

## CORRELATION

- Correlation in Power BI refers to the **statistical relationship between two variables**, showing how one variable changes in relation to another.
- It helps identify whether an increase or decrease in one field affects another, revealing **positive, negative, or no correlation** between them.

### Types of Correlation:

#### 1. Positive Correlation

When one variable increases, the other also increases.

*Example:* Higher sales are associated with higher profit.

#### 2. Negative Correlation:

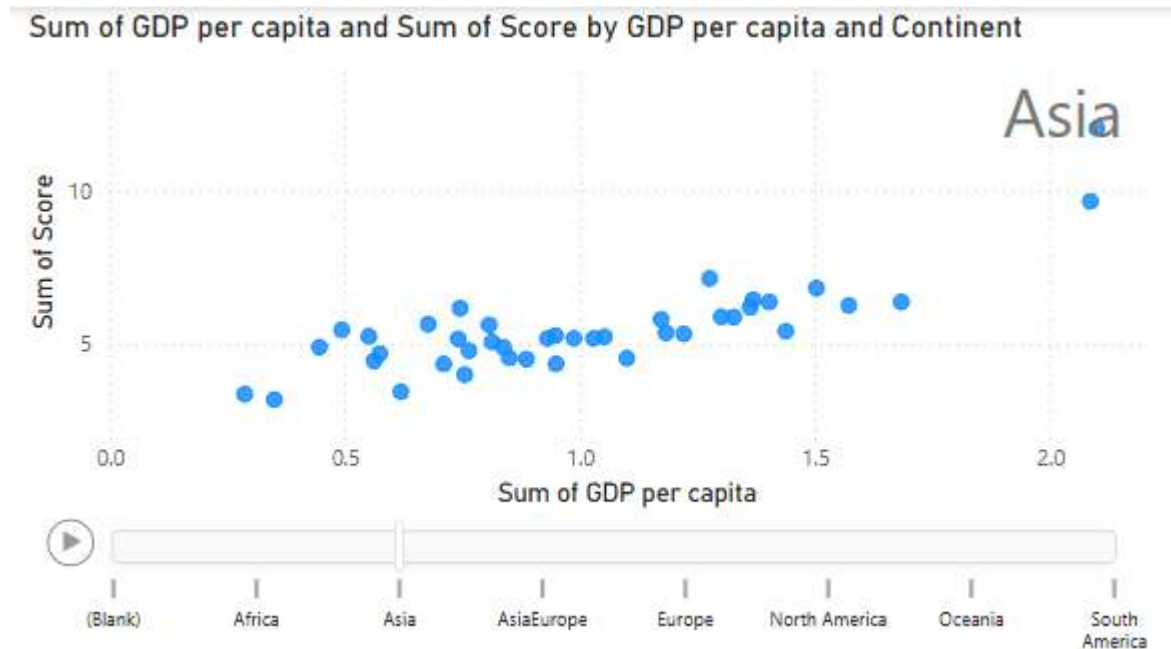
When one variable increases, the other decreases.

*Example:* Increase in discount leads to a decrease in profit margin.

#### 3. No Correlation:

There is no relationship between the two variables.

*Example:* Product color and sales amount may have no connection.



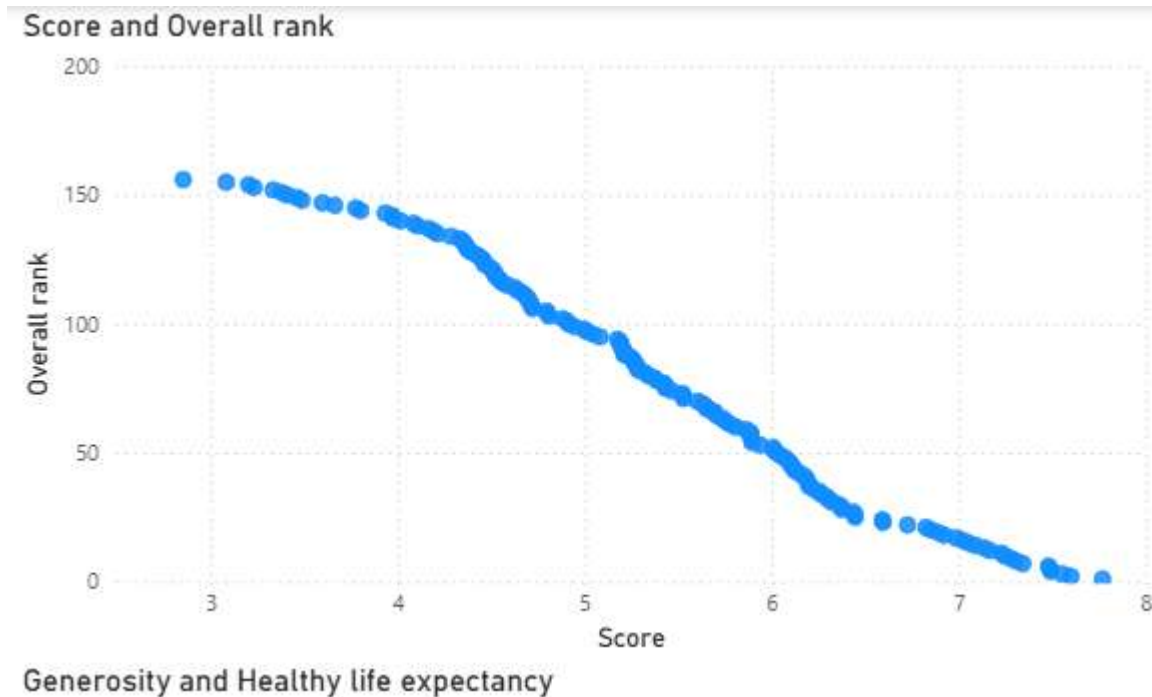
### Insights:

#### ✓ Weak Positive Correlation:

There is a clear positive relationship between **GDP per capita** and **Score** — as GDP per capita increases, the score also tends to increase.

✓ **Outliers:**

A few countries (such as one in Asia on the far right) have very high GDP per capita and score, suggesting strong economic and performance indicators compared to others.



**Insights:**

✓ **Strong Negative Correlation:**

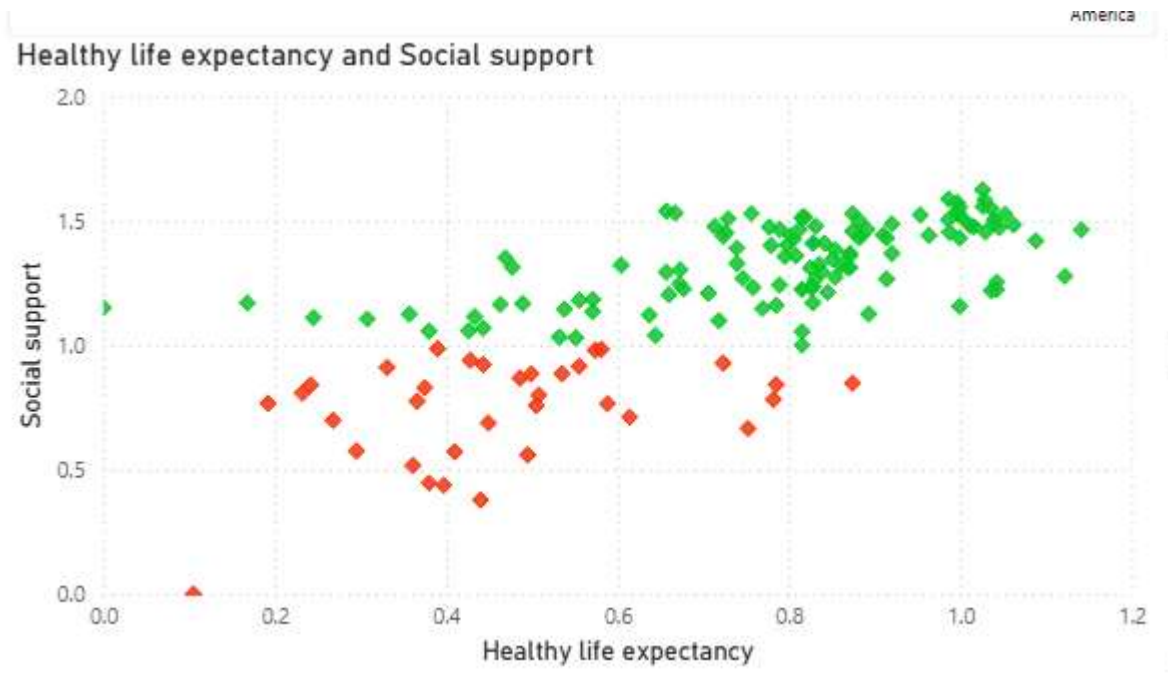
As the **Score** increases, the **Overall Rank** decreases sharply.  
This indicates that higher scores are associated with **better (lower) ranks**, showing a strong **negative correlation**.

✓ **Performance Pattern:**

Countries with scores above 6 generally fall in the top rankings (1–50), reflecting higher levels of generosity and healthy life expectancy.

