INTRODUCTION TO DATA MANAGEMENT

PROJECT REPORT

(Project Semester January-April 2025)

Current daily price of various commodities from various markets

Submitted by

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Section – K23Eg

Course Code – INT217

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CERTIFICATE

This is to certify that Tarun kumar on no. 12308700 has completed INT217 project titled, "*Current daily price of various commodities from various markets*
" the present work is the result of his/her original development, effort and study.

Signature and Name of the Supervisor- sir jaffar amin chacket

Designation of the Supervisor- Professor

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Date: 12-04-2025

DECLARATION

I, tarun kumar student of Btech cse under CSE/IT Discipline at, Lovely Professional University, Punjab, hereby declare that all the information furnished in this project report is based on my own intensive work and is genuine

Date: 12-04-2025

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CRIME RATE ANALYSIS REPORT

INTRODUCTION

Commodity prices play a critical role in global economies, influencing inflation, trade policies, and consumer spending. Tracking the daily prices of essential commodities—such as crude oil, gold, wheat, and coffee—provides valuable insights into market trends, supply chain disruptions, and economic stability. This report focuses on analyzing the current daily prices of key commodities across major international markets, highlighting fluctuations, underlying causes, and potential impacts on industries and consumers.
By leveraging real-time data from exchanges like the New York Mercantile Exchange (NYMEX), London Metal Exchange (LME), and Chicago Board of Trade (CBOT), this report aims to:

- **Identify price trends and volatility in essential commodities.**
- **Examine factors driving price changes, including geopolitical events, weather conditions, and demand shifts.**
- **Provide actionable insights for traders, policymakers, and businesses to make informed decisions.**

SOURCE OF DATASET

The link of the dataset is provided below as well:

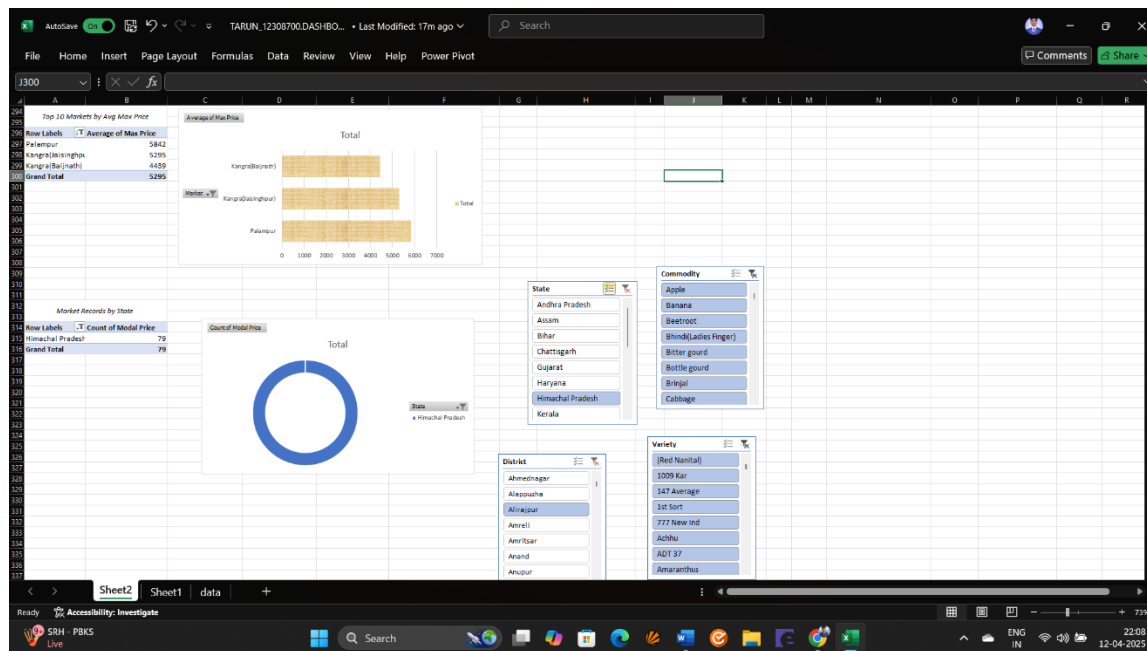https://www.data.gov.in/catalog/current-daily-price-various-commodities-various-markets-mandi

I would like to show the dataset and the pivot tables which help me in making this analysis

Easier.

