

Adventure Works Product Sales Analysis

Introduction

Embark on a data-driven journey as we delve into Adventure Works' product sales data. This project is designed to uncover key trends, patterns, and actionable insights to drive strategic decision-making. As a focal point, we will harness the power of Power BI to transform our analyses into an interactive and visually compelling dashboard.

Objectives

Discover Sales Trends and Patterns: Conduct an in-depth exploration of historical sales data to identify trends, patterns, and outliers using Power BI's robust analytical capabilities.

Product Performance Analysis: Leverage Power BI's capabilities to evaluate the performance of individual products, offering a dynamic view of best-sellers, slow-moving items, and correlations between different product categories.

Seasonal Sales Analysis: Leverage Power BI's visualization tools to investigate seasonal variations in sales patterns, facilitating informed decisions in inventory management and marketing strategies.

Dashboard Creation: Harness the capabilities of Power BI to create an intuitive and interactive dashboard. This centralized tool will empower stakeholders to monitor key metrics, explore trends, and make informed decisions.

Data Sources

The primary data source for this analysis is Adventure Works' sales dataset, a comprehensive repository of information on products, customers, orders, and sales transactions.

GitHub repository -> [click Here](#)

Methodology

Our analytical methodology involves leveraging Power BI alongside exploratory data analysis (EDA) techniques to unveil insights within the data. The integration of Power BI streamlines the process of transforming these insights into a visually compelling dashboard.

Tech Stack

The tech stack for this project centers around Power BI, a robust business analytics tool by Microsoft, known for its intuitive interface and powerful visualization capabilities. The seamless integration with various data sources and ease of use make Power BI an ideal choice for this sales analysis.

Expected Outcomes

Expect a comprehensive understanding of Adventure Works' sales dynamics through the lens of Power BI. The outcome will be a dynamic and visually appealing dashboard that serves as a strategic tool for monitoring trends, assessing product performance, understanding customer behavior, and making informed decisions to drive the company's success.

DATASETS:

File

Home

Transform

Add Column

View

Tools

Help

Close & Apply

Close

New Source

New Query

Recent Sources

Enter Data

Data source settings

Data Sources

Manage Parameters

Parameters

Refresh Preview

Query

Properties

Advanced Editor

Manage

Choose Columns

Remove Columns

Manage Columns

Keep Rows

Remove Rows

Reduce Rows

Sort

Split Column

Group By

Transform

Data Type: Whole Number

Use First Row as Headers

Replace Values

Merge Queries

Append Queries

Combine Files

Combine

Text Analytics

Vision

Azure Machine Learning

AI Insights

Queries [4]

Sales

Salesperson

Region

Product

fx

= Table.TransformColumnTypes(#"Promoted Headers",{{"ProductKey", Int64.Type}, {"Product", type text}, {"Standard

ProductKey

Product

Standard Cost

Color

Subcategory

Category

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

397 distinct, 397 unique

295 distinct, 218 unique

131 distinct, 49 unique

10 distinct, 1 unique

37 distinct, 8 unique

4 distinct, 0 unique

1	210	HL Road Frame - Black, 58	868.63	Black	Road Frames	Components
2	253	LL Road Frame - Black, 58	176.2	Black	Road Frames	Components
3	254	LL Road Frame - Black, 58	170.14	Black	Road Frames	Components
4	255	LL Road Frame - Black, 58	204.63	Black	Road Frames	Components
5	256	LL Road Frame - Black, 60	176.2	Black	Road Frames	Components
6	257	LL Road Frame - Black, 60	170.14	Black	Road Frames	Components
7	258	LL Road Frame - Black, 60	204.63	Black	Road Frames	Components
8	259	LL Road Frame - Black, 62	176.2	Black	Road Frames	Components
9	260	LL Road Frame - Black, 62	170.14	Black	Road Frames	Components
10	261	LL Road Frame - Black, 62	204.63	Black	Road Frames	Components
11	279	LL Road Frame - Black, 44	176.2	Black	Road Frames	Components
12	280	LL Road Frame - Black, 44	170.14	Black	Road Frames	Components
13	281	LL Road Frame - Black, 44	204.63	Black	Road Frames	Components
14	282	LL Road Frame - Black, 48	176.2	Black	Road Frames	Components
15	283	LL Road Frame - Black, 48	170.14	Black	Road Frames	Components
16	284	LL Road Frame - Black, 48	204.63	Black	Road Frames	Components
17	285	LL Road Frame - Black, 52	176.2	Black	Road Frames	Components

Query Settings

PROPERTIES

Name

Product

All Properties

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

12 COLUMNS, 397 ROWS

Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 10:47 PM

File

Home

Transform

Add Column

View

Tools

Help

Close & Apply

Close

New Source

New Query

Recent Sources

Enter Data

Data source settings

Data Sources

Manage Parameters

Parameters

Refresh Preview

Query

Properties

Advanced Editor

Manage

Choose Columns

Remove Columns

Manage Columns

Keep Rows

Remove Rows

Reduce Rows

Sort

Split Column

Group By

Transform

Data Type: Whole Number

Use First Row as Headers

Replace Values

Merge Queries

Append Queries

Combine Files

Combine

Text Analytics

Vision

Azure Machine Learning

AI Insights

Queries [4]

Sales

Salesperson

Region

Product

fx

= Table.TransformColumnTypes(#"Promoted Headers",{{"SalesTerritoryKey", Int64.Type}, {"Region", type text}},

123 SalesTerritoryKey

ABC Region

ABC Country

ABC Group

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

Valid 100%

Error 0%

Empty 0%

10 distinct, 10 unique

10 distinct, 10 unique

6 distinct, 5 unique

3 distinct, 1 unique

1		1 Northwest	United States	North America
2		2 Northeast	United States	North America
3		3 Central	United States	North America
4		4 Southwest	United States	North America
5		5 Southeast	United States	North America
6		6 Canada	Canada	North America
7		7 France	France	Europe
8		8 Germany	Germany	Europe
9		9 Australia	Australia	Pacific
10		10 United Kingdom	United Kingdom	Europe

Query Settings

PROPERTIES

Name

Region

All Properties

APPLIED STEPS

Source

Navigation

Promoted Headers

Changed Type

4 COLUMNS, 10 ROWS

Column profiling based on top 1000 rows

PREVIEW DOWNLOADED AT 10:47 PM

File

Home

Transform

Add Column

View

Tools

Help

Close & Apply

Close

New Source

New Query

Recent Sources

Enter Data

Data source settings

Data Sources

Manage Parameters

Parameters

Refresh Preview

Query

Properties

Advanced Editor

Manage

Choose Columns

Remove Columns

Manage Columns

Keep Rows

Remove Rows

Reduce Rows

Sort

Split Column

Group By

Transform

Data Type: Whole Number

Use First Row as Headers

Replace Values

Merge Queries

Append Queries

Combine Files

Combine

Text Analytics

Vision

Azure Machine Learning

AI Insights

Queries [4]

Sales

Salesperson

Region

Product

fx

= Table.TransformColumnTypes(#"Promoted Headers",{{"EmployeeKey", Int64.Type}, {"EmployeeID", Int64.Type},

123 EmployeeKey	123 EmployeeID	A ^B _C Salesperson	A ^B _C Title	A ^B _C UPN	
<div><div>Valid 100%</div><div>Error 0%</div><div>Empty 0%</div></div> <div>18 distinct, 18 unique</div>	<div><div>Valid 100%</div><div>Error 0%</div><div>Empty 0%</div></div> <div>18 distinct, 18 unique</div>	<div><div>Valid 100%</div><div>Error 0%</div><div>Empty 0%</div></div> <div>18 distinct, 18 unique</div>	<div><div>Valid 100%</div><div>Error 0%</div><div>Empty 0%</div></div> <div>5 distinct, 4 unique</div>	<div><div>Valid 100%</div><div>Error 0%</div><div>Empty 0%</div></div> <div>18 distinct, 18 unique</div>	
1	272	502097814	Stephen Jiang	North American Sales Manager	stephen-jiang@adventureworks.com
2	277	112432117	Brian Welcker	Director of Sales	brian-welcker@adventureworks.com
3	281	841560125	Michael Blythe	Sales Representative	michael-blythe@adventureworks.com
4	282	191644724	Linda Mitchell	Sales Representative	linda-mitchell@adventureworks.com
5	283	615389812	Jillian Carson	Sales Representative	jillian-carson@adventureworks.com
6	284	234474252	Garrett Vargas	Sales Representative	garrett-vargas@adventureworks.com
7	285	716374314	Tsvi Reiter	Sales Representative	tsvi-reiter@adventureworks.com
8	286	61161660	Pamela Ansman-Wolfe	Sales Representative	pamela-ansman-wolfe@adventureworks.com
9	287	139397894	Shu Ito	Sales Representative	shu-ito@adventureworks.com
10	288	399771412	José Saraiva	Sales Representative	jose-saraiva@adventureworks.com
11	289	987554265	David Campbell	Sales Representative	david-campbell@adventureworks.com
12	290	982310417	Amy Alberts	European Sales Manager	amy-alberts@adventureworks.com
13	291	668991357	Jae Pak	Sales Representative	jae-pak@adventureworks.com
14	292	134219713	Ranjit Varkey Chudukatil	Sales Representative	ranjit-varkey-chudukatil@adventureworks.com
15	293	90836195	Tete Mensa-Annan	Sales Representative	tete-mensa-annan@adventureworks.com
16	294	481044938	Syed Abbas	Pacific Sales Manager	syed-abbas@adventureworks.com
17	295	954276278	Rachel Valdez	Sales Representative	rachel-valdez@adventureworks.com

File

Home

Transform

Add Column

View

Tools

Help

Close & Apply

New Source

Recent Sources

Enter Data

Data source settings

Manage Parameters

Refresh Preview

Properties

Advanced Editor

Manage

Choose Columns

Remove Columns

Keep Rows

Remove Rows

Sort

Split Column

Group By

Data Type: Text

Use First Row as Headers

Replace Values

Merge Queries

Append Queries

Combine Files

Text Analytics

Vision

Azure Machine Learning

Close

New Query

Data Sources

Parameters

Query

Manage Columns

Reduce Rows

Transform

Combine

AI Insights

Queries [4]

Sales

Salesperson

Region

Product

fx

= Table.TransformColumnTypes(#"Promoted Headers",{{"SalesOrderNumber", type text}, {"OrderDate", type date},

AB SalesOrderNumber

Valid 100%

Error 0%

Empty 0%

216 distinct, 55 unique

OrderDate

Valid 100%

Error 0%

Empty 0%

190 distinct, 42 unique

123 ProductKey

Valid 100%

Error 0%

Empty 0%

287 distinct, 59 unique

123 ResellerKey

Valid 100%

Error 0%

Empty 0%

46 distinct, 4 unique

123 EmployeeKey

Valid 100%

Error 0%

Empty 0%

1 distinct, 0 unique

123 SalesTerritoryKey

Valid 100%

Error 0%

Empty 0%

1 distinct, 0 unique

	SalesOrderNumber	OrderDate	ProductKey	ResellerKey	EmployeeKey	SalesTerritoryKey
1	SO43897	8/25/2017	235	312		282
2	SO43897	8/25/2017	351	312		282
3	SO43897	8/25/2017	348	312		282
4	SO43897	8/25/2017	232	312		282
5	SO44544	11/18/2017	292	312		282
6	SO44544	11/18/2017	220	312		282
7	SO44544	11/18/2017	351	312		282
8	SO44544	11/18/2017	349	312		282
9	SO44544	11/18/2017	344	312		282
10	SO45321	2/18/2018	346	312		282
11	SO45321	2/18/2018	347	312		282
12	SO46082	5/23/2018	220	312		282
13	SO46082	5/23/2018	346	312		282
14	SO46082	5/23/2018	345	312		282
15	SO46082	5/23/2018	232	312		282
16	SO46082	5/23/2018	344	312		282
17	SO46082	5/23/2018	348	312		282

Query Settings

PROPERTIES

Name

Sales

All Properties

APPLIED STEPS

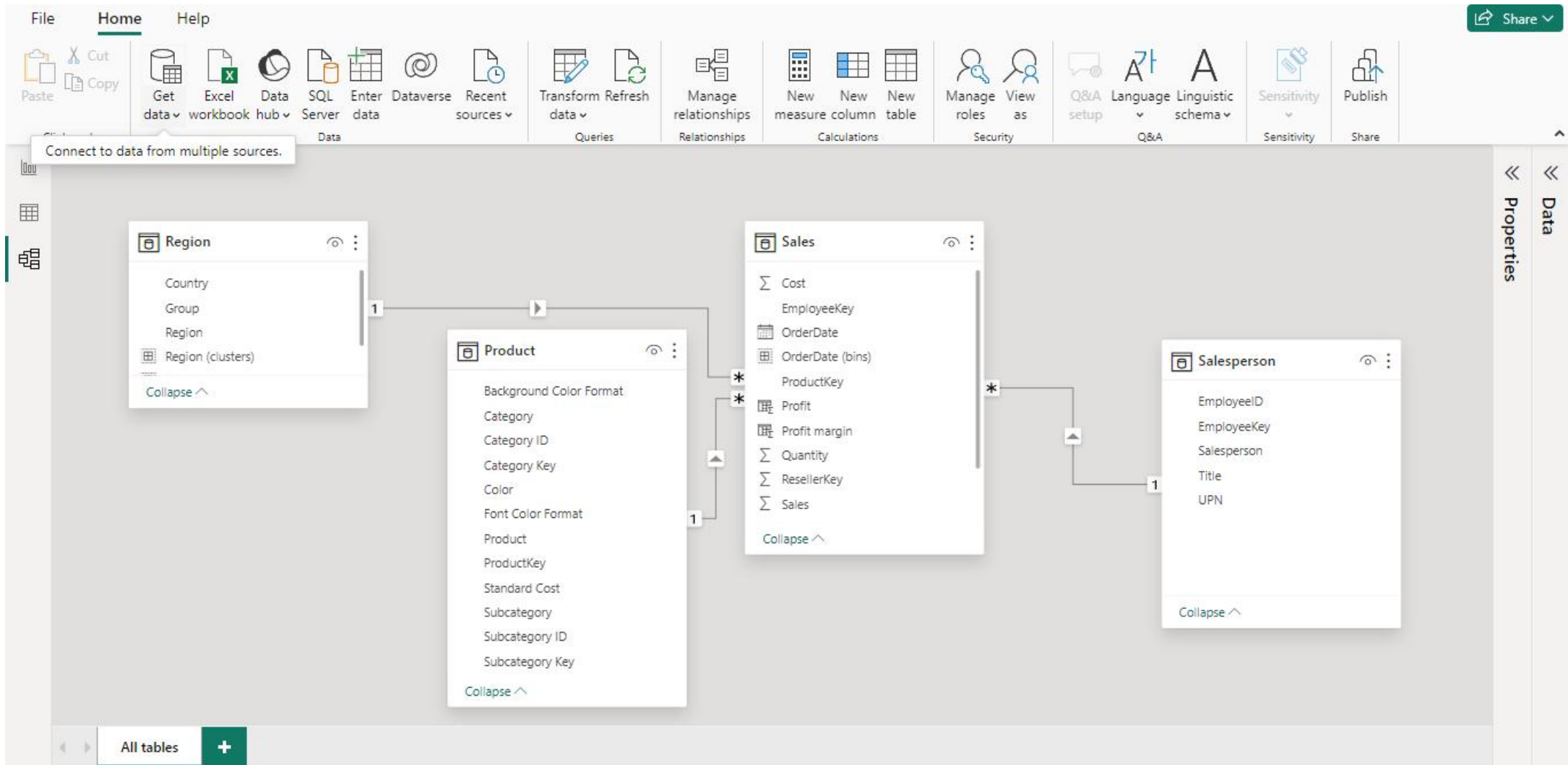
Source

Navigation

Promoted Headers

Changed Type

DATA MODELING:





Manage relationships

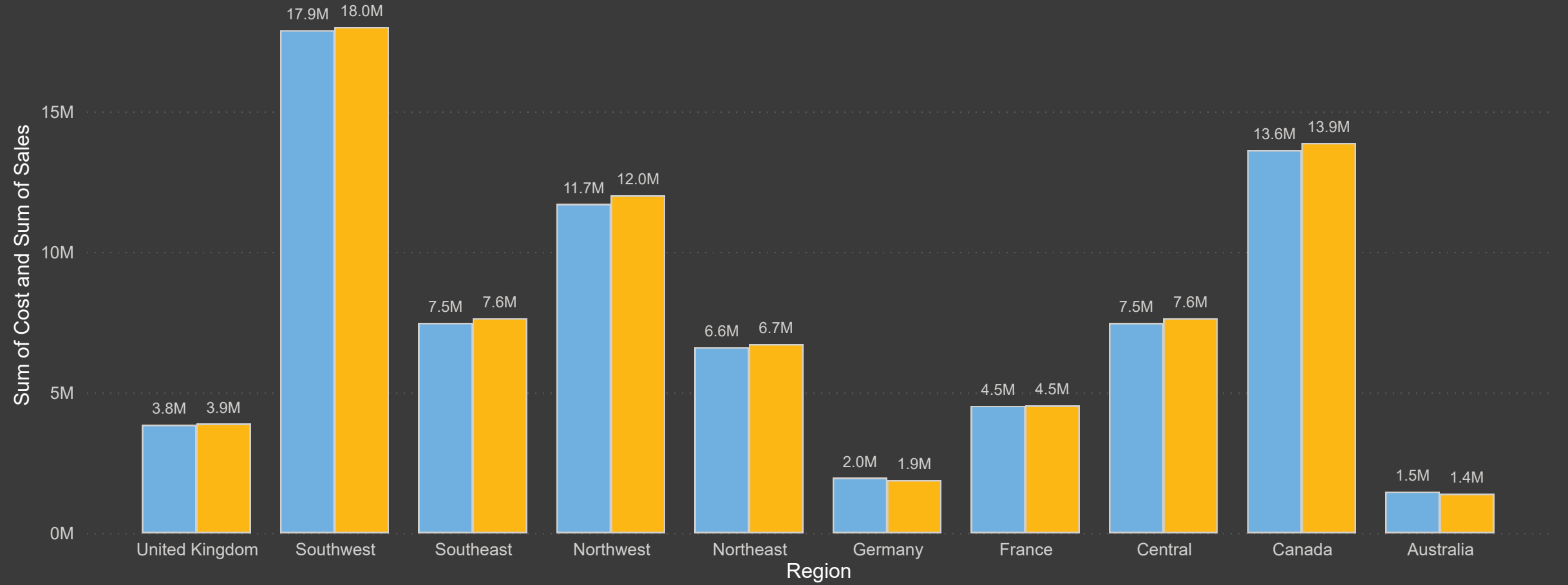
Active	From: Table (Column)	To: Table (Column)
<input checked="" type="checkbox"/>	Sales (EmployeeKey)	Salesperson (EmployeeKey)
<input checked="" type="checkbox"/>	Sales (ProductKey)	Product (ProductKey)
<input checked="" type="checkbox"/>	Sales (SalesTerritoryKey)	Region (SalesTerritoryKey)

