

## DAD 220

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### Module 7 SQL Project Two

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## Report

The database QuantigrationRMA shows that 37,566 products were returned to the company. In this report we analyzed the number of returns by state and the percentage of returns by product type.

**By using following command we can see the number of returns per state:**

```
SELECT C.State, COUNT(*)
```

```
FROM Orders O INNER JOIN Customers C ON O.CustomerID = C.Customer_ID
```

```
INNER JOIN RMA ON O.Order_ID = RMA.OrderID
```

```
GROUP BY C.State ORDER BY C.State;
```

```
mysql> SELECT C.State, COUNT(*)
-> FROM Orders O INNER JOIN Customers C ON O.CustomerID = C.Customer_ID
-> INNER JOIN RMA ON O.Order_ID = RMA.OrderID
-> GROUP BY C.State ORDER BY C.State;
```

State	COUNT(*)	State	COUNT(*)
Alabama	836	Montana	808
Arizona	775	Nebraska	723
Arkansas	844	Nevada	745
California	764	New Hampshire	764
Colorado	718	New Jersey	711
Connecticut	822	New Mexico	807
Delaware	811	New York	782
Florida	765	North Carolina	773
Georgia	719	North Dakota	774
Hawaii	783	Ohio	735
Idaho	822	Oklahoma	751
Illinois	747	Oregon	840
Indiana	802	Pennsylvania	802
Iowa	804	Rhode Island	764
Kansas	725	South Carolina	702
Kentucky	809	South Dakota	797
Louisiana	794	Tennessee	819
Maine	748	Texas	755
Maryland	767	Utah	755
Massachusetts	972	Vermont	785
Michigan	744	Washington	781
Minnesota	794	West Virginia	837
Mississippi	821	Wisconsin	807
Missouri	777	Wyoming	786

The screenshot above shows that the most orders were returned in Massachusetts (972 orders), Arkansas (844 orders), Oregon (840 orders).

**By using the following command we can analyze the reasons for returns in Massachusetts, Arkansas and Oregon:**

```
SELECT C.State, RMA.Reason, COUNT(*)
FROM Orders O INNER JOIN Customers C ON O. CustomerID = C. Customer_ID
INNER JOIN RMA ON O.Order_ID = RMA.OrderID
WHERE C.State = 'Massachusetts' OR C.State = 'Arkansas' OR C.State = 'Oregon'
GROUP BY C.State, RMA.Reason ORDER BY C.State;
```

```
mysql> SELECT C.State, RMA.Reason, COUNT(*)
-> FROM Orders O INNER JOIN Customers C ON O. CustomerID = C. Customer_ID
-> INNER JOIN RMA ON O.Order_ID = RMA.OrderID
-> WHERE C.State = 'Massachusetts' OR C.State = 'Arkansas' OR C.State = 'Oregon'
-> GROUP BY C.State, RMA.Reason ORDER BY C.State;
```

State	Reason	COUNT(*)
Arkansas	Defective	279
Arkansas	Incorrect	303
Arkansas	Other	262
Massachusetts	Defective	354
Massachusetts	Incorrect	312
Massachusetts	Other	306
Oregon	Defective	290
Oregon	Incorrect	275
Oregon	Other	275

From the above screenshot we can see that the reason of 1/3 of all the returns is Incorrect order. The department which is responsible for orders process should be more careful or maybe clients returned products because there was not enough information on the website about the purpose of the product. Additionally, if an item is returned because it is found to be defective, we will need to determine the cause of those defects (manufacturing defects or shipping defects). Perhaps the product simply needs additional packaging.

By using the following command we can analyze the reasons for returns due to order been

Incorrect in other states:

```
SELECT C.State, RMA.Reason, COUNT(*)
```

```
FROM Orders O INNER JOIN Customers C ON O. CustomerID = C. Customer_ID
```

```
INNER JOIN RMA ON O.Order_ID = RMA.OrderID
```

```
WHERE RMA.Reason = 'Incorrect' GROUP BY C.State ORDER BY C.State;
```

```
mysql> SELECT C.State, RMA.Reason, COUNT(*)
-> FROM Orders O INNER JOIN Customers C ON O. CustomerID = C. Customer_ID
-> INNER JOIN RMA ON O.Order_ID = RMA.OrderID
-> WHERE RMA.Reason = 'Incorrect' GROUP BY C.State ORDER BY C.State;
```

