



Data Analysis RMA Report

1. DISCOVERY

```
mysql> USE QuantigrationUpdates;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SHOW TABLES;
+-----+
| Tables_in_QuantigrationUpdates |
+-----+
| Collaborators                    |
| Orders                          |
| RMA                              |
+-----+
3 rows in set (0.00 sec)
```

```
mysql> DESC Collaborators;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CollaboratorID | int(11)       | NO   | PRI | 0        |       |
| FirstName      | varchar(25)   | YES  |     | NULL     |       |
| LastName       | varchar(25)   | YES  |     | NULL     |       |
| Street         | varchar(50)   | YES  |     | NULL     |       |
| City           | varchar(50)   | YES  |     | NULL     |       |
| State          | varchar(25)   | YES  |     | NULL     |       |
| ZipCode        | int(11)       | YES  |     | NULL     |       |
| Telephone      | varchar(15)   | YES  |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
8 rows in set (0.00 sec)
```

```
mysql> DESC Orders;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| OrderID        | int(11)       | NO   | PRI | NULL     |       |
| CollaboratorID | int(11)       | YES  |     | NULL     |       |
| SKU            | varchar(20)   | YES  |     | NULL     |       |
| Description     | varchar(50)   | YES  |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.00 sec)
```

```
mysql> DESC RMA;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| RMAID          | int(11)       | NO   | PRI | 0        |       |
| OrderID        | int(11)       | YES  |     | NULL     |       |
| Step           | varchar(50)   | YES  |     | NULL     |       |
| Status         | varchar(15)   | YES  |     | NULL     |       |
| Reason         | varchar(15)   | YES  |     | NULL     |       |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

2. ANALYSIS

- **Analyze the number of returns by state** and describe your findings in your report.

```
mysql> SELECT State, COUNT(*)
-> FROM RMA JOIN Orders
-> ON RMA.OrderID = Orders.OrderID
-> JOIN Collaborators
-> ON Orders.CollaboratorID = Collaborators.CollaboratorID
-> GROUP BY State
-> ORDER BY COUNT(*) DESC;
```

State	COUNT (*)
Massachusetts	972
Arkansas	844
Oregon	840
West Virginia	837
Alabama	836
Idaho	822
Connecticut	821
Mississippi	821
Tennessee	819
Delaware	811
Kentucky	809
Montana	808
New Mexico	807
Wisconsin	807
Iowa	804
Indiana	802
Pennsylvania	802
South Dakota	797
Minnesota	794
Louisiana	794
Wyoming	786
Vermont	785
Hawaii	783
New York	782
Washington	781
Missouri	777
Arizona	775
North Dakota	774
North Carolina	773
Maryland	767
Florida	765
California	764
New Hampshire	764
Rhode Island	762
Texas	755
Utah	755
Oklahoma	751
Maine	748
Illinois	747
Nevada	745
Michigan	744
Ohio	735
Kansas	725
Nebraska	723
Georgia	719
Colorado	718
New Jersey	711
South Carolina	702

Massachusetts is home of the most RMAs, with a total of 972 authorized returns.

Next is Arkansas with 844 returns, followed by Oregon with 840 returns.

The state with the least number of returns is South Carolina at only 702 total.



- **Analyze the percentage of returns by product type** and describe your findings in your report.

```
mysql> SELECT SKU,
-> COUNT(*) / (SELECT COUNT(*) FROM RMA) * 100 AS percent
-> FROM RMA INNER JOIN Orders
-> ON RMA.OrderID = Orders.OrderID
-> GROUP BY SKU
-> ORDER BY percent DESC;
```

SKU	percent
BAS-48-1 C	22.0465
ENT-48-40F	16.2860
ENT-48-10F	11.4119
BAS-08-1 C	11.3028
ENT-24-10F	11.2628
ADV-48-10F	10.9780
ADV-24-10C	10.9727
ENT-24-40F	5.6461
BAS-24-1 C	0.0878

9 rows in set (0.07 sec)

BAS-48-1 C is our most returned product at about 22% of total authorized returns.

Next is ENT-48-40F at 16%, followed by ENT-48-10F at approximately 11%.

Our least returned product is BAS-24-1 C, coming in at only 0.09% of total returns.



3. SUMMARY

Massachusetts is home of the most RMAs, with a total of 972 authorized returns. Next is Arkansas with 844 returns, followed by Oregon with 840 returns.

The state with the least number of returns is South Carolina at only 702 total, which is a difference of about 32% from the RMA count in Massachusetts:

$$\frac{|972 - 702|}{\frac{(972 + 702)}{2}} \times 100\% \approx 32\%$$

BAS-48-1 C is our most returned product at 22% of total authorized returns.

Next is ENT-48-40F at 16%. That's a difference of approximately 30%:

$$\frac{|22.0465\% - 16.2860\%|}{\frac{(22.0465\% + 16.2860\%)}{2}} \times 100\% \approx 30\%$$

This is followed by ENT-48-10F, representing 11% of total returns.

Our least returned product is BAS-24-1 C, coming in at only 0.09% of total returns.

It's worth taking note of our most ordered products:

```
mysql> SELECT SKU, COUNT(*)
-> FROM Orders
-> GROUP BY SKU
-> ORDER BY COUNT(*) DESC;
+-----+-----+
| SKU          | COUNT(*) |
+-----+-----+
| BAS-48-1 C   | 8385     |
| ENT-48-40F   | 6186     |
| ENT-48-10F   | 4329     |
| BAS-08-1 C   | 4284     |
| ENT-24-10F   | 4275     |
| ADV-24-10C   | 4178     |
| ADV-48-10F   | 4174     |
| ENT-24-40F   | 2152     |
| BAS-24-1 C   | 34        |
+-----+-----+
9 rows in set (0.03 sec)
```



The number of returns for any given product is directly correlated with the quantity of purchases that have been made for that product:

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

SKU	COUNT(*)
BAS-48-1 C	8282
ENT-48-40F	6118
ENT-48-10F	4287
BAS-08-1 C	4246
ENT-24-10F	4231
ADV-48-10F	4124
ADV-24-10C	4122
ENT-24-40F	2121
BAS-24-1 C	33

9 rows in set (0.06 sec)

This is to be expected; however, too many products are being returned.

For example, BAS-48-1 C has been purchased 8385 times and returned 8282 times.

That's only 103 items, or 98.77%, being kept after purchase:

$$\frac{8282}{8385} \times 100\% \approx 98.77\%$$

Although this does not seem like viable information, as *Quantigation* has grown substantially at quite a high rate.

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