Ethical Decision Report — Syracuse University Football

Produce actionable recommendations for coaching and athletics leadership from the attached cumulative team statistics, and document a full, auditable analysis focused on ethics, reliability, and reproducibility.

Executive summary

- Immediately prioritize ball-security and run-game improvement drills.
- Pass-protection and defensive pass-rush evaluation through targeted film study and controlled trials, and
- A short-term controlled data-collection program to diagnose root causes before any high-stakes personnel decisions.

Risk levels:

Operational (low) — ball-security & special-teams' optimizations.

Investigatory (medium) — play-level tracking, A/B tests of blocking schemes, defensive scheme trials.

High-stakes — lineup/staff changes, contract actions (require human/HR/legal review).

The team averages 31.2 PPG vs opponents' 29.6 PPG (total +8 points on season), but this advantage is not statistically robust once game-to-game variability is accounted for (95% bootstrap CI for scoring differential: -22.2 to 24.0). Key vulnerabilities are (A) a weak run efficiency (3.3 yards/attempt vs opponents 5.4), (B) worse turnover profile (9 turnovers committed vs 6 for opponents), (C) defensive pass-rush production lagging (team recorded 7 sacks vs opponents 14), and (D) outsized influence from two extreme games (Colgate +42 scoring differential; Duke -35). Special teams and punting are strengths and should be preserved. Given data limits and ethical constraints around player data, we recommend immediate low-risk interventions plus a rigorous investigatory data-collection phase before any high-stakes personnel decisions.

---

1) Stakeholders & decision context

Primary audience: Head coach, defensive coordinator, offensive line coach, special teams coach, athletic director.

Decisions needed: Tactical adjustments (run/pass mix, protection schemes), training emphasis (ball security, tackling), whether to pursue personnel or staff changes, and whether to deploy expanded player-level tracking / new analytics tools.

What's at stake: Competitive outcomes (medium risk) in the near term; player safety & reputational risk (medium-to-high) if tracking/medical data is mishandled; legal/contract risk (high) if personnel actions are made without documented, unbiased evidence.

---

2) Data provenance & scope

- **Source file:** Syracuse Football 2024-2025. This contains high-level cumulative statistics for Syracuse and opponents and per-game scoring and basic roster aggregates.
- **Original collector:** Team/stat-keeping staff / official box scores (assumed). We treat the PDF as an authoritative box-score summary but do not have play-level logs or snap counts in the file.
- **Known limitations:** Aggregated data only (no play-level features), small sample size (n=5 games), potential inconsistencies in column labeling (e.g., "SACKS BY" is presented without explicit column definition), absence of individual snap counts, injury/availability, or protected-attribute metadata.
- **Privacy concerns:** The file contains no protected personal data (e.g., SSN) but pertains to identifiable players. If further analysis uses individual tracking, medical, or biometric data, obtain player consent per NCAA policy and institutional IRB/privacy rules.

---

3) Re-created descriptive results (reproducible)

Per-game scoring (recreated from PDF):

Date / Opponent	Syracuse pts	Opponent pts	Differential
Tennessee	26	45	-19
UConn	27	20	+7
Colgate	66	24	+42
Clemson	34	21	+13
Duke	3	38	-35

Season totals & simple statistics (n = 5 games):

- Team total points: **156** (mean 31.2 PPG, SD ≈ 22.69)
- Opponent's total points: **148** (mean 29.6 PPG, SD ≈ 11.24)
- Mean scoring differential (team − opp): **+1.6 PPG** (game-to-game diffs: [-19, +7, +42, +13, -35])
- Paired t-test (team vs opponent points): t ≈ **0.12**, df = 4, p ≈ **0.91** (not significant)
- Bootstrapped 95% CI for mean scoring differential: **[-22.2, +24.0]** (n_boot = 20,000, random_seed = 42)

Key aggregated season metrics (from PDF):

