

Inventory Controlling:

Optimization for **Inventory** status of each category of product for the bicycle manufacturing company.



Executive Summary

This report is intended for the current **status of Inventory** by category, quantity of each product in Stock of each location (available & coming out of stock). Analysis of the **optimization** problem of Inventory and Stock.



Stakeholder Challenge:

Understand the problem of department



USERS

Help them to view the **Inventory** (component & finished goods) status of each category quickly and conveniently.



SALES PRESENTATIVES

Support Quantity Control so that they can report the current quantity of **Stock** (finished goods) of each product and status of out of stock.



MARKETING TEAM & BIZ OPERATIONS

Marketing strategies team to strategize for the product and introduce the product to the **market** and help Business Operations maximize **Sales & Profit**.

Table of contents:

01

OVERVIEW

About AdventureWork Cycles database.

02

INVENTORY OVERVIEW

Overview the inventory status.

03

STOCK ANALYSIS

Finished Goods in Stock and Sold Product Trend.

04

SCRAP & REASON

Status of scrap quantity in Stock and the reasons by Category

05

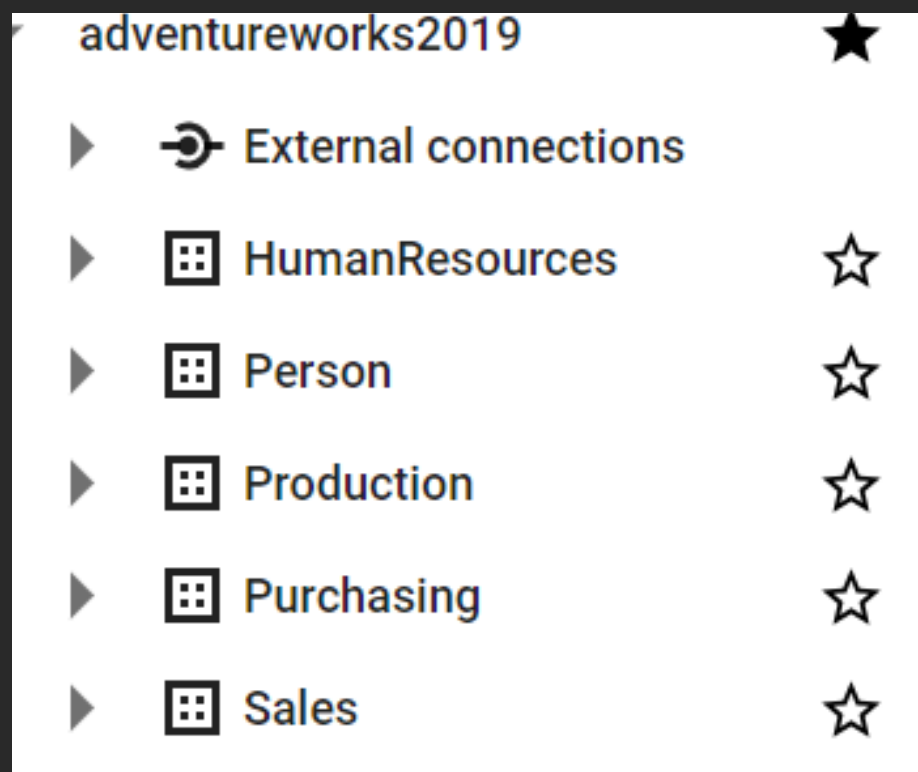
RECOMMENDATIONS

01

OVERVIEW

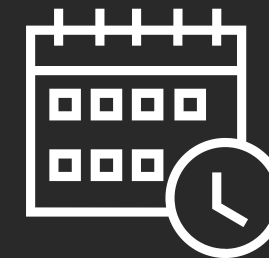
About AdventureWork Cycles database.

- There are 3 datasets to be analyzed from:
Purchasing, Production, Sales



Link of database:

<https://console.cloud.google.com/bigquery>



2011-2014

Recorded year



Registered customer

306.046 members



\$USD 63.7 Mil

Total sales from 2013 to 2014



31.465 Total orders

Made by customer

02

INVENTORY OVERVIEW

In PowerBi Desktop

INVENTORY OVERVIEW

2011

2012

2013

2014

Inventory Value

\$35M

Inventory Quatity

336K

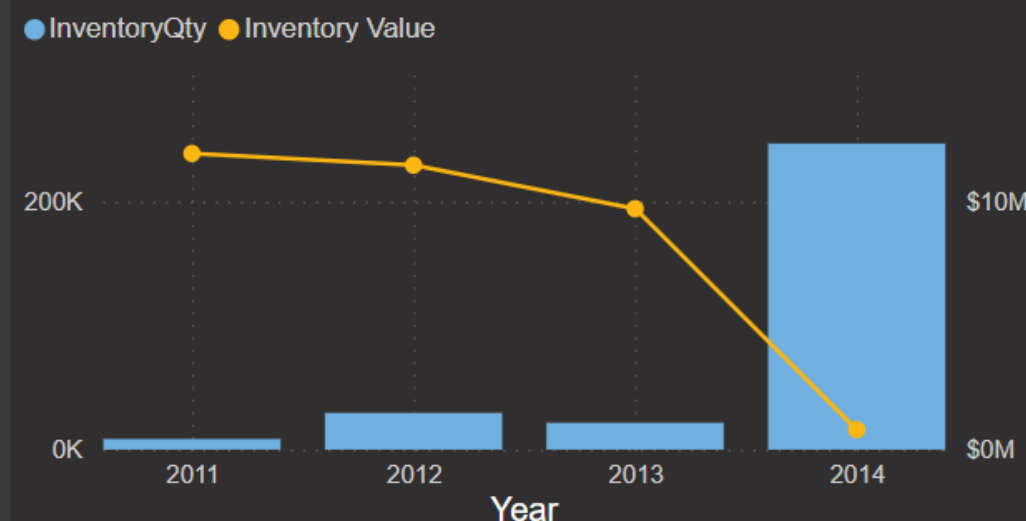
DeadProduct Value

\$15M

DeadProduct Quatity

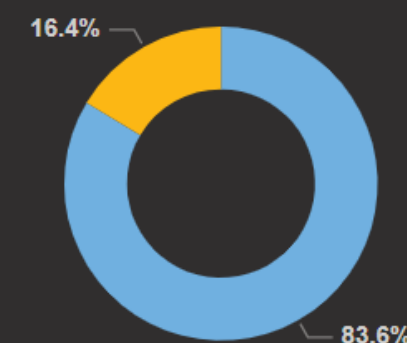
26K

Inventory Trend

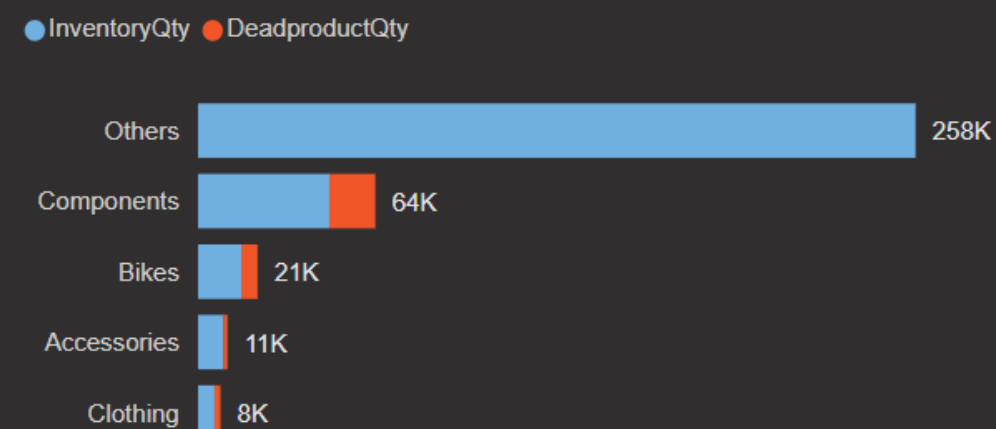


Inventory Quatity

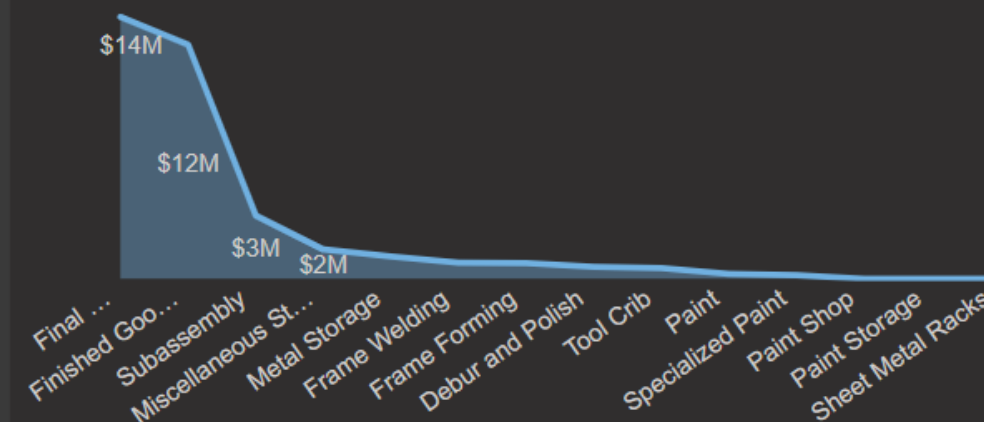
Type of Product ● Purchase Goods ● In-house Goods