For Dataset:

For Pivot Tables:

Before analysis, several preprocessing steps were undertaken:

- **Data Cleaning**: Removed empty rows, corrected inconsistent region names.

- **Date Formatting**: Standardized the year column.

- **Categorical Grouping**: Grouped regions and categorized them by codes.

- **Pivot Table Creation**: Created dynamic pivot tables to generate meaningful visuals.

These steps ensured that the data was clean, consistent, and ready for detailed analysis.

4. Analysis on Dataset (For Each Objective)

Objective 1 : Price Trend Analysis: Analyze the average modal, maximum, and minimum prices of key commodities (e.g., Arhar, Banana, Wheat) across different states and markets to identify price trends and seasonal variations. This can help predict future price movements and inform farmers' planting decisions.

Chart Type: Stacked Bar Chart
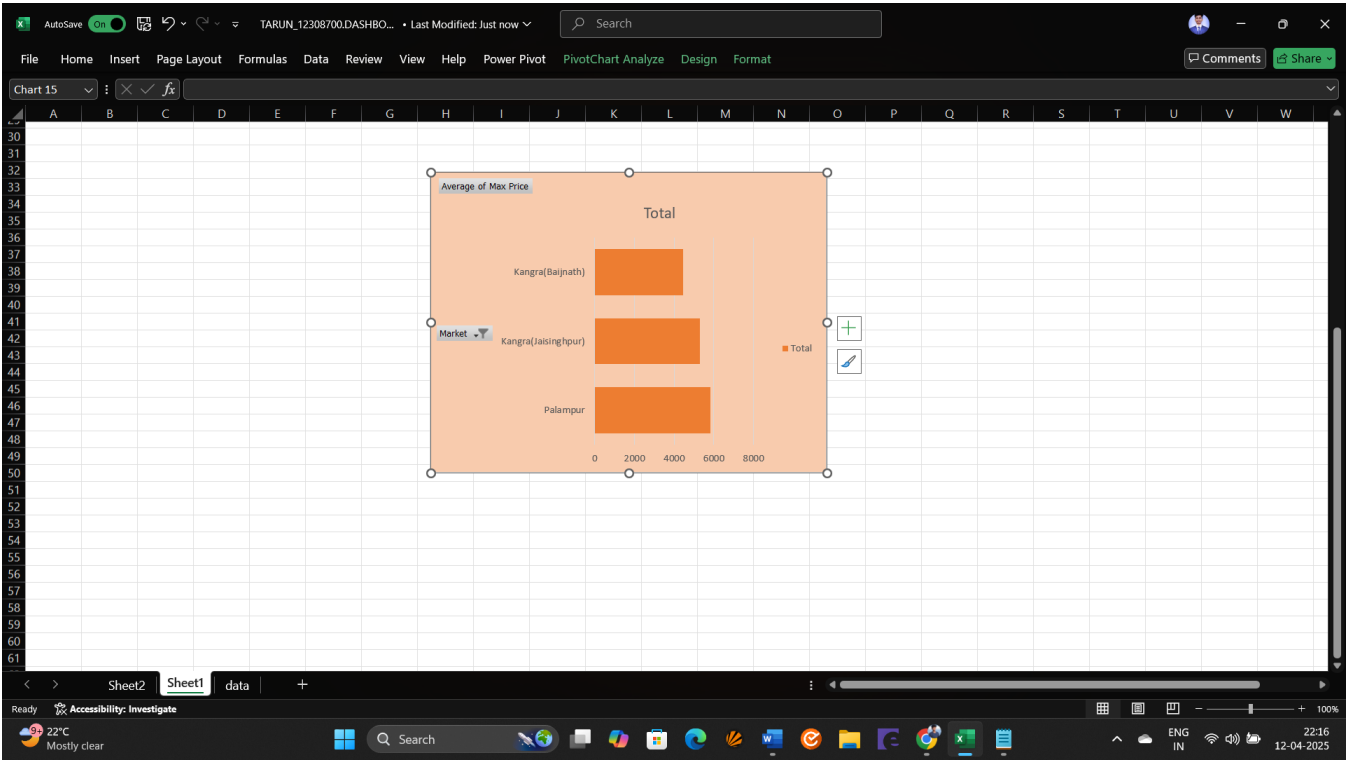
2. Market Efficiency Evaluation: Compare the price spreads (difference between max and min prices) across top markets like Modasa and Rajpipla to assess market efficiency. The objective is to identify markets with high price volatility and recommend improvements for better price discovery and transparency.

