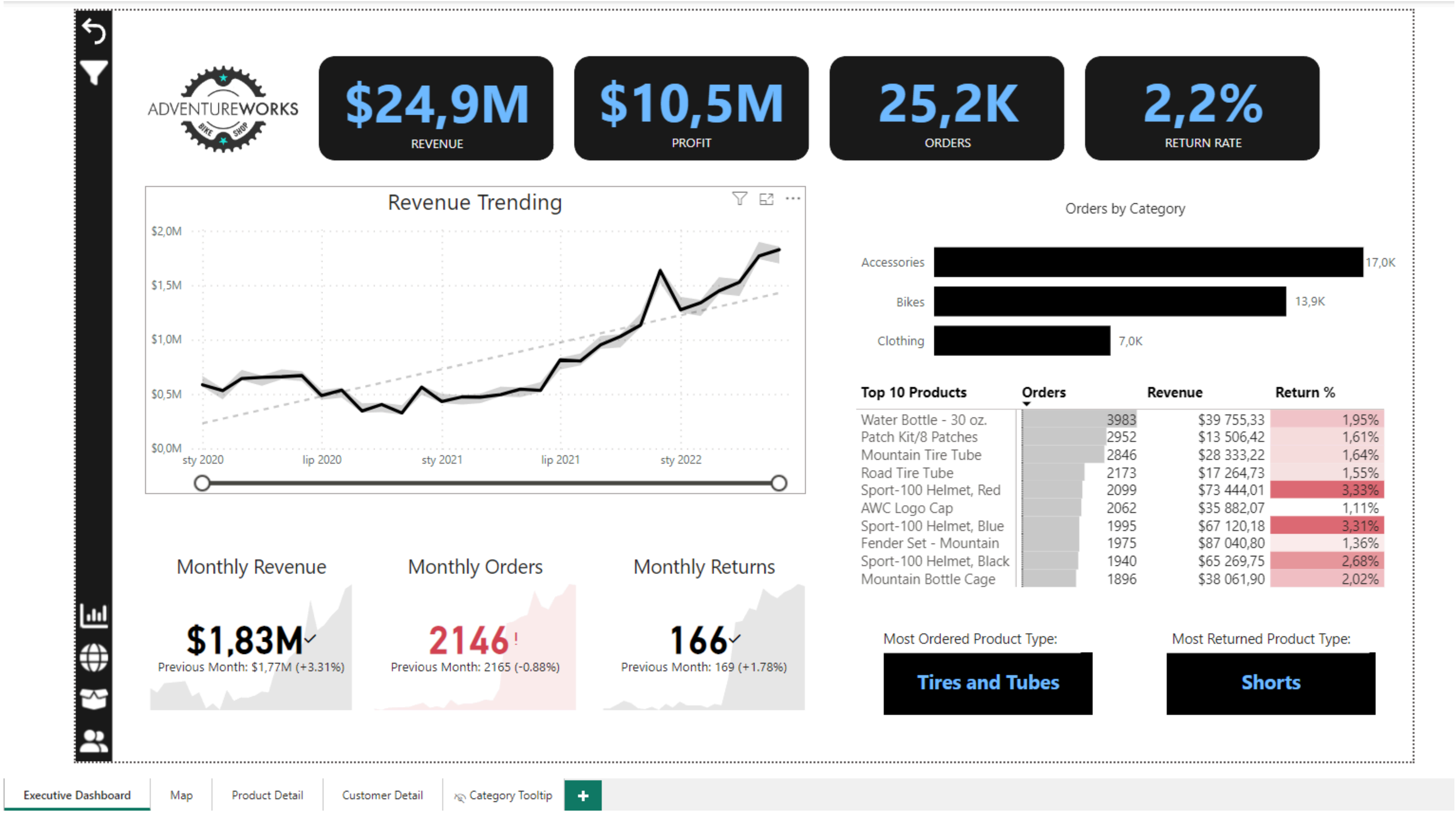


```
Bike Return Rate =
CALCULATE(
    [Return Rate],
    'Product Categories Lookup'[ProductCategoryKey] = 1
)
```

4. Data Visualization

The final stage was to build an interactive report based on key data using charts, cards, donuts, tables, maps using appropriate filters, slicers, drill-down filters, as well as editing interactions between the various elements of the visualization.

