DATA ANALYTICS

ANALYIZING THE PERFORMANCE & EFFIENCY OF THE RADISSON HOTELS USING VISULIZATION TECHIQUES

COURSE NAME: DATA ANALYSIS

TOPICS:

ANALYZING THE PERFORMANCE & EFFICIENCY OF THE RADISSON HOTELS USING DATA VISUALIZATION TECHIQUES

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TEAM MEMBERS:

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INTRODUCTION:

From the project, we are learnt that how to operate the tableau software and analysing the performance& efficiency of the radission hotels using data visualization techniques.

PURPOSE OF THE PROJECT:

Within hetras, hoteliers hotel revenue managers use tableau to analyse bookings and set room rates on demand.today,hotels can adjust their pricing multiple times a day and quickly analyse impact.

SPECIFY THE BUSINESS PROBLEM

Defining the problem

It is the primary aspect of a business problem statement. Summarize your problem in simple and layman terms. It is highly recommended to avoid industrial lingo and buzzwords. Write a 3-5 sentences long summary, avoid writing more than it.

Radisson owns multiple five-star hotels across India. They hav been in the hospitality industry for the past 100 years. Due to strategic moves from other competitors and ineffective decision-making in management, Radisson is losing its market share and revenue in the luxury/business hotels category. As a strategic move, the managing director of Radisson wanted to incorporate Business and Data Intelligence in order to regain their market share and revenue.

Common Challenges in Hotel Industry and Their Solutions

You don't need rocket science to overcome challenges. Rather, you need to have a strategic approach. Over the years, many hoteliers shared many pain points with us. So, in this section, we address a few global issues and challenges in the hospitality industry and their solutions.

- 1. Hiring and retaining the staff -Hiring and retaining staff has always been one of the most common problems in the hospitality industry. Every hotel requires quality staff on all fronts; be it administration, maintenance, kitchen, housekeeping, or frontdesk. Lack of skill in the educated youths graduating from education houses is also proving to be a major challenge in the hotel industry.
- 2. Change in marketing trends and dynamics Changes in the advertising and marketing trend often create problems for hoteliers. Also, traditional marketing methods aren't that effective now. So, for those who have always stuck to the old-school ways, getting the strategy right is one of the biggest challenges of the hospitality industry. Online marketing is a surefire method, though it would take years for hotel owners to establish their strength. Online deals are booked by genuine guests and major transactions are paid in advance.
- **3.** Operational issues There are countless operational challenges in the hotel industry. Ranging from reservations management, attending to guests, performing all front office operations, maintaining

cleanliness in hotel rooms and premises, and more. However, hotel departments often fail to perform all tasks in sync which leads to chaos and customer dissatisfaction.

- **4. Rising cost of daily consumables** Price inflation of daily use products, eatables, and other supplies has risen steeply in the last few years. While that has affected all industries, it takes a huge portion of the issues and challenges faced by the tourism and hospitality industry.
- 5. Housekeeping issues Cleanliness is a basic requirement of every guest. In fact, you'd also ask for a clean and tidy hotel room when you are traveling. A majority of hotel guests would prefer a clean room over complimentary amenities, any day. Also, if you think about it, an unclean and messy room is also a common guest complaint.
- **6.** Change in guest expectations Changes in guest expectations are one of the biggest hurdles in the hotel industry. You've witnessed that nowadays guests demand a lot more from a hotel. Be it free WiFi, entertainment system, unique stay experience, or swift check-in check-out services. And lately, people have also started expecting contactless hotel services to ensure a safe stay and eliminate their dependency on hotel staff. Certainly, it's quite difficult to abide by these demands because of resource or capital bandwidth, but it will be imperative to do it.
- 7. Irregular cash inflows One of the major challenges in the hotel industry is the credit menace. Dealing with parties who pay after 30, 60, and 90 days or even later. While these types of dealings are bigger, they don't help much during a cash crunch. On top of that, many payments are delayed or go into bad debt.
- **8. Data security challenges** The question of security is not a new one. While our data security methods have advanced considerably, so have the possibilities of data leaks and virus attacks. Threats of digital data theft and confidential data leaks are a matter of concern for hoteliers globally.
- **9.** Losing loyal customers Since various hotels are constantly pouring in attractive offers, guests tend not to be limited to a single brand. Rather, they're open to options; especially if you fail to connect and engage with them personally, and deliver a memorable guest experience.

Data Collection & Extraction from Database

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes and generate insights from the data.

Collect the dataset

Understand the data

Data contains all the meta information regarding the columns described in the CSV files. we have provided 5 CSV files:

- 1. dim_date
- 2. dim_hotels
- 3. dim_rooms
- 4. fact_aggregated_bookings
- 5. fact_bookings

Column Description for dim_date:

- 1. date: This column represents the dates present in May, June and July.
- 2. mmm yy: This column represents the date in the format of mmm yy (monthname year).
- 3. week no: This column represents the unique week number for that particular date.
- 4. day_type: This column represents whether the given day is Weekend or Weekday.

date	mmm yy	week no	day_type
01-May-22	May 22	W 19	weekend
02-May-22	May 22	W 19	weekeday
03-May-22	May 22	W 19	weekeday
04-May-22	May 22	W 19	weekeday
05-May-22	May 22	W 19	weekeday
06-May-22	May 22	W 19	weekeday
07-May-22	May 22	W 19	weekend
08-May-22	May 22	W 20	weekend
09-May-22	May 22	W 20	weekeday
10-May-22	May 22	W 20	weekeday
11-May-22	May 22	W 20	weekeday
12-May-22	May 22	W 20	weekeday
13-May-22	May 22	W 20	weekeday
14-May-22	May 22	W 20	weekend
15-May-22	May 22	W 21	weekend
16-May-22	May 22	W 21	weekeday
17-May-22	May 22	W 21	weekeday
18-May-22	May 22	W 21	weekeday
19-May-22	May 22	W 21	weekeday
20-May-22	May 22	W 21	weekeday
21-May-22	May 22	W 21	weekend
22-May-22	May 22	W 22	weekend
23-May-22	May 22	W 22	weekeday
24-May-22	May 22	W 22	weekeday
25-May-22	May 22	W 22	weekeday
26-May-22	May 22	W 22	weekeday
27-May-22	May 22	W 22	weekeday
28-May-22	May 22	W 22	weekend
29-May-22	May 22	W 23	weekend
30-May-22	May 22	W 23	weekeday
31-May-22	May 22	W 23	weekeday
01-Jun-22	Jun 22	W 23	weekeday
02-Jun-22	Jun 22	₩ 23	weekeday
03-Jun-22	Jun 22	W 23	weekeday
04-Jun-22	Jun 22	W 23	weekend
05-Jun-22	Jun 22	W 24	weekend
06-Jun-22	Jun 22	W 24	weekeday
07-Jun-22	Jun 22	W 24	weekeday

