Empowering the Future: A Literacy Rate Analysis for a Better Future Tomorrow

Literacy is another appropriate indication of economic progress for determining societal development. In India, a person over the age of seven who can write and read in any language with understanding is considered literate for census purposes. Literacy is critical to a country's economic development. Although India's current literacy rate of 74.04% (2021) has increased from 12% at the time of independence in 1947, it still falls short of the world average literacy rate of 84%. In comparison to other countries, the Republic of India has the most illiterate people.

India Literacy Rate (According to 2011 Census)	
Overall	74.04%
Male	82.14%
Female	65.46%

Majority of states in India has shown majors signs of improvement in their overall illiteracy rate thus contributing towards a literate nation

Here we are analysing literacy rate in India for 2021. This dataset contains a record Literacy rate each states of India, here we are going to analyse State wise, Region wise and Overall Literacy rate among Children, Women and Men in India in India.

Technical Architecture:

Project Flow

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

- Define Problem / Problem Understanding
    - o Specify the business problem
    - o Business requirements
    - o Literature Survey
    - o Social or Business Impact.
- Data Collection & Extraction from Database
    - o Collect the dataset,
    - o Storing Data in DB2
    - o Perform SQL Operations
    - o Connect DB2 with Cognos
- Data Preparation
    - o Prepare the Data for Visualization
- Data Visualizations
    - o No of Unique Visualizations
- Dashboard
    - o Responsive and Design of Dashboard
- Story
    - o No of Scenes of Story
- Report
    - o No of Visualization with detail information
- Performance Testing
    - o Amount of Data Rendered to DB2
    - o Utilization of Data Filters
    - o No of Calculation Fields
    - o No of Visualizations/ Graphs
- Web Integration
    - o Dashboard, Report and Story embed with UI With Flask
- Project Demonstration & Documentation
    - o Record explanation Video for project end to end solution
        - o Project Documentation-Step by step project development procedure

Milestone 1: Define Problem / Problem Understanding

Activity 1: Specify the business problem

To know development in a society, Literacy is another proper indicator of economic development. For the purpose of census, a person in age limit of seven and above, who can both write and read with understanding in any language is considered as a literate in India. Literacy plays a major role in the development of the Indian economy. Literacy plays a vital role in understanding healthcare information. It allows people to engage in civic activities, understand their rights and responsibilities, and contribute to the social and cultural fabric of their community. Nations with higher literacy rates are generally more competitive on the global stage. The literacy rate is a fundamental indicator of a society's well-being and development. It is a key factor in individual and collective progress, enabling people to lead more fulfilling and productive lives while contributing to the growth and stability of their communities and nations.Literacy empowers individuals by giving them access to information and knowledge. It enables them to be more self-reliant, make informed decisions, and advocate for their rights.

Activity 2: Business requirements

Understanding the literacy rate in India can also help businesses keep track of government policies and initiatives aimed at improving literacy rates. Businesses need to understand the literacy rates in India to conduct market research and determine the potential customer base for their products or services. The literacy rate analysis in India can help businesses make informed decisions, improve their marketing efforts, plan their workforce, and contribute to social causes, among other benefits. The ultimate goal is to gain insights and improve performance through data visualization techniques.

Activity 3: Literature Survey

Introduction

India, as one of the world's most populous countries, has made significant strides in the field of education and literacy. This literature survey aims to provide an overview of key research findings and trends related to literacy rates in India.

India faced significant challenges in education and literacy during its post-independence period. Limited access to quality education and stark disparities existed.

The Indian government introduced several policies and initiatives to promote literacy, such as the Sarva Shiksha Abhiyan (Education for All) and the Right to Education Act, which aimed to make primary education accessible to all (Government of India, 2000; Ministry of Human Resource Development, 2009).

Rising Literacy Rates: India has seen a steady increase in literacy rates over the decades. The Census of India reports a consistent upward trend in literacy, with the 2021 Census indicating a national literacy rate of XX% (Census of India, 2021).

While literacy rates have improved overall, significant gender disparities persist. Female literacy rates have historically lagged behind male literacy rates, and addressing this gap remains a challenge (UNESCO, 2019).

Although literacy rates have risen, concerns about the quality of education persist. Many individuals complete primary education but lack essential skills (ASER, 2020).

Literacy rates vary widely across India's states and regions, with some areas still facing considerable challenges (Khera, 2012).

In the digital age, the definition of literacy is evolving. Research is needed to understand digital literacy and its implications for India's population (Government of India, 2019).

The literature survey demonstrates India's progress in improving literacy rates over the years, primarily through government initiatives. However, gender disparities, regional variations, and concerns about education quality remain significant challenges. Further research is necessary to address these issues and adapt to the changing landscape of literacy, including digital literacy.

Activity 4: Social or Business Impact.

Social Impact: It have a significant social impact, including the empowerment of individuals, improved social inclusion, poverty reduction, improved health outcomes, and promotion of gender equality

Business Model/Impact: It has a Business that invests in literacy programs and supports education initiatives can benefit from a more skilled and innovative workforce, improved competitiveness, and enhanced social responsibility.

Milestone 2: 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.

Activity 1: Collect the dataset

Please use the link to download the dataset: Link

Activity 1.1: Understand the data

Data contains all the meta information regarding the columns described in the CSV files. The name of file is India_Updated Literacy 2021.csv

Description for India_Updated Literacy 2021.csv:

The file India_Updated Literacy 2021.csv contains 112 rows. Each row corresponds to record of state with details and marks in respective subjects. The columns are:

Columns are:

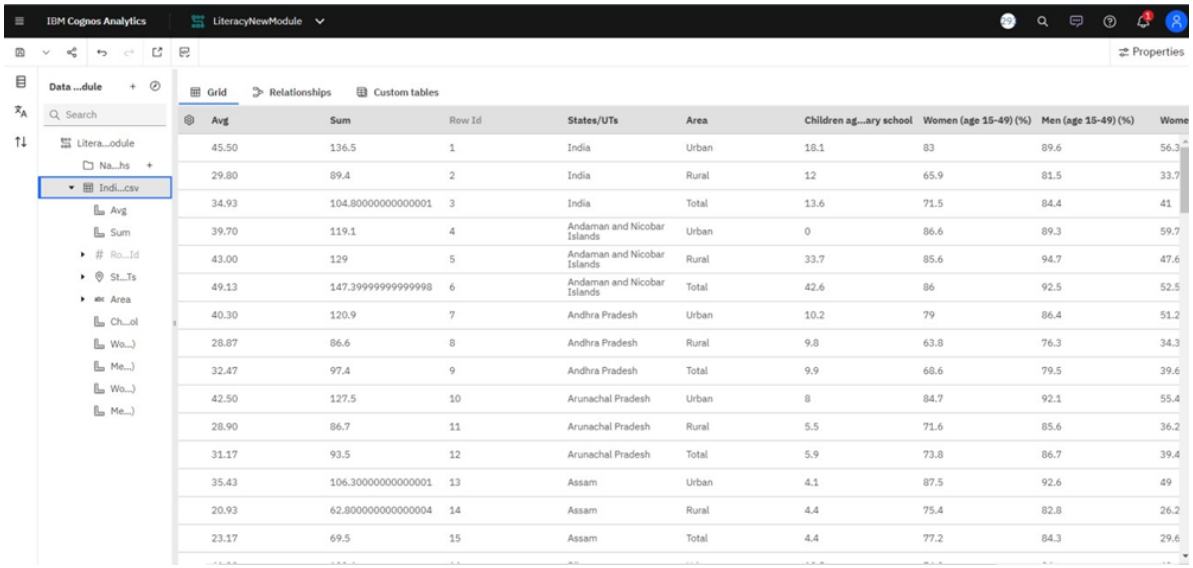
- States- Indian States
- Area- Rural or Urban Area
- Children age 5 years who attended pre-primary school
- Women (age 15-49) (%)
- Men (age 15-49) (%)
- Women (age 15-49) with 10 or more years of schooling (%)
- Men (age 15-49) with 10 or more years of schooling (%)