Inventory By Category



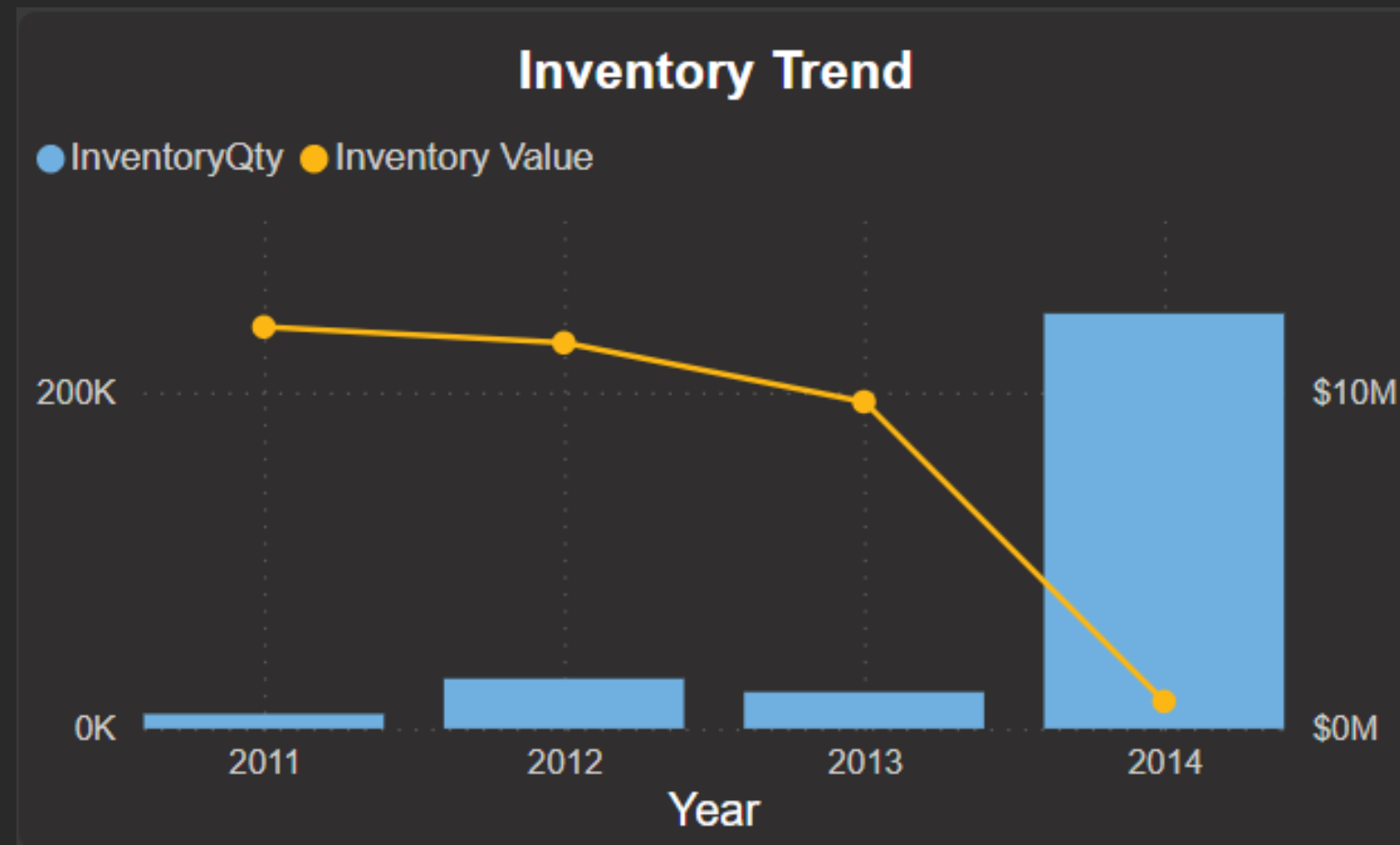
Value Inventory By Location



02

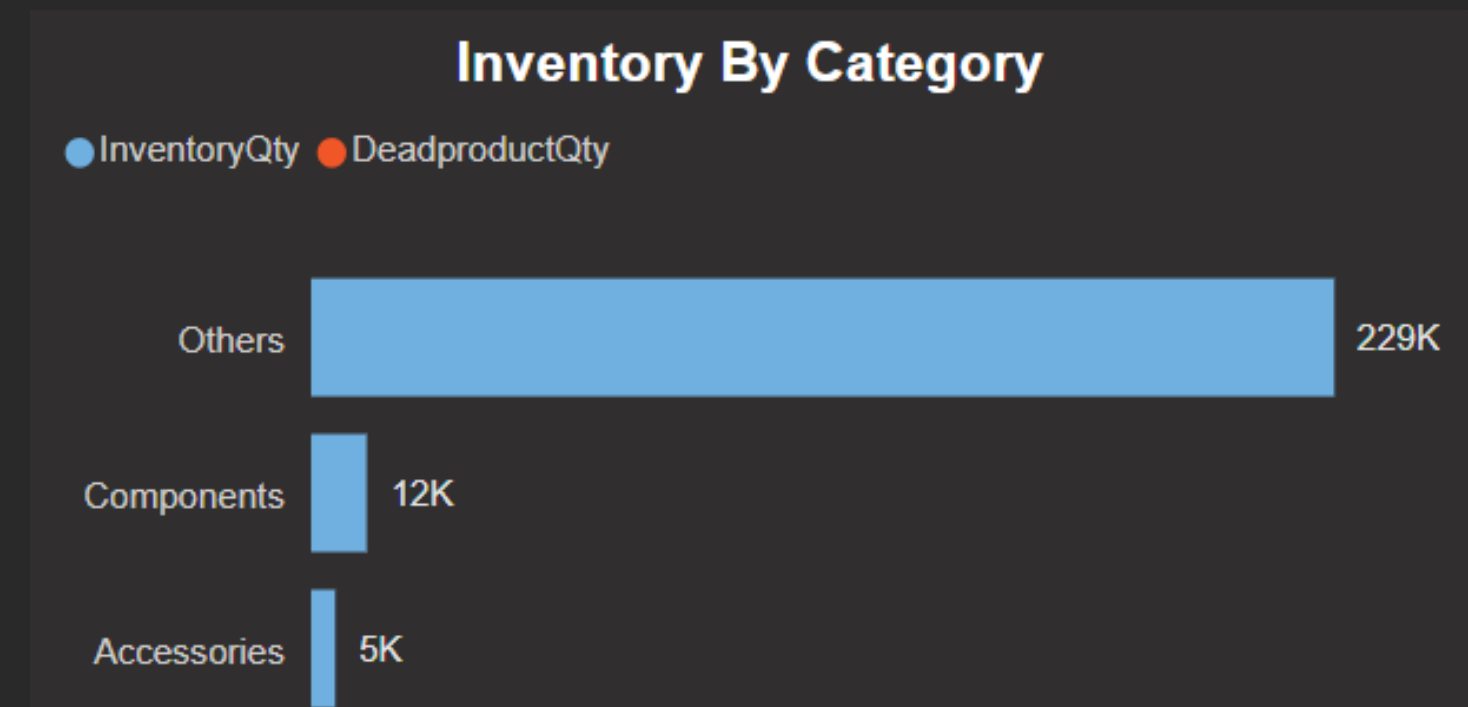
INVENTORY OVERVIEW

Overview the inventory status.



- Inventory value in 2014 was **decreased** because most of the categories included: others (materials), clothes & accessories.

- From 2011-2013, the changes of inventory was not significant, but in **2014** increased more than **10 times** compared to **2013**
- However, Inventory value trend is contrast to inventory quatity.

