Final Project: Visualizing Business Metrics

Congratulations! You've been hired as a data analysis intern at ComfyBunk - the premiere hospitality startup in the US!

Your main project with us will be focused on helping provide insight into our organization's financial health. Our Executive Team is concerned we are flying blind. We need data dashboards on how well we're performing, on both a local and overall level.

You will need to create two dashboards. One for the Executive Team, and one for the local General Managers in each of ComfyBunk's operating cities. There are a few Key Performance Indicators that are important to the health of the organization and will be the focus of the dashboards you will build.

Data Description

Download the Story Slides here for more context of the project scenario: Link

There are two datasets:

Property

Contains information about each of the listings at ComfyBunk.

- **property_id**: The unique identifier for each listing.
- **num_bedrooms**: The number of bedrooms available in the unit.
- **review_count**: The total number of reviews that unit has received.
- **city**: The city where the unit is located.
- **property_size**: A string identifying if it is a shared room, private room, or entire home.

Property Calendars

Contains booking information at the monthly level about each listing at ComfyBunk.

- **property_id**: The unique identifier for each listing.
- **booking_month**: The beginning of the month for which information is aggregated.
- **reserved_days**: Number of days in the month that the unit was booked.
- **open_days**: Number of days in the month the unit was available for bookings but were not reserved.

- **blocked_days**: Number of days in the month the unit was unavailable for bookings.
- **revenue**: Total revenue generated by the listing in the given month.

KPI Definitions:

- **Average Daily Rate (ADR)**: Revenue / Reserved Days
- **Occupancy Rate (OR)**: Reserved Days / (Reserved Days + Open Days)
- **Revenue per Available Location (RevPAL)**: ADR * OR
- **Number of Available Units**: Number of units that were reserved or open on the site

Assignment

Part I: Data Preparation

Connect to the data in Tableau and calculate the KPIs we care about for the dataset.

1. Take the two datasets provided and join them in Tableau. Ensure that the data are joined on the field the two datasets have in common.

2. Create a calculated field for the Average Daily Rate. *Warning*: Make sure to perform the calculation as an *aggregated* field so that the calculation is correct when we aggregate across multiple months or properties. Remember that an aggregated field will appear as AGG(*Field*) when we put it on a card or shelf.

3. Create a calculated field for the Occupancy Rate. Like the previous calculation, make sure this is an aggregated field. *Tip*: If done correctly, occupancy rates will end up with values between 0 and 1.

4. Create a calculated field for the Revenue per Available Location.

5. Create a calculated field for the Number of Available Units. *Note*: A unit is considered “available” for a given month if the number of reserved days + open days > 0. The field output should be a 1 if a unit is “available”, and 0 if a unit is not available.

6. We need to clean up the “Property Size” field for our visualizations. In order to do so, we want to standardize the names and remove redundant information. Create a calculated field, “Property Type”, that has only 3 unique entries in the new field: ENTIRE HOME, PRIVATE ROOM, and SHARED ROOM. For example, the string “ENTIRE_HOME_2_BEDROOMS” should become “ENTIRE HOME”, removing the underscores and references to the number of bedrooms. *Tip*: There are several ways to

create this calculated field. One suggestion is to use an IF function and look at the first letter of the Property Size value. There is a function called STARTSWITH that will come in handy if you go down this route.

Part II: Visualizations

Before you can create your dashboards, you will need to create the individual charts that will power the dashboards using the provided sheets. Follow the steps below to create the visualizations that the ComfyBunk executive team have decided are the most important to display on the dashboards.

7. In the “Occupancy Rate” sheet, create a line chart that plots this KPI over time.
    a. You will need to modify the “Booking Month” field to be continuous then click on the pill to change to the MONTH aggregation.

       Note: This will be required for all graphs using the “Booking Month” field.

    b. Remove the title on the x-axis
    c. Format the y-axis to show as a percentage (no decimal points).

8. In the “Number of Available Units” sheet, create a line chart that shows the number of units for each property type over time.

9. In the “Total Revenue” sheet, create a line chart that shows the total revenue for each property type over time.
    a. Remove the x and y-axis labels
    b. Format the values on the y-axis to be in millions of dollars (e.g. $4M)

10. In the “City RevPAL” sheet, create a bar chart showing the RevPAL KPI for each city in 2018 and 2019, the last two years for which we have data.
    a. Remove the y-axis label
    b. Show values in dollars (no cents)
    c. Change the color so it does not conflict with the "Number of Available Units" and "Total Revenue" sheets.
    d. Hide the field label

11. In the “ADR & RevPAL” sheet, create a dual or shared axis plot showing the two KPIs over time. Note: Regardless of whether you choose a dual axis or shared axis plot, your graph should only display one y-axis.
    a. Remove the titles on the x-axis and y-axis

b. Change the formatting so that the y-axis values are in $ dollars (no cents)

12. Add the “City” field to the filter in the “ADR & RevPAL” sheet.
    a. Select all the cities (you will be selecting the city to filter to in your dashboard)
    b. Edit the filter so that it also applies to the “Occupancy Rate” and “Number of Available Units” (in addition to “ADR & RevPAL”).

Part III: Dashboards

There are two dashboards to create. The executive team is interested in the financial health of the organization. They would like a dashboard that includes the Total Revenue over time and the City RevPAL.

The GM dashboard will need to reflect the city that the GMs want to drill down into. This will give them the information they need to focus on day-to-day operations for their areas.

13. In the “Executive Dashboard” page, create a dashboard for the executive team that shows the information from the Total Revenue and City RevPAL sheets. Use good design principles to make it succinct and easy to understand the information being displayed.

14. In the “GM Dashboard” page, create a dashboard for the GM team. Use good design principles to make it succinct and easy to understand what information is being displayed. Your dashboard needs to include the following details:
    a. Display the charts from the “ADR & RevPAL”, “Occupancy Rate”, and “Number of Available Units” sheets. Pay attention to the order and layout of the charts, as well as use of color.
    b. Include a dropdown filter for the city that updates the dashboard charts when a (single) new city is selected.
    c. Include a text box at the top giving directions to the GMs, e.g., “Please select a city to update the dashboard”

Part IV: Analysis

The ComfyBunk team has been really impressed with your work! They want you to help them understand what the data is telling them about the health of the organization.

15. Use both the “Executive Dashboard” and the “GM Dashboard” to look at the performance of the company as a whole and by individual cities.
    a. Give some high-level commentary on the results. Is there anything problematic in a specific city or the business as a whole? (Answer with two to three paragraphs.)

b. Do you have any suggestions for the general business of ComfyBunk? What additional data or analyses would you like to have been able to perform? How would you augment the dashboards if given access to more data?