PLUGGING INTO THE FUTURE : AN EXPLORATION OF ELECTRICITY CONSUMPTION PATTERNS

A PROJECT REPORT

Submitted by

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CONTENT

CHAPTER - 1

INTRODUCTION

1.INTRODUCTION :

India is the world's third-largest producer and third-largest consumer of electricity. The national electric grid in India has an installed capacity of 370.106 GW as of 31 March 2020. Renewable power plants, which also include large hydroelectric plants, constitute 35.86% of India's total installed capacity. During the fiscal year (FY) 2019–20, the total electricity generation in the country was 1,598 TWh, of which 1,383.5 TWh generated by utilities. The gross electricity consumption per capita in FY2019 was 1,208 kWh.

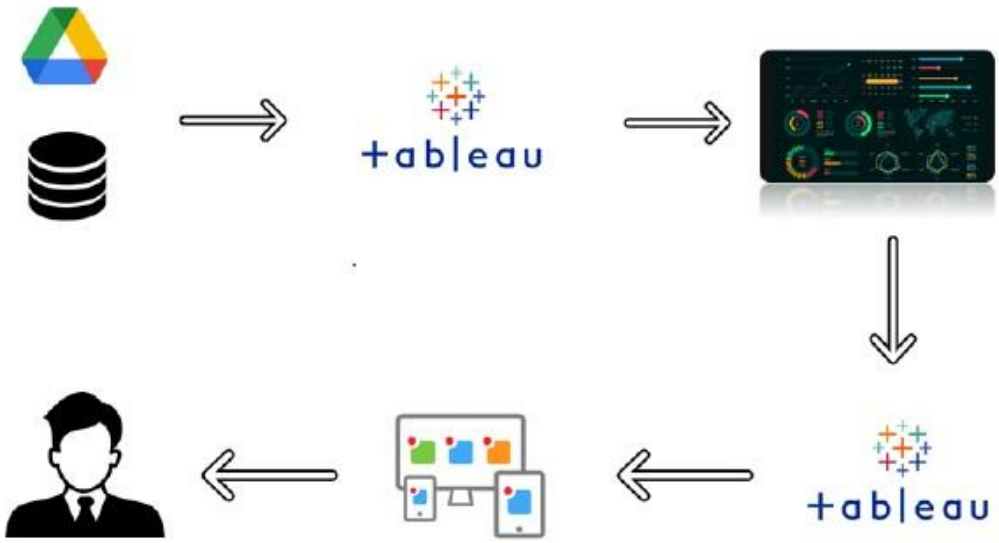
In 2015-16, electric energy consumption in agriculture was recorded as being the highest (17.89%) worldwide. The per capita electricity consumption is low compared to most other countries despite India having a low electricity tariff.

In light of the recent COVID-19 situation, when everyone has been under lockdown for the months of March to June the impacts of the lockdown on economic activities have been faced by every sector in a positive or a negative way.The dataset is exhaustive in its demonstration of energy consumption state wise.

Analysing Electricity Consumption in India from Jan 2019 till 5th December 2020. This dataset contains a record of Electricity consumption in each states of India, here we are going to analyse State wise , Region wise and Overall Electricity consumption in India.

Technical Architecture:

Management policies and practices. The project aims to provide insights into the banks' financial performance and risk management practices, and may include recommendations for how the banks can improve their performance going forward.



Project Flow

- To accomplish this, we have to complete all the activities listed below,
- Define Problem / Problem Understanding
- Specify the business problem
- Business requirements
- Literature Survey
- Social or Business Impact.

Data Collection & Extraction from Database

- Collect the dataset,
- Storing Data in DB
- Perform SQL Operations
- Connect DB with Tableau
- Data Preparation
- Prepare the Data for Visualization
- Data Visualizations
- No of Unique Visualizations
- Dashboard
- Responsive and Design of Dashboard
- Story
- No of Scenes of Story
- Performance Testing
- Amount of Data Rendered to DB ‘
- Utilization of Data Filters
- No of Calculation Fields

- No of Visualizations/ Graphs
- Web Integration
- Dashboard and Story embed with UI With Flask
- Project Demonstration & Documentation
- Record explanation Video for project end to end solution
- Project Documentation-Step by step project development procedure

CHAPTER - 2

PROBLEM DEFINITION &DESIGN THINKING

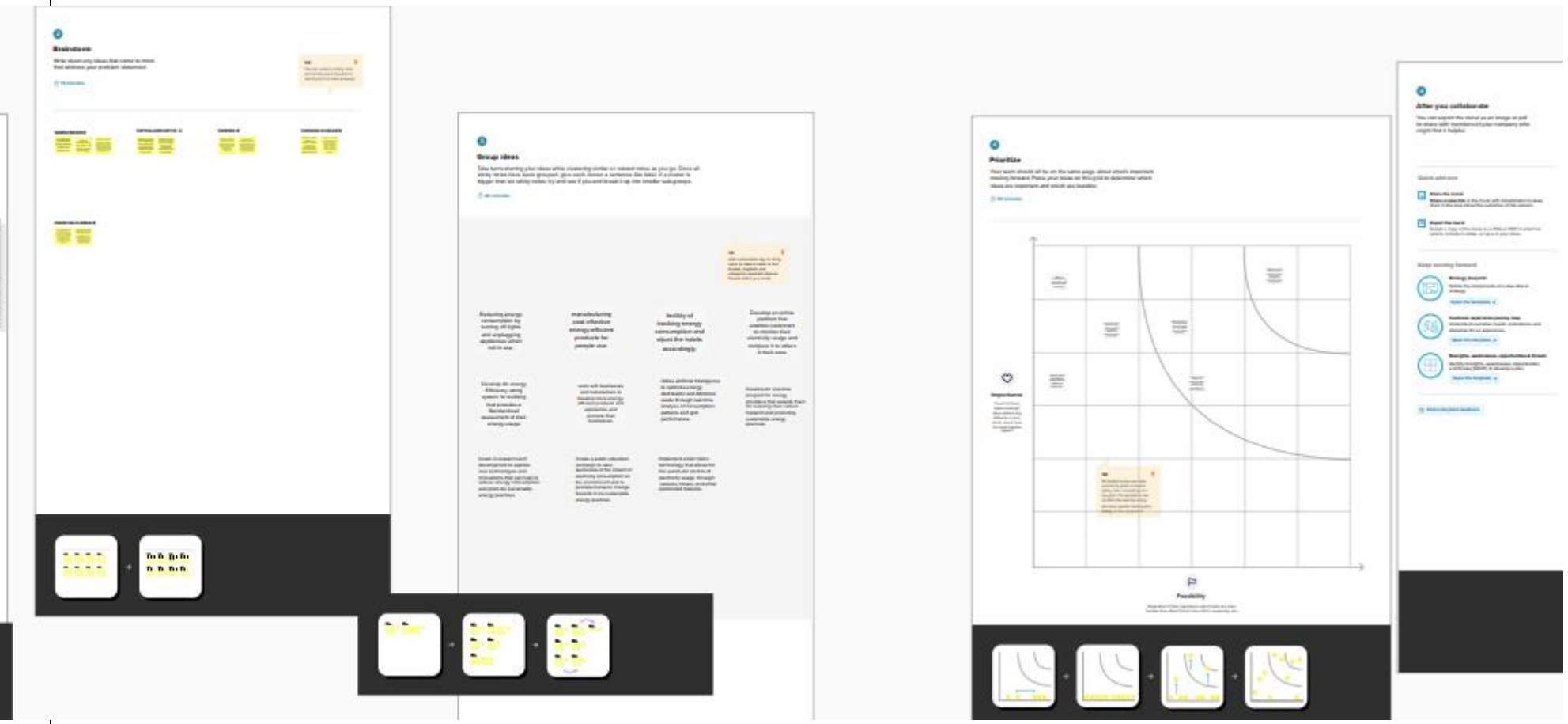
2.1. EMPATHY MAP :

- An Empathy Map is a tool used to help understand and empathize with the perspective of a particular user or customer. It is a visual representation of the user's attitudes, behaviors, emotions, and experiences that can be used to gain a deeper understanding of their needs and motivations. The Empathy Map is typically divided into **four quadrants**: **"Says," "Thinks," "Does,"** and **"Feels."** In each quadrant, the user's thoughts, feelings, actions, and spoken words are recorded to help build a more complete understanding of their perspective. The Empathy Map is often used in design thinking and user experience research to help inform the design of products or services that better meet the needs of the user.

2.2. IDEATION & BRAINSTORMING MAP :

- Ideation and Brainstorming Maps are tools used to generate and organize ideas in a structured and visual way. They are commonly used in creative problem solving, innovation, and product design to generate a large number of ideas and then organize them into meaningful categories.

- Ideation and Brainstorming Maps typically start with a central theme or problem statement in the center of the map. From there, branches are drawn out to represent different categories or subtopics related to the central theme. These categories can then be further expanded with additional branches to represent specific ideas.
- The purpose of an Ideation and Brainstorming Map is to encourage free thinking and generate as many ideas as possible. It allows participants to visually see how ideas are connected and to build upon each other's ideas. The map can then be used to prioritize and refine the most promising ideas. There are many variations of Ideation and Brainstorming Maps, including Mind Maps, Spider Maps, and Fishbone Diagrams.


Brainstorm
Group ideas
Prioritize
After you collaborate
Importance
Feasibility

CHAPTER – 3

DATA COLLECTION & EXTRACTION FROM DATABASE IN MYSQL

Use the MYSQL client or any other database management tool to connect to the MYSQL server where your database is hosted. You'll need to provide the hostname, port number, username, and password.

Select the database:

Once you're connected to the MYSQL server, use the "USE" statement to select the database you want to work with. For example, if your database is called "electricity consumption", you can use the command "USE electricity consumption".

Identify the data you want to collect:

Depending on your research question, you'll need to identify the specific data that you want to collect from the database. This may include information such as electricity consumption values, time stamps, location data, and so on.
Write a query to extract the data:

Using SQL, you can write a query to extract the data from the database. For example, if you want to extract all the electricity consumption data for a particular region, you can use the following query

```
SELECT * FROM electricity consumption WHERE region='Region X';
```

This query will select all the rows from the "electricity consumption" table where the "region" column is equal to "Region X".

Save the data to a file:

Once you've extracted the data using your query, you can save it to a file for further analysis. Depending on your needs, you may want to save the data in a specific format such as CSV, JSON, or XML.

By following these steps, you can collect and extract data from a MYSQL database for your research project on electricity consumption patterns.

CHAPTER-4

INTRODUCTION TO TABLEAU

4.1.: What is Tableau?