08-Jun-22	Jun 22	W 24	weekeday
09-Jun-22	Jun 22	W 24	weekeday
10-Jun-22	Jun 22	W 24	weekeday
11-Jun-22	Jun 22	W 24	weekend
12-Jun-22	Jun 22	W 25	weekend
13-Jun-22	Jun 22	W 25	weekeday

Column Description for dim_hotels:

- 1. property_id: This column represents the Unique ID for each of the hotels.
- 2. property_name: This column represents the name of each hotel.
- 3. category: This column determines which class[Luxury, Business] a particular hotel/property belongs to.
- 4. city: This column represents where the particular hotel/property resides in.

property_idproperty_ncategory	city
16558 Radisson G Luxury	Delhi
16559 Radisson ExLuxury	Mumbai
16560 Radisson CiBusiness	Delhi
20000	_
16561 Radisson BlLuxury	Delhi
16562 Radisson BaLuxury	Delhi
16563 Radisson PaBusiness	Delhi
17558 Radisson G Luxury	Mumbai
17559 Radisson ExLuxury	Mumbai
17560 Radisson CiBusiness	Mumbai
17561 Radisson BlLuxury	Mumbai
17562 Radisson BaLuxury	Mumbai
17563 Radisson PaBusiness	Mumbai
18558 Radisson G Luxury	Hyderabad
18559 Radisson ExLuxury	Hyderabad
18560 Radisson CiBusiness	Hyderabad
18561 Radisson BlLuxury	Hyderabad
18562 Radisson BaLuxury	Hyderabad
18563 Radisson PaBusiness	Hyderabad
19558 Radisson G Luxury	Bangalore
19559 Radisson ExLuxury	Bangalore
19560 Radisson CiBusiness	Bangalore
19561 Radisson BlLuxury	Bangalore
19562 Radisson BaLuxury	Bangalore
19563 Radisson PaBusiness	Bangalore
17564 Radisson SeBusiness	Mumbai

Column Description for dim_rooms:

- 1. room_id: This column represents the type of room[RT1, RT2, RT3, RT4] in a hotel.
- 2. room_class: This column represents to which class[Standard, Elite, Premium, Presidential] particular room type belongs.

189af52b5801b690380ccc17e6f7961d

room_id room_class
RT1 Standard
RT2 Elite
RT3 Premium

RT3 Premium RT4 presidential

Column Description for fact_aggregated_bookings:

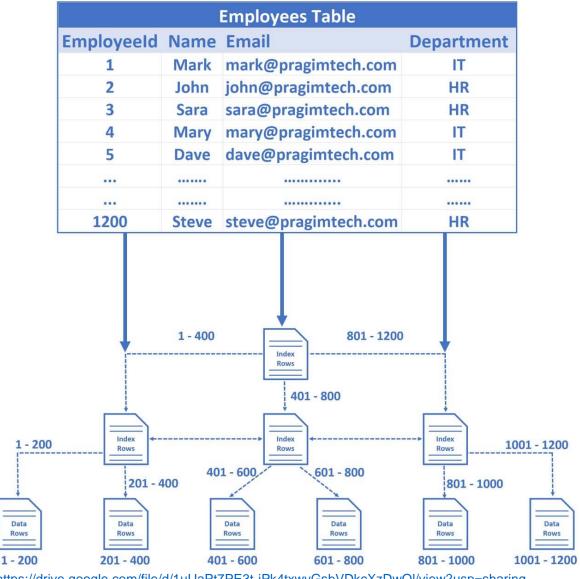
- 1. property_id: This column represents the Unique ID for each of the hotels.
- check_in_date: This column represents all the check_in_dates of the customers.
- room_category: This column represents the type of room[RT1, RT2, RT3, RT4] in a hotel.
- 4. successful_bookings: This column represents all the successful room bookings that happen for a particular room type in that hotel on that particular date.
- 5. capacity: This column represents the maximum count of rooms available for a particular room type in that hotel on that particular date.

Column Description for fact bookings:

- 1. booking_id: This column represents the Unique Booking ID for each customer when they booked their rooms.
- 2. property_id: This column represents the Unique ID for each of the hotels
- booking_date: This column represents the date on which the customer booked their rooms.
- 4. check_in_date: This column represents the date on which the customer checkin(entered) at the hotel.
- check_out_date: This column represents the date on which the customer checkout(left) of the hotel.
- 6. no_guests: This column represents the number of guests who stayed in a particular room in that hotel.
- 7. room_category: This column represents the type of room[RT1, RT2, RT3, RT4] in a hotel.
- booking_platform: This column represents in which way the customer booked his room.
- 9. ratings_given: This column represents the ratings given by the customer for hotel services.
- 10. booking_status: This column represents whether the customer cancelled his booking[Cancelled], successfully stayed in the hotel[Checked Out] or booked his room but not stayed in the hotel[No show].

- 11. revenue_generated: This column represents the amount of money generated by the hotel from a particular customer.
- revenue realized: This column represents the final amount of money that goes to the hotel based on booking status. If the booking status is cancelled, then 40% of the revenue generated is deducted and the remaining is refunded to the customer. If the booking status is Checked Out/No show, then full revenue generated will go to hotels.

Storing Data in DB & Perform SQL Operations



https://drive.google.com/file/d/1uUaPt7PE3t-jPk4txwyGsbVDkcXzDwOl/view?usp=sharing

In this video we will understand how SQL Server stores data internally. As a software engineer this knowledge is very important, especially if you want to troubleshoot and fix SQL queries that are not performing very well from performance standpoint. Along the way we will also understand some of the

common technical terms like the following. Understnading these terms is very important, especially if you are doing something related to sql server performance tuning.

