

# Case Study On Airbnb

## Introduction

**Airbnb** is a global online marketplace that connects people who want to rent out their homes with those looking for accommodations. Founded in **2008**, it has grown rapidly and disrupted the traditional hospitality industry. With millions of listings worldwide, Airbnb provides diverse options such as apartments, villas, shared rooms, and unique stays like treehouses or boats.



## Problem Statement

The goal of this case study is to analyze Airbnb customer feedback scores and compute the Net Promoter Score (NPS). We aim to:

- 1. Categorize customers into Promoters, Passives, and Detractors based on their feedback scores.
- 2. Calculate the Net Promoter Score (NPS) using NumPy.
- 3. Interpret the NPS to understand overall customer satisfaction and loyalty.

This case study on Airbnb focuses on analyzing customer feedback collected through surveys to measure customer satisfaction using the Net Promoter Score (NPS).

```
from google.colab import files
uploaded = files.upload()
```

No file chosen      Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.  
Saving survey.txt to survey.txt

```
#importing the libraries

import numpy as np
```

NumPy is a Python library used for numerical computing. It provides powerful tools to handle large arrays, matrices, and perform mathematical operations efficiently. It is widely used in data science, machine learning, and scientific computing. NumPy is used for storing and processing numerical data, such as calculating percentages of promoters, passives, and detractors, and computing the Net Promoter Score (NPS).

## The Code for Customer Feedbacks :

```
#importing the dataset

data=np.loadtxt("/content/survey.txt",dtype=int)
```

**np.loadtxt** is a function in the **NumPy library** used to load data from a text file into a NumPy array. It can read files containing numbers, and you can specify the data type using the dtype parameter. Each line in the text file usually represents a row in the array, and values can be separated by spaces, commas, or other delimiters. This function is useful for quickly importing numerical data for analysis, visualization, or computation.

```
#checking the data

data

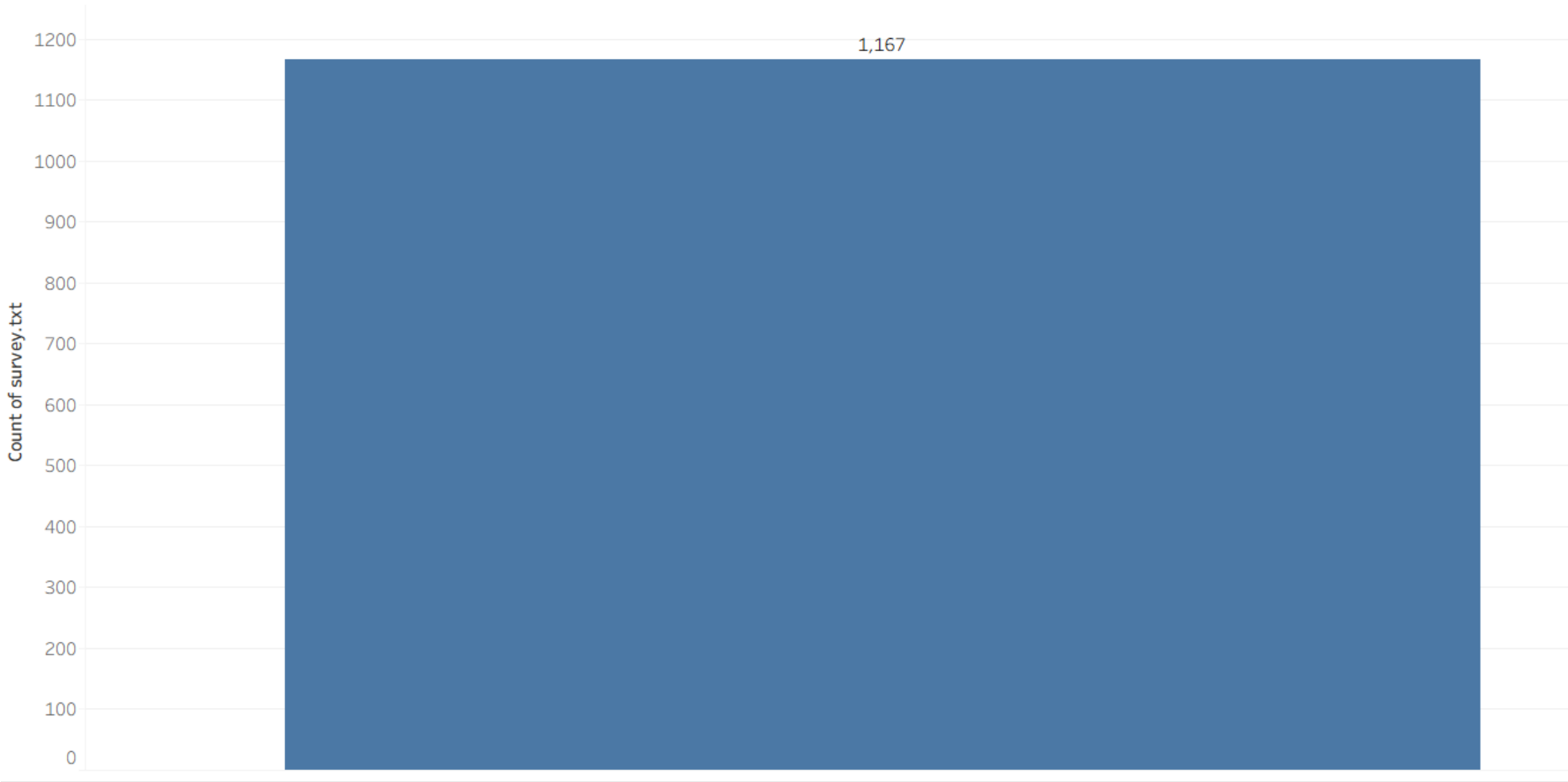
array([ 7, 10,  5, ...,  5,  9, 10])
```

