

Wide World Importers

SALES ANALYSIS MAY 2015 – MAY 2018

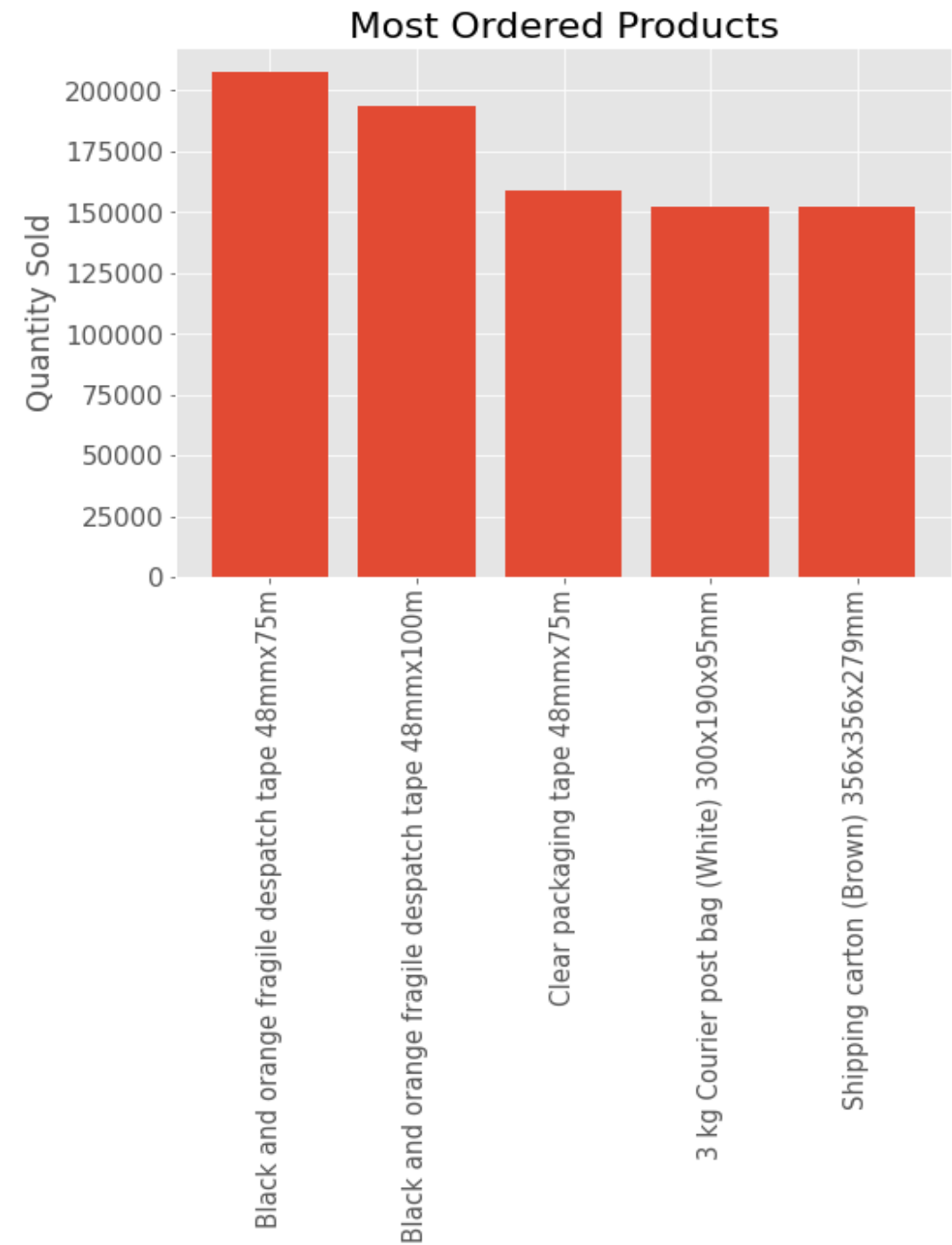
Best Selling Products

Top 5 Most Ordered Products

Description	Quantity
Black and orange fragile despatch tape 48mmx75m	207324
Black and orange fragile despatch tape 48mmx100m	193680
Clear packaging tape 48mmx75m	158626
3 kg Courier post bag (White) 300x190x95mm	152375
Shipping carton (Brown) 356x356x279mm	152125

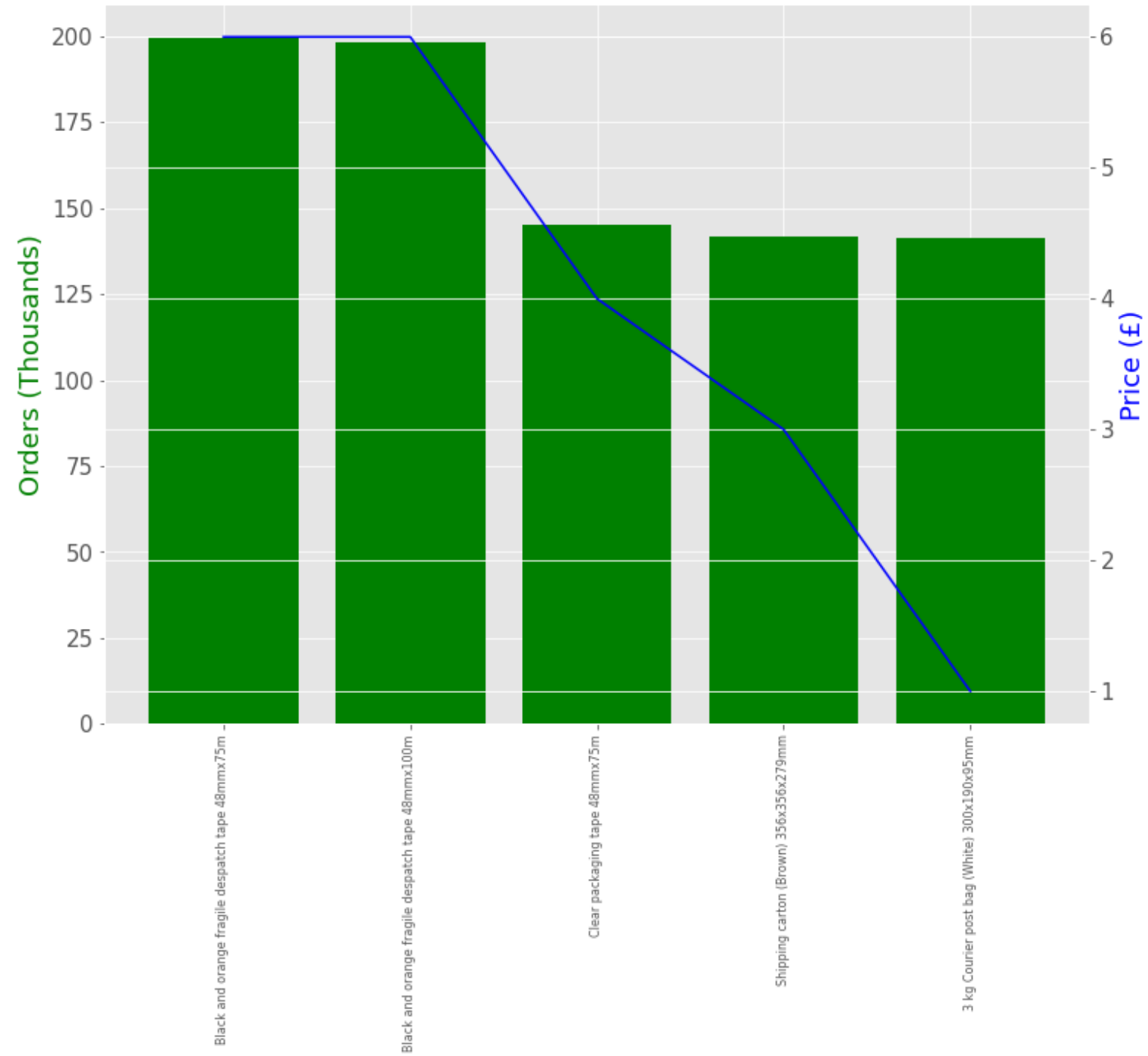
Most Ordered Product

Black and orange fragile despatch tape 48mmx75m
Total Orders: 207,324



Best Selling Products Price Points

The top 5 most ordered products each have modest retail price points at £6 or under.



