Project Report: Data Visualization for Maven Hotel Group (MHG)

Problem Statement:

Maven Hotel Group (MHG) is a Portuguese hotel chain with resorts in Lisbon and Algarve. As a Data Visualization Specialist, I was tasked with visualizing key insights derived from hotel booking data from July 2015 to August 2017. This report aims to present the key findings and recommendations using clear and effective data visualizations.

Objectives:

1. Visualize each insight effectively.
2. Use color consistently and deliberately.
3. Leverage dashboard layout and text to clearly communicate key insights and business recommendations.

Dataset Summary:

The dataset includes hotel booking data with the following dimensions and measures:

➢ **Dimensions:** Booking ID, Hotel, Booking/Arrival Date, Distribution Channel, Customer Type, Country, Deposit Type, Status, Status Update, Cancelled (0/1).

➢ **Measures:** Lead Time, Nights, Guests, Revenue, Loss.

Key Insights and Visualizations

Chart 1: Cancellation Rates and Average Daily Rates by Month

- **Objective:** To visualize the relationship between cancellation rates and average daily rates across months for the resort hotel.

- **Insight:** Cancellation rates peak during the summer (July and August) and cool off in January. The cancellation rates and average daily rates follow the same seasonality pattern.

- **Visualization:** A combo chart with bars representing average daily rates and a line chart representing cancellation rates. The maximum cancellation rate is highlighted with a red dot, and the minimum with a green dot to emphasize key points.

- **Recommendation:** MHG should prepare for higher cancellations during peak summer months and consider strategies to mitigate revenue loss during this period.

Chart 2: Revenue and Revenue Loss by Month (July & August 2016)

- **Objective:** To assess the financial impact of high cancellation rates on revenue during the peak summer months.

- **Insight:** High cancellations during July and August 2016 led to nearly $1,000,000 in revenue losses.

- **Visualization:** A column chart displaying total revenue and revenue losses by month, with a focus on July and August.

- **Recommendation:** MHG should consider overbooking during the summer months to compensate for anticipated cancellations, as guests booking closer to their stay tend to cancel less and spend more.

Chart 3: Cancellation Breakdown by Lead Time (July & August)

- **Objective:** To analyze cancellations based on lead time for bookings during July and August.

- **Insight:** Reservations made more than a month in advance contribute significantly to cancellations.

- **Visualization:** A 100% stacked bar chart showing cancellations by lead time. This chart provides a clearer visual breakdown of cancellations based on how far in advance bookings were made.

- **Recommendation:** MHG could consider offering incentives for guests who book closer to their stay, as these reservations have a lower cancellation rate and higher revenue potential.

Chart 4: Comparison of Lead Times by Metrics

- **Objective:** To compare the performance of bookings made within a month and those made more than a month in advance based on key metrics.

- **Insight:** Bookings made with less than a month to go have lower cancellation rates and higher average daily rates.

- **Visualization:** A combination of pivot charts and conditional formatting to highlight the differences between the two lead time categories.

- **Recommendation:** Focus on marketing efforts to attract bookings with shorter lead times to reduce cancellation rates and increase profitability.

Conclusion

Through the analysis of MHG's booking data, it is clear that cancellations have a significant impact on revenue, particularly during the peak summer months. By leveraging the insights from this data, MHG can implement strategies such as overbooking and targeting last-minute bookings to minimize losses and maximize revenue. Consistent use of colors and effective dashboard layouts helped to communicate these insights clearly and make data-driven recommendations.

Next Steps:

- Implement overbooking strategies during peak periods to compensate for high cancellation rates.

- Offer incentives for bookings made closer to the stay date to reduce cancellations.

- Monitor the impact of these changes on overall revenue and adjust strategies accordingly.

DATASET:

Booking ID	Hotel	Booking Date	Arrival Date	Lead Time	Nights	Guests	Distribution Channel	Customer Type
1	Resort	2014-07-24	2015-07-01	342	0	2	Direct	Transient
2	Resort	2013-06-24	2015-07-01	737	0	2	Direct	Transient
3	Resort	2015-06-24	2015-07-01	7	1	1	Direct	Transient
4	Resort	2015-06-18	2015-07-01	13	1	1	Corporate	Transient
5	Resort	2015-06-17	2015-07-01	14	2	2	Online Travel Agent	Transient
6	Resort	2015-06-17	2015-07-01	14	2	2	Online Travel Agent	Transient
7	Resort	2015-07-01	2015-07-01	0	2	2	Direct	Transient
8	Resort	2015-06-22	2015-07-01	9	2	2	Direct	Transient
9	Resort	2015-04-07	2015-07-01	85	3	2	Online Travel Agent	Transient
10	Resort	2015-04-17	2015-07-01	75	3	2	Offline Travel Agent	Transient
11	Resort	2015-06-08	2015-07-01	23	4	2	Online Travel Agent	Transient
12	Resort	2015-05-27	2015-07-01	35	4	2	Online Travel Agent	Transient
13	Resort	2015-04-24	2015-07-01	68	4	2	Online Travel Agent	Transient
14	Resort	2015-06-13	2015-07-01	18	4	3	Online Travel Agent	Transient
15	Resort	2015-05-25	2015-07-01	37	4	2	Online Travel Agent	Transient
16	Resort	2015-04-24	2015-07-01	68	4	2	Online Travel Agent	Transient