- 1. Data pages
- 2. Root node
- 3. Leaf nodes
- 4. B-tree
- 5. Clustered index structure

Connect DB with Tableau

1.Start Tableau Desktop and on the **Connect** pane, under **Search for Data**, select **Tableau Server**.

2. To connect to Tableau Server, enter the name of the server and then select **Connect**.

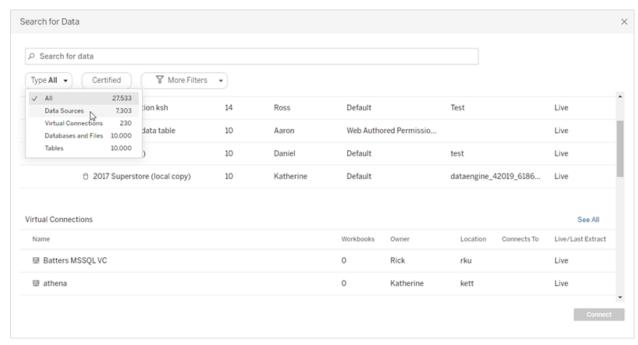
To connect to Tableau Cloud, select **Tableau Cloud** under **Quick Connect**.

- 3. To sign in:
 - o For Tableau Server, enter your user name and password.
 - o For Tableau Cloud, enter your email address and password.
- 4. Select data to connect to. Beginning in Tableau Cloud and Tableau Server 2023.1, the Search for Data dialog first displays a list of mixed content that's popular. Scroll down to see different types of data. Older versions of the dialog look slightly different but the overall function is similar.

You can search for data using the search field. You can filter results by type of data, certification status, or other filters that depend on the type of data selected. For example, some types of data may allow you to filter based on tags, connection type, data quality warnings, or other criteria.

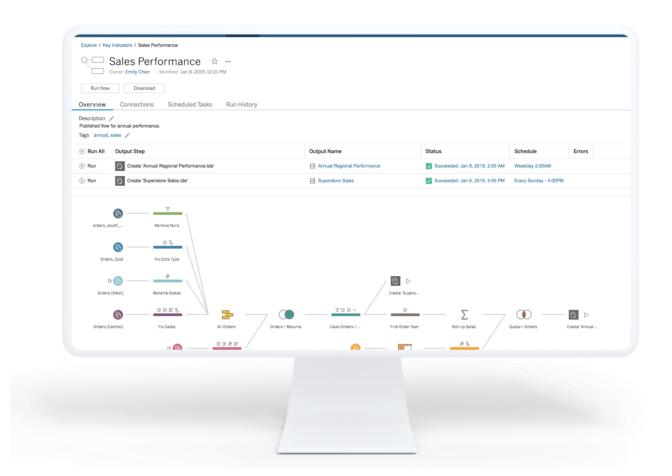
If you have a Data Management license, you can connect to data with a virtual connection, and if you have Data Management with Tableau Catalog enabled, you can also connect to external assets, like databases, files, and tables.