- Tableau is a ground breaking data visualization software created by Tableau Software.
- Tableau connects easily and nearly any data source.
- Tableau allows for instantaneous insight by transforming data into interactive data visualizations called dashboards

4.2.:Features of Tableau :

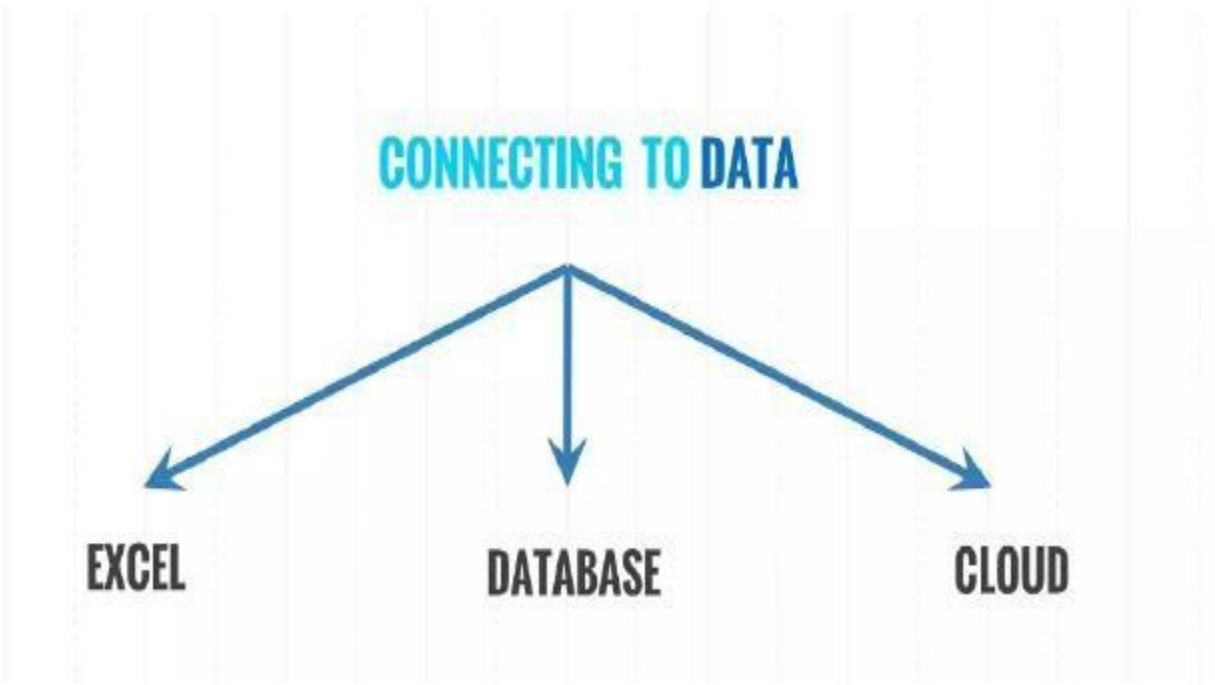
- Informative Dashboards
- Supports numerous Data Sources
- Provides Great Security
- Easy Collaboration & Sharing
- Provides Mobile Version
- Trend lines and Predictive analysis
- Availability of Geo Maps

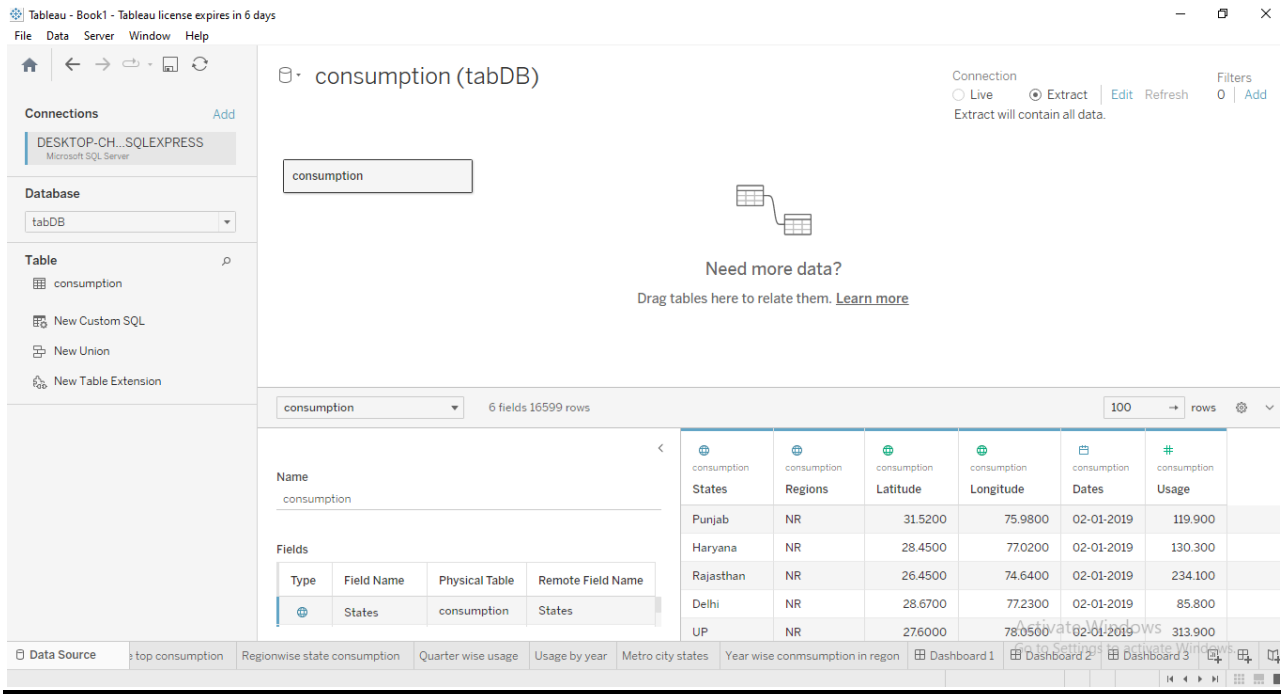
4.3.: Products of Tableau :

- Tableau Public

- Tableau Server
- Tableau Desktop

4.4.:Connecting Tableau with Data Sources :





4.5:Working with Flat files :

- In the To a File section you can see the list of file extensions.

- In the below you can see more option if the list of your file extension is not there.

4.5.:Working with the Spreadsheets :

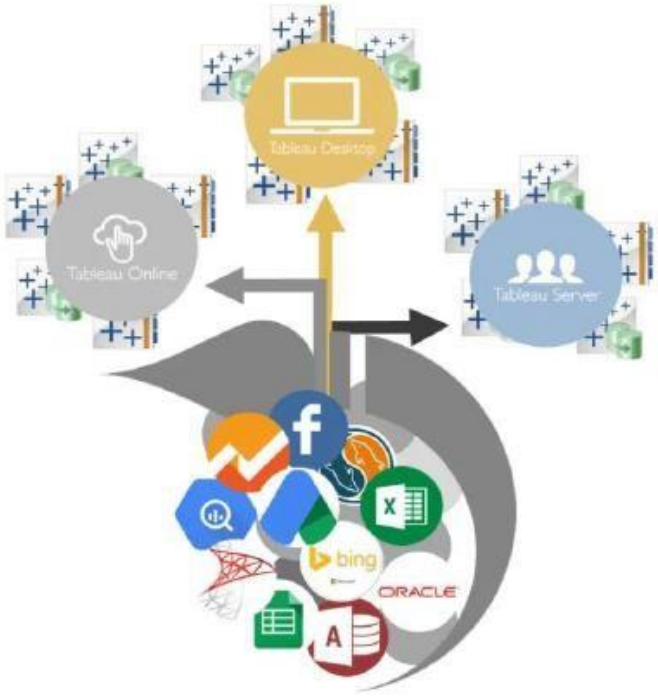
- Tableau enables us to connect with spreadsheets to import the data.

CHAPTER - 5

CONNECTING DATABASEAND TABLEAU

5.1.: Connecting Database and Tableau :

- Before you begin your analysis, you must connect to your data and then set up the data source.
- Before you can build a view and analyze your data, you must first connect Tableau to your data.
- Tableau supports connecting to a wide variety of data, stored in a variety of places.
- For example, your data might be stored on your computer in a spreadsheet or a text file, or in a big data, relational, or database on a server in your enterprise.

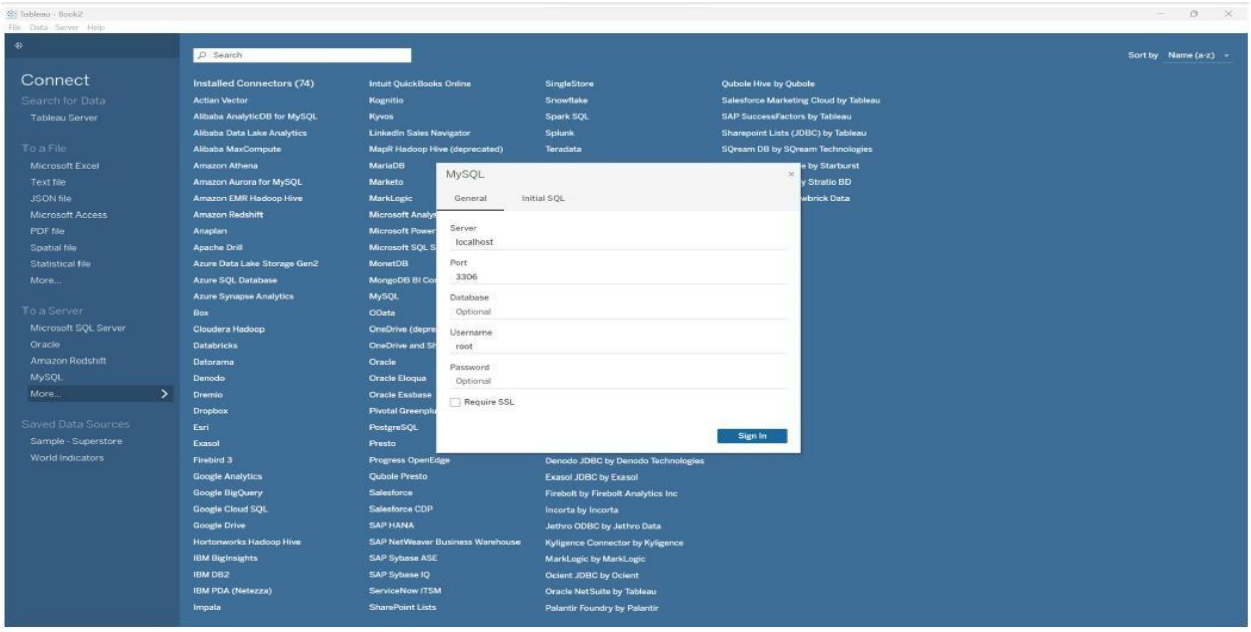


5.2.: List of Data Sources Supported by Tableau Desktop :

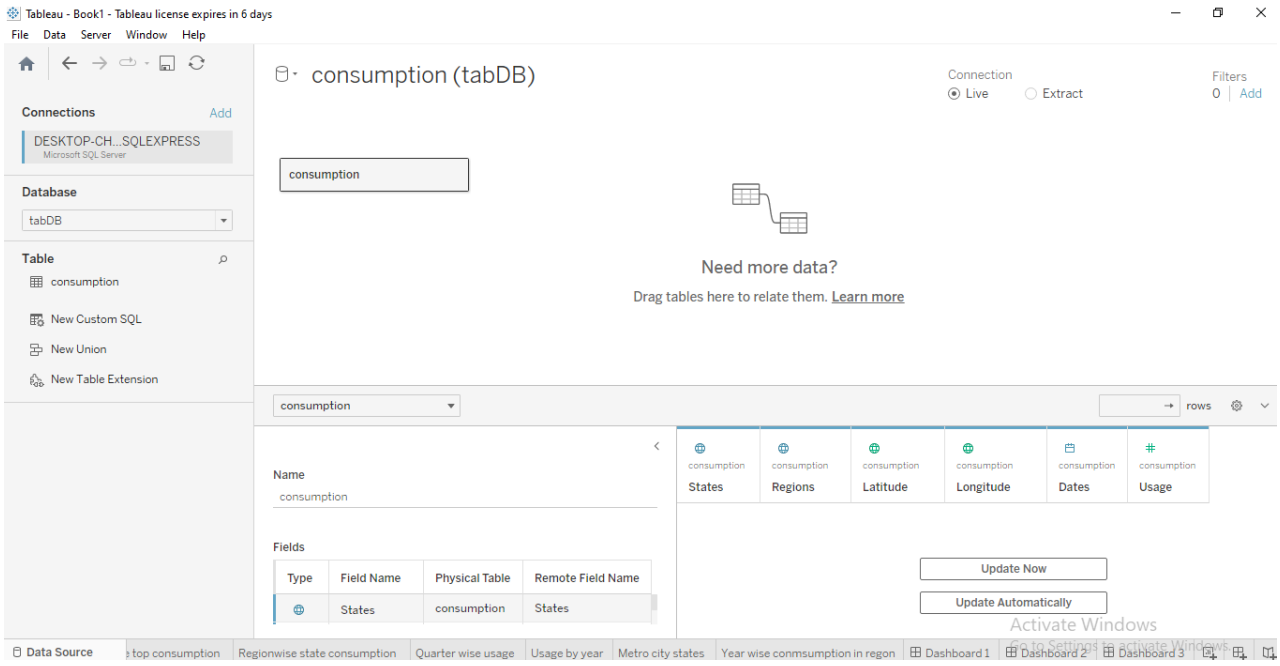
- When you launch Tableau Desktop, the data connectors that are available to you are listed on the Connect pane, which is the left

pane on the Start page.