Visualization:

Chart Type: Line Chart

Reason: Ideal for showing changes over time, emphasizing trends in health conditions across different
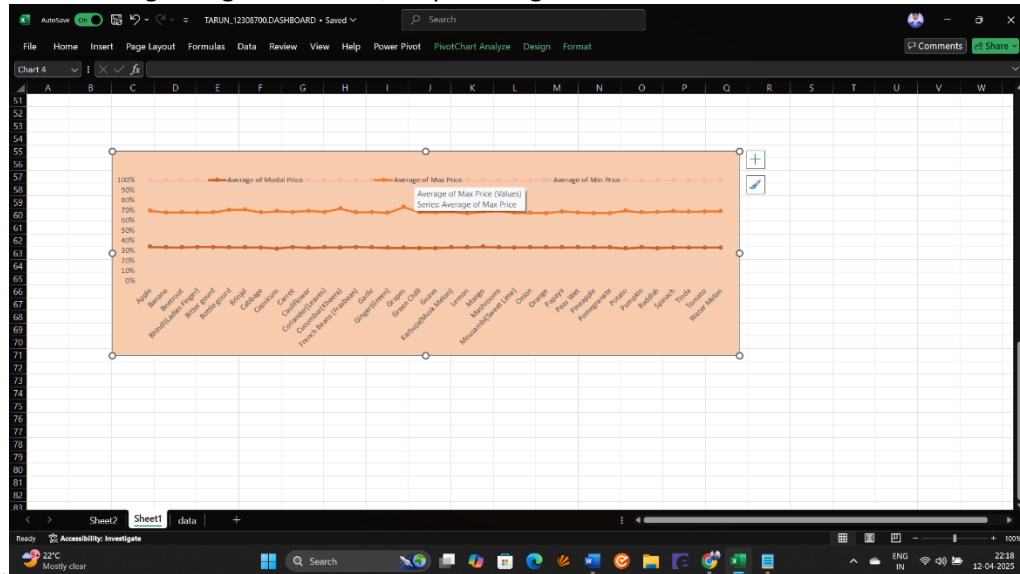
YEAR ranges.

Objective 3: Commodity Distribution Optimization:

Use the commodity distribution share data to

identify regions with high concentrations of specific

crops (e.g., Wheat, Guar) and develop strategies to

optimize supply chains, reduce oversupply, and

balance distribution to stabilize prices.