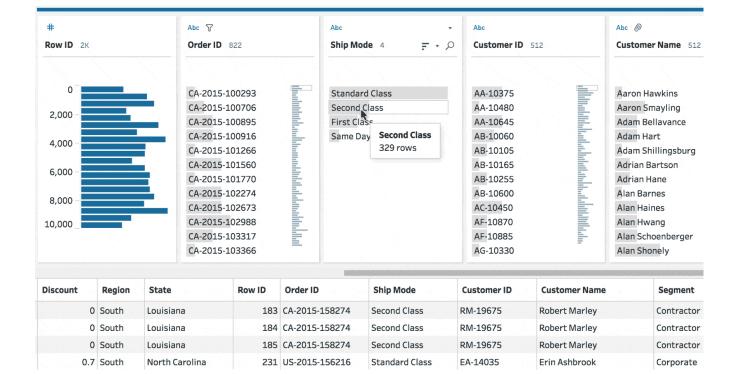




DATA PREPARATION IN TABLEAU

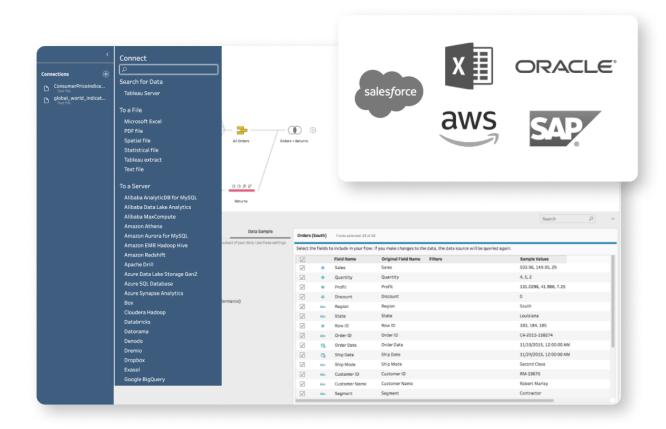
Tableau Prep Builder capabilities

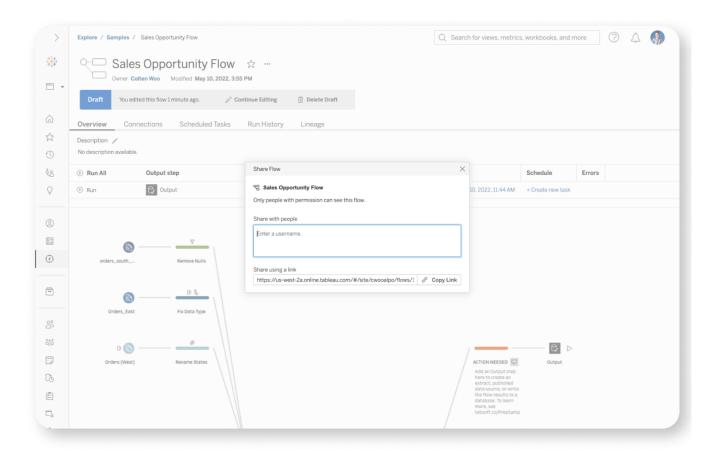


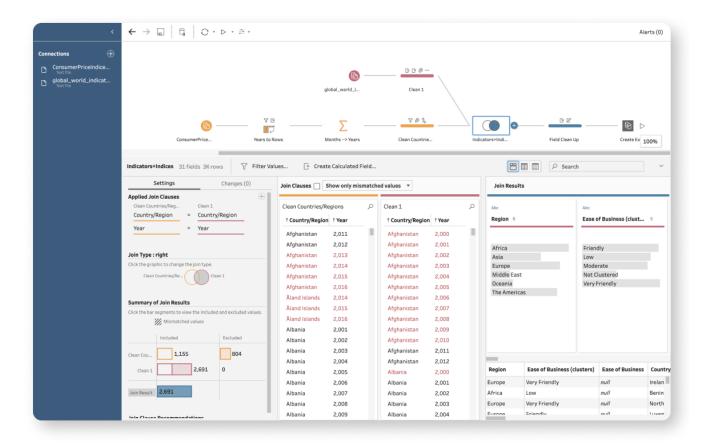


A complete picture of your data

Three coordinated views let you see row-level data, profiles of each column, and your entire data preparation process. Pick which view to interact with based on the task at hand.



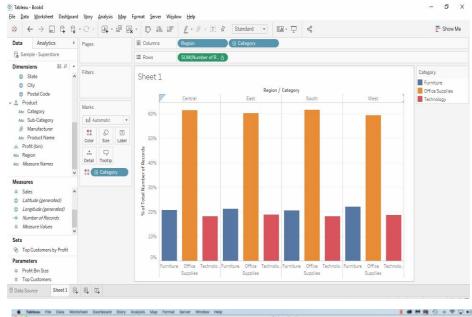


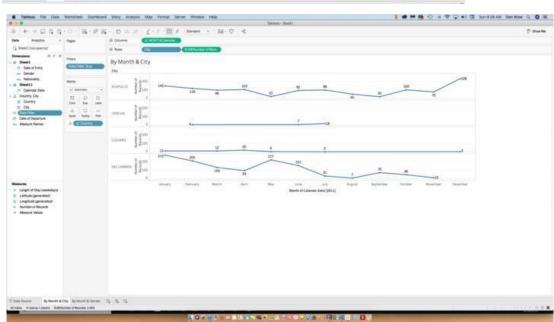


Data Visualization

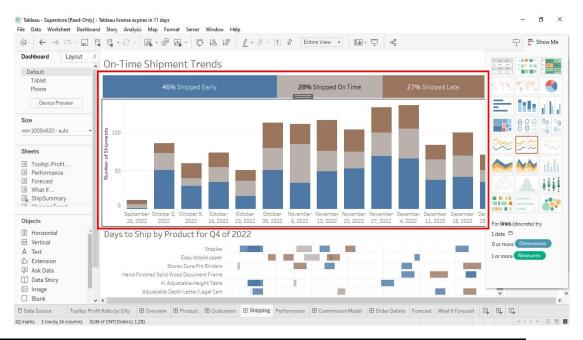
Data visualization Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. Additionally, it provides an excellent way for employees or business owners to present data to non-technical audiences without confusion.

REVENUE SPLIT BY CITY





OCCPANCY BY DAY TYPE





Story

Create a Tableau Data Story

If you've ever written an executive summary of your Tableau dashboard, then you know it can be time-consuming. It takes time to choose which insights to share, and you have to rewrite your summaries each time the data is updated. Tableau Data

Stories automatically generates narrative insights within your dashboard, saving time and surfacing relevant insights. As you explore the vizzes in your dashboard, the stories written by Data Stories adjust, allowing you to dive deeper into data and identify key insights faster.

From where you're already working in Tableau, you can quickly add the **Data Story** object to your dashboard. And you can customize the terms and metrics used in your story, so Data Stories speaks the language used by your business.

Today, you can write and view a Tableau Data Story anywhere you use Tableau. After you create your story, you can also view your Data Story in Tableau Mobile.

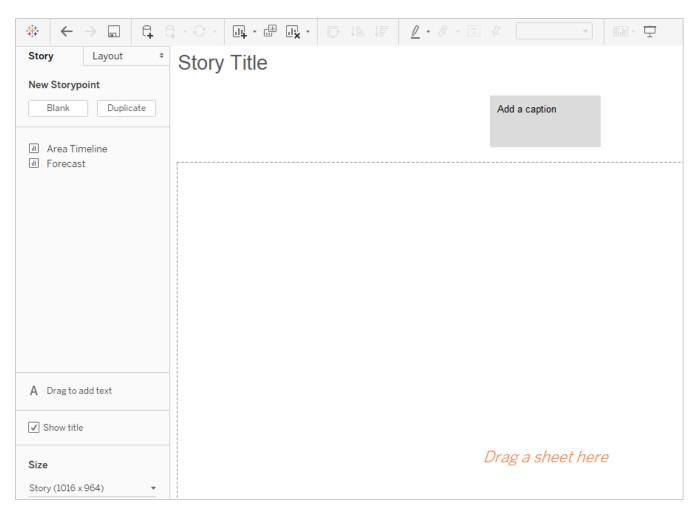
Understand how Data Stories handles data

To write Data Stories, Tableau uses a service hosted in your Tableau Cloud or Tableau Server environment. When you <u>Add a Tableau Data Story to a Dashboard</u> or view a Data Story from a dashboard, Tableau sends associated worksheet data to the environment that you're logged in to (i.e., your Tableau Cloud site or your Tableau Server instance), using the security standards outlined in <u>Security in the Cloud</u> and <u>Security in Tableau Server</u>. Data Stories can be written and viewed from anywhere you use Tableau

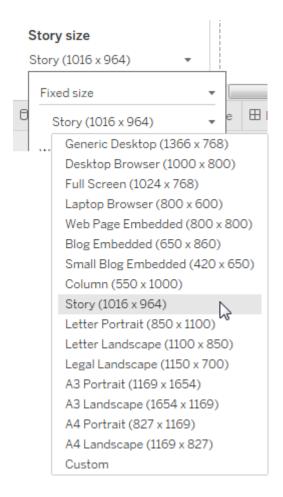
Create a story point

Click the **New Story** tab.