Most Profitable Products

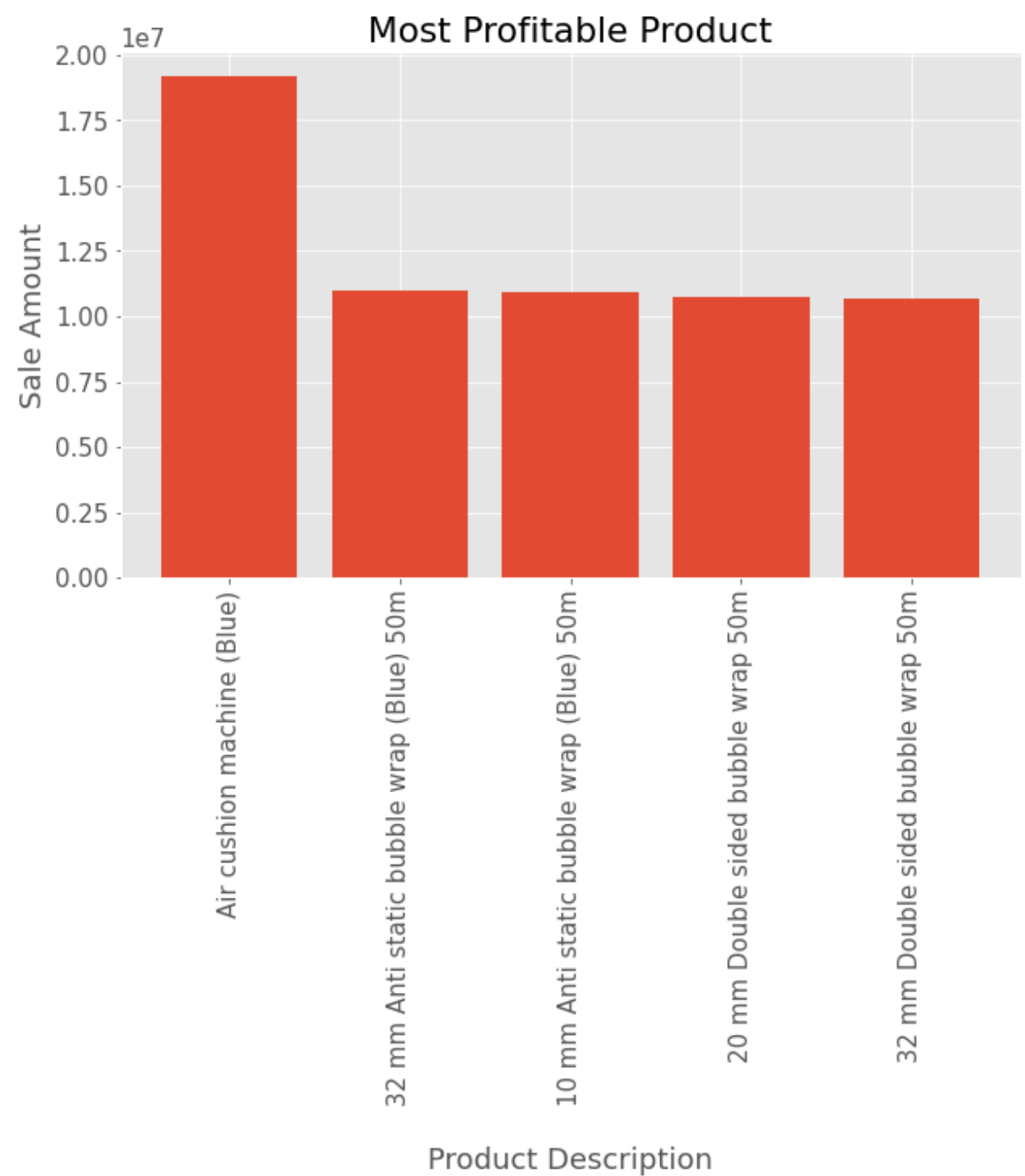
Top 5 Products with the Highest Revenue Income

Description	SaleAmount
Air cushion machine (Blue)	19160010.78
32 mm Anti static bubble wrap (Blue) 50m	11012400.00
10 mm Anti static bubble wrap (Blue) 50m	10917645.75
20 mm Double sided bubble wrap 50m	10719702.00
32 mm Double sided bubble wrap 50m	10678164.00

Most Profitable Product

Air cushion machine (Blue)

Total Revenue Income: £ 19,160,010



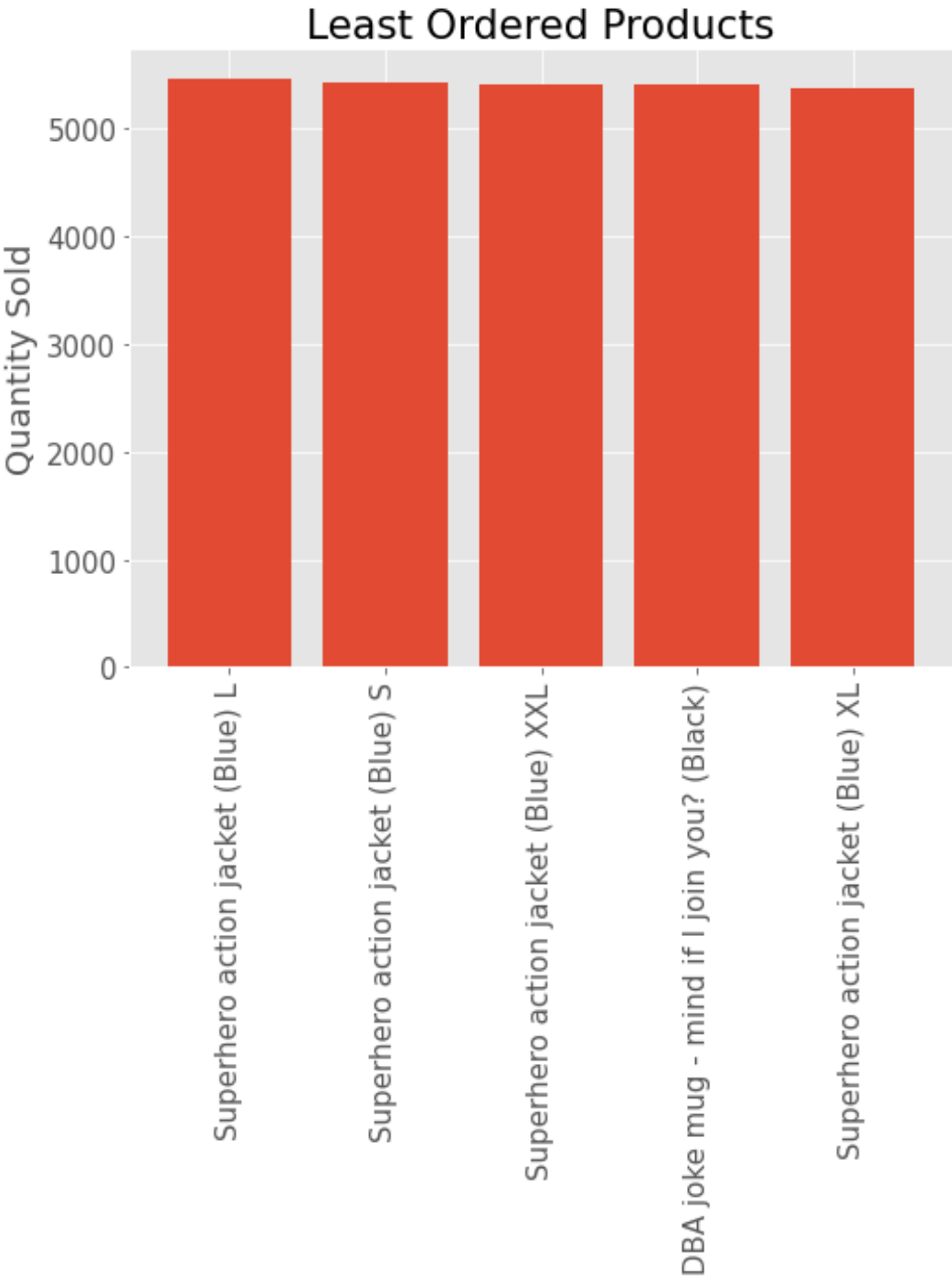
Least Ordered Products

Top 5 Least Ordered Products

Description	Quantity
Superhero action jacket (Blue) L	5464
Superhero action jacket (Blue) S	5426
Superhero action jacket (Blue) XXL	5404
DBA joke mug - mind if I join you? (Black)	5402
Superhero action jacket (Blue) XL	5373

