



# DATA WAREHOUSE AND BI DESIGN - BODEA HOTEL

MIS 636A

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# Hotel Reservations

## BUSINESS PROCESS

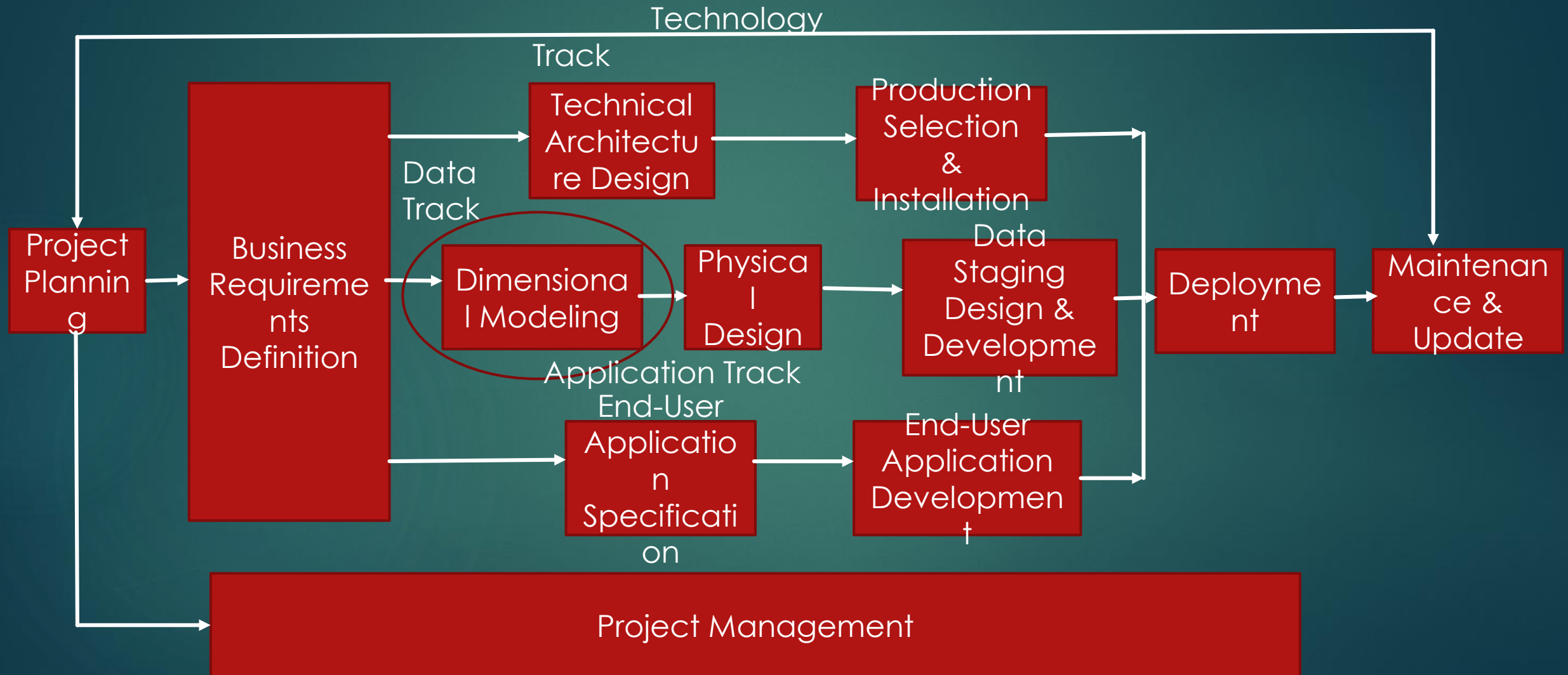
- ▶ The business process is related to a Hotel. The multi-dimensional model involves reservation of rooms for accommodation or reservation of tables for dining at the hotels restaurant. It contains data for managing reservations and storing guest data.

## Data source

- ▶ Data was obtained from the following website:

<http://www8.gsb.columbia.edu/cprm/research/datasets>

# Business Dimensional Lifecycle



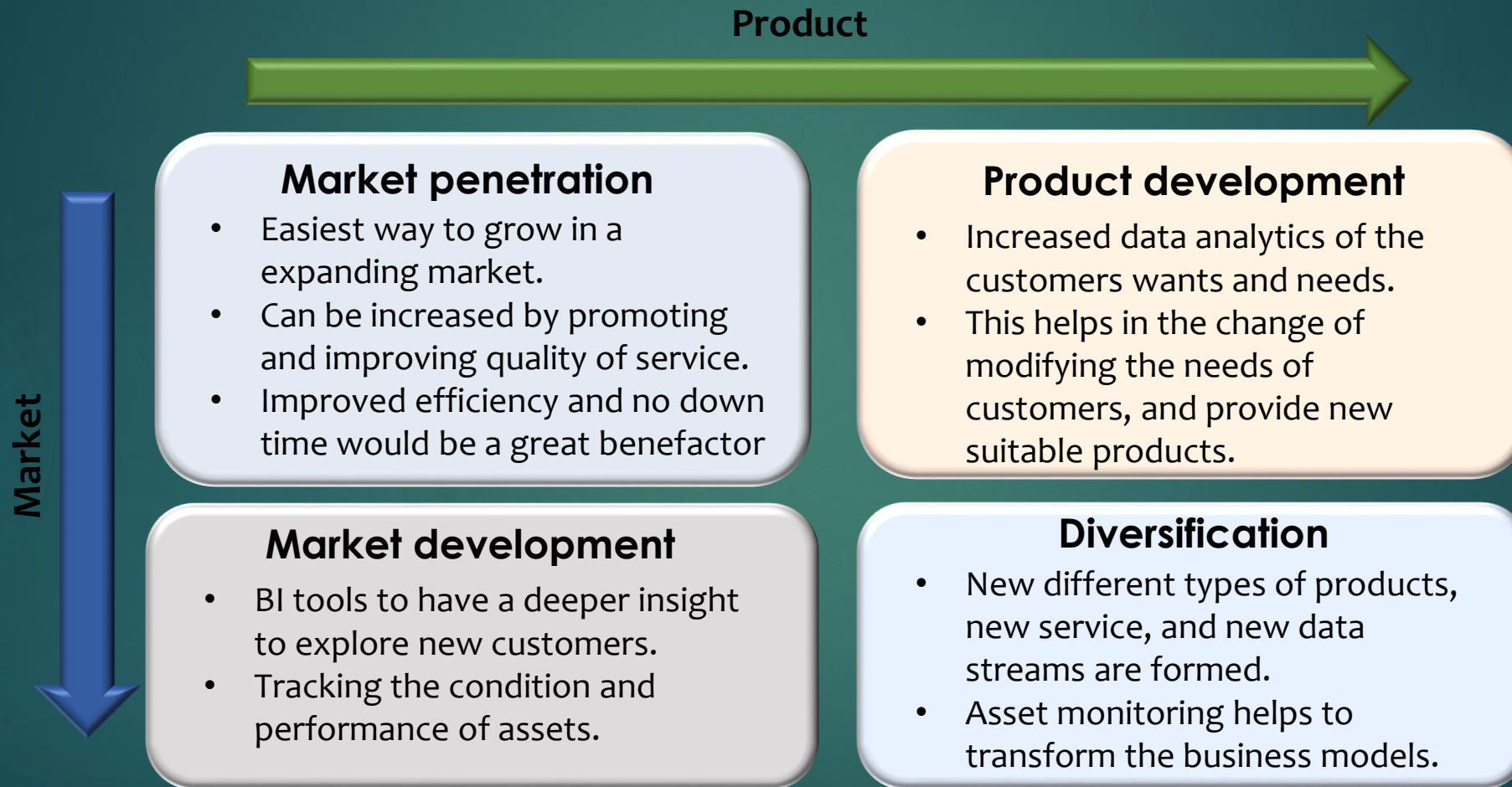
# Bus Matrix

Dimension/Business Process	Online Reservation	Check-in process	Room Service	Ordering	Deposit Return
Guest	X	X	X	X	X
Check-in date	X	X			
Check-out date	X				
Department			X		X
Rooms	X		X		
Rooms Type					
Manager		X	X		X
Hotel Staff		X			
Restaurant Staff				X	