Tableau opens a new story as your starting point:



In the lower-left corner of the screen, choose a size for your story. Choose from one of the predefined sizes, or set a custom size, in pixels:



3. By default, your story gets its title from the sheet name. To edit it, right-click the sheet tab, and choose **Rename Sheet**.

If you're using Tableau Desktop, you can also rename a story by double-clicking the title.

4. To start building your story, double-click a sheet on the left to add it to a story point.

In Tableau Desktop, you can also drag sheets into your story point.



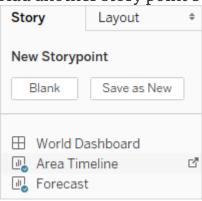
5. Click **Add a caption** to summarize the story point.

In Tableau Desktop, you can highlight a key takeaway for your viewers by dragging a text object to the story worksheet and typing a comment.

6. To further highlight the main idea of this story point, you can change a filter or sort on a field in the view. Then save your changes by clicking **Update** on the story toolbar above the navigator box:



Add another story point by doing one of the following:



Click Blank to use a fresh sheet for the next story point. Explore layout options

You can refine the look of your story using the options on the Layout tab.

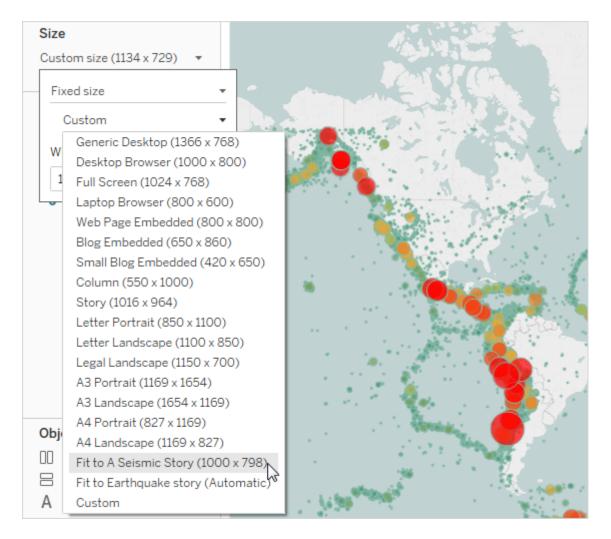
- 1. Click the **Layout** tab.
 - 2. Choose a navigator style that best suits your story, and show or hide the next and previous arrows.



Fit a dashboard to a story

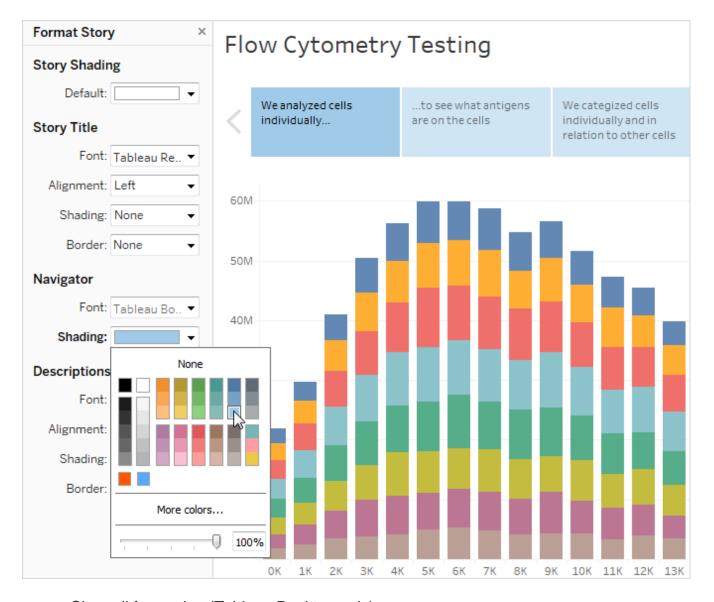
You can fit a dashboard to the exact size of a story. For example, if your story is exactly 800 by 600 pixels, you can shrink or expand a dashboard to fit inside that space.

Click the **Size** drop-down menu and select the story you want the dashboard to fit inside.



Format a story's shading, title, and text objects (Tableau Desktop only)

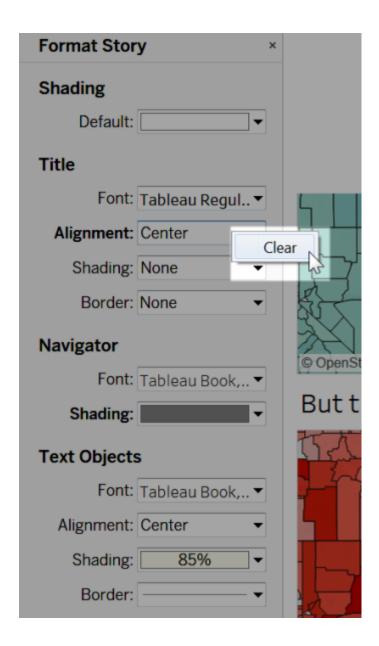
To open the **Format Story** pane, select **Format > Story**.



Clear all formatting (Tableau Desktop only)

- To reset a story to its default format settings, click the **Clear** button at the bottom of the **Format Story** pane.
- To clear a single format setting, right-click (Windows) or control-click (macOS) the format setting you want to undo in the **Format Story** pane. Then select **Clear**.

For example, if you want to clear the alignment of the story title, right-click (control-click on Mac) **Alignment** in the **Title** section, and then select **Clear**.