- Name of the server that hosts the database you want to connect to.
- Username and password
- Are you connecting to an SSL server?
- (Optional) Initial SQL statement to run every time Tableau connects. If the connection is success you can see this page.



Now you can go to sheets and start working on the dataset to create Visualizations.



CHAPTER – 6

DATA VISUALIZATION

6.1.: What is Data Visualization…??

- Data visualization is the graphical representation of information and data. By using visual elements like chart, graph and maps.
- Data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

Advantages :

- Easily sharing information.
- Interactively explore opportunities.
- Visualize patterns and relationships.

6.2 : Types of Visualization in Tableau :

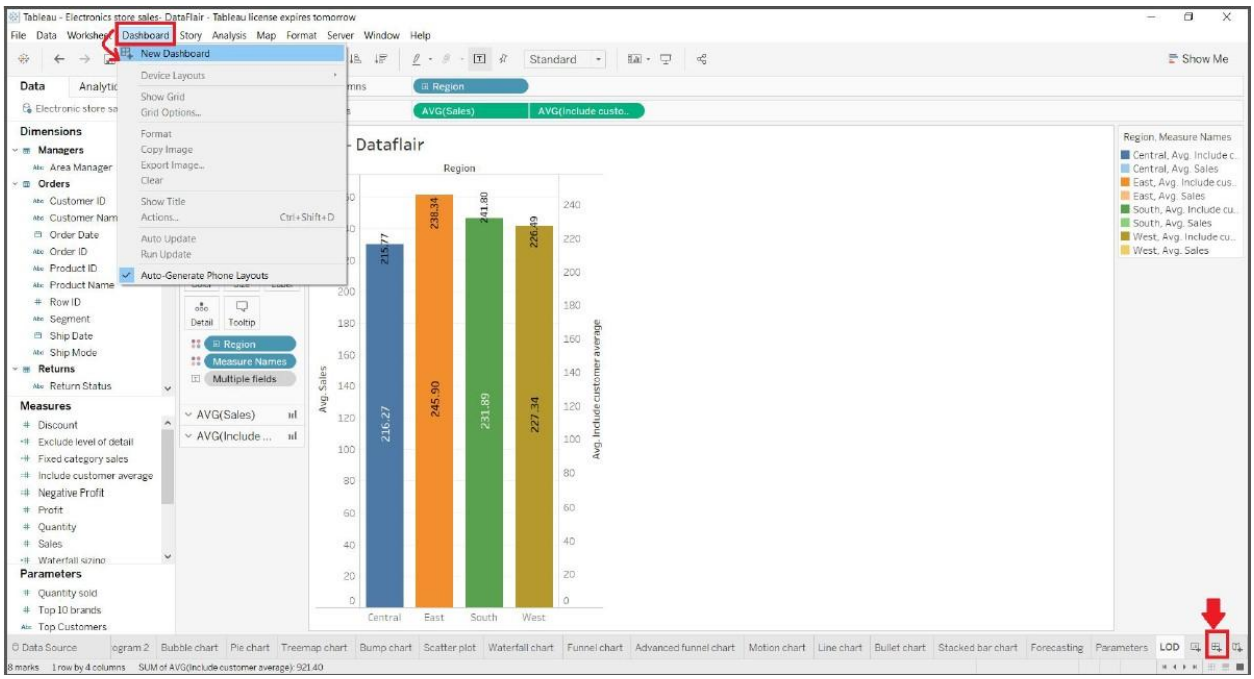
Histograms	Box plot
Motion	Pie
Bar	Line
Bubble	Bullet
Scatter	Tree

CHAPTER - 7

DASHBOARD AND STORIES

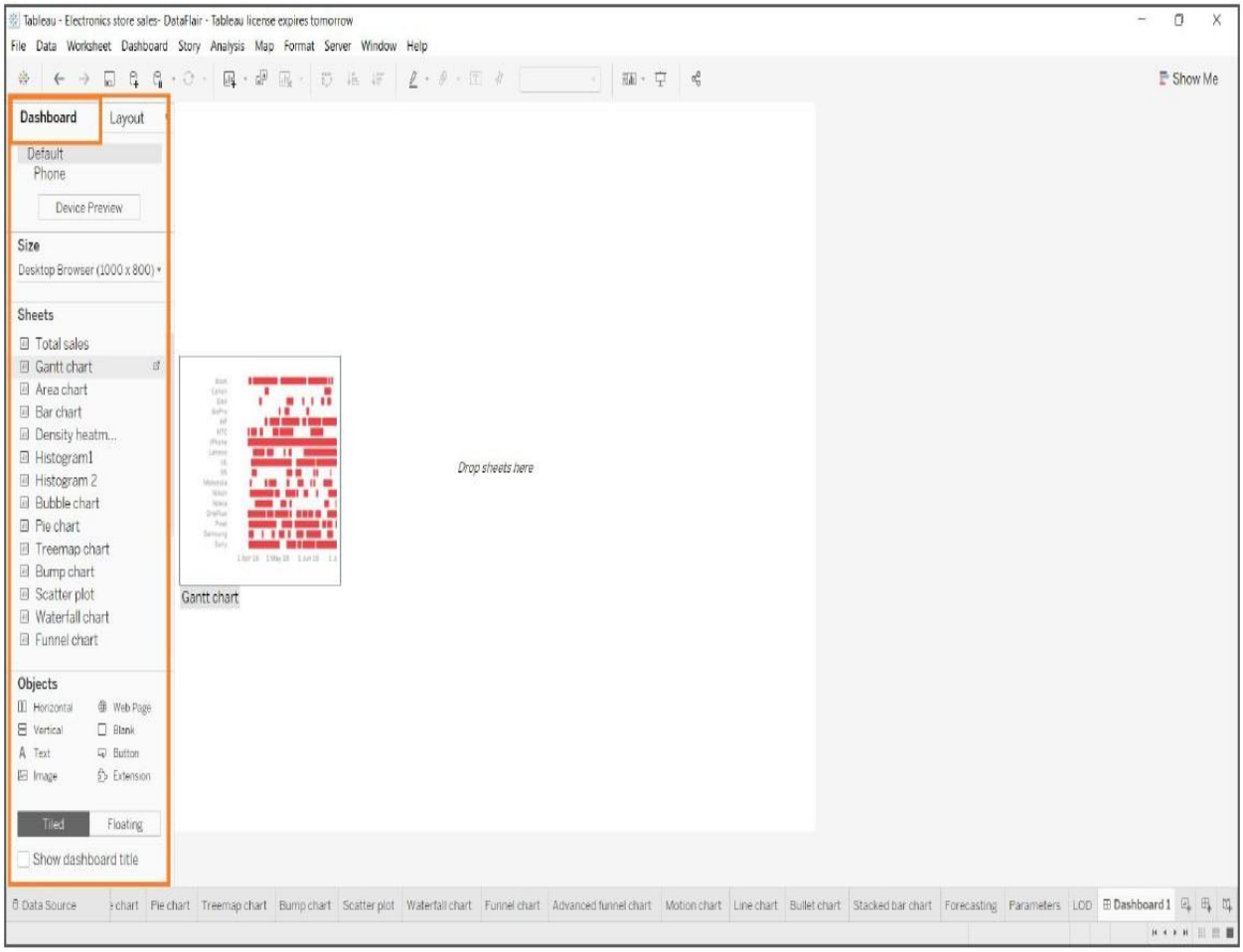
Creating a Dashboard in Tableau :

- A dashboard is a collection of different kinds of visualizations or views that we create on Tableau We can bring together different elements of multiple worksheets and put them on a single dashboard.
- The dashboard option enables us to import and add charts and graphs from worksheets to create a dashboard. On a dashboard, we can place relevant charts and graphs in one view and analyze them for better insights.



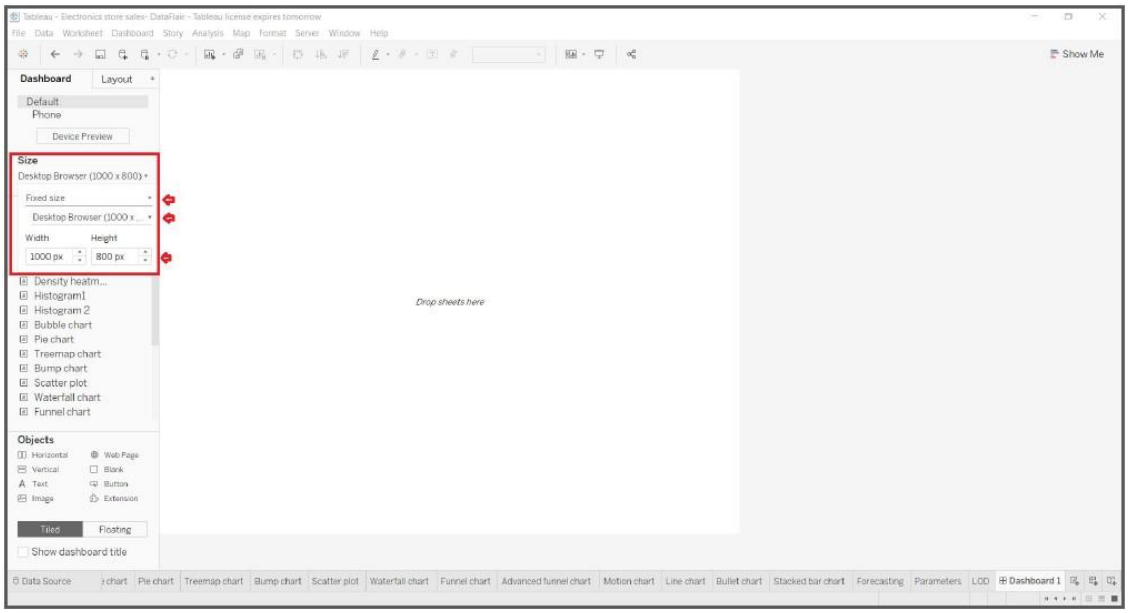
Dashboard pane :

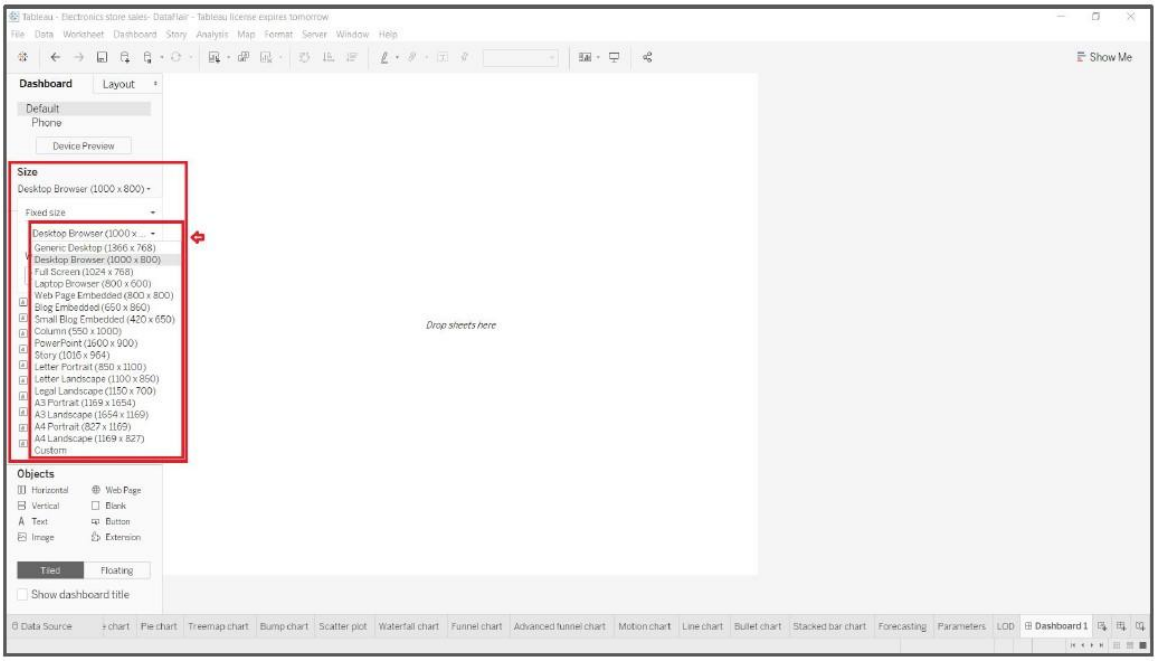
- In the window where we can create our dashboard, we get a lot of tabs and options related to dashboarding. On the left, we have a Dashboard pane which shows the dashboard size, list of available sheets in a workbook, objects, etc.