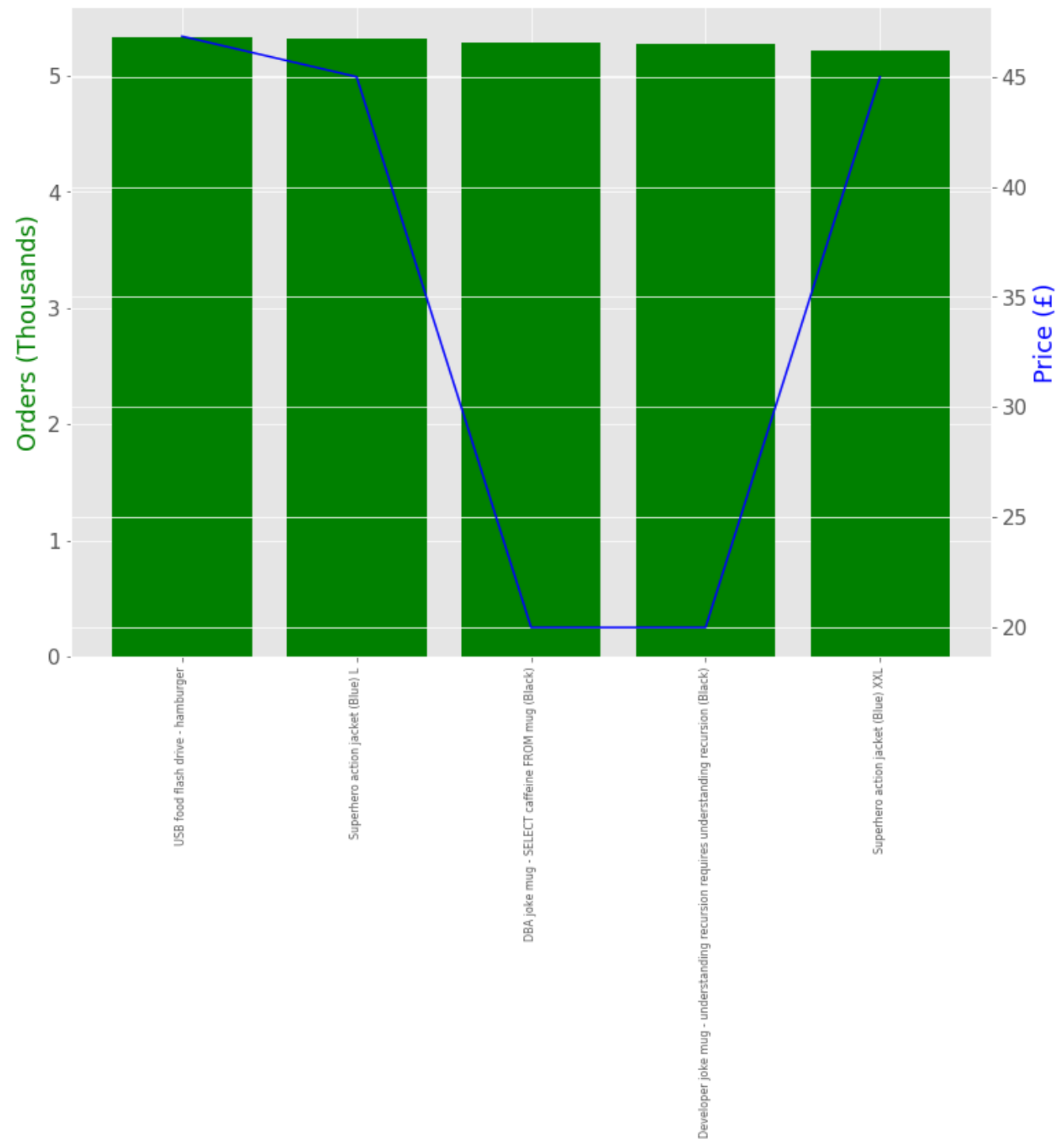
Least Ordered Product

Superhero action jacket (Blue) XL
Total Orders: 5373



Least Ordered Products Price Points

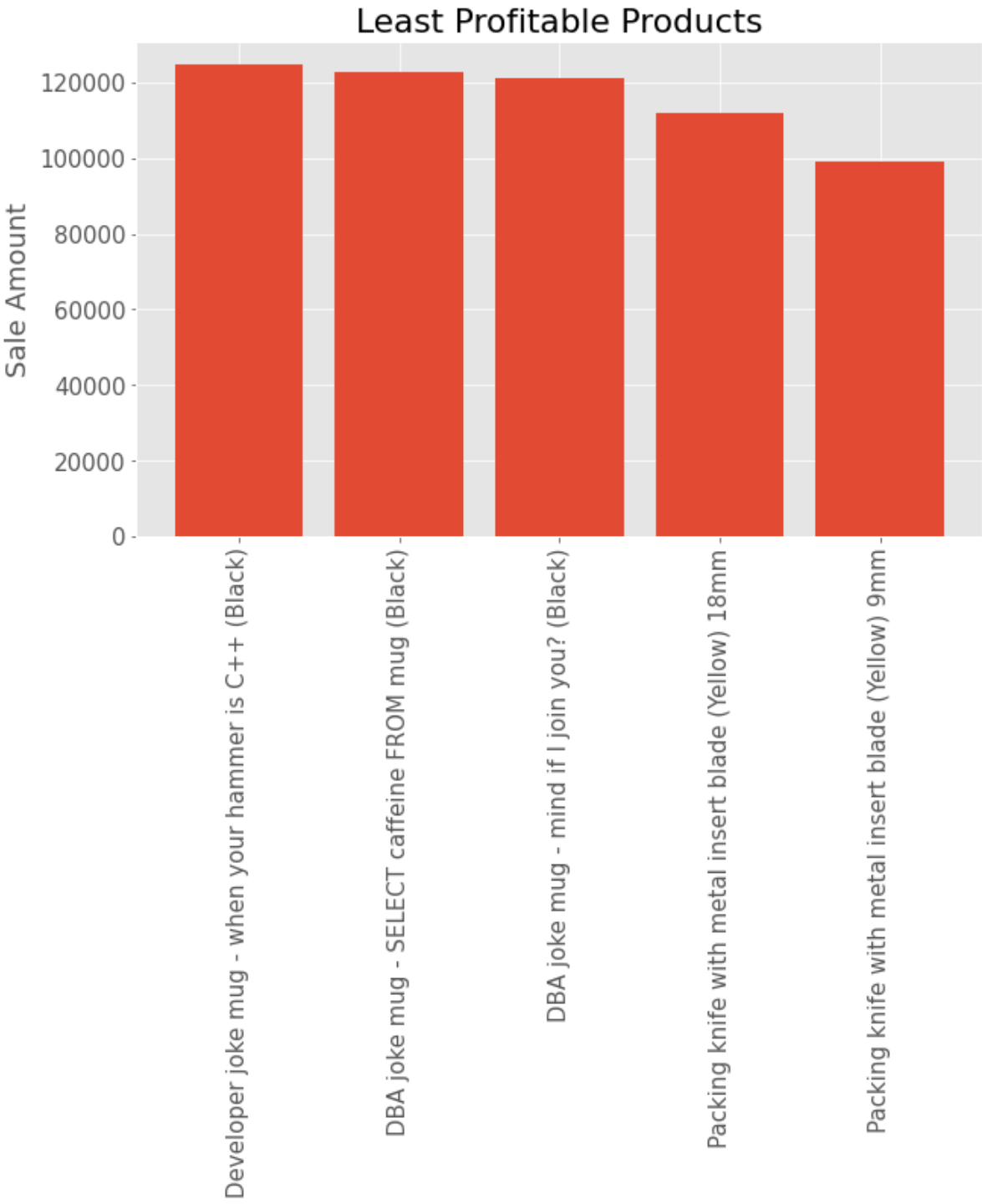
The top 5 least ordered products are novelty/joke items with a price range of £20 - £45.



Least Profitable Products

Top 5 Products with the Lowest Revenue Income

Description	SaleAmount
Developer joke mug - when your hammer is C++ (Black)	124663.18
DBA joke mug - SELECT caffeine FROM mug (Black)	122689.98
DBA joke mug - mind if I join you? (Black)	121142.46
Packing knife with metal insert blade (Yellow) 18mm	111904.20
Packing knife with metal insert blade (Yellow) 9mm	98948.83



Least Profitable Product

Packing knife with metal insert blade (Yellow) 9mm
Total Revenue Income: £ 98,948

Top 10 Products Bought Within an Order of 2

10 mm Anti static bubble wrap (Blue) 50m & Furry gorilla with big eyes slippers (Black)

21 Orders

```
('10 mm Anti static bubble wrap (Blue) 50m', 'Furry gorilla with big eyes slippers (Black) L') 21
('Shipping carton (Brown) 457x279x279mm', 'Developer joke mug - there are 10 types of people in the world (Black)') 20
('Developer joke mug - old C developers never die (White)', 'Void fill 400 L bag (White) 400L') 20
('RC toy sedan car with remote control (Red) 1/50 scale', 'Black and orange handle with care despatch tape 48mmx75m') 19
('The Gu red shirt XML tag t-shirt (Black) 3XS', 'Shipping carton (Brown) 457x279x279mm') 18
('USB rocket launcher (Gray)', '10 mm Double sided bubble wrap 20m') 18
('Ogre battery-powered slippers (Green) L', 'Furry gorilla with big eyes slippers (Black) XL') 18
('Alien officer hoodie (Black) 4XL', '32 mm Anti static bubble wrap (Blue) 10m') 18
('Red and white urgent heavy despatch tape 48mmx100m', 'Superhero action jacket (Blue) L') 18
('Air cushion film 200mmx200mm 325m', 'Medium sized bubblewrap roll 20m') 18
```

Reviewing the most common pairs of items bought together within an order, there does not seem to be a clear correlation between the items sold.