Delete a story point

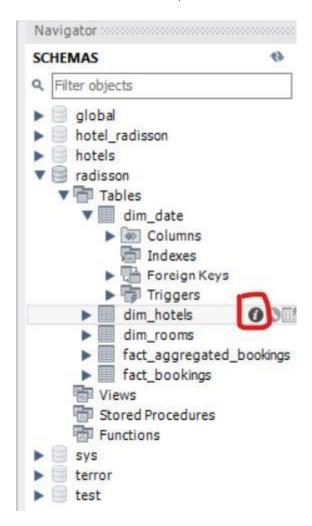
Click the X in the toolbar above the point's caption:

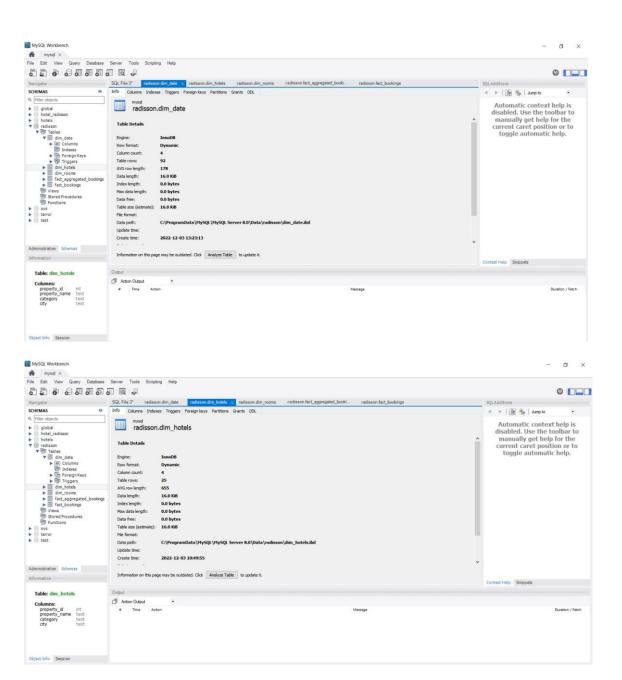


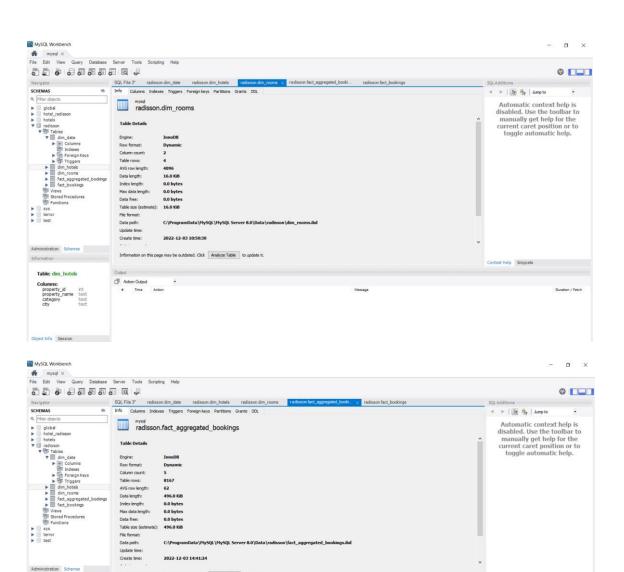
Performance Testing

Amount of Data Rendered to DB

- The amount of data that is rendered to a database depends on the size of the dataset and the capacity of the database to store and retrieve data.
- Open the MySQL Workbench, go to the database then click to expand the tables, select the table and click on (i) button to get the information related to table such as column count, table rows etc.







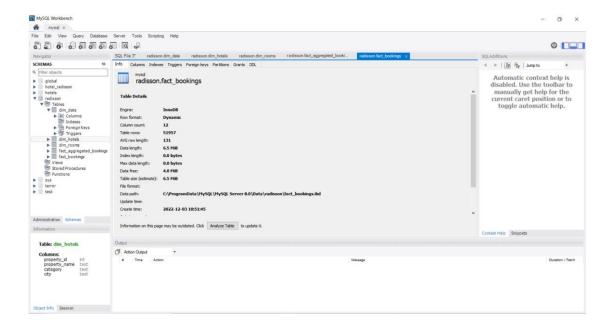
Context Help Snippets

2022-12-03 14:41:24 Information on this page may be outdated. Click Analyze Table to update it.

Action Output
Time Action

Table: dim_hotels

Object Info Session



Utilization of Data Filters





No of Calculation Fields

Tables

Measure Names % Occupancy change co... % Occupancy Change p... =# =# % rating Change % Revenue Change Color % Revenue Change per ... % Revenue Change per ... =# Cancelled booking no. =# Cancelled bookings % # Current Month Revenue # Occupancy - Current Mo... =# Occupancy % -# Occupancy Change per ... *# Occupancy Previous Mo... # Previous Month Revenue -Abc Rating -Abc rating change color *# Rating Current Month *# Ratings Change =# ratings given replace val... *# ratings given replace val... # Ratings Previous Month -# ratings round # Revenue -# Revenue Change per Mo... *# Total Occupancy

No of Visualizations/ Graphs

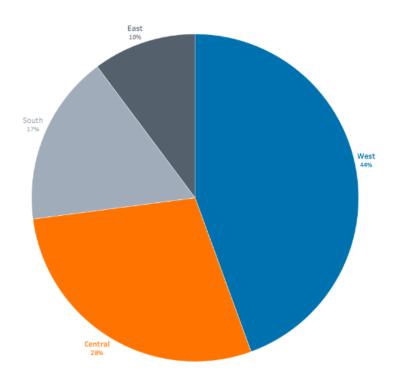
- 1. Revenue split by city
- 2. Occupancy split by city
- 3. Occupancy by day type
- 4. Revenue by room class
- 5. Booking % by platform
- 6. Property By key metrics
- 7. Revenue contribution % by category
- 8. Successful Bookings by city
- 9. Successful Booking by date wise
- Total Revenue for the hotels
- 11. Total Successful Bookings

Occupancy in % Key types of charts

The table below contains a brief description for the most common types of Charts. As the Reference Library expands in depth and breadth more types will be added and each will have

a page dedicated to showing practical examples and explaining when to use them.

% of Total Sales per Market for Small Market Sizes



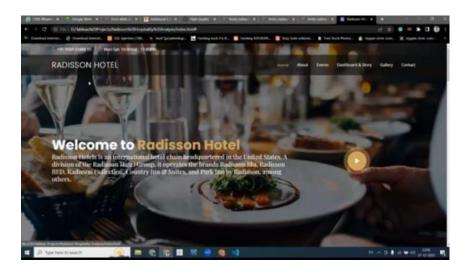
his pie chart shows the percentage of total sales per regional market.

