Smart Internz Project

Team No: 426

Team Members:

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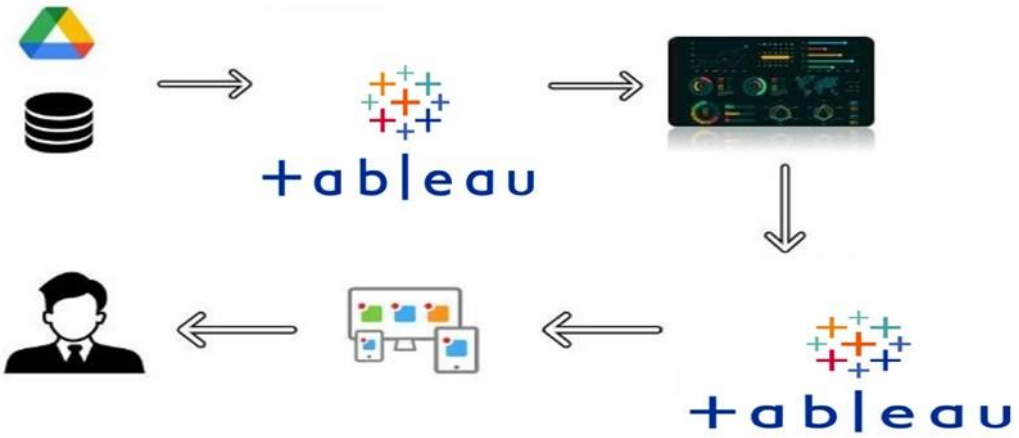
Analysis Of Rainfall In India Using Tableau

Rainfall forecasting is very important because heavy and irregular rainfall can have many impacts like destruction of crops and farms, damage of property so a better forecasting model is essential for an early warning that can minimize risks to life and property and also managing the agricultural farms in better way. This study aims to determine trends in annual and seasonal rainfall and rainy days over different river basins across India.

The project reviews, rainfalls in India visualization in Tableau environment. The aim is to show how to extract meaningful data from the raw data and visualize it. The rainfall pattern in the States/Union Territories of India was successfully visualised.

Technical Architecture:



Project Flow

- Users can create multiple analysis graphs/charts.
- Using the analysed chart creation of Dashboard is done.
- Saving and Visualizing the final dashboard in the personal Tableau public profile.

To accomplish this, we have to complete all the activities and tasks listed below

- Working with the Dataset
    - Understand the Dataset
    - Loading the Dataset
- Visualizations of Rainfalls in India (1901-2015)
    - Problem Statement 1: Annual average Rainfall analysis by states
    - Problem Statement 2: Find the Rainfall Season(Average Seasonal Rainfall)
    - Problem Statement 3: Top 10 States which is having Heavy Rainfall
    - Problem Statement 4: Seasonal wise Rainfall occurred in States

Content

- Time Period: 1901 - 2015
- Granularity: Monthly
- Location: 36 meteorological sub-divisions in India

Report

- Creating a report

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

Prerequisites

To complete this project, you must require the following software, concepts

- Tableau Public :
  - Click on the link to download Tableau Public
  - Below is the installation video

- Tableau Basic Concepts: **Please find the below reference videos to know basics about tableau**
  - Tableau basic
  - Tableau graph and chart

Project Objectives

By the end of this project you will:

- know fundamental concepts and can work on Tableau.
- gain a broad understanding of plotting different graphs.
- Able to create meaningful dashboards

Data collection:

The first requirement is to collect data from Kaggle that is relevant to the Company name, Job Title, Salary, Salaries reported, Location, Employment Status, Job roles, and rating

Data analysis:

The data must be analyzed to uncover meaningful insights. This could involve using techniques such as descriptive statistics, regression analysis and data visualization to gain a deeper understanding of the data.

Report creation:

The insights and findings from the data analysis must be presented in a comprehensive report that includes visualizations and data tables. The report must be well organized and easy to understand, with clear and concise explanations of the results.

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, evaluate outcomes, and generate insights from the data.