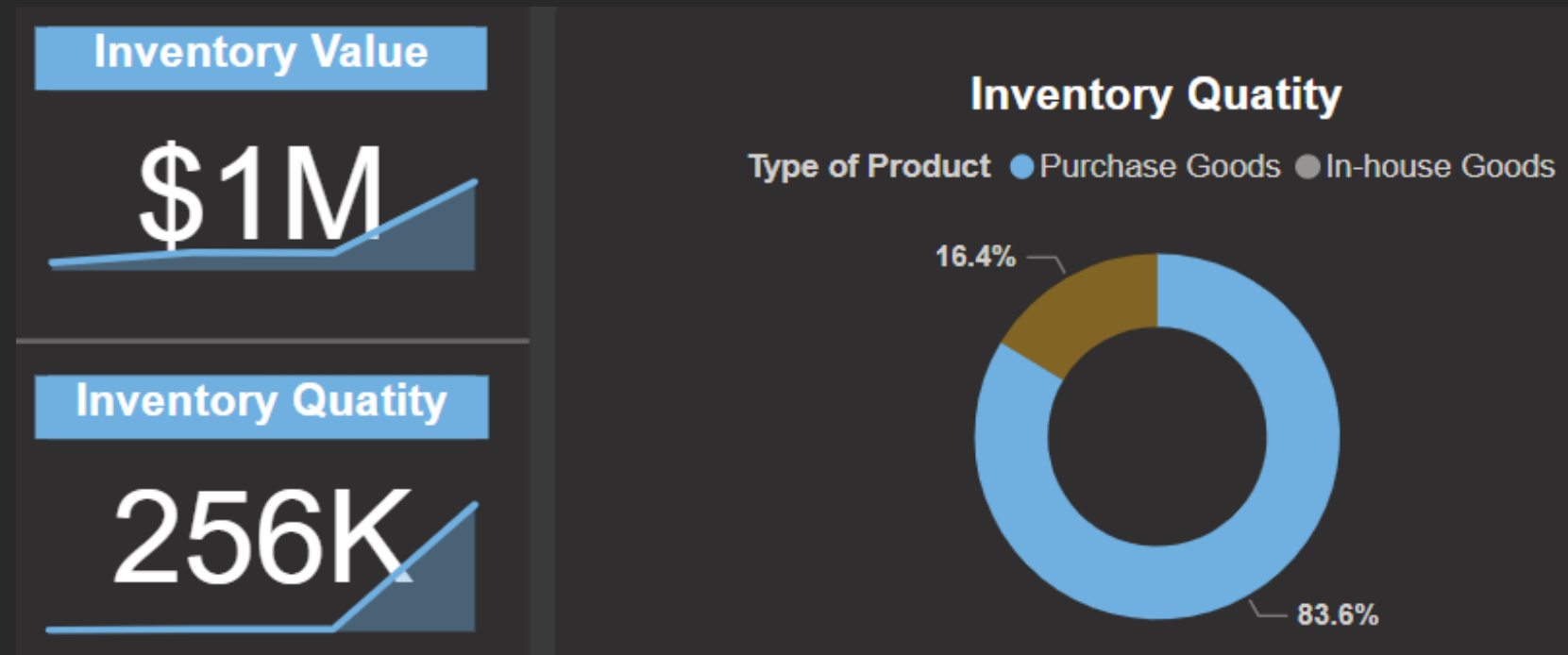


02

INVENTORY OVERVIEW

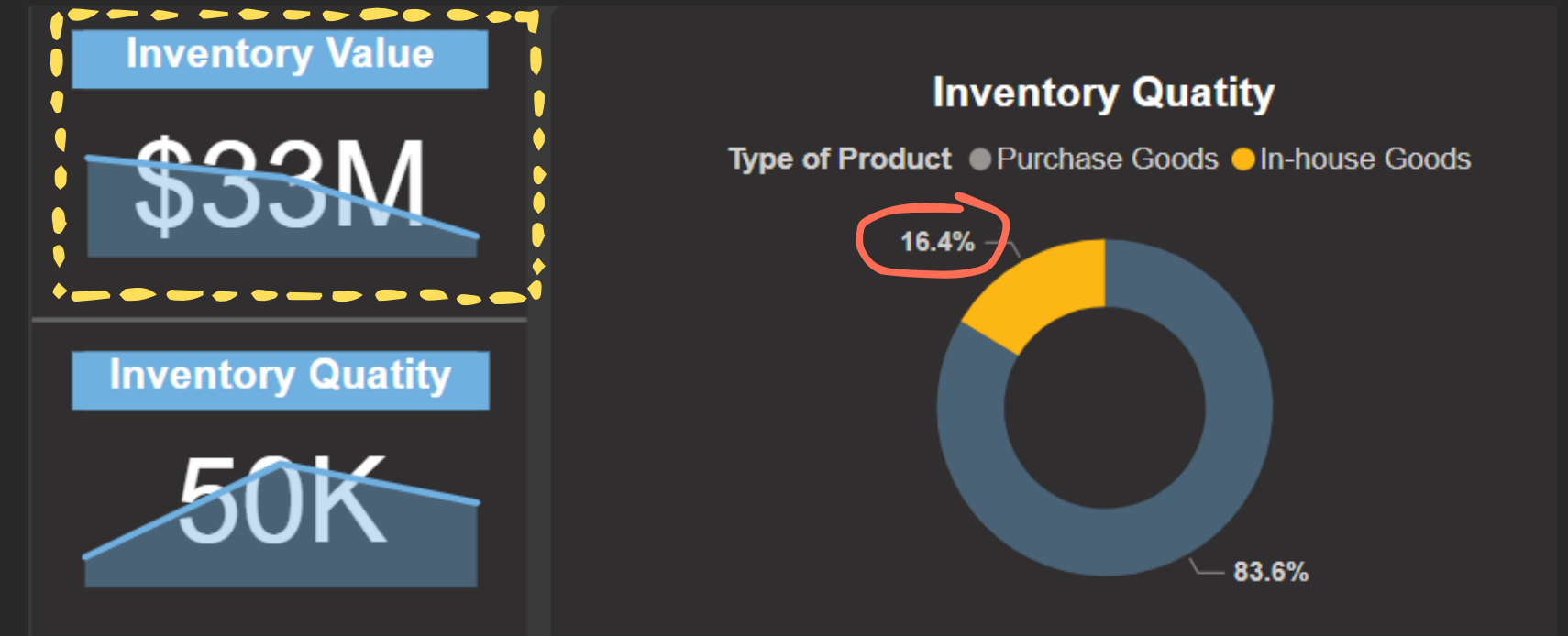
Overview the inventory status.

Purchased Goods



- Purchased goods accounted for **83.6%** of the majority of inventory but only accounted for **more than 1M** out of **35M Total Inventory Value**.

In-house Goods



97% of **Total Inventory Value** came from **In-house goods** which took **16.4%** of **Total Inventory Quatity**.