New...Autodetect...Edit...Delete

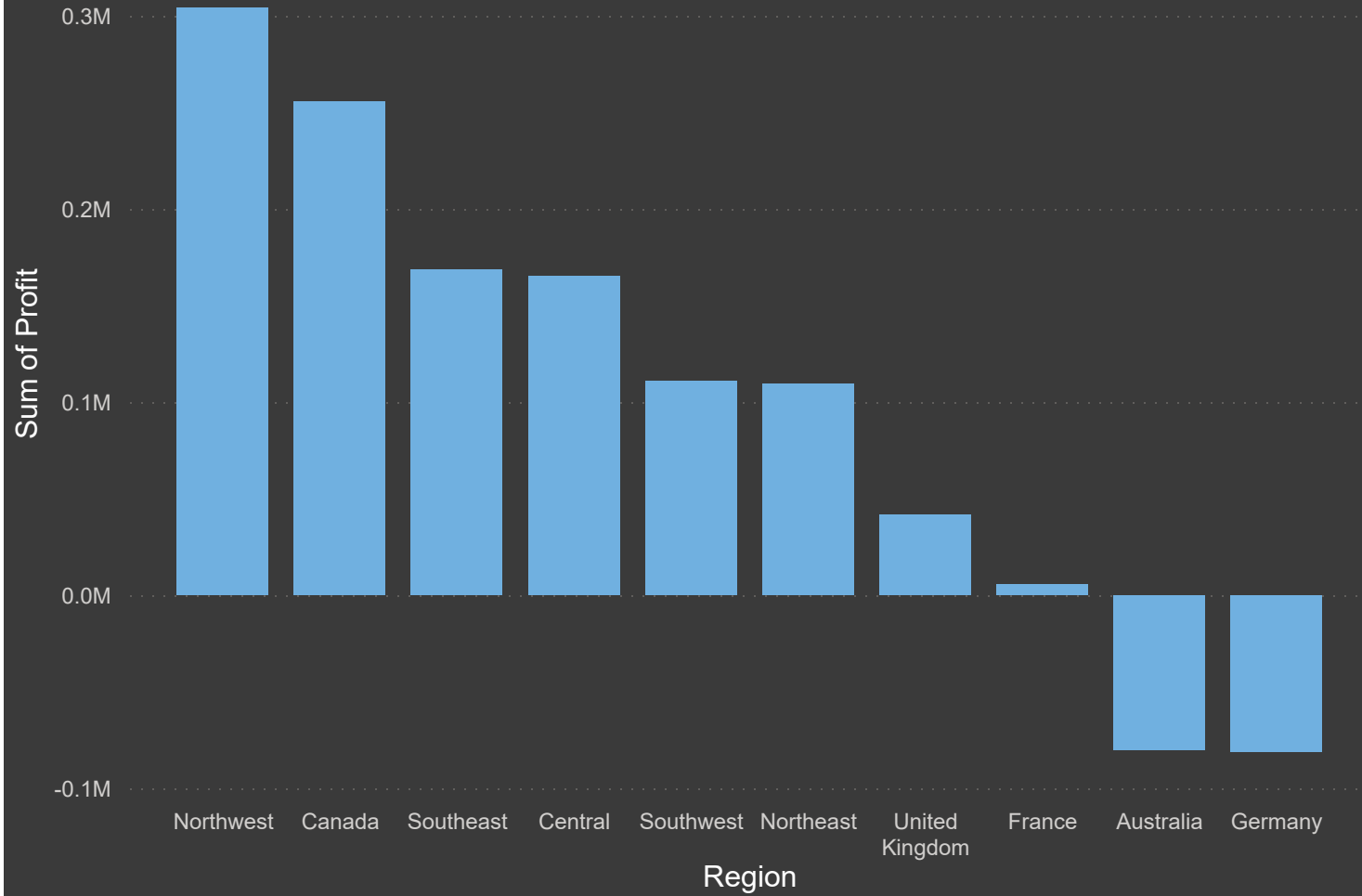
Close

Cost and Sales by Region

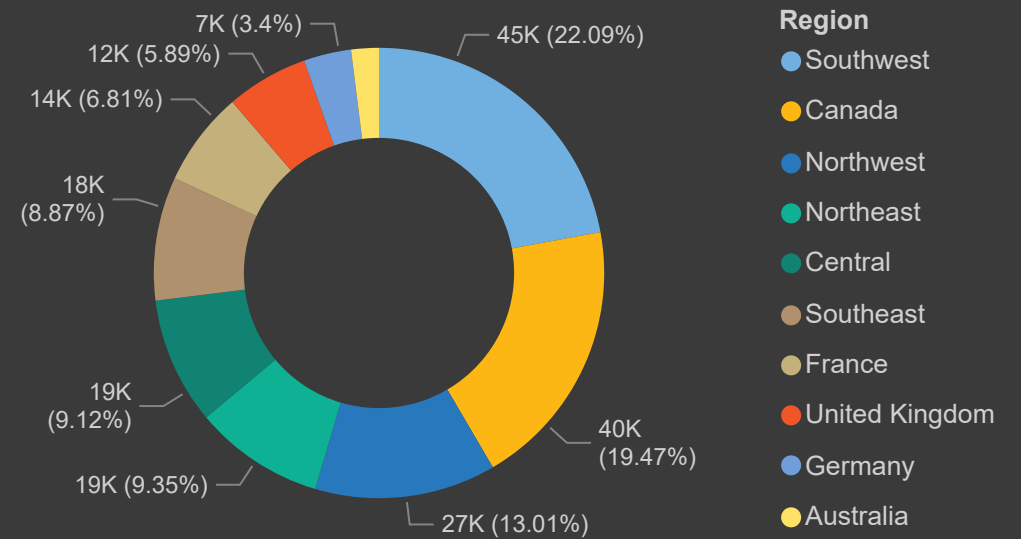
● Sum of Cost ● Sum of Sales



Profit by Region

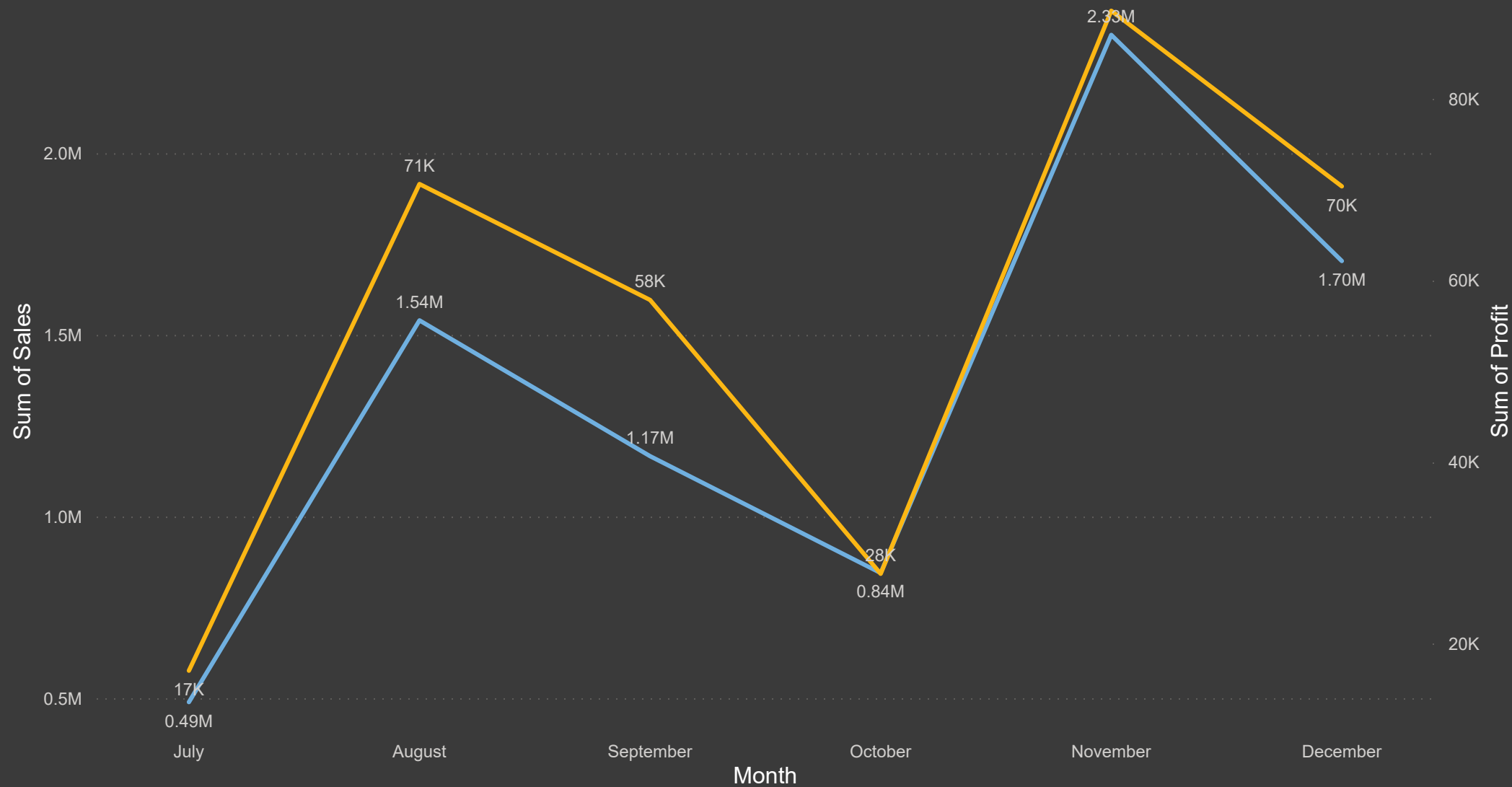


Quantity Sold by Region

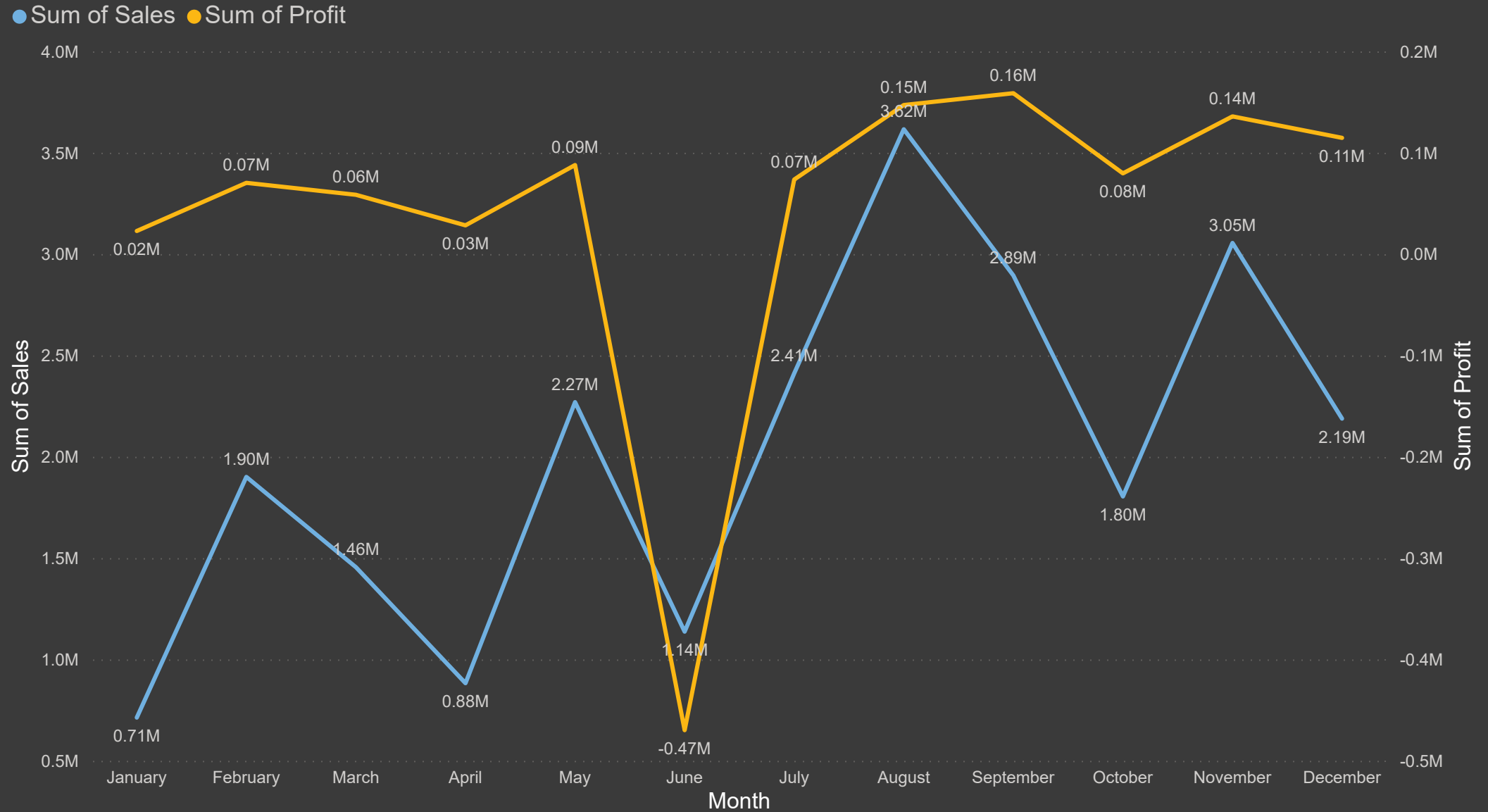


Trends in 2017

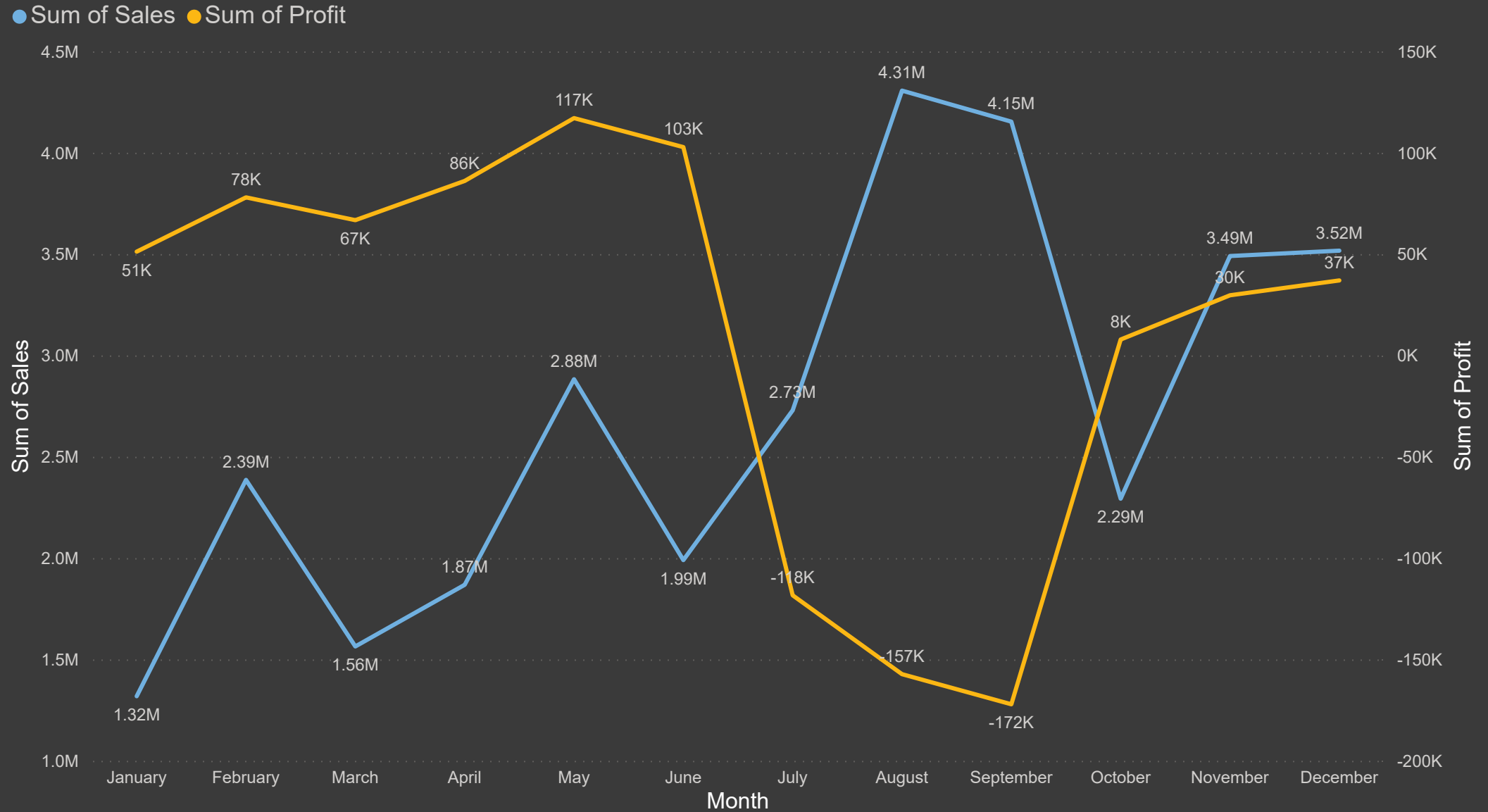