- From the Dashboard tab, we can set the size of our dashboard. We can enter custom dimensions like the width and height of the dashboard as per our requirements.

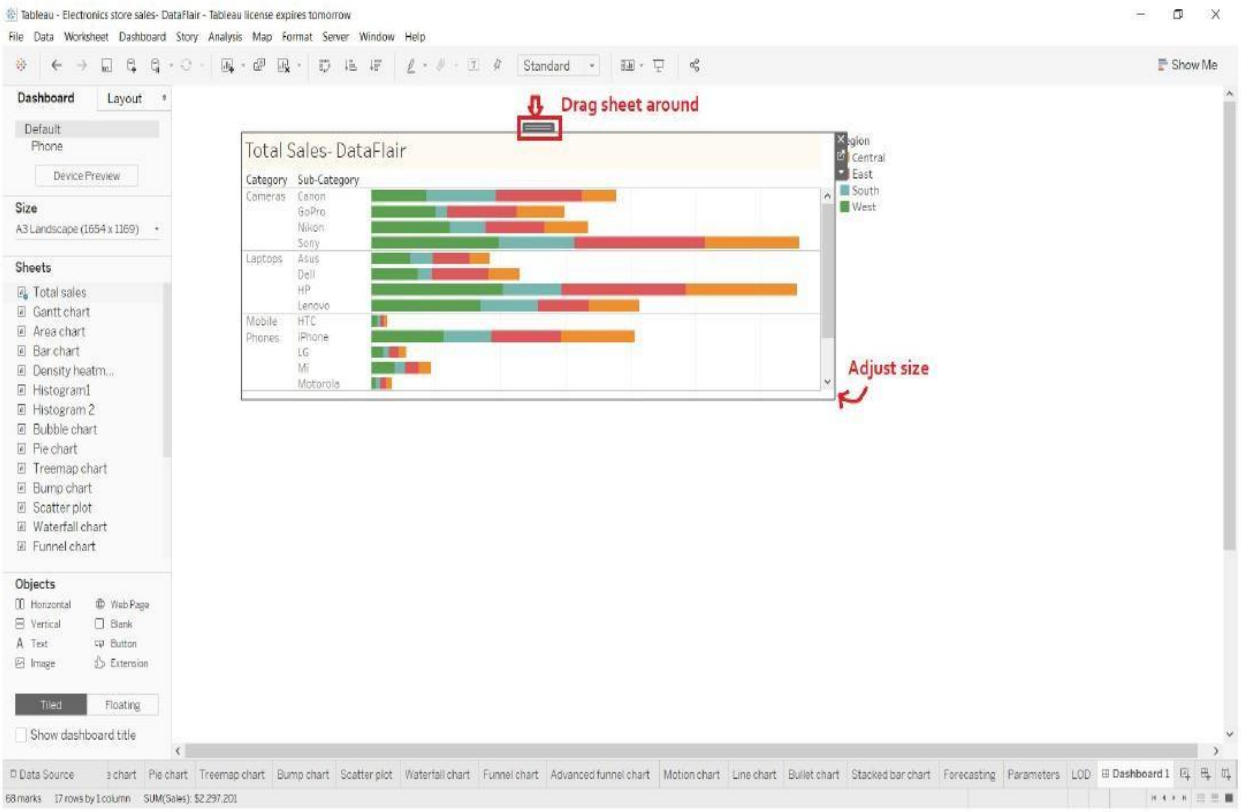
7





Adding Sheets :

- Have a look at the picture below to see how you can drag a sheet or visual around on the dashboard and adjust its size.



Adding More sheets in dashboard :

- In a similar way, we can add as many sheets as we require and arrange them on the dashboard properly.

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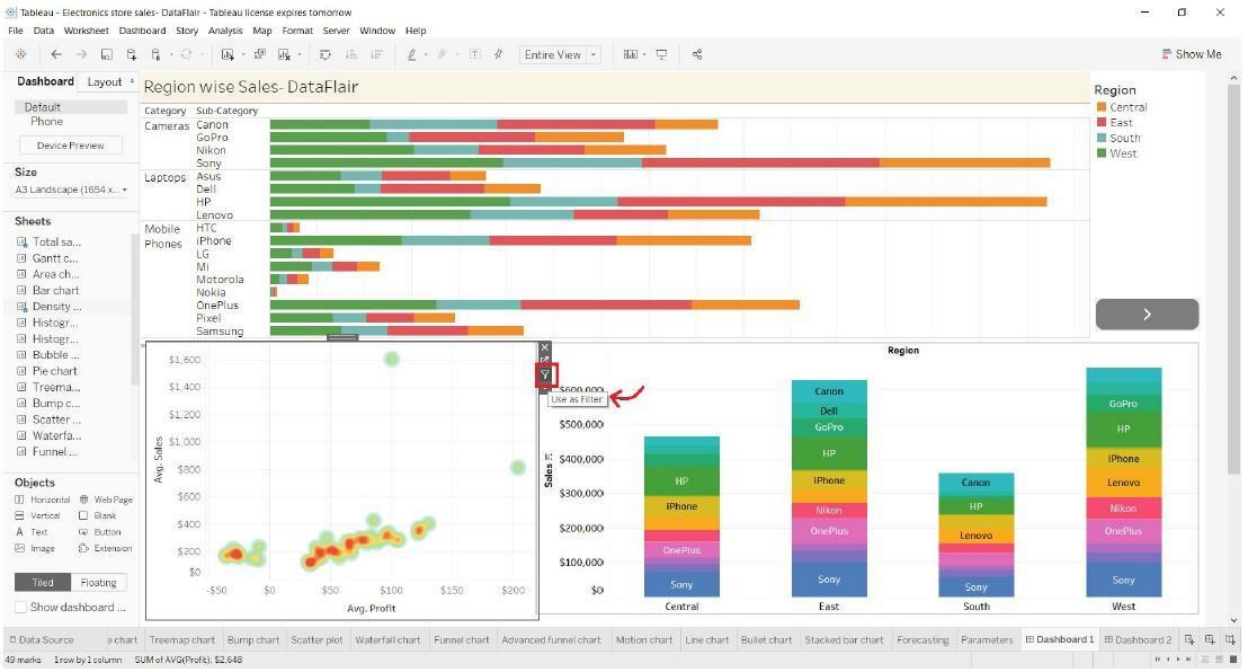


Filters in dashboard :

- Also, you can apply the filter or selections on one graph and treat it like a filter for all the other visuals on the dashboard.
- To add a filter to a dashboard in Tableau, select Use as Filter option given on the right of every visual.

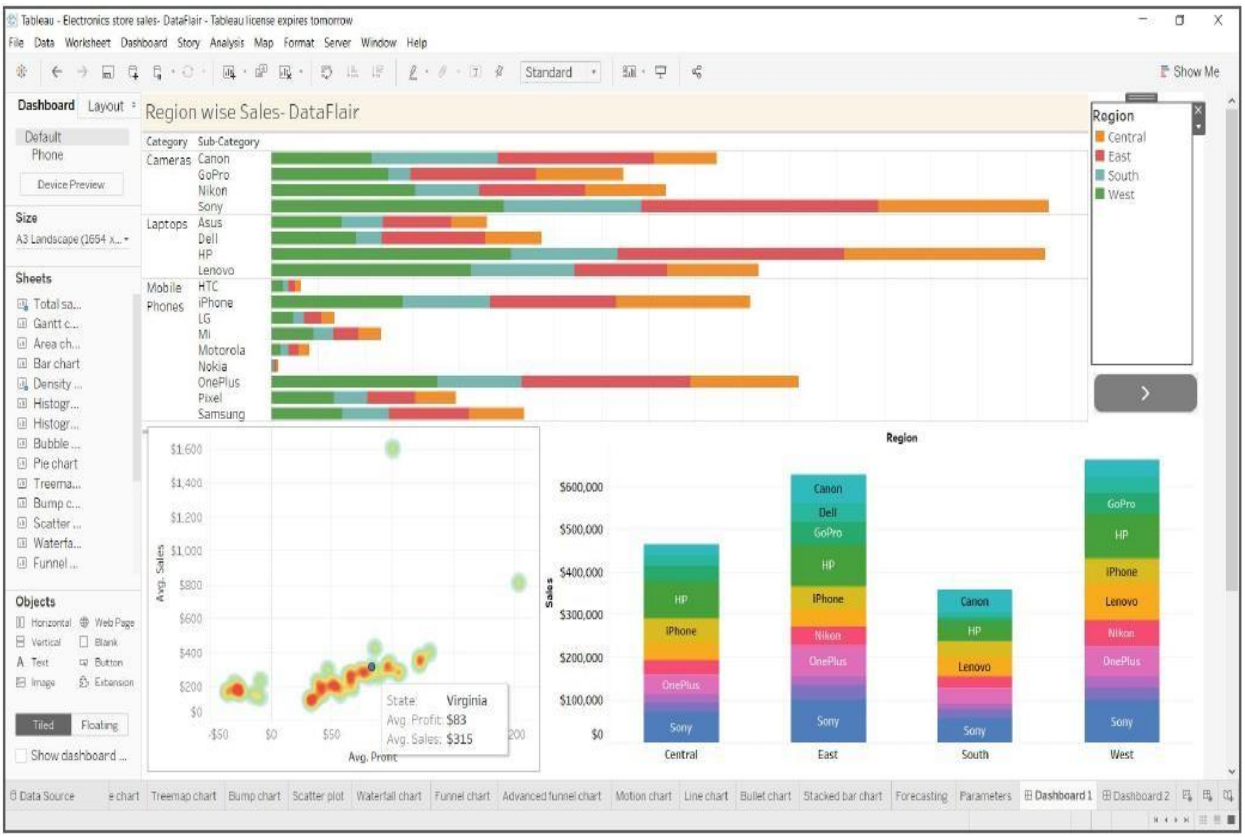
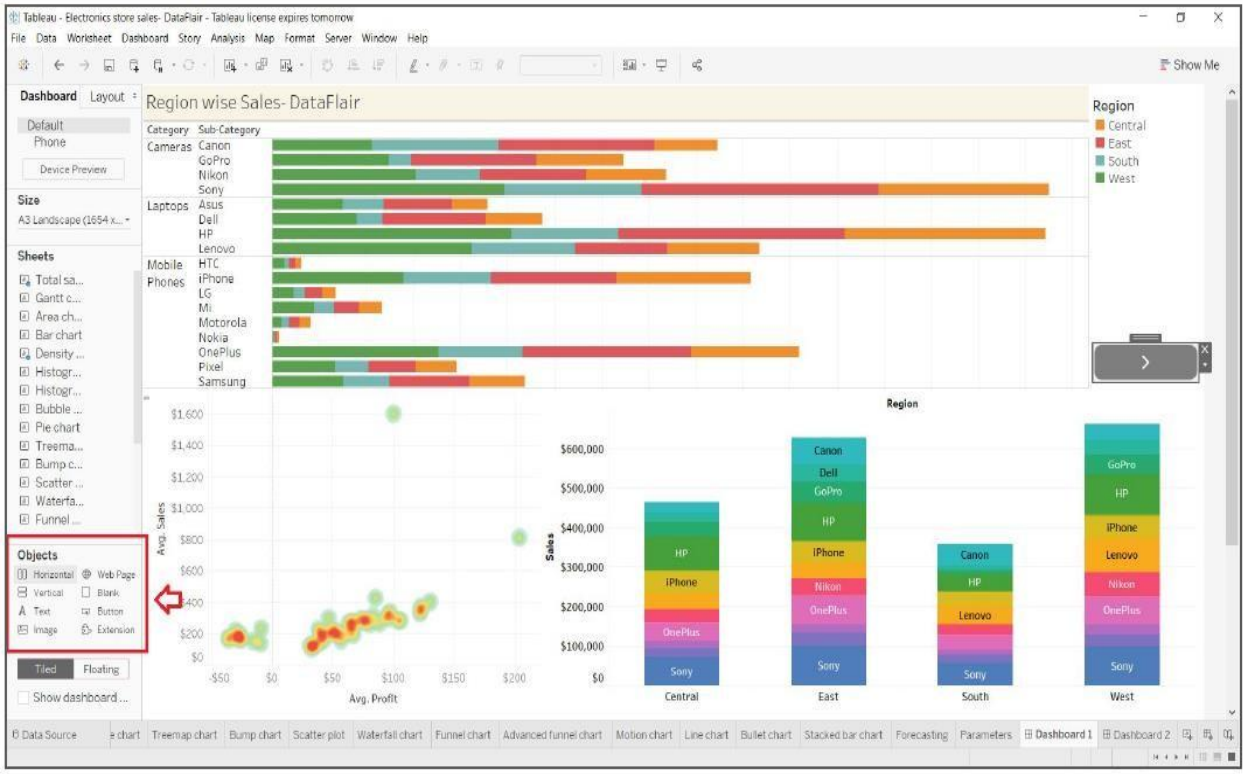