Milestone 3: Data Preparation

Data modules are containers that describe data and rules for combining and shaping data to prepare it for analysis and visualization in IBM Cognos Analytics. Data module sources. Data

modules can be based on data servers, packages, uploaded files, data sets, and other data modules

Activity 1: Prepare the Data for Visualization



Avg	Sum	Row Id	States/UTs	Area	Children ag...ary school	Women (age 15-49) (%)	Men (age 15-49) (%)
45.50	136.5	1	India	Urban	18.1	83	89.6
29.80	89.4	2	India	Rural	12	65.9	81.5
34.93	104.80000000000001	3	India	Total	13.6	71.5	84.4
39.70	119.1	4	Andaman and Nicobar Islands	Urban	0	86.6	89.3
43.00	129	5	Andaman and Nicobar Islands	Rural	33.7	85.6	94.7
49.13	147.39999999999998	6	Andaman and Nicobar Islands	Total	42.6	86	92.5
40.30	120.9	7	Andhra Pradesh	Urban	10.2	79	86.4
28.87	86.6	8	Andhra Pradesh	Rural	9.8	63.8	76.3
32.47	97.4	9	Andhra Pradesh	Total	9.9	68.6	79.5
42.50	127.5	10	Arunachal Pradesh	Urban	8	84.7	92.1
28.90	86.7	11	Arunachal Pradesh	Rural	5.5	71.6	85.6
31.17	93.5	12	Arunachal Pradesh	Total	5.9	73.8	86.7
35.43	106.30000000000001	13	Assam	Urban	4.1	87.5	92.6
20.93	62.800000000000004	14	Assam	Rural	4.4	75.4	82.8
23.17	69.5	15	Assam	Total	4.4	77.2	84.3

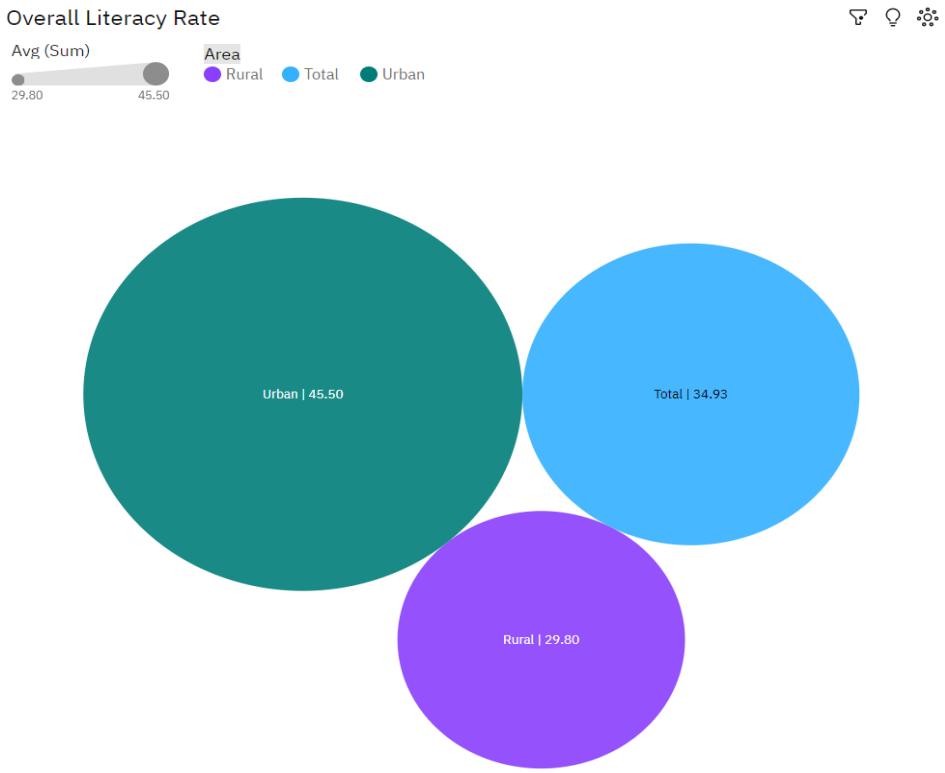
Milestone 4: Data Visualization

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 data sets 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.

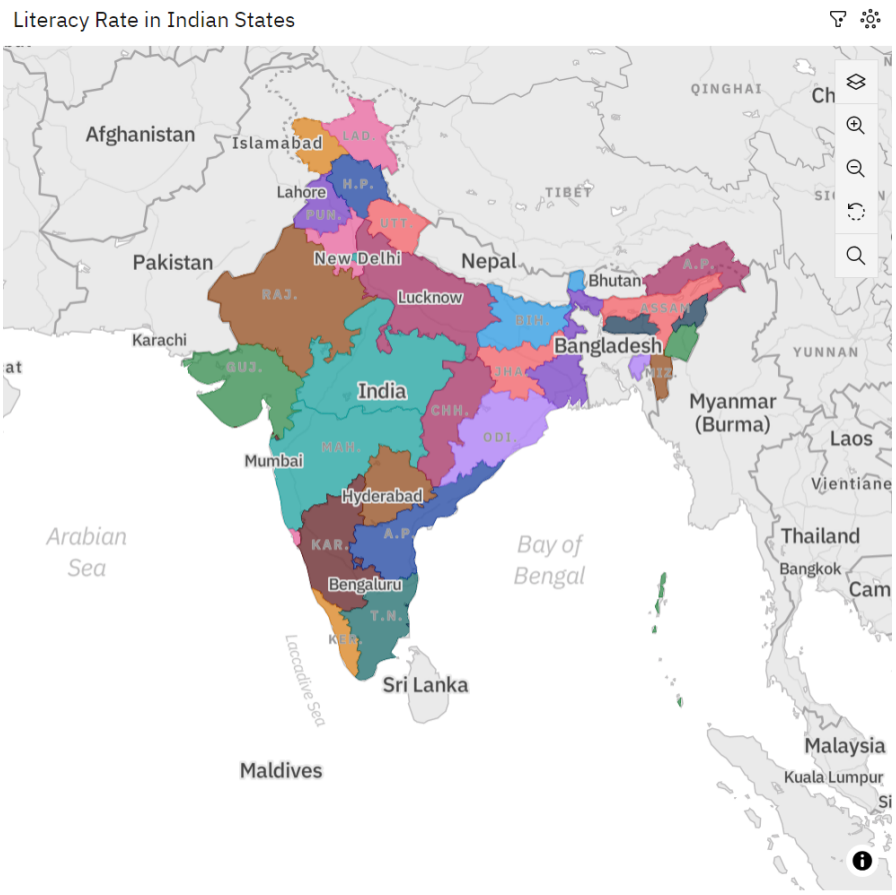
Activity 1: No of Unique Visualizations

The number of unique visualizations that can be created with a given dataset. Some common types of visualizations that can be used to analyse the Literacy 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 relationships between variables, breakdown of revenue and customer demographics, workload, resource allocation and location of hotels.