✓ **The Code for Number of Customer Feedbacks :**

```
#to check the shape
#number_of_rows and number_of_columns

data.shape

(1167,)
```



In NumPy, the shape of an array tells us the structure or dimensions of the data. It shows how many (rows and columns) the array has. For example

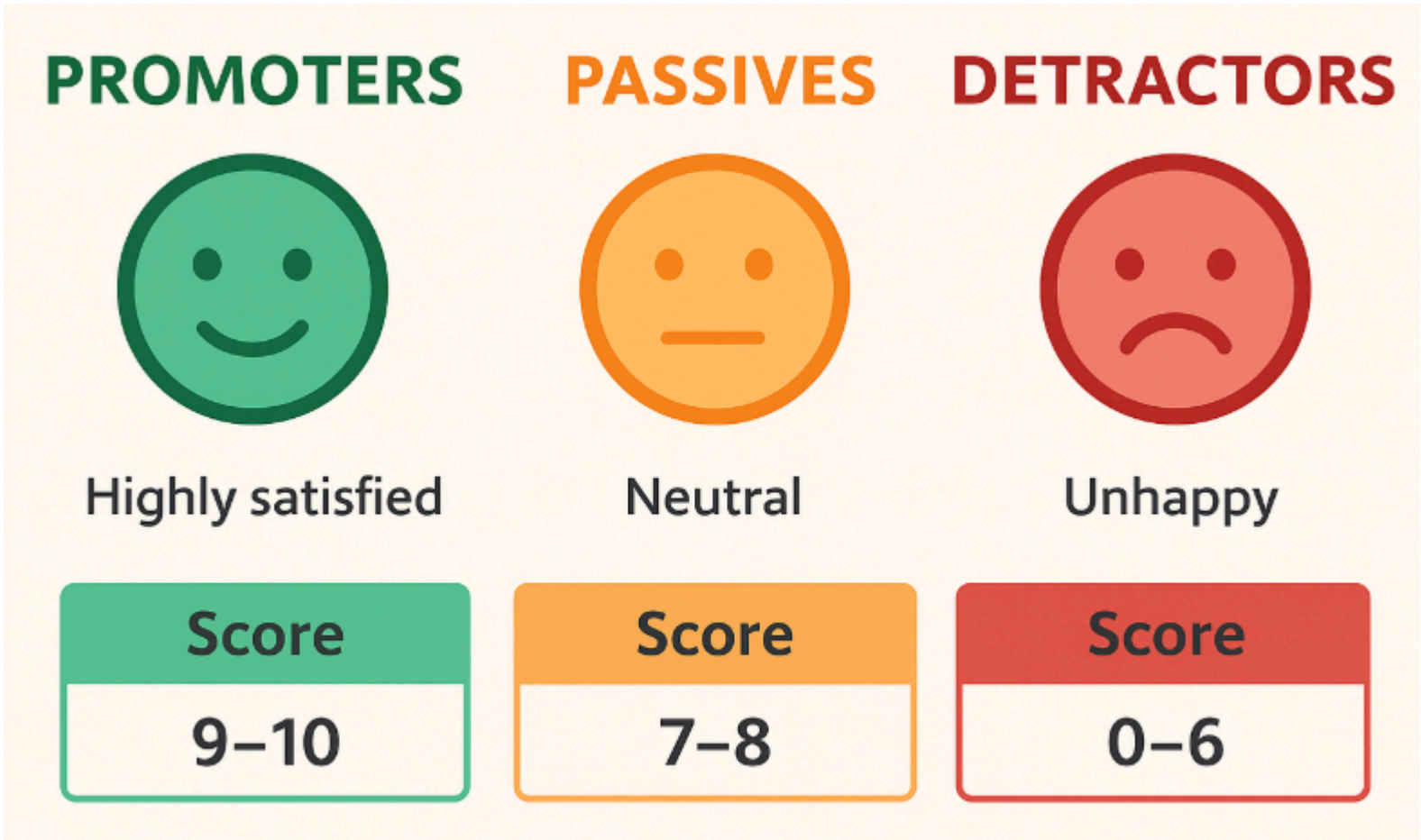
- A shape (1167,) means the array has 1167 elements in a single column (1D array).
- A shape (1167,2) means the array has 1167 elements in a single column (2D array).

