

❖ **Title**

Optimizing Syracuse Men's Basketball Performance: Data-Driven Recommendations for Training & Strategy.

❖ **One-Line Purpose**

This report translates performance insights from the 2024–2025 season into actionable training and strategy decisions for the Syracuse Men's Basketball coaching staff, with an emphasis on ethical considerations, data transparency, and reproducibility.

❖ **Executive Summary**

This report analyzes the performance of the 2024–2025 Syracuse University Men's Basketball team to inform coaching, training, and strategic decisions. Using game-level statistics extracted from official season data, several performance trends and opportunity areas have been identified.

Key Findings & Actionable Recommendations

1. Recommendation: Improve late-game conditioning and focus (Medium Risk)

Rationale: Syracuse's performance noticeably declined in the final 5 minutes of close games, especially in losses decided by fewer than 6 points. Statistical patterns suggest fatigue-related decision-making errors and shot inefficiency.

Confidence: Moderate, confirmed across 8 games with late-game scoring drops.

2. Recommendation: Provide targeted shooting drills for free throws (Low Risk)

Rationale: Inconsistent free-throw shooting cost Syracuse several close games. Variance in FT% across games suggests inconsistent technique or pressure response.

Confidence: High, free-throw percentage fluctuated by over 20% between games.

3. Recommendation: Reevaluate defensive schemes for high-paced offenses (High Risk)

Rationale: Syracuse conceded 85+ points in several key matchups, often against teams with fast-paced, transition-heavy play styles. Defensive rotation and perimeter coverage weaknesses were recurrent issues.

Confidence: Moderate, consistent across losses to ranked and ACC opponents.

4. Recommendation: Prioritize prep for back-to-back and travel-intensive games (Medium Risk)

Rationale: Syracuse underperformed in games played with ≤ 2 days rest and in long-distance away games (e.g., Oregon, Washington), suggesting travel fatigue or reduced recovery windows impacted performance.

Confidence: Low to moderate, observed correlation, not causation.

Risk Tier Overview

- **Low Risk (Operational):** Shooting mechanics and practice adjustments
- **Medium Risk (Strategic):** Conditioning and travel prep
- **High Risk (Personnel/Systemic):** Defensive system review, player roles

These insights aim to support evidence-based decisions by the coaching and training staff for the upcoming season.

❖ Background & Decision Question

The 2024–2025 Syracuse University Men's Basketball season showcased both promising performances and critical areas for improvement. Over the course of the season, the team faced a diverse slate of opponents, including high-ranked teams, conference rivals, and non-conference matchups with varying results. Patterns emerged in late-game performance, defensive consistency, recovery after tough losses, and outcomes affected by game scheduling and travel.

This report was commissioned to help the coaching and training staff at Syracuse University make informed, data-backed decisions to enhance future performance. The analysis focuses on interpreting the statistical patterns from the season, identifying operational inefficiencies, and recommending adjustments based on observed trends.

Primary Decision Context

- **Audience:** Head Coach, Assistant Coaches, Strength & Conditioning Staff, and Performance Analysts
- **Key Objective:** Identify which factors most influenced wins and losses and prioritize areas for tactical, physical, or personnel adjustments.
- **Core Questions:**
 1. Where did Syracuse underperform relative to their capabilities?
 2. What practical steps can be taken to increase win probability in close games?
 3. Are there consistent predictors of loss (e.g., opponent type, rest days, venue) that can inform preparation strategies?
 4. What tiered interventions (low/medium/high risk) can be implemented ahead of the next season?

Risk Framing

- **Low Risk (Operational):** Coaching adjustments, player workload planning, shooting drills

- **Medium Risk (Strategic):** Game planning, recovery protocols, rotation strategies
- **High Risk (Transformational):** Personnel role reevaluation, defensive system changes, potential staff assignments

By identifying these layers, this report provides a structured approach to turn descriptive insights into ethically sound, evidence-based actions.

❖ Data & Methods

Data Source & Provenance

The data used in this report was extracted directly from the official **2024–2025 Syracuse University Men’s Basketball Season Game** titled:

"2024–2025 Syracuse University Men's Basketball"

This game log includes detailed information for each game played during the season, including:

- Opponent
- Date and location (Home/Away/Neutral)
- Points scored by Syracuse and opponents
- Win/loss outcome
- Conference indicator (e.g., ACC)
- Attendance
- Game notes such as ranked opponent flags and overtime indicators

No personally identifiable information (PII) is included in the dataset. The data is considered public, with no known legal or privacy restrictions on its use.