Collect The Dataset

Check out the below link to understand the dataset in deatail:

https://www.kaggle.com/datasets/arbethi/rainfall-dataset

Activity 1.1: Understand the data

Explanation video link:

https://drive.google.com/file/d/1lGlpJFAnxOGKT7lQfPK4bWRlBxEnj6-Z/view?usp=sharing

Activity 2: Connect MySQL and Tableau with the dataset

Explanation video link:

Creating schema in Mysql:

https://drive.google.com/file/d/1ti5ZDn0R4qWdQP6XmnGHzp1DCeizYTOe/view?usp=sharing

Connecting Mysql and tableau with the dataset:

https://drive.google.com/file/d/11rd5Qf-eZBejptuzvXrzrjfOiDGxJ0En/view?usp=sharing

Data Preparation

Data preparation for Tableau involves the process of organizing, cleaning, and transforming raw data into a format that can be effectively visualized and analyzed within the Tableau software. This includes tasks such

as data cleaning, data integration, data formatting, and data aggregation. The goal is to ensure that the data is accurate, consistent, and structured in a way that enables meaningful insights and visualizations in Tableau.

Prepare The Data For Visualization

Preparing the data for visualization involves cleaning the data to remove irrelevant or missing data, transforming the data into a format that can be easily visualized, exploring the data to identify patterns and trends, filtering the data to focus on specific subsets of data, preparing the data for visualization software, and ensuring the data is accurate and complete. This process helps to make the data easily understandable and ready for creating visualizations to gain insights into the performance and efficiency.

Data Visualization

Data visualization is the process of creating graphical representations of data in order to help people understand and explore the information. The goal of data visualization is to make complex datasets more accessible, intuitive, and easier to interpret. By using visual elements such as charts, graphs, and maps, data visualizations can help people quickly identify patterns, trends, and outliers in the data.

No Of Unique Visualizations (Filters Applied)

The number of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyze the data include bar charts, line charts, heat maps, scatter plots, pie charts, maps, etc. These visualizations can be used to compare performance, track changes over time, show distribution, and show relationships between variables.

Activity 1.1: Annual Average Rainfall Analysis By States

Explanation video link :

https://drive.google.com/file/d/17zlKM-XabqlUPhl44HElOKXYkbxDcEEB/view?usp=sharing

Activity 1.2: Season Having Heavy Rainfall (Seasonal)

Explanation video link :

https://drive.google.com/file/d/1SG0LDtCbCNO6byRPP3wU9omw_V0v-6qe/view?usp=sharing

Activity 1.3: Top 10 States Having Heavy Rainfall

Explanation video link

https://drive.google.com/file/d/1S8iA4pujQ0uO1yJhr9WkP7IiPO8D8X-N/view?usp=sharing

Activity 1.4: Seasonal Wise Rainfall Occurred In States

Explanation video link :

https://drive.google.com/file/d/1xxHFDyYSprQjfAeBKQYfwPGMw0hvy52e/view?usp=sharing

Dashboard

A dashboard is a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format. Dashboards are often used to provide real-time monitoring and analysis of data and are typically designed for a specific purpose or use case.

Dashboards can be used in a variety of settings, such as business, finance, manufacturing, healthcare, and many other industries. They can be used to track key performance indicators (KPIs), monitor performance metrics, and display data in the form of charts, graphs, and tables.