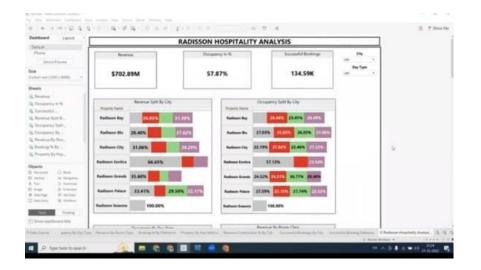
- No more than five slices were used.
- The largest slice starts from the top of the circle.
- Slices are colored with distinct, vivid colors. Consider using colors friendly

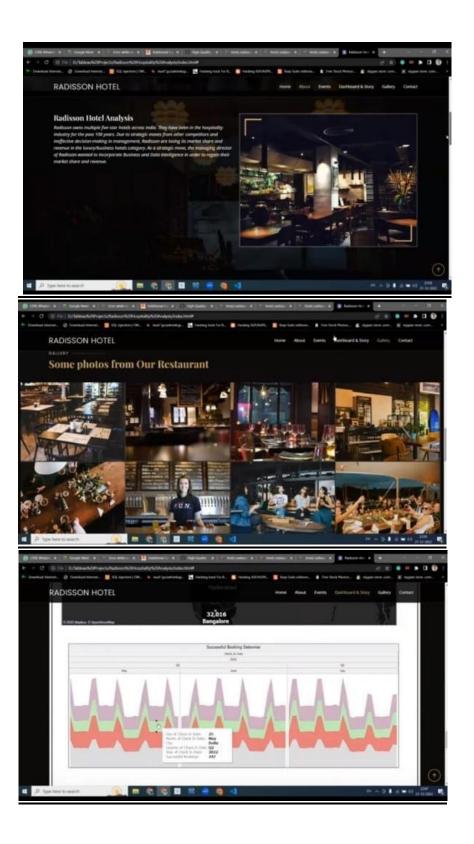


Web integration

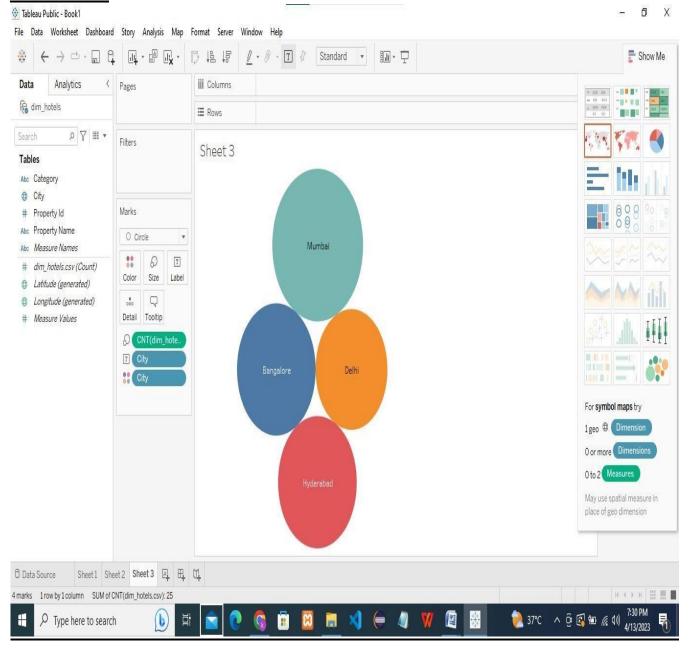
Publishing helps us to track and monitor key performance metrics, to communicate results and progress. help a publisher stay informed, make better decisions, and communicate their performance to others