On the Executive Dashboard view I focused on KPIs. The visualizations can be filtered by period, product category and also by region using the navigation panel. The user can also switch to individual tabs or clear all the applied filters.



$24,9M
REVENUE

$10,5M
PROFIT

25,2K
ORDERS

2,2%
RETURN RATE

Top 10 Products	Orders	Revenue	Return %
Water Bottle - 30 oz.	3983	$39 755,33	1,95%
Patch Kit/8 Patches	2952	$13 506,42	1,61%
Mountain Tire Tube	2846	$28 333,22	1,64%
Road Tire Tube	2173	$17 264,73	1,55%
Sport-100 Helmet, Red	2099	$73 444,01	3,33%
AWC Logo Cap	2062	$35 882,07	1,11%
Sport-100 Helmet, Blue	1995	$67 120,18	3,31%
Fender Set - Mountain	1975	$87 040,80	1,36%
Sport-100 Helmet, Black	1940	$65 269,75	2,68%
Mountain Bottle Cage	1896	$38 061,90	2,02%

Monthly Revenue
$1,83M
Previous Month: $1,77M (+3.31%)

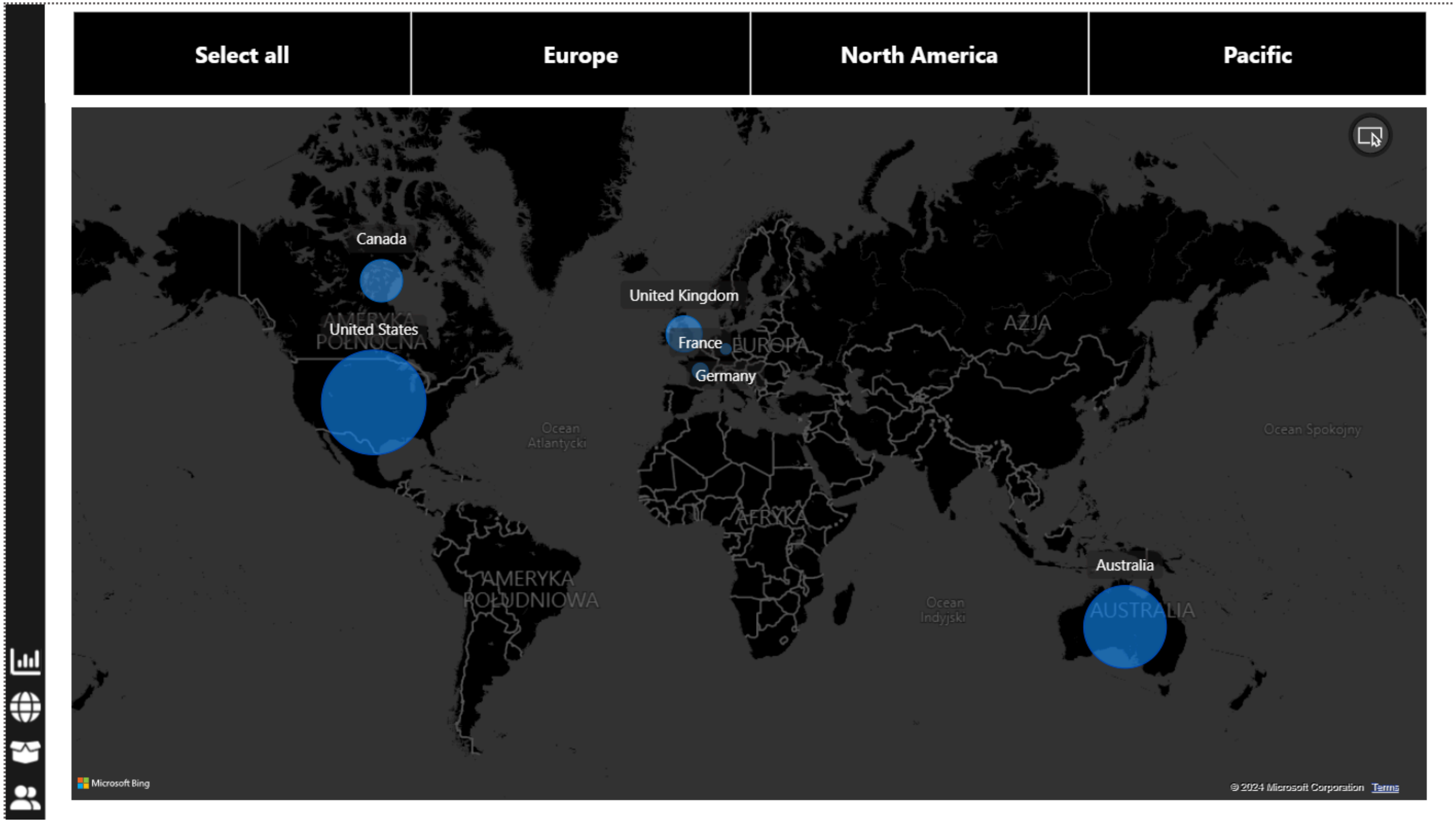
Monthly Orders
2146!
Previous Month: 2165 (-0.88%)

