**Methodology Document**

**Introduction**

This document outlines the methodology for the Airbnb Listings Data Visualization Project. It details the steps involved in data wrangling and visualization using Tableau.

### ****1. Data Import and Cleaning****

**Objective**: Prepare the dataset for analysis by importing, cleaning, and pre-processing the data.

**Steps:**

1. **Import Data**
   * **Tool**: Python (Pandas) for initial import and cleaning.
   * **Code Example**:

import pandas as pd

data = pd.read\_csv('airbnb\_listings\_nyc.csv')

1. **Inspect Data**
   * **Tool**: Python (Pandas)
   * **Code Example**:

print(data.head())

print(data.info())

1. **Handle Missing Values**
   * **Tool**: Python (Pandas)
   * **Code Example**:

data = data.dropna(subset=['price', 'neighborhood'])

1. **Standardize Data Types**
   * **Tool**: Python (Pandas)
   * **Code Example**:

data['price'] = data['price'].astype(float)

1. **Remove Duplicates**
   * **Tool**: Python (Pandas)
   * **Code Example**:

data = data.drop\_duplicates()

1. **Export Cleaned Data**
   * **Tool**: Python (Pandas)
   * **Code Example**:

data.to\_csv('cleaned\_airbnb\_listings\_nyc.csv', index=False)

**2. Data Visualization**

**Objective**: Create visualizations using Tableau to effectively present the KPIs and insights.

**Steps:**

1. **Load Data into Tableau**
   * **Tool**: Tableau Desktop
   * **Steps**:
     + Open Tableau Desktop.
     + Connect to the cleaned dataset (cleaned\_airbnb\_listings\_nyc.csv).
2. **Create Visualizations**
   * **Tool**: Tableau Desktop
   * **Examples**:
     + **Average Price per Night**
       - **Visualization**: Bar Chart
       - **Steps**:
         * Drag neighborhood to Rows.
         * Drag price to Columns.
         * Set aggregation to Average.
     + **Occupancy Rate**
       - **Visualization**: Bar Chart or Map
       - **Steps**:
         * Drag neighborhood to Rows (for Bar Chart) or to Map (for Map View).
         * Drag availability\_365 to Columns.
         * Set aggregation to Average.
     + **Average Number of Reviews per Listing**
       - **Visualization**: Bar Chart
       - **Steps**:
         * Drag neighborhood to Rows.
         * Drag number\_of\_reviews to Columns.
         * Set aggregation to Average.
3. **Design Dashboards**
   * **Tool**: Tableau Desktop
   * **Steps**:
     + Create a new dashboard in Tableau.
     + Add the visualizations created to the dashboard.
     + Arrange and format visualizations to ensure clarity and coherence.
     + Add interactive elements such as filters and dropdowns for user interaction.
4. **Export and Share**
   * **Tool**: Tableau Desktop
   * **Steps**:
     + Export visualizations as images or PDFs if needed.
     + Publish the dashboard to Tableau Server or Tableau Online for sharing with stakeholders.