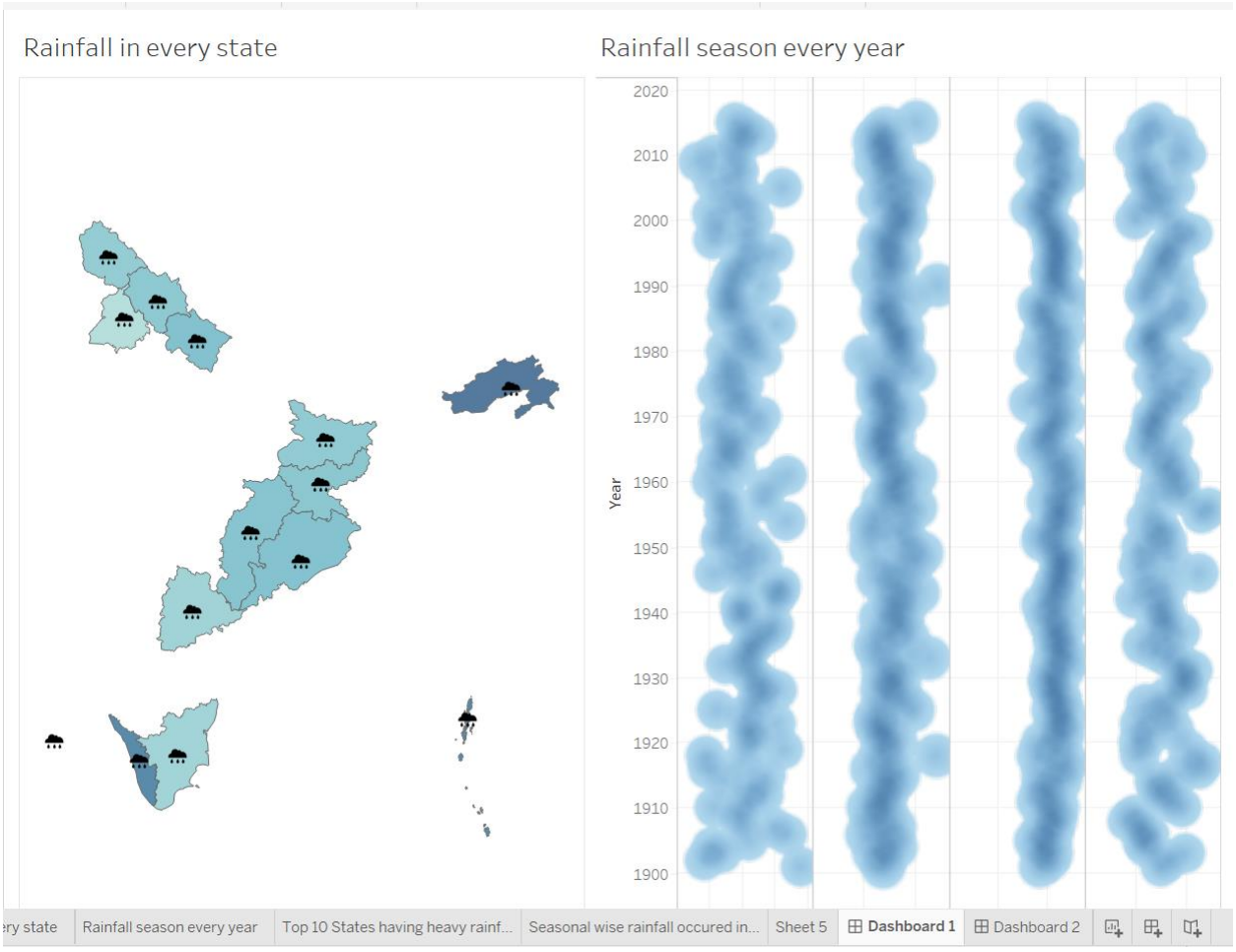
Responsiveness And Design Of Dashboard

The responsiveness and design of a dashboard for analyzing the factors important for A comprehensive analysis of the IT sector's salaries and roles analyzes various engagement metrics such as Company name, Job Title, Salary, Salaries reported, Location, Employment Status, Job roles, and Rating.