In the context of Airbnb customer feedback, if the shape count is 1167, it means:

- There are **1167 feedback** entries collected from customers

✓ **Net Promoter Score(NPS)**

The **Net Promoter Score (NPS)** measures customer loyalty by asking how likely a customer is to recommend a product or service. Customers are classified as **Promoters** (highly satisfied), **Passives** (neutral), or **Detractors** (unhappy). NPS is calculated by subtracting the percentage of Detractors from Promoters, while Passives are not counted in the score.

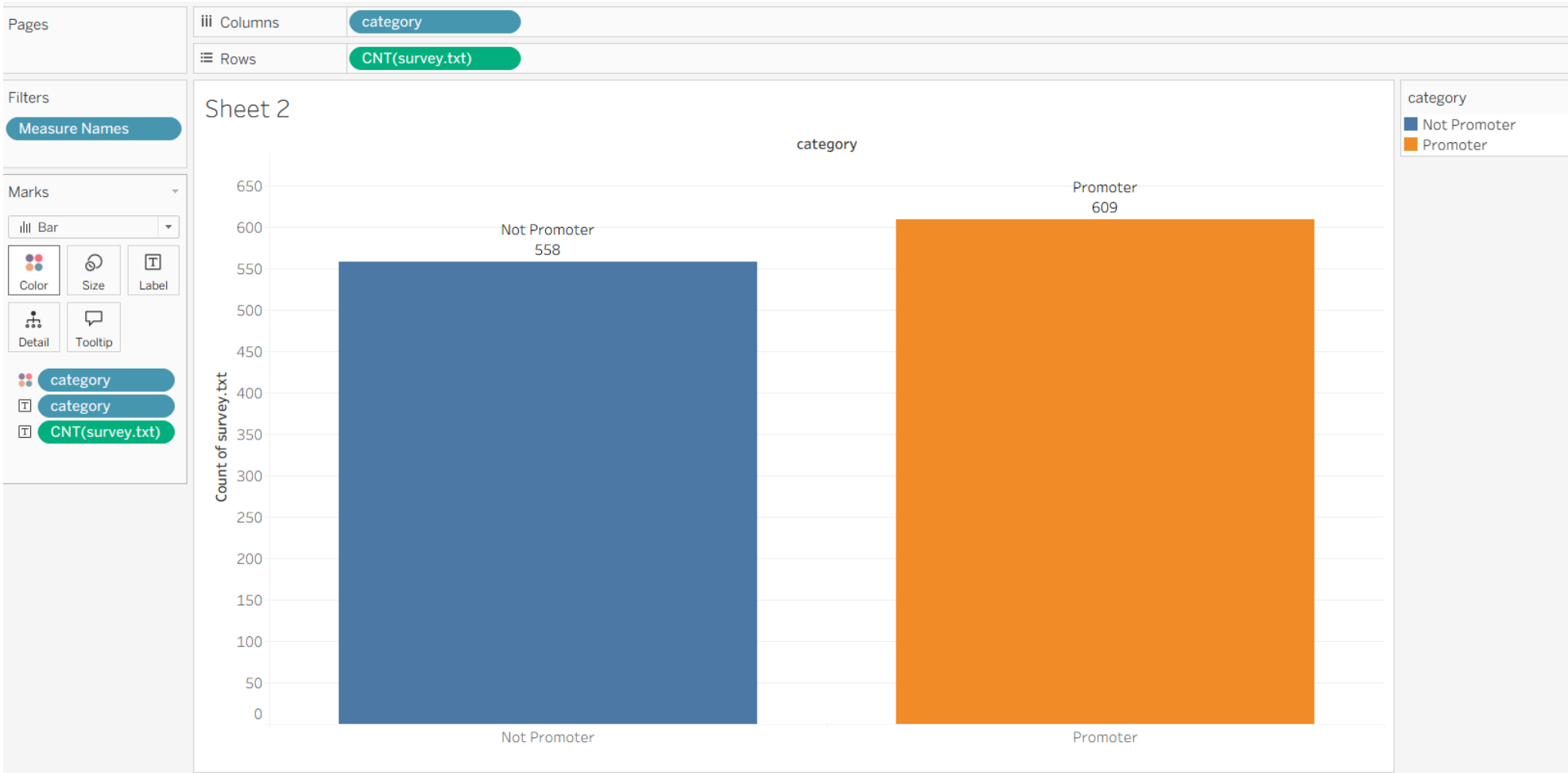


▼ Promoters

