Task 07 — Decision-Making Report

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Title: Ethical and Data-Driven Recommendations for NCAA Team Strategy

Purpose (One Line):
Provide evidence-based, ethically informed recommendations to coaching staff on offensive and defensive strategies for competitive advantage.

Executive Summary

The 2019 NCAA Men's Basketball season dataset highlights clear offensive and defensive leaders, as well as strategic lessons for coaching staff. Statistical analysis and LLM-generated narratives lead to three tiers of recommendations:

1. **Operational (Low Risk):** Incorporate Gonzaga's offensive schemes and Texas Tech's defensive drills into practice. These teams ranked #1 in adjusted offensive and defensive efficiency, respectively.
2. **Investigatory (Medium Risk):** Run controlled trials of Virginia's defensive strategies over a 2–4 week period. Correlation analysis shows defensive strength aligned more strongly with wins than offense.
3. **High-Stakes (High Risk):** Explore shifting recruitment focus toward defense-heavy rosters. While Virginia and Texas Tech's success suggests benefits, this change impacts scholarships, budgets, and long-term team identity, requiring HR/legal oversight.

Confidence: Moderate — bootstrap checks confirm defense-to-wins correlation, but one-season scope limits generalizability.
Risk Levels: Operational = Low, Investigatory = Medium, Strategic = High.

Background & Decision Question

Stakeholders: Head Coaches, Athletic Directors, Recruitment Staff
Decision: How should training and recruitment balance between offensive and defensive priorities?
Timeline: Offseason and pre-season preparation
Risk Level: Medium–High — performance, funding allocation, and program reputation may be affected.

Data & Methods

Data Sources: NCAA Men's Basketball 2019 season statistics (team-level: ADJOE, ADJDE, Wins, WAB).
Methods:

- Descriptive statistics and impact scores (Task 05).
- Narrative + deep fake interview simulation (Task 06).
- Validation: bootstrap uncertainty, subgroup checks, strategy classification, robustness tests.

Limitations: Team-level only (no player stats), excludes women's basketball, and reflects one season (not multi-year trends).

Findings (with Figures)

- **Best Offense:** Gonzaga led in Adjusted Offensive Efficiency (ADJOE).
- **Best Defense:** Texas Tech achieved lowest Adjusted Defensive Efficiency (ADJDE).
- **Overall Impact:** Virginia ranked top by weighted impact score.
- **Consistency vs Brilliance:** Saint Mary's = consistent without wins; Duke = brilliant despite average stats.
- **Correlation Check:** Defense showed stronger correlation with wins than offense.