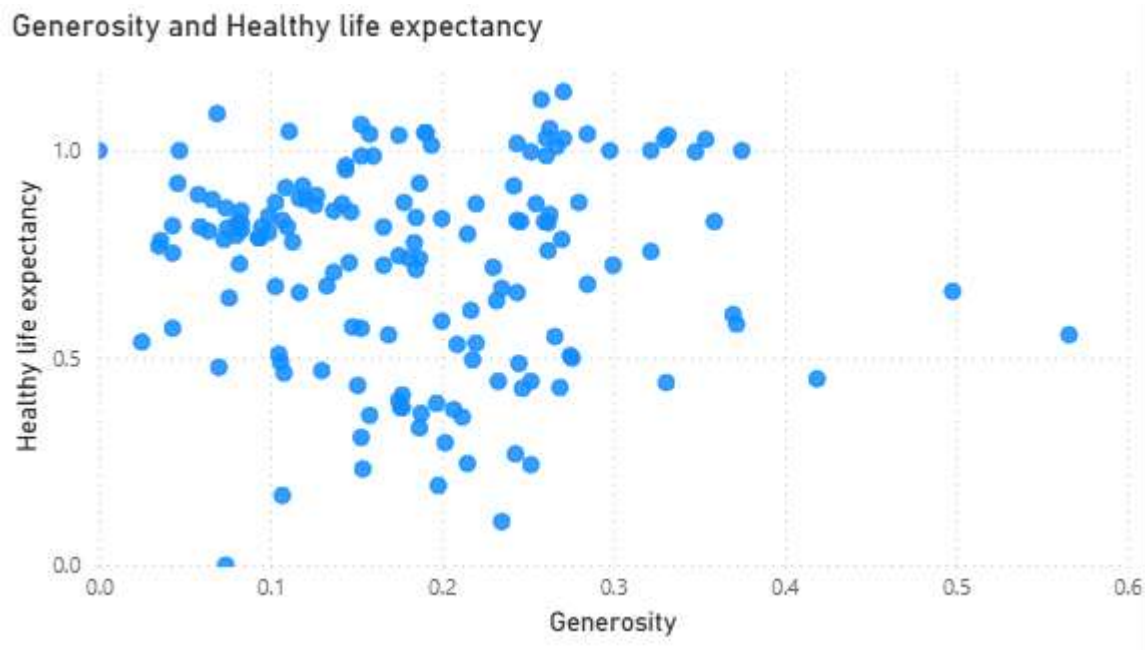
✓ **Consistent Relationship:**

The data points form a smooth downward trend, indicating a **consistent and predictable relationship** between score and overall rank.



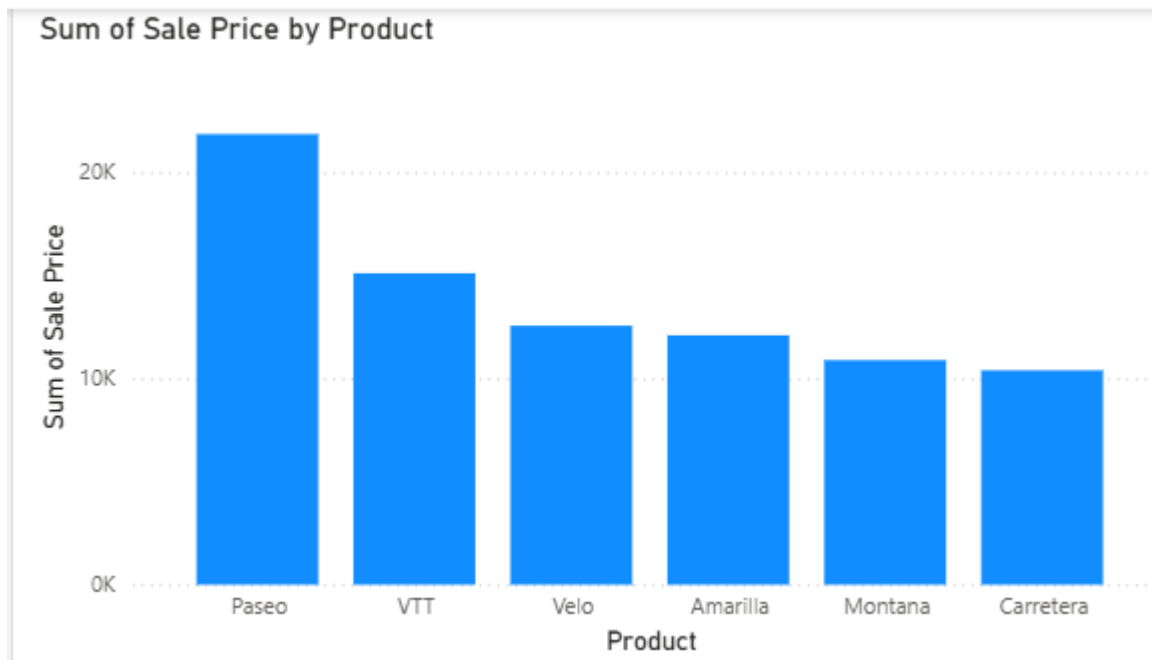
### Insights:

- ✓ **Positive Correlation:**  
As *Healthy life expectancy* increases, *Social support* also rises. Countries with longer healthy life expectancy tend to have stronger social support systems.
- ✓ **Performance Pattern:**  
Nations in the higher life expectancy range (above 0.8) consistently show strong social support levels (above 1.2), indicating a positive well-being ecosystem.
- ✓ **Lower End Trend:**  
Countries with lower life expectancy (below 0.5) exhibit weaker social support, showing disparities in healthcare and community strength.
- ✓ **Consistent Relationship:**  
The upward trend of data points highlights a stable and predictable relationship between both indicators.



### Insights:

- ✓ **No Correlation:**  
The scatter points are widely spread, showing no clear upward or downward pattern between *Generosity* and *Healthy life expectancy*.
- ✓ **Performance Pattern:**  
Both high and low generosity levels are observed across different life expectancy values, indicating limited interdependence.
- ✓ **Irregular Distribution:**  
Countries with similar generosity levels show varying healthy life expectancies, suggesting other dominant influencing factors like healthcare access and economy.
- ✓ **Lack of Consistency:**  
The scattered pattern shows an unpredictable relationship, lacking any defined trend.



### Bar Chart – Sum of Sale Price by Product

This bar chart shows that **Paseo** has the highest sale price among all products, followed by **VTT** and **Velo**.

Products like **Amarilla**, **Montana**, and **Carretera** contribute comparatively less. This indicates that Paseo is the top-performing product in terms of total revenue.

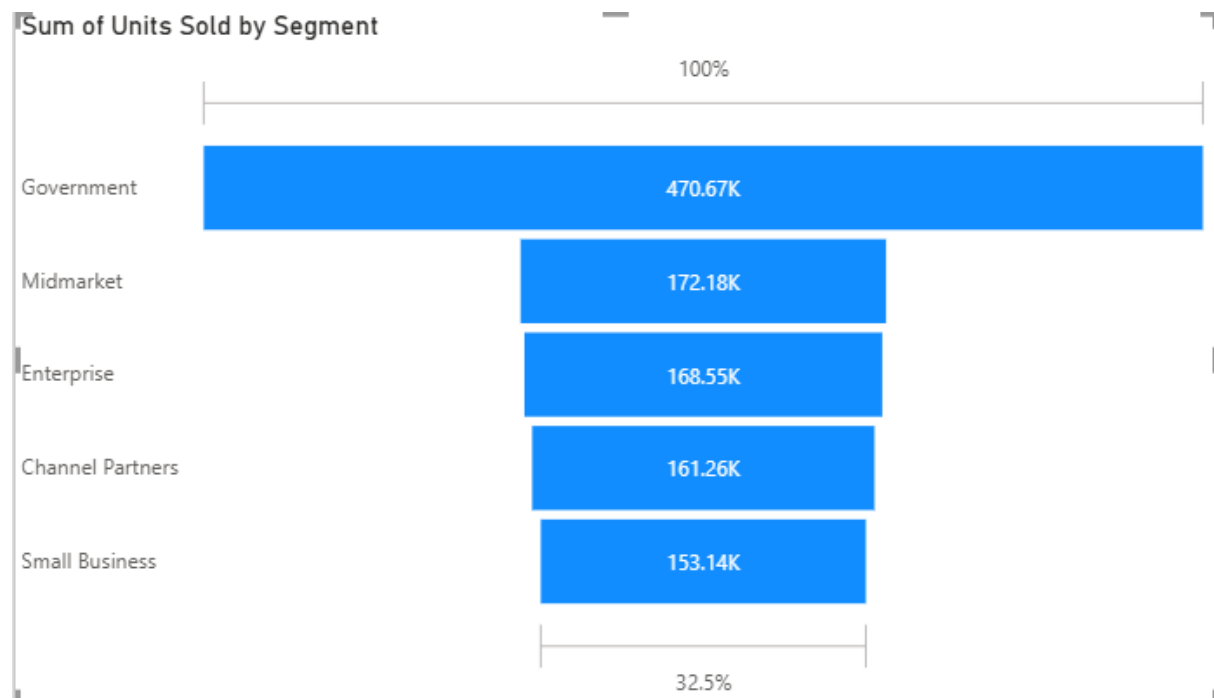


### Map Chart – Sum of Units Sold by Country

The map visual shows that **North America and Europe** have the largest sales volumes. These regions dominate global distribution and contribute significantly to total units

sold.