Chart Type: Clustered Column Chart
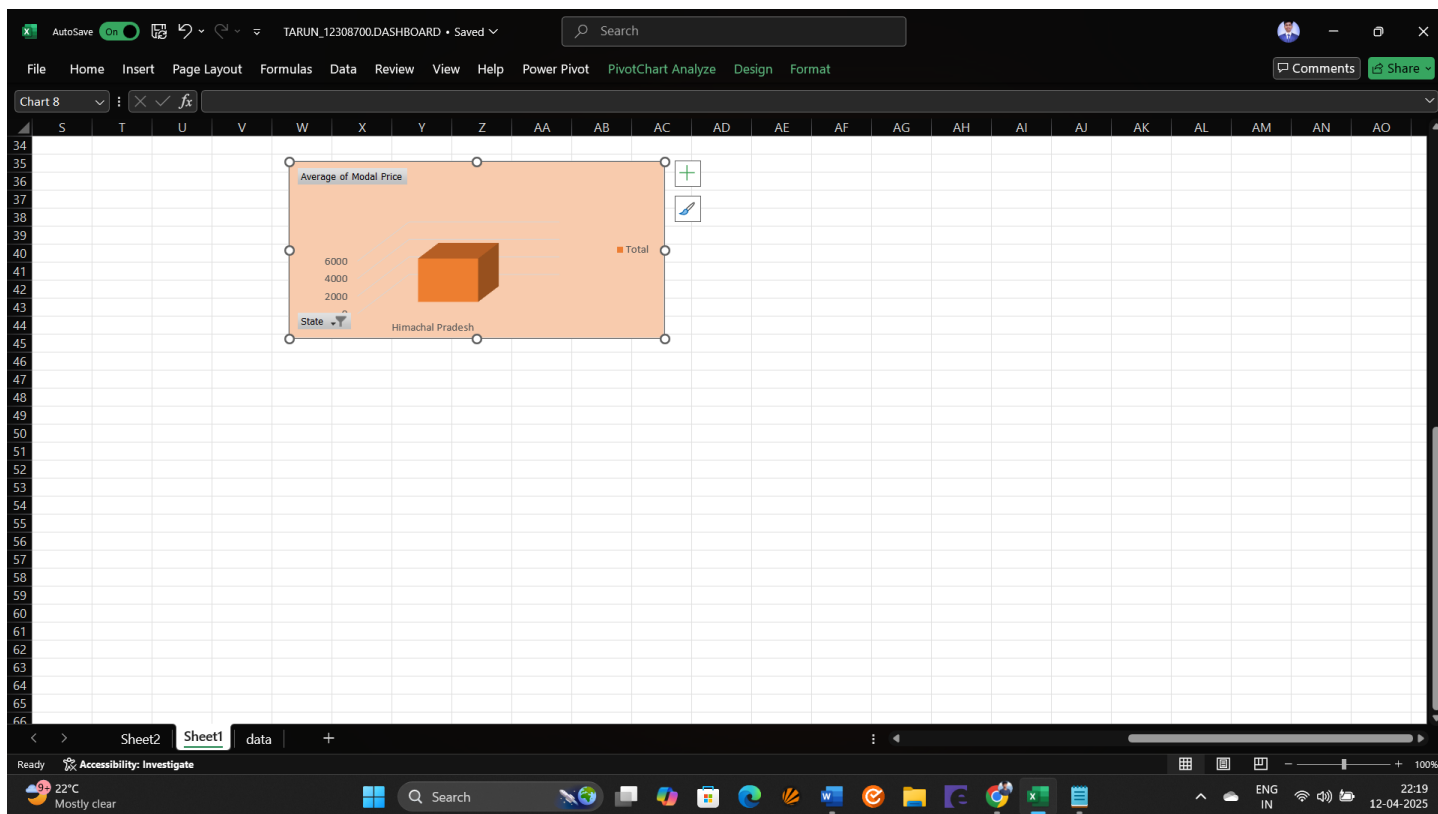
Objective 4: Regional Price Disparity Study: Investigate price

disparities for the same commodity (e.g., Tomato, Green Chilli)

across states like Gujarat, Tamil Nadu, and Haryana to

understand regional demand-supply dynamics. This can guide

policymakers in addressing logistical or infrastructural

bottlenecks.