**Promoters (9–10):** They are highly satisfied customers who love your product or service. They actively recommend it to others, helping you gain new customers. Promoters drive growth, loyalty, and long-term success for the business.

```
data[data>8].shape
```

```
(609,)
```

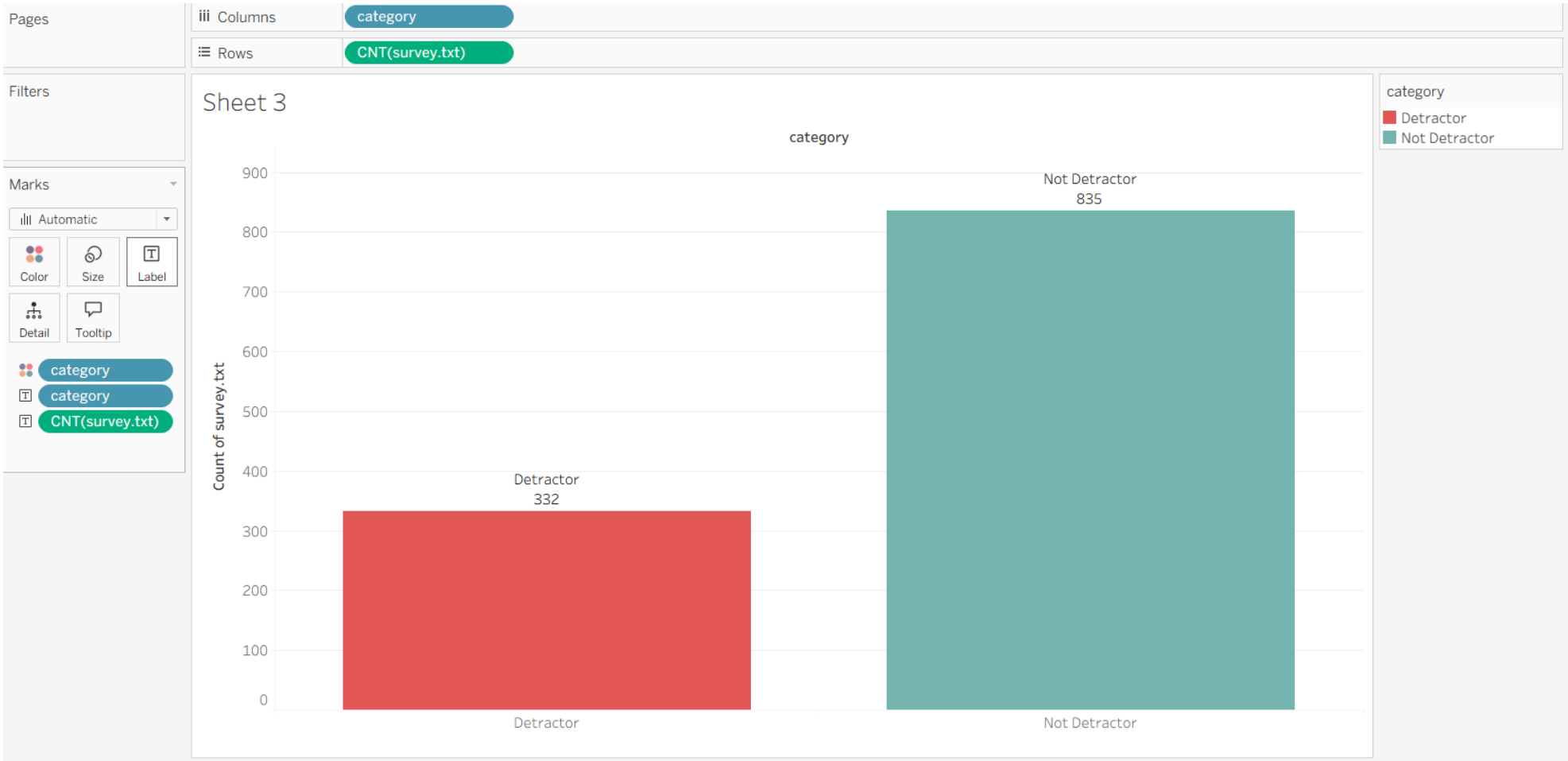


▼ Detractors

**Detractors (0–6):** They are dissatisfied customers who are unhappy with the product or service. They are unlikely to recommend and may discourage others from using it. Detractors can harm the brand’s reputation if their concerns aren’t addressed.

```
data[data<7].shape
```

```
(332,)
```

