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```
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> SELECT State, COUNT(*) AS NUMBEROFRETURNS
    -> FROM Collaborators
    -> INNER JOIN Orders ON Orders.CollaboratorID = Collaborators.CollaboratorID
    -> INNER JOIN RMA ON Orders.OrderID = RMA.OrderID
    -> GROUP BY State
    -> ORDER BY COUNT(*) DESC;
+---------------+-----------------+
| State         | NUMBEROFRETURNS |
+---------------+-----------------+
| Massachusetts |             972 |
| Arkansas      |             844 |
| Oregon        |             840 |
| West Virginia |             837 |
| Alabama       |             836 |
| Connecticut   |             822 |
| Idaho         |             822 |
| Mississippi   |             821 |
| Tennessee     |             819 |
| Delaware      |             811 |
| Kentucky      |             809 |
| Montana       |             808 |
| Wisconsin     |             807 |
| New Mexico    |             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
Rhode Island	764
New Hampshire	764
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

```
mysql> SELECT SKU, COUNT(*) AS TOTAL
    -> FROM Orders
    -> GROUP BY Orders.SKU;
+------------+-------+
| SKU        | TOTAL |
+------------+-------+
| 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 |
+------------+-------+
9 rows in set (0.02 sec)
```

```
mysql> SELECT SKU, COUNT(*) AS TOTAL
    -> FROM Orders;
+------------+-------+
| SKU        | TOTAL |
+------------+-------+
| BAS-08-1 C | 37998 |
+------------+-------+
1 row in set (0.01 sec)
```