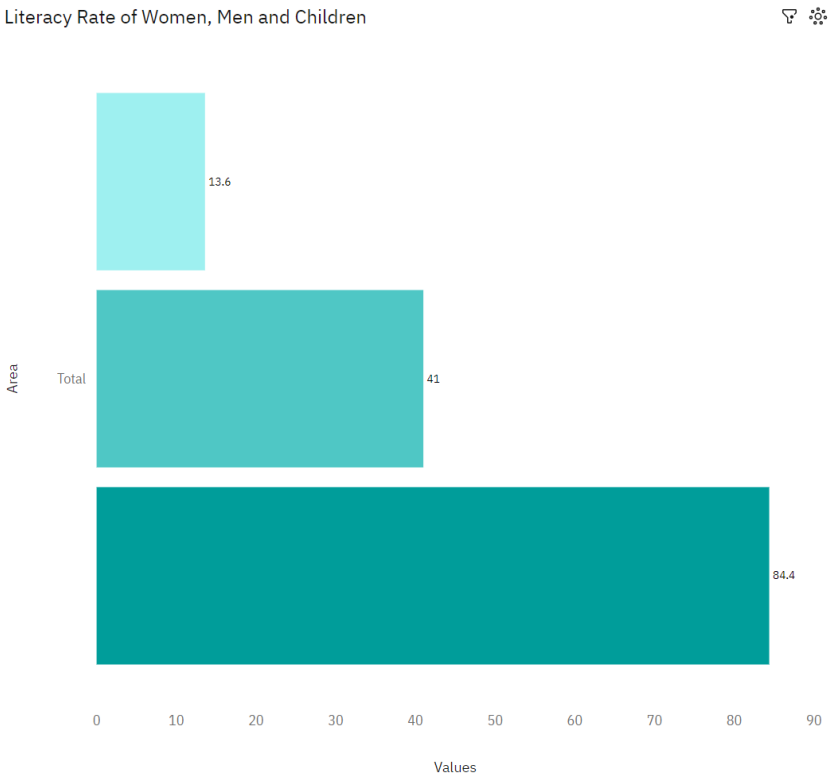
Activity 1.1: Overall Literacy Rate



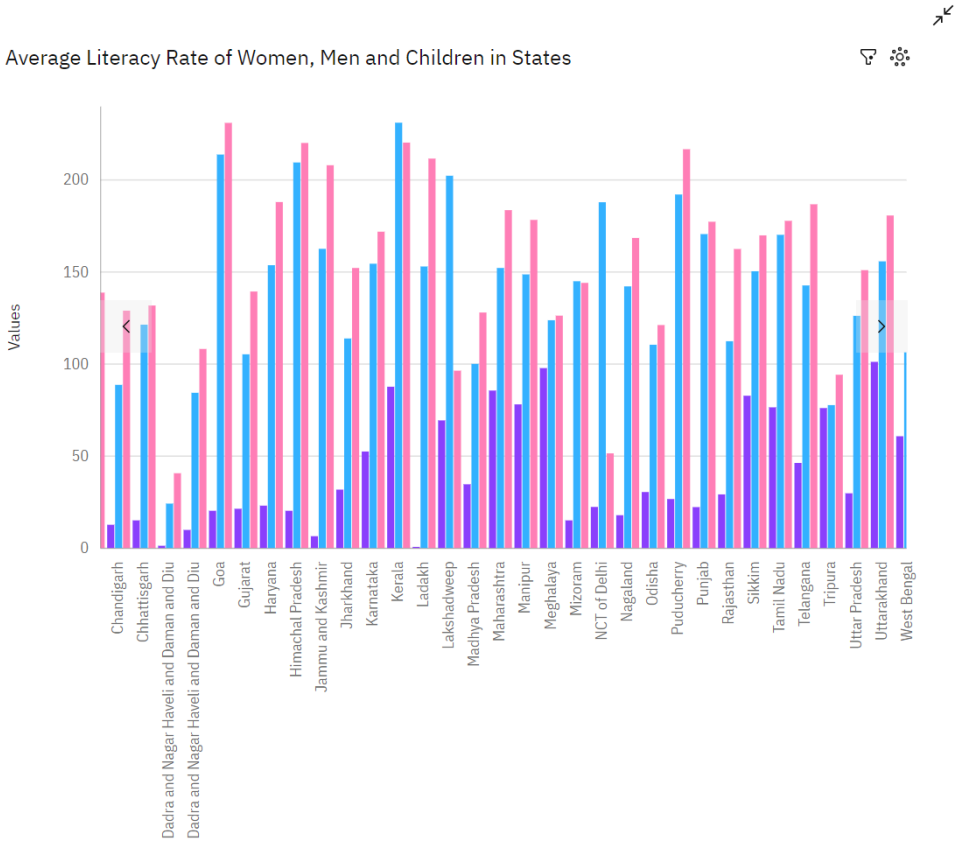
Activity 1.2: Literacy Rate in Indian States



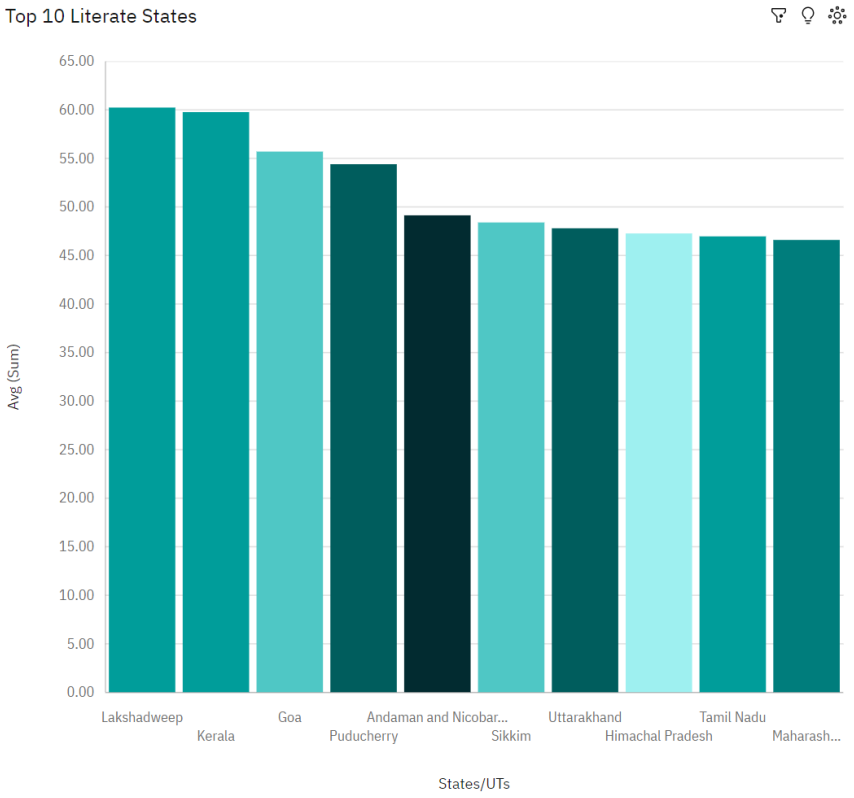
Activity 1.3: Literacy Rate of Women, Men and Children



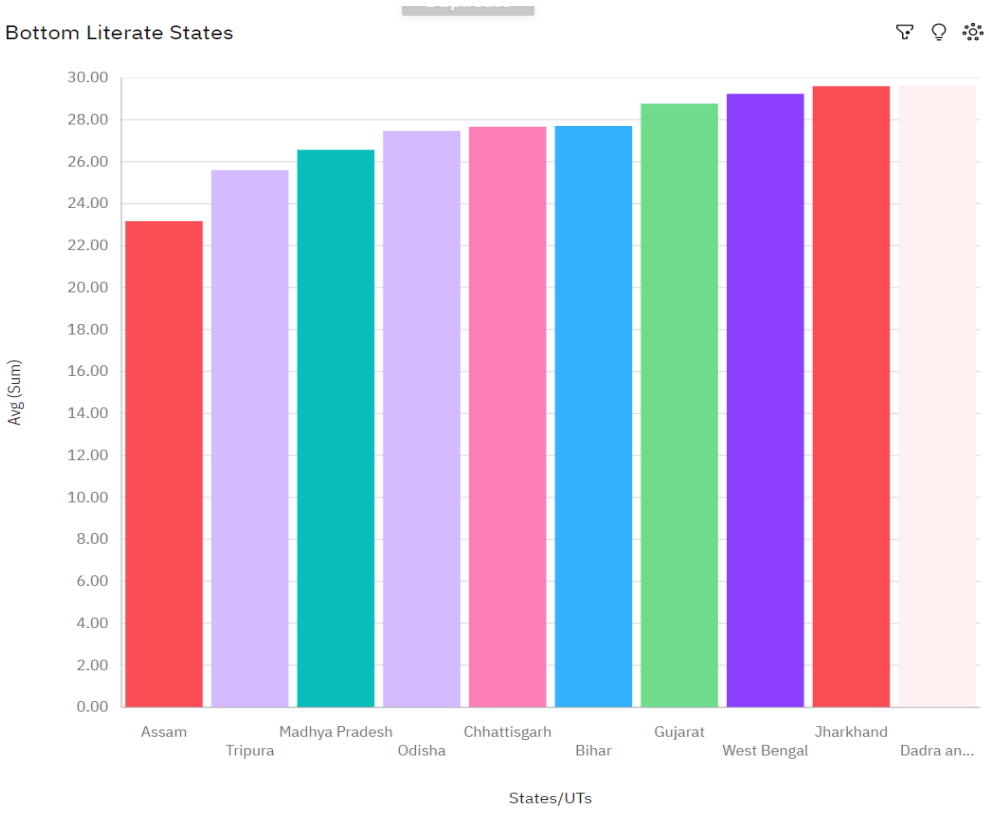
Activity 1.4: Average Literacy Rate of Women, Men and Children in States



