

19BLC1077

SANTOSH.V

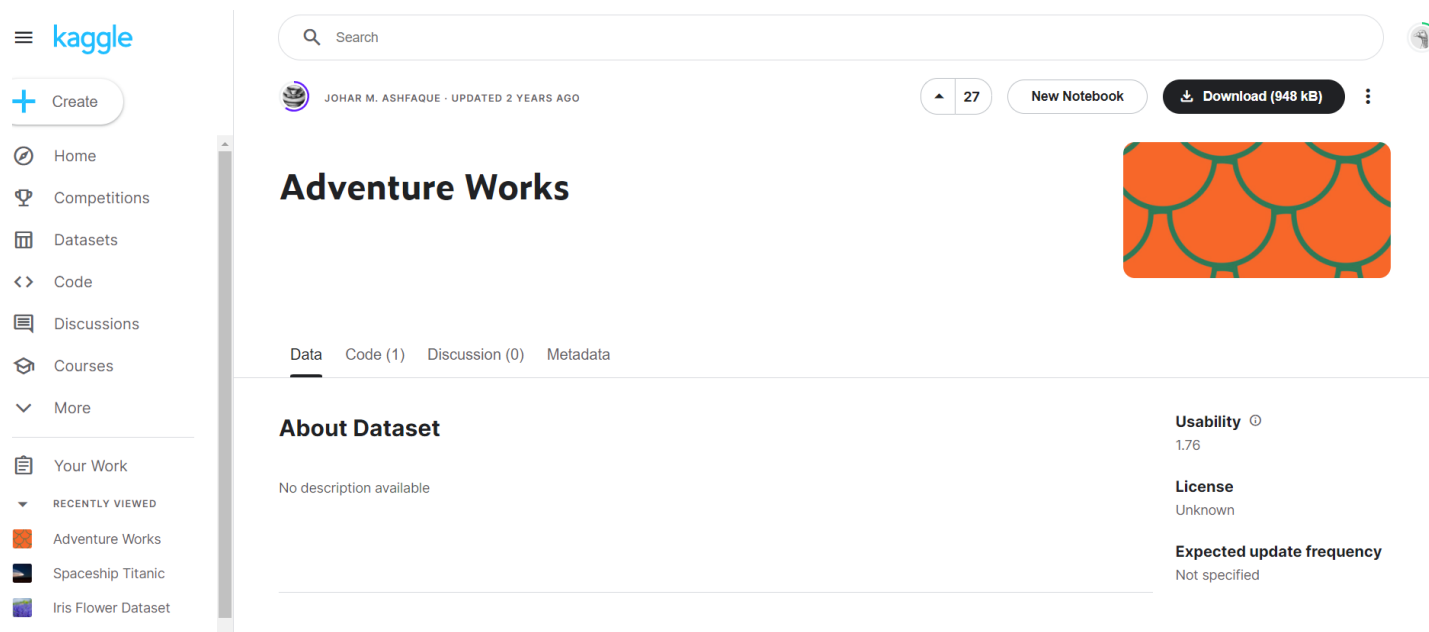
BICYCLE SALES ANALYTICS USING IBM COGNOS

SMART INTERNZ GUIDED PROJECT

AIM: To gather 10 CSV files from the Kaggle Adventure works repository regarding the bicycle sales and customer data and perform data preparation and visualizations to observe the trends existing in the data and represent them on a dashboard.

SCREENSHOTS:

Kaggle Adventure Works Repository:



List of 10 CSV files part of Adventure Works Bicycle Sales data:

Data Explorer

Version 1 (4.59 MB)

- AdventureWorks_Calendar.c...
- AdventureWorks_Customers...
- AdventureWorks_Product_C...
- AdventureWorks_Product_S...
- AdventureWorks_Products.c...
- AdventureWorks>Returns.csv
- AdventureWorks_Sales_201...
- AdventureWorks_Sales_201...
- AdventureWorks_Sales_201...
- AdventureWorks_Territories....

Prepared data from the source files:

IBM Cognos Analytics with Watson

AdW_DataPrep.csv

304

Data module

+

Search

AdW_DataPrep.csv

Navigation paths

ReturnRate

Products

Returns

Sales_Data

Calendar

Customers

Categories

Subcategories

Sales_2015

Sales_2016

Sales_2017

Territories

Grid

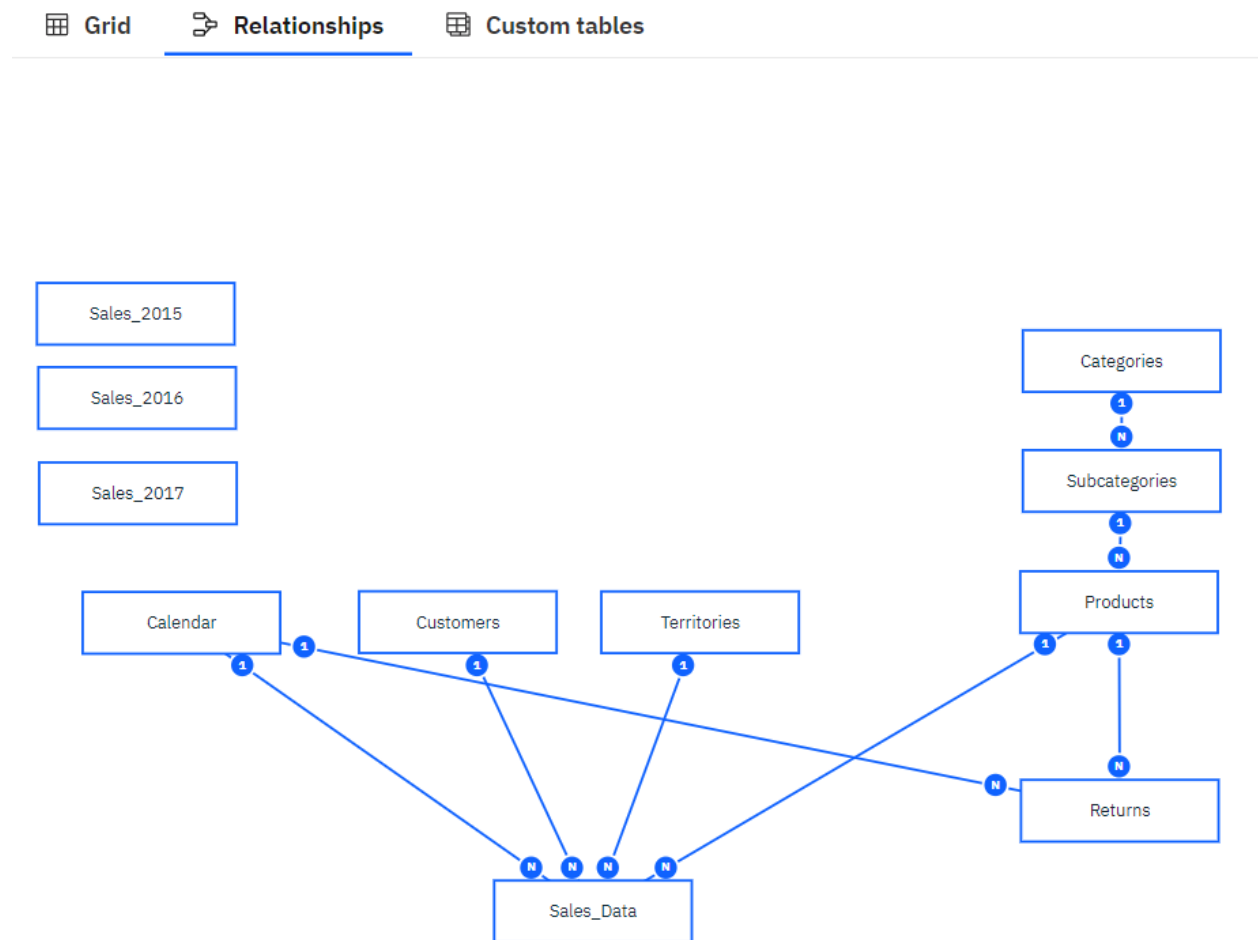
Relationships

Custom tables

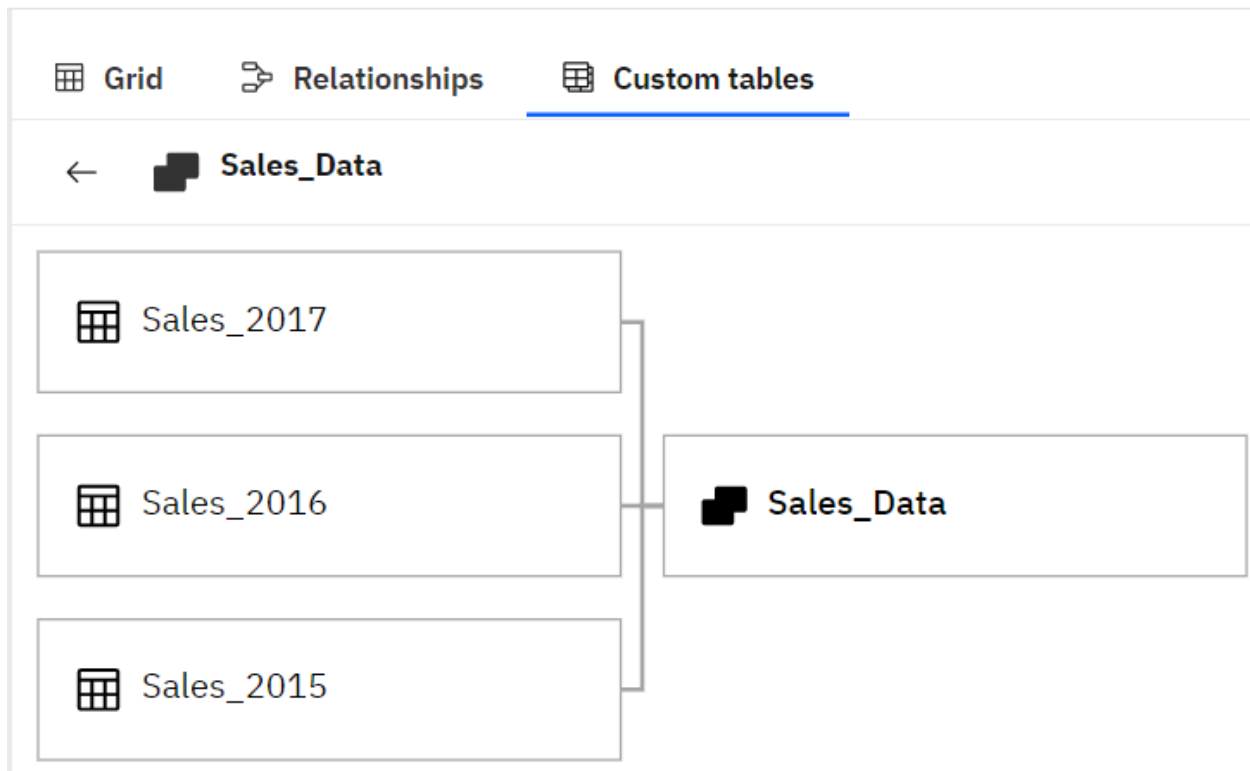
Preview data

To preview data, select a table, a column in a table, or a folder that contains columns.

Cardinality and relationship existing between different tables:



Custom made Sales_Data table using Sales_2017, Sales_2016 and Sales_2015 as source tables:



ReturnRate calculation:

Edit calculation

Name ReturnRate

Components

Expression

Search

AdW_DataPrep.csv

- ReturnRate
- Products
- Returns
- Sales_Data
- Calendar
- Customers
- Categories
- Subcategories
- Sales_2015
- Sales_2016

1 AdventureWorks>Returns.csv.ReturnQuantity / Sales_2015_Union_1.OrderQuantity

Information

Products Table:

Data module

Search

Month

Day

ReturnRate

Products

Row Id

ProductKey

ProductS...goryKey

abc ProductSKU

abc ProductName

abc ModelName

abc ProductDescription

abc ProductColor

abc ProductSize