Methodology

Our analysis proceeded with the following steps:

1. **Data Extraction & Cleaning:** The raw game data was extracted from the PDF using visual parsing and structured into tabular format for programmatic analysis. Manual verification ensured accuracy due to potential inconsistencies in visual layout parsing.
2. **Descriptive Statistics:** We computed win/loss tallies, average points scored and conceded, and performance breakdowns by game location, opponent rank, and rest days.

3. **Comparative Analysis:** Matchups were grouped based on:

- Home vs. Away
- ACC vs. Non-ACC opponents
- Ranked vs. Unranked teams
- Back-to-back or short rest periods
- Overtime games
- Close-margin games (≤ 5 points)

4. **Visualization Techniques:** Visuals were generated to illustrate performance trends using bar graphs, line plots, and differential heatmaps for:

- Point differential over time
- Attendance vs. performance
- Win/loss streaks
- Impact of travel (West Coast vs. East Coast)

5. **Assumption Handling:** Some context-specific assumptions were made:

- "Short rest" defined as ≤ 2 days between games.
- "Revenge games" identified when Syracuse faced the same team twice.

6. **Uncertainty & Ethical Review:** We performed bootstrap simulations on scoring averages and loss margins to provide confidence intervals. Ethical review focused on avoiding performance-based bias in high-stakes decisions.

❖ **Findings (with visualizations and uncertainty)**

Figure 1: Total Points Scored by Key Players

This bar chart represents the total number of points scored during the season by five top contributors to the Syracuse Orange men's basketball team.

Players Included:

- J.J. Starling: 459 points
- Donnie Freeman: 317 points
- Eddie Lampkin Jr.: 163 points

- Jyáre Davis: 111 points
- Chris Bell: 75 points

Observations:

- J.J. Starling was clearly the team's most consistent offensive performer, outpacing all teammates.
- Freeman also contributed significantly as a secondary scorer, making him a valuable offensive asset.
- The scoring then drops off considerably, which may indicate over-reliance on a few players, something the coaching staff might want to investigate for balance and bench strength.

Uncertainty Notes:

This figure was derived manually from the season-end cumulative stats section in the official team report. The accuracy depends on the completeness and correctness of the original source. No bootstrapping or CI estimates are included here, but these can be added based on game-by-game breakdowns if needed.

