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INTRODUCTION & BACKGROUND MOTIVATION

Goal: mapping tool with predictive environmental risks

that may impact a manufacturing site's water to inform leaders how to adapt and optimize operations to mitigate those risks. Extreme weather conditions impact water quality, pH, and availability. Our team was tasked to make predictions using past data to help manufacturers anticipate changes and help reach PepsiCo's 2025 goal of a 25% improvement in water-use efficiency in 6 states: Arizona, California, Colorado, Florida, Nevada, Texas.



POWER BI DASHBOARD



Figure 2: Weather Monitoring Dashboard Showcasing Weather Data and Real-Time Insights



Diverse Climate Data

Integrates (temperature, wind , rainfall, snow, humidity, drought, flood) for PepsiCo's factories across six states.



Benchmarks Conditions using Data

With color codes to highlight risks above, below, or within normal ranges of 10-year historical data.



Real-time Monitoring

With interactive filters for state and county-level insights to support sustainable decisions.

Google Trends functions as a sub-section within the Power BI dashboard, providing relevant keywords that support our data analysis.

Team Members: Akhand Bindra, Asrith Nedurumalli, Gokul Mani, Hansheng Liu, Mayank Goel, Muhammad Muhammad, Prashansa Talati, Ramya Rajaram, Manthan Rao, Sejal Verma, Shrish Mahesh, De'keva Creshana Tindal, Wei-Ting Chang, Chi Che Colin Wu, Xiaochan Wang, Xiaochong Chen

Mapping Environmental Risks

RESEARCH METHODOLOGY



GOOGLE TRENDS INSIGHTS

Google Trends Dashboard		🔆 2/14 11:00 AM	•
Local Trending	Keyword Highlights	Strong Correlation Keywords	
Showing Local Trending Keywords	The purpose of this section is to create an	Drought &	•
In every 3hours	and Nationwide Keywords sections, when you click on a particular keyword, this	Water Scarcity	
3 keywords in a section	adjacent section will display a summary of that keyword	 Noticeable spikes occurred in mid-July, 	• -
• Live 0 votes	Live 0 votes	coinciding with new local water restrictions.	(
PepsiCo & Water Resource Keywords	Water Scarcity	This suggests that public concern about drought	
Showing PepsiCo itself related Trending Keywords	80	and broader water scarcity issues tends to rise in tandom indicating a	
In every 3hours	50	combined impact on	• To
3 Keywords Sets		policy discussions.	v.
• Live 1 vote			fc

Figure 3: Real-Time Keyword Analysis Dashboard



Keyword Monitoring

Monitors keyword mentions in water-related discussions to proactively manage sustainability challenges.



Trending Keywords Refresh

Daily updates capture the latest local and PepsiCo-related water topics for timely decision-making insights.



Alerts for Abnormal Trends

Identifies sudden spikes in trending words and sends immediate alerts for rapid response to risks or opportunities.

The Data Mine Corporate Partners Symposium 2025

Faculty & TA: Professor Jinsuh Lee, Ashley Arroyo, Kush Malhotra PepsiCo Mentors: Wenny Noha, Anthony Weishampel, Janette Pool Google. (n.d.). Google Trends. <u>https://trends.google.com/trends</u> JSON and XML weather API and Geolocation Developer API. Free Weather API -WeatherAPI.com. (n.d.). https://www.weatherapi.com/ US Department of Commerce, N. (2025, March 3). API web service. National Weather Service. https://www.weather.gov/documentation/services-web-api



API WORK





Trend Analysis

Got insights from the current and historical Weather API to identify patterns in weather





PEPSICO

Data Integration Cleaned and transformed API data in Power Query for seamless analysis

CONCLUSION

The Environmental Monitoring Dashboard effectively integrates diverse climate data to provide actionable insights for PepsiCo's factory locations. By benchmarking current conditions against historical data and offering realtime monitoring, it empowers plant managers to **proactively address** environmental risks.

The interactive filters and state-level analysis ensure that targeted actions can be taken swiftly to support **sustainable operations**.

FUTURE GOALS

enhance our operational efficiency and commitment to sustainability, /e're introducing advanced predictive analytics to boost accuracy in our precasts using machine learning, aiming for proactive risk management at our U.S. factory locations.

• Our sustainability initiatives will align closely with PepsiCo's environmental goals, actively tracking our advances in water conservation and waste reduction strategies.

REFERENCES/ACKNOWLEDGEMENTS