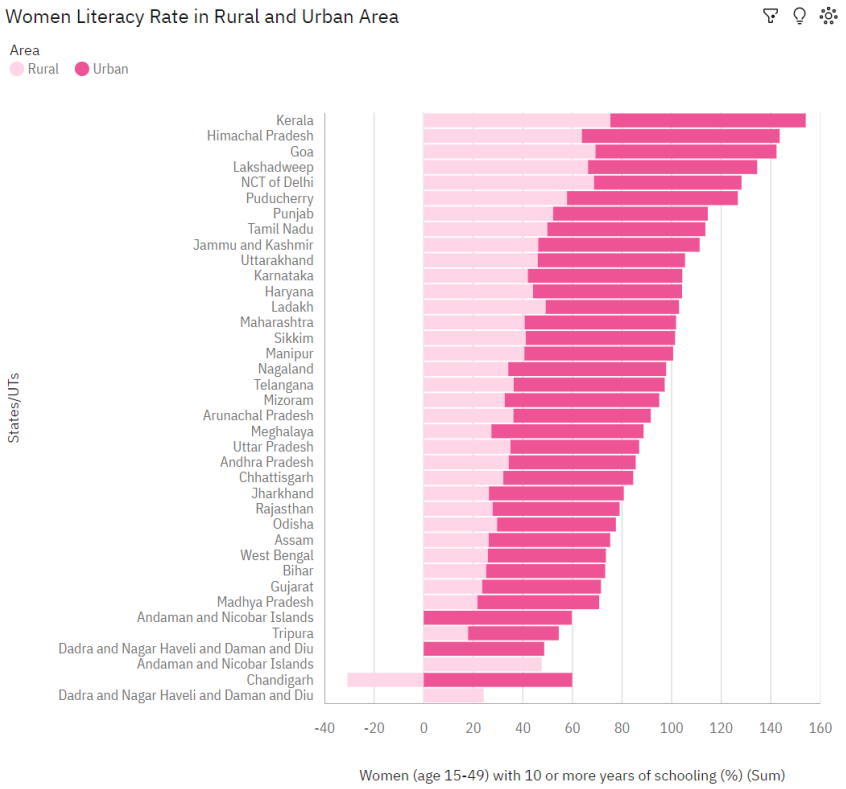
Activity 1.5: Top Literate States



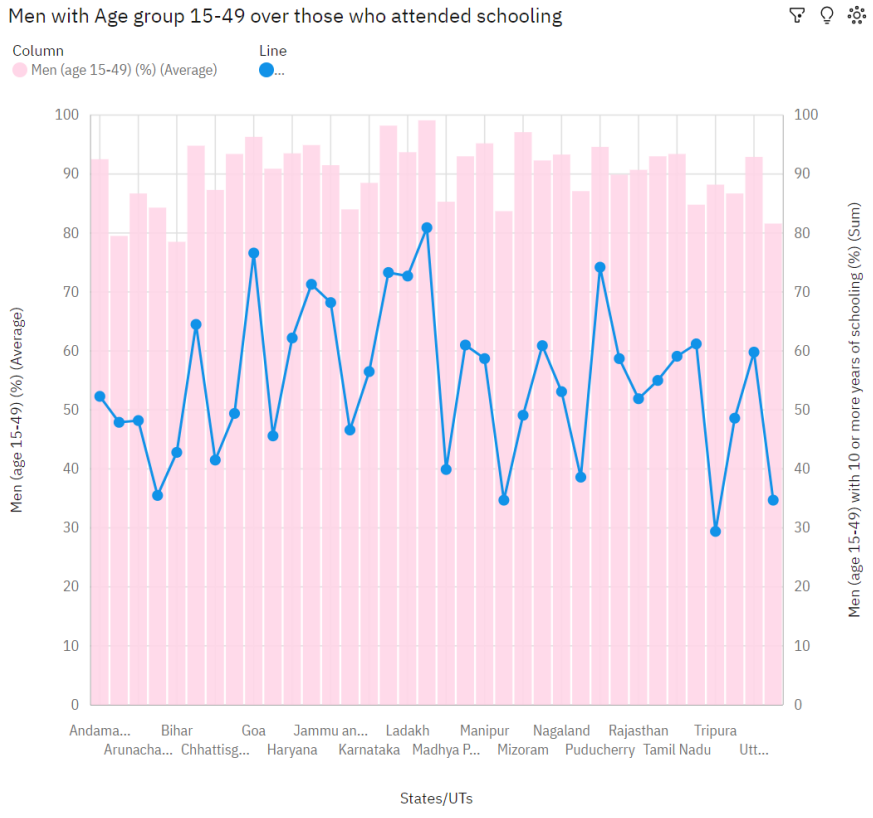
Activity 1.6: Bottom Literate States



Activity 1.7: Women Literacy Rate in Rural and Urban Area



Activity 1.8: Men with Age group 15-49 over those who attended schooling

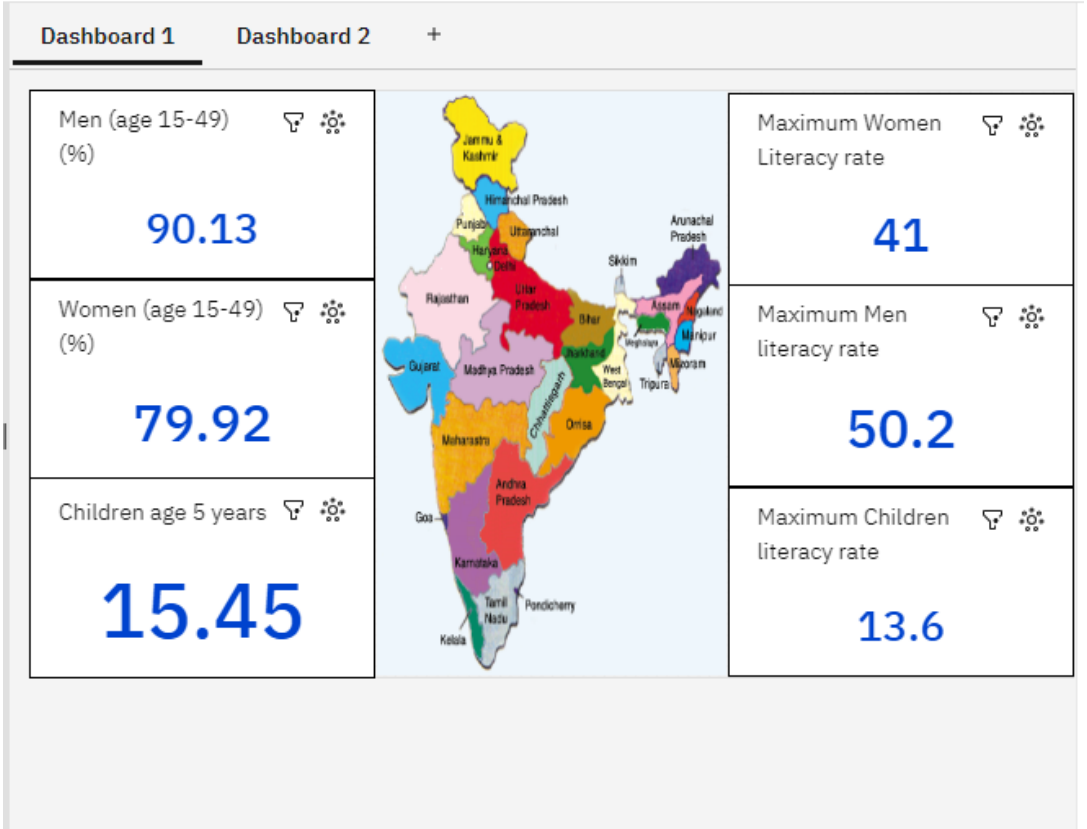


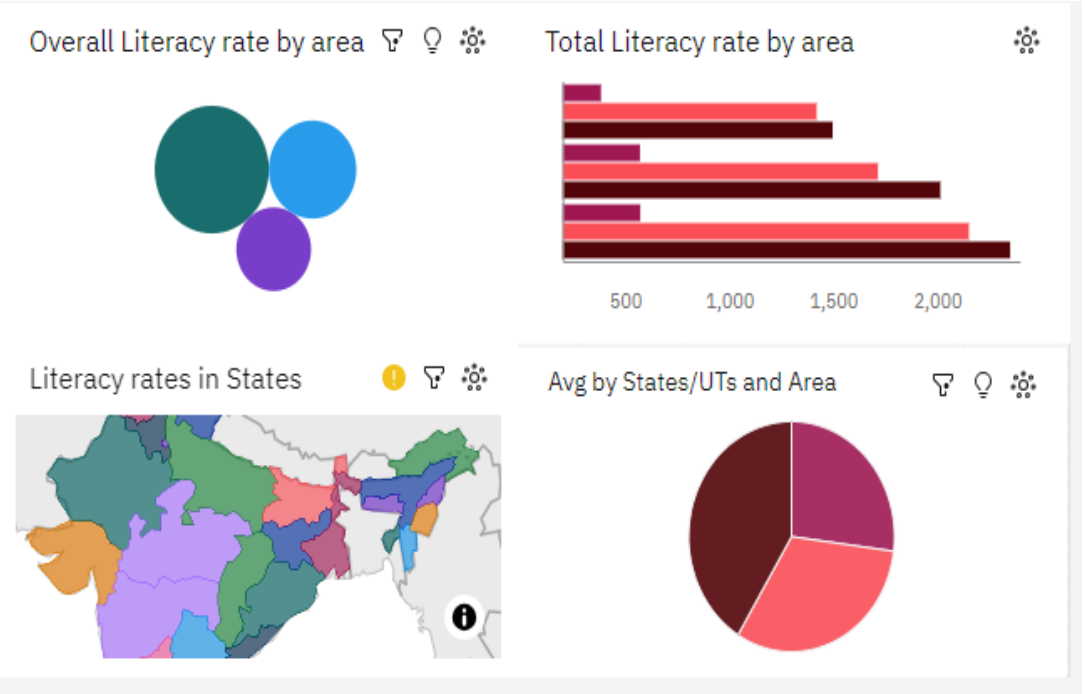
Milestone 5: Dashboard

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.

Activity :1- Responsive and Design of Dashboard

The responsiveness and design of a dashboard for Data-Driven insights on Student Performance is crucial to ensure that the information is easily understandable and actionable. Key considerations for designing a responsive and effective dashboard include