abc ProductStyle

ProductCost

ProductPrice

Returns

Grid

Relationships

Custom tables

| Row Id | ProductKey | ProductSubcategoryKey | ProductSKU | ProductName | ModelName | ProductDescription |
|--------|------------|-----------------------|------------|----------------------------|-------------------------|---|
| 1 | 214 | 31 | HL-U509-R | Sport-100 Helmet, Red | Sport-100 | Universal fit, we |
| 2 | 215 | 31 | HL-U509 | Sport-100 Helmet, Black | Sport-100 | Universal fit, we |
| 3 | 218 | 23 | SO-B909-M | Mountain Bike Socks, M | Mountain Bike Socks | Combination of and synthetic fit stays dry and pr |
| 4 | 219 | 23 | SO-B909-L | Mountain Bike Socks, L | Mountain Bike Socks | Combination of and synthetic fit stays dry and pr |
| 5 | 220 | 31 | HL-U509-B | Sport-100 Helmet, Blue | Sport-100 | Universal fit, we |
| 6 | 223 | 19 | CA-1098 | AWC Logo Cap | Cycling Cap | Traditional style flip-up brim; on |
| 7 | 226 | 21 | LJ-0192-S | Long-Sleeve Logo Jersey, S | Long-Sleeve Logo Jersey | Unisex long-sleeve logo microfiber jersey |
| 8 | 229 | 21 | LJ-0192-M | Long-Sleeve Logo Jersey, M | Long-Sleeve Logo Jersey | Unisex long-sleeve logo microfiber |

Sales_Data Table:

Data module

Search

AdW_DataPrep.csv

Navigation paths

Date

ReturnRate

Products

Returns

Sales_Data

Calendar

Customers

Categories

Subcategories

Sales_2015

Sales_2016

Sales_2017

Territories

Grid

Relationships

Custom tables

| Row Id | OrderDate | StockDate | OrderNumber | ProductKey | CustomerKey | TerritoryKey |
|--------|------------|------------|-------------|------------|-------------|--------------|
| 1 | 2015-01-01 | 2001-09-21 | SO45080 | 332 | 14657 | 1 |
| 9 | 2015-01-03 | 2001-10-03 | SO45093 | 312 | 18906 | 9 |
| 10 | 2015-01-03 | 2001-09-29 | SO45090 | 310 | 29170 | 4 |
| 21 | 2015-01-04 | 2001-12-20 | SO45099 | 312 | 29174 | 1 |
| 23 | 2015-01-05 | 2001-11-21 | SO45100 | 326 | 19428 | 8 |
| 26 | 2015-01-06 | 2001-10-01 | SO45108 | 310 | 22975 | 6 |
| 31 | 2015-01-07 | 2001-11-05 | SO45109 | 311 | 14937 | 10 |
| 33 | 2015-01-07 | 2001-11-09 | SO45111 | 326 | 25713 | 9 |
| 35 | 2015-01-08 | 2001-12-14 | SO45119 | 314 | 18740 | 9 |
| 37 | 2015-01-08 | 2001-11-24 | SO45116 | 311 | 29204 | 1 |
| 41 | 2015-01-08 | 2001-11-11 | SO45113 | 313 | 29141 | 4 |
| 50 | 2015-01-10 | 2001-12-26 | SO45126 | 311 | 12480 | 7 |
| 52 | 2015-01-11 | 2001-11-30 | SO45130 | 313 | 14975 | 10 |
| 58 | 2015-01-11 | 2001-09-14 | SO45131 | 344 | 25979 | 1 |

Dashboard Tab 1: Text tables representing top 12 Products with highest returns, Highly sold products by quantity and Revenue obtained by selling the products:

Tab 1

Tab 2

Tab 3

Tab 4

Tab 5

Tab 6

Tab 7

Top 12 Products by Returns

| ProductName | OrderQuantity | ReturnQuantity | ReturnRate |
|-------------------|---------------|----------------|------------|
| Road-650 Red, ... | 51 | 6 | 11.76% |
| Mountain-100 ... | 24 | 2 | 8.33% |
| Touring-2000 B... | 96 | 8 | 8.33% |
| Mountain-500 ... | 41 | 3 | 7.32% |
| Mountain-100 ... | 31 | 2 | 6.45% |
| Mountain-100 ... | 36 | 2 | 5.56% |
| Touring-3000 B... | 54 | 3 | 5.56% |
| Road-650 Red, ... | 75 | 4 | 5.33% |
| Mountain-500 ... | 38 | 2 | 5.26% |
| Road-650 Red, ... | 39 | 2 | 5.13% |
| Classic Vest, S | 157 | 8 | 5.10% |
| Women's Moun... | 334 | 17 | 5.09% |
| Touring-3000 Y... | 59 | 3 | 5.08% |
| Road-150 Red, ... | 139 | 7 | 5.04% |
| Summary | 1,174 | 69 | 6.05% |

