

Group Project Plan: NBA Player Stats Analysis

1. Team Designations

- **Team Lead:** Ruilong Chen
 - **Coders:**
 - Lejun Shen
 - Xian Wu
 - Zirui Chen
 - Ziqi Guo
 - Feiran Zhang
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2. Data Set

- **Selected Dataset:** NBA Player Stats (as of March 7, 2025)
 - **Source:** NBA 2025
 - **Data File:** `nba_2025-03-07.csv`
 - **Data Dictionary:** `nba_codebook.xlsx`
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3. Coding Elements and Responsibilities

Each coder is responsible for summarizing different aspects of the dataset. Below are the assigned tasks:

1. Overall Player Rankings & Performance Metrics (Ruilong Chen)

- Summarize the top-ranked players based on points per 36 minutes.
- Compare different positions (e.g., guards vs. forwards vs. centers) based on performance.

2. Shooting Efficiency Analysis(member 1)

- Examine field goal percentage, three-point percentage, and effective field goal percentage.
- Identify trends in shooting efficiency among different player positions.

3. Rebounding and Defensive Performance(member 2)

- Analyze total rebounds, offensive rebounds, and defensive rebounds.
- Compare defensive contributions using blocks and steals.

4. Playmaking & Turnovers(member 3)

- Evaluate assists per 36 minutes.
- Analyze turnover rates and their correlation with assists.

5. Foul & Free Throw Analysis(member 4)

- Assess the free throw percentage and attempts per player.
- Study the impact of personal fouls on player efficiency.

6. Comparing Team Contributions(member 5)

- Group players by team and analyze each team's statistical strengths.
- Identify teams with the highest-scoring or best-defensive players.

7. Report Compilation & Automation (Ruilong Chen)

- Compile all outputs into a final report.
- Ensure the report is generated automatically with the `make` command.

4. Project Organizational Structure

The project will be structured as follows:

```
NBA_Project/
| — data/           # Raw dataset and dictionary
|   | — nba_2025-03-07.csv
|   | — nba_codebook.xlsx
|
```

```

| — src/                # Source code directory
|   | — overall_performance.R
|   | — shooting_efficiency.R
|   | — rebounding&defence.R
|   | — turnovers.R
|   | — free_throw.R
|   | — Team_contributions.R
|
| — output/              # Generated tables and figures
|
| — report/              # Final report
|   | — nba_analysis_report.Rmd
|   | — nba_analysis_report.html
|
| — config.yaml          # Configuration file for customization
| — Makefile             # Automation script to build the report
| — README.md            # Project description and instructions

```

5. Customization Elements

The project will be parameterized to allow users to customize their reports:

- The project will include a **config file** that allows customization of:
 - Player positions to focus on (e.g., guards, forwards, centers)
 - Time range for filtering player statistics (e.g., different dataset, age range)
 - Specific metrics to highlight in visualizations
- **Implementation:**
 - A `config.yaml` file will store user preferences.
 - R scripts will read parameters from `config.yaml` to adjust analysis dynamically.
 - The report will be regenerated automatically using `make` when parameters are changed.

6. Group Ground Rules

To ensure smooth collaboration, our team agrees to the following ground rules:

1. **Respect and Communication:**

- All team members will respect each other's ideas and contributions.
- Weekly check-ins via WeChat to discuss progress and roadblocks.

2. **Code Submission and Review:**

- All coders will submit their scripts **at least one week before the final deadline.**
- Pull requests should include meaningful descriptions.
- Code should be reviewed by at least one other member before merging.

3. **Version Control and Repository Management:**

- The project will be managed on GitHub.
- The team lead (Ruiling Chen) will handle merges and resolve conflicts.
- Each coder will create branches for their tasks and submit pull requests.

4. **Final Report Compilation:**

- The team lead is responsible for integrating all code outputs into the final report.
 - All members will review the final report before submission.
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