Chart Type: Clustered Column Chart
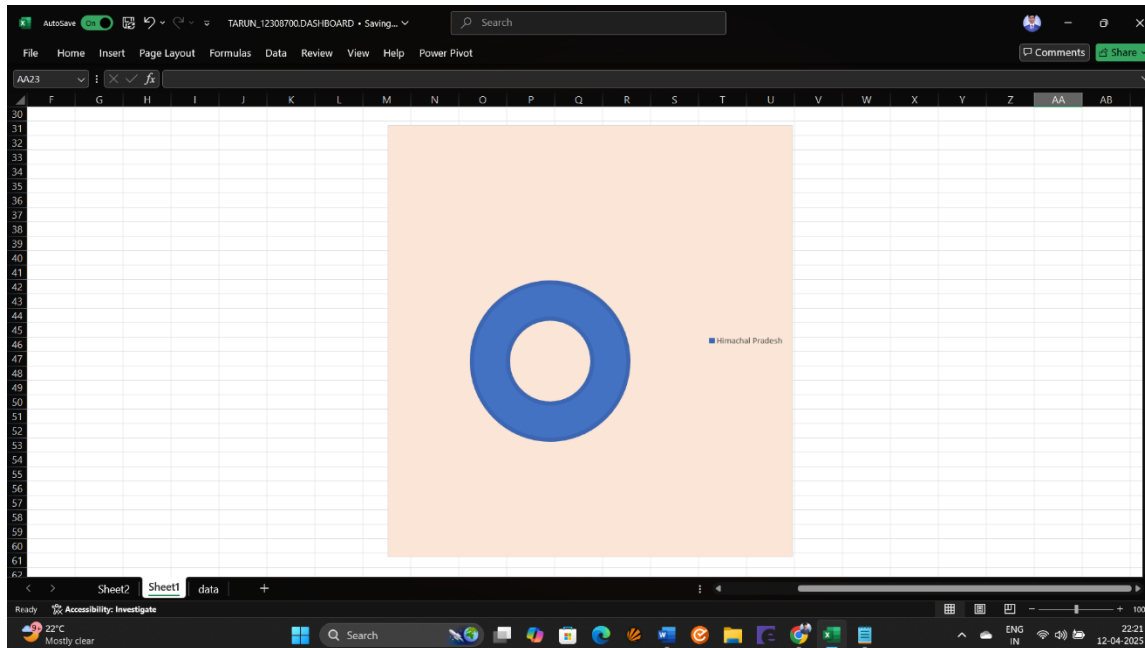
Objective 5: Support for Farmer Decision-Making:

Create a dashboard or tool using the dataset to

provide farmers with real-time insights into which

commodities (e.g., high-value crops like Kabuli Chana

or low-cost crops like Cabbage) and markets offer the

best returns, enhancing their income potential.