02

INVENTORY OVERVIEW

Deadproduct overview

DeadProduct Value

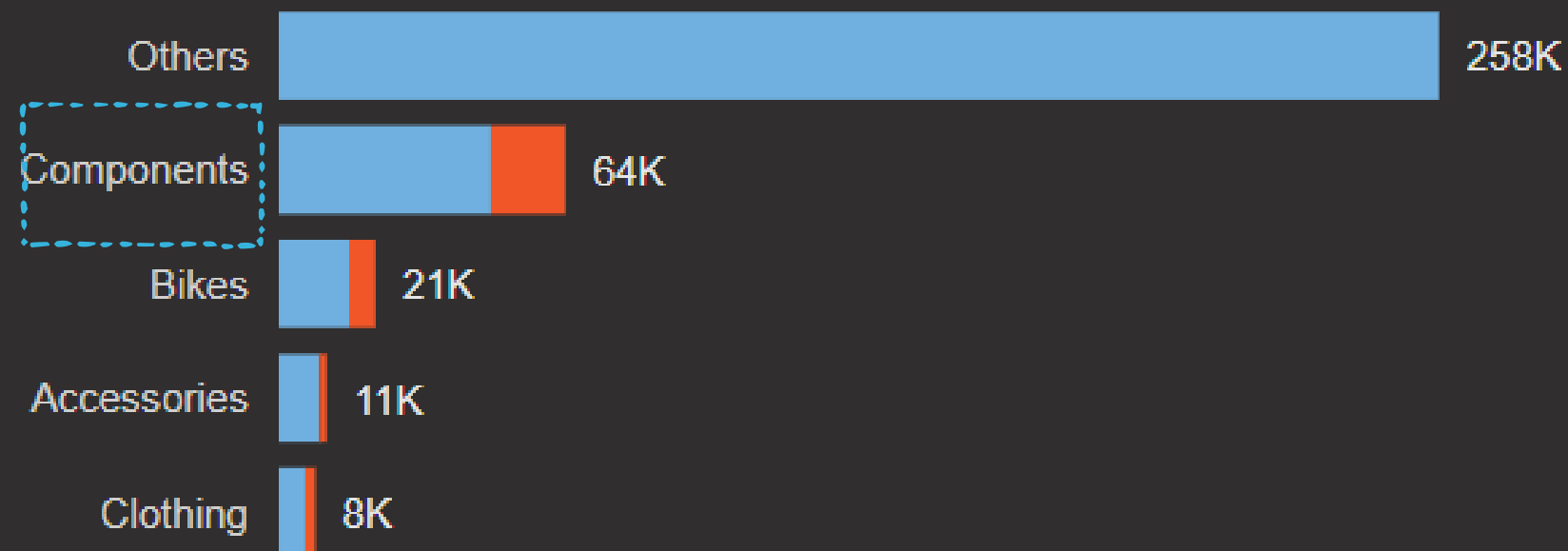
~~\$15M~~

DeadProduct Quantity

~~26K~~

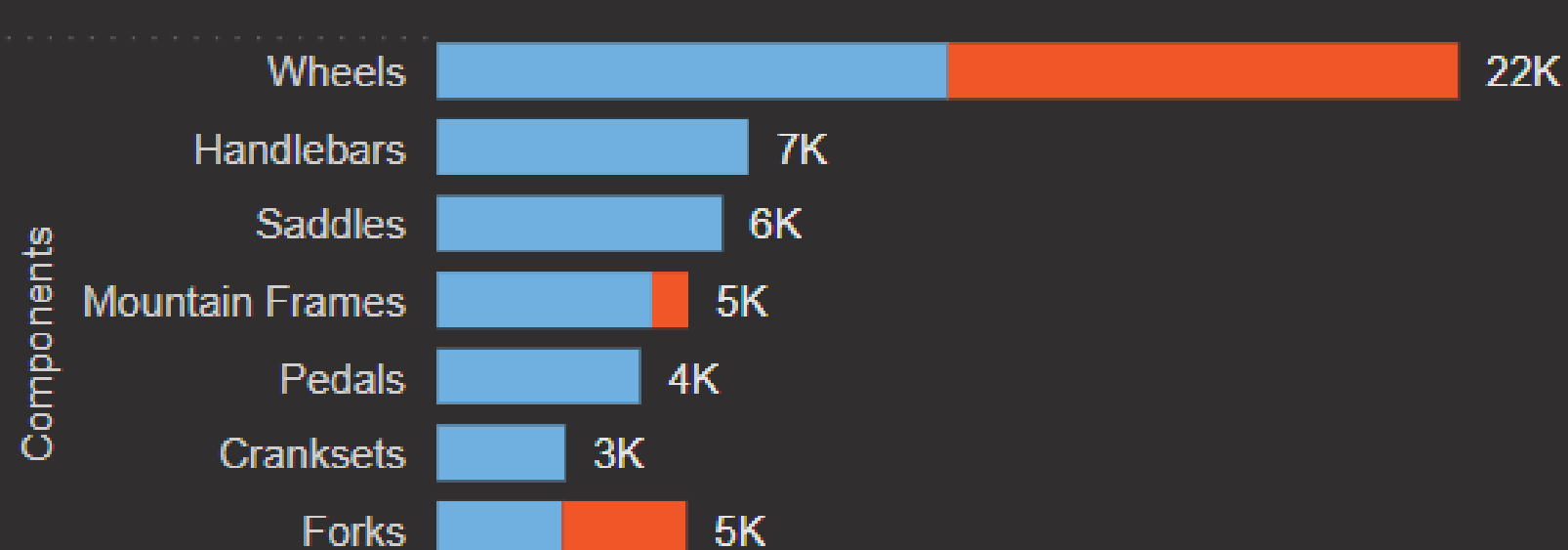
Inventory By Category

● InventoryQty ● DeadproductQty



Inventory By Category

● InventoryQty ● DeadproductQty



- **Deadproduct** just accounted for 8% out of **Total Inventory Quatity**. However, they took **42%** out of **35M Total Inventory Value**.

- Most of **Deadproduct** belonged to **In-house Goods**.

- **Components** accounted for a large number of 16.5K out of 26K (**more than 60%**)



Some products of **Components** that had **Deadproduct**

03

STOCK ANALYSIS

Finished Goods in Stock and Sold Product Trend

STOCK ANALYSIS

Stock Quatity

78K

Sales Quatity

275K

Accessories

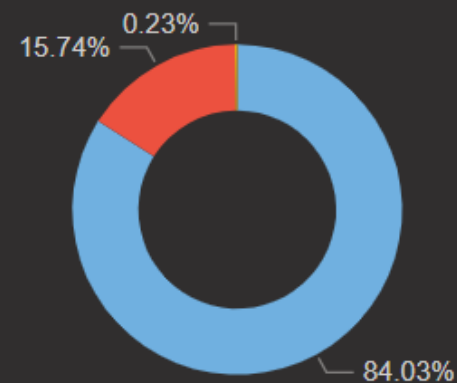
Bikes

Clothing

Components

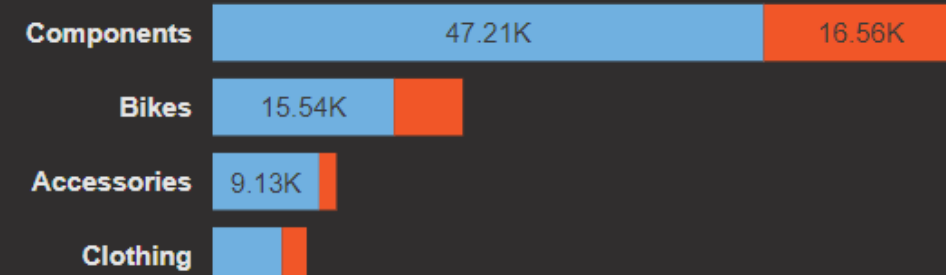
Status Of Product in Stock

- Available in Stock
- Out of Stock
- Reorder



Stock Quatity By Category

- StockQty
- StopSellingStockQty



Stopped Selling Quatity

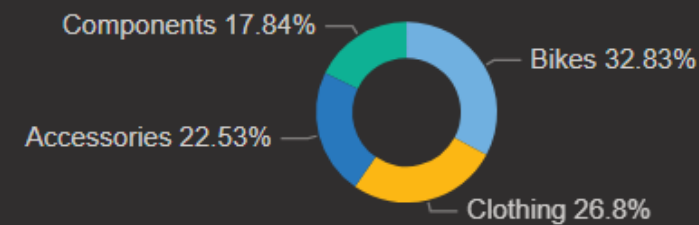
26K

Sales & Stock Quantity

- StockQty
- SalesQty



Sold Quantity By Category

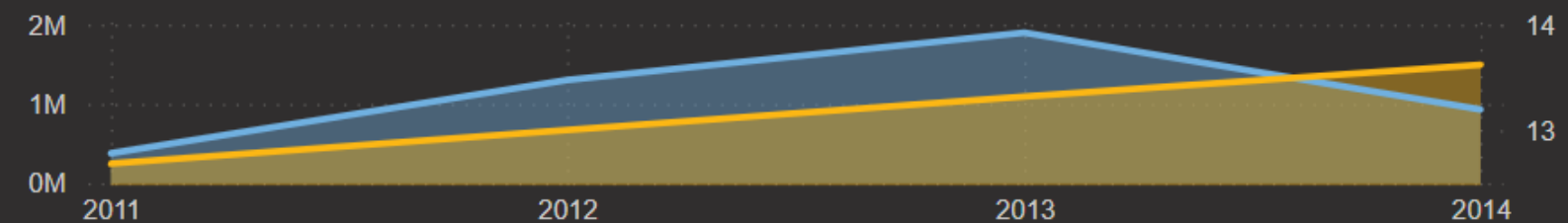


TOP 5 BEST SELLER

ProductID	Name	SalesQty
712	AWC Logo Cap	8,311
870	Water Bottle - 30 oz.	6,815
711	Sport-100 Helmet, Blue	6,743
715	Long-Sleeve Logo Jersey, L	6,592
708	Sport-100 Helmet, Black	6,532
Total		274,914