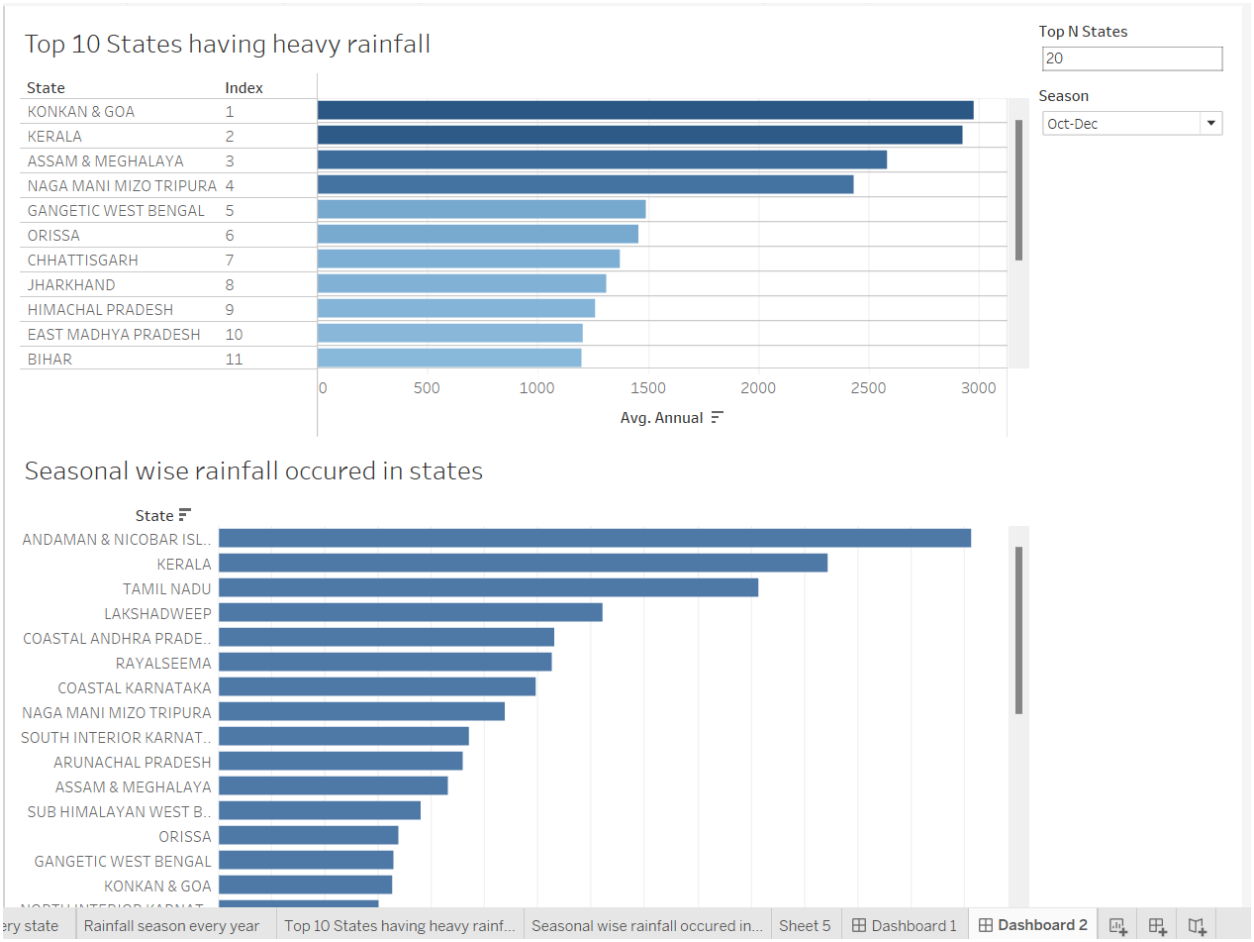
Explanation video link:

https://drive.google.com/file/d/13SdbMSqhgXSjazHhiTHGABmO3nlFhzKZ/view?usp=sharing

Dashboard 1:



Dashboard 2:


Top 10 States having heavy rainfall
Top N States
20
Season
Oct-Dec
State
Index
KONKAN & GOA 1
KERALA 2
ASSAM & MEGHALAYA 3
NAGA MANI MIZO TRIPURA 4
GANGETIC WEST BENGAL 5
ORISSA 6
CHHATTISGARH 7
JHARKHAND 8
HIMACHAL PRADESH 9
EAST MADHYA PRADESH 10
BIHAR 11
0
500
1000
1500
2000
2500
3000
Avg. Annual
Seasonal wise rainfall occured in states
State
ANDAMAN & NICOBAR ISL..
KERALA
TAMIL NADU
LAKSHADWEEP
COASTAL ANDHRA PRADE..
RAYALSEEMA
COASTAL KARNATAKA
NAGA MANI MIZO TRIPURA
SOUTH INTERIOR KARNAT..
ARUNACHAL PRADESH
ASSAM & MEGHALAYA
SUB HIMALAYAN WEST B..
ORISSA
GANGETIC WEST BENGAL
KONKAN & GOA
ery state
Rainfall season every year
Top 10 States having heavy rainf...
Seasonal wise rainfall occured in...
Sheet 5
Dashboard 1
Dashboard 2