● Sum of Sales ● Sum of Profit



Trends in 2018

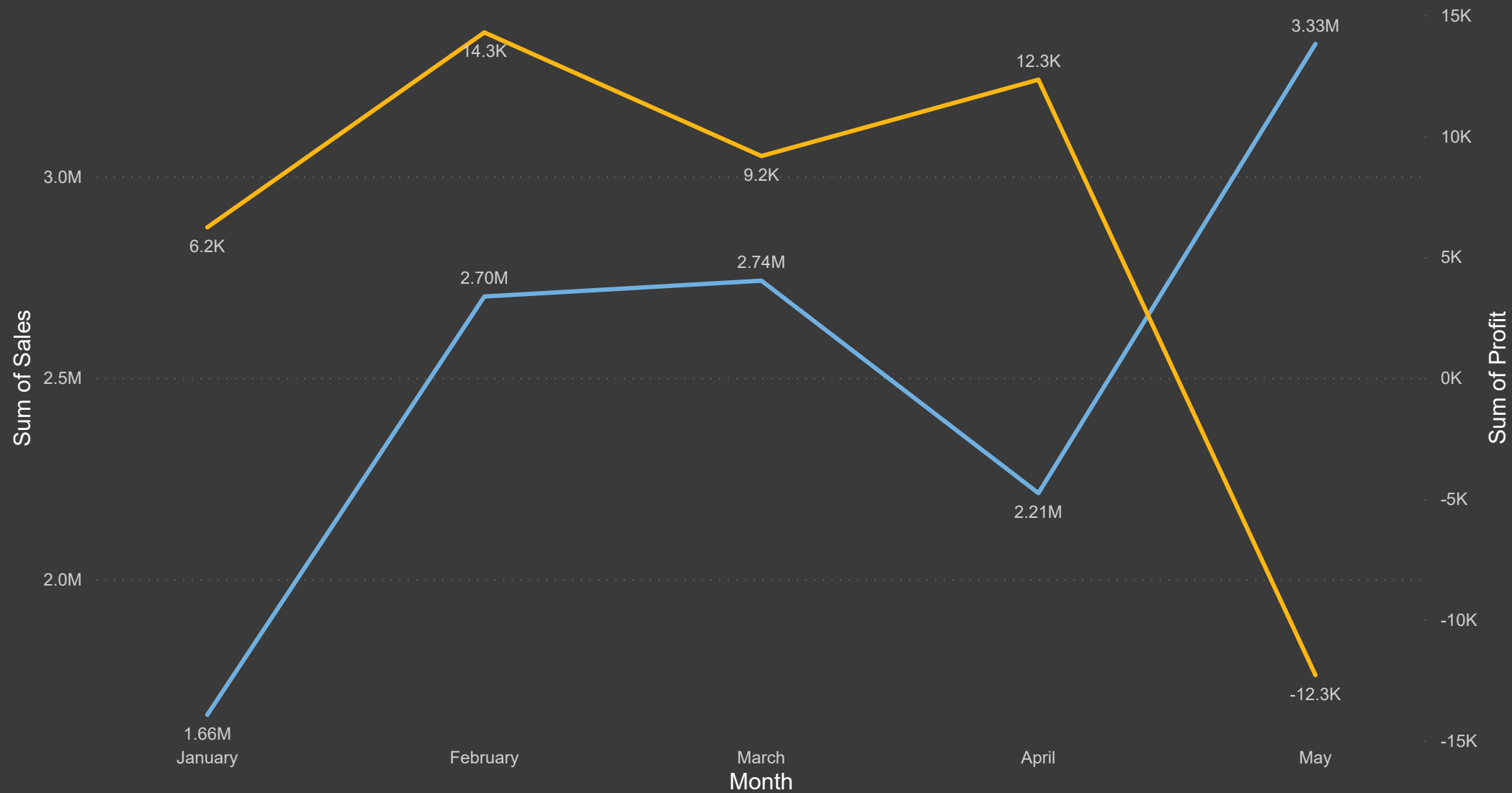


Trends in 2019



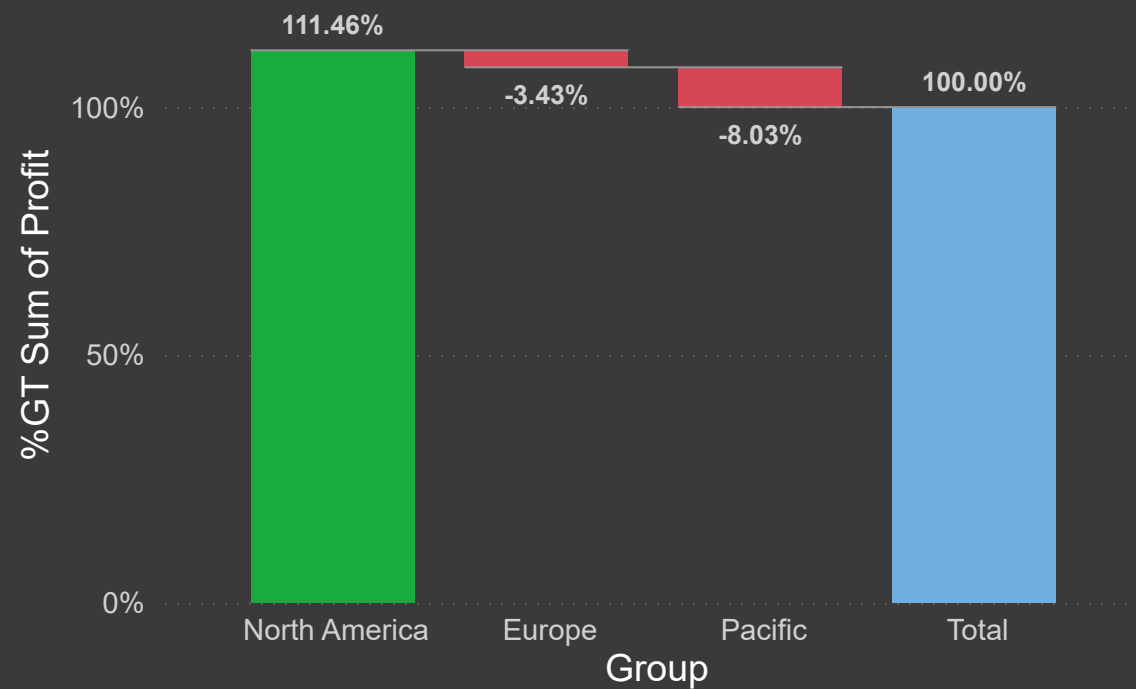
Trends in 2020

● Sum of Sales ● Sum of Profit

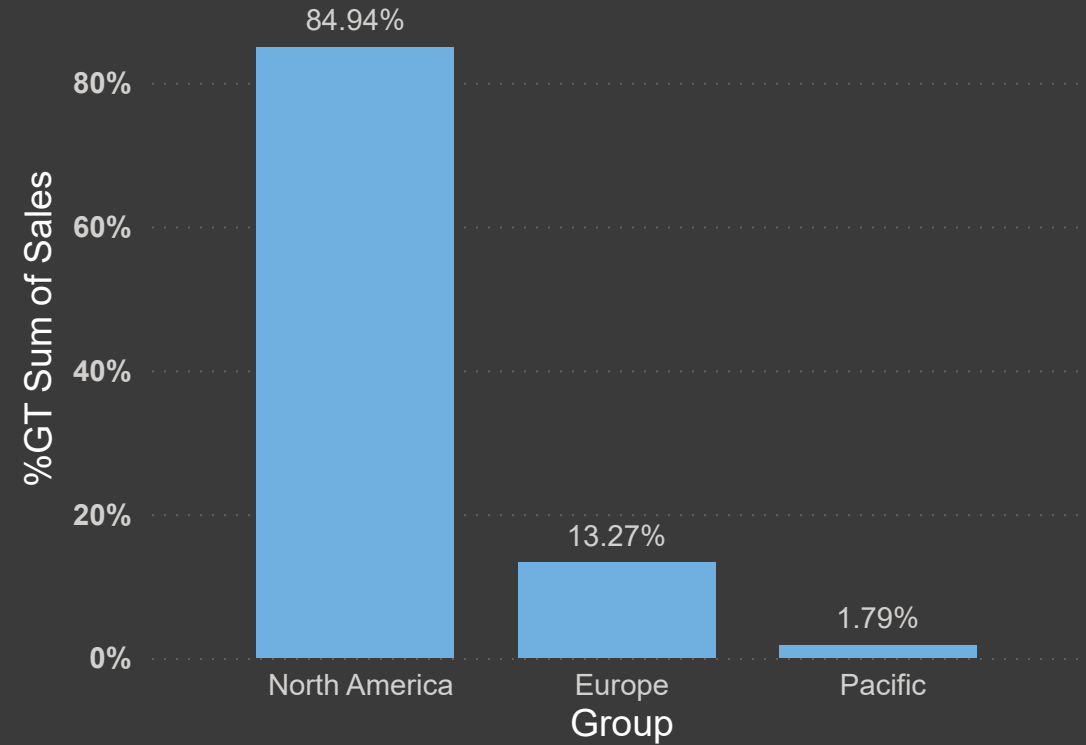


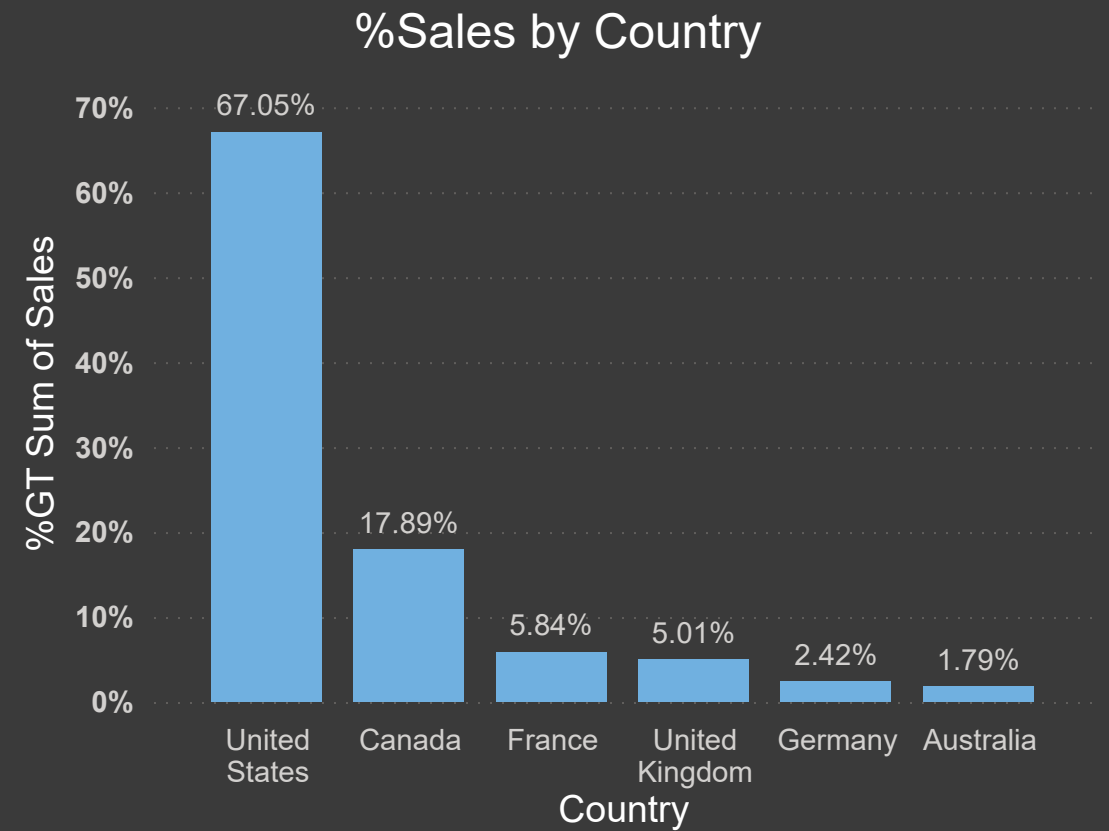
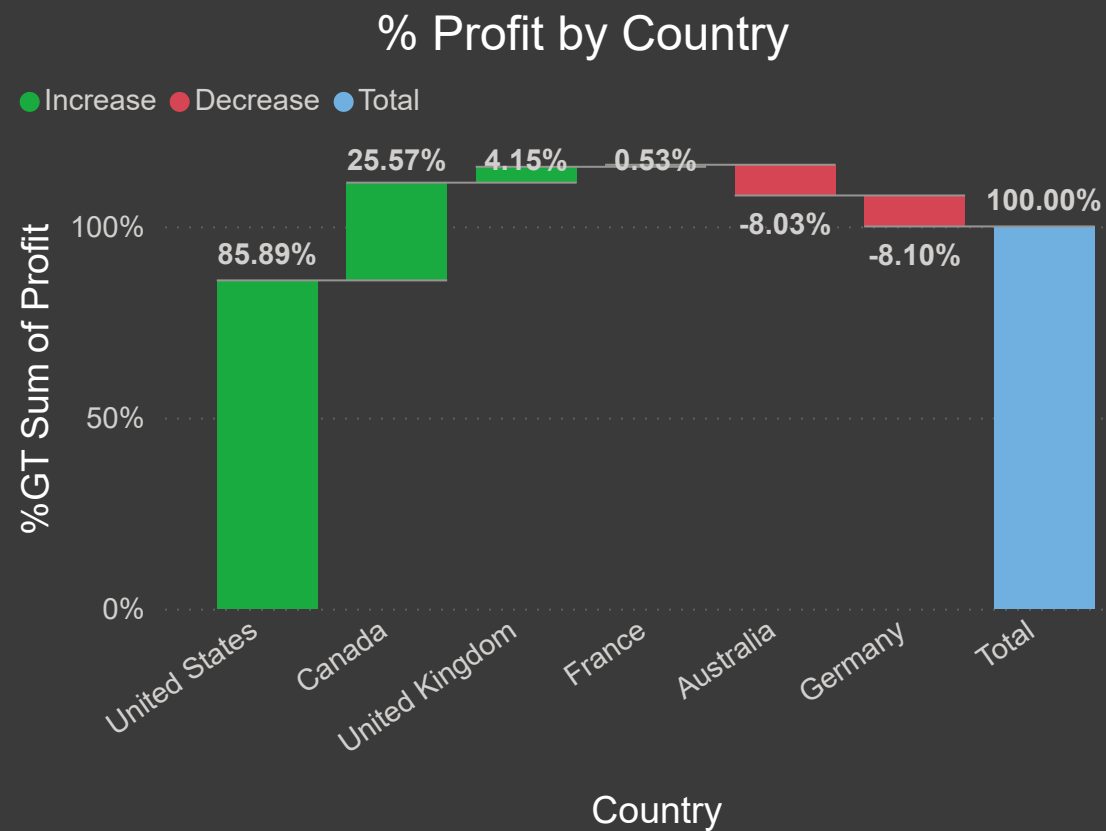
% Profit by Group