Average Leadtime Production

- Sum of OrderQty
- Average of LeadTime



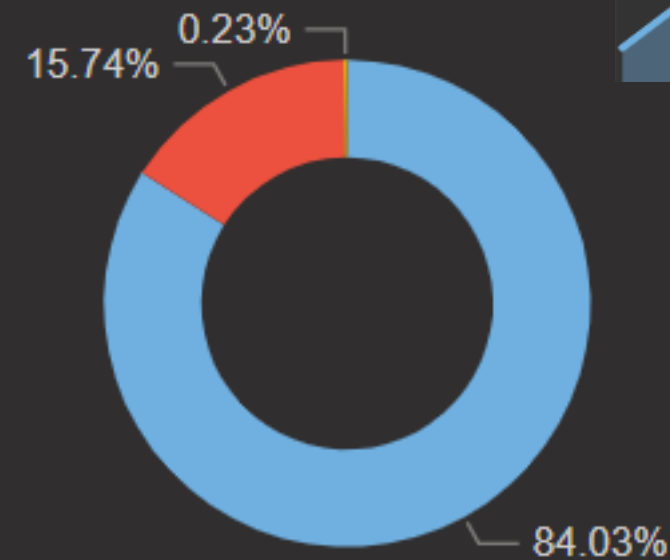
03

STOCK ANALYSIS

Status in Stock

Status Of Product in Stock

- Available in Stock
- Out of Stock
- Reorder

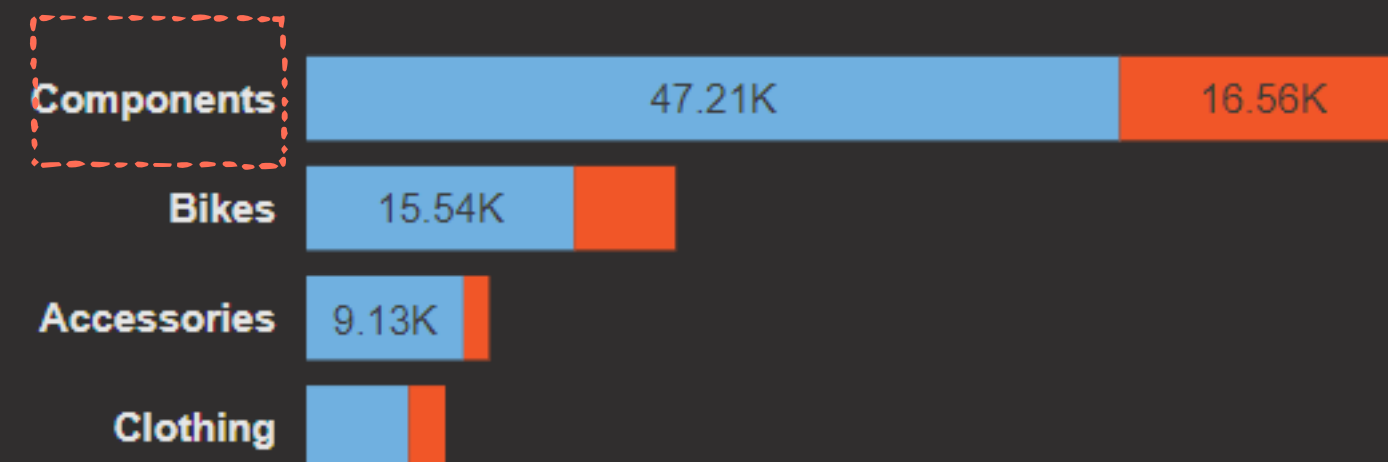


Stock Quatity

78K

Stock Quatity By Category

- StockQty
- StopSellingStockQty



Stopped Selling Quatity

26K

- The total amount of Stock was **78K**. In which, **84%** of items was **Available**, and the last **16%** was **Out Of Stock**
- The quantity in Stock is mostly **Components**
- The **Stopped Selling** items accounted **33%** out of **Total of Stock**.
- Items of **Components** accounted for **63%** of Total Stopped Selling Quatity, following were Bikes, Accessories and Clothing.