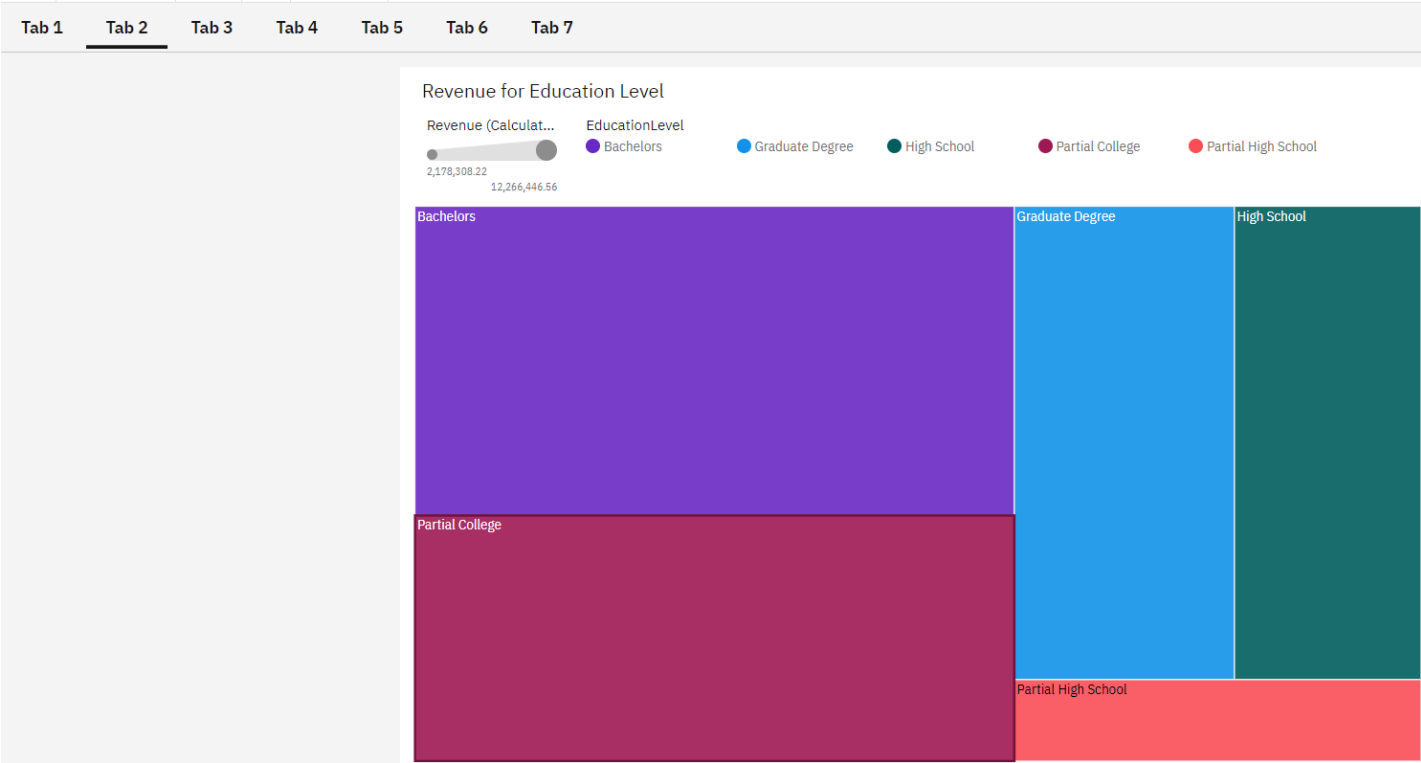
OrderQuantity and ProductName

| ProductName | OrderQuantity |
|-----------------------|---------------|
| Water Bottle - 30 oz. | 7,967 |
| Patch Kit/8 Patches | 5,898 |
| Mountain Tire Tube | 5,678 |
| Road Tire Tube | 4,327 |
| AWC Logo Cap | 4,151 |
| Summary | 28,021 |