Most Profitable ColorID

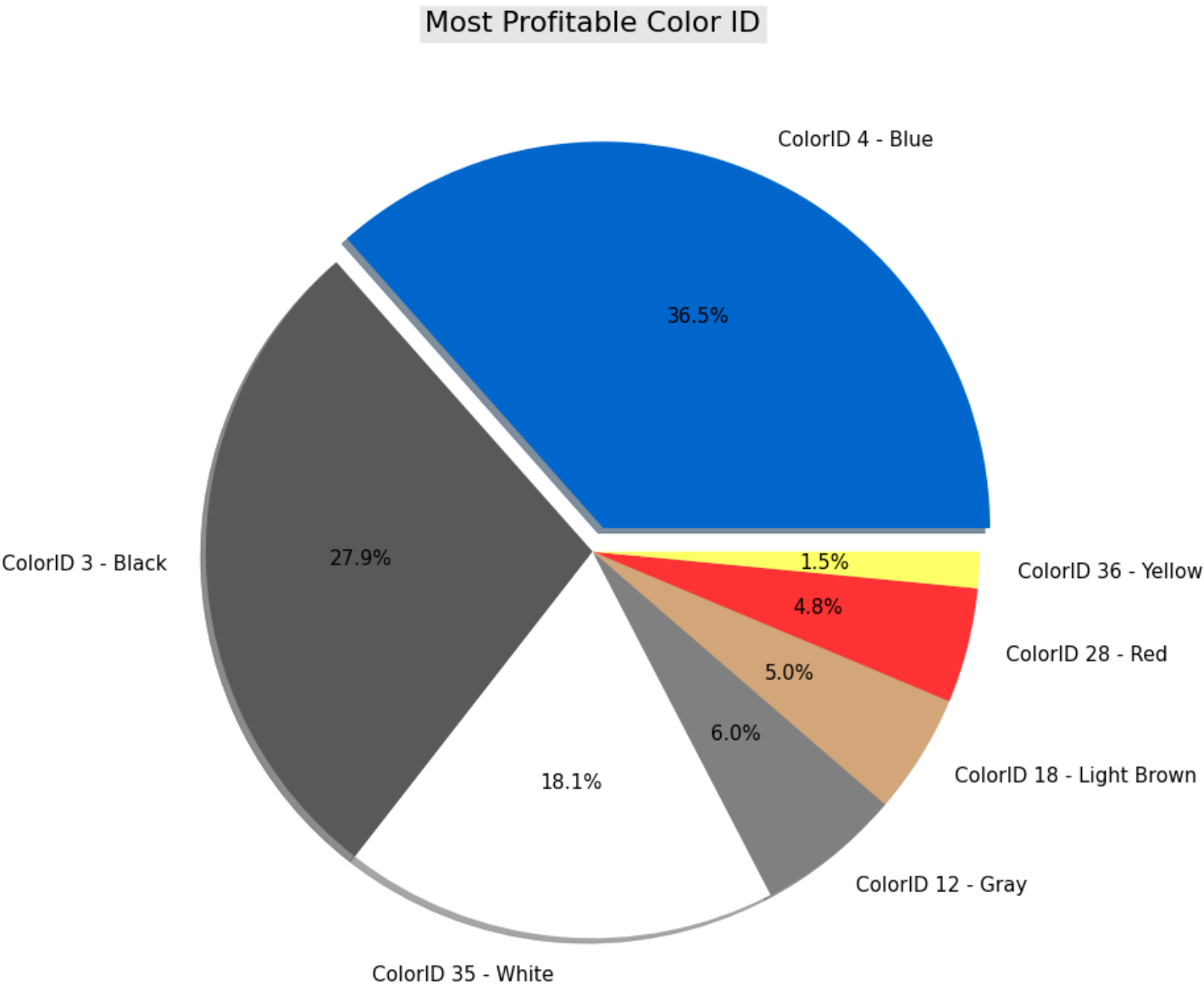
Top ColorID's with the Highest Revenue Income

ColorID	SaleAmount
4.0	61934209.69
3.0	47381775.48
35.0	30768572.64
12.0	10235634.71
18.0	8523225.00
28.0	8153157.21
36.0	2570502.74

Most Profitable ColorID

Blue – ColorID 4

Total Revenue Income: £ 61,934,209



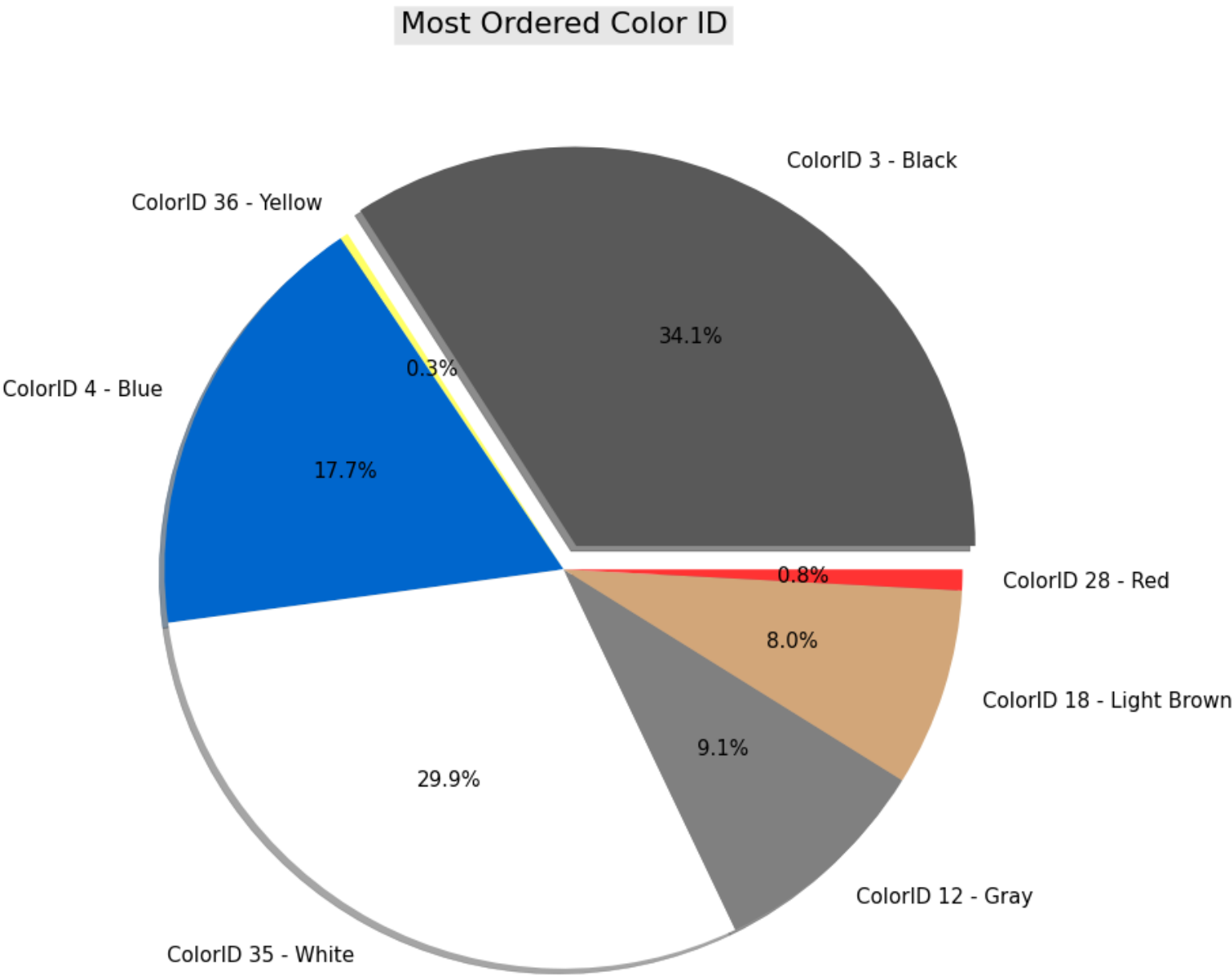
Most Ordered ColorID

Top ColorID's with the Most Orders

ColorID	Quantity
3.0	1167677
35.0	1025157
4.0	605738
12.0	309847
18.0	274500
28.0	29033
36.0	11562