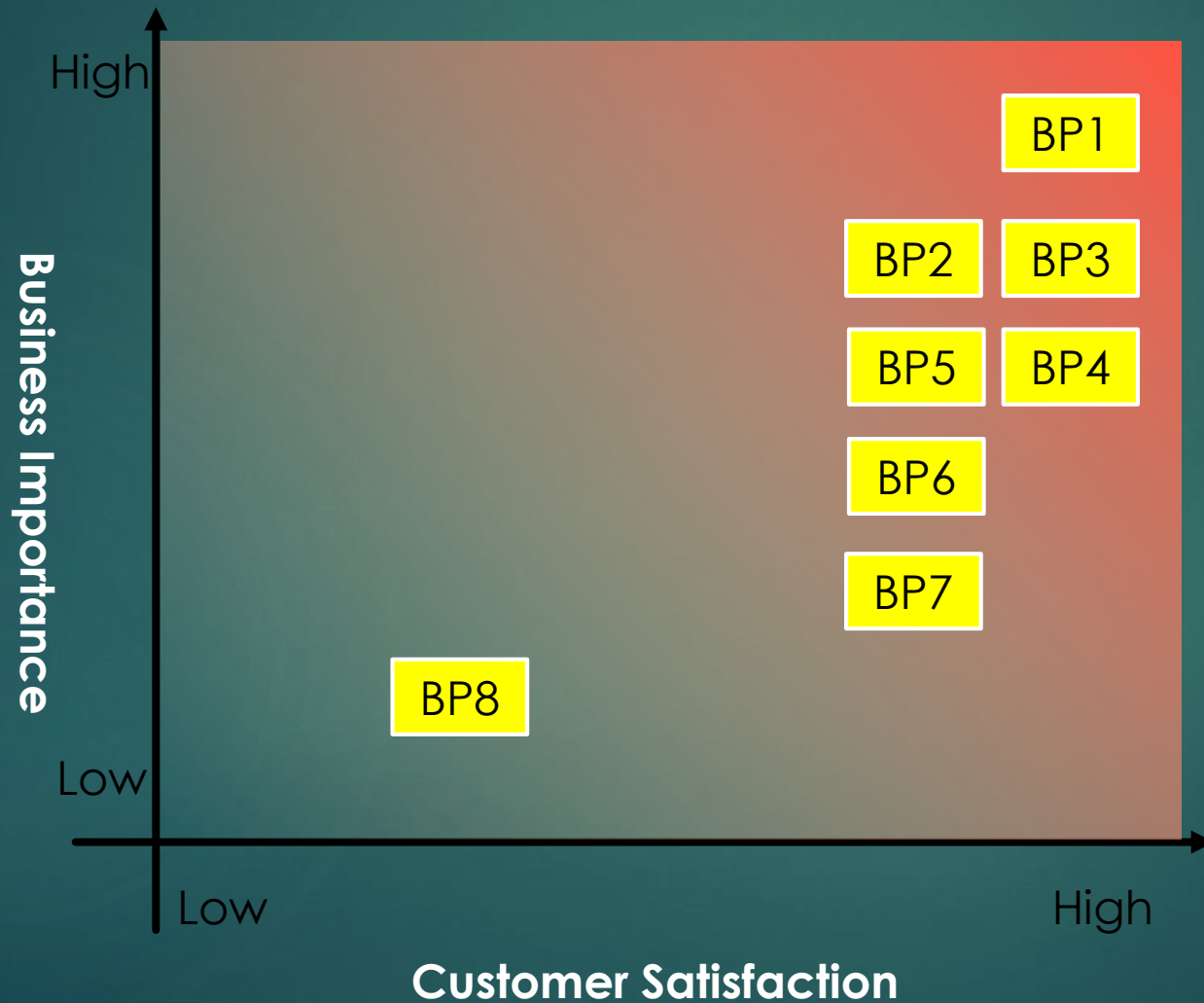
# Opportunity Matrix

Business process	Guest Services	Financial	Housekeeping	Reservations	Back office	Marketing
Online reservation	◆	◆	◆	◆		
Confirm reservation	◆	◆	◆	◆		
Check-in process	◆	◆			◆	
Room service	◆				◆	
Ordering	◆	◆				
Check-out process	◆	◆				
Deposit return		◆	◆			
Feedback process	◆		◆	◆		◆

# Ansoff Matrix for Opportunities - Sales



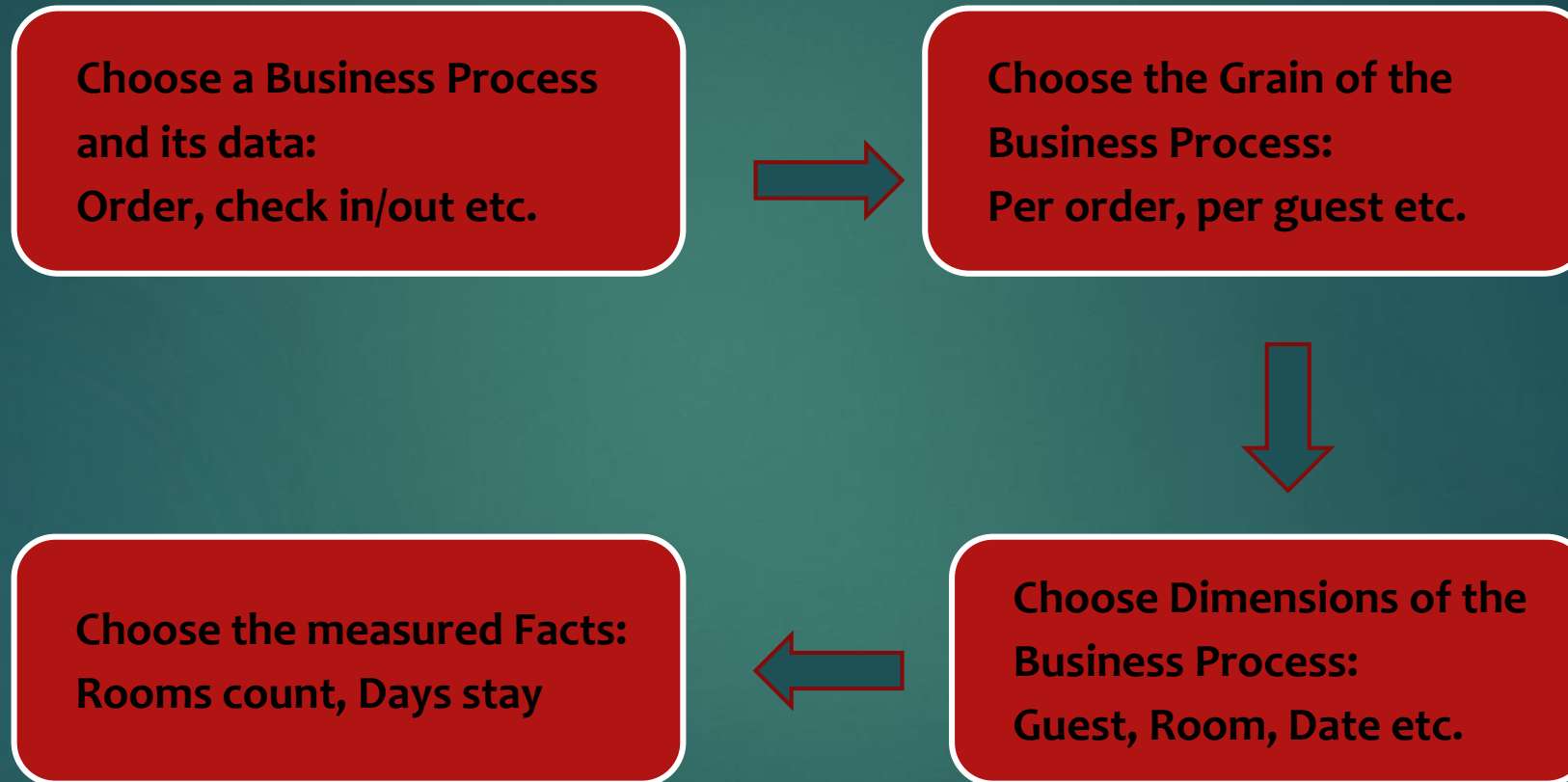
# Prioritization Grid



## Business process

1. Online order
2. Confirm reservation
3. Check-in process
4. Room service
5. Ordering
6. Check-out process
7. Deposit return
8. Feedback process