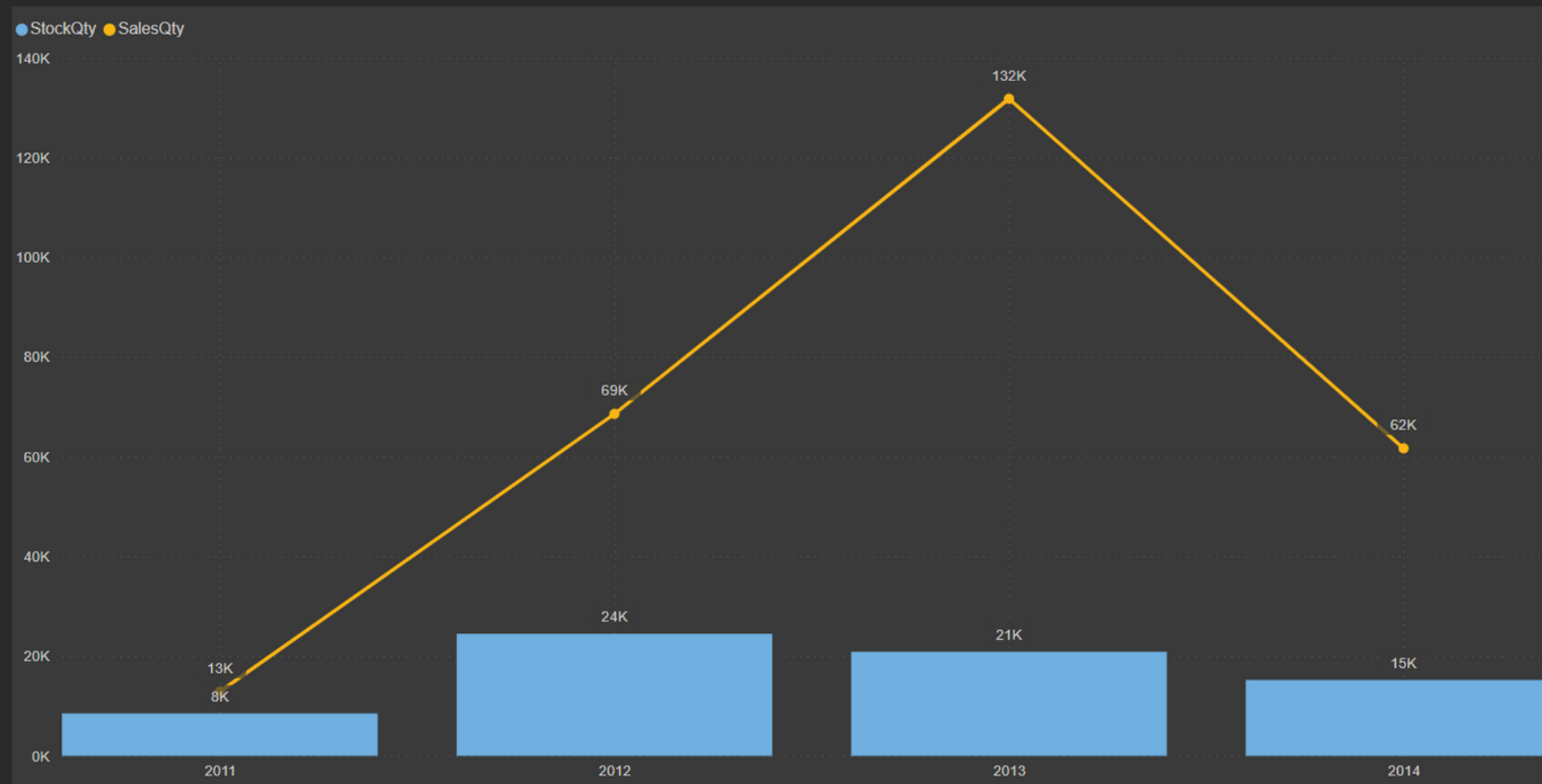
03

STOCK ANALYSIS

Sales & Stock Trend

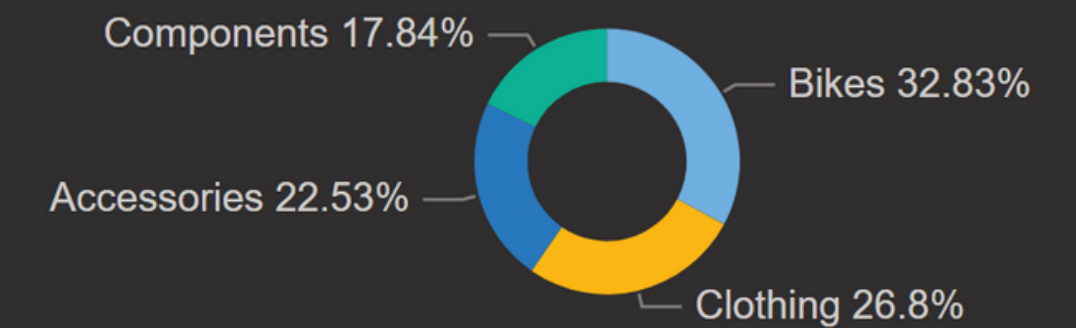
Sales Quatity

275K



- The trend of sales **increased steadily** from 2011-2013, but in 2014 it **decreased** by nearly **50%** compared to 2013.
- Bike** is the best seller, with the sold quatity was more than **32%** of Total Sold Amount.

Sold Quantity By Category



03

STOCK ANALYSIS

Sales Trend of Accessories

Sales Quatity

62K

Accessories

Bikes

Clothing

Components

Sales & Stock Quantity

● StockQty ● SalesQty



Sold Quantity By Category

Accessories 100%



TOP 5 BEST SELLER

ProductID	Name	SalesQty
870	Water Bottle - 30 oz.	6,815
711	Sport-100 Helmet, Blue	6,743
708	Sport-100 Helmet, Black	6,532
707	Sport-100 Helmet, Red	6,266
873	Patch Kit/8 Patches	3,865
Total		61,932

- The sold items of **Accessories** increased **23 times** in 2014 compared to 2011.

- In 2014, **Accessories** accounted for 75.2% of sales

- There was **1.476 items** in Accessories which needed to be solved.

Stock Quatity By Category

● StockQty ● StopSellingStockQty

Stopped Selling Quatity

1476

Accessories

9.13K

1.48K

03

STOCK ANALYSIS

Sales Trend of Bikes

Sales Quatity

90K

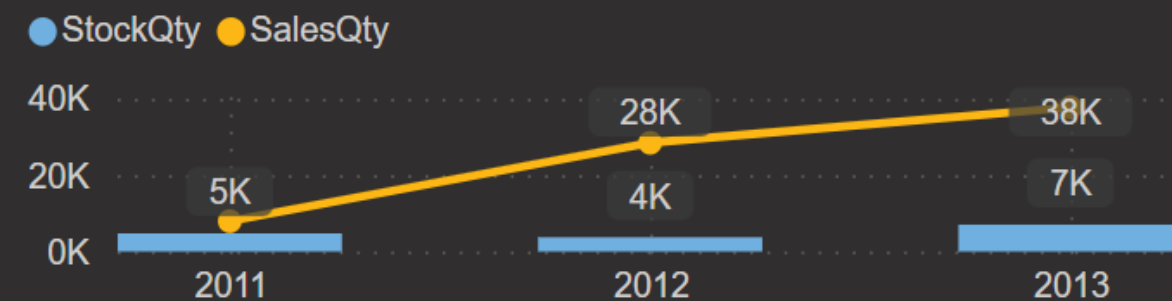
Accessories

Bikes

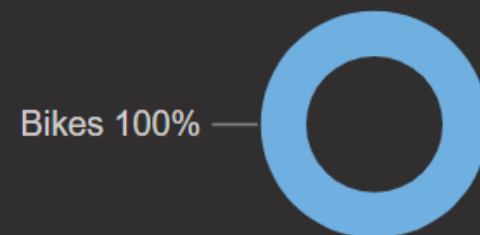
Clothing

Components

Sales Trend & Stock Quantity



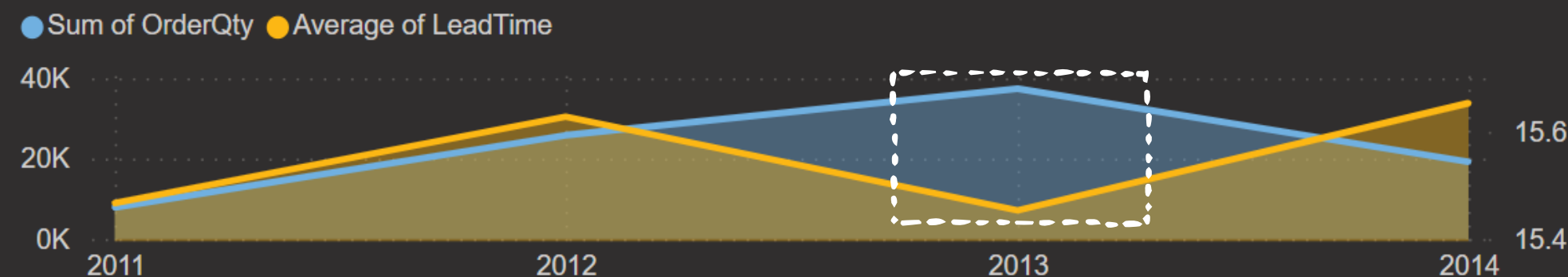
Sold Quantity By Category



TOP 5 BEST SELLER

ProductID	Name	SalesQty
782	Mountain-200 Black, 38	2,977
783	Mountain-200 Black, 42	2,664
779	Mountain-200 Silver, 38	2,394
770	Road-650 Black, 52	2,270
762	Road-650 Red, 44	2,254
Total		90,268

Average Leadtime Production



- The sold quatity of **Bikes** increased steadily from 2011 to 2013

- Besides, **Best Seller Table** shows items which was the best seller.