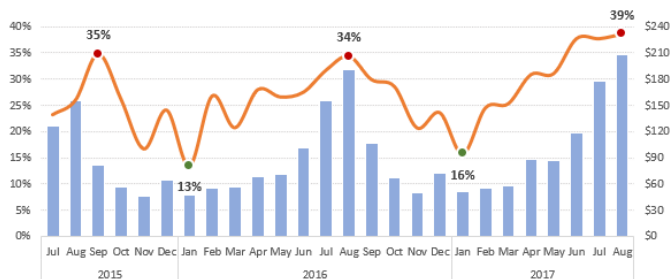| Country	Deposit Type	Avg Daily Rate	Status	Status Update	Cancelled (0/1)	Revenue	Revenue Loss
Portugal	No Deposit	$0.00	Check-Out	2015-07-01	0	$0.00	$0.00
Portugal	No Deposit	$0.00	Check-Out	2015-07-01	0	$0.00	$0.00
United Kingdom	No Deposit	$75.00	Check-Out	2015-07-02	0	$75.00	$0.00
United Kingdom	No Deposit	$75.00	Check-Out	2015-07-02	0	$75.00	$0.00
United Kingdom	No Deposit	$98.00	Check-Out	2015-07-03	0	$196.00	$0.00
United Kingdom	No Deposit	$98.00	Check-Out	2015-07-03	0	$196.00	$0.00
Portugal	No Deposit	$107.00	Check-Out	2015-07-03	0	$214.00	$0.00
Portugal	No Deposit	$103.00	Check-Out	2015-07-03	0	$206.00	$0.00
Portugal	No Deposit	$82.00	Canceled	2015-05-06	1	$0.00	-$246.00
Portugal	No Deposit	$105.50	Canceled	2015-04-22	1	$0.00	-$316.50
Portugal	No Deposit	$123.00	Canceled	2015-06-23	1	$0.00	-$492.00
Portugal	No Deposit	$145.00	Check-Out	2015-07-05	0	$580.00	$0.00
United States	No Deposit	$97.00	Check-Out	2015-07-05	0	$388.00	$0.00
Spain	No Deposit	$154.77	Check-Out	2015-07-05	0	$619.08	$0.00
Portugal	No Deposit	$94.71	Check-Out	2015-07-05	0	$378.84	$0.00
Ireland	No Deposit	$97.00	Check-Out	2015-07-05	0	$388.00	$0.00

DASHBOARD:

## We Need To Overbook Same-Month Resort Reservations During July & August

Cancellations Cost Us Around $1 Million In Revenue Last Summer

Our Resort's **Cancellation Rates** & **Average Dailly** Prices Spike During Summer Months

Which Increases **Revenue** But Also **Revenue Loss By Cancellations** In July & August

~$1 million lost in July & August 2016

But we can Turn That Into Additional Revenue Going Forward
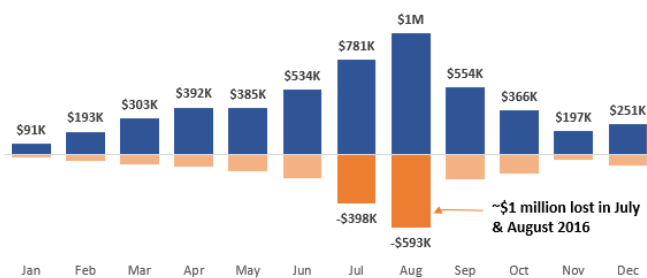
Summer Bookings **Made Within 30 Days** Of Arrival Only To Make Up 17% Of Cancellations

And They Maintain **Lower Cancellation Rates** Despite Having **Higher Average Prices**
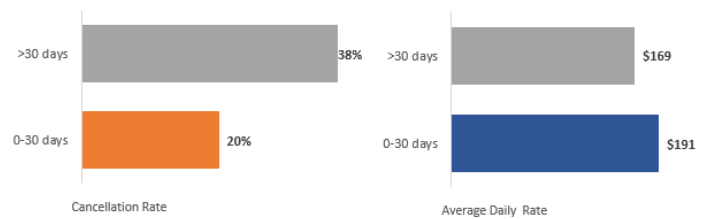
💡 **What Does This Mean?**

By **Overbooking Same-Month Reservations During Summer** We Can:

-Replace The Bookings Made In Advance Which Are Likely To Be Cancelled
-With Bookings That Have A Lesser Risk Of Cancellation
-And They Can Be Sold At A Higher Average Price