● Increase ● Decrease ● Total



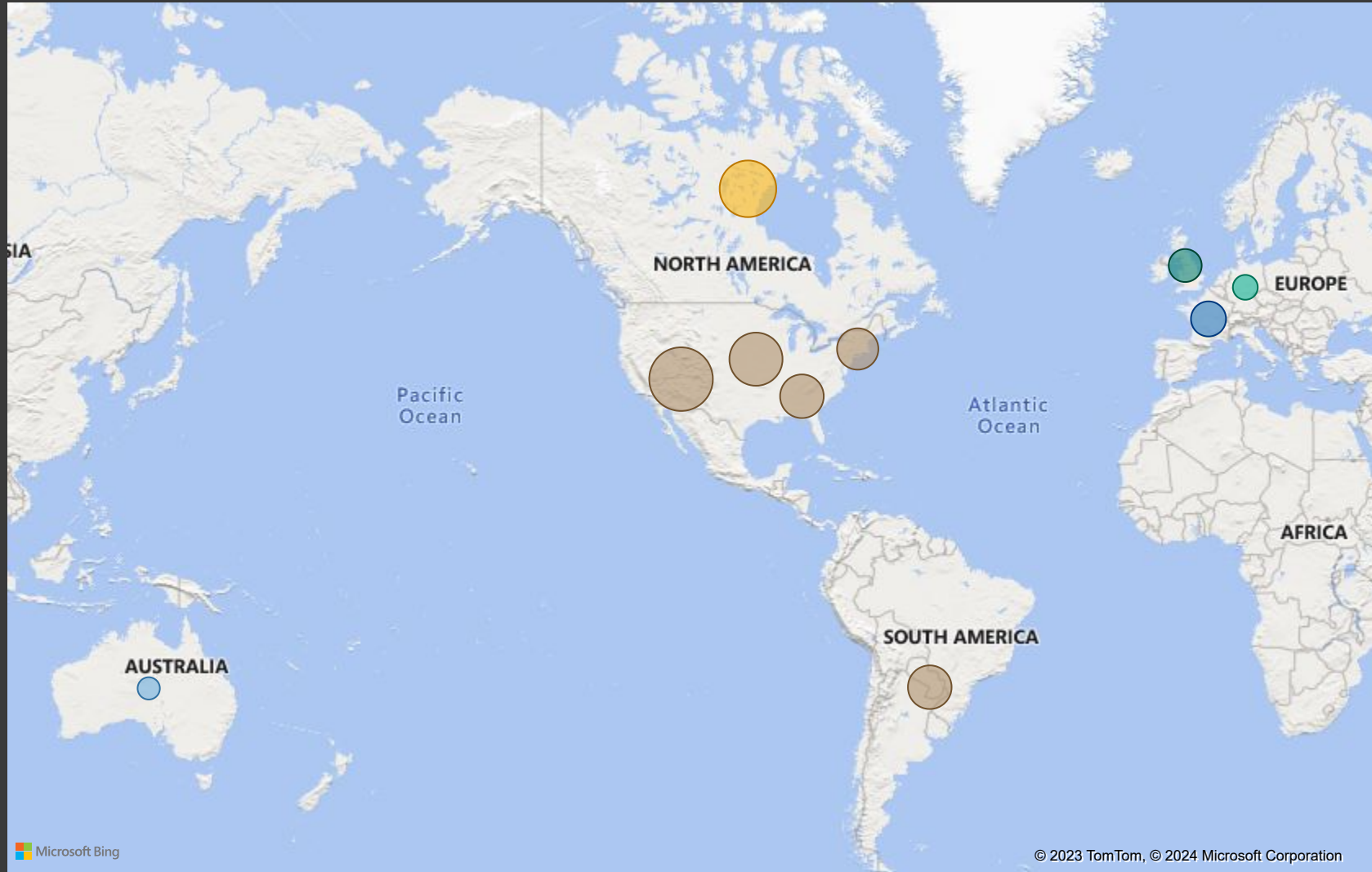
%Sales by Group





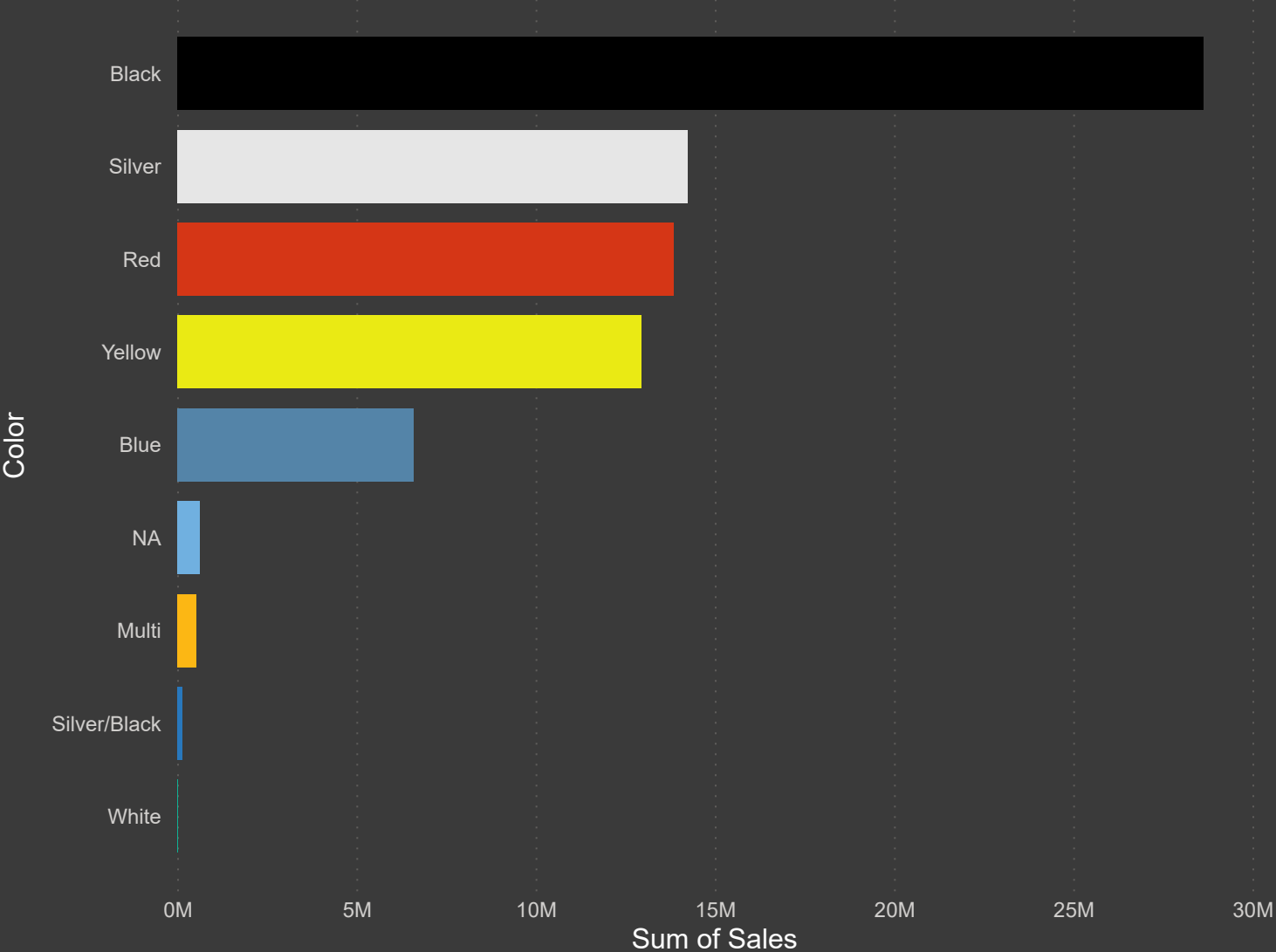
Sales by Country

Country ● Australia ● Canada ● France ● Germany ● United Kingdom ● United States

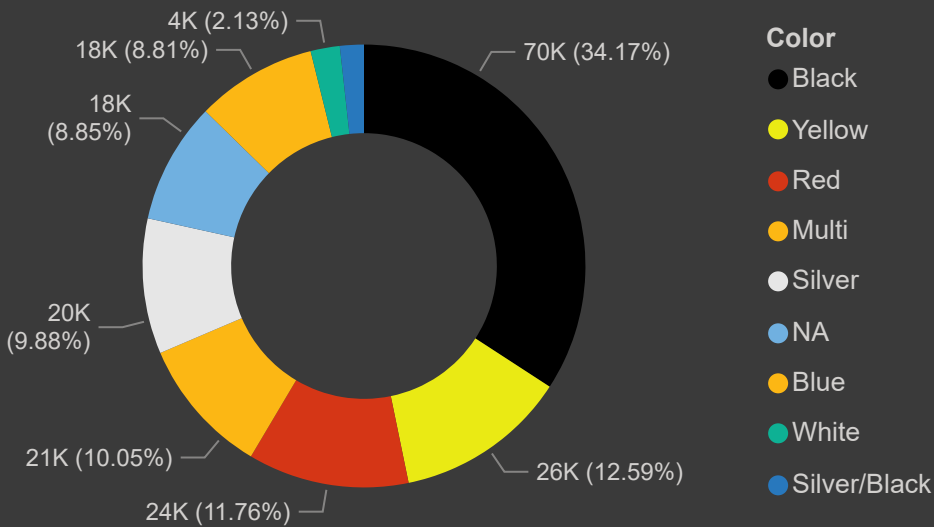


Sales by Color

Color ● Black ● Silver ● Red ● Yellow ● Blue ● NA ● Multi ● Silver/Black ● White



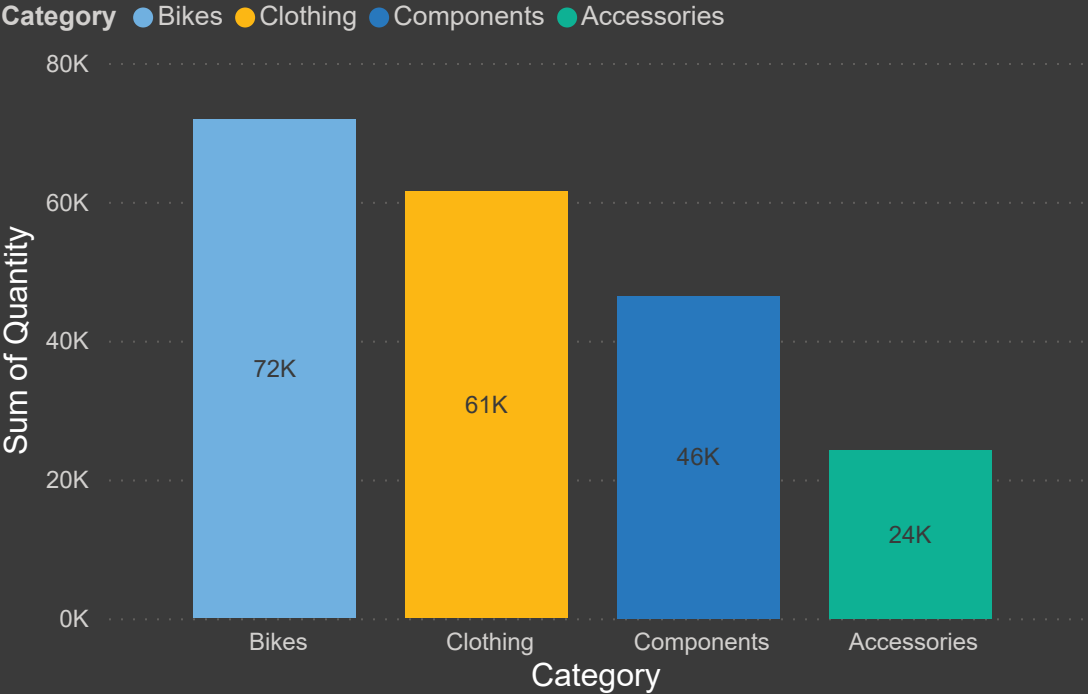
Quantity Sold by Color



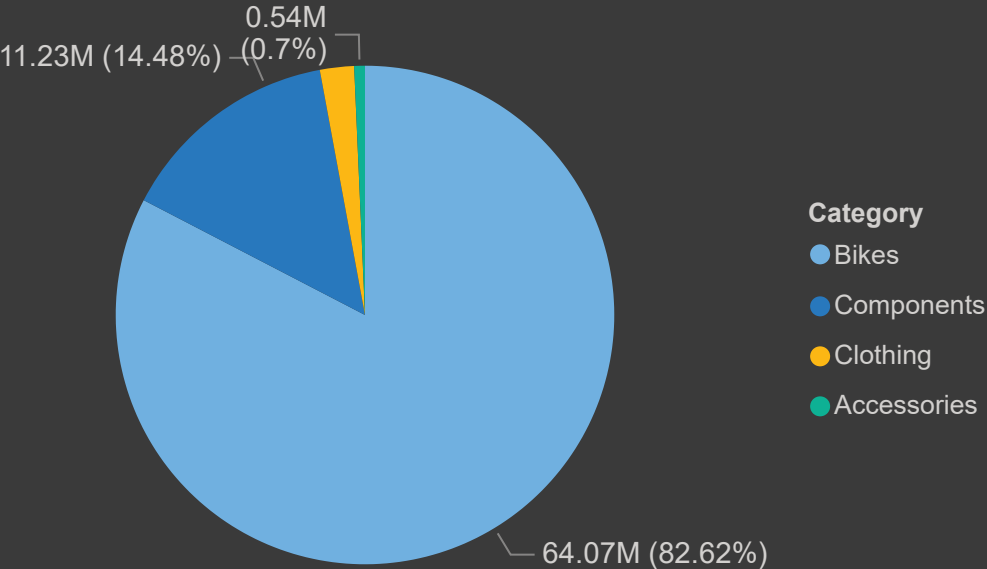
Region

Australia	Canada	Central	France	Germany	Northeast	Northwest	Southeast	Southwest	United...
-----------	--------	---------	--------	---------	-----------	-----------	-----------	-----------	-----------