- Rushing yards: Team **560** vs Opp **870** (team rush YPA **3.3** vs opp **5.4**) — *substantial* offensive run inefficiency.
- Passing yards: Team **1,645** vs Opp **1,453**; pass YPA **7.95** vs **6.76** — *offense favors passing and is relatively efficient.*
- Total offense: Team **2,205** vs Opp **2,323** (avg per game 441.0 vs 464.6).
- Turnovers (offense): Team **9** turnovers committed (5 fumbles lost + 4 INTs) vs Opp **6** (3 fumbles lost + 3 INTs). Syracuse has **3 more turnovers**.
- Third-down conversion: Team **36.76%** vs Opp **39.73%**.
- Fourth-down conversion: Team **58.33%** (7/12) vs Opp **33.33%** (4/12) — Syracuse converts and attempts more 4th downs successfully (aggressive play-calling).
- Sacks: Team recorded **7** sacks (for 52 yards); opponents recorded **14** sacks (for 102 yards) — indicates Syracuse is generating fewer sacks while also allowing significant pressure (ambiguous directionality; see data caveat below).
- Penalty yards: Team **230** vs Opp **319** (team better discipline by yards).
- Special teams: Punting average **47.96** net **45.78**; Opp punting avg **40.29** — **special teams are a strength**.

Interpretation: The scoring advantage is small and not statistically robust; the offense is pass-heavy and efficient through the air, while the run game is underperforming. Turnover profile and run defense (opponents' rushing totals) are major concerns. Special teams and fourth-down aggressiveness are positives.

---

4) Uncertainty quantification & sensitivity

- **Small-sample uncertainty:** With only 5 games, per-game variance is large — the bootstrapped 95% CI for scoring differential spans about 46 points, making any claim of superiority tenuous.
- **Outlier sensitivity:** Removing the Colgate game (the +42 differential) changes the team PPG from **31.2** to **22.5** and opponents' from **29.6** to **31.0**, flipping the mean differential to **−8.5** (team now behind). This shows recommendations must be robust to outliers.
- **Recommendation:** Avoid committing to season-defining personnel actions based solely on these aggregated statistics; instead perform targeted play-level analysis and collect more observations.

---

5) Sanity checks & domain validation performed

1. **Outlier detection:** Identified Colgate (+42) and Duke (−35) as high-leverage games; flagged for film review to determine matchup/context (e.g., starters rested, injuries, turnovers).
2. **Missingness:** No play-level features or snap counts — request play-by-play logs and snap counts for deeper analysis.
3. **Ambiguous metrics:** "SACKS BY" columns required careful reading; clarified interpretation in this report and recommended standardization of exported stats (e.g., label: "Sacks made by team" vs "Sacks allowed").

4. **Domain check:** Coaches should cross-check pass protection calls/pressure metrics and run-blocking grades from film vs aggregated numbers before acting.

---

6) Bias & fairness checks

- **Data coverage bias:** The PDF contains only playing outcomes and aggregate box-score numbers. There is no demographic, medical, or recruiting-data included here; however, making personnel decisions without balancing context (snap counts, opponent strength, injuries) risks unfair treatment.
- **Algorithmic bias risk:** If future analytics use tracking/biometric data, apply fairness audits; ensure models do not use or proxy protected attributes (e.g., race, nationality, age) in ways that affect personnel decisions.
- **Mitigations:** (a) Use de-identified features for model training where possible; (b) require human-in-loop sign-off for any automated recommendation that affects roster/employment; (c) keep an auditable decision log.

---

7) Robustness & sensitivity experiments (performed / recommended)

Performed (in this analysis):

- Bootstrap CI for mean scoring differential (n_boot=20,000, seed=42).
- Sensitivity: recomputed means excluding the Colgate game — result flips team to behind opponent average.

Recommended next steps (investigatory):

1. Pull play-by-play logs for all 5 games and compute per-play yardage distributions, formation usage, rush/pass selection rate by down-distance, and pressure rates.
2. Compute per-player snap counts and target share to deconfound per-snap production vs raw totals.
3. Run a matched-opponent analysis (adjust for opponent defensive/pass rush rank) to separate matchup effects from team performance.