# Steps To Dimensional Modelling





# DETAILED BUS MATRIX

Business Process	Fact Table	Granularity	Dimension					
			Guest	Check in Date	Check out Date	Departmen †	Rooms	Manager
Online Reservation	Reservations	Per reservation	√	√	√		√	
	Hotel information	Per room booked						
Check-in Process	Billing and invoicing	Per check-in	√	√				√
Room service	Order amount	Per order	√			√	√	√
	Order billing	Per order						
Ordering	Order amount	Per order	√				√	
	Order billing	Per order						
Deposit return	Return transaction	Per transaction	√			√		√

# Fact and Dimension Tables

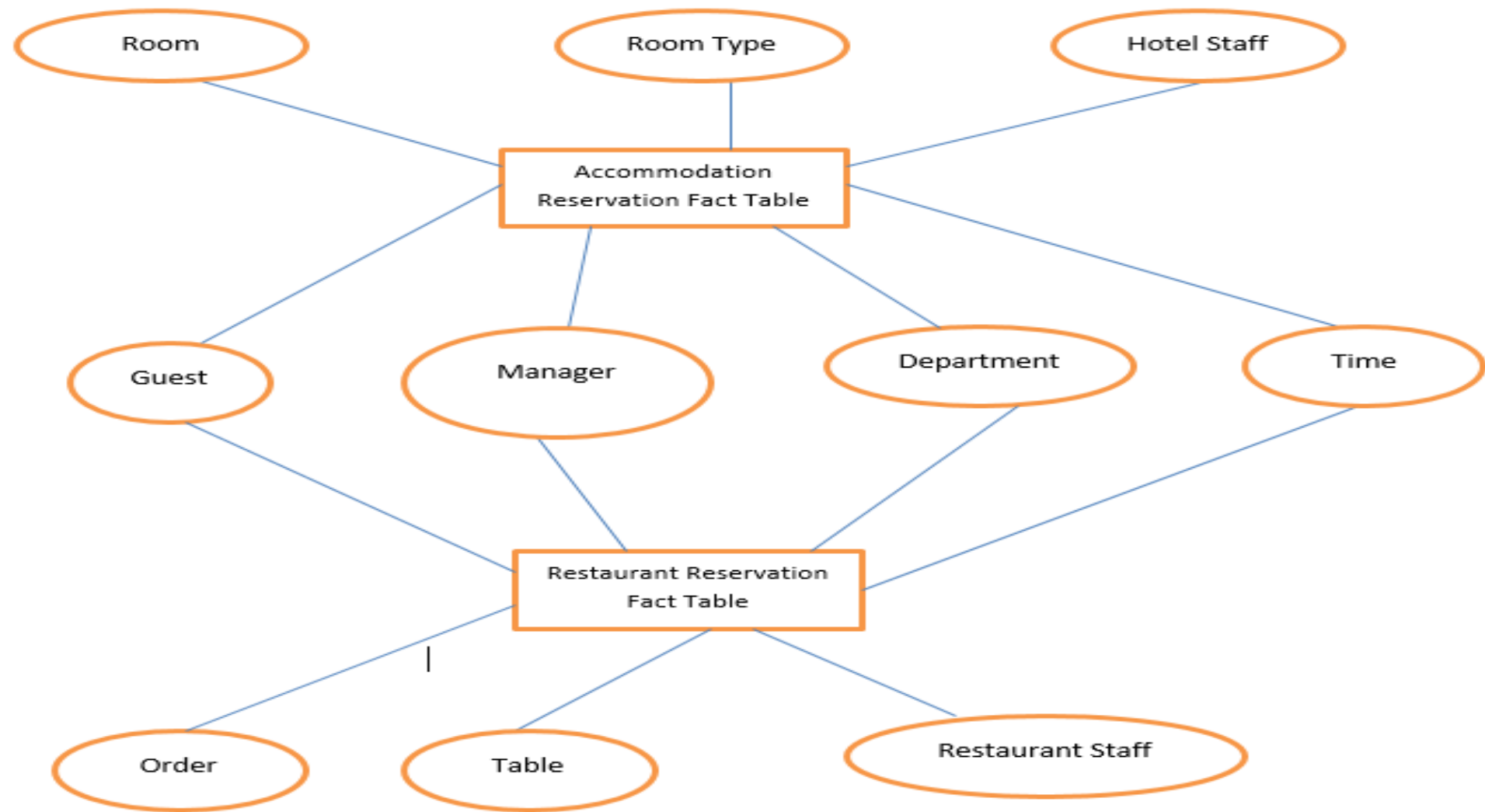
## FACT TABLES

- ▶ The Accommodation Reservation fact table is for making reservations for rooms in the Hotel.
- ▶ The primary keys of each dimension table associated with a fact table are included in the fact table as foreign keys. The primary key for fact table is the composite key made up of all its foreign keys.
- ▶ The fact table also has numerical attributes for reporting and aggregation. For example, Accommodation Reservation fact table has the attributes Total no. of rooms, Total no. of guests, Days of Stay, Total Amount.

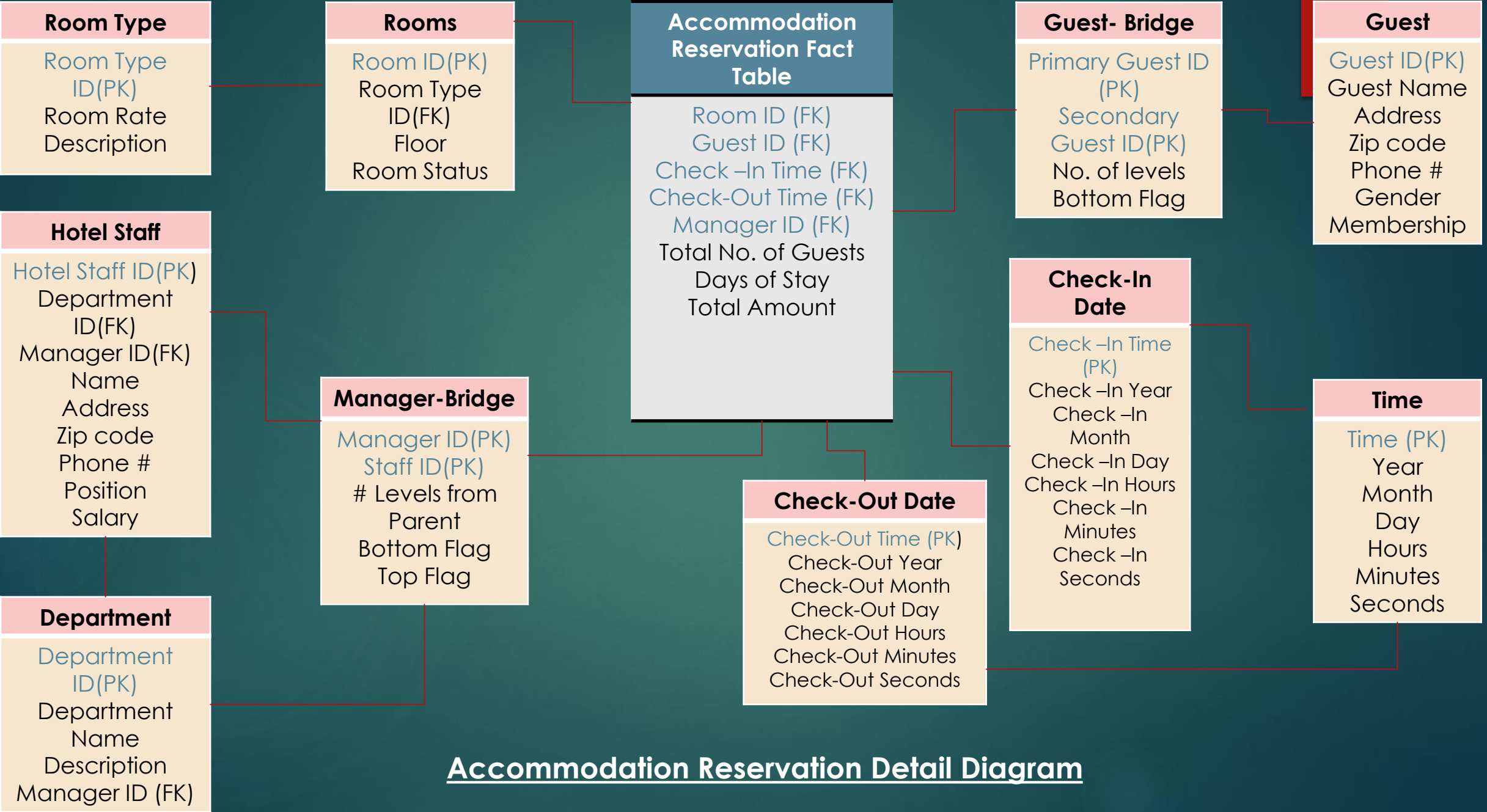
## DIMENSION TABLES

- ▶ Dimension tables for the Accommodation Reservation fact table are Guest, Room, Hotel Staff, Department and Time.
- ▶ There are conformed dimension such as Time, Guest, Department and Manager.