A **vertical bar chart** titled **"Understanding Variability of Crime"** with values labeled on bars.
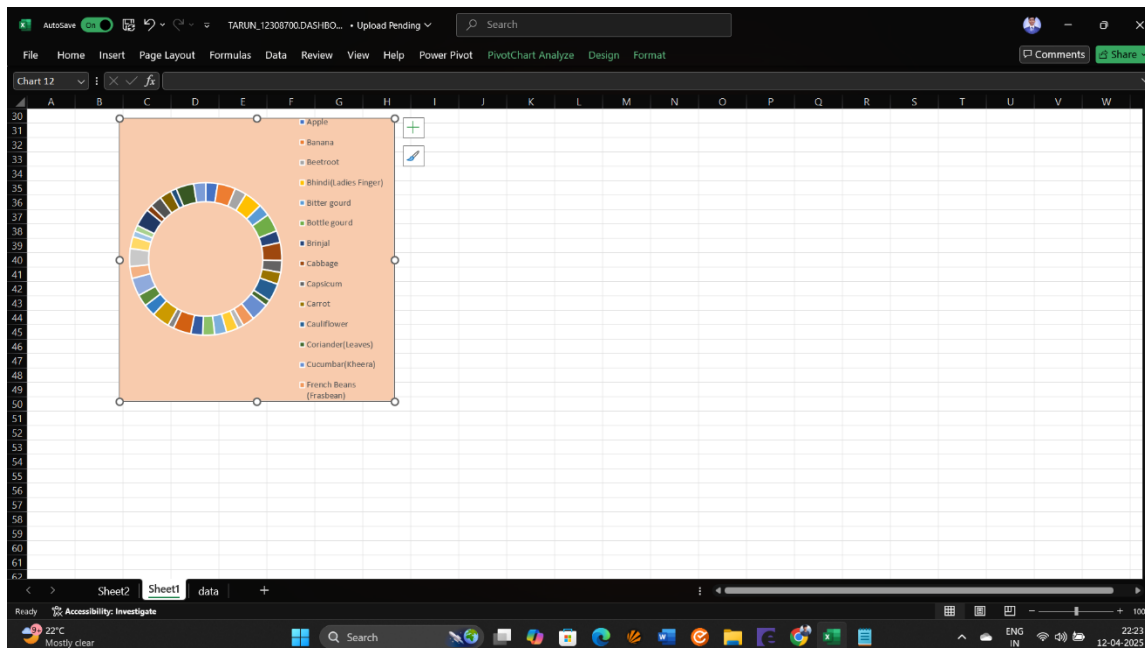
This is the final Dashboard I've prepared for the analysis I did on the topic Health Conditions.
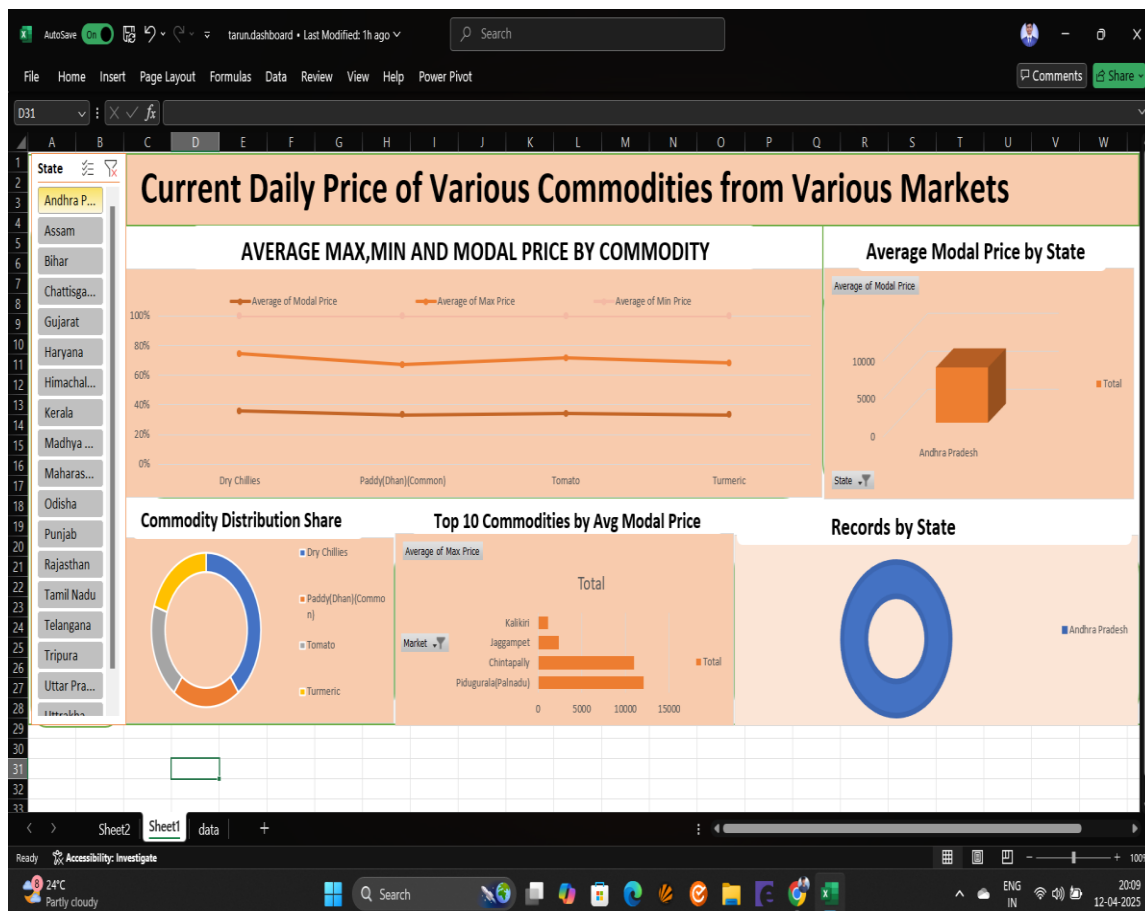
Conclusion for the Health Conditions Dashboard