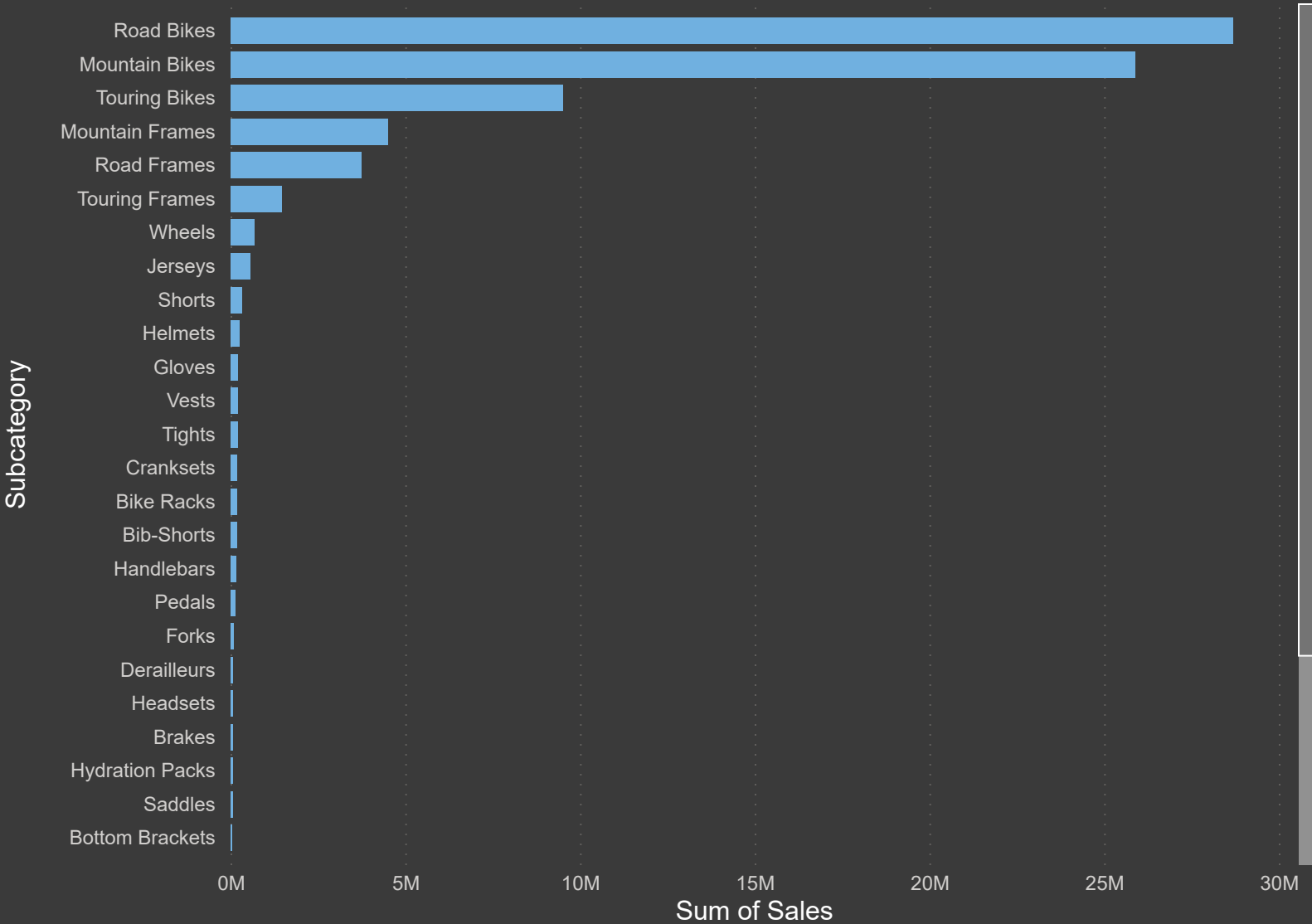
Quantity Sold by Category



Sales by Category



Sales by Subcategory



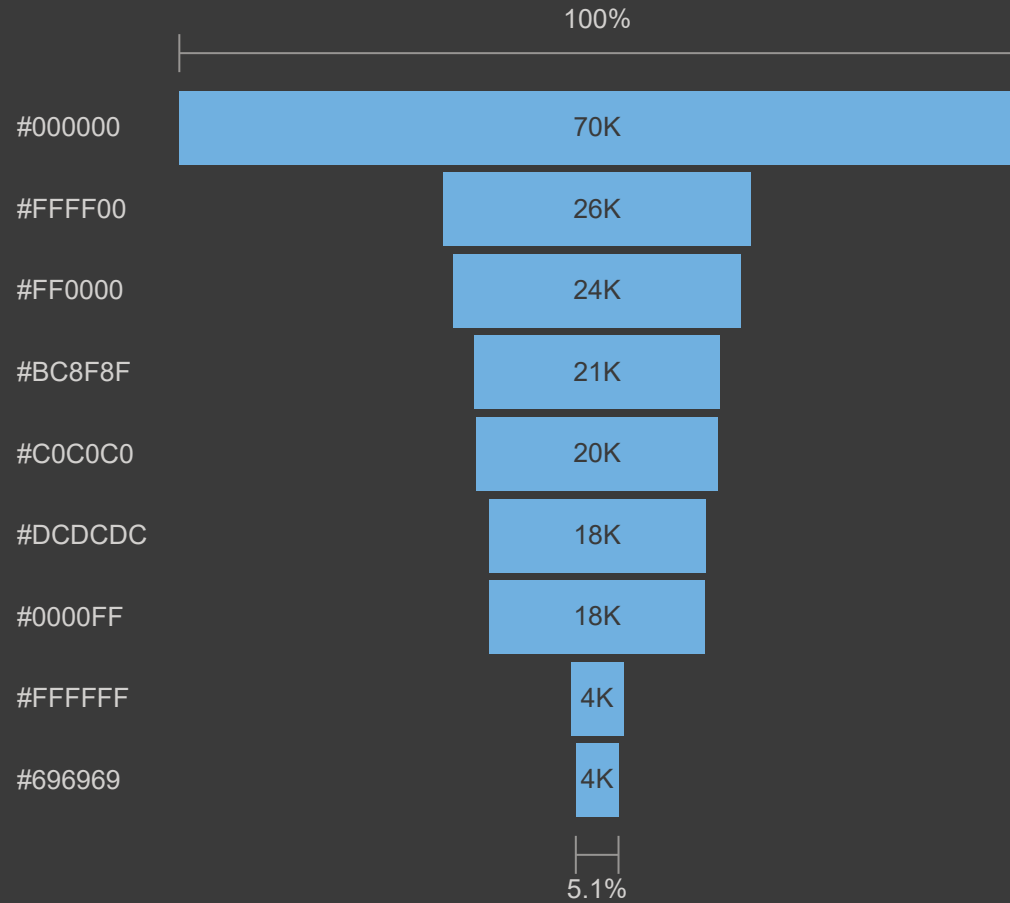
Region

Australia	Canada	Central	France
Germany	Northeast	Northw...	Southe...
Southw...	United...		

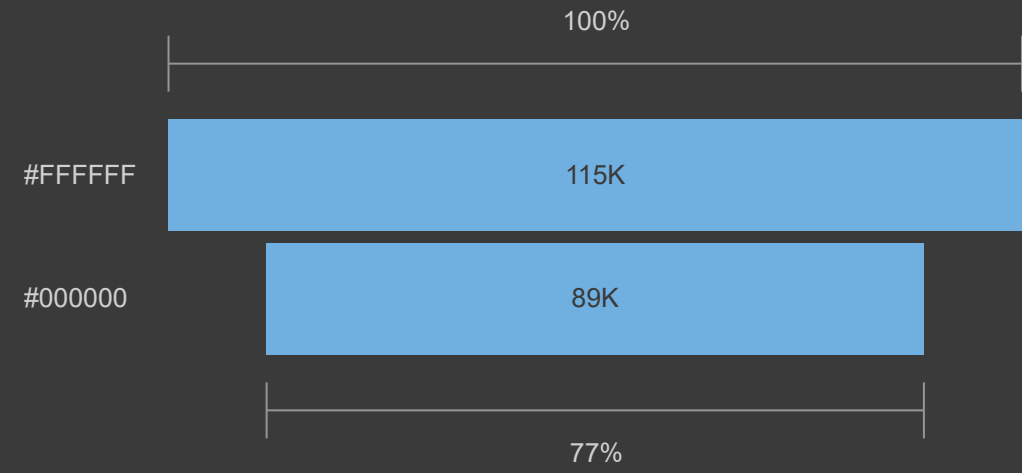
Year

2017	2018	2019	2020
------	------	------	------

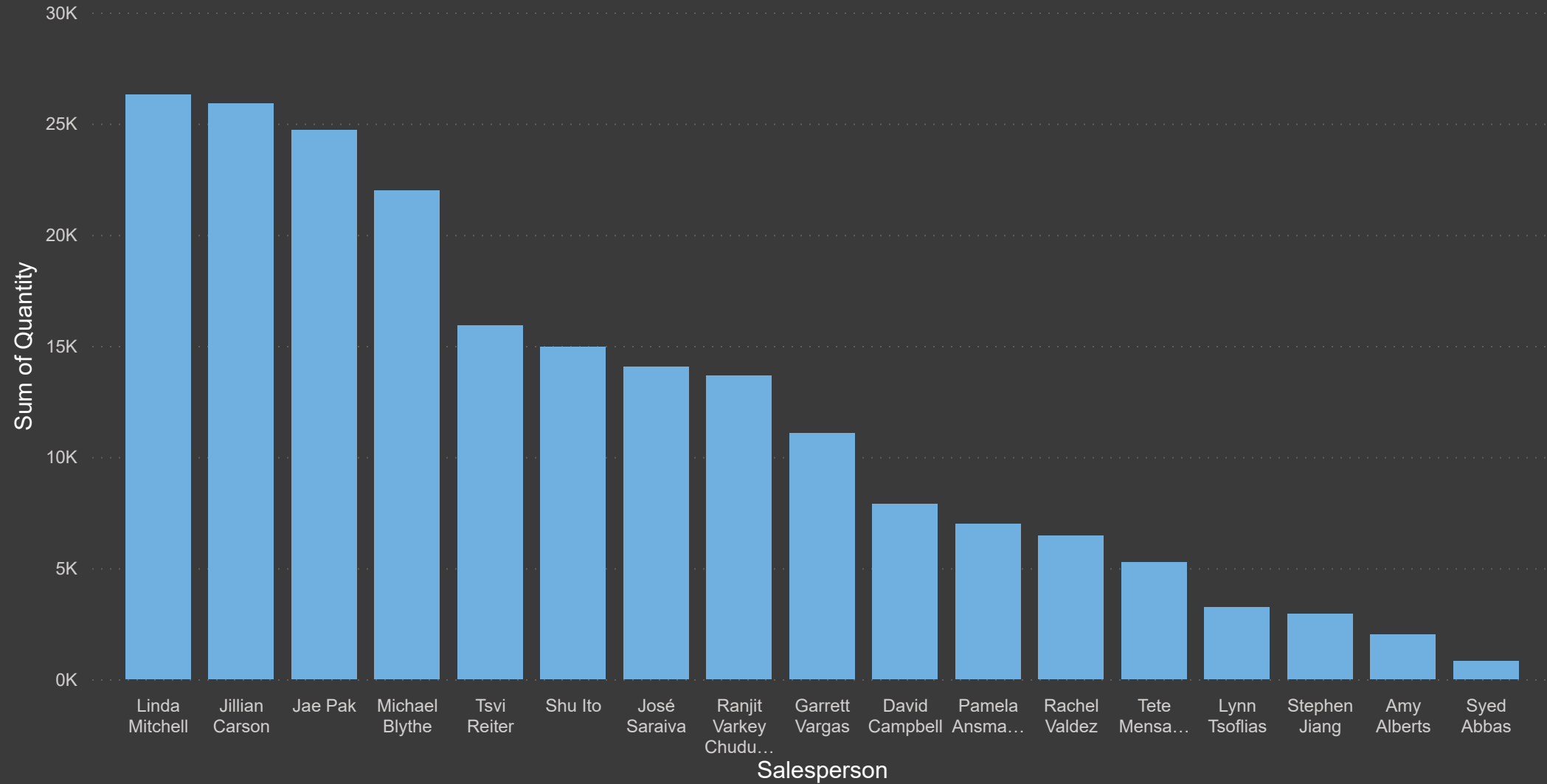
Quantity Sold by Background Color Format



