BICS NFL Games Demo

A BICS app to understand and compare main drivers of NFL team performance. In particular, how weather conditions influence game results team per team, over time.

Discover how games tactical moves correlate with game results and win rate, who are the best ranked teams, quarterbacks, and use this insight to predict the results of next game.
A. Dashboards Overview

B. Mini Scripts Examples
BICS NFL Games Demo

8 Dashboards on NFL history analysis (30+ pages)

Showcases numerous BICS features

- Rich BICS visuals enabling intuitive insight on very dense data result-sets,
- Mobile friendly
- Interactive prompting and exception highlighting, rich calculations on the fly (composite performance rankings)
- Advanced Analytics (Regressions, On-the-fly Predictions)
- Real time Visits Tracker and Live Monitoring
- Simple semantic model with easy mash-up capability, sourcing from very simple CSV file extract

Dashboards Overview

1. Weather Impact on Score
   - How do weather conditions impact the playing of each NFL team over 13 years games history.
   - Compare teams with each other on sensitivity to weather factors (wind, temperature, humidity)

2. Next Game Head to Head
   - How do game KPI values compare for two teams. How do teams compare on sensitivity to weather factors? Which team benefits the most from hot or cold weather?
   - Use regressions to predict next game score considering various factors such as weather, geo location, type of field, etc.

3. Tactics Driving Game Success
   - What tactical game moves correlate with high scores or with high success rate?
   - Statistically, is a long passing or long rushing team more of a winner or more of a loser?
   - What offensive moves truly correlate with high scores and positive win ratios.
4. My Team Scorecard KPIs
- See how your team performs on major game KPIs over time. How it ranks overall and historically.
- Compare Quarterback personal impacts and effect on game KPI values over history for your team.

5. Comparative Performance
- How do two teams compare in historical game performance? How do they each position to NFL average?
- How do they compare on composite performance mixing all indicators, over time, by season?

6. Location Impact on Score
- Is each team consistently better at playing home vs far from home? North / South or East / West?
- What is the impact of natural grass vs turf field on teams scores? Domes vs retractable roofs, or open stadiums?

7. Quarterbacks
- Who are the best quarterbacks over time, or for a season, for a division, a team...
- Who won the most games, who had the best win rates...
- How do each quarterback position on score performance quadrants?

Visits Tracker
- Who is viewing which page in which dashboard of the BICS application, and when?
- How many visits did each page collect in past day?
- What are the preferred pages or dashboards by visits rate?
Dashboard

1. Weather Impact on Score
Impact of Temperature, Wind MPH, Humidity

- Who are the teams with a visible sensitivity to these weather factors on their game performance? Each team is not similarly impacted by weather factors.
- Who benefits the most of wind, temperature, humidity?

BICS Features
- Trellis dense visuals
- Rankings and conditional highlighting
- Linear Regressions

How does Weather affect my supported team?

- Can we quantify weather statistical impact on game results, for a given selected team? Will my selected team typically benefit more of hot weather than other teams? Wind? Humidity?
- What’s the detailed regression line of my team’s score versus weather conditions, historically?

BICS Features
- Linear Regressions and Scatter-plot visuals
- Dense Ranking Visuals and conditional highlighting
Dashboard

2. Next Game Head to Head
Team comparative tactical KPIs and Weather Sensitivity

- Pick two teams and compare their main game tactical KPIs values.
- See how each team is statistically sensitive to weather conditions, and their expected score behavior under various weather conditions. Compare this to average NFL team on same chart.

BICS Features

- Comparative KPI Visuals, composite ranking calculation,
- Comparative Linear Regressions Visuals

Team comparative KPIs and Sensitivity, Score Predictor

- On the fly prediction of expected score of the next game by composite linear regressions.
- Pick two teams, a location and a set of weather conditions. Based on this input, see combined results of multiple regressions on various variables (weather, location, geography...)
- See how each factor is influencing the composite prediction result.

BICS Features

- On-the-fly prediction,
- Comparative KPI Visuals, composite performance score and rank calculation,
- Comparative Linear Regressions Visuals
Dashboard

3. Tactics Driving Game Success
Score and Win Rate correlation with main tactical moves

• See how average game score correlates with major tactical moves: statistically, do games where a team play many pass attempts result in higher score for the team? How about rush attempts, pass yards distance, pass intercepted %, etc...

• See the exact same correlation paradigm, but also applied to Win Rates. Does scoring high with a particular move result in winning more? Not all the time

BICS Features

• Dense correlation visuals (~3300 records summarized in each chart)

• Use of volume-tiling to contrast color (darker = more games)

• Dynamic Averages markers (red lines)

How does a particular move influence a game on average?