Story

A data story is a way of presenting data and analysis in a narrative format, with the goal of making the information more engaging and easier to understand. A data story typically includes a clear introduction that sets the stage and explains the context for the data, a body that presents the data and analysis in a logical and systematic way, and a conclusion that

summarizes the key findings and highlights their implications. Data stories can be told using a variety of mediums, such as reports, presentations, interactive visualizations, and videos.

No Of Scenes Of Story

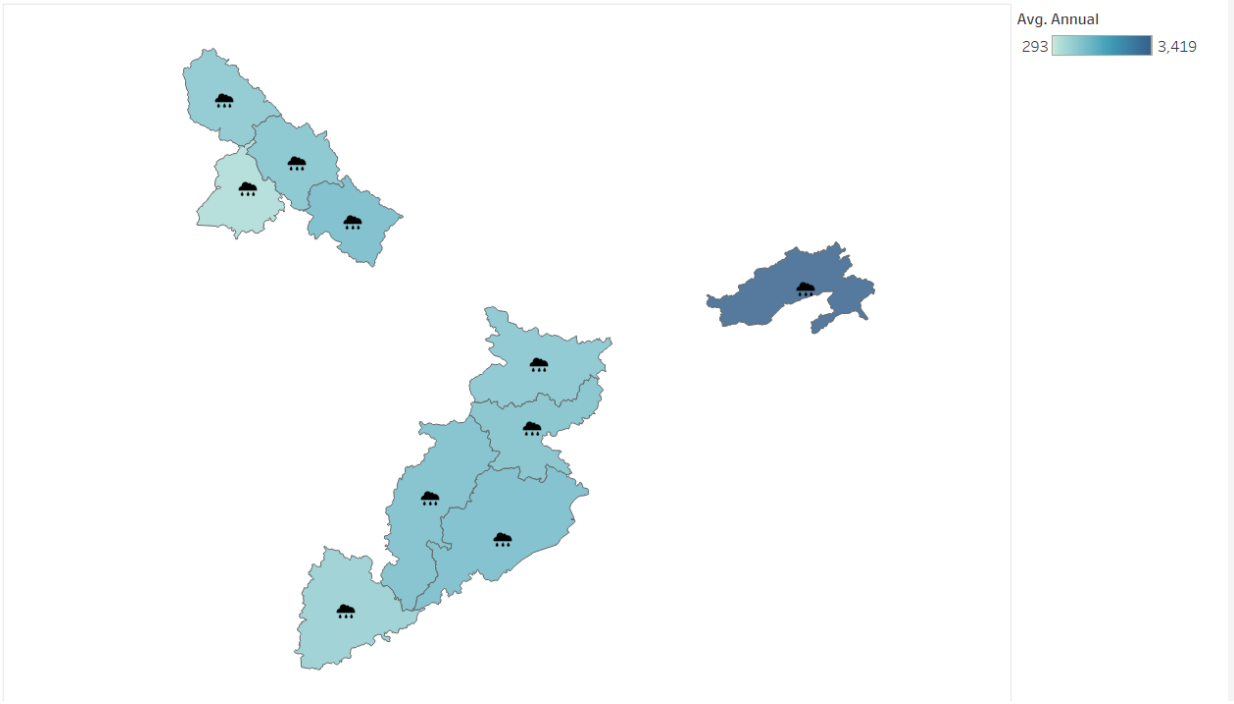
The number of scenes in a storyboard for a data visualization analysis of the factors affecting the insights of IT Sector Salaries, will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process, and it breaks down the analysis into a series of steps or scenes.