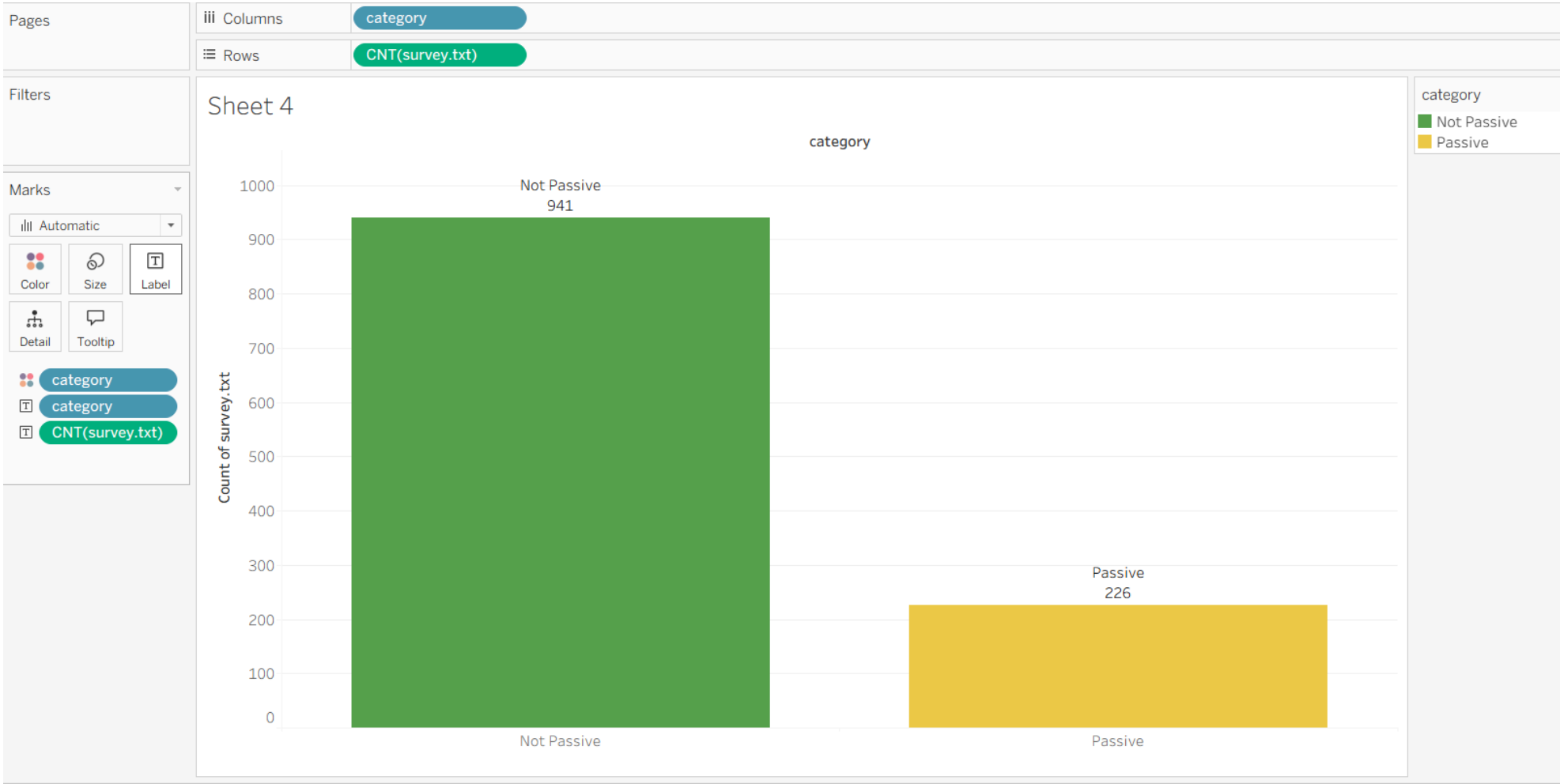


Passives

**Passives (7–8):** They are somewhat satisfied but not enthusiastic customers. They won’t actively promote your product, but they also won’t criticize it. Passives are at risk of switching to competitors if offered something better.