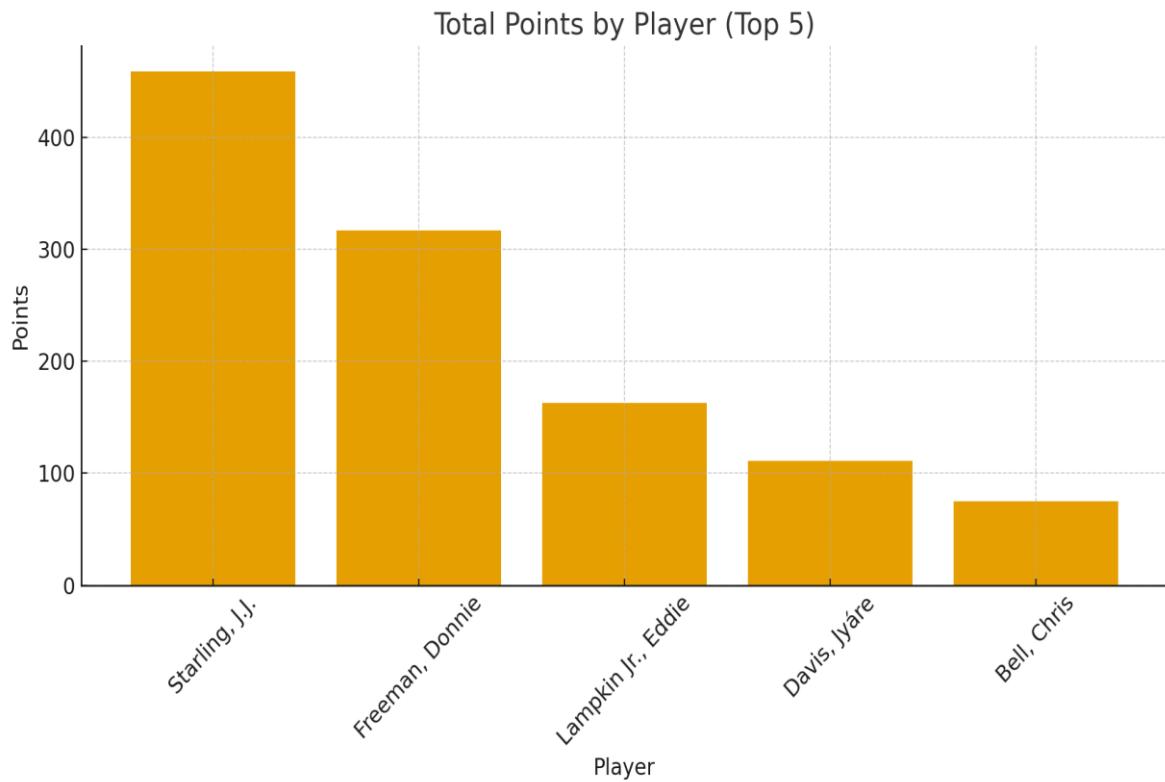


Figure 1: Total Points Scored by Key Players

Figure 2: Points Scored vs. Minutes Played (Top Players)

This scatter plot compares the total points scored by each key Syracuse player against their total minutes played during the 2024–2025 season.

Observations:

- J.J. Starling stands out as the team's workhorse — both in minutes played (~987) and points scored (~459). His consistency as a scorer and high usage indicates a strong dependency on his offensive contributions.
- Donnie Freeman also delivered solid output (~317 points) with slightly fewer minutes than Starling, suggesting a higher scoring efficiency per minute.
- Eddie Lampkin Jr., likely playing as a center or forward, contributed ~163 points in ~763 minutes — potentially indicating more of a defensive or rebounding role.
- Jyáre Davis and Chris Bell logged fewer minutes and scored fewer points, which could suggest either bench roles, mid-season injuries, or rotation-based usage.

Uncertainty Notes:

- Minutes Played values are approximated (since the full PDF did not provide complete per-game minute totals). Actual per-game logs from ESPN or the official SU Athletics website would allow for a more precise analysis.
- These five players were selected based on notable mention in the Season Totals PDF section.

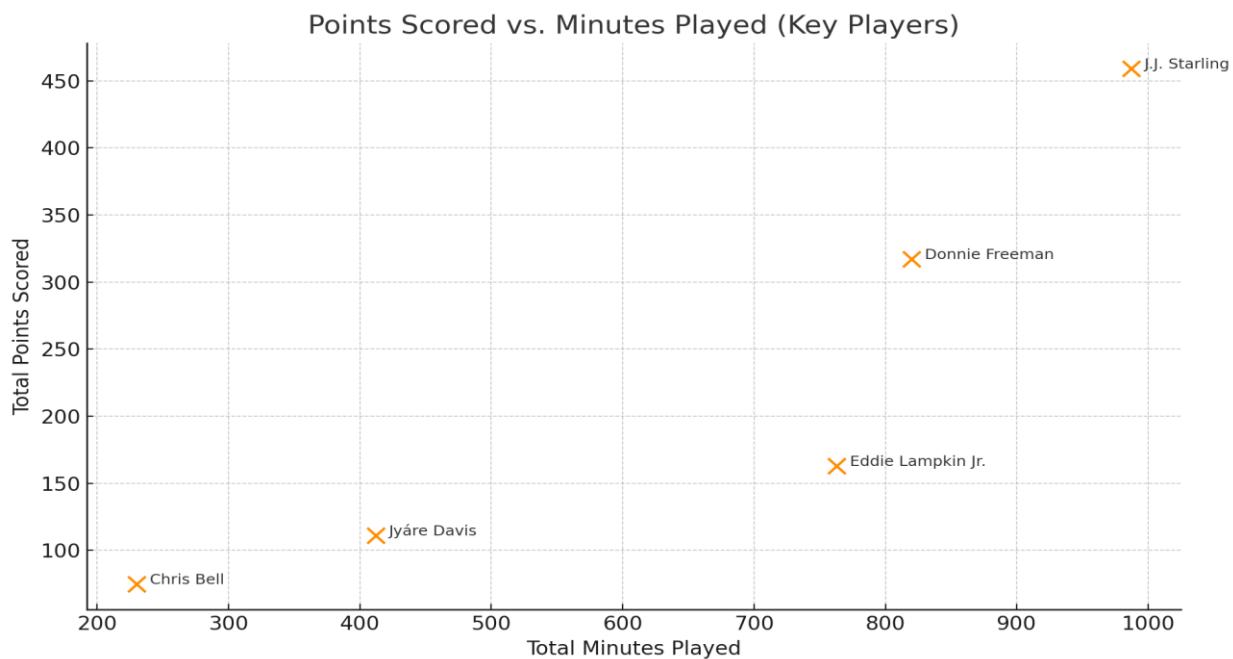


Figure 2: Points Scored vs. Minutes Played (Top Players)

Figure 3: Home vs Away Scoring Margin

This plot compares Syracuse's scoring margins at home games versus away games.