Explanation video link:

https://drive.google.com/file/d/1HChR6ohrEHjfoBEP9fyel1kgmvCXvVHn/view?usp=sharing

Story 1

Rainfall in every state | Rainfall season every year | Top 10 States having heavy rainfall | Seasonal wise rainfall occured in states



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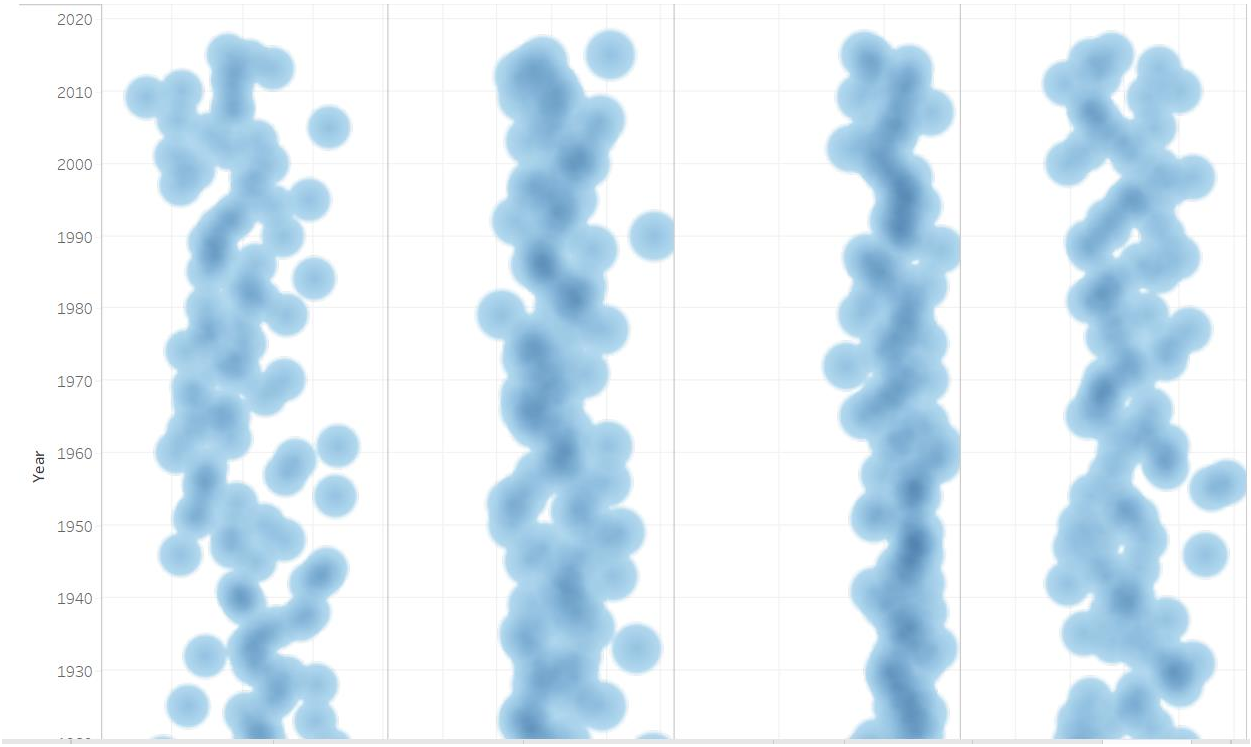