ADV-24-10C = (4178/37998)*100

10.995%

ADV-48-10F = (4174/37998)*100

10.98%

BAS-08-1 C = (4285/37998)*100

11.276%

BAS-24-1 C (34/37998)*100

0.089

BAS-48-1 C (8385/37998)*100

22.067%

ENT-24-10F (4275/37998)*100

11.25%

ENT-24-40F (2152/37998)*100

5.66%

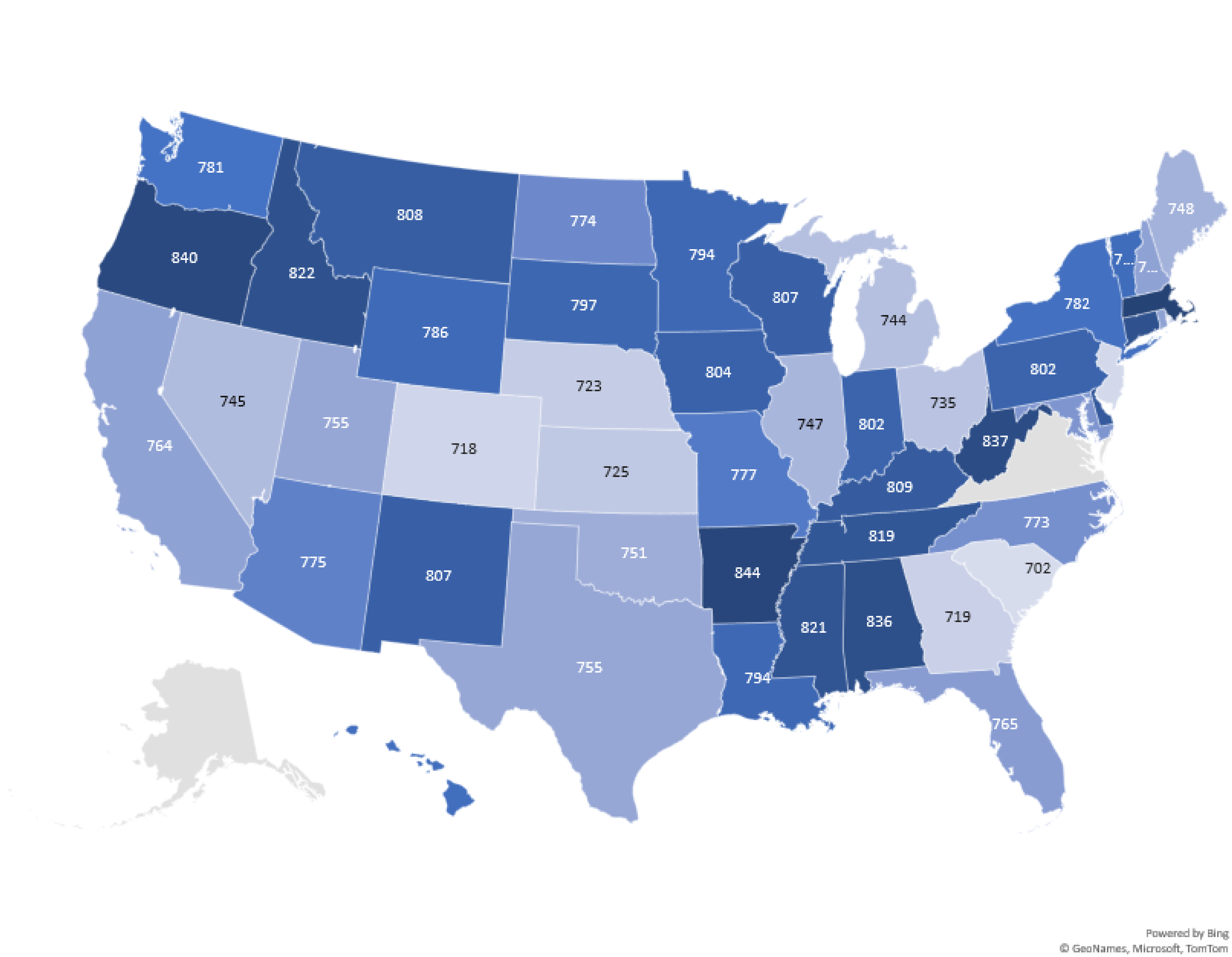
ENT-48-10F (4329/37998)*100

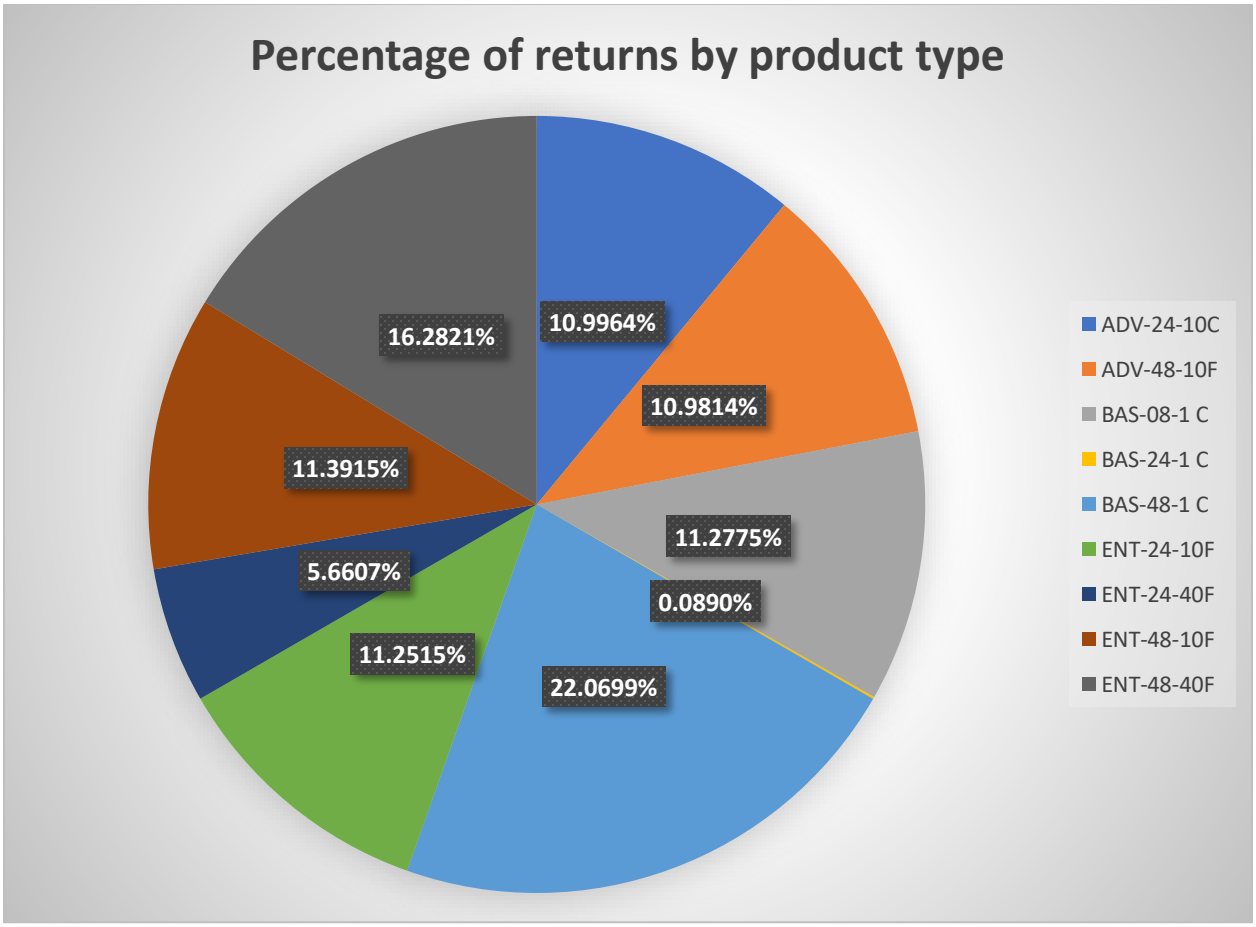
11.39%

ENT-48-40F (6186/37998)*100

16.28%

Number of returns by state





Within the analysis of the QuantigrationUpdates database, multiple lineaments arose. Two areas of investigation were undergone, from the number of returns by state and the percentage of returns by product type. Within the first analysis by state, there appears to be no clear pattern of geographic locations and their return rate. The state with the highest returns was Massachusetts, with 972; the next two were Arkansas and Oregon, with 844 and 840, respectively. These three states are in differing regions of the nation and thus do not allow for a trend to be apparent in this manner. The two states with the lowest returns are South Carolina and New Jersey, with 702 and 711, respectively. One apparent aspect of this data is that as the list descends, each state has a steady decline in returns, with no sharp differences. This is different for Massachusetts, with a 128 return difference between itself and the next highest state Arkansas. This is 14 returns less than Arkansas and the lowest state of South Carolina. This can lead the company to deduce that products entering this state face some challenges, ranging from poor product quality, stronger competition, or potential price discrepancies causing customers to return the product.

The second analysis area consists of the percentage of returns by product type. The findings within this query result in an equal distribution of each product's return rate. Each product was divided into its SKU and then counted by the number of returns it held. Of the 9 SKUs, only two held large percentages of the return distribution. These two SKUs were BAS-48-1 C with 22% and ENT-48-40F with 16% of the distribution. Every other product consistently held around 11% of the return

distribution, except for ENT-24-40F and BAS-24-1 C, responsible for 5.7% and 0.09% of returns. With certain products experiencing higher or lower rates of return, the business should determine why this is. While the business should aim to understand the reasons for high returns for BAS-48-1 C and ENT-48-40F, it should spend equal if not more resources on the two lowest products to identify why customers return them less. This could be for reasons such as affordability, popularity, durability, or market trends from social media or word of mouth.

