CAPSTONE PROJECT

TRACKING MATERNAL HEALTH PROGRESS TOWARD SDG 3.1: A GLOBAL DATA ANALYSIS

Presented By:
Akhila Nandkishor Prabhukeluskar-Thakur College of Engineering and Technology-Computer Engineering

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OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

PROBLEM STATEMENT

The Sustainable Development Goal 3.1 aims to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. Monitoring progress towards this goal requires analyzing country-wise data on maternal mortality and associated health indicators such as antenatal care coverage, births attended by skilled personnel, adolescent birth rates, and healthcare expenditures. Despite global efforts, maternal health outcomes vary drastically between regions and income groups, raising the need for data-driven insights into the factors influencing maternal health.

PROPOSED SOLUTION

- The proposed system aims to analyze and predict the progress of various countries toward achieving Sustainable Development Goal 3.1 — reducing the global maternal mortality ratio to less than 70 per 100,000 live births by 2030. By leveraging data analytics on maternal health indicators, the system provides insights that help identify high-risk regions and enable targeted interventions.
- The solution will consist of the following components:
  Data Collection:

  The dataset used is the AI Kosh Dataset, sourced from the Government of India's open data platform. It includes data on maternal mortality ratio (MMR), antenatal care c coverage, skilled birth attendance, adolescent birth rate, and healthcare expenditure.
- **Data Preprocessing:**

  The collected data is cleaned to handle missing values, outliers, and inconsistencies. Key indicators are normalized and standardized to allow for accurate cross-country comparison.
- **Deployment:**

  The analysis is deployed on IBM Cloud using Watson Studio. A user-friendly interface displays interactive visualizations, such as pie charts and line graphs, that show progress across countries and regions.
  - **Evaluation:**

  The model's outputs are evaluated by examining year-wise trends, regional disparities, and indicator correlation strength. Analytical methods include correlation analysis and clustering.

SYSTEM APPROACH

- The system approach outlines the methodology and tools used to track and analyze maternal health progress across countries.:

  System requirements:

- IBM Cloud (Watson Studio)
- Cloud Object Storage (for dataset handling)

ALGORITHM & DEPLOYMENT

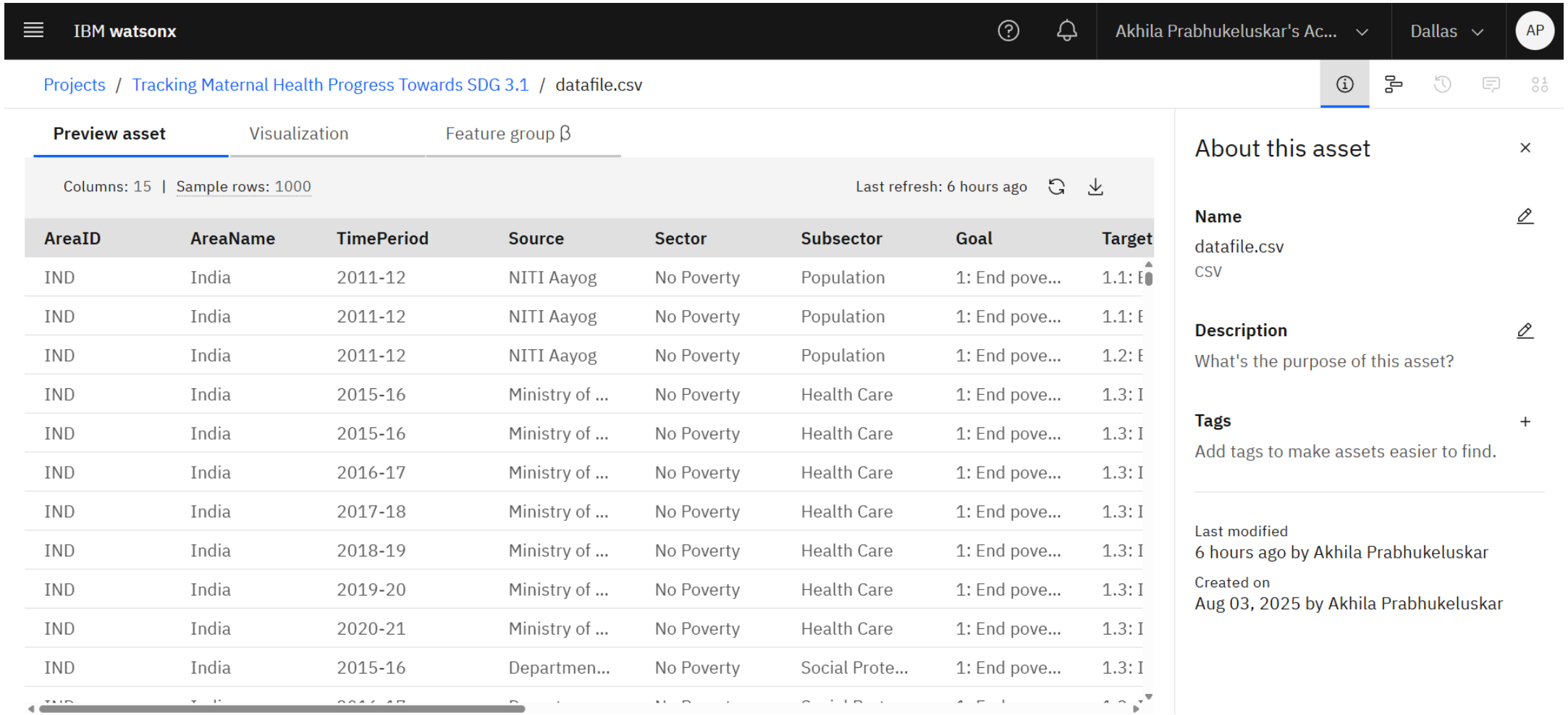
- This section describes the algorithm and deployment strategy used to analyze trends and forecast maternal health progress.
  - **Algorithm Selection:**