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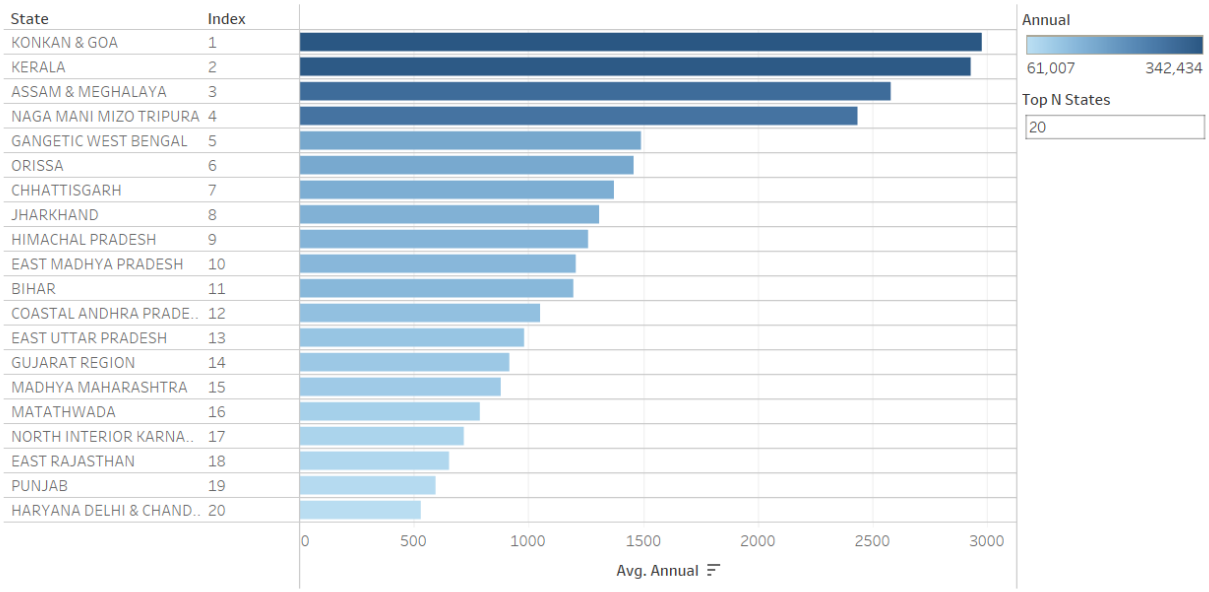

