



## The 4th Annual Business Analytics Competition 2024

### Round 1: Descriptive Analytics

In a competitive business world, companies are seeking students with both technical insight and business acumen to lead the charge to the future. To help students prepare for this competitive marketplace, the Saunders College of Business presents the 4th Business Analytics Competition that aims to bring together students from diverse backgrounds and skill levels to solve complex and meaningful business problems.

### Scenario

Global Hotels and Resorts (GHR) is a top European hotel brand that is struggling to make sense of its customer demands in two of its recently-acquired properties. One is a city hotel while the other is a resort. A proper understanding of the customer demands means higher revenue and better planning for in-house services which translates into lower operating costs. To this end, GHR has hired your team to help them address this problem. Specifically, its Revenue Management department wants your team to perform the following tasks:

1. Producing various visualizations to help GHR better understand the guests, booking behaviors, and opportunities to maximize the revenue in their two properties.
2. Suggesting strategies to maximize the revenue in the two properties.

### Data

GHR has provided the following files:

1. hotel.csv: contains the booking information for guests in the GHR hotel.
2. resort.csv: contains the booking information for guests in the GHR resort.

The data dictionary is below.

Variable	Type	Description
ArrivalDate	Date	Arrival Date of the Guests
ArrivalWeekNumber	Numeric	Arrival Date - Week Number

AssignedRoom	Categorical	Assigned Room Type Code. Can be different from Reserved Room Type due to hotel operation reasons (e.g. overbooking) or by customer request.
AverageDailyRate	Numeric	Room's Average Daily Rate
BookingChanges	Numeric	Booking Amendments Count (From Entry to Check-In or Cancellation)
BookingCompany	Categorical	Booking Company/Entity ID (For Anonymity)
BookingDistributionChannel	Categorical	Booking Distribution Channel (TA for Travel Agents, TO for Tour Operators)
BookingMeal	Categorical	Booked Meal Type. <ul style="list-style-type: none"> <li>- Undefined/SC for no meal package</li> <li>- BB for Bed &amp; Breakfast</li> <li>- HB for Half Board (breakfast and one other meal – usually dinner)</li> <li>- FB for Full Board (breakfast, lunch and dinner))</li> </ul>
BookingParking	Numeric	Number of Required Car Parking Spaces
CheckoutDate	Date	Guests' Check-Out Date
Country	Categorical	Guests' Country of Origin (ISO 3155–3:2013 Format)
CustomerType	Categorical	Booking Type. Four categories: <ul style="list-style-type: none"> <li>- Contract - when the booking has an allotment or other type of contract associated to it;</li> <li>- Group – when the booking is associated to a group;</li> <li>- Transient – when the booking is not part of a group or contract, and is not associated to other transient booking;</li> <li>- Transient-party – when the booking is transient, but is associated to at least other transient booking</li> </ul>
DaysInWaitingList	Numeric	Waiting List Duration before Confirmation
DepositType	Categorical	Deposit Made for Booking. Three categories: <ul style="list-style-type: none"> <li>- No Deposit – no deposit was made;</li> <li>- Non Refund – a deposit was made in the value of the total stay cost;</li> <li>- Refundable – a deposit was made with a value under the total cost of stay.</li> </ul>
LeadTime	Numeric	Days Between Booking Entry and Arrival
MarketSegment	Categorical	Market Segment Designation (TA for Travel Agents, TO for Tour Operators)
NumberOfAdult	Numeric	Number of Adult Guests in the Booking

NumberOfBabies	Numeric	Number of Infants (Under 12 Months) in the Booking
NumberOfChildren	Numeric	Number of Children (Aged 1 to 17) in the Booking
RepeatedGuest	Categorical	Repeated Guest Indicator (1 for Repeated, 0 for New)
ReservedRoom	Categorical	Reserved Room Type Code (for Anonymity)
StaysInWeekendNights	Numeric	Number of Weekend Nights
StaysInWeekNights	Numeric	Number of Week Nights
TotalOfSpecialRequests	Numeric	Special Requests Count (e.g., Twin Bed, High Floor)
TravelAgent	Categorical	Booking Travel Agency ID

## Objectives

1. The purpose of this challenge is to help understand the patterns, trends, and anomalies in data provided by GHR. Teams should focus on descriptive analytics to understand customer segmentation, customer satiation, seasonality, revenue management, among others.
2. The primary objective is to maximize the revenue in the two properties. Hence, good business understanding is important for this challenge. Teams are encouraged to include members with both technical and business skills.
3. This challenge targets students with both beginner and advanced skills.
4. In this first part of the competition, the focus will be on **descriptive analytics and storytelling**. Teams are challenged to craft a compelling story that can be self-explanatory in PowerPoint format.
5. Creativity and visual appeal will be important parts for this challenge.

## Deliverables

Your team is asked to produce a PowerPoint report (with no page limit) that communicates your findings to GHR. The report should contain the following elements:

1. A slide with names, email, information about school and major of each team member. The cover page should indicate the team leader of the team (who will receive communication from the judges).
2. An executive summary slide or slides that present key findings and recommendations for the above two tasks
3. A series of slides that contain the visualizations and explanations for your analyses

All accompanying analysis files should be submitted together with the report (e.g., Tableau files, R/Python codes, Excel files, etc.).

# Procedure to Participate

1. Interested students should gain access to the datasets and challenge in the competition website (<https://www.rit.edu/business/business-analytics-competition>).
  - a. Students should form their own teams. Each team should have no more than **five members**.
2. There will be a workshop on **November 18 @ 12pm EDT, 2023** in which students will have the opportunity to ask questions and discuss their preliminary findings with some mentors. This is a hybrid event with both in-person and Zoom options. Those who want to attend the workshop need to sign up using the link on the competition website.
3. Participating teams can submit their final solution on the competition website. The deadline for submission is **December 1, 2023 at 11:59pm EDT**. Late submissions will not be considered.
4. The evaluation of students' submissions will be done and announced by **December 8, 2023**. This will be a hybrid event with both in-person and Zoom options. The judges will select the top three teams as the prize winners for this part of the competition.

## Evaluation Criteria

A panel of instructors will assess the quality of each submission on the following dimensions:

1. **Technical accuracy and sophistication** - Does the report build confidence in the technical analyses? Does the team show creativity in constructing visualizations? Are they appealing?
2. **Business logic and implied reasoning** - Do the findings demonstrate an understanding of how the data contributes to the business decisions?
3. **Report coherency, narrative flow, and professionalism** - Does the report clearly communicate both the technical and business thinking to persuade an audience of business executives?