**Data-Driven Insights from Europe's Top 5 Leagues (2008–2016)**

**Introduction**

This project explores Europe’s top five football leagues (Premier League, Serie A, Ligue 1, La Liga, and Bundesliga) using a Kaggle dataset with over **25,000 matches** and **10,000 players** from 2008 to 2016.

The analysis was performed using **Python (Pandas, NumPy, Matplotlib, and Seaborn)** on Jupyter Notebook. After extensive data cleaning and preparation, the project focused on uncovering **story-driven insights** into club performance, dominance, and competitive dynamics across leagues.

**Tech Stack**

* **Python (Jupyter Notebook)** – core analysis and scripting
* **Pandas & NumPy** – data cleaning and transformation
* **Matplotlib & Seaborn** – data visualization and storytelling
* **Kaggle Dataset** – raw match and player data

**Project Workflow**

1. **Data Cleaning & Preparation** – handled missing values, standardized formats, and ensured consistency.
2. **Exploratory Analysis** – identified key storylines across each league.
3. **Statistical Analysis** – applied metrics such as clean sheets, entropy (predictability), and seasonal point comparisons.
4. **Visualization** – built clear charts to highlight insights for each storyline.

**Key Analyses & Insights**

**Premier League: Manchester United’s Decline**

* Compared pre- and post-Sir Alex Ferguson eras.
* **Insight:** Even United’s worst Ferguson season outperformed their best post-Ferguson season.

A graph of blue and red bars

AI-generated content may be incorrect.

**Serie A: Defensive Prowess**

* Investigated if clean sheets correlated with league winners.
* **Insight:** Teams with strong defensive records often aligned with league success.

A graph of different colored bars

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**Ligue 1: PSG’s Transformation**

* Compared PSG’s performance before and after the **QSI takeover (2011)**.
* **Insight:** Wins surged, goals scored increased, and defensive solidity improved significantly post-investment.

A graph with blue and orange bars

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**La Liga: Predictability of Dominance**

* Applied **entropy** to measure predictability of match outcomes.
* **Insight:** Real Madrid and Barcelona consistently had the lowest entropy, proving their dominance.

A screen shot of a graph

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**Bundesliga: Dortmund’s Decline**

* Compared seasonal points between **Bayern Munich** and **Borussia Dortmund**.
* **Insight:** Dortmund’s sharp decline post-2011/12 highlighted Bayern’s continued dominance.

A graph with red and yellow lines

AI-generated content may be incorrect.

**Business / Analytical Impact**

* Demonstrated how **data analytics can tell compelling sports stories**.
* Provided **data-backed evidence** for popular football narratives (e.g., Ferguson’s influence, PSG’s rise).
* Showcased ability to **integrate statistical measures (entropy, clean sheets)** with real-world outcomes.
* Built **reproducible workflows** for football analytics using Python.

**Learning Outcomes**

* Strengthened expertise in **data cleaning, statistical analysis, and visualization**.
* Applied **storytelling through data** to make technical findings accessible.
* Enhanced understanding of **sports analytics frameworks** and real-world football dynamics.

**Future Enhancements**

* Expand dataset to include seasons **2016–2024** for modern context.
* Incorporate advanced football metrics such as **expected goals (xG)**.
* Build **interactive dashboards (Streamlit/Dash)** for live exploration.
* Apply **predictive modeling** to forecast future league winners and team performance.