Monthly Returns
166
Previous Month: 169 (+1.78%)

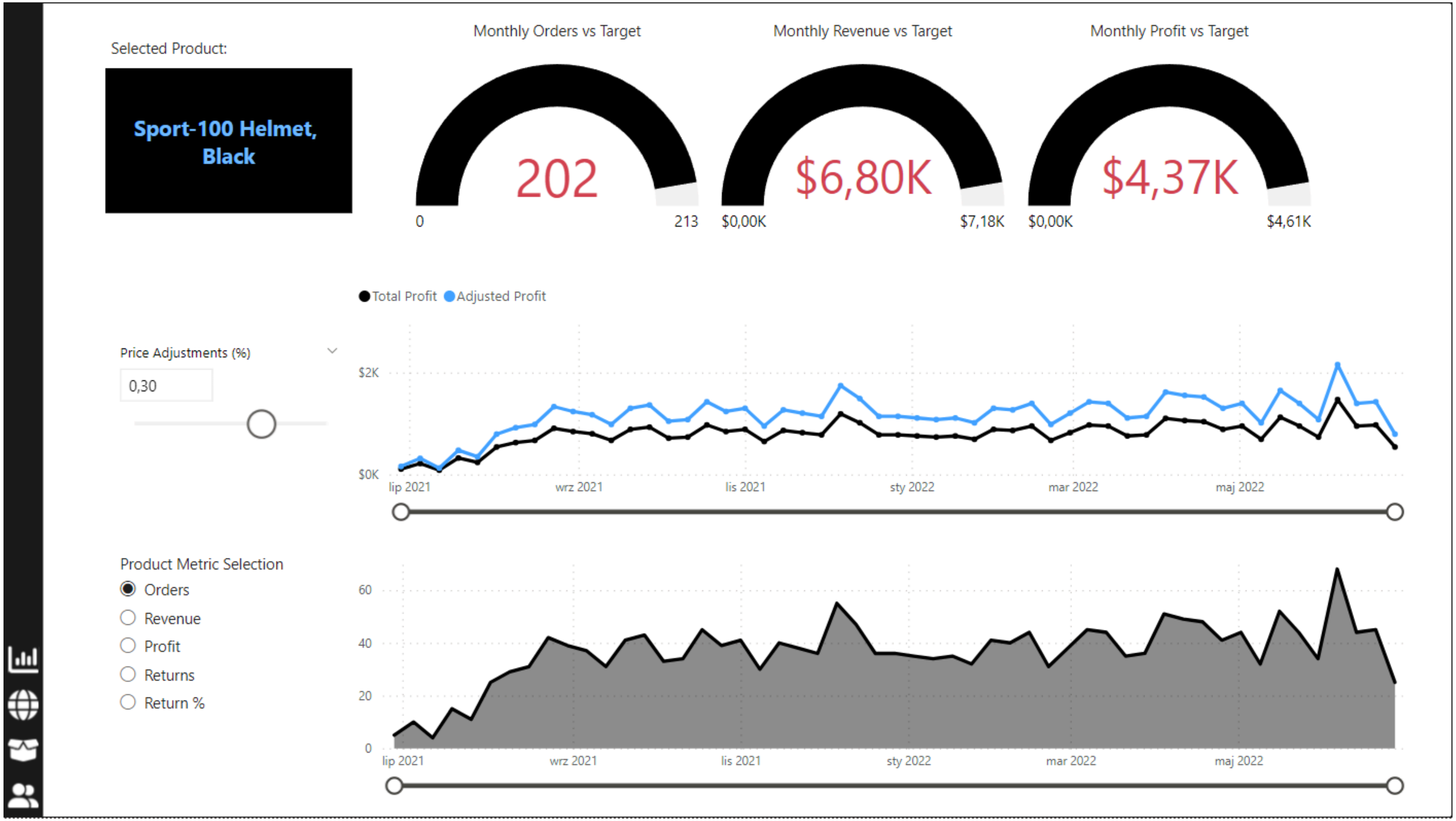
Most Ordered Product Type:
Tires and Tubes