• Pick any given tactical move (Pass yards, Pass intercepted, Penalty Yards, Rush Attempts...), and see how it statistically influences a game score, win rate, opponent score...

• Example: Average Pass Yards distance for a team in a game, significantly correlates with team score. The longer one passes, the higher his average score. However, this factor does not increase win rate... Because statistically, longer passes by a team also clearly increase the opponent game score as well...

BICS Features

• Dense correlation visuals (~3300 records summarized in each chart)

• Use of volume-tiling to contrast color (darker = more games)

• Dynamic Averages markers (red lines)
Dashboard

4. My Team Scorecard KPIs

How are my Team KPIs, how does my team rank overall?

- See various game and tactical KPIs values for your selected team, over history or for selected game seasons. Each KPI value is compared to NFL quartiles for this value, and lets you visually locate how the selected team is doing vs NFL averages.
- See a composite scoring for all the KPIs (deviations from composite mean), a ranking of your team for each KPI and a composite performance ranking across all KPIs.

**BICS Features**

- Comparative KPI Visuals, composite performance score and global ranking calculation.
- Conditional highlighting
History of KPI values and Ranking for my team?

- Check the history of each KPI values for the selected team, how it compares to NFL average trend. Is the team improving its game over time along with the NFL average trend, or against it?
- See the composite ranking of teams for each season, where does the selected team rank among the 32 teams for each year, for its composite performance

BICS Features
- Comparative KPI Visuals, composite performance score and global ranking calculation.
- Conditional highlighting

Quarterbacks history performance for selected team

- For a selected team, what where the quarterbacks over history, and how does their game style impact KPIs and game win rates?
- Did team score and team performance drastically change over the period when a particular quarterback led it?

BICS Features
- Multiple Metrics Comparative Trellis
- Comparative KPI Visuals over history
Dashboard

5. Comparative Performance

- Directly visualize how two selected teams compare in performance for each game KPI, how they each position vs each other and vs NFL averages.
- Check the historical trend of KPI values for each selected team, and how it compares to trend of NFL Average. Who is improving the most? See composite ranking of both teams for each season.

**BICS Features**
- Comparative KPI Visuals, composite performance score and global ranking calculation.
- Conditional highlighting
Dashboard

6. Location Impact on Score

Impact of Travel distance and geography on Teams score

- See which the teams have a visible sensitivity to travelling distance, to Latitude (South/North) or Longitude (East/West) of the location where the game is played. Some teams seem to prefer South locations vs North, some East vs West. See the details of expected results line for any selected team.

- See how any given team is doing better on turf or natural grass. Open fields, retractable roofs, or domes?

BICS Features

- Trellis of Linear Regressions,
- Scatter plot visuals with linear regressions
Dashboard
7. Quarterbacks

Who are the top Quarterbacks?

- Who are the best quarterbacks over time, or for a season, for a division, a team... Who won the most games, but who had the best win rates? See how the two lists differ.
- How does each quarterback position on score performance quadrants plotting score against typical moves. Quickly identify who really are the top quarterbacks.

BICS Features
- Top Ranking and Conditional Highlighting
- Quadrant visuals leveraging Scatter plot graphs
Dashboard
Visits Tracker

Visits Tracker Dashboard

- Who is viewing which page in which dashboard of the BICS NFL application, and when?
- How many visits did each page collect in past day?
- What are the preferred pages or dashboards by visits rate?

BICS Features
- Implicit Visits Tracking, by user, by page
- Database write-back
- Live real time no-cache reporting
B - Mini Scripts Examples
Script Example I : Weather impact on next game

- **a)** Understand difference of impact of weather factors on teams scores

  - Dashboard 1 Weather Impact on Score use trellis pages to see how teams scores are differently impacted by temperature, wind, and humidity. Hot temperatures make some teams score higher, while others prefer cold temperature. For some teams, the slope of the line is highly positive or negative.
  
  - Identify one or two teams of interest for the audience, and compare them visually. Highlight the fact that this visualization represents a lot of datapoints in an intuitive way, and allows to gain immediate insight out of it.

- **b)** Zoom on details for one or two particular teams

  - On Dashboard 1 Weather Impact on Score use My Team page to see more details about a single team. Pick a team with audience interest, and make the point on it’s rankings for weather factors sensitivity vs other teams.
  
  - Move on to My Team Details and show the details of the regression line for this team, as well as the dispersion of games occurrences around the line. Use this chart to highlight the credibility of the calculations, and the fact that BICS easily computes this and represents it.