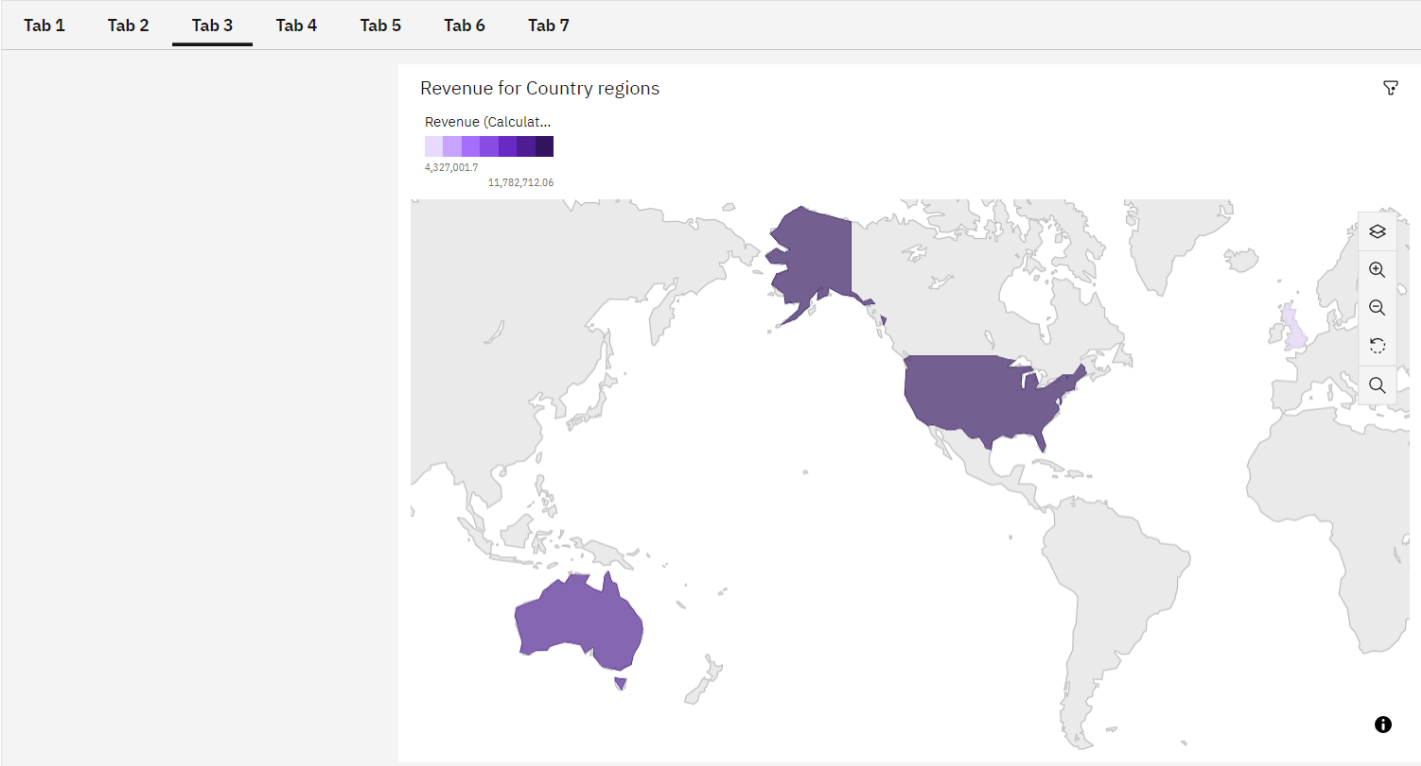
Revenue and ProductName

| ProductName | Revenue |
|-------------------------|-------------|
| Mountain-200 Black, 46 | 1,241,753.5 |
| Mountain-200 Black, 42 | 1,233,557.1 |
| Mountain-200 Silver, 38 | 1,213,851.8 |
| Mountain-200 Silver, 46 | 1,182,780.5 |
| Mountain-200 Black, 38 | 1,165,936.8 |

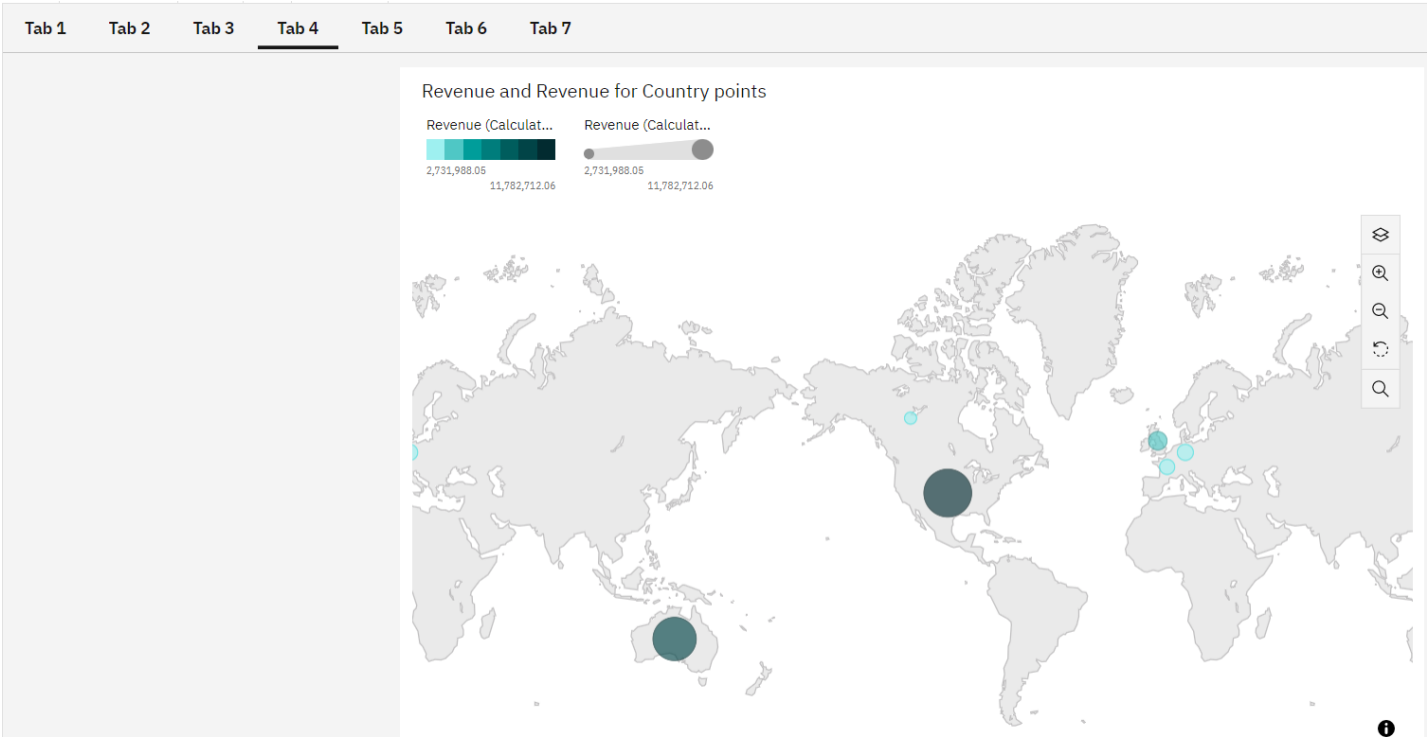
Dashboard Tab-2: Tree map representing revenue for the individuals according to their education levels