Most Ordered ColorID

Black – ColorID 3
Total Orders: 1,167,677



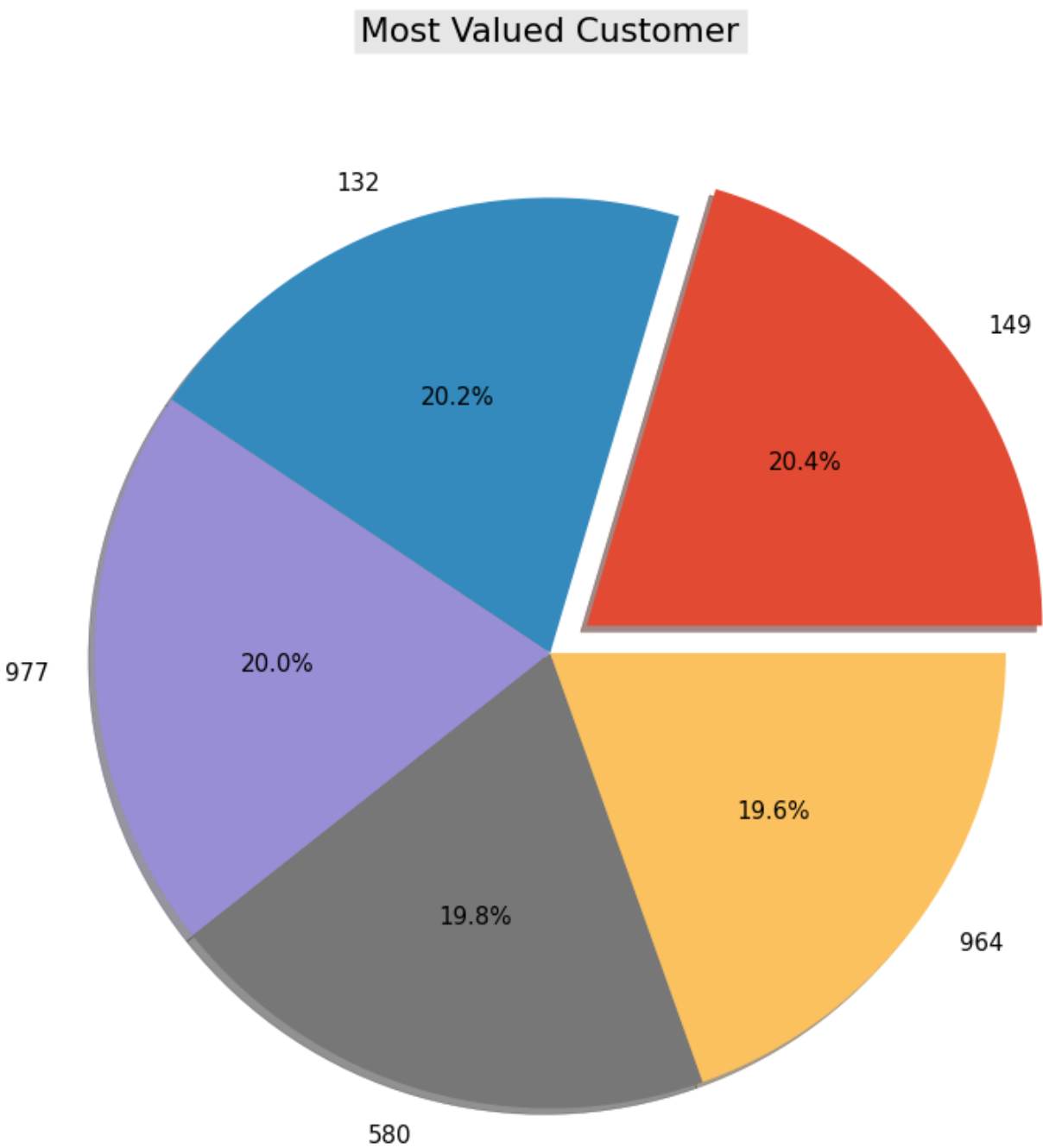
Most Valued Customer

Top Customers with the Highest Total Sales

CustomerID	SaleAmount
149	662878.80
132	654689.88
977	650514.20
580	641944.13
964	634885.95

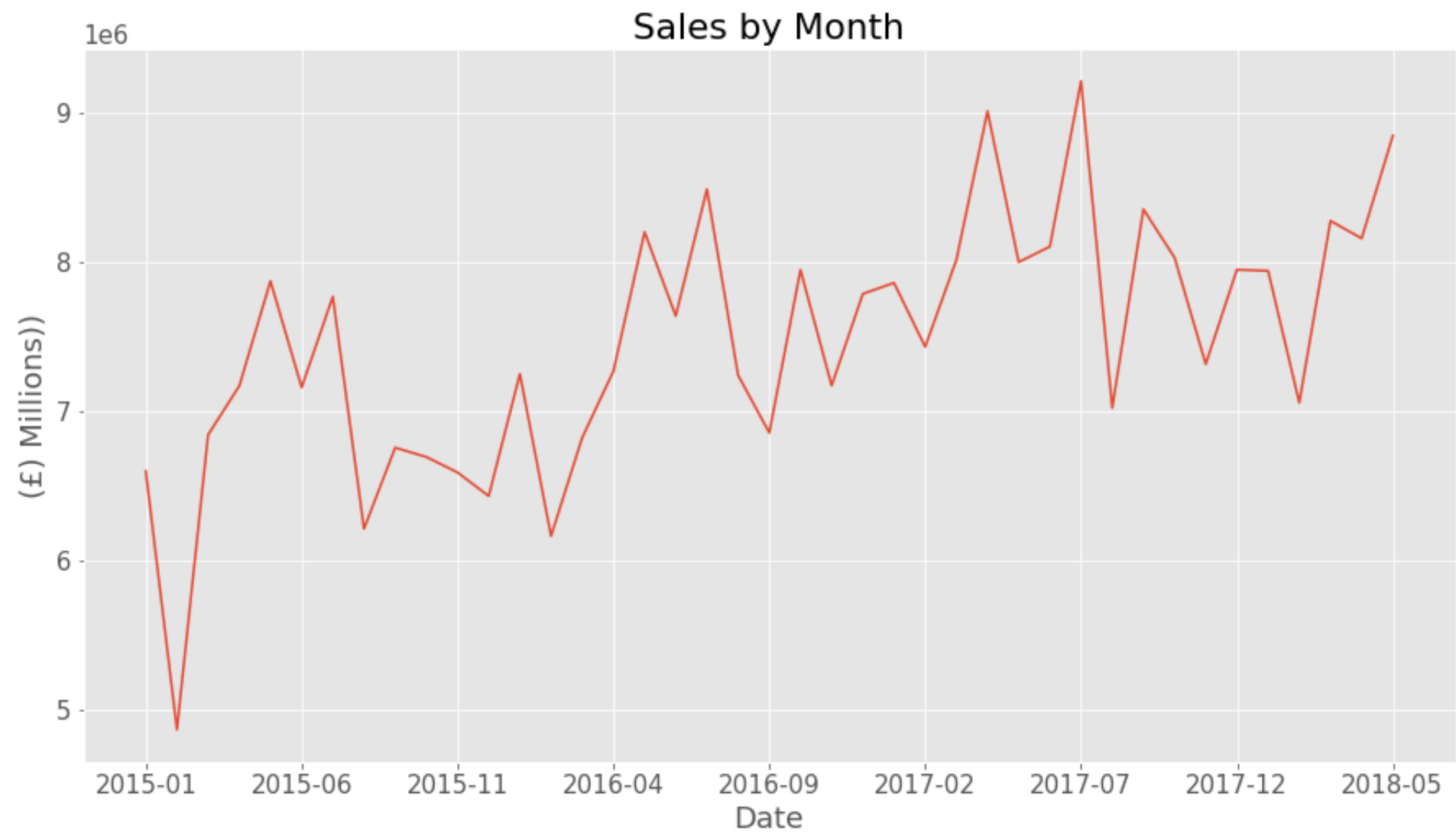
Most Valued Customer

CustomerID 149
Total Orders: £662,878



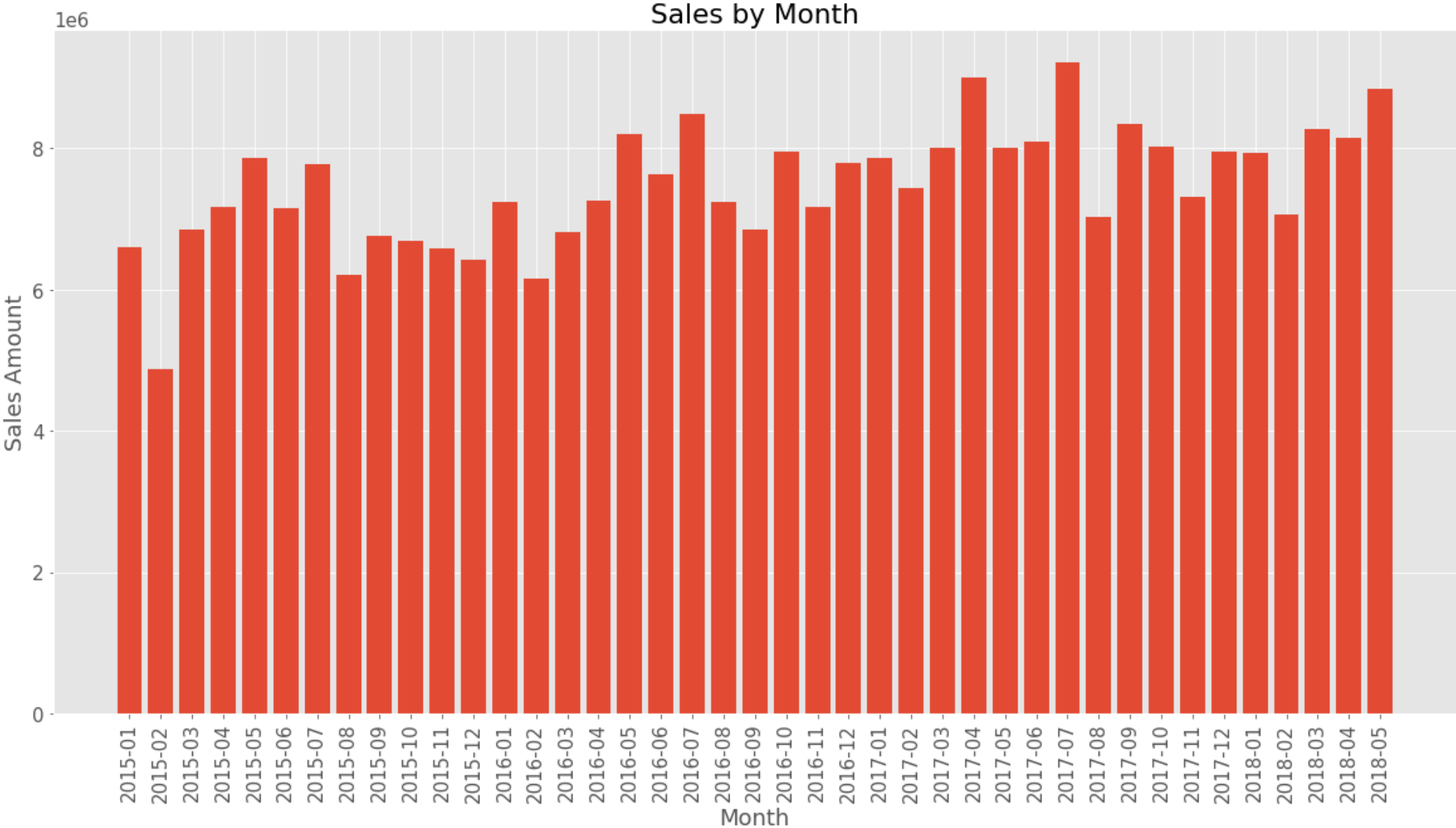
Analysing Monthly Sales Data Jan 2015 – May 2018

There is an increase of sales during each of the years summer months.