    A combination of statistical analysis and clustering (K-Means) is used to group countries based on similar maternal health profiles. Additionally, ARIMA (AutoRegressive Integrated Moving Average) is used for time-series forecasting of MMR trends
  - **Data Input:**

    AreaID AreaName, TimePeriod, Source Sector, Subsector, Goal, Target, Indicator, Unit, Subgroup, Dimension, Subgroup, SubgroupOrder , DataValue, Footnote
  - **Visualiization:**

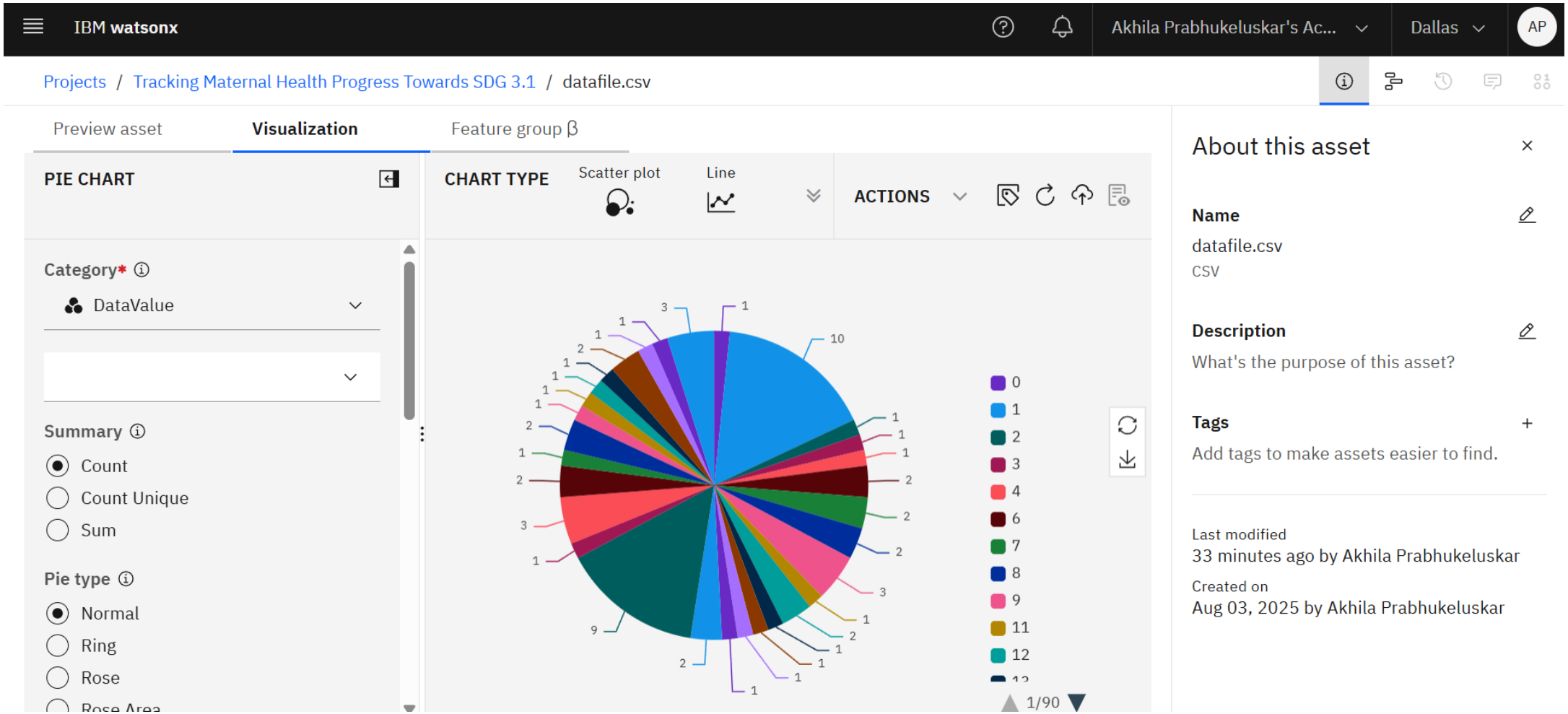
    The data set is visualized on vatsonx under asset section in pie and line graph for analyzing the marital health progress