Quantity Sold by Font Color Format

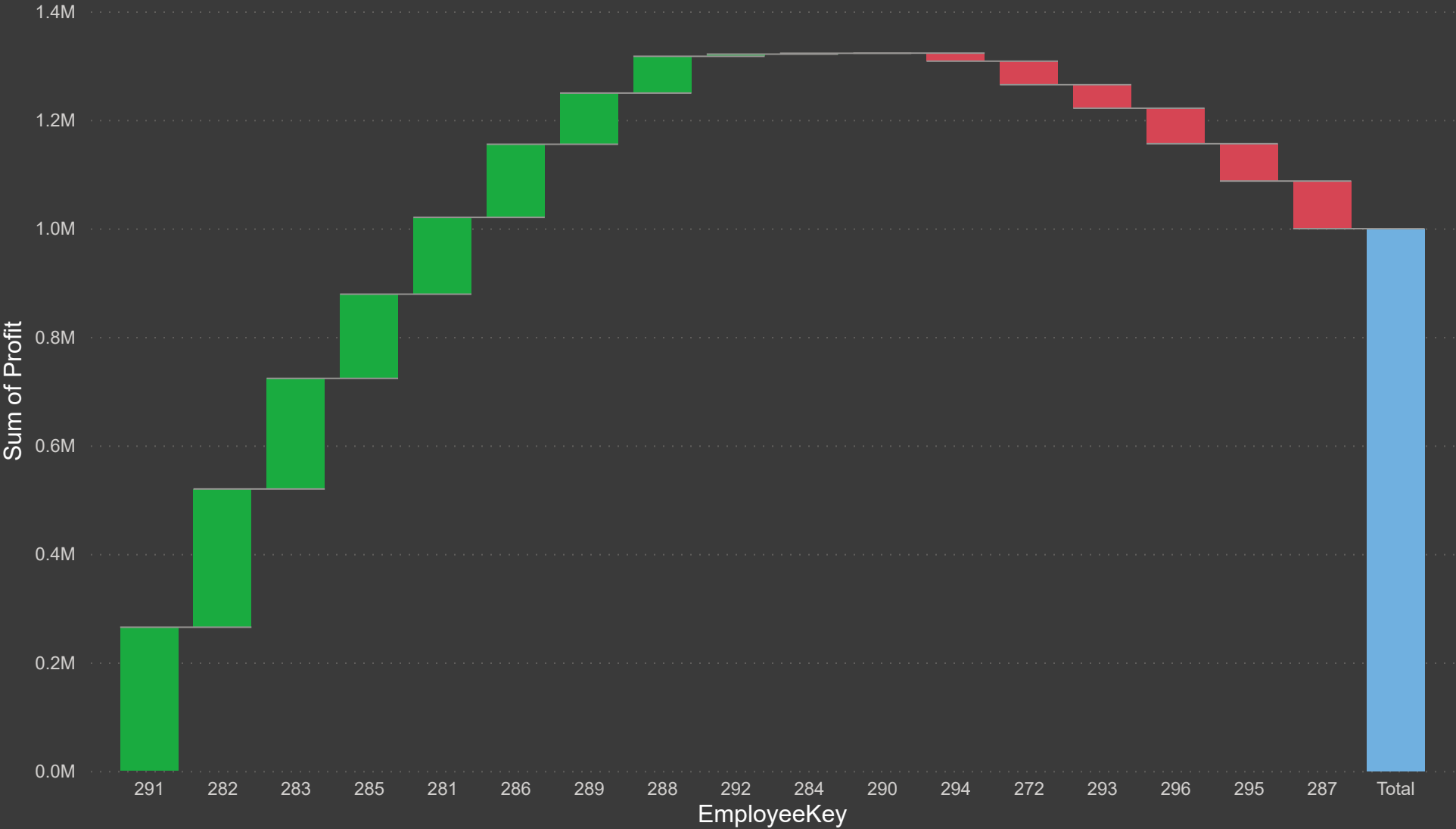


Quantity Sold by Salesperson



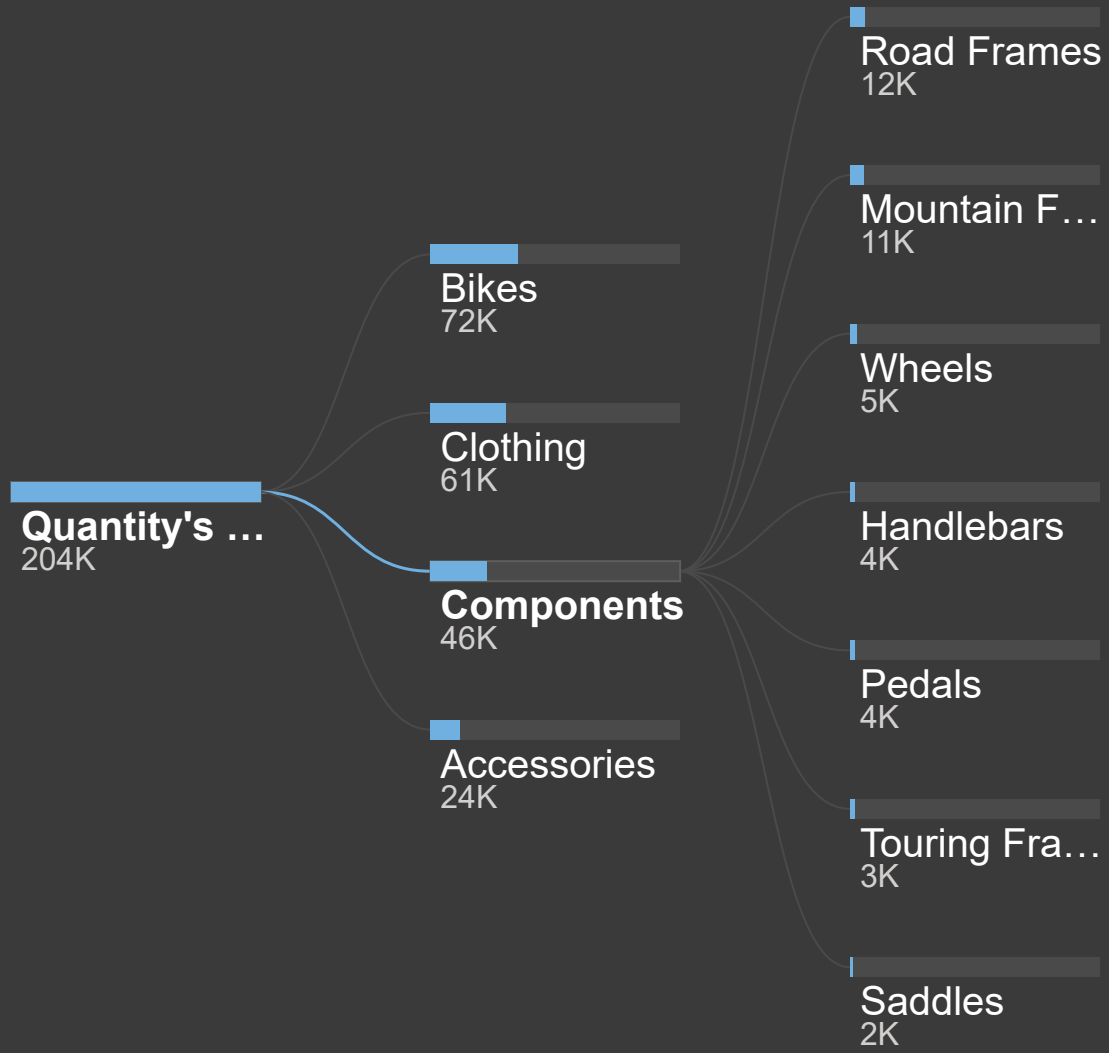
Profit by EmployeeKey

● Increase ● Decrease ● Total



Category x
Components

Subcategory x



Key influencers

Top segments



What influences Profit to Increase ?

When...

....the average of Profit increases by

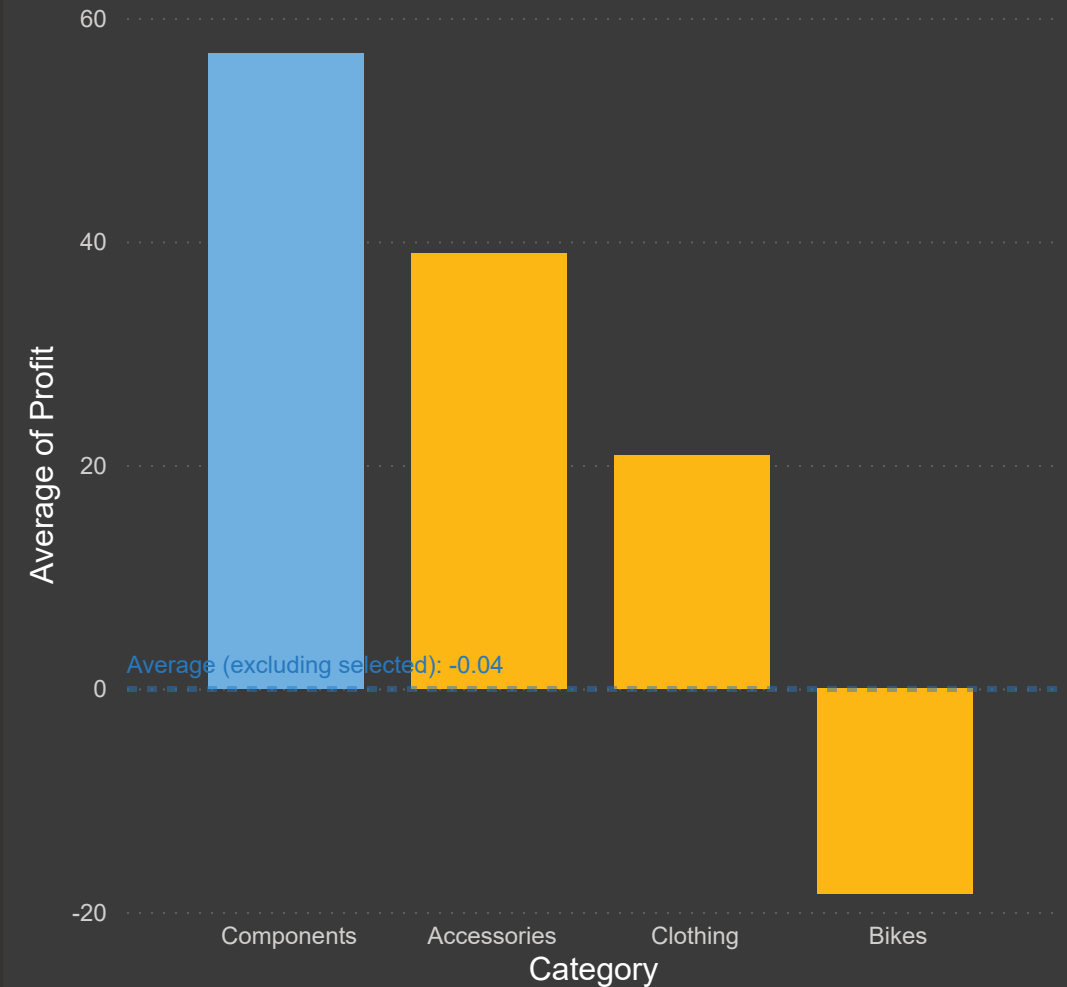
Category is Components

62.37

Category is Accessories

27.68

← Profit is more likely to increase when Category is Components than otherwise (on average).