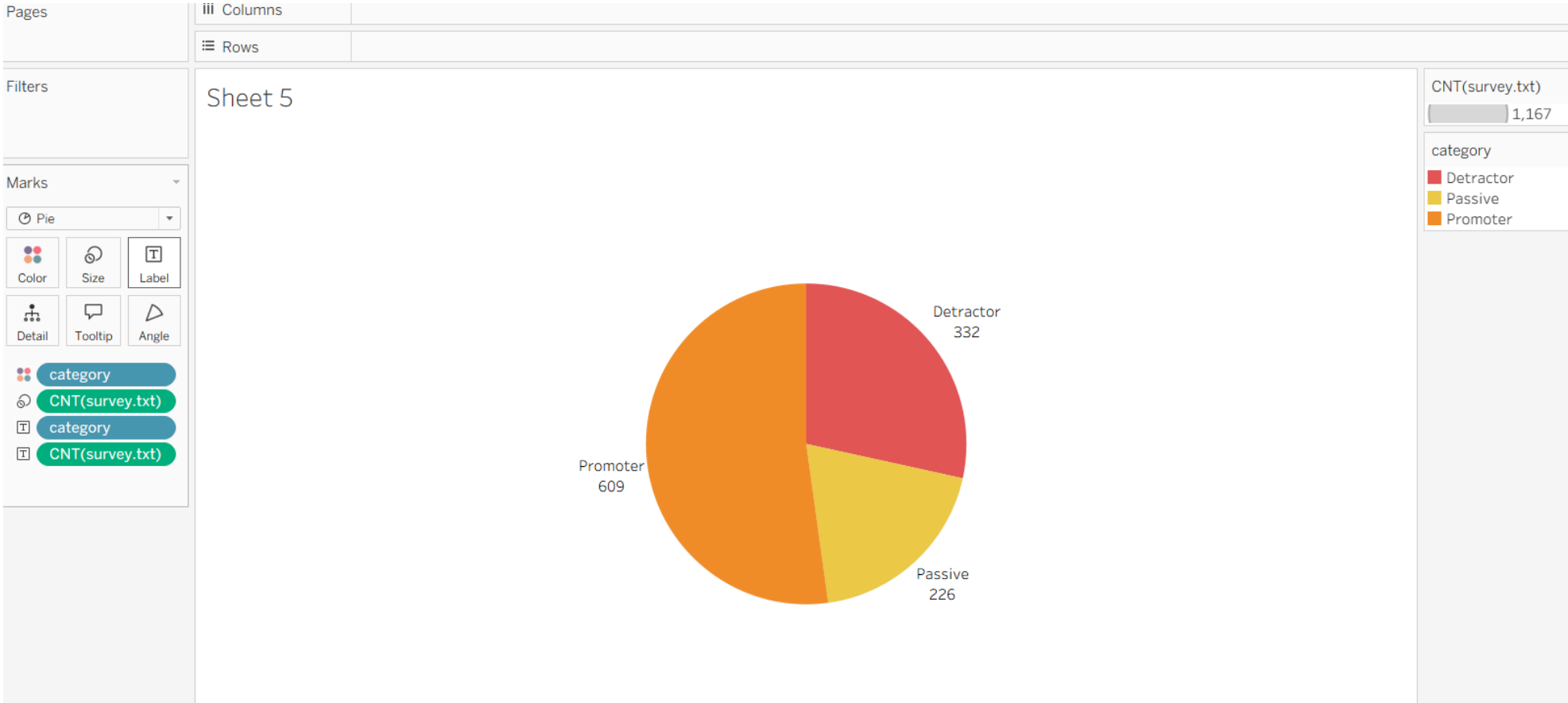
```
data[(data==7) | (data==8)].shape
```

```
(226,)
```



Visualization for NPS :