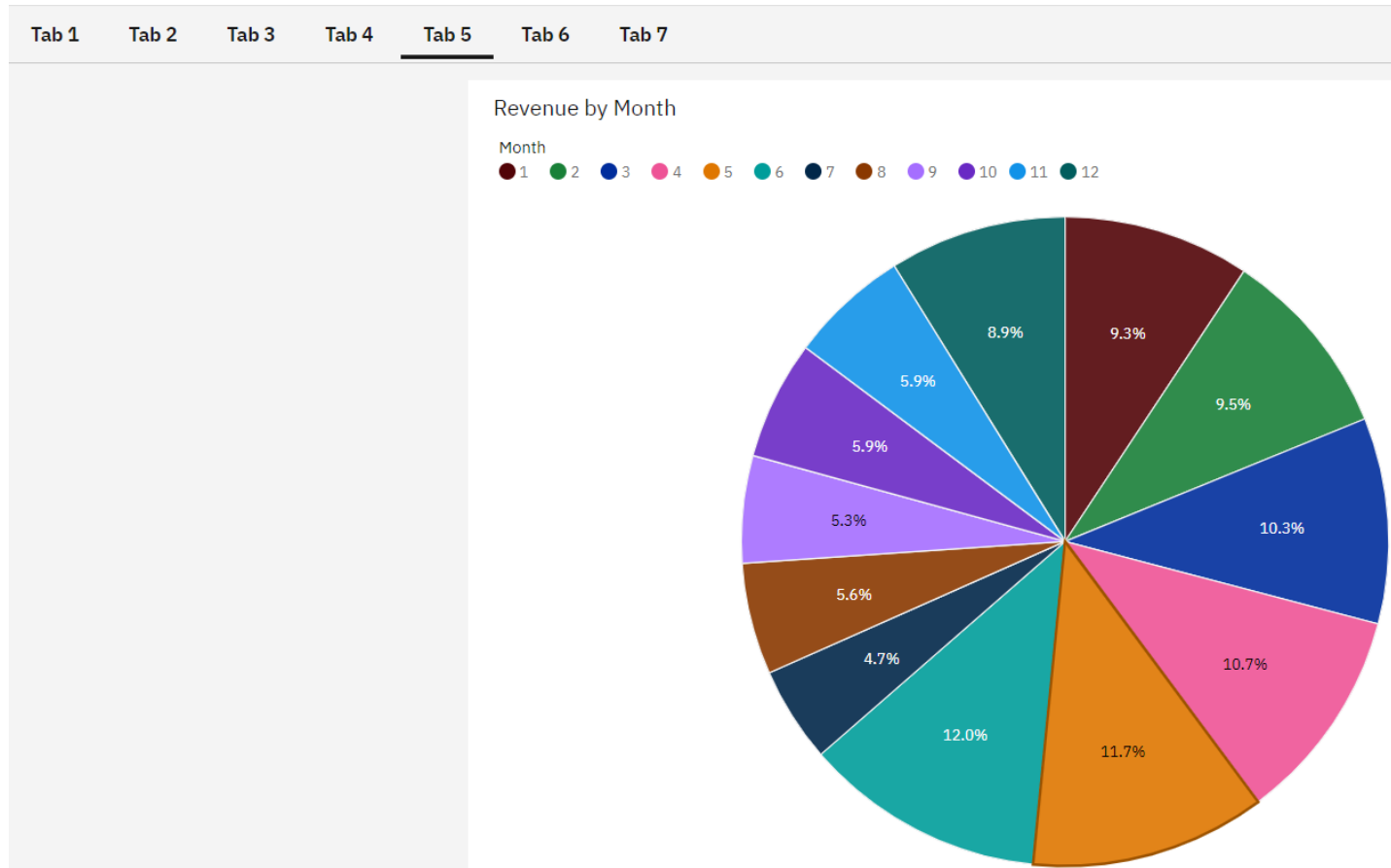
Dashboard Tab 3: Map representing top 3 countries with highest revenues:



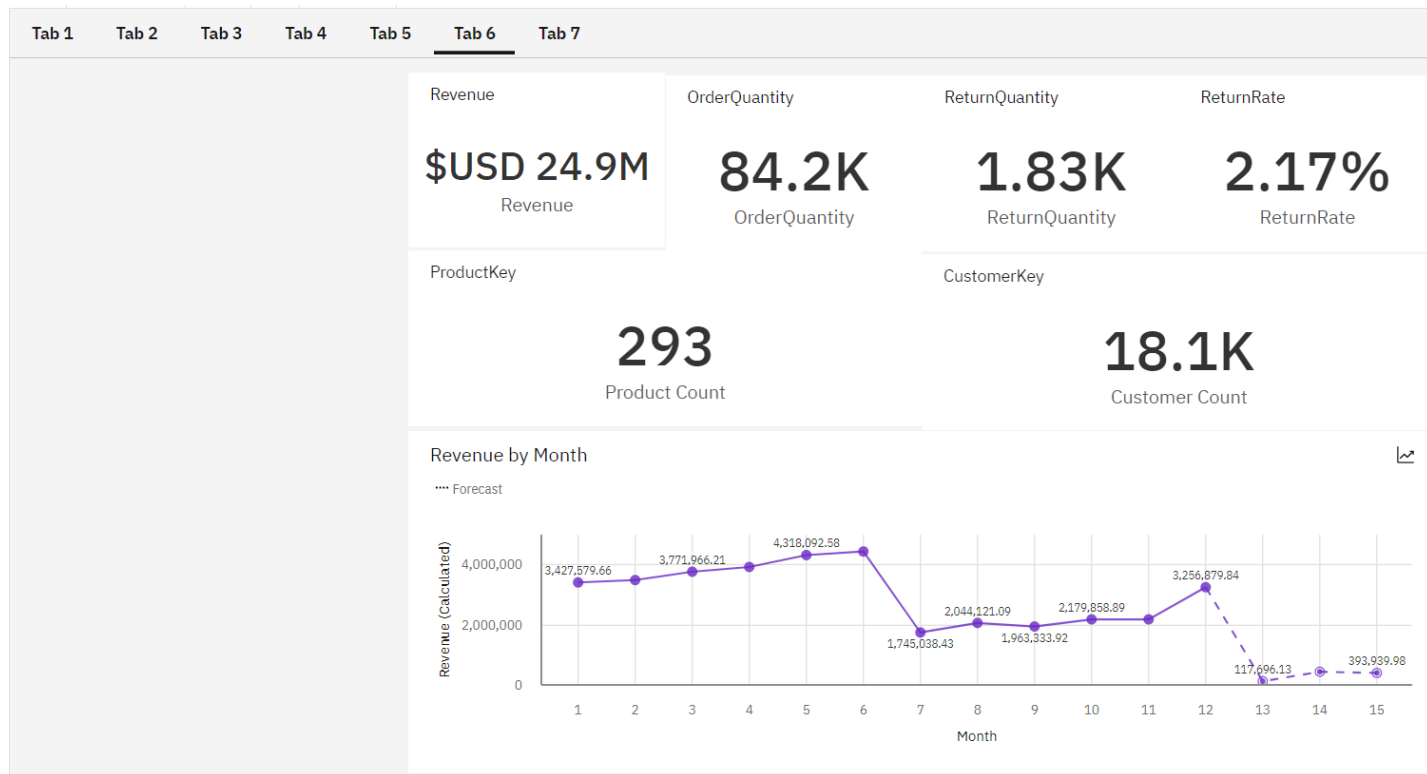
Dashboard Tab 4: Map representing revenue for each country point:



Dashboard Tab 5: Pie chart representing revenue for each month:



Dashboard Tab 6: Cards representing total revenue , number of products ordered, return quantity, rate of returns, total number of products and total number of customers. Line graph representing the revenue for each month along with future revenue prediction using forecasting:



RESULT:

Thus the bicycle sales data analysis guided project has been successfully completed using IBM Cognos.

CONCLUSION:

Thus the adventure works bicycle sales dataset which is a zip file of 10 CSV files has been downloaded from kaggle and 8 1:N (one to many) cardinality relationships have been formed and a union of 2015, 2016 and 2017's sales tables have been performed and necessary calculations such as returnrate and revenue have been performed. Then the data visualization has been performed using IBM Cognos.

[Bicycle Sales Analysis by Santosh.V Video Link:](#)

<https://drive.google.com/file/d/1aTJWD9-oxmJcOx7QDCMRSH7Lm6b4U47x/view?usp=sharing>