## HIGH LEVEL MODEL DIAGRAM



# Star Schema



Accommodation Reservation Detail Diagram

# Attributes, Keys and Grain

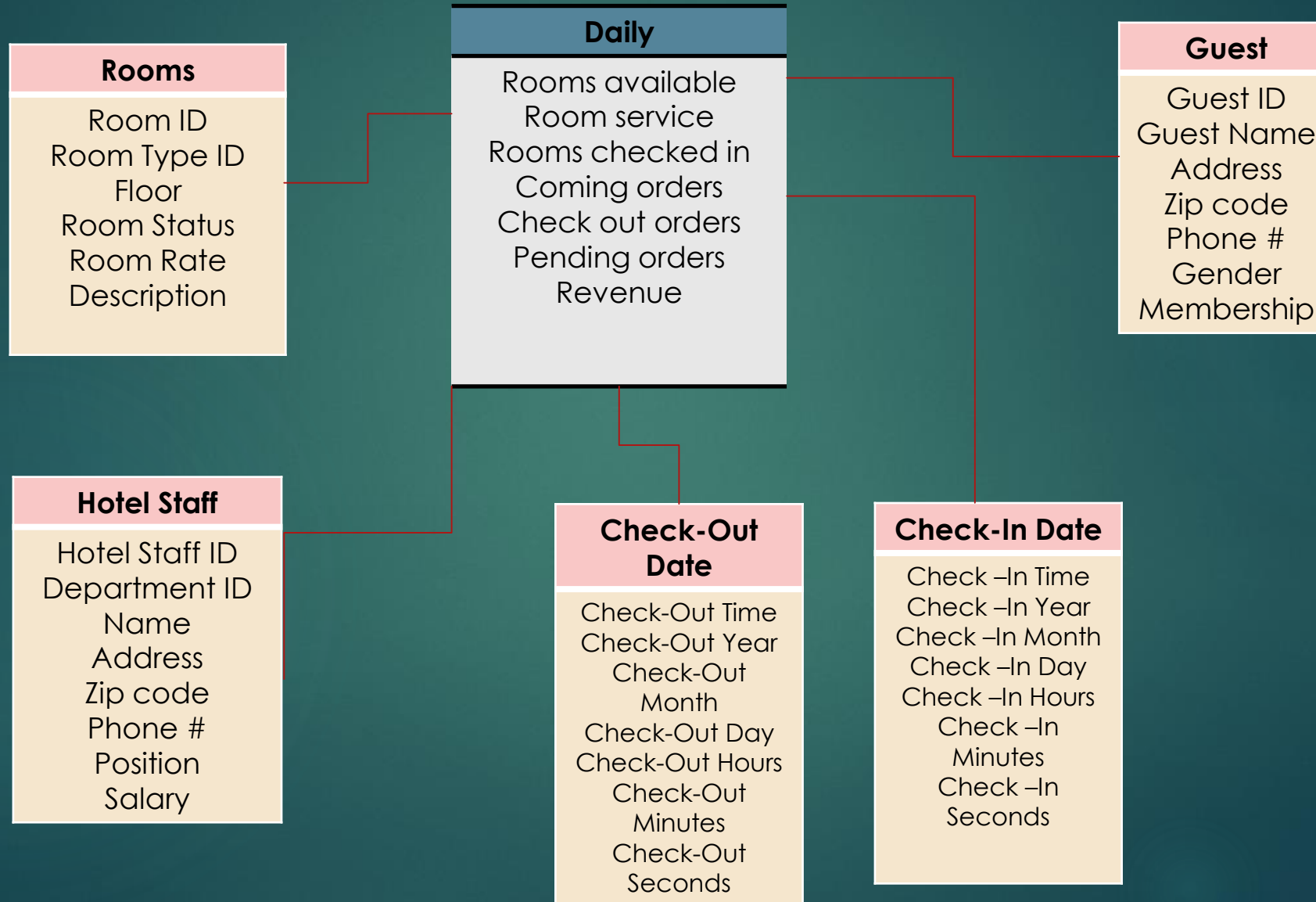
## ATTRIBUTES AND KEYS

- ▶ Composite primary keys are present in each fact table, consisting of all foreign keys from the dimension tables.
- ▶ Room dimension contains foreign key of Room Type ID from the Room Type dimension describing the rooms.
- ▶ Department Dimension contains the Manager ID foreign key to show the manager for each department.
- ▶ For conformed dimensions, primary keys are also surrogate keys.

## GRAIN

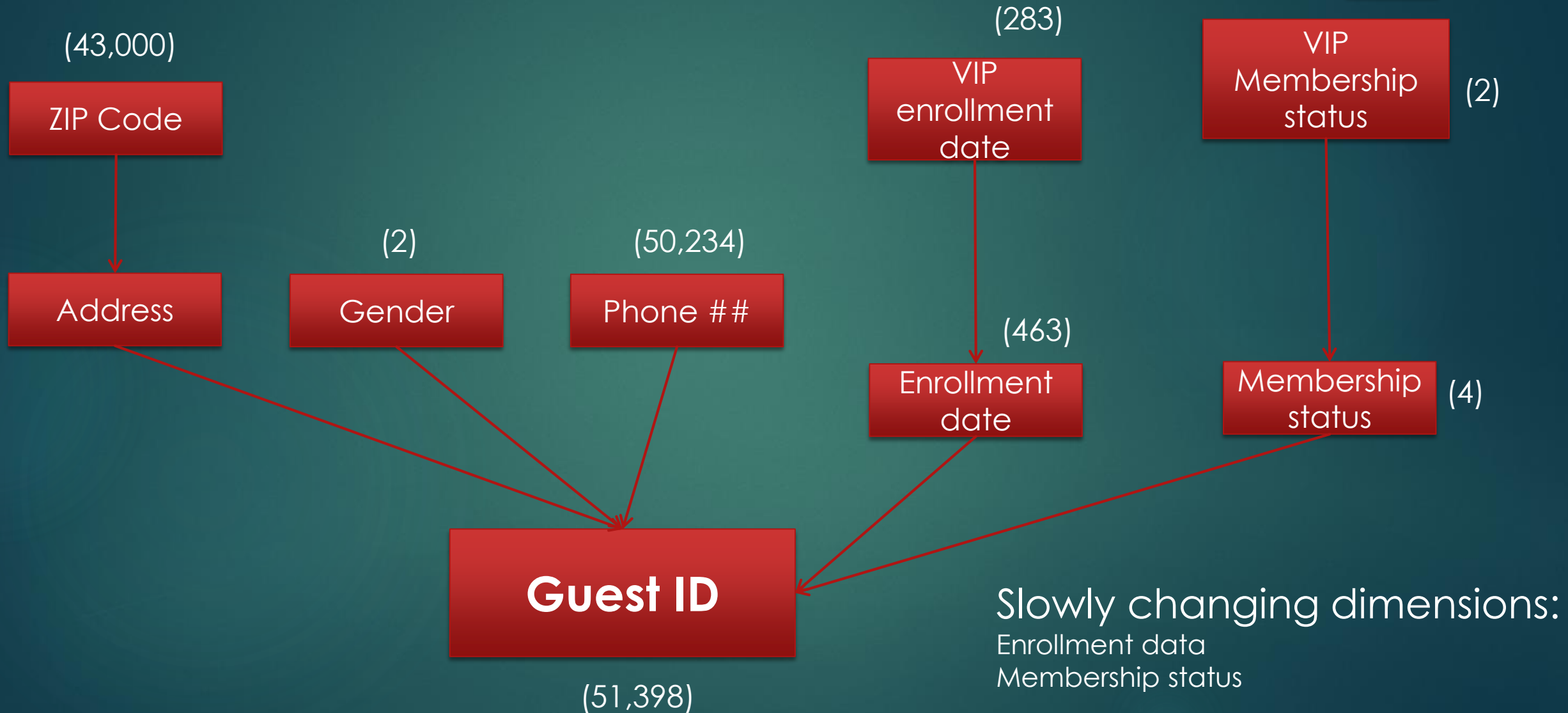
- ▶ The grain is a one time reservation of a room . It is measured at an the instantaneous point of time.