Analysing Monthly Sales Data Jan 2015 – May 2018

There is an increase of sales during each of the years summer months.



The Best & Worst Months of Sales

Jan 2015 – May 2018

Best Sales Months

MonthSold	SaleAmount
2017-07	9210146.87
2017-04	9008982.11
2018-05	8844549.33
2016-07	8486646.24
2017-09	8352277.36

The best month of sales is July 2017.

July 2017 Total Sales: £9,210,146

Worst Sales Months

MonthSold	SaleAmount
2015-11	6589175.21
2015-12	6430982.82
2015-08	6212109.69
2016-02	6162988.24
2015-02	4866715.31

The worst month of sales is February 2015.

February 2015 Total Sales: £4,866,715

Sales Revenue Percentage Changes Jan 2015 – May 2018

	SaleAmount	% Revenue Change
MonthSold		
2015-01-01	6597858.56000	NaN
2015-02-01	4866715.31000	-26.00000
2015-03-01	6841489.70000	41.00000
2015-04-01	7168604.56000	5.00000
2015-05-01	7870887.43000	10.00000
2015-06-01	7158924.94000	-9.00000
2015-07-01	7767234.80000	8.00000
2015-08-01	6212109.69000	-20.00000
2015-09-01	6755110.27000	9.00000
2015-10-01	6692784.28000	-1.00000
2015-11-01	6589175.21000	-2.00000
2015-12-01	6430982.82000	-2.00000
2016-01-01	7249453.39000	13.00000
2016-02-01	6162988.24000	-15.00000
2016-03-01	6822823.73000	11.00000

	SaleAmount	% Revenue Change
MonthSold		
2016-04-01	7267181.99000	7.00000
2016-05-01	8199317.03000	13.00000
2016-06-01	7637570.05000	-7.00000
2016-07-01	8486646.24000	11.00000
2016-08-01	7240273.64000	-15.00000
2016-09-01	6854943.88000	-5.00000
2016-10-01	7946180.82000	16.00000
2016-11-01	7171296.09000	-10.00000
2016-12-01	7785089.87000	9.00000
2017-01-01	7859217.72000	1.00000
2017-02-01	7430993.05000	-5.00000
2017-03-01	8012013.42000	8.00000
2017-04-01	9008982.11000	12.00000
2017-05-01	7998189.65000	-11.00000
2017-06-01	8102100.63000	1.00000

	SaleAmount	% Revenue Change
MonthSold		
2017-07-01	9210146.87000	14.00000
2017-08-01	7021663.16000	-24.00000
2017-09-01	8352277.36000	19.00000
2017-10-01	8027881.25000	-4.00000
2017-11-01	7315061.14000	-9.00000
2017-12-01	7947394.62000	9.00000
2018-01-01	7939576.21000	-0.00000
2018-02-01	7056720.37000	-11.00000
2018-03-01	8274583.06000	17.00000
2018-04-01	8156650.10000	-1.00000
2018-05-01	8844549.33000	8.00000

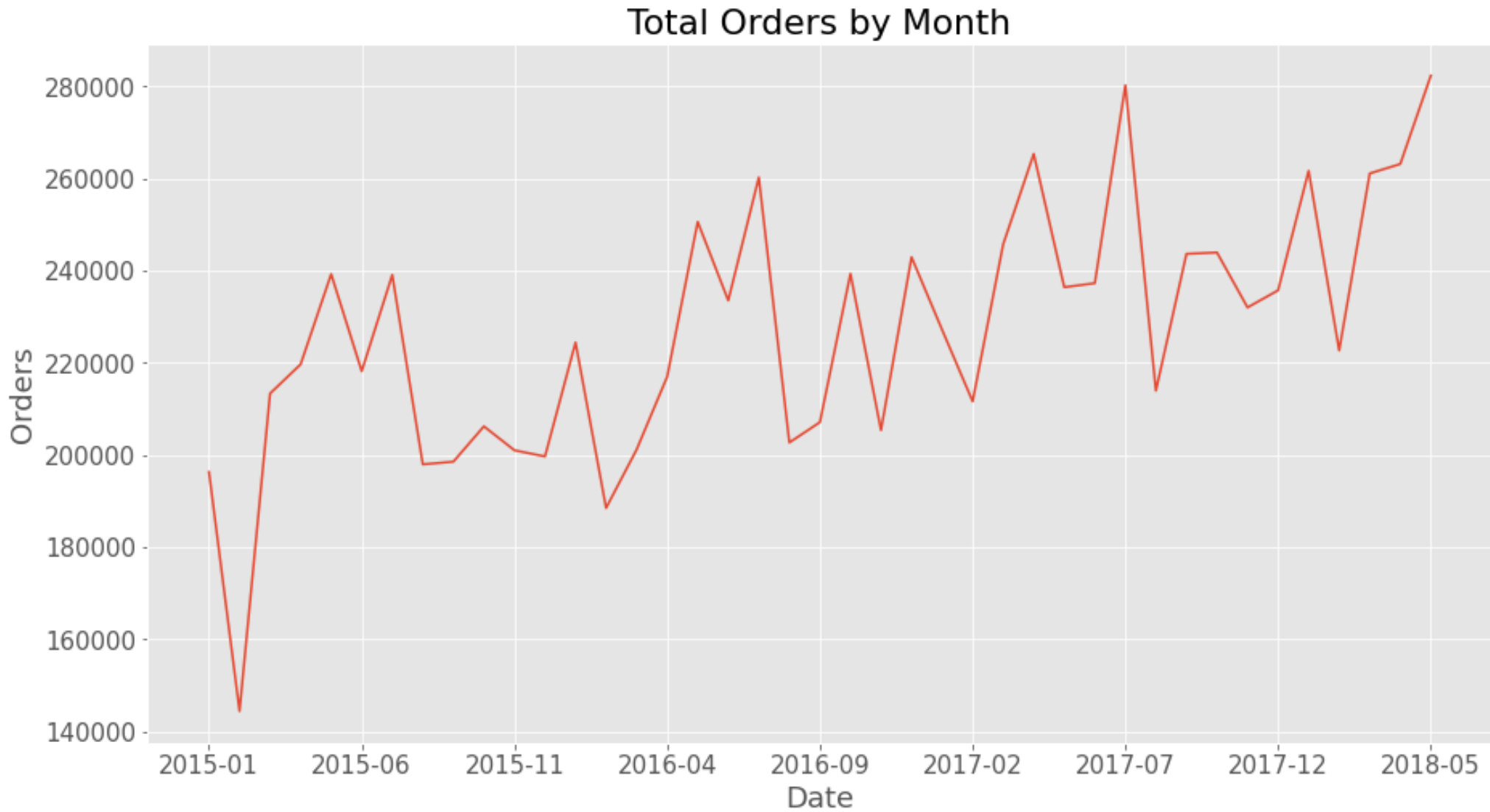
There has been a 2.57% revenue increase in sales from May 2017 to May 2018 when compared to the revenue of May 2016 to May 2017.

There is a year on year increase of sales from Jan 2015 to May 2018.

There is not a positive month on month revenue change.