RESULT

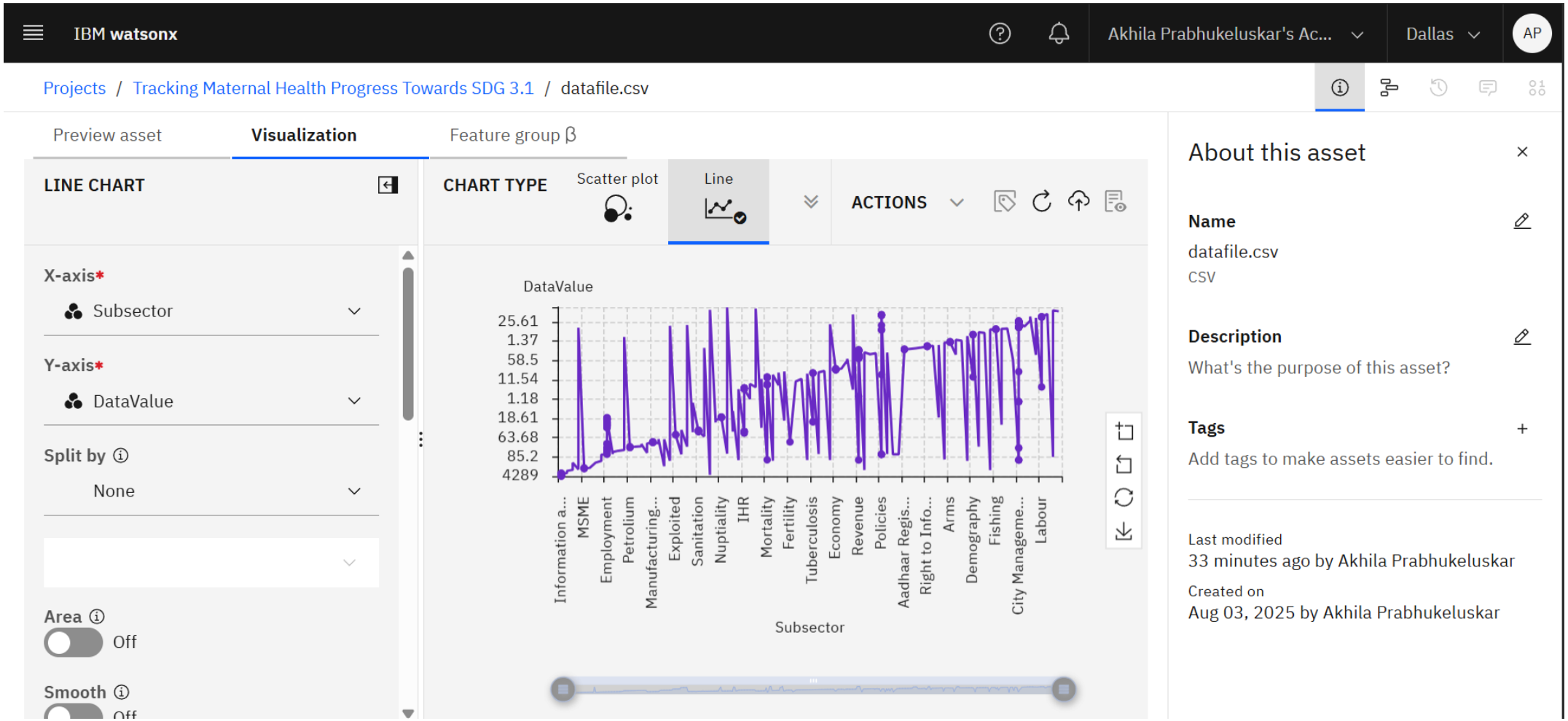


AreaID	AreaName	TimePeriod	Source	Sector	Subsector	Goal	Target
IND	India	2011-12	NITI Aayog	No Poverty	Population	1: End pove...	1.1: E
IND	India	2011-12	NITI Aayog	No Poverty	Population	1: End pove...	1.1: E
IND	India	2011-12	NITI Aayog	No Poverty	Population	1: End pove...	1.2: E
IND	India	2015-16	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2015-16	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2016-17	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2017-18	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2018-19	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2019-20	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2020-21	Ministry of ...	No Poverty	Health Care	1: End pove...	1.3: I
IND	India	2015-16	Departmen...	No Poverty	Social Prote...	1: End pove...	1.3: I