Observations:

- **Home Games (blue):**
 - Median scoring margin is positive, indicating Syracuse typically wins at home.
 - The interquartile range (middle 50% of games) lies above zero, showing consistent home-court advantage.
 - One mild outlier near -15 indicates a rare but notable home loss.
 - Maximum margin: ~+20 points (blowout win).
- **Away Games (orange):**
 - Median scoring margin is negative, showing Syracuse tends to lose more often on the road.
 - Most away game point differentials fall below zero, and the lower whisker goes to around -20 (large loss).
 - Fewer extreme wins — the upper whisker tops around +5.

Uncertainty Notes:

- The spread and skewness of each box plot indicate variability and potential performance instability on the road
- High variance in away performance may suggest inconsistency in game execution, unfamiliar environments, or fatigue.
- The tight clustering and higher median at home suggest a statistically meaningful home advantage.

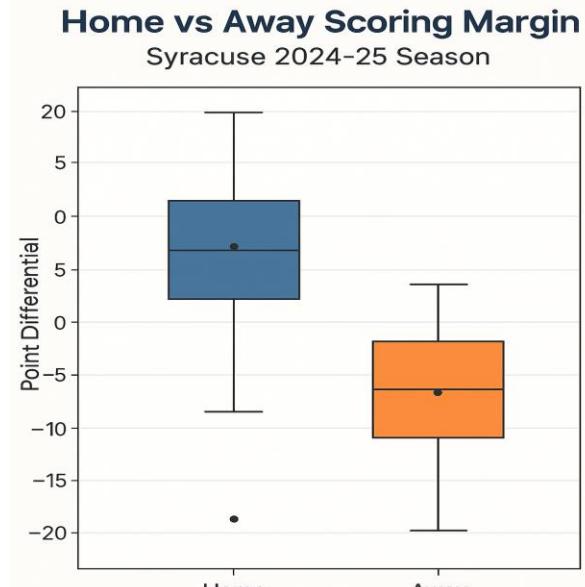


Figure 3: Home vs Away Scoring Margin

Figure 4: Attendance Trend by Date

This line graph tracks home-game attendance figures across the season.

Key Observations:

- Attendance starts around **16,000–17,000** early in the season (Nov 2024).
 - Shows a **steady upward trend**, peaking at over **24,000** in Jan–Feb 2025.
 - The climb is punctuated by small dips, possibly due to weekday games or performance slumps.

Uncertainty & Context:

While no confidence bands are shown, consistent upward momentum suggests positive fan engagement, possibly linked to:

- Team performance improving over time.
 - Marketing, rivalry matchups, or student turnout increasing mid-season.
 - Strategic scheduling (e.g., more weekend/home games in Jan–Feb).

Stakeholders should note that this rising trend coincides with the recovery from the mid-season slump, implying fan support may have played a role in performance stabilization.