user-cantered design, clear and concise information, interactivity, data-driven approach, accessibility, customization, and security. The goal is to create a dashboard that is user-friendly, interactive, and data-driven, providing actionable insights.



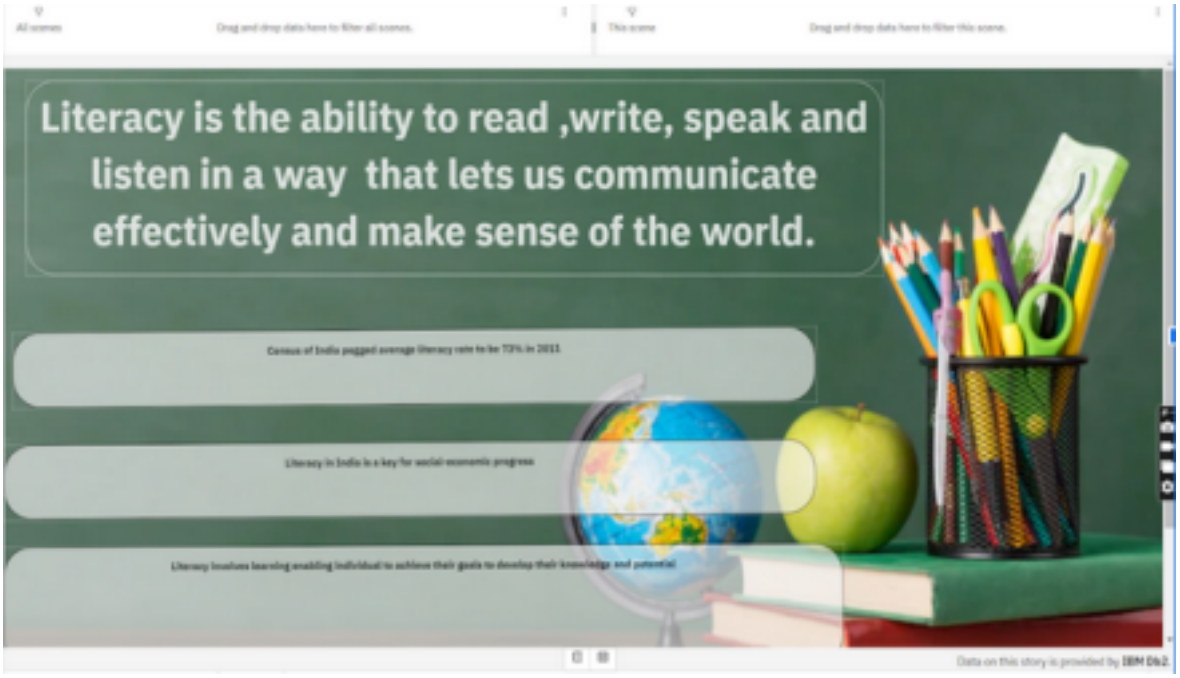


Milestone 6: Story

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.

Activity:1- No of Scenes of Story

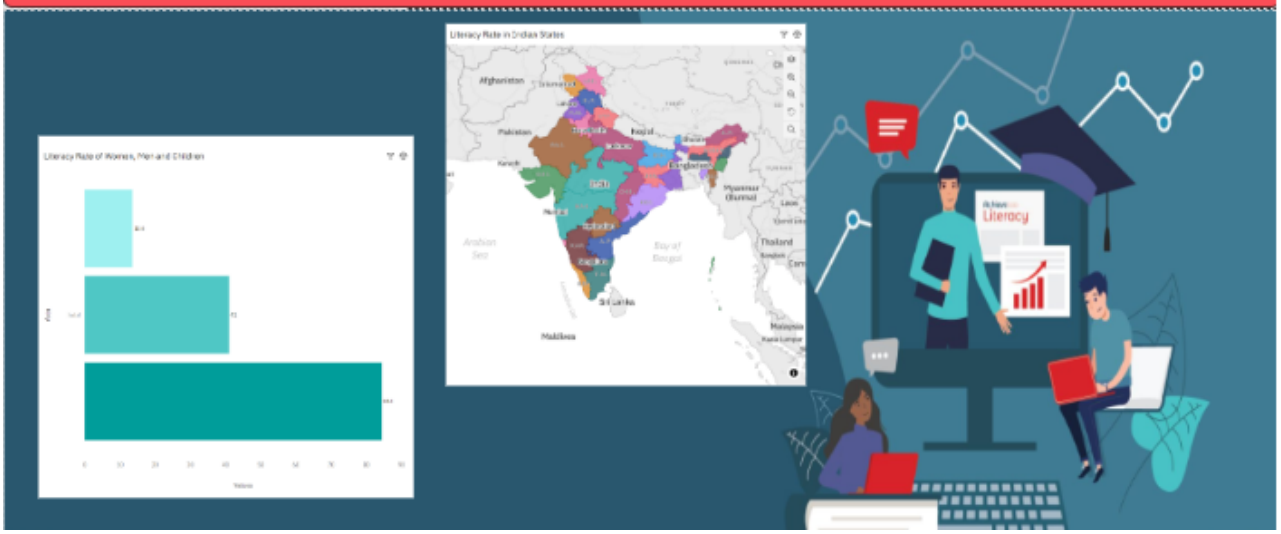
The number of scenes in a storyboard for Data-Driven insights on Literacy will depend on the complexity of the analysis and the specific insights that are trying to be conveyed. A storyboard is a visual representation of the data analysis process and it breaks down the analysis into a series of steps or scenes.