RESULT



RESULT



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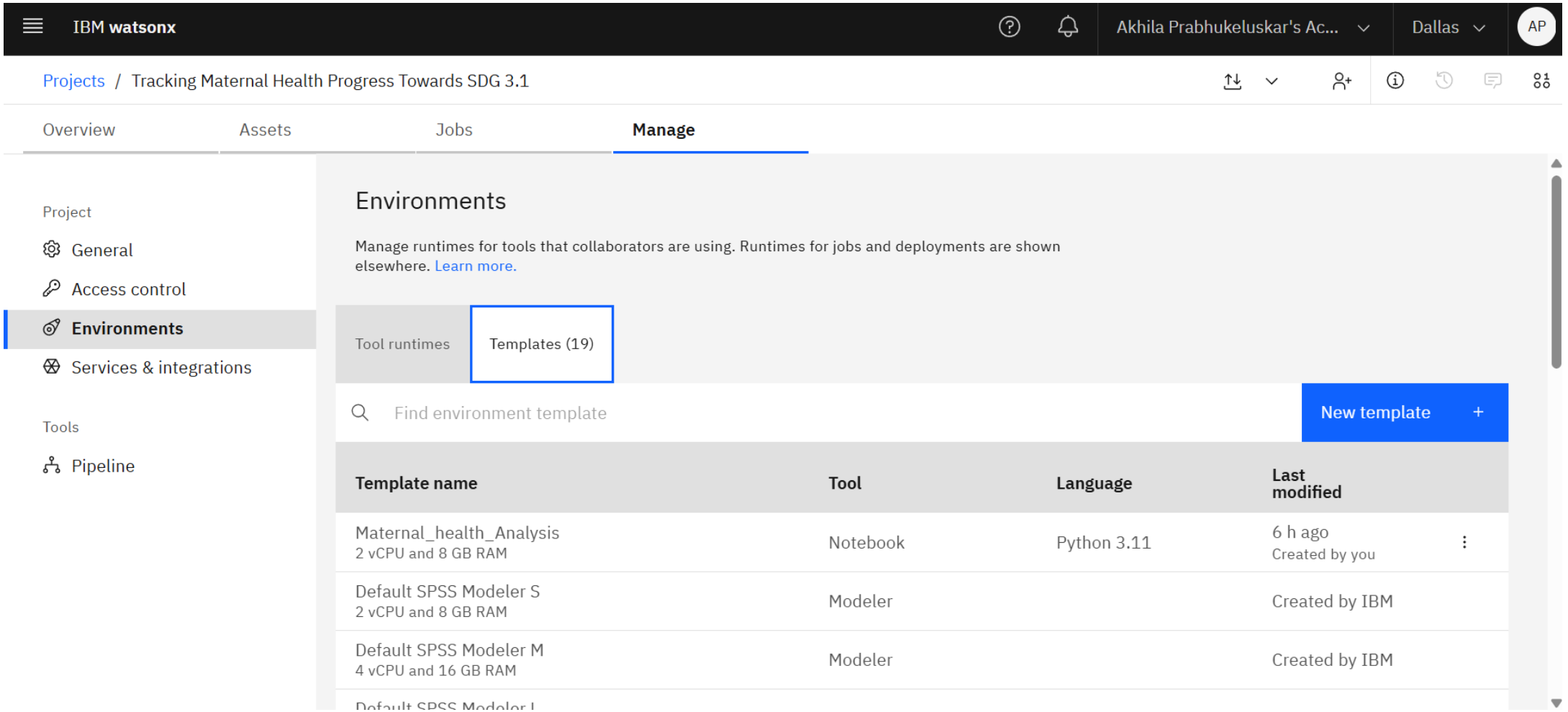
RESULT



CONCLUSION

- This project successfully visualizes global maternal health indicators using publicly available data from Al Kosh. By focusing on **interactive and informative visualizations**, we highlight disparities in healthcare access and maternal mortality across different countries.
- No predictive model was built, but the visual tools serve as a strong foundation for informing health policy, research, and further machine learning-based analysis if needed.

FUTURE SCOPE

Integrate additional datasets from WHO or UNICEF to provide a more global and updated view.Incorporate real-time data streams from national health dashboards.Develop regional drill-down dashboards for state- or district-level analysis.Introduce predictive capabilities in the future using time-series forecasting.Enhance dashboard interactivity with user-selectable filters (e.g., region, income level, year range).

REFERENCES

- AI Kosh Dataset – data.gov.in
- IBM Watson Studio Documentation

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