Tableau - Electronics store sales- DataFlair - Tableau license expires tomorrow
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Region wise Sales- DataFlair
Region
Central
East
South
West
Category Sub-Category
Cameras Canon GoPro Nikon Sony
Laptops Asus Dell HP Lenovo
Mobile Phones HTC iPhone LG Mi Motorola Nokia OnePlus Pixel Samsung
State: Virginia
Avg. Profit: $83
Avg. Sales: $315
Avg. Sales
Avg. Profit
Region
Sales
Central
East
South
West
Dashboard 1
Dashboard 2

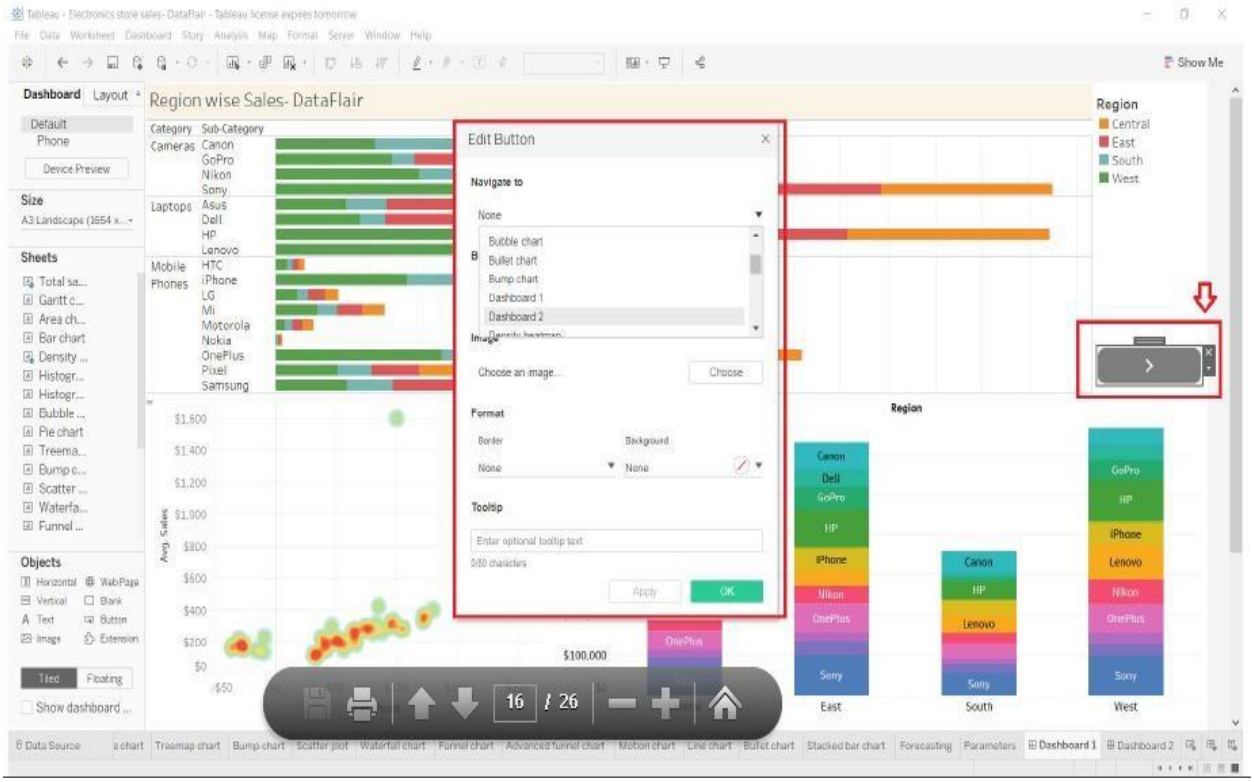
Adding objects :

- Another set of tools that we get to make our dashboard more interactive and dynamic is in the Objects section. We can add a wide variety of objects such as a web page, button, text box, extension, etc.



- From the objects pane, we can add a button and also select the action of that button, that is, what that button should do when you click on it. Select the Edit Button option to explore the options you can select from for a button object.

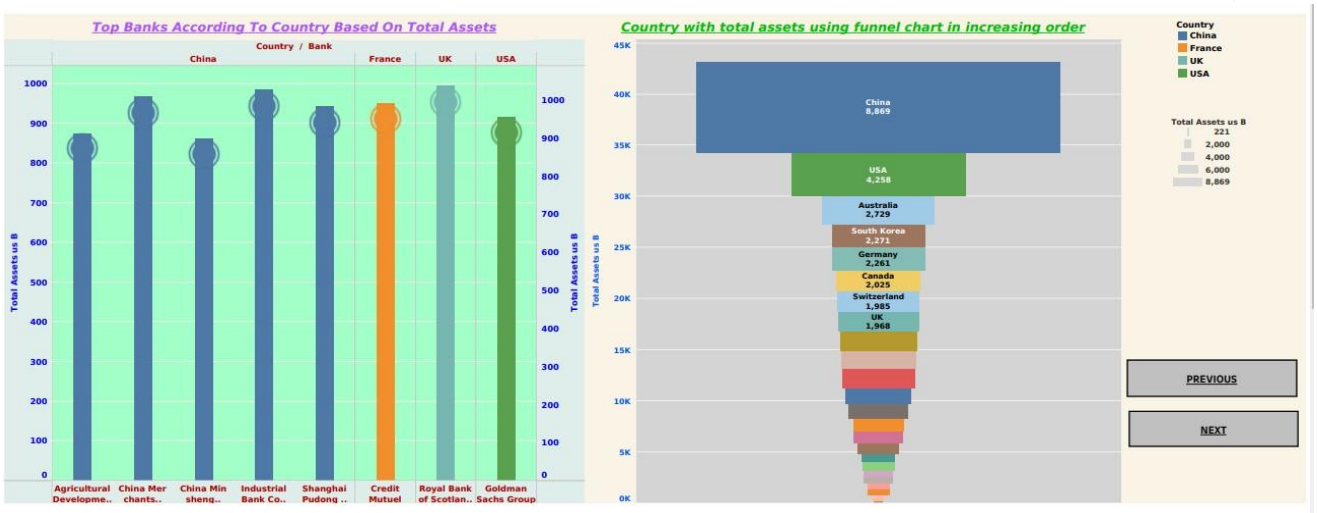
7



Final Dashboard :

- Now, we move towards making a final dashboard in Tableau with all its elements in place


Top Banks According To Total Assets
UBS Group AG
Westpac Banking Corp
China Everbright Bank
European Investment Bank
Credit Mutuel
Industrial Bank Co. Ltd
National Australia Bank
China Minsheng Banking Corp
Bank of Nova Scotia
Credit Suisse Group
Shanghai Pudong Development Bank
Agricultural Development Bank of China
BBVA
Australia & New Zealand Banking Group
China CITIC Bank Corp
Royal Bank of Scotland Group
Commonwealth Bank of Australia
China Merchants Bank
Goldman Sachs Group
Nordea
DZ Bank AG
Standard Chartered Plc
Intesa Sanpaolo
Morgan Stanley
Rabobank Group
Top banks according rank and assets
Total Assets us B
Bank
Agricultural Development Bank of China
China Merchants Bank
China Minsheng Banking Corp
Credit Mutuel
Goldman Sachs Group
Industrial Bank Co. Ltd
Intesa Sanpaolo
Royal Bank of Scotland Group
Shanghai Pudong Development Bank
UBS Group AG
873 873
966 966
859 859
950 950
916 916
985 985
954 954
995 995
942 942
937 937
NEXT


Top Banks According To Country Based On Total Assets
Country / Bank
China
France
UK
USA
Total Assets us B
Agricultural Developme..
China Mer chants..
China Min sheng..
Industrial Bank Co..
Shanghai Pudong ..
Credit Mutuel
Royal Bank of Scotlan..
Goldman Sachs Group
Country with total assets using funnel chart in increasing order
China 8,869
USA 4,258
Australia 2,729
South Korea 2,271
Germany 2,261
Canada 2,025
Switzerland 1,985
UK 1,968
Country
China
France
UK
USA
Total Assets us B
221
2,000
4,000
6,000
8,869
PREVIOUS
NEXT

7

What are Tableau Stories?

- Well, it is a sequence of different charts that combine to provide a cohesive plot to its viewers. In essence, all these charts tell a story about the data which allows the viewers to form their conclusion. The story in Tableau contains story points, where each story point is either a worksheet or a dashboard.
- When you share a story —for example, by publishing a workbook to Tableau Public, Tableau Server, or Tableau Cloud— users can interact with the story to reveal new findings or ask new questions of the data.

A. Options for adding a new story point: Choose **Blank** to add a new point or **Duplicate** to use the current story point as the starting place for your next point.

B. The Story pane: Use this pane to drag dashboards, sheets, and text descriptions to your story sheet. This is also where you set the size of your story and display or hide the title.

C. The Layout pane: This is where you choose your navigator style and display or hide the forward and back arrows.

D. The Story menu: Use this menu in Tableau Desktop to format the story or copy or export the current story point as an image. You can also clear the entire story here or show or hide the navigator and story title.