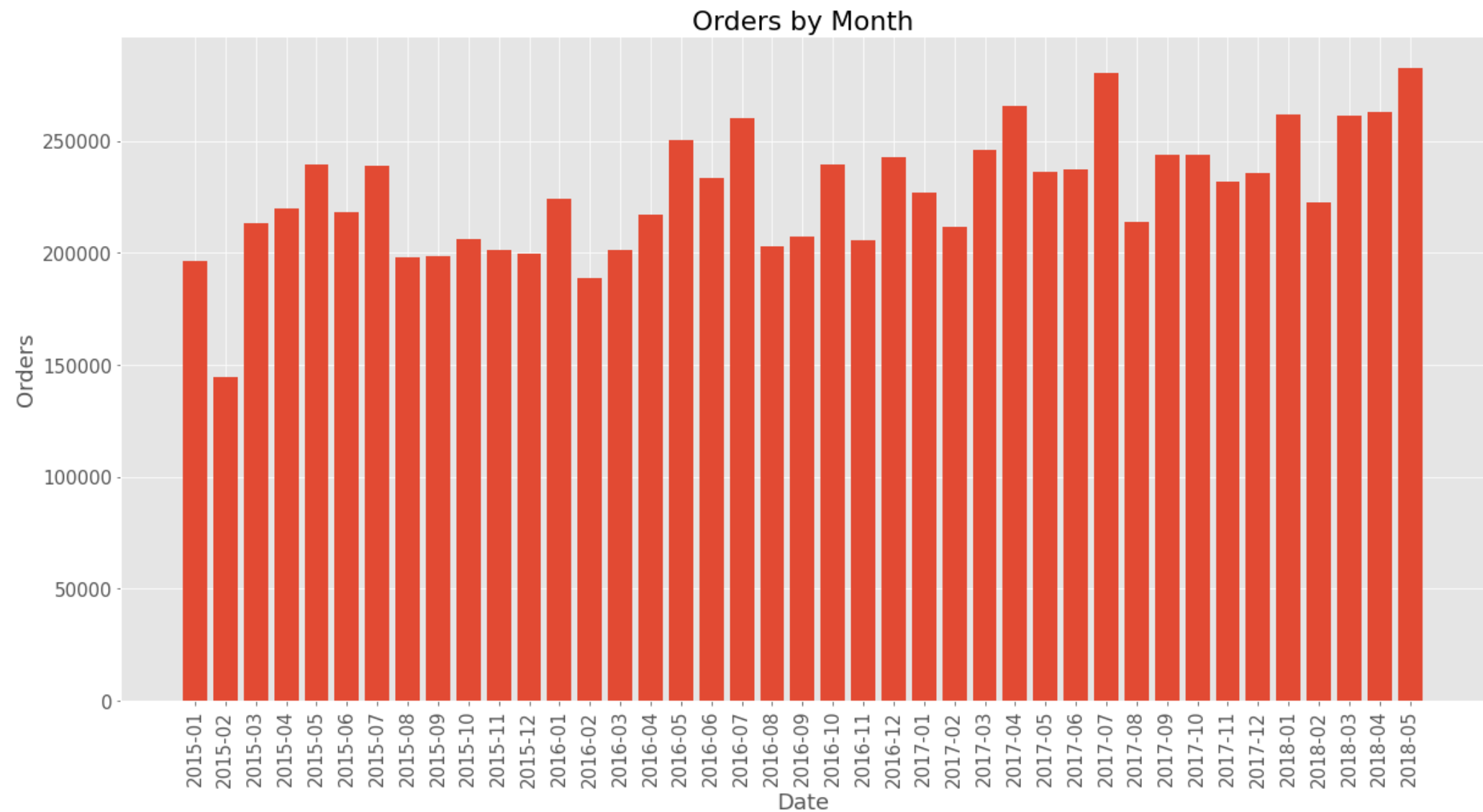
Analysing Monthly Orders Data Jan 2015 – May 2018

There is an increase of orders during during each of the years summer months.



Analysing Monthly Orders Data Jan 2015 – May 2018

There is an increase of orders during each of the years summer months.



The Best & Worst Months of Orders

Jan 2015 – May 2018

Best Orders Months

Quantity	
MonthSold	
2018-05	282360
2017-07	280262
2017-04	265378
2018-04	263172
2018-01	261688

The best month of orders is May 2018.

May 2018 Total Orders: 282,360

Worst Orders Months

Quantity	
MonthSold	
2015-09	198537
2015-08	197961
2015-01	196295
2016-02	188481
2015-02	144382

The worst month of Orders is February 2015.

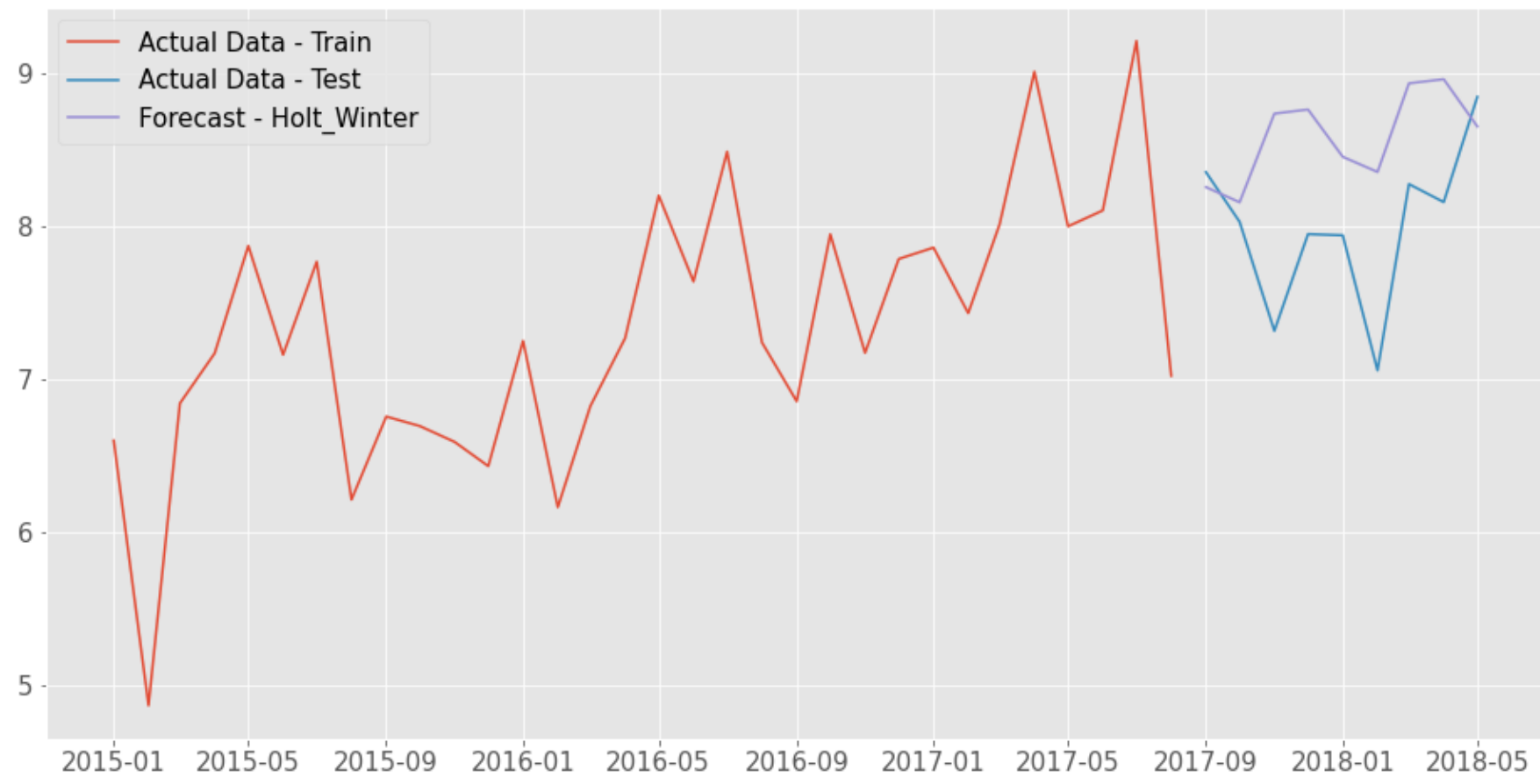
February 2015 Total Orders: 144,382

Forecasting Future Monthly Sales – May 2018 – May 2019

Using the Time Series Forecasting Model Holt-Winter-Method, actual sales data is used to forecast future sales.

	Actual Sales	Forecast Sales
MonthSold		
2017-09-01	8352277.36000	8254608.60919
2017-10-01	8027881.25000	8155383.85346
2017-11-01	7315061.14000	8734861.54365
2017-12-01	7947394.62000	8761847.96026
2018-01-01	7939576.21000	8452671.01072
2018-02-01	7056720.37000	8353446.25499
2018-03-01	8274583.06000	8932923.94518
2018-04-01	8156650.10000	8959910.36179
2018-05-01	8844549.33000	8650733.41225

Visualising the forecasted sales values against the actual sales.