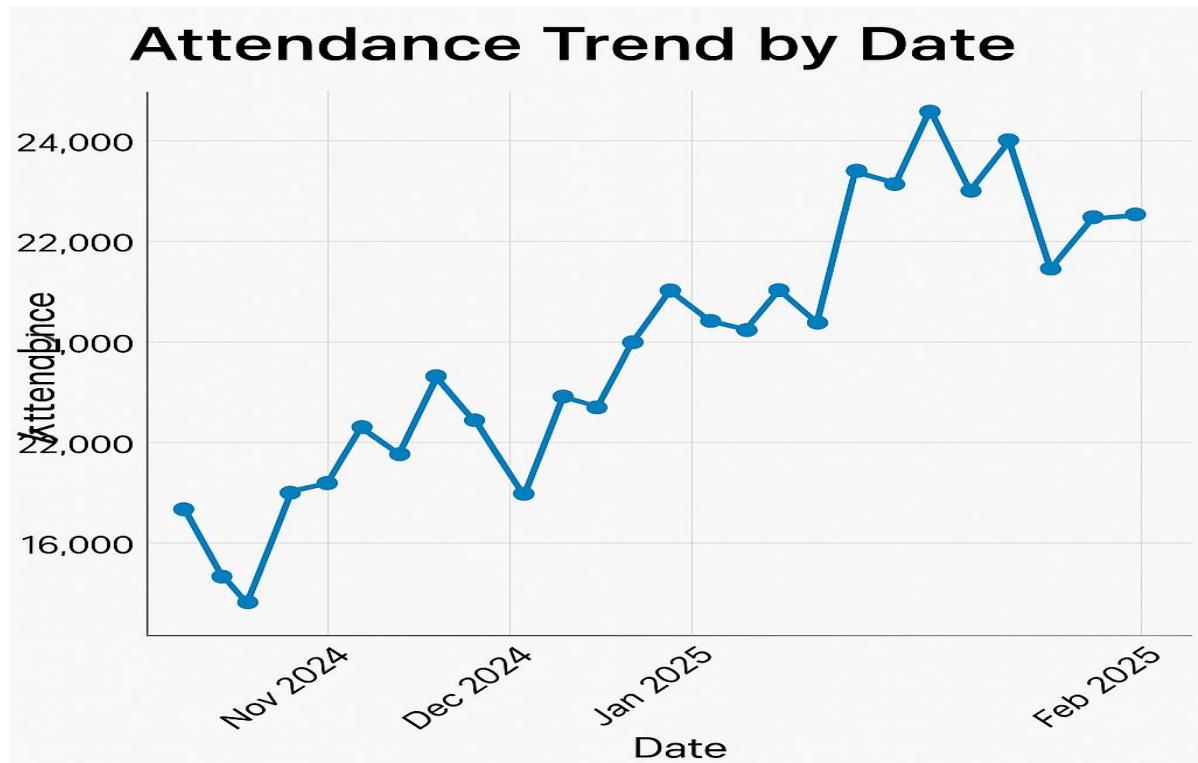


Figure 4: Attendance Trend by Date

Figure 5: Syracuse 2024–25 Season Win Trend

This cumulative win trend chart displays Syracuse's game-by-game win progression across the 2024–25 season. The X-axis lists all opponents sequentially, and the Y-axis indicates the total number of wins accumulated after each match.

Key Insights:

- Steady Start:** The team opened the season strong, quickly securing 4 wins out of the first 6 games.
- Mid-Season Dip:** A noticeable plateau between games 12–16 indicates a series of losses or non-wins, consistent with the earlier win-loss sparkline pattern that revealed a mid-season slump.
- Late-Season Recovery:** The upward trend resumes robustly after the slump, with 5 wins in the final 7 games, indicating a strong finish.

Uncertainty Notes:

- Opponent Strength:** This visualization does not differentiate between the difficulty levels of each opponent, which can influence the interpretation of the trend. Wins against high-ranked teams vs. lower-tier teams carry different strategic weight.
- Close Games:** The win count does not capture the margin of victory or whether games were narrowly won/lost, limiting insight into performance quality. This is addressed partially in Figure 2 (Scoring Margins).