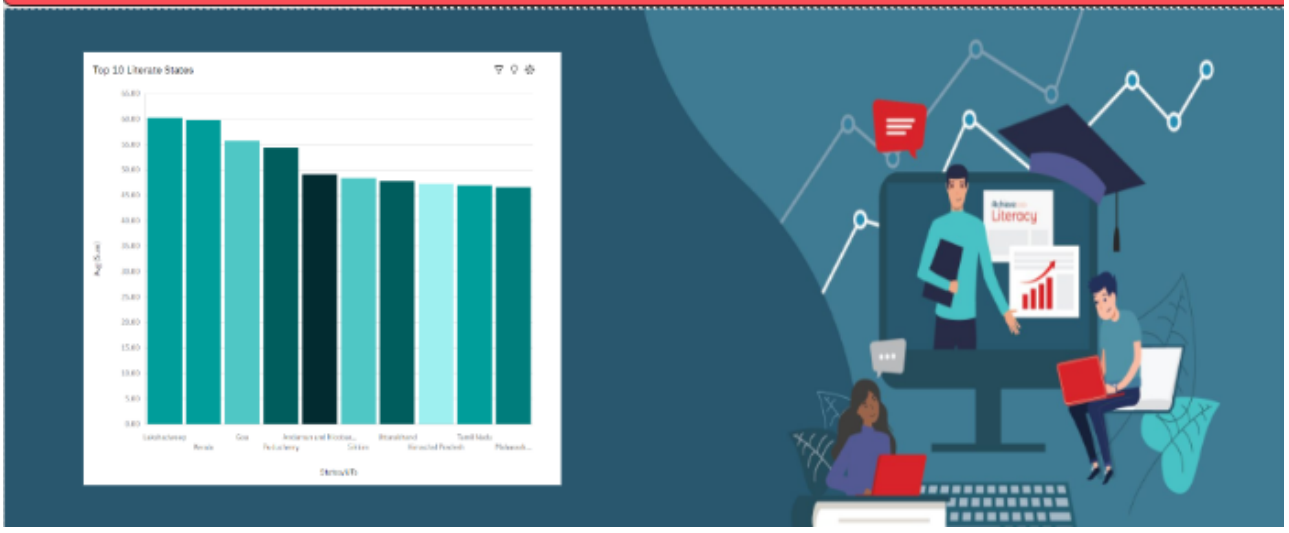
Literacy Rate

Literacy in its broadest sense describes "particular ways of thinking about and doing reading and writing" with the purpose of understanding or expressing thoughts or ideas in written form in some specific context of use.

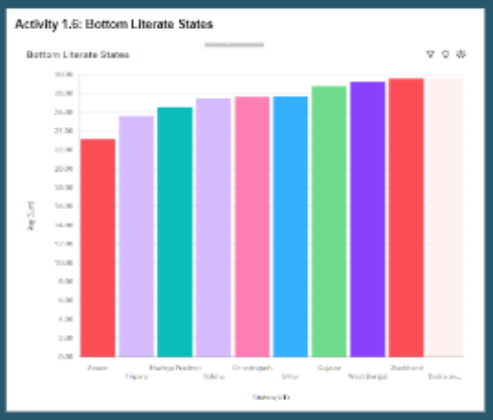
Overall Literacy Rate



Top Literacy Rate



Bottom Literacy Rate



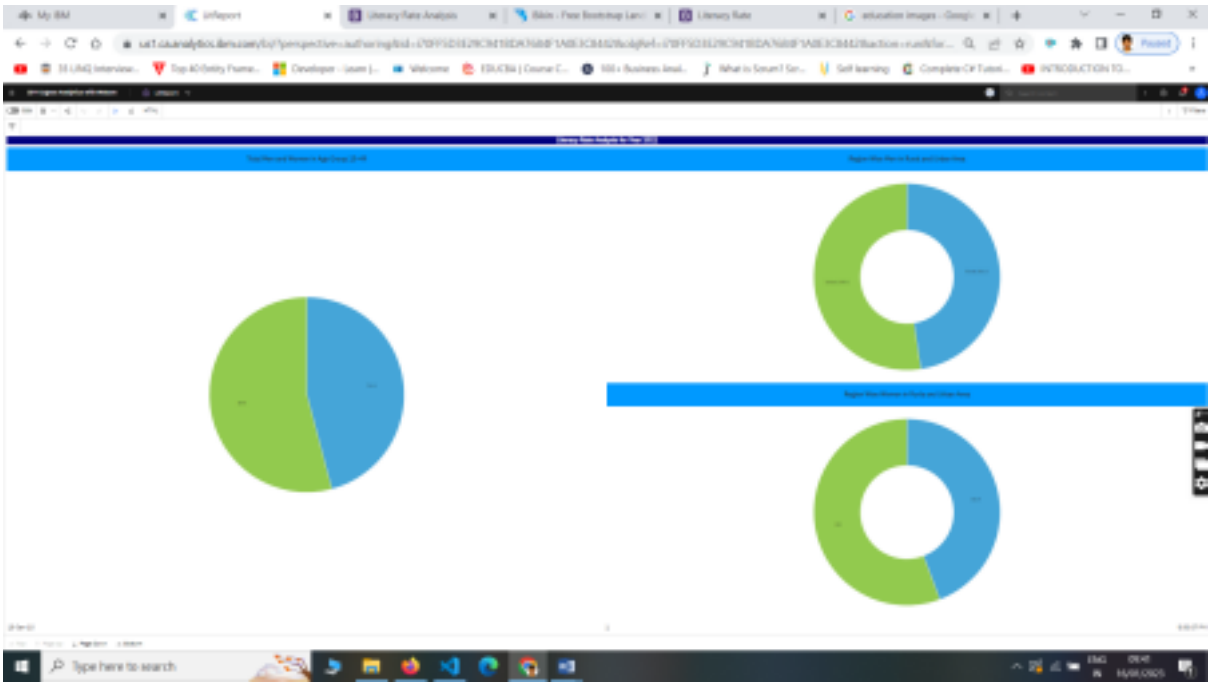
Women Literacy Rate in Rural and Urban Area