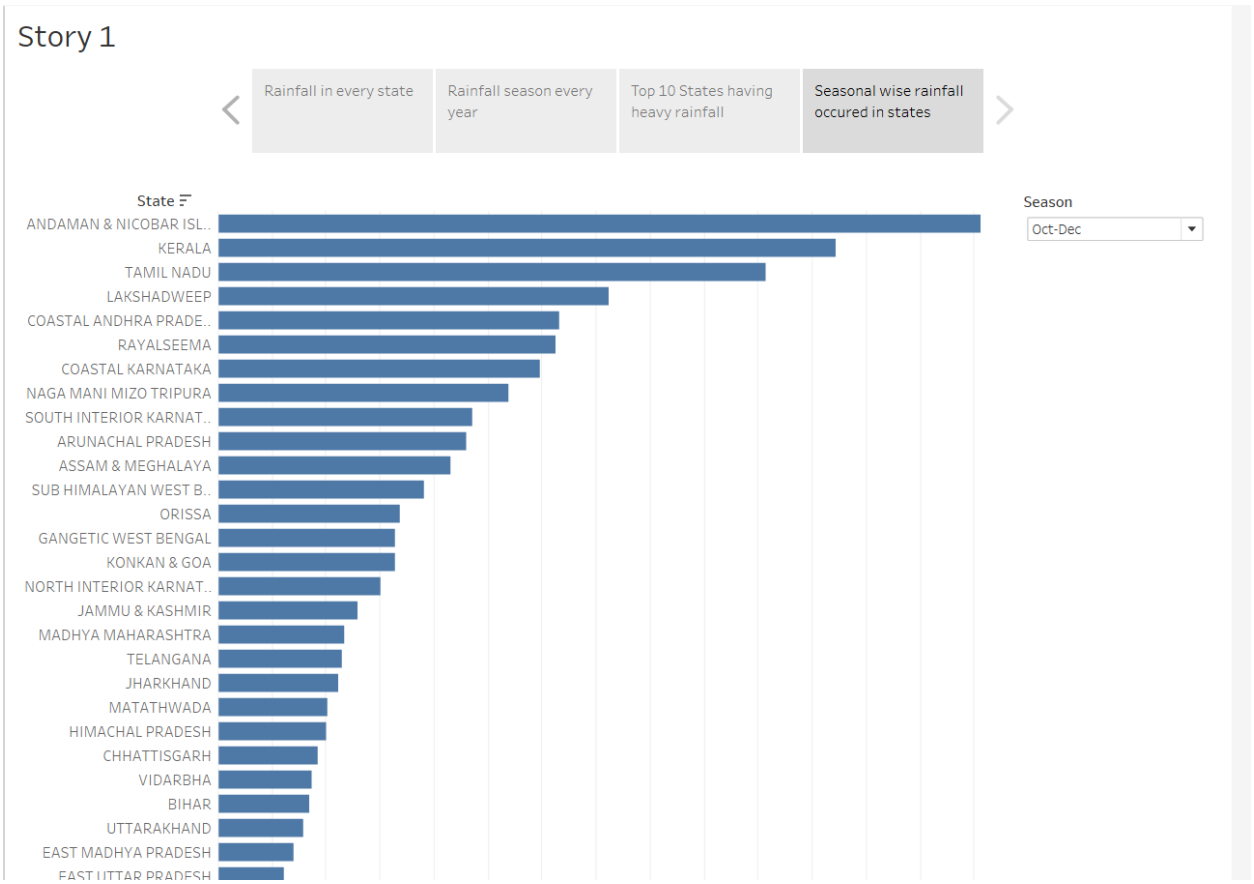
Story 1
Rainfall in every state
Rainfall season every year
Top 10 States having heavy rainfall
Seasonal wise rainfall occured in states
State
ANDAMAN & NICOBAR ISL..
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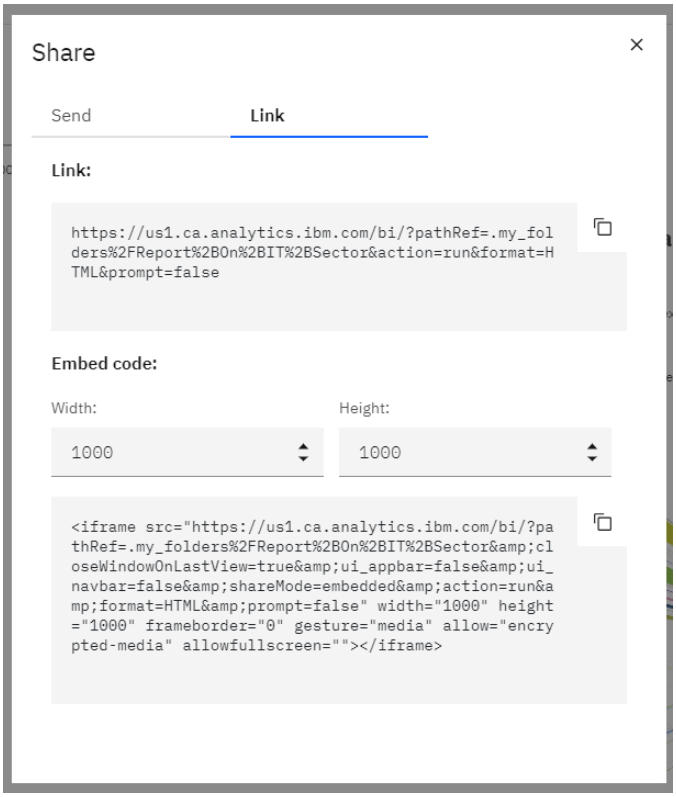
MADHYA MAHARASHTRA
TELANGANA
JHARKHAND
MATATHWADA
HIMACHAL PRADESH
CHHATTISGARH
VIDARBHA
BIHAR
UTTARAKHAND
EAST MADHYA PRADESH
EAST UTTAR PRADESH
Season
Oct-Dec

Web Integration

Publishing helps us 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.

Integrating dashboard/reports/stories to web

Step 1: Go to Dashboard/story/report, click on share button on the top ribbon



Note: You can also change the width and height of the dashboard/story/report as you like.

Activity 1: Integrating with Tableau Public

Explanatory video:

https://drive.google.com/file/d/1VC5ZEIkhyhMFHOAJgmSZ304aFN6rnvGu/view?usp=sharing

Activity 2: Integrating with bootstrap website

Explanatory video:

https://drive.google.com/file/d/1fIBf46-NAKCmA96hfCJQbW1EREJXcO_N/view?usp=sharing

Activity 3: Implementing Flask

Explanatory video:

https://drive.google.com/file/d/1AuR0OYUKEuspiBuNvkw8bOlgTk_57vgE/view?usp=sharing