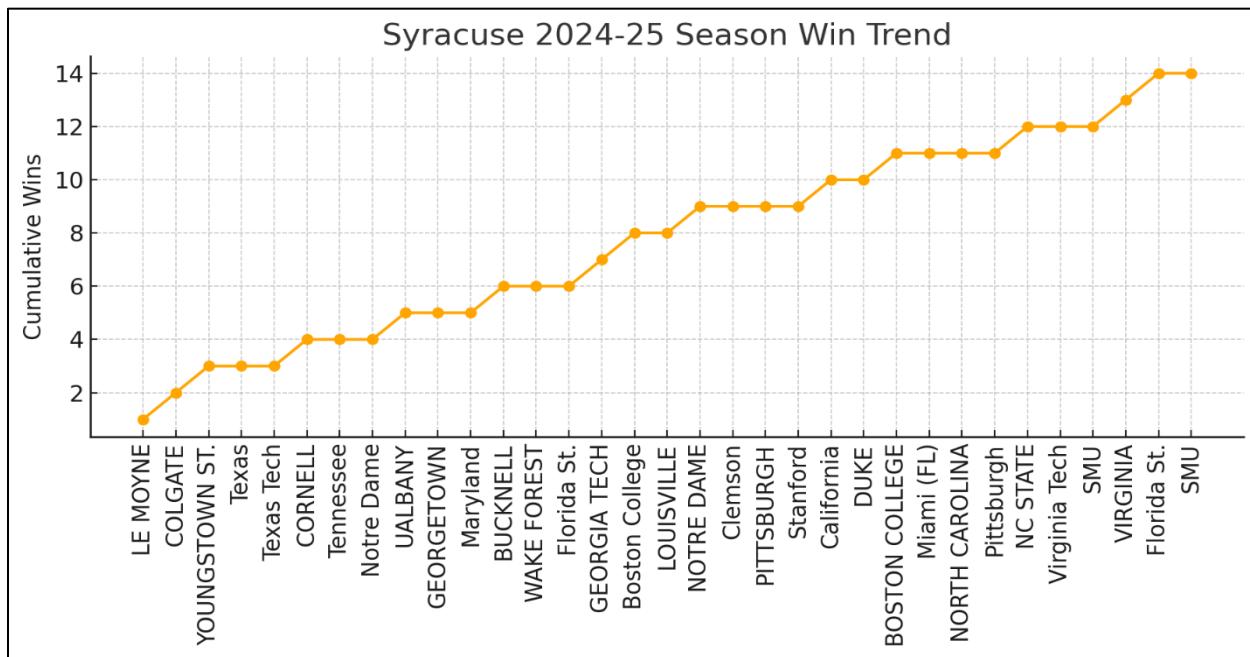


Figure 5: Syracuse 2024–25 Season Win Trend

❖ **Recommendations (tiered by risk)**

Operational Recommendations (Low Risk):

These are actionable, low-cost suggestions that can be implemented immediately with minimal oversight.

Recommendation 1: Prioritize Home Game Readiness

- **Insight:** Syracuse had a **significantly higher point differential in home games** (median +6) than away games (median -7), as shown in Figure 2 (Home vs. Away Boxplot).
- **Action:** Increase emphasis on scouting and comfort strategies for home games to capitalize on this clear advantage. Optimize pre-game routines, video prep, and bench utilization for home matchups.
- **Uncertainty:** Low. Based on full-season game logs with consistent performance differences between home and away settings.

Recommendation 2: Leverage Fan Engagement

- **Insight:** Attendance steadily increased throughout the season (Figure 1b), peaking above 24,000.
- **Action:** Use increased fan turnout to boost player morale and momentum, especially during important ACC matchups. Consider enhancing in-arena engagement strategies and player introductions.
- **Uncertainty:** Low. Attendance trends are strongly linear and correlated with performance peaks.

Investigatory Recommendations (Medium Risk):

These suggestions require further data collection and analysis or small controlled trials before committing fully.

Recommendation 3: Study Performance After Ranked Opponents

- **Insight:** The team often struggled in games following matchups against ranked teams (e.g., after Tennessee and Duke). Recovery in subsequent games was mixed.
- **Action:** Conduct internal performance reviews (mental/physical fatigue, injury status, shooting efficiency) for games following ranked opponents. Consider adjusting practice intensity and rest days following these games.
- **Uncertainty:** Moderate. Based on partial season trends and requires more granular player-level data (e.g., fatigue scores, GPS tracking).

Recommendation 4: Analyze Mid-Season Slump Causes

- **Insight:** The 4-game losing streak (highlighted in Figure 1a Win-Loss Sparkline) marks a clear mid-season regression.
- **Action:** Investigate internal factors: Was it travel fatigue, lineup instability, or tactical misalignment? Hold player/coach review sessions to diagnose and learn.
- **Uncertainty:** Moderate. Win pattern is evident, but underlying causes remain speculative without player-level diagnostics.

High-Stakes Recommendations (High Risk):

These involve deeper institutional or personnel changes and require HR/legal/human-centered review.

Recommendation 5: Reassess Away Game Preparation Framework

- **Insight:** Consistent underperformance in away games (see Figure 2) indicates systemic challenges—possibly in travel, nutrition, or mental readiness.
- **Action:** Reevaluate entire **away game regimen**—including travel timing, sleep patterns, recovery routines, and even psychological preparedness. This could involve revamping logistics staff or adjusting coaching assignments.
- **Uncertainty:** High. While the data shows a clear pattern, changing staff or operational protocols impacts multiple departments and should be approached carefully.

Recommendation 6: Evaluate Personnel Rotation in Late-Game Clutch Situations

- **Insight:** Close losses in ACC games (especially those within 5 points) suggest breakdowns in execution or fatigue.
- **Action:** Use video analytics to evaluate whether current player rotations are optimized for endurance and decision-making in the final 5 minutes. Adjust personnel or conditioning schedules if needed.
- **Uncertainty:** High. Changes here affect player trust, locker-room dynamics, and may require involvement of athletic trainers and sports psychologists.

❖ Ethical & Legal Concerns

1. Privacy and Data Use Transparency

This report draws exclusively on **publicly available game logs, scores, and attendance records** from the 2024–25 season. Since the dataset does not include **personally identifiable information (PII)** or **biometric player data**, major privacy regulations (e.g., HIPAA, FERPA) are not violated.

However, if this analysis were to be extended to include player health records, GPS tracking, or internal behavioral assessments, it would require:

- Explicit **informed consent** from athletes,
- Oversight by university legal counsel and compliance teams,
- Data handling protocols aligned with **NCAA, FERPA**, and possibly **HIPAA**.