- Nearby **6K** items of **Bikes** that were **Stopped Selling Product**

Stock Quatity By Category

● StockQty ● StopSellingStockQty

Stopped Selling Quantity

5890

Bikes

15.54K

5.89K

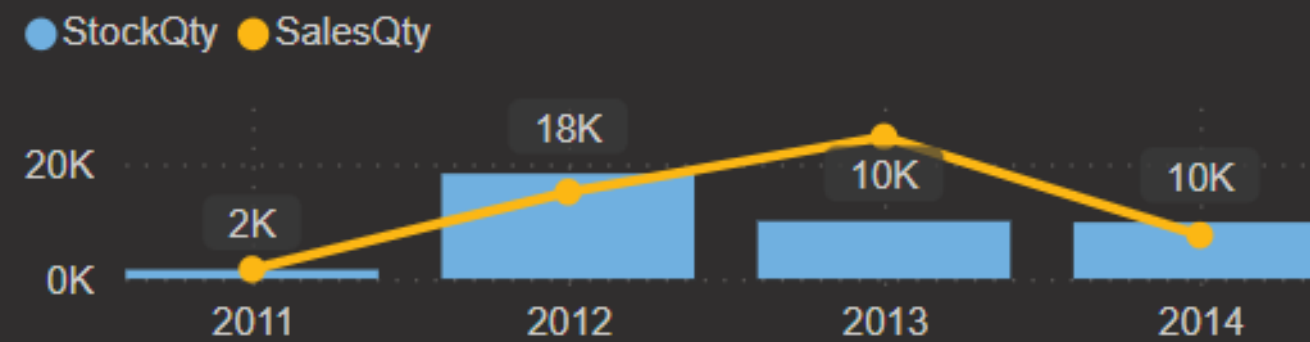
- Average Leadtime in 2013 is contrast to Order Quatity

03

STOCK ANALYSIS

Sales Trend of Components

Sales Trend & Stock Quantity



- The sold quatity of **Components** **increased** steadily from 2011 to 2013, and **decreased** in 2014

Stock Quatity By Category

● StockQty ● StopSellingStockQty

Stopped
Selling Quatity

17K

Components

47.21K

16.56K

- Components** had large number of **Stopped Selling Product : 17K**
- These products needed to be solved.

04

SCRAP & REASON

Status of scrap quantity in Stock and the reasons by Category

SCRAP & REASON

Scrapped Cost

\$0.36M

Scrapped Quantity

11K

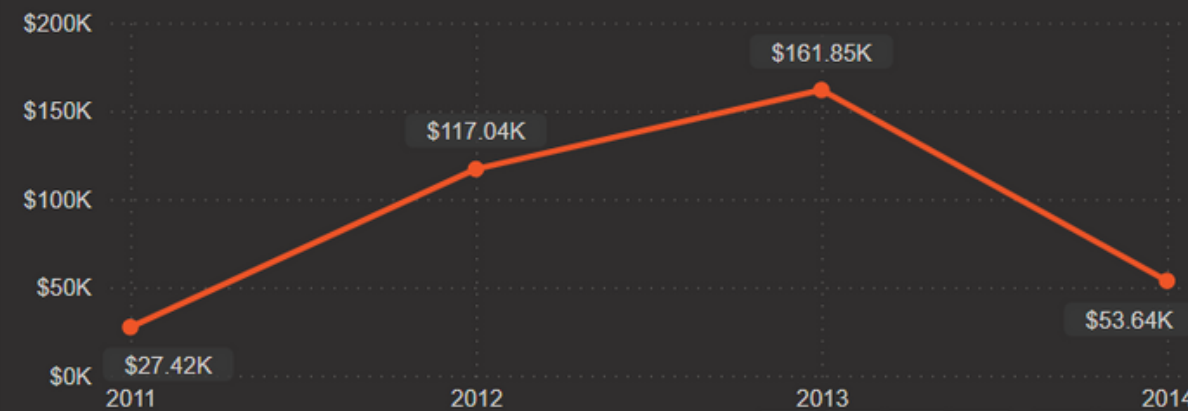
Accessories

Bikes

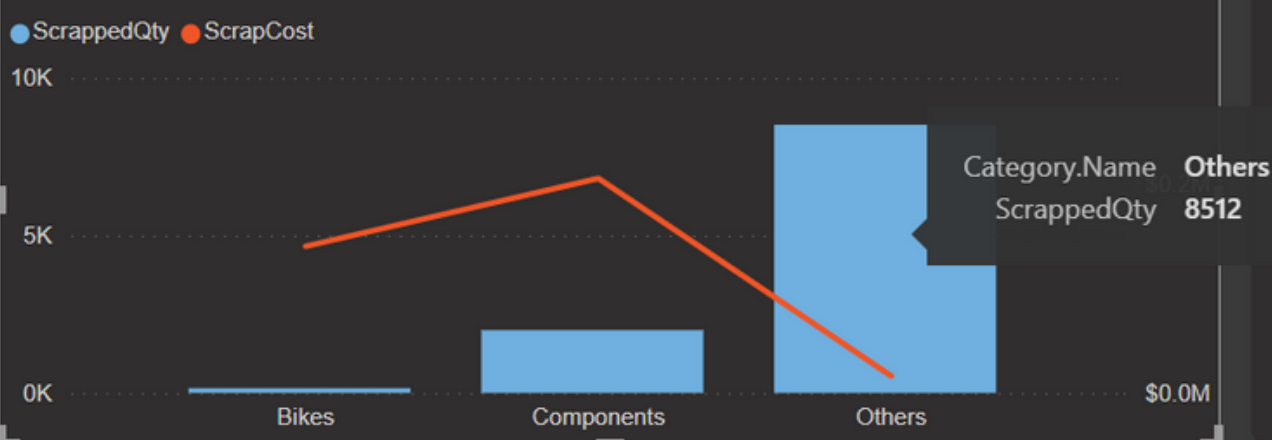
Clothing

Components

ScrapCost Trend

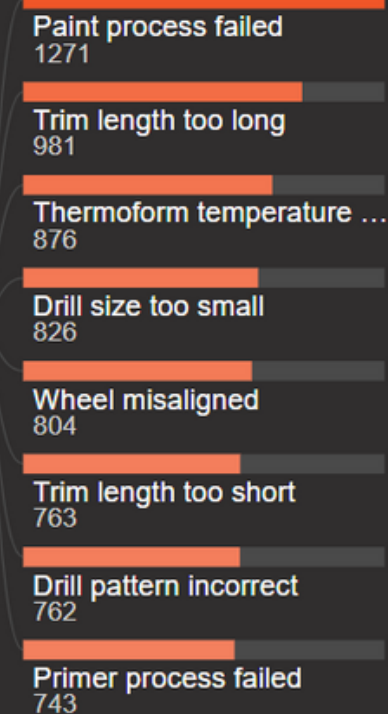


Scrap Cost By Category



Scrap Reason

Sum of ScrappedQty
10651



- **Scrapped Cost** tended to increase from 2011-2013, and sharply decreased in 2014. Specifically, 2014 decreased by **33%** compared to 2013.
- The **Others** (purchased goods) account for 77% of the **Scrapped Quantity**. However, this cost is negligible.
- **Bikes** and **Components** made up the majority of the **Scrapped Cost**. However, this number has tended to decrease steadily until 2014.

05

RECOMMENDATIONS

- **Offer solutions** such as Discount, Giveaway, Combo,... for the number of **Stopped Selling** products (especially **Bikes and Components**), because this quantity is low but accounts for **43%** (15M/35M) of the **Inventory Value** which means it can bring in **BIG Revenue**.
- **Pay attention** to **16%** of **Out of Stock** items to ensure the best sales.
- **Accessories** tend to increase in sales, so focus on products of this category, following is **Bikes**.
- Controlling **LeadTime** to optimize the production of goods (WorkOrder)
- Controlling the **Quality** of **purchased goods** as well as the production of **in-house goods** in order to minimize the **Scapped cost**.

THANK YOU!