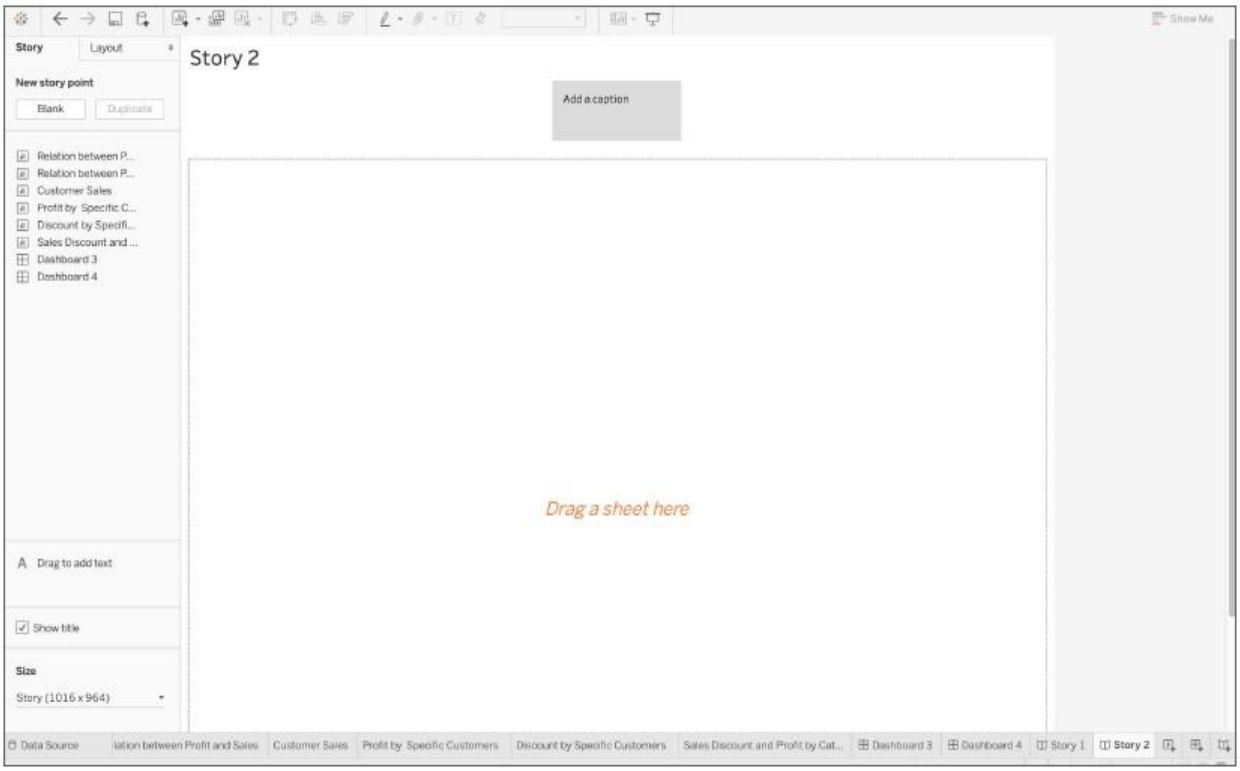
E. The Story toolbar: This toolbar appears when you mouse-over the navigator area. Use it to revert changes, apply updates to a story point, delete a story point, or create a new story point out of the current, customized one.

F. The navigator: The navigator allows you to edit and organize your story points. It's also how your audience will step through your story. To change the style of the navigator, use the Layout pane.

How to create a Story? .

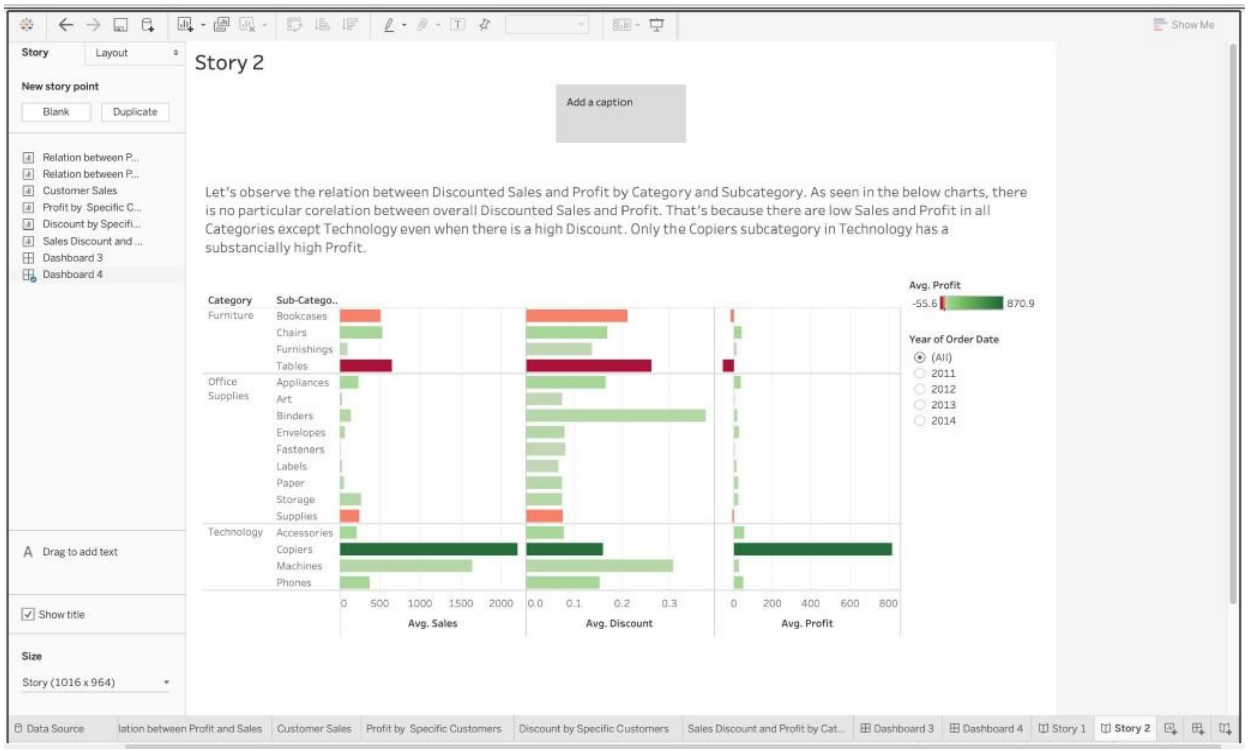
Step 1:

Click on the new Story tab to create a new story. You can then add various sheets and dashboards to create a story point.



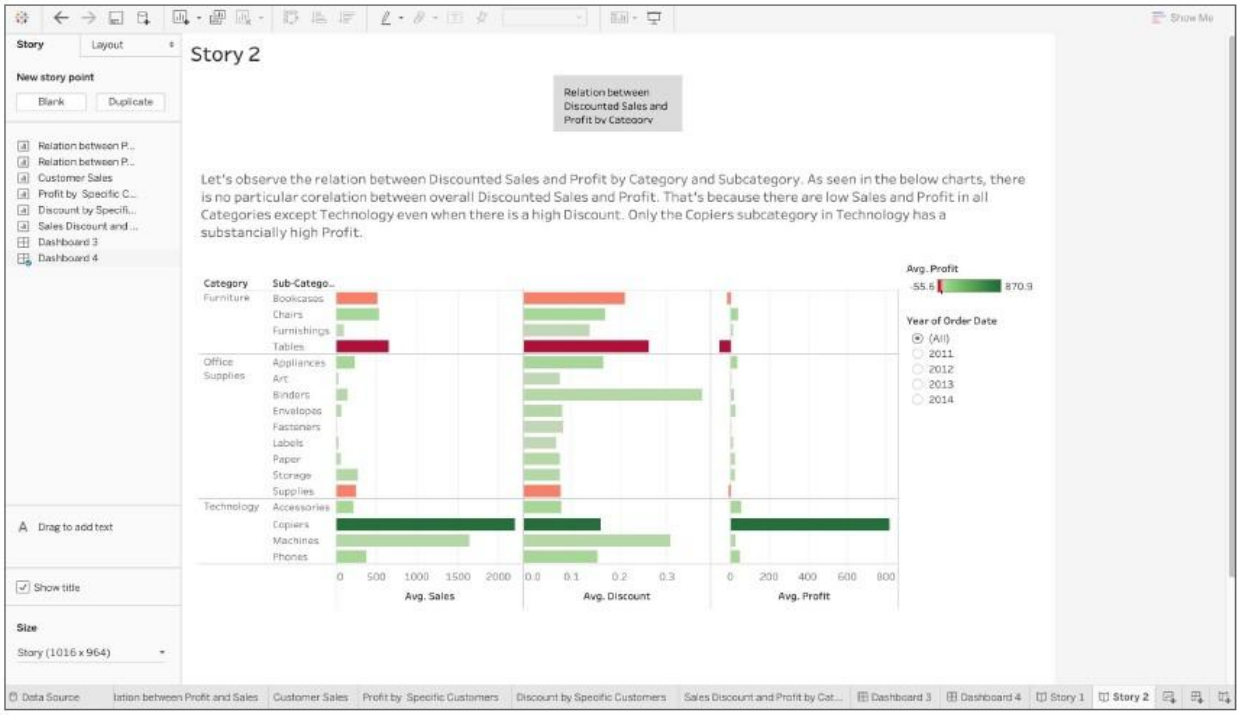
Step 2:

To start building your story, double-click a sheet on the left to feature it to your story purpose



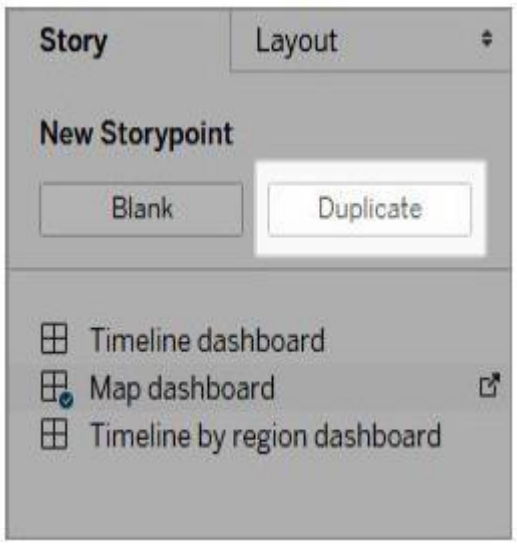
Step 3:

We can also add a caption to summarize the story point by clicking on "Add a caption" and then writing it.



Starting with your next story point, you'll use the drill-down technique in order to narrow down the scope of the story and keep the narrative moving.