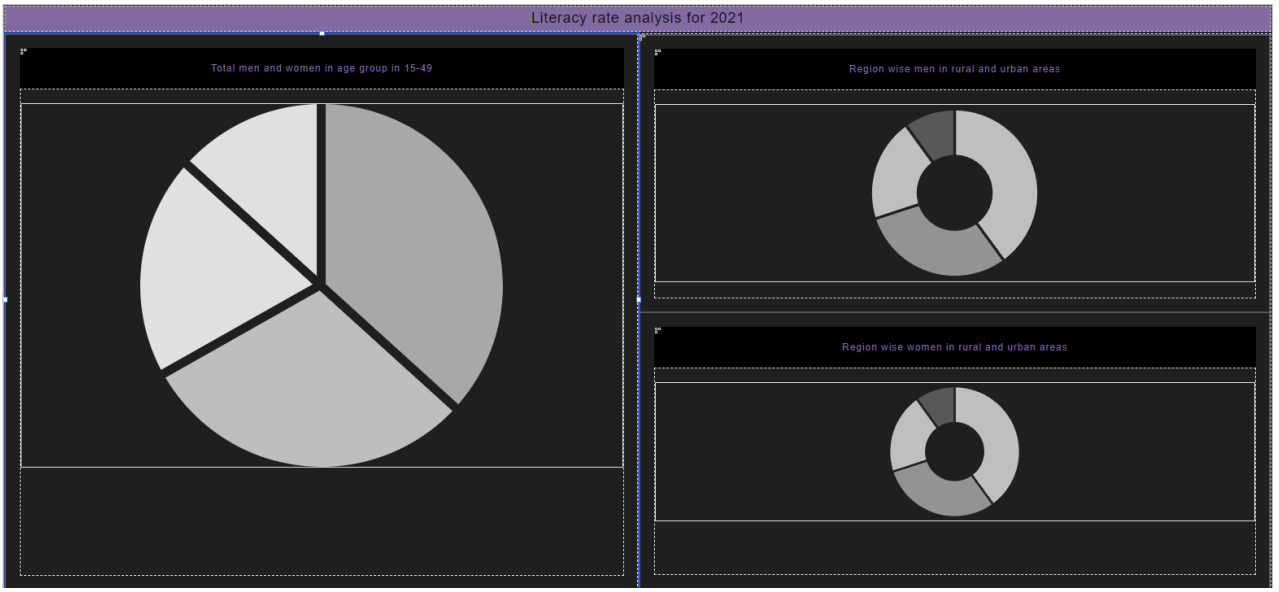
Milestone 7: Report

A report in data analytics typically involves analysing and interpreting data to draw insights and conclusions that can inform business decisions or address research questions. The report usually includes a summary of the data analysis process, including the methods and tools used, as well as the findings and recommendations based on the analysis. The report should begin with an executive summary, which provides a brief overview of the main findings and recommendations. The introduction should provide background information on the problem or research question being addressed and the data sources used.

Activity:1- No of Visualization with detail information

When creating a report in Cognos, it is often helpful to include visualizations to help communicate the findings of the analysis.



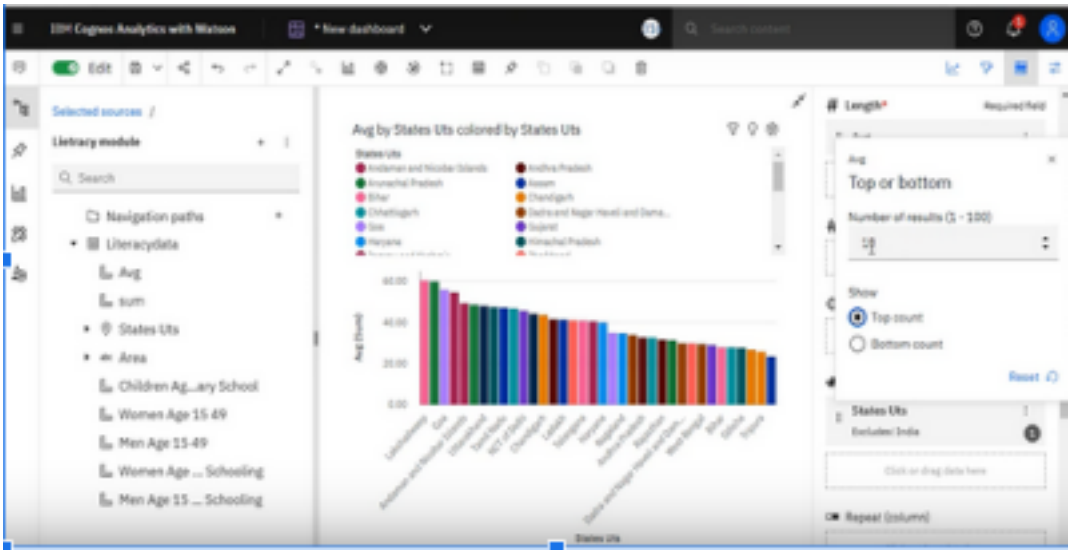

Literacy rate analysis for 2021
Total men and women in age group in 15-49
Region wise men in rural and urban areas
Region wise women in rural and urban areas

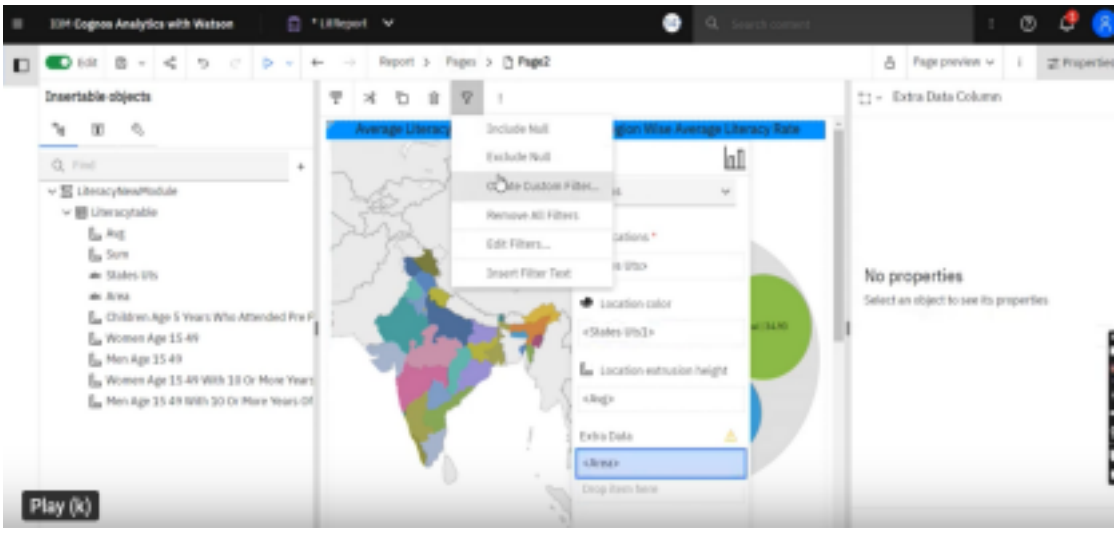
Milestone 8: Performance Testing

Activity 1: Amount of Data Rendered to DB2

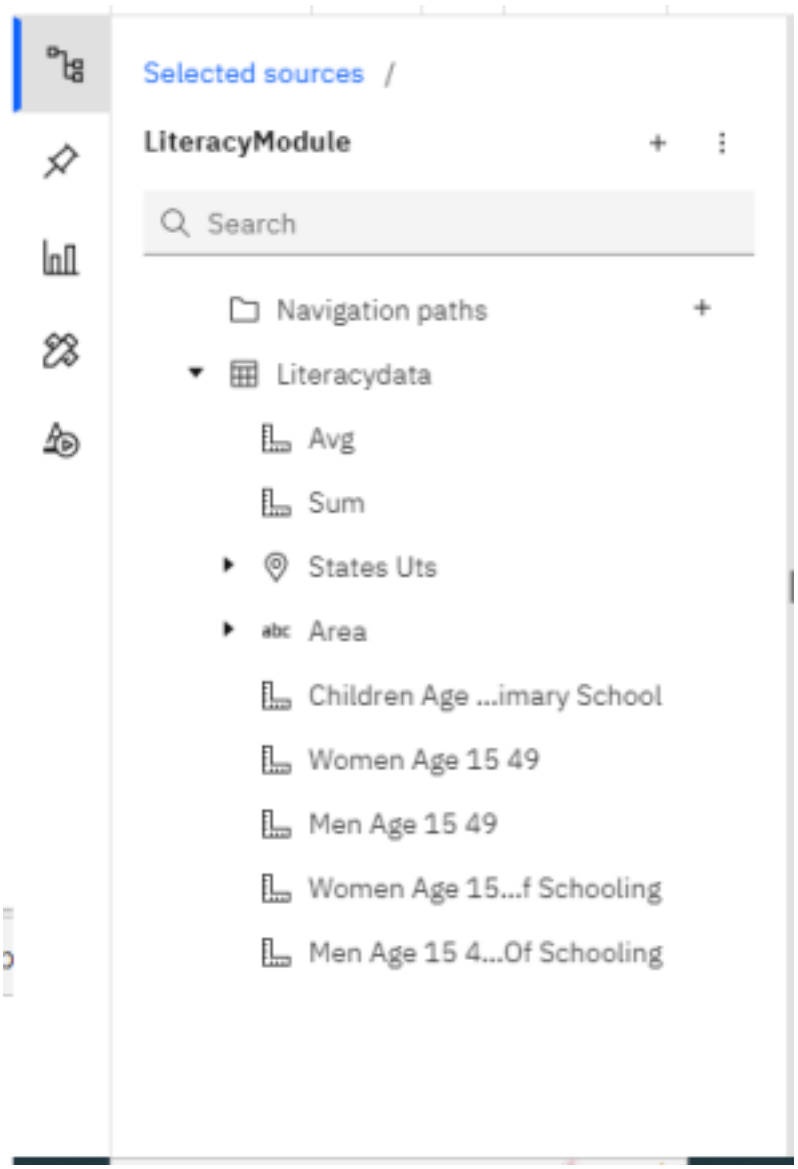
- The amount of data that is rendered to a database depends on the size of the dataset and the capacity of the database to store and retrieve data.