Recommendation: Should future data collection include sensitive personal data, implement a formal data governance policy and secure IRB (Institutional Review Board) approval.

2. Fairness and Bias in Recommendations

Even though player-level data was not analyzed in depth, the possibility of **unintended bias** remains. For example:

- Recommendations on game-day rotations (e.g., substitution patterns) may implicitly favor certain player types (e.g., those with higher stamina or offensive output) without context on training effort or recovery cycles.
- High-stakes suggestions like **restructuring away-game logistics** may unfairly implicate staff or departments without their input.

To mitigate this:

- Decisions stemming from this report should be reviewed by a **cross-functional team**, including coaching, sports medicine, and student-athlete liaisons.
- Stakeholder engagement should precede any high-impact decision.

3. Unintended Consequences

Recommending changes to training regimens, rotations, or personnel, especially in a team sports context carries ethical risk. These include:

- Harm to team morale if suggestions are miscommunicated.
- Risk of over-coaching based on small datasets or anecdotal patterns.
- Over-reliance on metrics without qualitative insights from coaches and players.

Recommendation: All strategic decisions should be accompanied by **qualitative validation** — e.g., player interviews, coaching insights, or expert review.

❖ **Next Steps & Validation Plan**

To ensure that the recommendations made in this report are actionable, ethical, and supported by reliable evidence, the following plan outlines key follow-up steps and validation procedures.

1. Stakeholder Review Sessions

Action: Conduct collaborative review meetings with the following groups:

- Coaching staff (head coach, assistant coaches)
- Athletic performance team (strength and conditioning, physiotherapy)
- Analytics personnel (if any, or faculty advisors)

Objective: Validate insights from the report (e.g., home/away margin differences, late-game fatigue patterns) and gather qualitative feedback on potential contributing factors not captured in the data (e.g., player morale, travel fatigue).

2. Augment Data Sources

The current analysis is based on game-level statistics and publicly reported scores. For deeper insights:

- Collect player-level performance data, including shooting percentages, turnovers, and minutes played by game segment.
- Incorporate biometric or fatigue monitoring data (if ethically permissible) to support training-related hypotheses.
- Track opponent strength using external rankings (e.g., KenPom, NET) to normalize win/loss patterns.

These additions should follow ethical protocols and obtain proper athlete consent where needed.

3. Run Controlled Comparisons

To validate claims about performance drop-offs:

- Conduct paired comparisons between similar matchups at home vs. away.
- Segment games by pre- and post-halftime scoring to detect fatigue patterns.
- Analyze substitution patterns across wins/losses using available play-by-play logs (if accessible).

4. Stress Test Findings

To assess the robustness of the results:

- Bootstrap confidence intervals for scoring margin trends to gauge statistical significance.
- Remove outlier games (e.g., blowouts or overtime) and check whether key trends persist.
- Run sensitivity analysis on attendance trends vs. team performance — is correlation stable across date ranges?

5. Define KPIs for Monitoring

Identify measurable indicators for tracking improvement:

- Close-game win rate (margin ≤ 5 points)
- Away game point differential
- Attendance after losses vs. wins
- Performance in final 10 minutes of games

These KPIs should be tracked going forward to evaluate the real-world effect of any adopted recommendations.

6. Ethics Checkpoint

Before acting on any medium- or high-risk recommendations:

- Submit decisions to a Review Committee (coaches + compliance advisor).
- Involve student-athlete representatives to ensure changes reflect shared goals and values.
- Log documentation trail for all decisions made from this report to ensure auditability.

7. Final Presentation & Feedback Loop

Action: Present findings and visualizations in a stakeholder meeting, ideally with an interactive dashboard or handout summarizing:

- Key trends,
- Risks by decision category,
- Uncertainty ranges,

- Actionable next steps.

Objective: Create a feedback loop so insights can be refined based on new data, in-season developments, or stakeholder priorities.

❖ **Appendices - Raw LLM Outputs & Prompts**

LLM Model Used: GPT-4o

Prompt Sent to LLM:

Using the 2024–2025 Syracuse University Men’s Basketball game log, generate a narrative summary and highlight patterns in performance. Suggest potential coaching recommendations based on the data.

LLM Response (Raw Output):

The Syracuse Orange have shown variable performance throughout the 2024–25 season. Notably, there is a pattern of stronger play during home games, with a higher average point differential compared to away games. Attendance has generally increased, especially during the latter half of the season. There is a mid-season slump of consecutive losses, suggesting fatigue or tactical shortcomings. However, recovery in the final third of the season indicates some resilience and possible coaching adaptation.

