**Answers for Data Owners**

**Question 1:**

The data owners are interested in determining whether there are differences between countries in terms of average Sales Price and average cost price.  They also want to know whether they are differences between makes in a country.  They are considering simply withdrawing from a country if average cost price is less than $300 below the average Sales Price, or to stop selling a make in a country if the average cost price for that make in that country is less than $300 the average Sales Price, but they are willing to reconsider in light of the data that you are gathering.

**Answer:**

Chart, bar chart

Description automatically generated

* In this Visualization, the data owners are looking to understand the differences in the average Sales Price and average cost price between countries and make within a country.
* To create the above visualization, I created a hierarchy of Country and Make and pull it into columns.
* Pull the Average cost price and Average Sales Price from the dataset into rows.
* Remove the null values to do that pull the country to the filter.
* We will use the Calculated field As Data owners wanted to understand the difference between Average Sales Price and average Cost price.
* Average Sales Price > Average Cost Price 🡪It’s Profit
* Average Sales Price < Average Cost Price 🡪It’s Loss
* According to the question, we will create a calculated field named Withdrawn Countries which will Include those countries from which data owners will withdraw if the condition is satisfied.
* According to the above visualization we can notice the country which is making highest

**Question 2:**

The data owners have some concerns about their labor costs.  They are therefore considering re-engineering their labor operations for at least some makes possibly for some countries.  They therefore want to know the average labor costs by make overall and within a country for each make.  They are considering simply outsourcing labor operations if the labor cost for a make or a make in a country is over $500, but they are willing to reconsider these limits in light of the data that you are gathering.

Chart, bar chart

Description automatically generated

Chart, bar chart

Description automatically generated

* According to the question the data owners are looking to understand the reasons behind their labor costs, and to identify which makes and countries have higher labor costs.
* In that case, we will create a hierarchy of make and Country and pull them to the column field
* We will pull labor cost and calculate its average and pull it to the rows field.
* I have used side by side graph here to represent the Outsourced labor cost which is a calculated field that includes the condition Average labor cost is greater than $500.
* In the above visualization, the orange color shows the Outsourced Labor cost and the blue color shows the labor cost which is not outsourced. Bentley is the only make where all county’s labor costs have been outsourced.
* If we will focus on the Average Labor Cost by make then Rolls Royce has the highest average labor cost and Triumph has the lowest Average labor cost.

**Question 3:**

The data owners want to know which proportion of Sales are generated for each make.  They are interested in both the total Sales Price and the number of sales.  They are considering stop selling makes with a very low proportion of sales.

**Answer:**

**Part1: Proportion of Sales Price by Make**

Chart, pie chart

Description automatically generated

* The above visualization represents the proportion of sales by make.
* To calculate the Proportion of Sales Price by Make we have created a calculated field which is named calculation 1 which includes calculation as SUM([Sales Price]) / TOTAL(SUM([Sales Price]))\*100.
* As we can notice from the above visualization Rolls Royce has the highest proportion of Sales Price by make and Triumph has the lowest.

**Part 2 : Proportion of Sales Price by Make**

Chart, pie chart

Description automatically generated

* The above visualization represents the proportion of the number of sales by make.
* To calculate the Proportion of Number of Sales by Make we have created calculated field names as calculation 2.
* To calculate it I have used the formula:
* COUNT([Sales Price]) / TOTAL(COUNT([Sales Price]))\*100
* From the above visualization we can notice that Rolls-Royce has the highest sale and Jaguar has the lowest sale.

Chart, pie chart

Description automatically generated

The above figure is the Dashboard of both Proportion of Sales Price by make and Proportion of number of sale by make.

**Description Addressed to Professor**

**Answer1:**Chart, bar chart

Description automatically generated

* In the above visualization I have used Side by Side bar graph since it is easy to understand and can be used to organize and display the categories. it can be understood in a quick look for data owners.
* From the graph we can easily identify two things
* Profit and Loss by country or make and withdrawn countries which we have calculated based on data owner’s requirement.

**Answer 2:**

Chart, bar chart

Description automatically generated

* In this visualization, I have used Symbol maps to represent average labor cost by Make overall and within a country for each make. This appears just like the Bar graph but here we have applied the data owner’s condition which is easily identifiable as True and False with different two colors indicated to each. This helped me to easily visualize the data.

**Answer 3:**

Chart, pie chart

Description automatically generated

* In this visualization, I have used a pie chart to represent the Proportion of Sales Price by make and Proportion of Number of Sales by Make.
* Pie charts represent data visually as a fractional part of a whole, which can be an effective communication tool for even an uninformed audience. It will enable one to see a data comparison immediately to make an immediate analysis or to understand information quickly. it is the best chart that can clearly specify the portion using percentages.