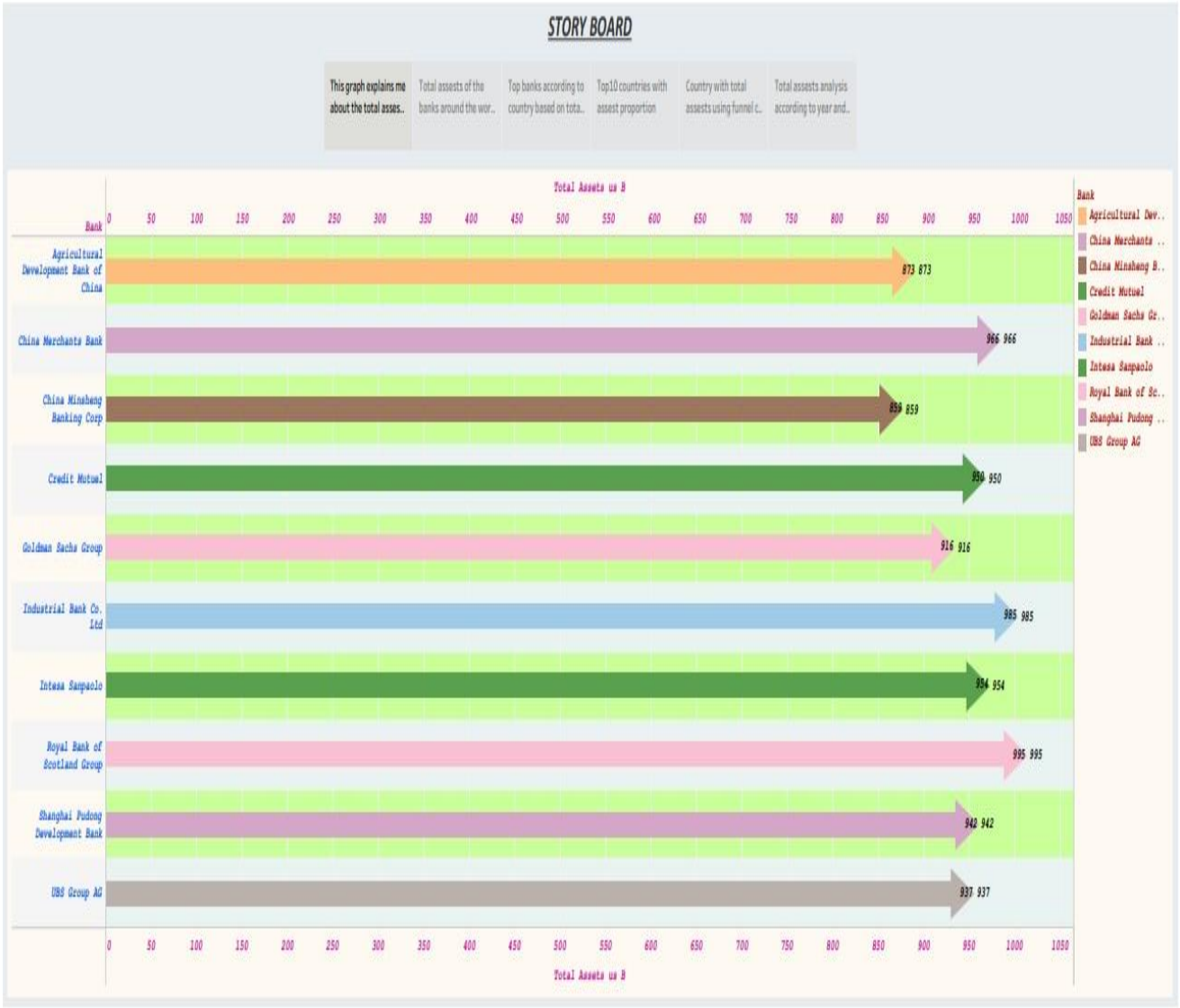
1. To use your first story point as a baseline for your next, click Duplicate under New Story point on the left.



You can change the size of your story by clicking on the Size option in the lower-left corner. You can choose from one of the predefined sizes or set your custom size in pixels. You can also change the name of your story by right-clicking on your Story tab and choosing rename.

Final Story :

Examine your work! Take a look at “Finishing touches” in action.



CHAPTER – 8

WEB INTEGRATION

8. WEB INTEGRATION :

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

8.1 : Publishing dashboard and reports to tableau public :

Step 1:

Go to Dashboard/story, click on the share button on the top ribbon Give the server address of your tableau public account and click on connect.

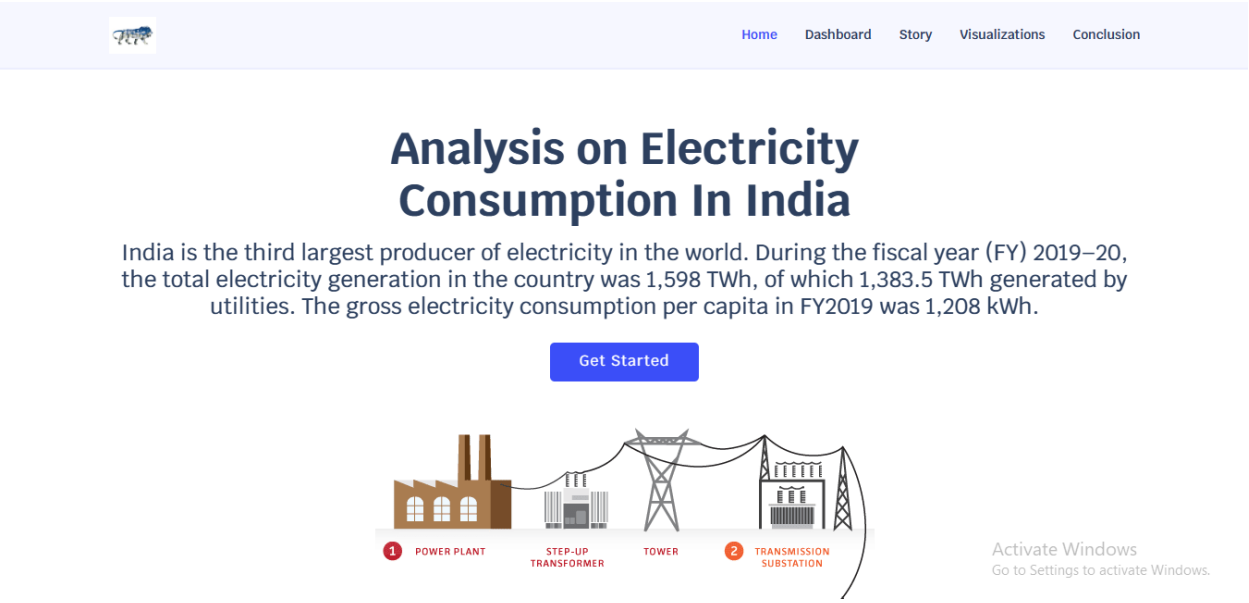
Step 2:

Once you click on connect it will ask you for the tableau public username and password. Once you login into your tableau public using the credentials, the particular visualization will be published into the tableau public

Note: While publishing the visualization to the public, the respective sheet will get published when you click on the share option.

8.2. : Embed Dashboard & Story with Web Bootstrap :

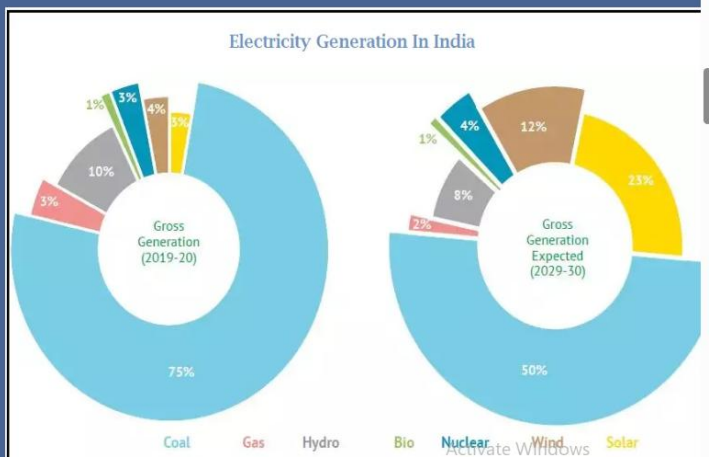
Created the Web Integration : **Electricity Consumption Analysis** by SARAVANAN. R AND TEAM



History

India began using grid management on a regional basis in the 1960s. Individual State grids were interconnected to form 5 regional grids covering mainland India, the Northern, Eastern, Western, North Eastern and Southern Grids. These regional links were established to enable transmission of surplus electricity between states in each region.

The first interconnection of regional grids was established in October 1991 when the North Eastern and Eastern grids were interconnected. The Western Grid was interconnected with these grids in March 2003. The Northern grid was also interconnected in August 2006, forming a Central Grid and operating at one frequency. The Southern Grid, was synchronously interconnected to the Central Grid on 31 December 2013 with the commissioning of the 765 kV Raichur-Solapur transmission line, establishing the National Grid.



CHAPTER – 9

ADVANTAGES & DISADVANTAGES & APPLICATIONS

9. LIST OF ADVANTAGES AND DISADVANTAGES OF THE PROPOSED SOLUTION :

Advantages:

Improved Energy Efficiency: Analysis on electricity consumption in India can help identify energy consumption patterns and identify opportunities for improvement, leading to improved energy efficiency.

Reduction in Costs: Analysis of electricity consumption can help reduce electricity costs by identifying areas where energy consumption can be reduced, resulting in lower energy bills.

Identifying Peak Demand: Analysis of electricity consumption can help identify peak demand periods and allow utilities to develop strategies to manage peak demand, avoiding blackouts and brownouts.

Better Grid Management: Analysis of electricity consumption can help improve grid management, allowing for more efficient energy distribution and reducing the risk of power outages.

Disadvantages:

Limited Data Availability: In some cases, data on electricity consumption in India may be limited or unavailable, making it difficult to conduct a comprehensive analysis.

Data Quality Issues: The quality of data on electricity consumption in India may vary, which can affect the accuracy and reliability of analysis.

Complexities in Data Analysis: Electricity consumption data is complex, and the analysis requires expertise in statistical analysis, data visualization, and other technical skills.

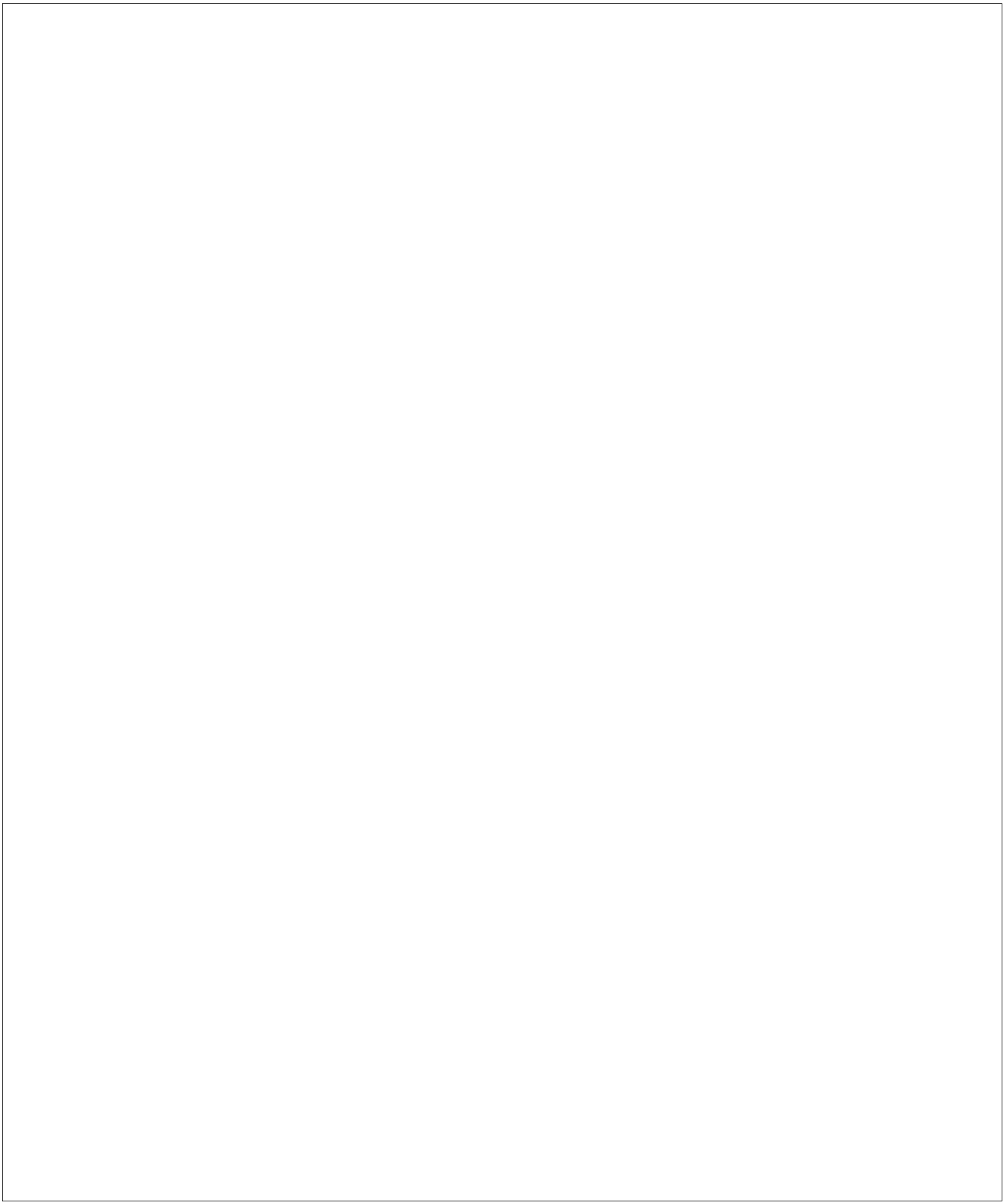
Applications:

Policy Development: Analysis of electricity consumption patterns can help policymakers develop energy policies that promote energy efficiency and reduce greenhouse gas emissions.