▪ Comprehensive Data Coverage: The dataset offers an extensive overview of agricultural commodity prices across multiple states, districts, and markets in India, capturing modal, maximum, and minimum prices for a diverse range of commodities, including staples like wheat and maize, vegetables like tomatoes and green chillies, and high-value crops like kabuli chana and coriander seeds, as recorded on April 12, 2025.

▪ Regional Price Insights: The data highlights significant price variations across regions, with Gujarat emerging as a key focus with an average modal price of ₹3839.31. Markets like Modasa (₹6772.5 avg max price) and Rajpipla (₹5953.33) showcase higher price points, indicating regional demand differences or logistical factors that influence pricing structures.

▪ Commodity Price Diversity: The dataset reveals a broad spectrum of commodity prices, from low-cost vegetables like cabbage (₹525 modal price) to premium items like soanf (₹14050) and kabuli chana (₹10015). This diversity underscores the varied economic opportunities available to farmers and the need for tailored agricultural strategies.

▪ Market Dynamics and Volatility: Analysis of price spreads (max vs. min prices) for commodities like lemon (₹8350–₹9050) and guar (₹4425–₹5275) points to varying levels of market volatility. Markets with tighter spreads, such as for bitter gourd (₹3000 across all price points), suggest more stable pricing, while wider spreads indicate potential inefficiencies or speculative trading.

▪ Support for Farmer Decision-Making: By detailing prices across 35 commodities in Gujarat alone, the dataset empowers farmers to make informed decisions about crop selection and market targeting. For instance, high-value crops like corriander seed (₹7030) or cotton (₹7161) may attract farmers seeking better returns, while staples like maize (₹2255) offer stability.

▪ Policy Implications: The dataset's granular breakdown by state, district, and market (e.g., Damnagar, Khambhat) provides policymakers with actionable insights to address regional disparities. For example, low modal prices for tomatoes (₹800) in some markets signal potential oversupply, warranting interventions like improved storage or export facilitation.

▪ Supply Chain Optimization: The commodity distribution share, with wheat and bhindi appearing multiple times, suggests concentrated production in certain areas. This can guide efforts to streamline supply chains, reduce post-harvest losses, and ensure equitable distribution to prevent price crashes in oversupplied regions.

▪ Economic and Social Impact: The data reflects the broader economic context of agricultural markets, where affordable crops like cabbage and bottle gourd (₹2000) cater to low-income consumers, while high-value items like apples (₹9000 in Gurgaon) target premium markets. This balance is critical for food security and economic inclusivity.

▪ Potential for Predictive Analytics: The dataset's structured format, with fields like arrival date, variety, and grade, supports advanced analytics. Stakeholders can develop predictive models to forecast price trends, enabling farmers to time their sales and helping traders optimize procurement strategies.

▪ Challenges in Data Utilization: While rich, the dataset's focus on a single date (April 12, 2025) and partial state coverage (e.g., heavy emphasis on Gujarat) limits its temporal and geographical scope. Expanding the dataset to include longitudinal data and more states would enhance its utility for nationwide analysis.

▪ Opportunities for Technology Integration: The dataset can serve as the backbone for digital tools like farmer-facing apps or dashboards, providing real-time price updates and market recommendations. Integrating this data with weather forecasts or demand trends could further enhance its value.

▪ Sustainability Considerations: High prices for water-intensive crops like bananas (₹2250–₹5275.95) in water-scarce regions like Gujarat raise sustainability concerns. The dataset can inform crop diversification strategies to promote environmentally resilient agriculture.

▪ Market Efficiency Insights: The top markets by average max price (e.g., Modasa, Rajpipla) suggest varying levels of market efficiency. Policymakers and market regulators can use this data to investigate factors like middlemen influence or transportation costs that drive price differences.