Among both datasets, the product manager can determine which states and products require further research to increase their sales and identify popular offerings. This can allow products that perform well in the market to share characteristics among others to reduce returns and understand why the large discrepancy exists in Massachusetts and why fewer products are being returned in South Carolina. Even with this information, potential flaws in the data may be present. This analysis aims to collect quantitative information from products. It fails to explore results from reasons for the returns, timelines of returns, number of products returned at once, or the company's presence and popularity within each state. These reasons can provide further business intelligence to the company by assisting in decision-making when positioning resources in resolving these issues. For example, the manager has the potential to produce a flawed decision from this data by investing in further marketing resources by assuming that states like Massachusetts have competitors with the company's products when in actuality, the reason for the most returns could be due to faulty manufacturing.

Further flaws within the data can be product or customer redundancy, producing skewed results. If a customer has purchased a product in Arkansas, and returns it in Oregon, both states may enter this result in their database, producing a count for two products instead of one. Additionally, the data only records number of returns and not the number of products in stock. If a customer purchased 3 products, returned 1 but decided to repurchase it, this return would still exist in the database. This can further skew the data by producing inaccurate information for product management.

Limitations amongst conclusions can arise from the discrepancy between state returns and percentages of return distributions. In Massachusetts, a larger consumer presence may account for a more significant return increase when compared to states like South Carolina. Assuming each state has an equal amount of customers and their returns are not dependent on this population can produce a flawed assumption. If Massachusetts had 60,000 customer purchases with 972 returns, this would be a return rate of 1.62%. Compared to a state like South Carolina which could have 10,000 purchases with 702 returns produces a return rate of 7.02%. The population is not apparent in this analysis, so a further understanding of state returns can only be understood with this information. This dilemma can arise again with the return distribution among all products, each being produced at different numbers. Each return is being compared to the other return instead of to itself. This can alter the data or even contradict it. With BAS-48-1 C's 22% return rate, if 400,000 products were purchased, 8385 returns would produce a 2% return rate. The same can exist in the product, with the smallest return of 34 being BAS-24-1 C. If 200 of these products were produced, this would result in a 17% return rate. These factors are essential for consideration before management produces decisions or moves further with the data analyzed in this report.