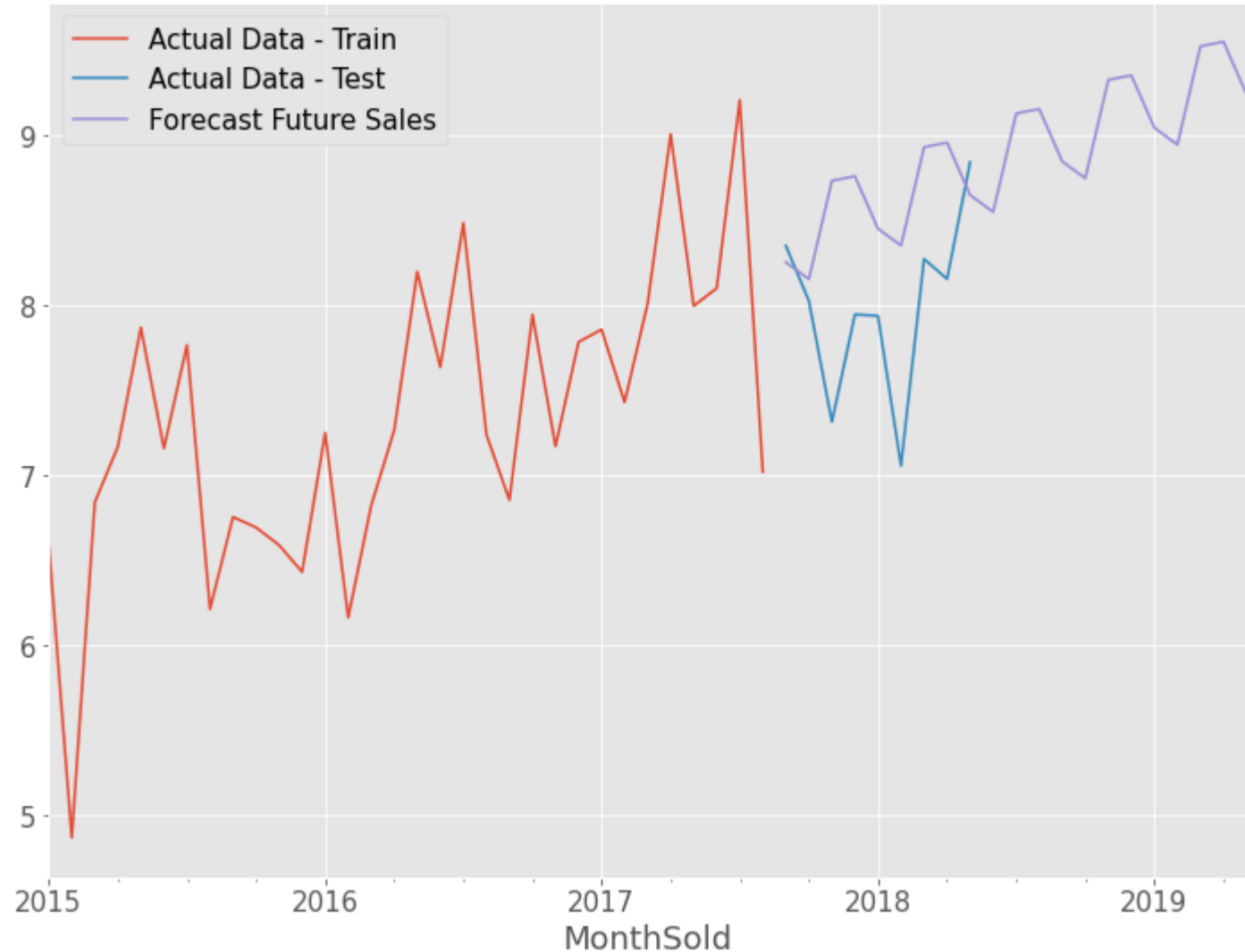
Forecasting Future Monthly Sales – May 2018 – May 2019

Monthly sales forecast for the next 12 months.

	Forecast Sales
2018-05-01	8650733.41225
2018-06-01	8551508.65652
2018-07-01	9130986.34671
2018-08-01	9157972.76332
2018-09-01	8848795.81378
2018-10-01	8749571.05805
2018-11-01	9329048.74824
2018-12-01	9356035.16485
2019-01-01	9046858.21531
2019-02-01	8947633.45958
2019-03-01	9527111.14977
2019-04-01	9554097.56638
2019-05-01	9244920.61684

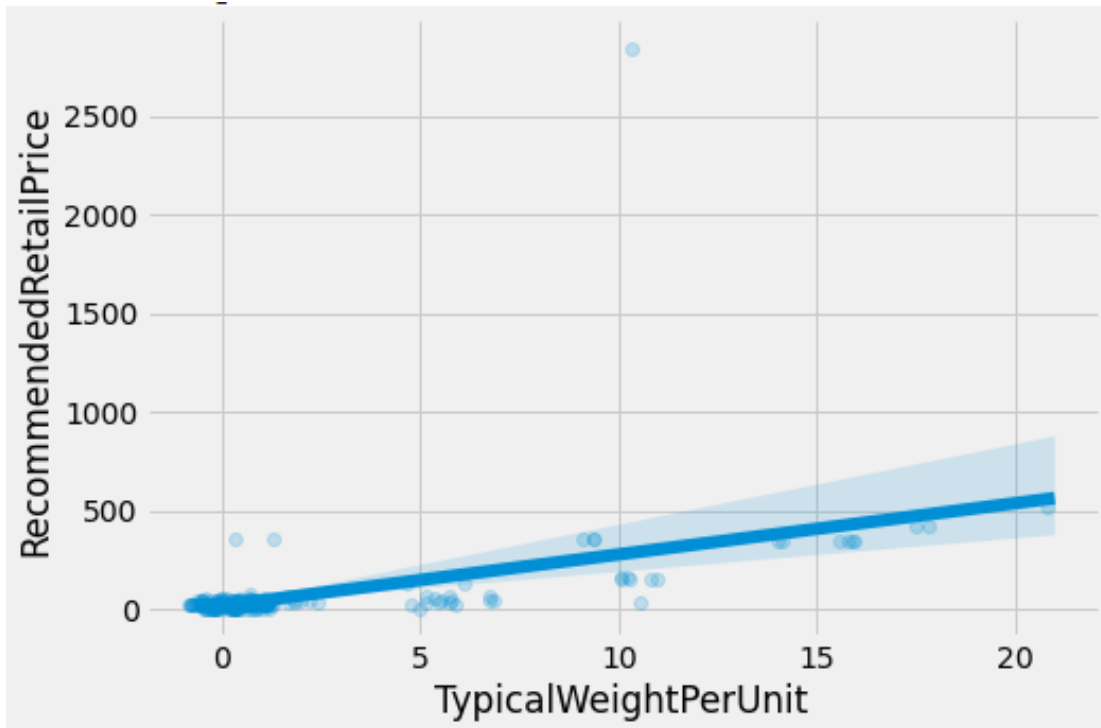
As with prior years, we can expect a positive revenue increase from May 2018 to May 2019

Visualising the forecasted sales for the next 12 months



Predicting Future Product Prices

When analysing the stock warehouse data, I identified a positive upward trend between the weight of a product and retail price, this can be seen within the Linear Model Plot.



With this information I decided to experiment with two different Linear Regression models with an aim of returning an accurate scientific prediction of retail prices for new products that have not yet been allocated a price.

The Linear Regression Model learns patterns from the historic data it is provided and tuned in a way to output accurate predicted values.

Predicting Future Product Prices

Model 1

```
X = stock[['TypicalWeightPerUnit']]  
y = stock['RecommendedRetailPrice']
```

```
new_product_weight = [[1]]  
linear_reg.predict(new_product_weight)
```

```
([44.35282268])
```

Model 1 takes an input of weight.

With a input of 1kilogram, the Linear Regression model predicts a retail price of £44.35

Model 2

```
X = stock['TypicalWeightPerUnit', 'ColorID']  
y = stock['RecommendedRetailPrice']
```

```
new_productweight_colorID = [[1, 4]]  
linreg.predict(new_productweight_colorID)
```

```
([45.45978218])
```

Model 2 takes an input of weight and ColorID.

With a input of 1kilogram and ColorID of 4 the Linear Regression model predicts a retail price of £45.46

The average retail price of a product with a weight of 1kg is £54.

As the model's prediction is £10 off a realistic prediction some fine tuning is required before coming into use.

Security of Data

Addressing concerns of confidentiality and complying with the UK General Data Protection Regulations, no identifiable or confidential information is available within the source data and subsequent analysis.

There are also no concerns with regards to the orders, product, stock and related data that could potentially damage business operations.

Summary

1. Most Ordered Product

Black and orange fragile despatch tape 48mmx75m

Total Orders: 207,324

3. Least Ordered Product

Superhero action jacket (Blue) XL

Total Orders: 5373

5. Most Ordered ColorID

Black – ColorID 3

Total Orders: 1,167,677

7. Most Valued Customer

CustomerID 149

Total Orders: 662,878

2. Most Profitable Product

Air cushion machine (Blue)

Total Revenue Income: £ 19,160,010

4. Least Profitable Product

Packing knife with metal insert blade (Yellow) 9mm

Total Revenue Income: £ 98,948

6. Most Profitable ColorID

Blue – ColorID 4

Total Revenue Income: £ 61,934,209

8. Top Items Bought Together

10 mm Anti static bubble wrap (Blue) 50m & Furry gorilla with big eyes slippers (Black)

Total Orders: 21 Orders

Summary Continued

9. Best Month of Sales

July 2017

Total Sales: £9,210,146

11. Worst Month of Sales

February 2015

Total Sales: £4,866,715

There was a 2.57% revenue increase in sales from May 2017 to May 2018 when compared to the revenue of May 2016 to May 2017

Sales and Orders increase during the summer months

10. Best Month of Orders

May 2018

Total Orders: 282,360

12. Worst Month of Orders

February 2015

Total Orders: 144,382

Forecasting the next years sales revenue we can expect a sales revenue increase of 4.98%