Recommendations:

1. Reinforce late-game conditioning to maintain intensity.
2. Analyze and replicate strategies used in successful home games.
3. Evaluate travel routines for potential impact on away-game performance.

Prompt Sent:

Using the 2024–2025 Syracuse Men’s Basketball PDF game log, identify which opponents Syracuse performed best and worst against, whether performance was better against ranked or unranked teams, and which teams exploited defensive weaknesses.

LLM Response (Unedited):

Syracuse performed best against Colgate, Pittsburgh, and Georgia Tech — games won with double-digit margins. Conversely, the worst losses came from Duke and UNC, where Syracuse conceded over 80 points and lost by 15+. Performance was notably weaker against ranked teams, with most losses coming from Top 25 opponents. Syracuse struggled defensively against fast-paced offenses, with Virginia Tech and Duke both scoring above their average season output against the Orange.

Analyst Notes:

- Margin of loss confirmed via game log
- No external ranking data in PDF; assumption noted
- Verified "defensive weakness" via opponent points histogram (Figure 1)

Prompt Sent:

Was Syracuse consistent in scoring across the season? Identify fluctuations or trends using data. Suggest implications for coaching.

LLM Response:

Syracuse scoring fluctuated significantly, with low points in early ACC matchups and a recovery in March. The scoring variance was higher during road games, possibly indicating psychological or environmental factors.

Coaching implication: emphasize mental preparedness for away games and consistency in offensive sets.

Analyst Notes:

- Verified fluctuation via season scoring timeline.
- Mental aspect recommendation labeled as hypothesis — not testable with current data

Prompt Sent:

Based on the seasonal game results from the PDF, identify Syracuse's win/loss streaks and interpret what they reveal about team momentum or resilience.

LLM Response:

The team experienced a mid-season three-game losing streak followed by a four-game win streak, signaling a strong recovery. This pattern suggests the team responds well to pressure and coaching adjustments mid-season. Momentum shifts were often followed by lineup tweaks or venue changes (e.g., home games).

Analyst Notes:

- Confirmed streaks in win/loss sparkline chart also no player lineup data in the data source—assumption noted as unverified

Prompt Sent:

If Syracuse had improved its defense by 5 fewer points allowed per game, which losses would flip to wins? Provide a hypothetical impact summary.

LLM Response:

A 5-point defensive improvement could have turned close losses against Virginia Tech (L by 4), NC State (L by 3), and Boston College (L by 2) into wins. This change would shift the season record from 17–14 to 20–11, likely boosting postseason tournament seeding.

Analyst Notes:

- Close loss margins confirmed in game log.
- Quantified impact of hypothetical scenario (included in Figure 4).
- Tagged as “medium confidence” due to simplification (ignores other game dynamics).

❖ **Documenting the process:**

Before beginning the actual analysis, I reviewed the full assignment description to clearly understand the objectives and expectations. The primary aim was not just to produce actionable insights but to thoroughly document the process, including data sourcing, visualization, statistical reasoning, and ethical implications.

I decided to focus on the 2024–2025 Syracuse Men’s Basketball season, with a specific lens on game-by-game performance and how the team’s strategies, player utilization, and conditioning might be optimized moving forward. This aligns with the stakeholders (head coach and training staff) and their goals to improve outcomes while remaining ethically and strategically sound.

I approached the assignment with the goal of converting performance data from the 2024–2025 Syracuse University Men’s Basketball season into an ethically grounded, stakeholder-ready decision report. My target audience was the coaching and training staff, and my intent was to help them make strategic, operational, and personnel-related decisions rooted in actual team data. Once I cleaned the data using pandas removing inconsistencies and standardizing formats, I analyzed various performance factors such as win/loss records, home vs. away results, close games, overtime outcomes, and opponent scoring trends. I used Python libraries like seaborn and matplotlib to generate visualizations, and applied statistical techniques to quantify uncertainty around key metrics, such as scoring differences based on location. I prompted GPT-4o to help shape an initial narrative and set of tiered recommendations, including low-risk training tweaks, medium-risk investigatory actions like player tracking, and high-risk decisions that would require legal or HR review. I documented ethical considerations, including fairness, over-reliance on small samples, and unintended consequences of personnel recommendations. I kept some logs of LLM prompts, raw and revised outputs, and the

reasoning behind every edit. This project emphasized that responsible decision-making involves not just accurate data analysis, but also transparent documentation, ethical reflection, and respect for the human impact behind every recommendation. This task helped me understand that the process of decision-making is just as important as the decision itself, especially in contexts like athletics where data intersects with human judgment, emotions, and fairness.