Most Returned Product Type:
Shorts

Another view is a map where we can see in which regions the shop sells its products. This has also helped to define roles by region for the presentation to individual regional managers.



Using drill-through filters, the user has the option to switch to a more detailed view of a product from the executive dashboard.



Selected Product:

Sport-100 Helmet, Black

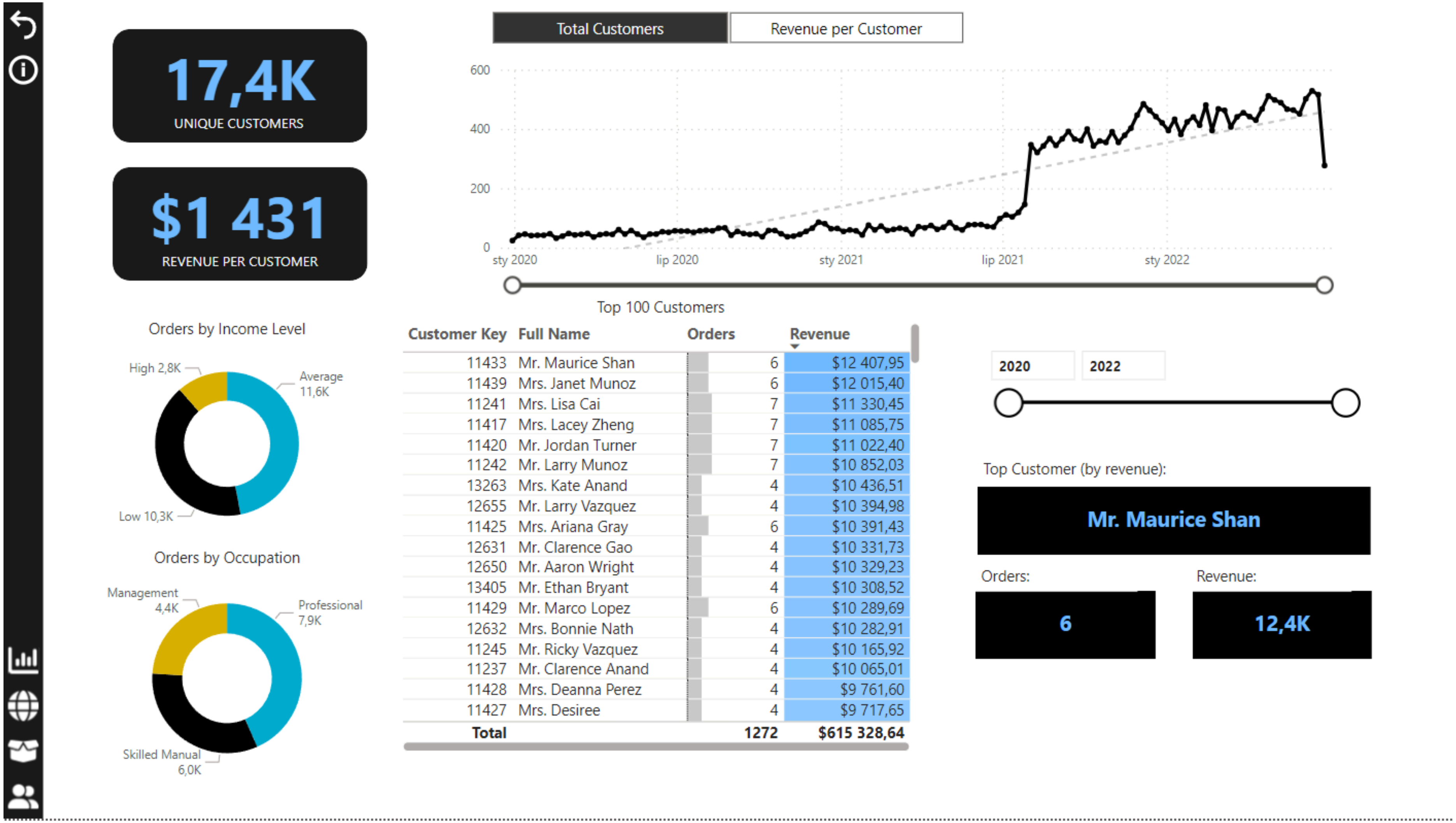
Price Adjustments (%)

0,30

Product Metric Selection

● Orders
○ Revenue
○ Profit
○ Returns
○ Return %

Last but not least is the customer detail view, where the user has the option, among other things, to filter by, the level of income or the profession, which allows the company to choose which groups make the most profit.



17,4K
UNIQUE CUSTOMERS

$1 431
REVENUE PER CUSTOMER