Energy Planning: Analysis of electricity consumption can help utilities and energy planners develop strategies for managing peak demand, improving energy distribution, and reducing energy costs.

Consumer Awareness: Analysis of electricity consumption data can help consumers better understand their energy usage patterns and make more informed decisions about energy consumption.

Environmental Impact Assessment: Analysis of electricity consumption can help assess the environmental impact of energy use, identifying areas for improvement in energy efficiency and reducing greenhouse gas emissions.



CHAPTER - 10

CONCLUSION & FUTURE SCOPE

CONCLUSION SUMMARIZING THE ENTIRE WORK AND FINDINGS :

In conclusion, analysis of electricity consumption in India can help identify patterns and trends that are crucial for the development of policies and strategies aimed at improving energy efficiency, reducing energy costs, and mitigating the environmental impact of energy use. Despite challenges such as limited data availability and data quality issues, analysis of electricity consumption data can help policymakers, utilities, and consumers make informed decisions about energy use.

The future scope of analysis on electricity consumption in India is vast, and there are several areas where further research and analysis can help improve energy efficiency and reduce energy costs. One area of future research could be the development of more advanced analytics tools that can handle large volumes of data and provide more detailed insights into energy consumption patterns. Another area of research could be the integration of renewable energy sources into the grid, which can help reduce greenhouse gas emissions and improve energy security.

Overall, the analysis of electricity consumption in India is a critical area of research that can help improve energy efficiency, reduce energy costs, and mitigate the environmental impact of energy use. With the right policies, strategies, and research, India can transition towards a more sustainable energy future.

APPENDIX

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* Author: BootstrapMade.com

* License: https://bootstrapmade.com/license/

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<!-- Uncomment below if you prefer to use an image logo -->

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Home
Dashboard
Story
Visualizations
Conclusion

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Get Started
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<p>India began using grid management on a regional basis in the 1960s. Individual State grids

were interconnected to form 5 regional grids covering mainland India, the Northern, Eastern, Western, North Eastern and Southern Grids.

These regional links were established to enable transmission of surplus electricity between states in each region.

</p>

<p>The first interconnection of regional grids was established in October 1991 when the North Eastern and Eastern grids were interconnected. The Western Grid was interconnected with these grids in March 2003. The Northern grid

was also interconnected in August 2006, forming a Central Grid and operating at one frequency. The Southern Grid, was synchronously interconnected to the Central Grid on 31 December 2013 with the commissioning of the 765

kV Raichur-Solapur transmission line, establishing the National Grid</p>

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src='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Pr&#47;Proj1_167100
07367810&#47;StoryonElectricityConsumptionInIndia&#47;1_rss.png' style='border: none'
/></a></noscript>
<object class='tableauViz' style='display:none;'>
<param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' />
<param name='embed_code_version' value='3' />
<param name='site_root' value='' />
<param name='name'
value='Proj1_16710007367810&#47;StoryonElectricityConsumptionInIndia' />
<param name='tabs' value='no' />
<param name='toolbar' value='no' />
<param name='static_image'
value='https:&#47;&#47;public.tableau.com&#47;static&#47;images&#47;Pr&#47;Proj1_1671
0007367810&#47;StoryonElectricityConsumptionInIndia&#47;1.png' />
<param name='animate_transition' value='yes' />
<param name='display_static_image' value='yes' />
<param name='display_spinner' value='yes' />
<param name='display_overlay' value='yes' />
<param name='display_count' value='yes' />
<param name='language' value='en-US' />
<param name='filter' value='publish=yes' />
<param name='showShareOptions' value='false' />
```

```
</object>
</div>
<script type='text/javascript'>
var divElement = document.getElementById('viz1671000792400');
var vizElement = divElement.getElementsByTagName('object')[0];
vizElement.style.width = '100%';
vizElement.style.height = (divElement.offsetWidth * 0.75) + 'px';
var scriptElement = document.createElement('script');
scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>
</div>
</section>
<!-- ======= Features Section ======= -->
<!-- End Features Section -->
<!-- ======= Services Section ======= -->
<!-- End Services Section -->
<!-- ======= Portfolio Section ======= -->
<section id="portfolio" class="portfolio">
<div class="container" data-aos="fade-up">
<div class="section-title">
<h2>Visualizations</h2>
</div>
<div class="row portfolio-container">
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
<div class="portfolio-wrap">
<img src="assets/img/portfolio/p1.jpg" class="img-fluid" alt="">
<div class="portfolio-info">
<h4>Image 1 </h4>
<div class="portfolio-links">
<a href="assets/img/portfolio/p1.jpg" data-gallery="portfolioGallery" class="portfolio-lightbox"
title="Web 3"><i class="bx bx-plus"></i></a>
</div>
</div>
</div>
</div>
<div class="col-lg-4 col-md-6 portfolio-item filter-web">
<div class="portfolio-wrap">
```

<img src="assets/img/portfolio/p2.jpg" class="img-fluid" alt="">

<h4>Image 2</h4>

<img src="assets/img/portfolio/p3.jpg" class="img-fluid" alt="">

<h4>Image 3</h4>

<img src="assets/img/portfolio/p5.jpg" class="img-fluid" alt="">

<h4>Image 4</h4>

<img src="assets/img/portfolio/p6.jpg" class="img-fluid" alt="">

<h4>Image 6</h4>

<img src="assets/img/portfolio/p4.jpg" class="img-fluid" alt="">

<h4>Image 5</h4>

</section>

<!-- End Portfolio Section -->

<section id="features" class="features" data-aos="fade-up">

<h2>Conclusion</h2>

<img src="assets/img/img1.jpg" class="img-fluid" alt="">

<h3>Electricity Consumption Stats.</h3>

 Maharashtra is the Highest Electricity consumption user of India.

 Gujarat is the Second Highest Electricity consumption user of India.

 Sikkim is the Lowest Electricity Consumption user of India .

```
</ul>
</div>
</div>
<div class="row content">
<div class="col-md-5 order-1 order-md-2" data-aos="fade-left">
<img src="assets\img\img2.jpg" class="img-fluid" alt="">
</div>
<div class="col-md-7 pt-5 order-2 order-md-1" data-aos="fade-right">
<h3>Electricity Consumption before and during Lockdown in India</h3>
<p class="">
Electricity consumption was more in 2019 in month of March-June before Lockdown
</p>
<p>
Electricity Consumption was less in 2020 in month of March-June during the Lockdown
</p>
</div>
</div>
<div class="row content">
<div class="col-md-5" data-aos="fade-right">
<img src="assets/img/img3.jpg" class="img-fluid" alt="">
</div>
<div class="col-md-7 pt-5" data-aos="fade-left">
<h3>Electricity Consumption in Quarters</h3>
<ul>
<li><i class="bi bi-check"></i> Electricity Consumption in 2019 for Quarter 3 was Highest.</li>
<li><i class="bi bi-check"></i> Electricity Consumption in 2019 for Quarter 1 was Lowest.</li>
<li><i class="bi bi-check"></i> Electricity Consumption in 2020 for Quarter 3 was Lowest.</li>
<li><i class="bi bi-check"></i> Electricity Consumption in 2020 for Quarter 1 was Highest.</li>
</ul>
</div>
</div>
<div class="row content">
<div class="col-md-5 order-1 order-md-2" data-aos="fade-left">
<img src="assets/img/img5.jpg" class="img-fluid" alt="">
</div>
<div class="col-md-7 pt-5 order-2 order-md-1" data-aos="fade-right">
```

<h3>Electricity Consumption in Regions</h3>

 Total Electricity consumption in Western Region is Highest.
 Total Electricity consumption in North Eastern Region is Lowest.
 Electricity Consumption in 2020 for Quarter 3 was Lowest.
 Electricity Consumption in 2020 for Quarter 1 was Highest.

</section>

<!-- ======= Contact Section ======= -->
<section id="contact" class="contact section-bg">

<h2>Contact</h2>

<h3>Our Address</h3>
SamrtBridge, Hyderabad,AndhraPradesh, India

<h3>Email Us</h3>
info@smartbridge.com
contact@smartbridge.com

```
<div class="info-box mt-4">
<i class="bx bx-phone-call"></i>
<h3>Call Us</h3>
<p>+11 1234 1234<br>+11 4321 4321</p>
</div>
</div>
</div>
</div>
<div class="col-lg-6 mt-4 mt-md-0">
<form action="forms/contact.php" method="post" role="form" class="php-email-form">
<div class="row">
<div class="col-md-6 form-group">
<input type="text" name="name" class="form-control" id="name" placeholder="Your Name" required>
</div>
<div class="col-md-6 form-group mt-3 mt-md-0">
<input type="email" class="form-control" name="email" id="email" placeholder="Your Email" required>
</div>
</div>
<div class="form-group mt-3">
<input type="text" class="form-control" name="subject" id="subject" placeholder="Subject" required>
</div>
<div class="form-group mt-3">
<textarea class="form-control" name="message" rows="5" placeholder="Message" required></textarea>
</div>
<div class="my-3">
<div class="loading">Loading</div>
<div class="error-message"></div>
<div class="sent-message">Your message has been sent. Thank you!</div>
</div>
<div class="text-center"><button type="submit">Send Message</button></div>
</form>
</div>
</div>
</div>
</section>
<!-- End Contact Section -->
```

```
</main>
<!-- End #main -->
<!-- ======= Footer ======= -->
<footer id="footer">

<div class="container d-md-flex py-4">
<div class="me-md-auto text-center text-md-start">
<div class="copyright">
&copy; Copyright <strong><span>SmartBridge</span></strong>. All Rights Reserved
</div>
<div class="credits">
<!-- All the links in the footer should remain intact. -->
<!-- You can delete the links only if you purchased the pro version. -->
<!-- Licensing information: https://bootstrapmade.com/license/ -->
<!-- Purchase the pro version with working PHP/AJAX contact form:
https://bootstrapmade.com/bikin-free-simple-landing-page-template/ -->
Designed by <a href="https://bootstrapmade.com/">Indra Prakash</a>
</div>
</div>
<div class="social-links text-center text-md-right pt-3 pt-md-0">
<a href="#" class="twitter"><i class="bx bxl-twitter"></i></a>
<a href="#" class="facebook"><i class="bx bxl-facebook"></i></a>
<a href="#" class="instagram"><i class="bx bxl-instagram"></i></a>
<a href="#" class="google-plus"><i class="bx bxl-skype"></i></a>
<a href="#" class="linkedin"><i class="bx bxl-linkedin"></i></a>
</div>
</div>
</footer>
<!-- End Footer -->

<div id="preloader"></div>
<a href="#" class="back-to-top d-flex align-items-center justify-content-center"><i class="bi bi-
arrow-up-short"></i></a>

<!-- Vendor JS Files -->
<script src="assets/vendor/aos/aos.js"></script>
<script src="assets/vendor/bootstrap/js/bootstrap.bundle.min.js"></script>
<script src="assets/vendor/glightbox/js/glightbox.min.js"></script>
<script src="assets/vendor/isotope-layout/isotope.pkgd.min.js"></script>
<script src="assets/vendor/swiper/swiper-bundle.min.js"></script>
<script src="assets/vendor/php-email-form/validate.js"></script>

<!-- Template Main JS File -->
```

```
<script src="assets/js/main.js"></script>
</body>
</html>
```