Other regions show smaller sales bubbles, suggesting potential markets for expansion.

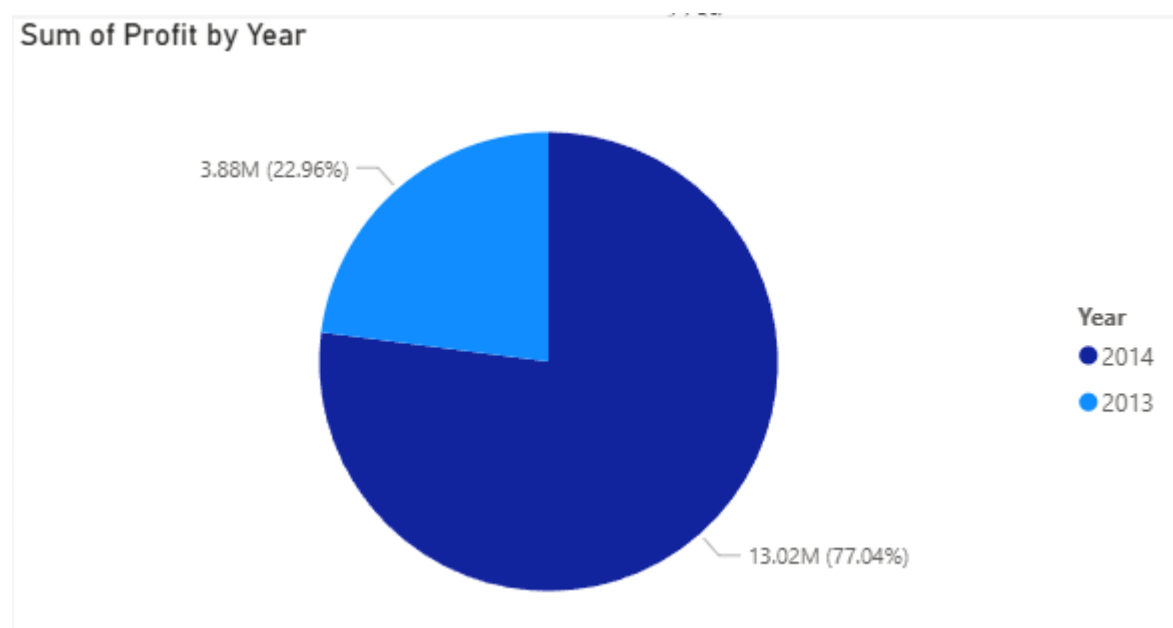


**Bar Chart – Sum of Units Sold by Segment**

This horizontal bar chart highlights that the **Government segment** has the highest unit sales.

Other segments like **Midmarket**, **Enterprise**, and **Channel Partners** show moderate sales levels.

It reveals that government contracts are the main revenue drivers for the business.



### Pie Chart – Sum of Profit by Year

The pie chart compares profit by **year (2013 vs 2014)**.

**2013** accounts for **77.04%** of total profit, while **2014** contributes only **22.96%**, showing a decline.

This drop indicates reduced profitability or increased costs in 2014.

| Discount Band | Sum of Sale Price | Sum of Units Sold | Sum of Discounts | Sum of Profit  |
|---------------|-------------------|-------------------|------------------|----------------|
| High          | 28317             | 398087            | 53,17,026.28     | 33,88,866.73   |
| Low           | 21426             | 261858            | 8,85,675.80      | 61,88,857.70   |
| Medium        | 28260             | 379697            | 30,02,546.16     | 55,79,522.84   |
| None          | 4897              | 86164             | 0.00             | 17,36,455.00   |
| Total         | 82900             | 1125806           | 92,05,248.24     | 1,68,93,702.26 |

### Table – Discount Band Summary

The table displays sales, units, discounts, and profit by **discount band**.

The **Low discount band** yields the **highest profit (₹61.88M)**, even with fewer units sold.

Meanwhile, **High and Medium** bands bring more sales volume but lower profit margins due to higher discounts.