# Aggregate Table



# Dimensional Table Diagram: Guest Attribute

## Dimensional Table

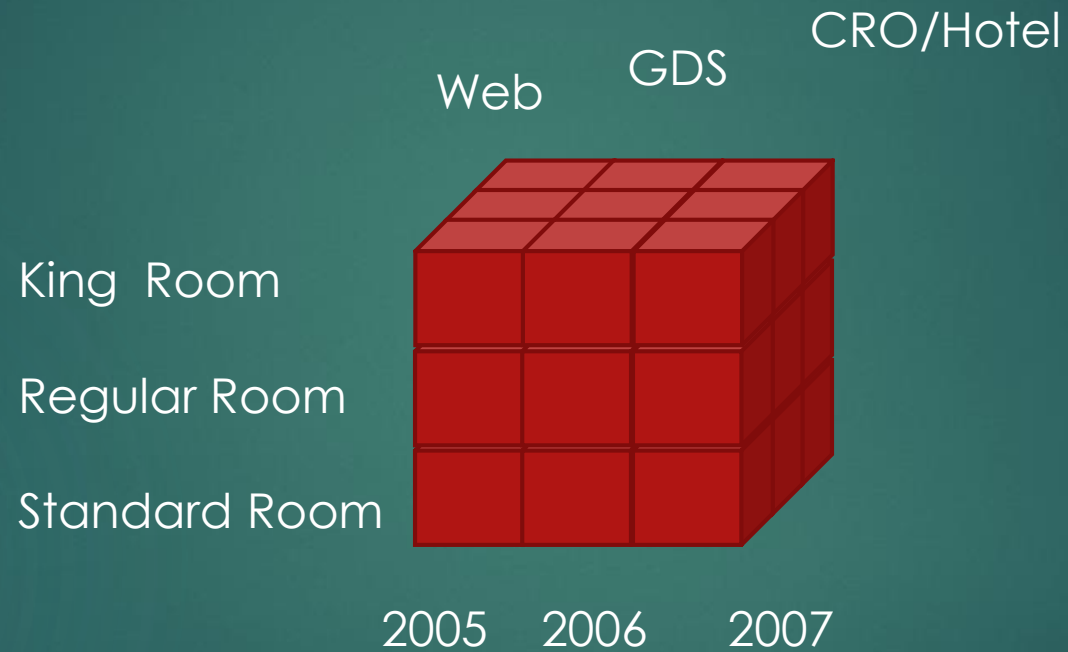


# Attribute Dimension Table

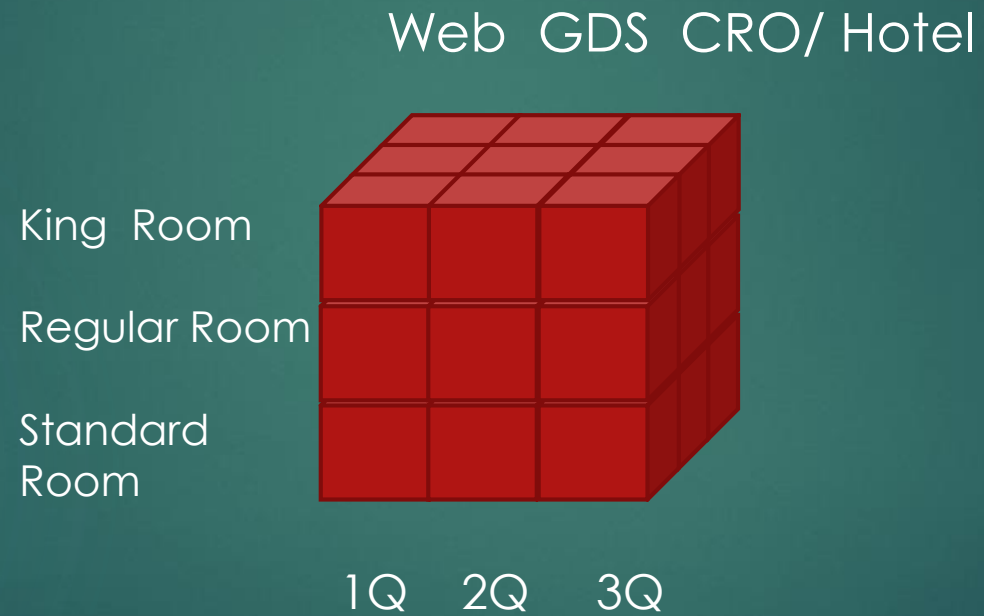
Dimension	Attribute Description	Slowly Changing Dimension	Cardinality	Sample Values
Guest ID	Every guest has a unique ID	Not updated	51,398	1004, 1005, 1006
Address	The guest address	Overwritten		169 Lincoln Street, Jersey City
Zip Code	The guest zip code	Overwritten	43,000	07307
Phone #	The guest contact information	Overwritten	50,234	+1(613)-567-7985
Gender	The guest gender	Not updated	2	M or F
Membership Status	Membership status of the guest	Type 2	4	0,1,2,3
Enrolment Date	Enrolment Date for Membership	Type 2	463	01/01/2014
VIP Membership status	VIP Membership status of guest	Type 2	2	0,1
VIP Enrolment Date	Enrolment Date for VIP Membership	Type 2	283	02/03/2014



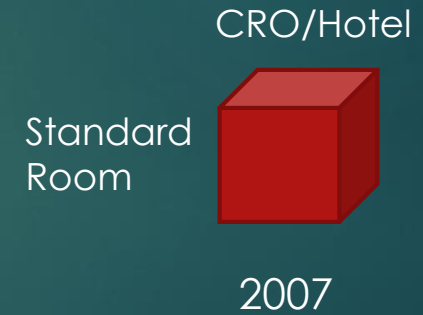
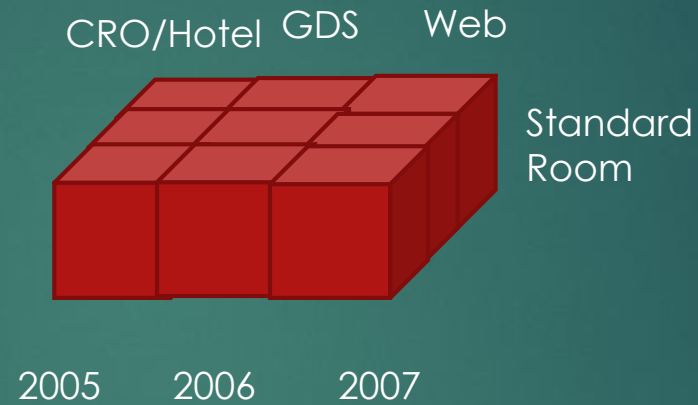
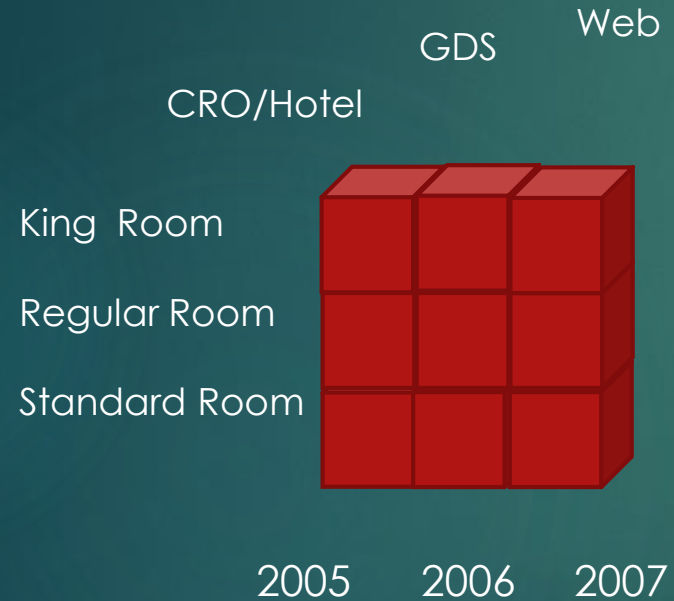
# Bodea Hotel's Cube