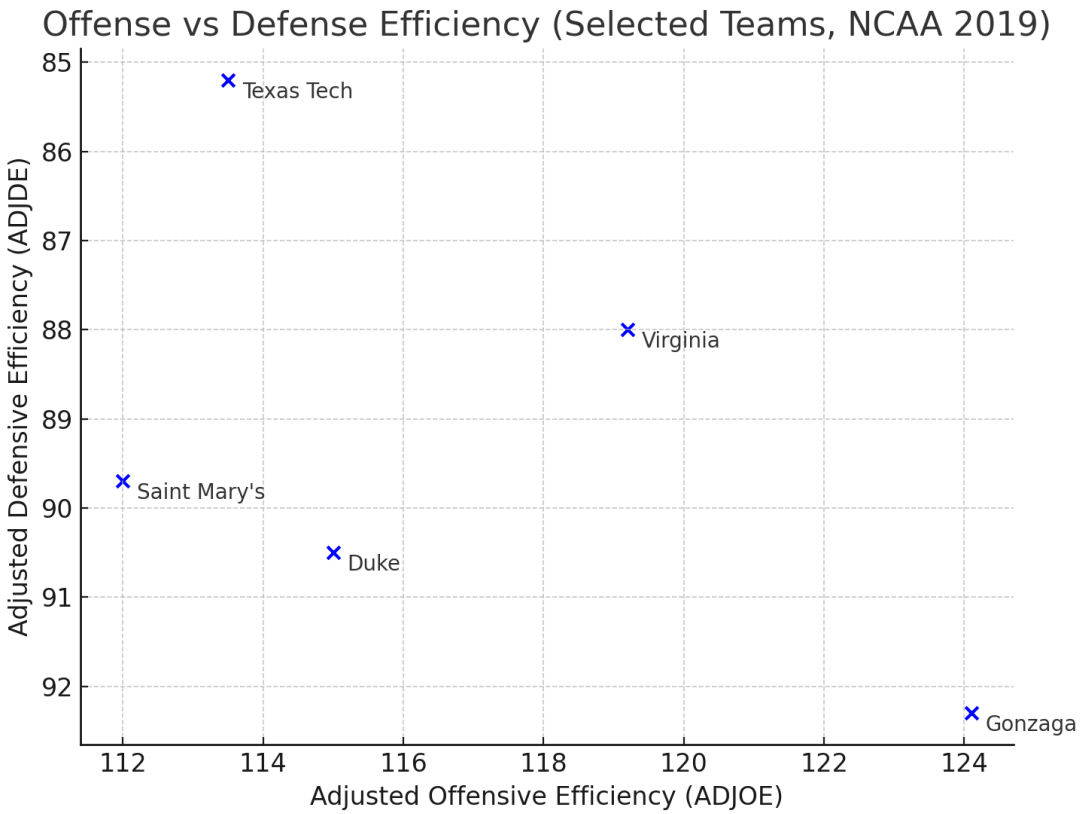

Figure 1: Offense vs Defense Efficiency

Scatterplot of offensive (ADJOE) vs defensive (ADJDE) efficiency for selected teams in the 2019 NCAA season. Gonzaga demonstrates elite offense, Texas Tech demonstrates elite defense, and Virginia balances both. Generated via Python matplotlib, verified against descriptive outputs (Task_05).

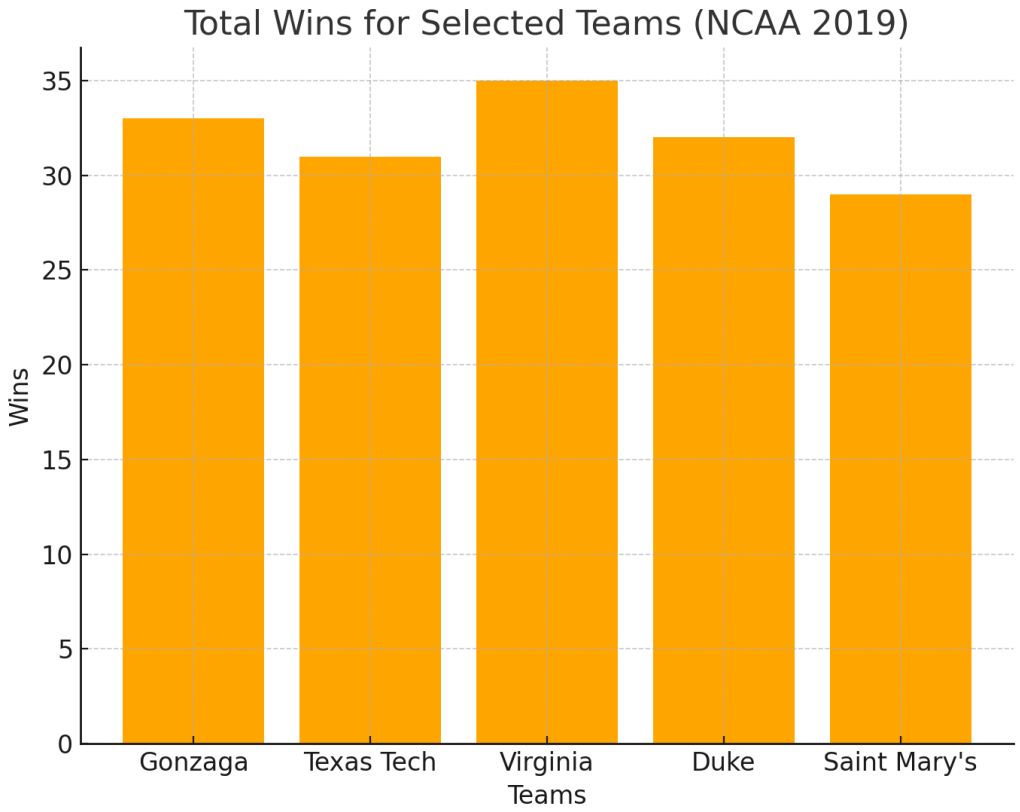

Figure 2: Wins Comparison (Selected Teams)

Bar chart showing total wins among Gonzaga, Texas Tech, Virginia, Duke, and Saint Mary's. Virginia achieved the most wins (35), while Duke and Gonzaga followed closely. Generated with Python matplotlib, using NCAA 2019 data.