State	Reason	COUNT(*)
Alabama	Incorrect	280
Arizona	Incorrect	264
Arkansas	Incorrect	303
California	Incorrect	247
Colorado	Incorrect	252
Connecticut	Incorrect	297
Delaware	Incorrect	260
Florida	Incorrect	281
Georgia	Incorrect	246
Hawaii	Incorrect	287
Idaho	Incorrect	313
Illinois	Incorrect	263
Indiana	Incorrect	274
Iowa	Incorrect	300
Kansas	Incorrect	242
Kentucky	Incorrect	298
Louisiana	Incorrect	300
Maine	Incorrect	257
Maryland	Incorrect	273
Massachusetts	Incorrect	312
Michigan	Incorrect	270
Minnesota	Incorrect	262
Mississippi	Incorrect	289
Missouri	Incorrect	249
Montana	Incorrect	277
Nebraska	Incorrect	267
Nevada	Incorrect	258
New Hampshire	Incorrect	261
New Jersey	Incorrect	239
New Mexico	Incorrect	289
New York	Incorrect	291
North Carolina	Incorrect	270
North Dakota	Incorrect	272
Ohio	Incorrect	278
Oklahoma	Incorrect	264
Oregon	Incorrect	275
Pennsylvania	Incorrect	274
Rhode Island	Incorrect	246
South Carolina	Incorrect	242
South Dakota	Incorrect	290
Tennessee	Incorrect	302
Texas	Incorrect	255
Utah	Incorrect	253
Vermont	Incorrect	302
Washington	Incorrect	283
West Virginia	Incorrect	303
Wisconsin	Incorrect	256
Wyoming	Incorrect	250

The screenshot above shows that the most orders were returned for Reason – Incorrect in Idaho (313 orders), Massachusetts (312 orders). The lowest index is in New Jersey (239 orders).

**By using the following command we can analyze the returns by product type:**

The amount of product sold:

```
SELECT SKU, COUNT(*)  
FROM Orders  
GROUP BY SKU;
```

```
mysql> SELECT SKU, COUNT(*)  
-> FROM Orders  
-> GROUP BY SKU;
```

SKU	COUNT(*)
ADV-24-10C	4178
ADV-48-10F	4174
BAS-08-1 C	4285
BAS-24-1 C	34
BAS-48-1 C	8385
ENT-24-10F	4275
ENT-24-40F	2152
ENT-48-10F	4329
ENT-48-40F	6186

**TOTAL sold 37,998 items**

The amount of product returned:

```
SELECT O.SKU, COUNT(*)  
FROM Orders O  
INNER JOIN RMA ON O.Order_ID = RMA.OrderID  
GROUP BY SKU;
```

```
mysql> SELECT O.SKU, COUNT(*)  
-> FROM Orders O  
-> INNER JOIN RMA ON O.Order_ID = RMA.OrderID  
-> GROUP BY SKU;
```

SKU	COUNT(*)
ADV-24-10C	4122
ADV-48-10F	4124
BAS-08-1 C	4248
BAS-24-1 C	33
BAS-48-1 C	8282
ENT-24-10F	4231
ENT-24-40F	2121
ENT-48-10F	4287
ENT-48-40F	6118

**TOTAL returned 37,566 items**

The table above shows that more than 98% of all products sold were returned. For example, product 'BAS-48-1 C' was sold 8385 times, and it was returned back - 8282 times. Same as product 'ENT-48-40F' returned 6118 times and 'ENT-48-10F' returned 4287 times. Therefore, the company needs to work equally for all products to identify the reasons for returns. The Quantigrattion product manager should analyze the reasons for returns and work on the quality of the product.

**For convenience, we can analyze the types of returned goods in different regions (for example. Southeastern region):**

```
SELECT DISTINCT SKU, COUNT(*)  
  
FROM Orders  
  
INNER JOIN Customers ON Orders.CustomerID = Customers.Customer_ID  
  
WHERE Customers.State = 'Virginia' OR Customers.State = 'North Carolina'  
  
OR Customers.State = 'South Carolina' OR Customers.State = 'Georgia'  
  
GROUP BY SKU;
```

```
mysql> SELECT DISTINCT SKU, COUNT(*)  
-> FROM Orders  
-> INNER JOIN Customers  
-> ON Orders.CustomerID = Customers.Customer_ID  
-> WHERE Customers.State = 'Virginia'  
-> OR Customers.State = 'North Carolina'  
-> OR Customers.State = 'South Carolina'  
-> OR Customers.State = 'Georgia'  
-> GROUP BY SKU;
```

SKU	COUNT(*)
ADV-24-10C	243
ADV-48-10F	255
BAS-08-1 C	257
BAS-24-1 C	1
BAS-48-1 C	504
ENT-24-10F	235
ENT-24-40F	143
ENT-48-10F	247
ENT-48-40F	337

From the screenshot above we can see 3 top products that were returned: 'BAS-48-1 C' was returned 504 times, product 'BAS-48-1 C' – 337 times and 'BAS-08-1 C' – 257 times.

In addition, please note that there are some limitations on the report due to lack of information about how the product information represented on the company's website and also we did not consider how the orders been processed. So, if there are any returns of the product due to been "Incorrect" extra analisys is needed to advise with the next steps to avoid this happening in the future.