# Bodea Hotel's Cube-Drill Down

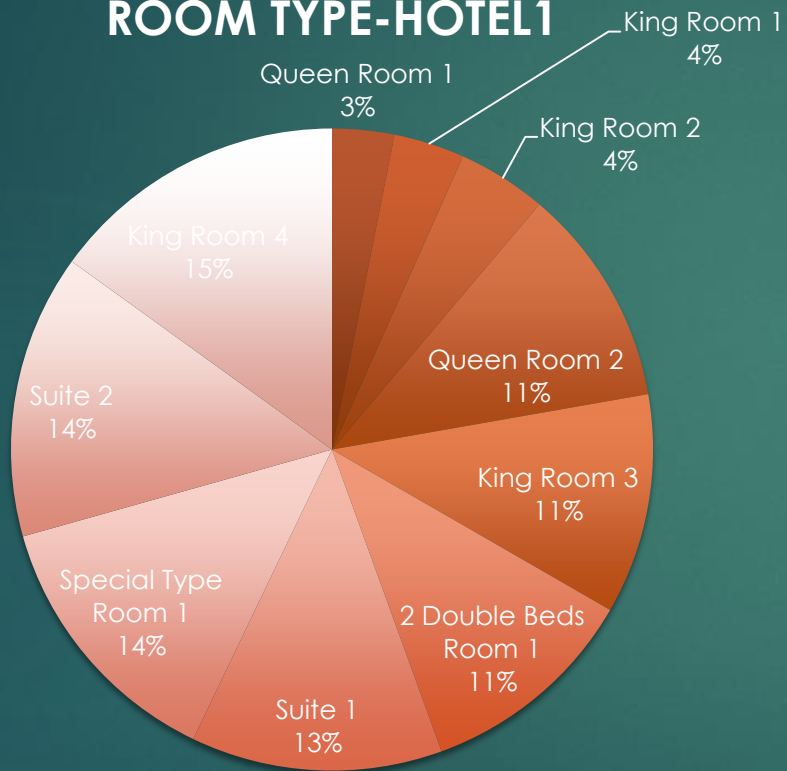


# Bodea Hotel's Cube Slicing and Dicing

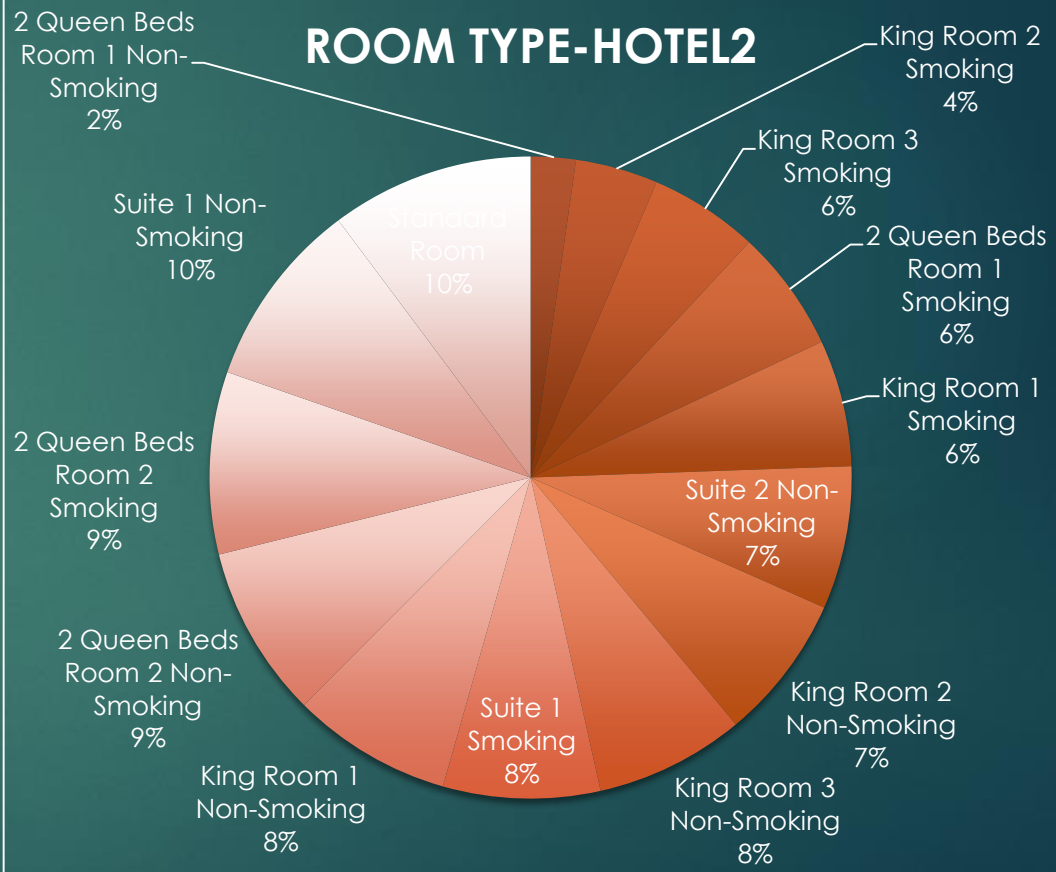


# Room Type Analysis & Contrast

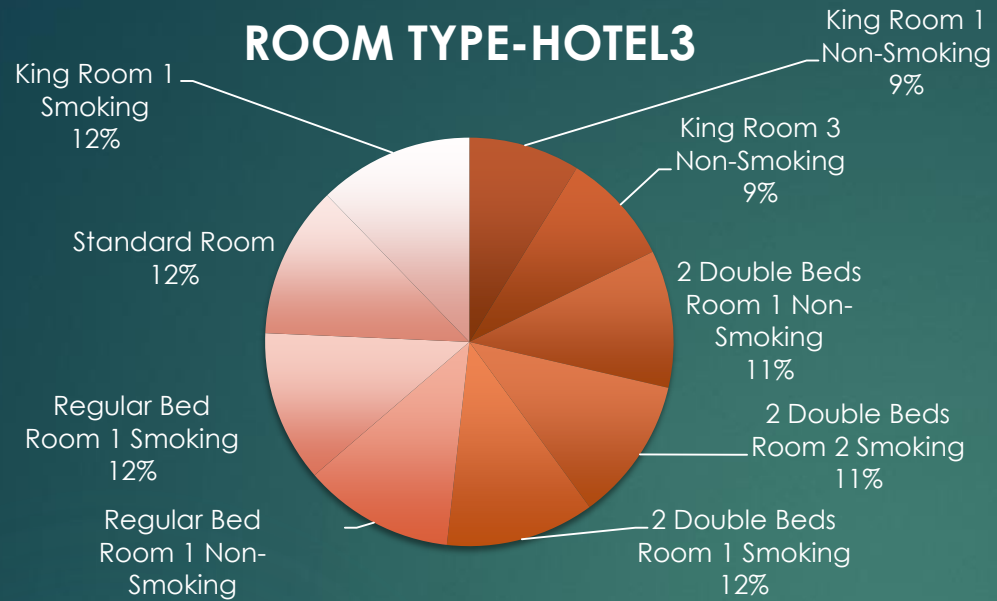
ROOM TYPE-HOTEL1