Activity 2: Utilization of Data Filters





Activity 3: No of Calculation Fields



Activity 4: No of Visualizations/ Graphs

1. Overall Literacy Rate
2. Literacy Rate in Indian States
3. Literacy Rate of Women, Men and Children
4. Average Literacy Rate of Women, Men and Children in States
5. Top Literate States
6. Bottom Literate States
7. Women Literacy Rate in Rural and Urban Area
8. Men with Age group 15-49 over those who attended schooling

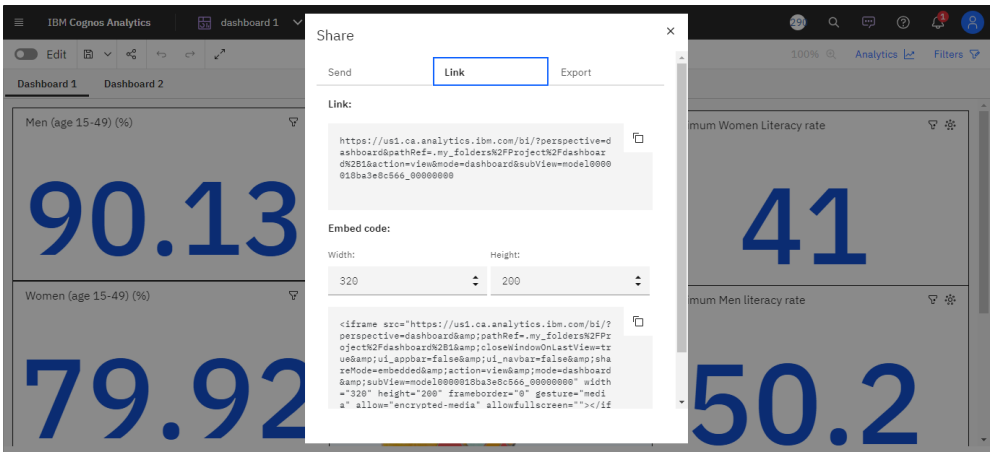
Milestone 9: Web integration

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.

Publishing dashboard, report & story.

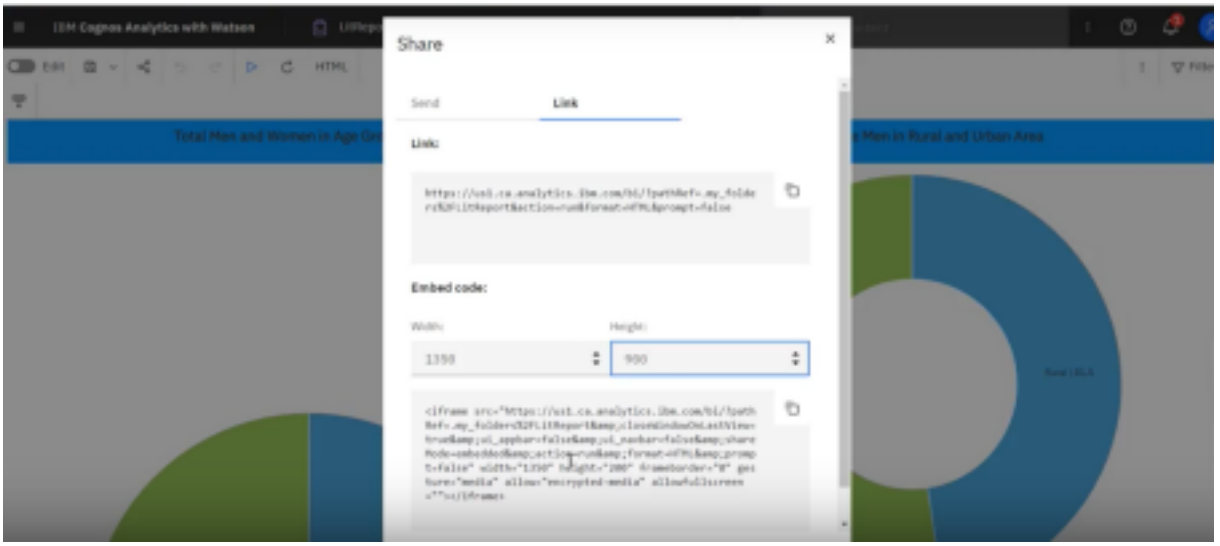
Step 1: Go to Dashboard, report & /story, click on share button on the top.

Dashboard



Story

Report



Activity 1: Dashboard, Report and Story embed with UI with Flask

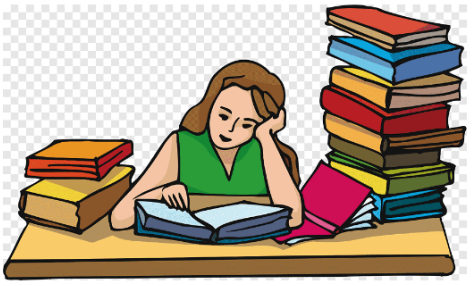
Literacy Rate

Home Dashboard Story Report Contact Get Started

Empowering the Future: A Literacy Rate Analysis for a Better Future Tomorrow

Literacy is another appropriate indication of economic progress for determining societal development. In India, a person over the age of seven who can write and read in any language with understanding is considered literate for census purposes.

Get Started

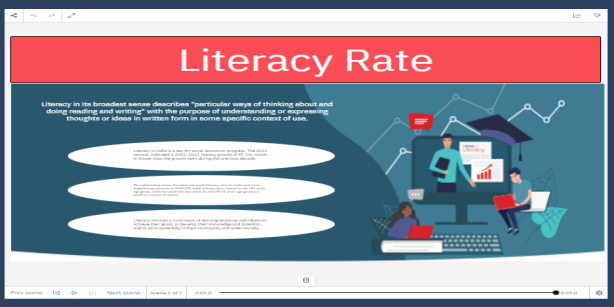


Dashboard

Literacy Rate

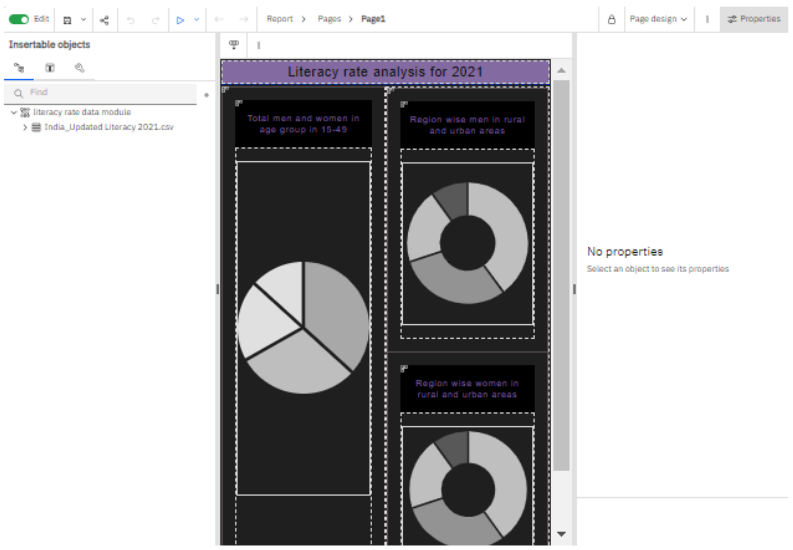
Home Dashboard Story Report Contact Get Started

Story



Report

Report



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Milestone 10: Project Demonstration & Documentation

Activity 1:- Record explanation Video for project end to end solution

Activity 2:- Project Documentation-Step by step project development procedure