☐ Only show values that are influencers



Adventure Works Sales Analysis

Year

2017

2018

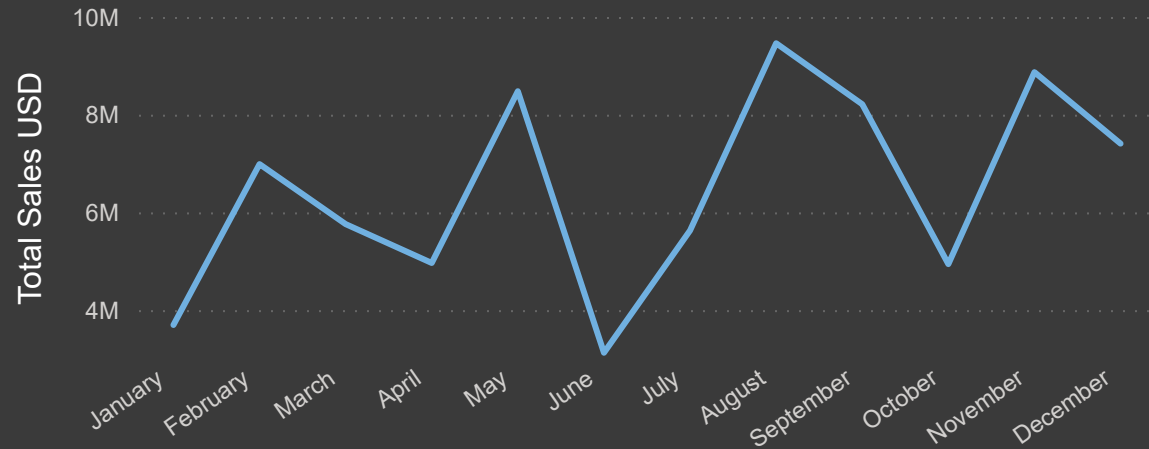
77.55M

Sum of Sales

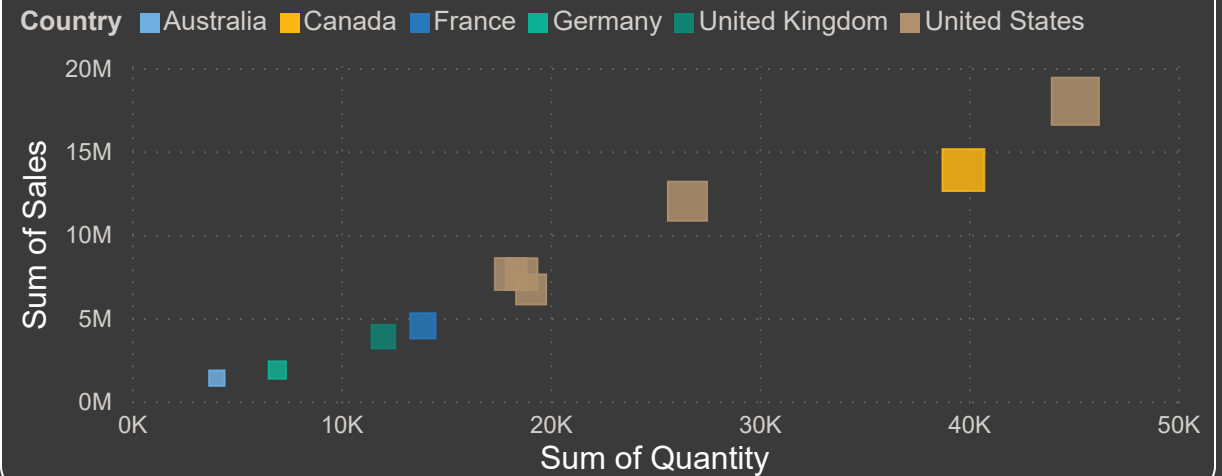
1.00M

Sum of Profit

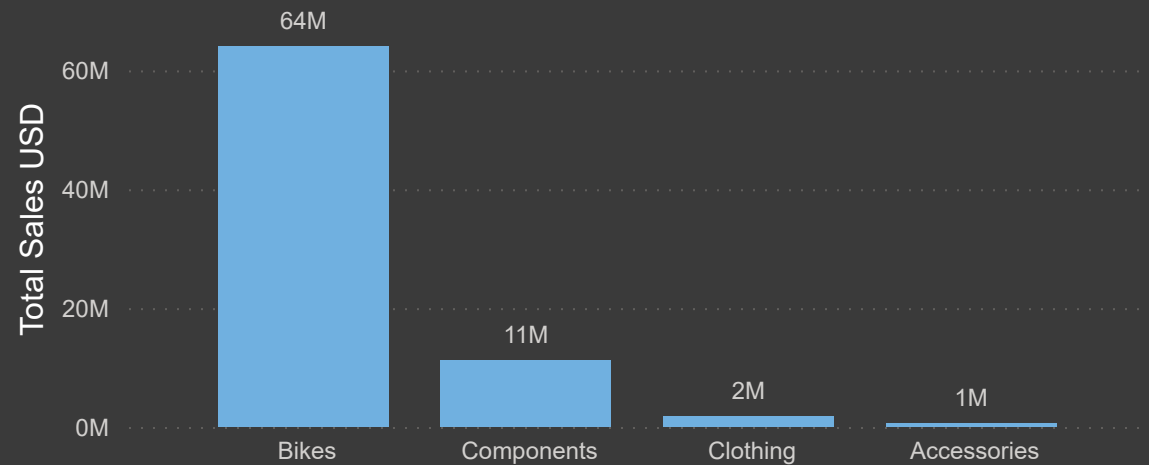
Sales by Month



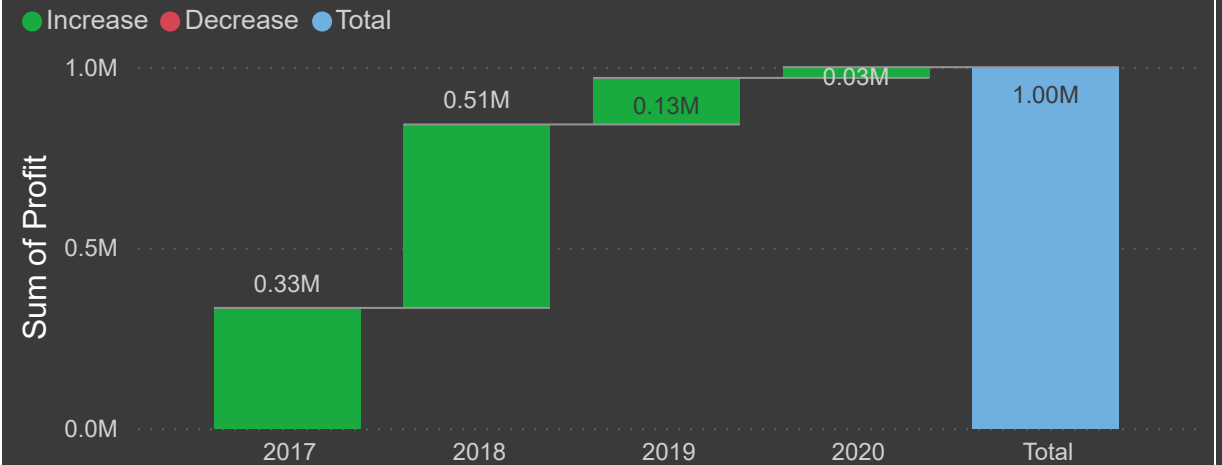
Sales and Quantity's by Country



Sales by Category



Profit by Year





Adventure Works Regional Analysis

Year

2017

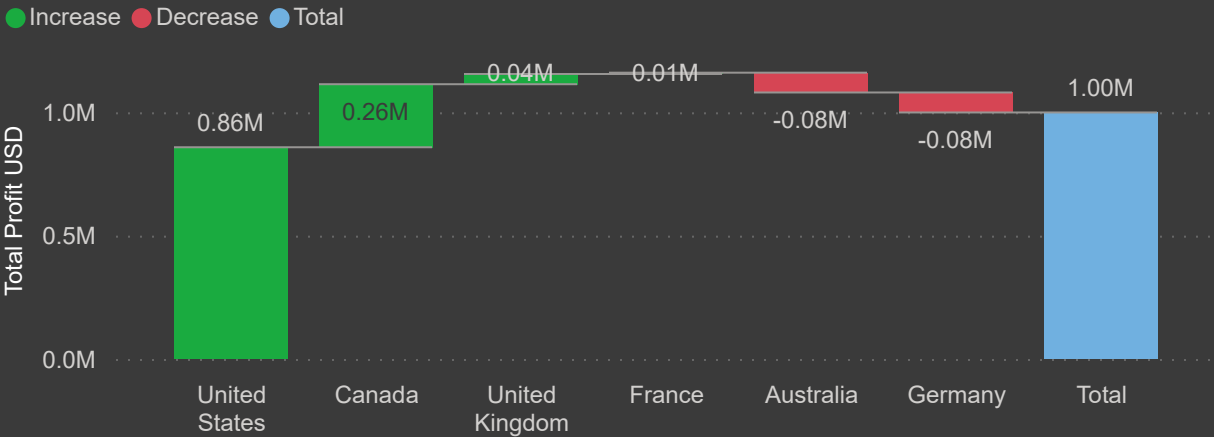
77.55M

Sum of Sales

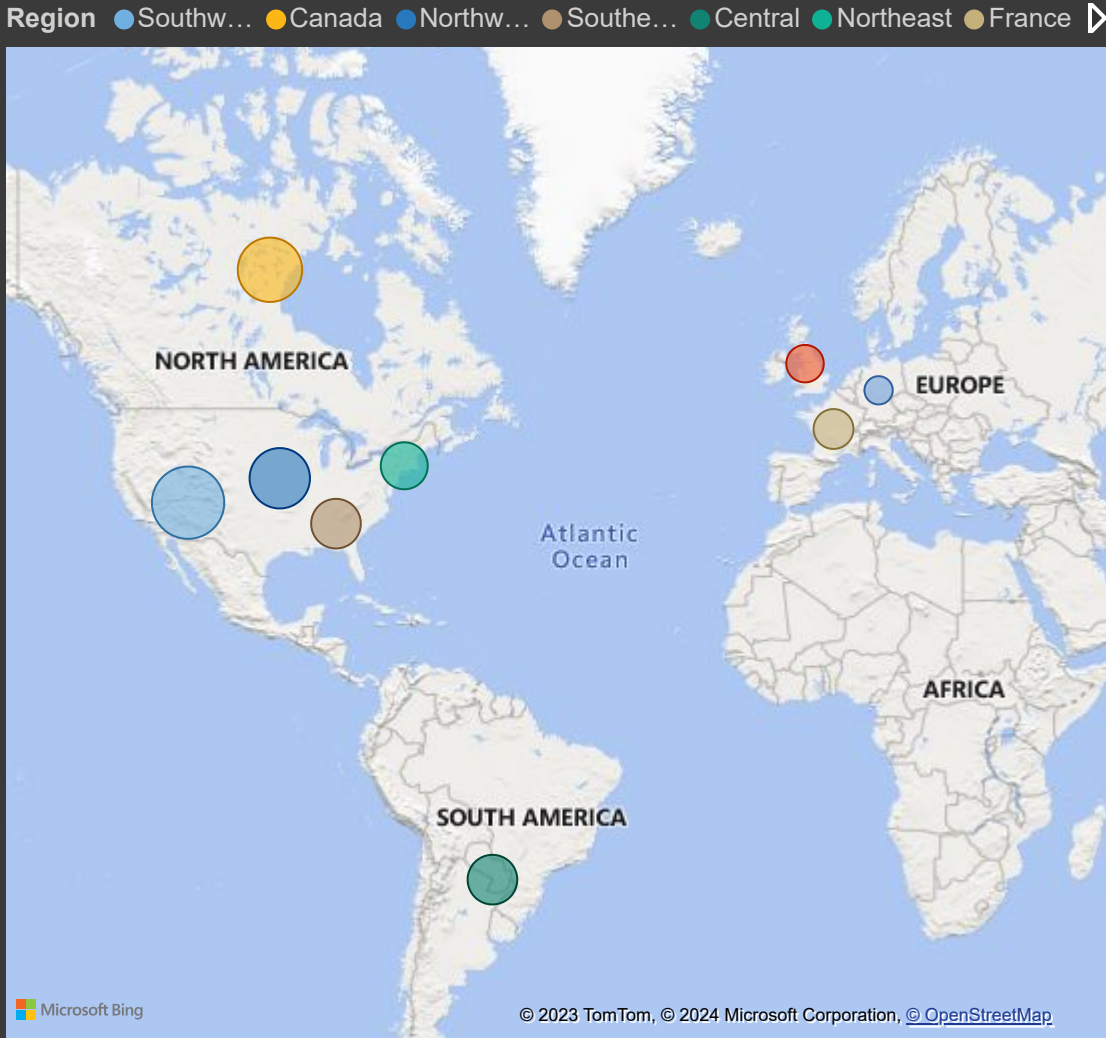
1.00M

Sum of Profit

Profit by Region



Sales by Region



Country	Region	Quantity Sold	Cost	Sales	Profit
Australia	Australia	4055	1,471,301.62	1,391,024.85	-80,276.77
Canada	Canada	39743	13,620,056.55	13,875,632.96	255,576.41
France	France	13903	4,522,507.53	4,527,839.69	5,332.16
Germany	Germany	6949	1,958,740.28	1,877,743.39	-80,996.89
United Kingdom	United Kingdom	12021	3,841,613.48	3,883,042.96	41,429.48
United States	Central	18619	7,468,037.62	7,633,386.86	165,349.24
United States	Northeast	19077	6,605,755.87	6,715,354.39	109,598.52
United States	Northwest	26552	11,700,586.64	12,004,822.45	304,235.81
Total		204114	76,549,075.63	77,548,570.20	999,494.57



Adventure Works Product Analysis

Year

2017

2018

77.55M

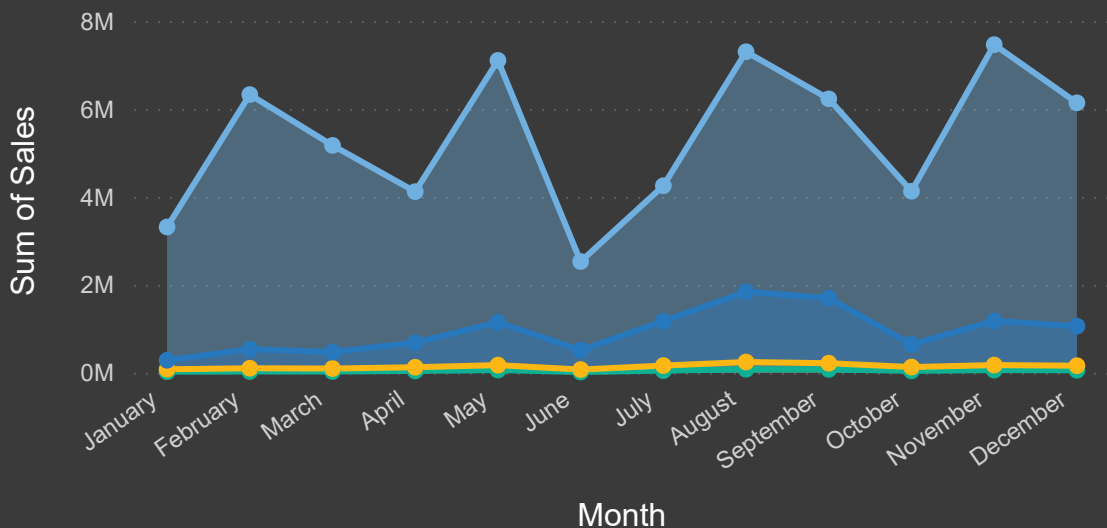
Sum of Sales

1.00M

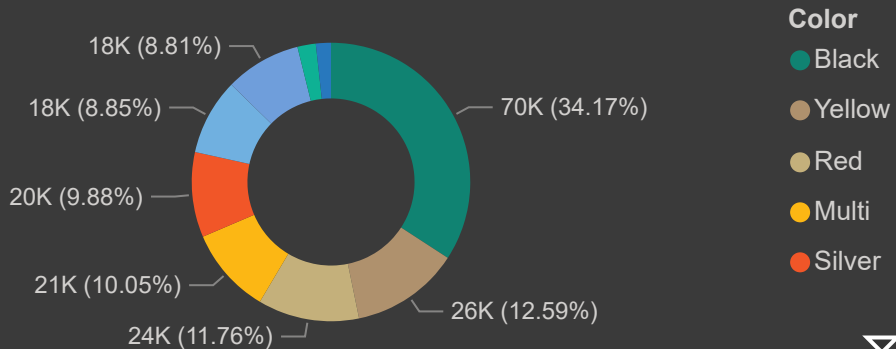
Sum of Profit

Sales by Category

Category Accessories Bikes Clothing Components



Quantity by Color



Category	Subcategory	Quantity's Sold	Cost	Sales	Profit
Accessories	Bike Racks	2585	116,014.80	182,007.60	65,992.80
Accessories	Bottles and Cages	2348	4,382.35	6,885.93	2,503.58
Accessories	Cleaners	2173	6,460.99	10,179.94	3,718.95
Accessories	Helmets	12515	165,698.52	250,209.76	84,511.24
Accessories	Hydration Packs	1820	37,430.95	59,218.45	21,787.50
Accessories	Locks	1086	11,199.71	16,249.00	5,049.29
Accessories	Pumps	1130	9,317.96	13,524.30	4,206.34
Accessories	Tires and Tubes	607	520.05	831.11	311.06
Bikes	Mountain Bikes	22454	24,318,955.00	25,880,152.86	1,561,197.86
Bikes	Road Bikes	38178	29,733,685.66	28,681,899.48	-1,051,786.18
Bikes	Touring Bikes	11248	10,452,071.40	9,506,980.82	-945,090.58
Clothing	Bib-Shorts	3111	115,482.06	167,171.79	51,689.73
Clothing	Caps	5903	35,764.78	30,658.42	-5,106.36
Clothing	Gloves	11292	143,895.31	207,372.85	63,477.54
Clothing	Jerseys	18291	668,021.89	549,933.91	-118,087.98
Clothing	Shorts	8369	215,800.32	325,297.09	109,496.77
Clothing	Socks	4351	14,669.86	23,331.45	8,661.59
Clothing	Tights	4562	141,117.89	203,041.16	61,923.27
Total		204114	76,549,075.63	77,548,570.20	999,494.57



Adventure Works Salesperson Analysis

Year

2017

2018

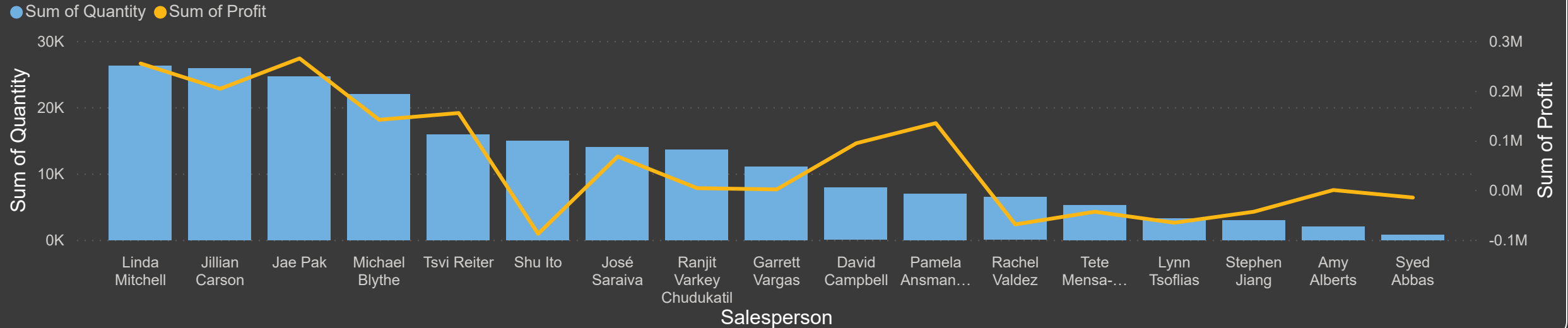
77.55M

Sum of Sales

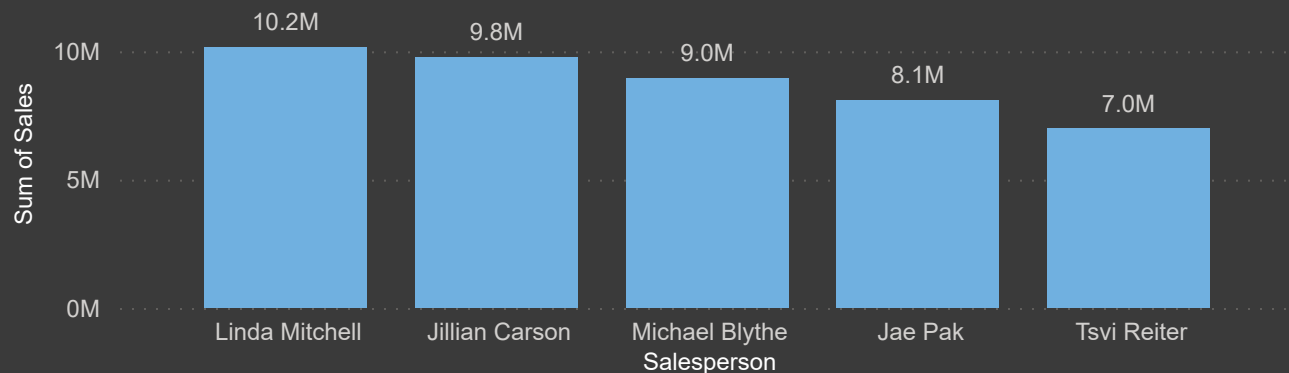
1.00M

Sum of Profit

Quantity and Profit by Salesperson



Top 5 Salesperson



No of Employee by Country

