Andrew Possi

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Injury Risk Modeling Summary: Project Missed Games (PMG)

The goal of this project was to quantitatively estimate how many games each fantasy football player is projected to miss in the upcoming 2025 NFL season. While injuries are inherently unpredictable, this model leverages historical data and situational context to make injury probability more actionable for fantasy football players and analysts. The result is a newly developed metric: Projected Missed Games (PMG).

PMG (Projected Missed Games) is a numerical estimate (scaled between 0 and 4) representing the likelihood and magnitude of games a player is projected to miss due to injury over the course of the season.

This metric is designed to inform fantasy football draft strategy, especially for risk-averse or risk-tolerant managers, and to adjust ADP rankings to reflect true player availability.

The PMG calculation was designed through iterative refinement. It began by weighting core components of injury and usage risk, then scaled to a standardized 0–4 range for easy interpretability.

PMG = Base Risk + Position Risk + $(0.10 \cdot$ Touches/Game$) + (0.10 \cdot$ Targets$) + (0.125 \cdot$ Snap Counts$) + (0.20 \cdot$ Injury History$) + (0.20 \cdot$ Injury Severity$)$

All raw values were normalized via min-max scaling before being added to ensure a fair range between players.

PMG Formula Variables (Weighted Factors):

- Base Risk: 0.05

  A universal baseline risk applied to all players (no one is injury-proof).

- Position Risk: 0.10

  Adjusted by position: RBs typically face higher contact volume than WRs, TEs, and QBs.

- Touches per Game: 0.10

  Measures how often a player handles the ball on average — more touches increase exposure.

- Targets: 0.10

  Important for WRs and TEs; indicates involvement and play design even if not touching the ball.

- Snap Counts: 0.125

  Reflects time spent on the field. More snaps = more chances for injury even without touches.

- Injury History: 0.20

  A custom-scaled score representing how often and how significantly a player has been injured in the past.

- Injury Severity: 0.20

  Weighs the long-term and reinjury risk of past injuries (e.g., ACL or Achilles > hamstring pull).

Final CSV Column Descriptions:

- Full Name: Player's full name

- Rank: ESPN PPR ADP rank (1–100)

- Position: QB, RB, WR, or TE

- Touches_Per_Game: Average touches per game in 2024

- **Targets**: Total number of targets in 2024

- **Snap_Counts**: Total offensive snaps played in 2024

- **Injury_History_Score**: Scaled score (0–4) based on the player's past injuries

- **Injury_Severity_Score**: Scaled score (0–4) based on the type and recurrence risk of injuries

- **PMG**: Final **Projected Missed Games** score (0–4), higher = greater risk

- **Tier**: Categorized risk tier (Very Low, Low, Moderate, High)

Data Source: ESPN ADP Top 100 (PPR), Mike Clay's 2025 NFL Projection Guide

Players: QB, RB, WR, TE only

Tools Used: R, Microsoft Excel

Visualization: Scatterplot of ADP vs PMG with Tier Zones and Player Names

Exported CSV: Contains full rankings, positional data, injury metrics, and adjusted risk tier

This model introduces a quantified method to compare injury risk across positions and players. It enables more data-driven drafting decisions and can be used in:

- Fantasy football research and podcasts

- Injury regression studies

- Draft optimizers and ADP risk-adjustment tools

- Sports analytics portfolios

Top 100 Fantasy Football ADP Rankings vs. Potential Games Missed (2025)

Distribution of Projected Missed Games (PMG) Across Top 100 Players

PMG vs. Touches per Game by Position