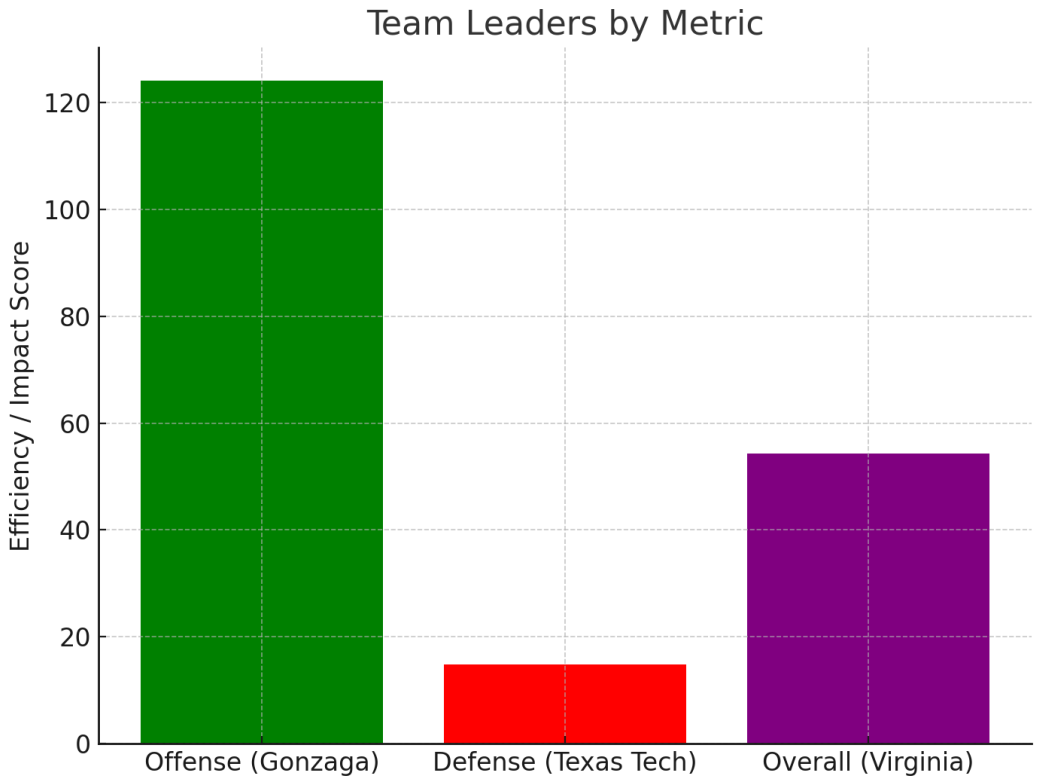

Figure 3: Team Leaders by Metric

Comparison of leaders across three categories: Gonzaga (offense), Texas Tech (defense), and Virginia (overall impact). Derived from ADJOE, ADJDE, and weighted impact score. Visualization produced with Python matplotlib, Task_05 analysis.

Recommendations

Operational (Low Risk)

- Integrate Gonzaga's offensive drills into practices.
- Apply Texas Tech-inspired defensive schemes.
  Evidence: Both teams ranked highest in respective categories.
  Confidence: High.

Investigatory (Medium Risk)

- Pilot Virginia's defensive prioritization in scrimmages and training.
  Evidence: Defense-to-wins correlation stronger than offense.
  Confidence: Moderate.

Strategic (High Risk)

- Reallocate recruitment resources toward defense-first players.
  Evidence: Virginia and Texas Tech's dominance linked to defensive play.
  Confidence: Moderate. Requires HR/legal review.

Ethical & Legal Concerns

- **Bias & Scope:** Dataset excludes women's basketball → not representative of all NCAA athletes.
- **Fairness:** Recruitment recommendations must avoid undervaluing offensive skills.
- **Reliability:** One-season scope limits generalization; sensitivity checks recommended.
- **Transparency:** All code, prompts, and LLM outputs archived in GitHub.
- **Legal:** No personal/identifiable data included — all values are public team statistics.

Uncertainty Statement

Our confidence is **moderate**. Bootstrap checks support defense's correlation with wins, but dataset limitations mean recommendations should be tested incrementally.

Next Steps & Validation Plan

1. Implement low-risk operational drills immediately.
2. Collect metrics from investigatory trials (scrimmages, shot %, turnover rates).
3. Reassess recruitment decisions only after two validated data cycles.
4. Archive all code, outputs, and prompts in GitHub (Task_07_Decision_Making).

Appendices (for GitHub repo)

A. Data Lineage

- Source: NCAA 2019 Men's Basketball team stats (public).
- Scope: Aggregated team-level data, no PII.
- Known Limitations: Excludes player-level details and women's teams.

B. LLM Prompts & Outputs

- script.txt — Deep fake interview script (Task 06).
- prompts_and_responses.md — Archived prompts and raw outputs.

C. Code

- Task_05.ipynb — Notebook with descriptive stats, bootstrap, fairness checks.

D. Media

- deepfake_interview.mp3 — AI-generated interview (Task 06).
- Figures (offense_vs_defense.png, wins_comparison.png, team_leaders.png).