---

8) Recommendation tiers (with concrete actions)

Operational (Low risk — immediate, quick wins)

- **Ball security drills:** Mandatory team sessions on ball carrying and ball-stripping awareness; track fumbles in practice and measure improvement weekly. *Rationale:* team committed 9 turnovers through 5 games (1.8/game).
- **Short-yardage run-package:** Design & install 2 short-yardage/gap-run plays emphasizing contact balance to increase average rush YPA on early downs.
- **Protect QB:** Quick-release passing concepts (screen/slant combos) on 2nd-and-long to reduce sack exposure.
- **Preserve special teams' strategy:** Continue with current return and punting usage; they are outperforming opponents.

Investigatory (Medium risk — requires data, controlled trials)

- **Film-led pass-rush / protection audit:** Tag every play for pressure source (blitz/OL miss). Run a 4-week micro-trial swapping protection schemes in practice and compare sack rates.
- **A/B test run-blocking schemes:** Implement zone vs gap blocking on alternating weeks in non-critical drives and measure YPA and success rate on 1st/2nd downs.
- **Deploy play-level analytics:** Acquire play-by-play CSV exports and (if permitted) tracking data; compute adjusted yards per play (Opponent-adjusted) and expected points added (EPA).

High-stakes (High risk — require human/HR/legal review)

- **Starting lineup changes / staff reassignment:** Only after investigatory evidence showing consistent, significant underperformance after controlling for opponent strength and injuries.
- **Contract or recruitment actions based on automated models:** Require full human audit, fairness report, and legal review prior to implementation.

---

9) Ethical & legal analysis

Data privacy & consent: If moving to tracking or medical data, obtain explicit consent, follow institutional privacy policies, NCAA rules, and (if applicable) IRB oversight. Limit retention to stated purposes and delete raw biometric data after necessary analysis.

Fairness & transparency: Avoid automated decisions that materially affect employment without documented human review. Keep a record of what features/models influenced a recommendation.

Explainability: For any model used to recommend personnel actions, provide coaches with model explanations (feature importance, counterfactuals) and an explicit uncertainty measure.

Accountability & audit: Maintain immutable logs (version-controlled code, data snapshots, LLM prompts & outputs) so decisions can be audited; designate an internal reviewer (title

suggested: Analytics & Ethics Officer) responsible for compliance.

Appendix A — Quick numeric summary

- Team points: **156** (31.2 PPG)
- Opp points: **148** (29.6 PPG)
- Mean differential: **+1.6** (95% bootstrap CI: **−22.2 to +24.0**, seed=42)
- Rushing yards: **560** vs **870** (team rush YPA **3.3** vs opp **5.4**)
- Passing yards: **1,645** vs **1,453** (team pass YPA **7.95** vs opp **6.76**)
- Turnovers (team): **9** (5 fumbles lost + 4 INTs) vs Opp **6**
- 3rd-down: **36.76%** vs **39.73%**
- 4th-down conv: **58.33%** vs **33.33%**
- Sacks (team vs opp): **7** vs **14**
- Penalty yards: **230** vs **319**
- Special teams: Punting avg **47.96** (net 45.78) vs opp **40.29** — strength

---

AI Prompt (Audit Log for LLM)

Exact prompt used to generate this report:

"Take the attached cumulative team statistics PDF (cume.pdf) for Syracuse University Football as of Sep 30, 2025, and produce a stakeholder-facing decision report focusing on ethics, reliability, and process documentation. Include: stakeholder context, data provenance, recreated descriptive stats and visuals, code and seeds, uncertainty quantification (CIs/bootstrap), bias/fairness checks, robustness/sensitivity, and a 3-tier recommendation structure (operational, investigatory, high-stakes). Save every prompt and raw output and annotate edits."

Model response handling:

- Initial raw output was refined for clarity
- Clarified ambiguous stat labels (sacks, turnovers)
- Inserted bootstrap confidence intervals and sensitivity tests
- Added ethical/privacy/legal section for robustness

Closing notes

This repository ensures transparency, reproducibility, and ethical accountability in sports analytics decision-making. Immediate operational actions can begin this week, while investigatory steps require new data collection. High-stakes decisions must follow human and legal review channels.