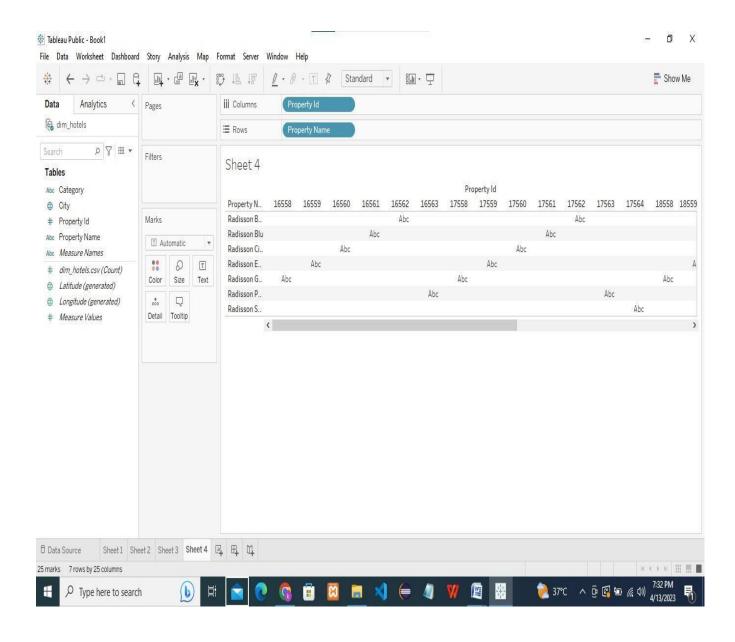


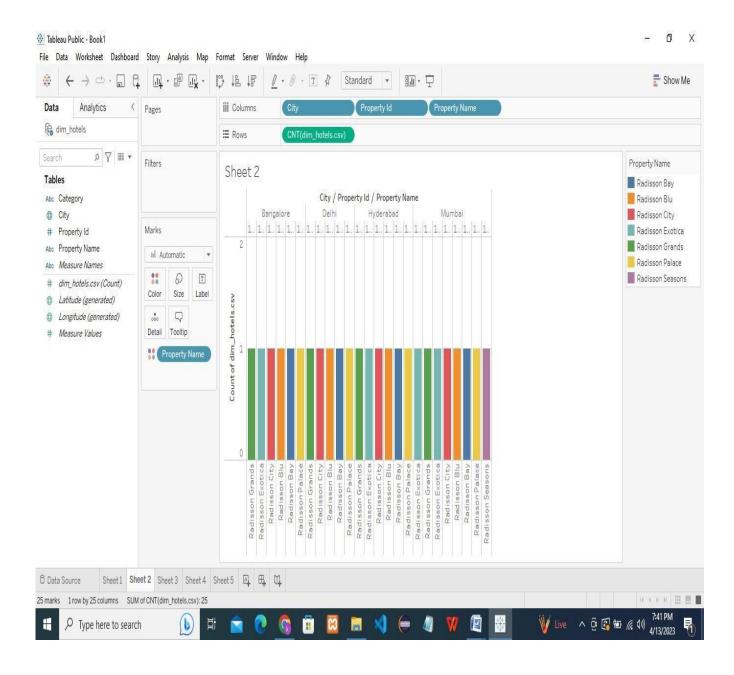


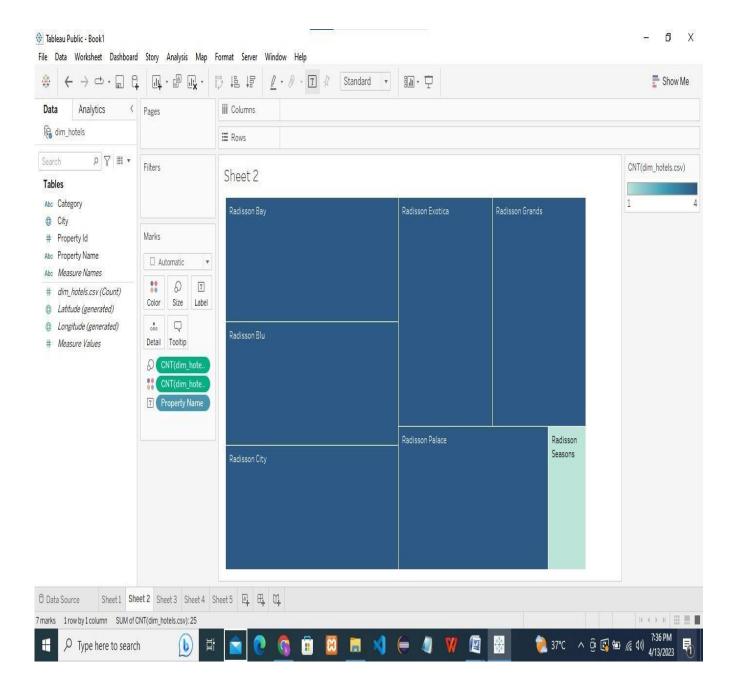


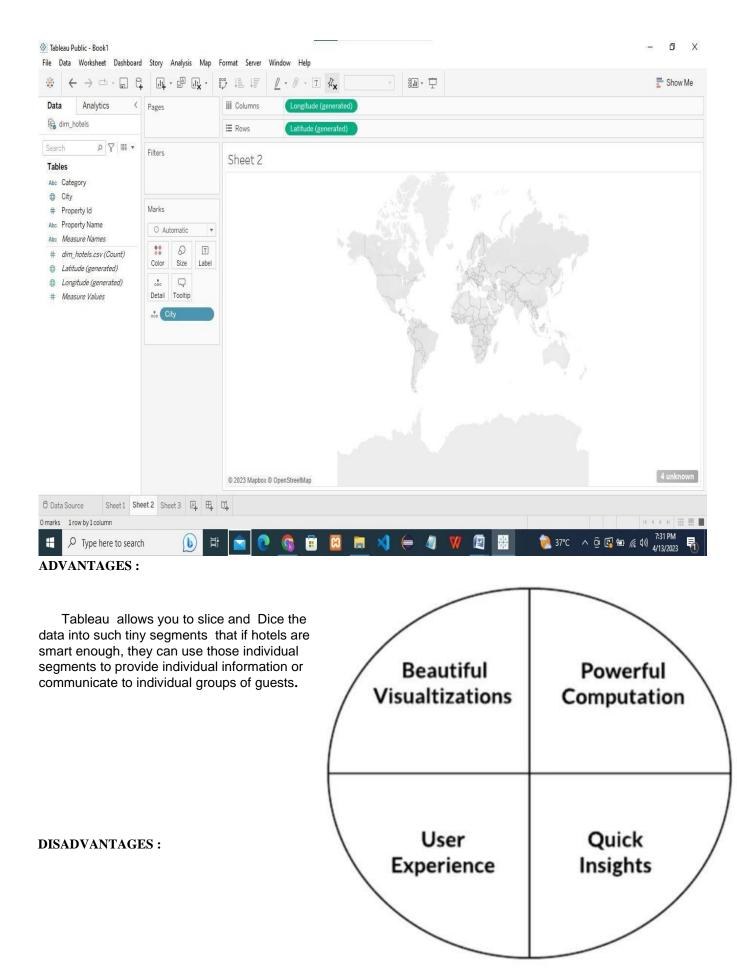
RESULTS:



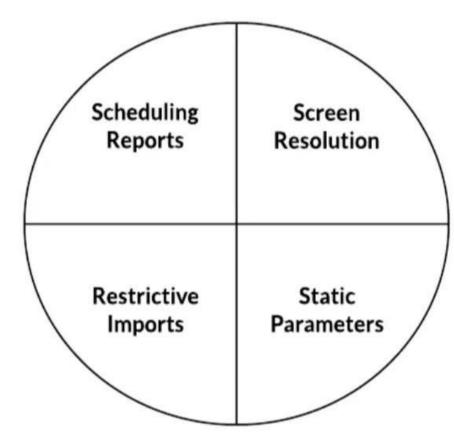








SO, Now that you know all the Great aspects of the tool, lets dive into Some of the more challenging aspects of it. The section below is going to highlight some of the pain points that's many tableau users express.



APPLICATION:

TABLEAU: WHAT HAPPENS TO THE DATA YOU GET FROM

HOTELS?

PETER: We take data from hotels, we re-engineer that data, and then we push it into other vendors applications that are then using it back with their hotel clients.

CONCLUSION:

By this project we learn a knowledge about tableau in hotel management system and also make a team work to collapse with others to get more information with beautiful conversation beyond our team mates.

FUTURE SCOPE:

A look at the future of data Visualization.

Future trends will have machine

Learning and AL utilize their natural

Language processing capabilities to generate Insights.AR and VR will provide visual controllers making it possible for the viewers to explore data on a new level.

"I think Tableau is one of those pieces of technology that comes along and really has transformational effects on certain industries and businesses. And I believe that Tableau is going to revolutionize data for hotels."

— PETER JOHNSON, CEO