- Promoter : 609, Detractors : 332, Passives : 226

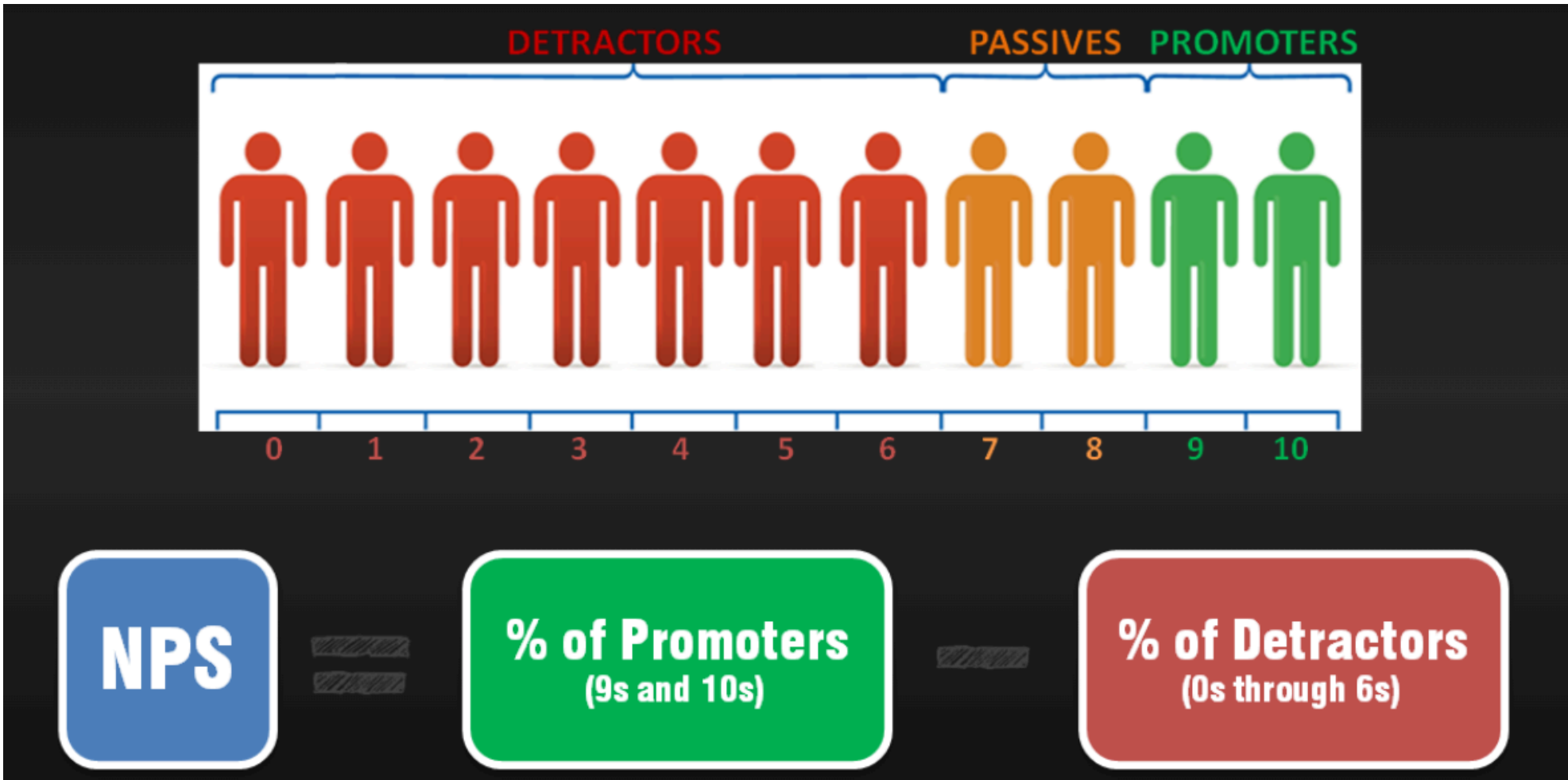


To find the NPS score, we have to find the percentage of detractors and percentage of promoters

The total number of Customer Feedbacks:

- Promoters : 609 = 52.16%
- Detractors: 332 = 28.44%
- Passives : 226 = 19.37%

✓ NPS Formula : % Promoters - % Detractors



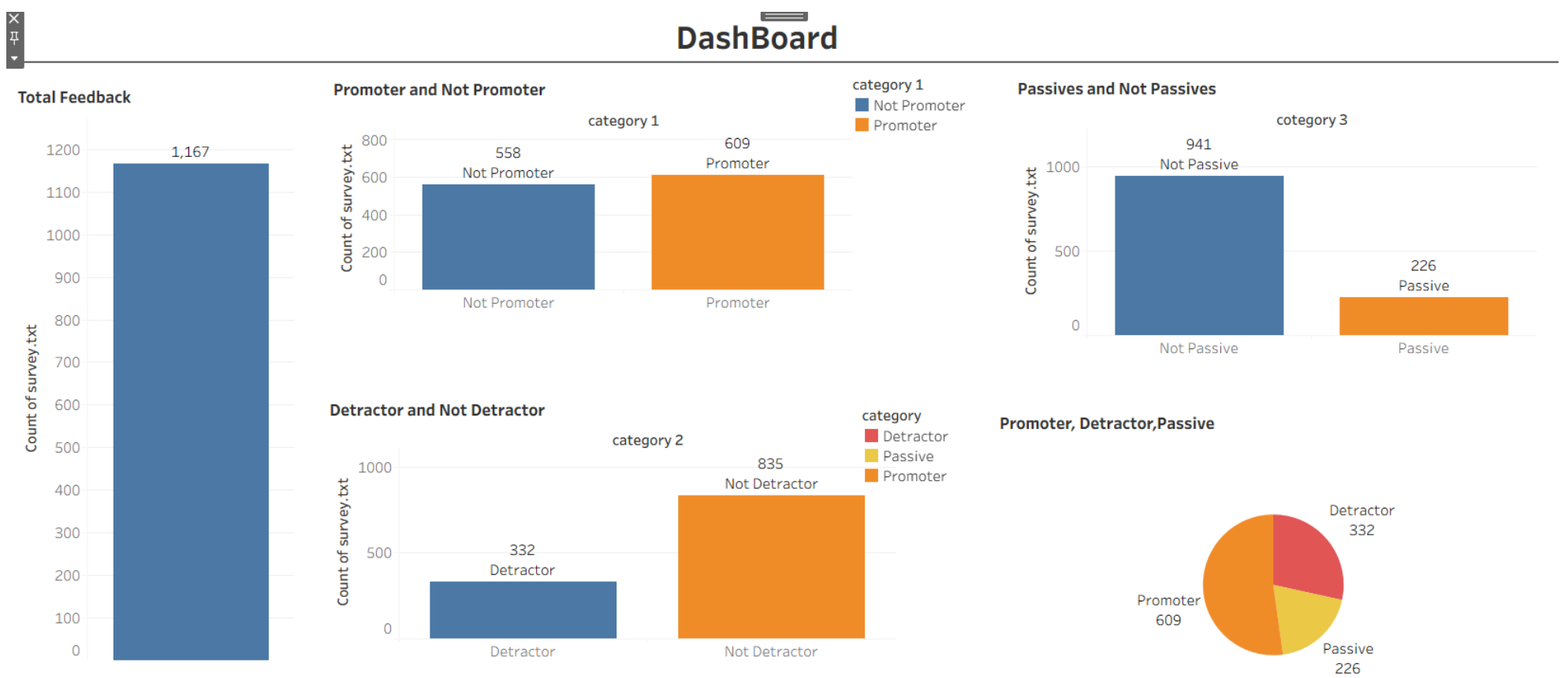
$NPS = 52.16\% - 28.44\%$

$NPS = 23.72\%$

Hence the NPS score of Airbnb total Customer Feedbacks in percent is 23.72%



## ▼ DashBoard



## How do the NPS helpful in Data Analytics

Net Promoter Score (NPS) can be very helpful in data analytics because it provides a simple, quantifiable measure of customer sentiment that can be analyzed in many ways.

- Tracking NPS over time shows changes in customer satisfaction.
- Analysts can correlate NPS trends with business events (e.g., product launches, campaigns, price changes) to see what affects customer perception.
- NPS can serve as a leading indicator of business growth.
- High numbers of promoters often predict repeat purchases, referrals, and positive reviews.

## Overview

- This case study focuses on analyzing Airbnb customer feedback using the Net Promoter Score (NPS) framework to measure customer satisfaction and loyalty. Customers are categorized into three groups: **Promoters** (highly satisfied, likely to recommend), **Passives** (moderately satisfied, neutral), and **Detractors**(unsatisfied, likely to discourage others).
- By studying these groups, we can identify patterns in customer experience, highlight areas that need improvement, and track the effectiveness of Airbnb’s service enhancements over time. Using tools like **NumPy** for **data analysis** and **Tableau** for **visualization**, the study provides actionable insights to improve customer retention, increase referrals, and strengthen brand loyalty.

## Insights

- Total feedback responses are large, providing reliable data for analysis.
- Most customers are satisfied, with mean rating 6.78, median 7.0, and mode 9.0.
- Ratings are slightly skewed toward higher scores, showing overall positive sentiment.
- Airbnb can focus on converting passives into promoters to boost loyalty.
- Addressing detractor concerns can help improve service quality and customer satisfaction.

## Recommendations

1. Based on the analysis of customer feedback, Airbnb should focus on enhancing the experience for detractors by identifying common issues and implementing targeted improvements.
2. Efforts should also be made to convert passives into promoters through personalized experiences, small incentives, or loyalty programs.
3. Maintaining high-quality service for promoters is essential to ensure consistent positive experiences. Regular monitoring and analysis of feedback will help detect trends and address issues proactively.