- **c)** Directly measure how weather can impact next game score

  - On Dashboard 2 Next Game Head to Head use page Game Advantage, select the two teams for the next game, and compare their sensitivity by looking up each line. Then move on to score predictor, and see how these regression lines can help compute a composite score : look up the charts on the right, and influence the value of temperature, wind or humidity based on the steepest line. See how the prediction results table updates in the middle of the page, in particular for the parameter you influenced. Notice the position of the red line marker on the charts, indicating the value you selected and the resulting scores.

Script Example II : How game tactics influence success

- **a)** Understand how tactical moves truly influence game results

  - Dashboard 3 Tactics Driving Game Success : go there to gain a statistical understanding of what moves really drive success for a team. Start on page Score impact : it appears that Avg Rush Attempts, Avg Rush Yards, Avg Pass Yards and Third downs % have a direct positive influence on how much the team scores in the game. On the opposite, Pass intercepted rate (by opponent) has an expected negative correlation on score
  
  - Move to page Win Rate impact : how much the team scores in the game may not be directly correlated to its success. It’s interesting to see that, while increase in avg pass yards increases avg score, it clearly does not increase win rate. Similarly, pass intercepted rate also does not have the negative impact we saw on score. How can that be ? let’s find out.

- **b)** See how tactical moves correlations seem contradictory

  - Still on Dashboard 3 Tactics Driving Game Success : go to page Pass Yards to understand more about the contradicting insights on step a).
  
  - There, highlight that indeed, longer avg passes significantly increase expected game score for a team. But looking up the chart below, see that it also has a direct positive correlation on opponent game score. The longer you pass on average, the higher the chances both you and opponent score high. That explains that long passes do not yield higher win rates for the team.
  
  - Check the page Rush Attempts, see how focused the lines show. Clearly rush attempts are a win factor for any teams. However, notice the optimal point of ~40 rush attempts, past which, there is diminishing returns in win rate. There is no point in trying to rush too much.

- **c)** See how your supported team does with these moves

  - Go to Dashboard 4 My Team Scorecard : page KPIs, select a team in the prompt, and a season if you are interested in reducing the scope. Better to keep all history first. See each gauge chart showing how the selected team is doing for each KPI. Lowest quartiles (Q1) means that team is within the worst 25% population, highest quartile Q4 is top 25%, for that KPI.
  
  - How about a composite score that merges all these kpis together : that’s what the right side chart and composite ranking show. BICS computes a composite deviation to the mean for all kpis together, and ranks how the team is doing vs other teams.
Script Example III: Quarterback Effect

a) Monitor historical performance of a selected team

- On Dashboard 4 My Scorecard, page History: this is showing how each KPI measure has evolved over time for your selected team, and vs for the NFL average. It helps understanding what was improved over years, and if it was a specific effort from the team, or an overall league improvement. This can help perceive the strategic efforts of your team, and if they were in driving success.
- Move to page Ranking History: see the composite results of all these indicators. Now you can see the ranking of your team across all indicators, over history. This is the composite result of the various measure from the history page. While this is only looking at some indicators for NFL games, it should nevertheless be meaningful to any audience familiar with the team performance history.

b) Understand how quarterback changes impacted historical performance

- Move on to Team Quarterbacks page on the same dashboard, see how performance was impacted with tenure of each quarterbacks in the selected team. Equate this with the KPI historical analytics from steps c) and d), and see if you can explain the variations by a given QB name over time.
- By this point, any audience familiar with the team you picked should already interact on why, who, when, etc...

c) Directly measure how weather can impact next game score

- On Dashboard 7 Quarterbacks go to page Score Quadrants or Win Rate Quadrants, select the name of a quarterback that made a difference in the selected team on step b), and check how he is doing in the national quadrant. Was the star in your selected team also a national star? Compare other quarterbacks names in the quadrant.
- Move to Face to Face QBs page and see statistics about games where QB met face to face.

Script Example IV: Visits Tracking

a) Check status of Visits tracking dashboard

- On Dashboard Visits Tracker, page Visits Summary: open and check the value of total number of hits (visits), at the bottom of the pivot table. In particular, see the current number of visits for the current date, and highlight the number for a given page, that you plan to visit yourself.

b) Open a dashboard page of your choice

- Then go back to actually opening this dashboard page (any of your choice). Visit few pages if you want to, but keep a mental counting of how many pages you visited or hit refresh on.

c) Show real time Visits tracker update

- Go back to Visits tracker dashboard, hit refresh if necessary, and highlight that numbers of visits have incrementally increased by your own clicking activity.
- Check that this dashboard also tracks user names.