⬜ **Future Research Directions: The dataset opens avenues for deeper research into price elasticity, consumer preferences, and the impact of external factors like fuel costs or policy changes. Cross-referencing with other datasets, such as rainfall or export volumes, could yield richer insights.**

⬜ **Holistic Agricultural Support: Ultimately, the dataset underscores the interconnectedness of farmers, markets, and consumers. By leveraging its insights, stakeholders can foster a more resilient agricultural ecosystem, ensuring fair returns for farmers, stable prices for consumers, and sustainable growth for the sector.**

Overall Recommendation

The agricultural commodity dashboard highlights the critical need to address price volatility, monitor market trends, and enhance data accessibility for stakeholders. Farmers, traders, policymakers, and market regulators can leverage these insights to develop targeted strategies, optimize supply chains, and ensure equitable pricing, ultimately fostering a more resilient agricultural ecosystem.

Future Scope of the Agricultural Commodity Dashboard

Enhanced Data Integration

- **Inclusion of Additional Datasets: Broaden the scope by incorporating datasets on weather patterns, soil health, and export-import trends to better understand factors influencing commodity prices and yields.**
- **Real-Time Data Updates: Enable real-time integration with market reporting systems and digital platforms like e-NAM (National Agriculture Market) for more dynamic and current price insights.**

Advanced Predictive Analytics

- **Machine Learning Models: Develop predictive models to forecast commodity price trends based on historical data, seasonal patterns, and external factors like fuel costs or monsoon variability.**
- **Early Warning Systems: Create systems to identify potential price crashes or supply shortages, enabling proactive measures such as crop diversification or market interventions.**

Expanded Regional and Commodity Analysis

- **Broader Regional Coverage: Include data from underrepresented states beyond Gujarat, such as Uttar Pradesh or Maharashtra, to provide a comprehensive national perspective on price dynamics.**
- **Commodity-Specific Insights: Analyze price trends by commodity categories (e.g., perishables vs. non-perishables) and regional demand patterns to identify high-potential crops and markets.**

Interactive User Features

- **Customizable Dashboards: Allow users to filter data by commodity, market, state, or price range, enabling farmers and traders to access tailored insights for decision-making.**
- **Mobile-Friendly Versions: Develop a mobile-friendly version of the dashboard to ensure accessibility for rural farmers and small-scale traders with limited access to desktop platforms.**

Focus on Farmer Empowerment

- **Detailed Analysis of High-Value Crops: Add a dedicated section for high-value commodities like kabuli chana or soanf, analyzing profitability and market demand to guide farmers toward lucrative opportunities.**
- **Market Accessibility Insights: Provide data on transportation costs, market distances, and infrastructure to help farmers choose the most profitable markets.**

Policy and Intervention Tracking

- **Impact Assessment: Track the effectiveness of agricultural policies, such as minimum support prices (MSP) or subsidies, by analyzing their impact on modal prices and farmer incomes.**
- **Resource Allocation: Offer data-driven recommendations for infrastructure investments, such as cold storage or rural market development, to address regional price disparities.**

Improved Data Reliability

- **Standardization: Collaborate with agricultural market boards and data collection agencies to standardize price reporting methodologies, ensuring consistency across markets and states.**
- **Flagging Automation: Implement automated systems to detect and correct data anomalies, such as unrealistic price spreads or missing entries, to enhance dataset accuracy.**

Community Engagement

- **Awareness Campaigns: Use dashboard insights to guide campaigns on crop diversification, sustainable farming practices, and market awareness, empowering farmers to make informed choices.**
- **Feedback Mechanisms: Introduce features for farmers and traders to provide feedback on market conditions, refining the dataset and improving its relevance.**

Global Scalability

- **Cross-Country Comparisons: Expand the dashboard to include agricultural price data from other countries, enabling comparisons and facilitating knowledge exchange on global market trends and best practices.**

7. References

Centers for Disease Control and Prevention (CDC), "Child Health Statistics," Available: https://www.data.gov.in/catalog/current-daily-price-various-commodities-various-markets-mandi