Top 100 Customers

Customer Key	Full Name	Orders	Revenue
11433	Mr. Maurice Shan	6	$12 407,95
11439	Mrs. Janet Munoz	6	$12 015,40
11241	Mrs. Lisa Cai	7	$11 330,45
11417	Mrs. Lacey Zheng	7	$11 085,75
11420	Mr. Jordan Turner	7	$11 022,40
11242	Mr. Larry Munoz	7	$10 852,03
13263	Mrs. Kate Anand	4	$10 436,51
12655	Mr. Larry Vazquez	4	$10 394,98
11425	Mrs. Ariana Gray	6	$10 391,43
12631	Mr. Clarence Gao	4	$10 331,73
12650	Mr. Aaron Wright	4	$10 329,23
13405	Mr. Ethan Bryant	4	$10 308,52
11429	Mr. Marco Lopez	6	$10 289,69
12632	Mrs. Bonnie Nath	4	$10 282,91
11245	Mr. Ricky Vazquez	4	$10 165,92
11237	Mr. Clarence Anand	4	$10 065,01
11428	Mrs. Deanna Perez	4	$9 761,60
11427	Mrs. Desiree	4	$9 717,65
Total		1272	$615 328,64

2020 2022

Top Customer (by revenue):

Mr. Maurice Shan

Orders: 6

Revenue: 12,4K