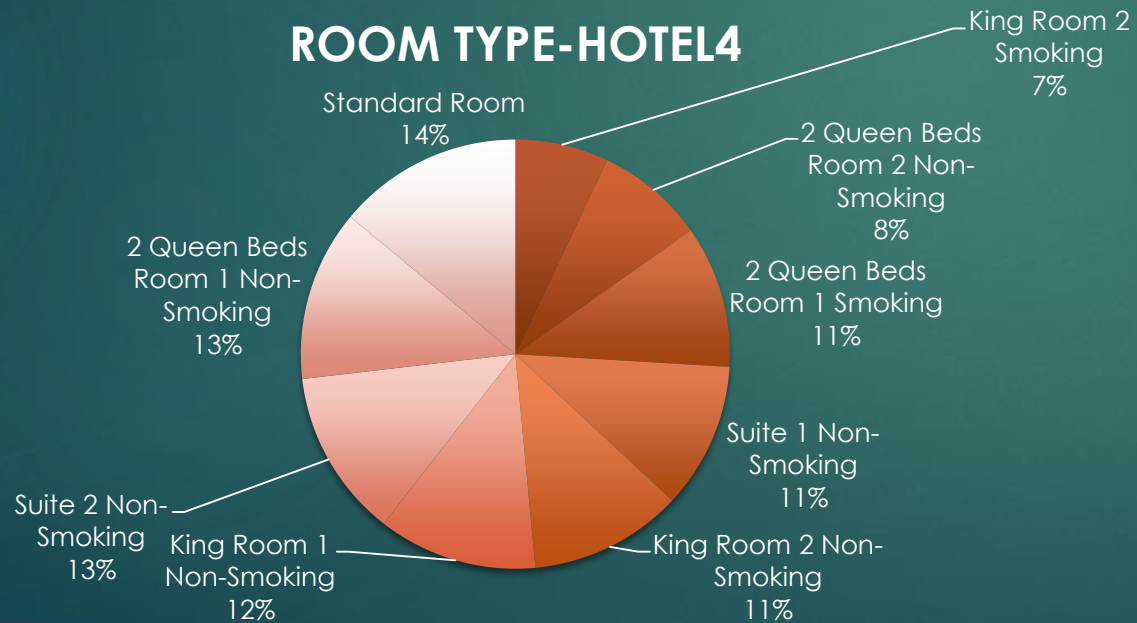
ROOM TYPE-HOTEL2



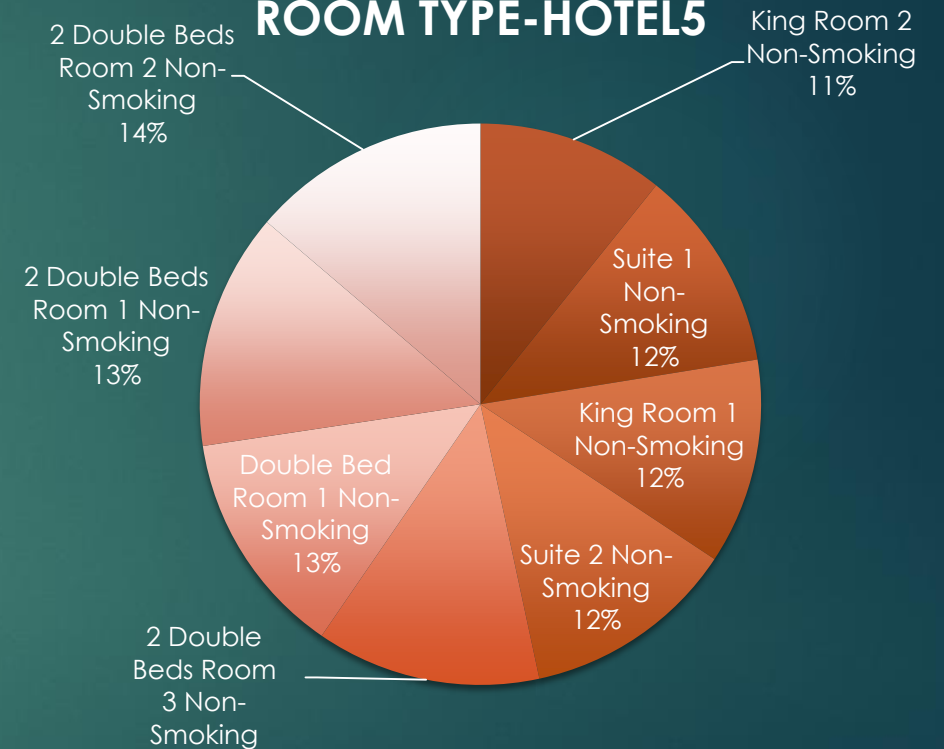
### ROOM TYPE-HOTEL3



### ROOM TYPE-HOTEL4

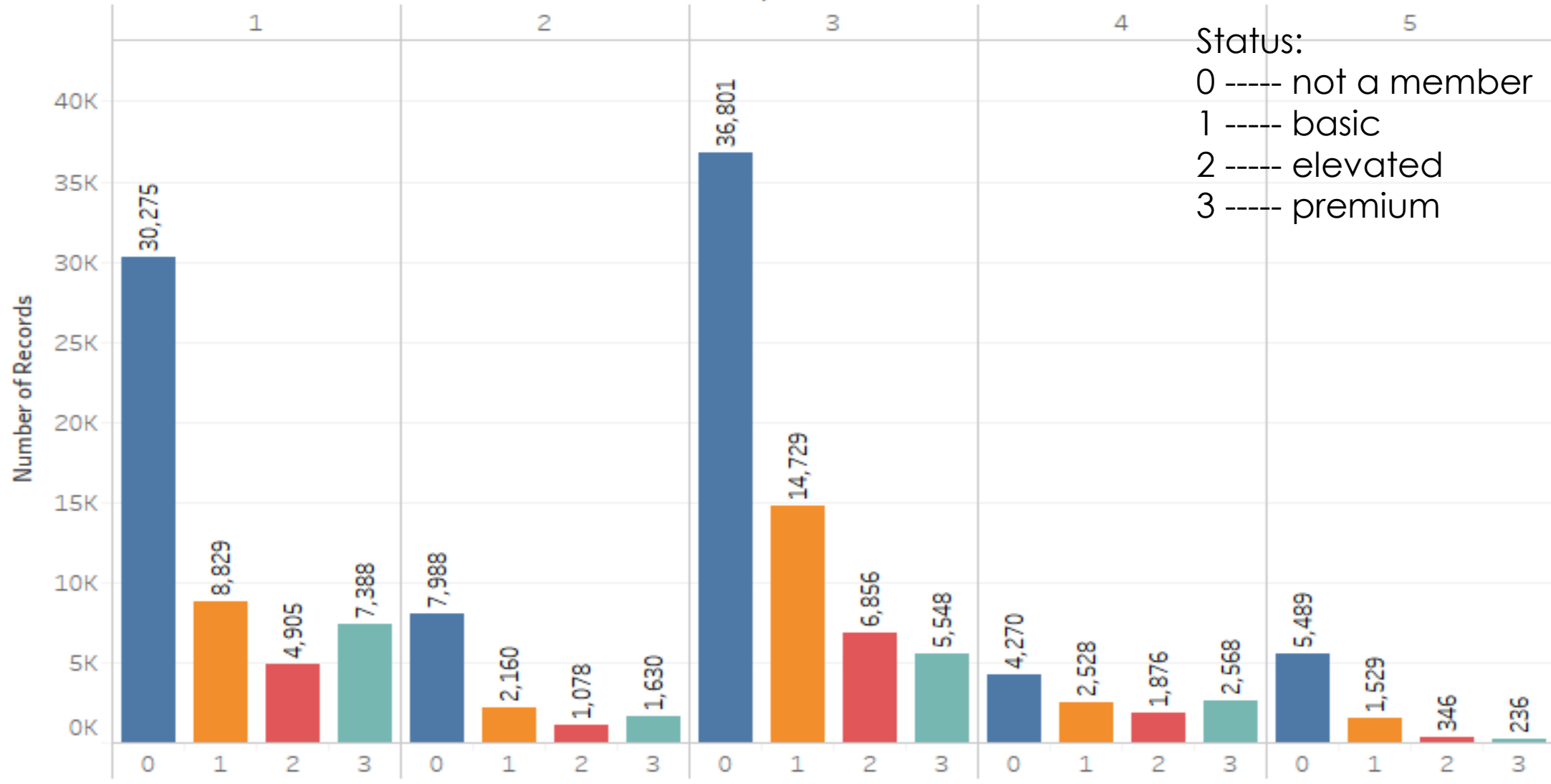


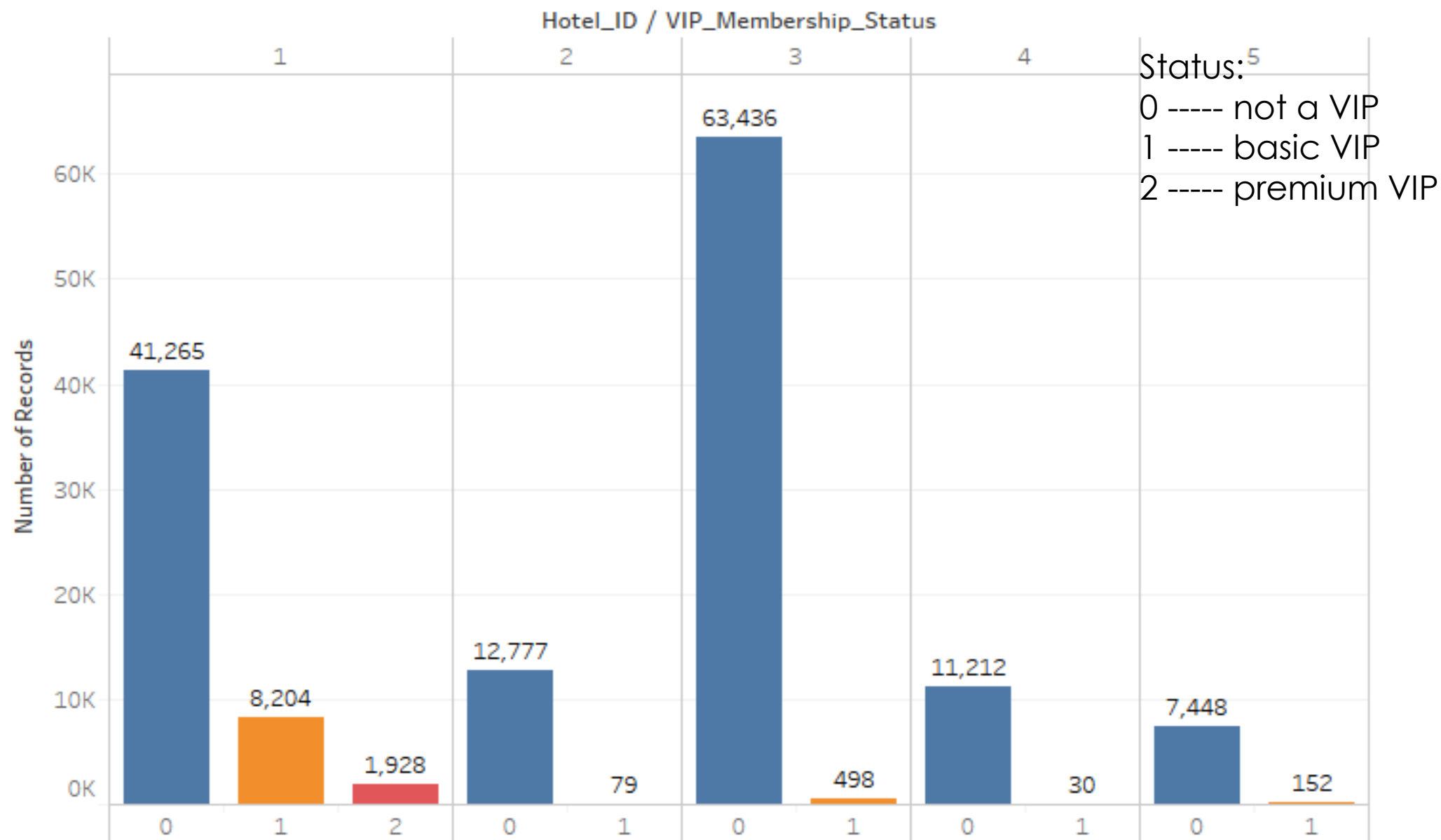
### ROOM TYPE-HOTEL5



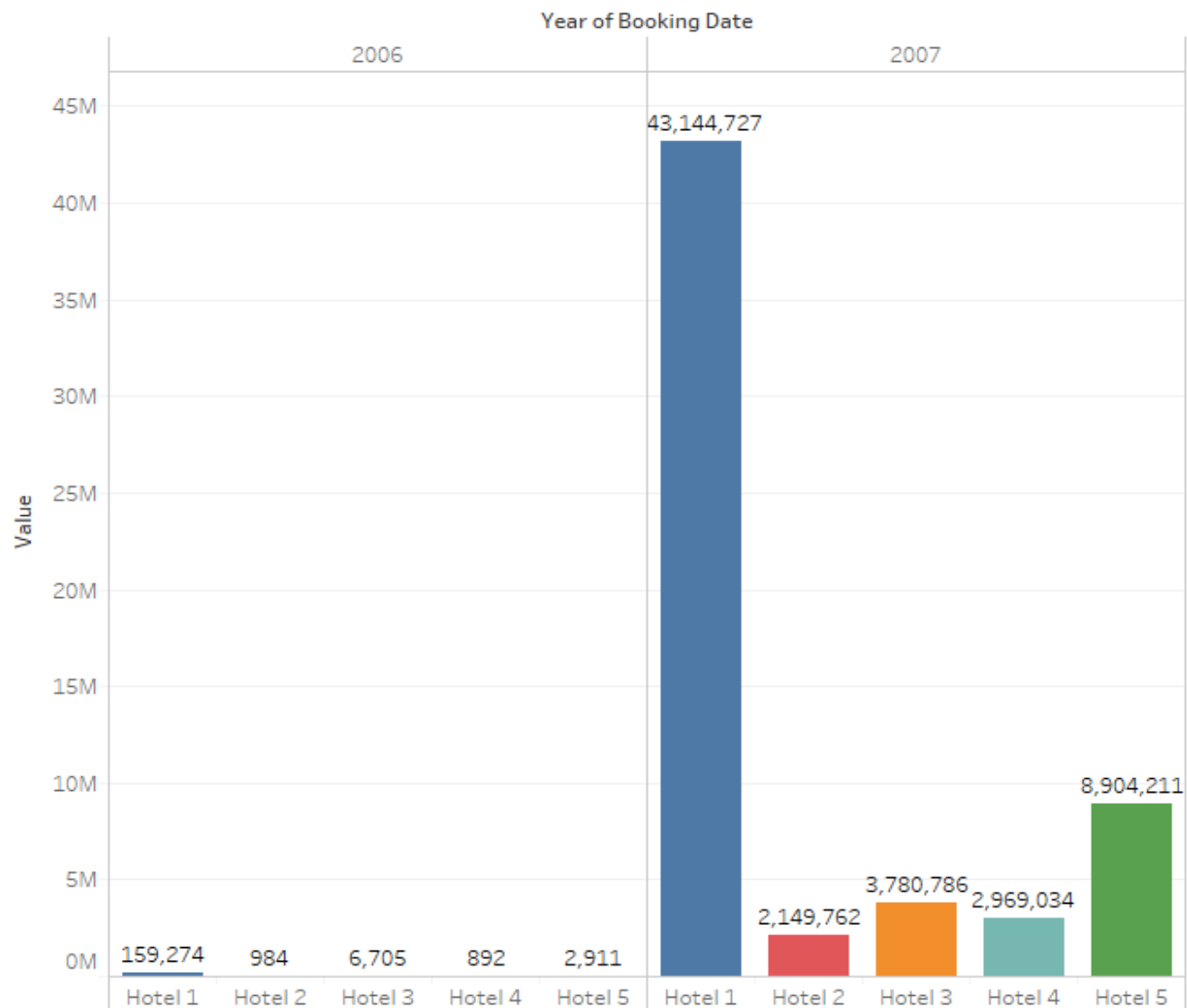
Hotel\_ID / Membership\_Status

Status:  
 0 ---- not a member  
 1 ---- basic  
 2 ---- elevated  
 3 ---- premium





## Year of Booking vs Total Revenue



### Measure Names

- Hotel 1
- Hotel 2
- Hotel 3
- Hotel 4
- Hotel 5



THANK YOU