https://github.com/mknoww/Design-final

How Do NBA Stars Score? Threes vs Free Throws in 2024–25

Course: DS 2023
Project: Final Infographic – NBA Scoring Styles
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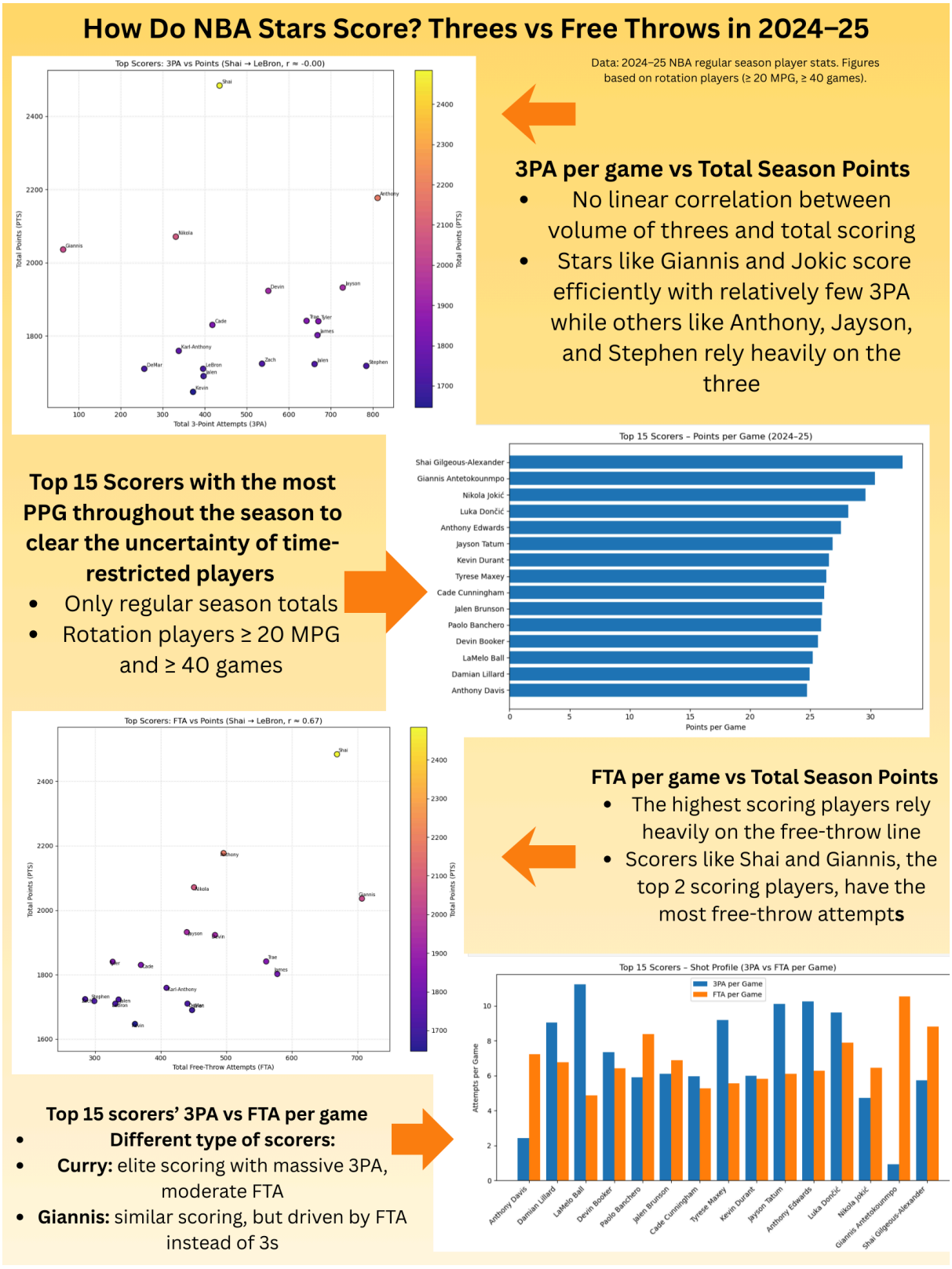
Final Infographic

In [3]:
```
from IPython.display import Image

Image("infographic.png", width=900)
```

Out[3]:



Project Question and Data

This project asks:

> **Among the NBA's top scorers in the 2024–25 regular season, is high scoring more closely associated with three-point volume or with free-throw volume?**

I use a dataset of **2024–25 NBA player season totals**, where each row represents one player's season line.
After combining multi-team players into a single season total, I restrict the analysis to **rotation players**:

- At least 20 minutes per game (MPG)
- At least 40 games played

All stats used in the infographic come from this cleaned subset of players and use regular-season totals only.

Interpreting the Infographic

The infographic combines four plots to compare how NBA stars score.

1. Top-left: 3PA vs Total Season Points

The scatterplot in the top-left shows **total 3-point attempts** on the x-axis and **total points** on the y-axis for the highest-scoring players.
The correlation for this group is essentially zero ($r \approx 0$), which means:

- Some stars (e.g., **Giannis Antetokounmpo**, **Nikola Jokic**) reach high point totals with relatively **few threes**.
- Others (e.g., **Anthony Edwards**, **Jayson Tatum**, **Stephen Curry**) achieve similar totals while relying heavily on **high 3-point volume**.

This suggests that *taking a lot of threes is not the only path to elite scoring* among NBA stars.

2. Top-right: Top 15 Scorers by Points per Game

The horizontal bar chart ranks the **top 15 players by points per game**.
This establishes who counts as a "star" in the analysis and shows the size of the scoring gap between players like **Shai Gilgeous-Alexander**, **Giannis**, **Luka**, etc.

3. Bottom-left: FTA vs Total Season Points

The bottom-left scatterplot replaces 3PA with **free-throw attempts (FTA)** on the x-axis.
Here the relationship is much stronger ($r \approx 0.67$):

- The highest scorers, such as **Shai** and **Giannis**, also have the **most free-throw attempts**.
- In general, players who generate more free throws tend to score more points.

This indicates that **getting to the free-throw line is more consistently associated with high scoring** than simply taking more threes.

4. Bottom-right: Shot Profiles of the Top 15 Scorers

The grouped bar chart compares **3PA per game** and **FTA per game** for the top 15 scorers.

It highlights different scoring “profiles”:

- **Stephen Curry**: elite scoring with **very high 3PA** and only moderate FTA.
- **Giannis Antetokounmpo**: similar scoring output, but driven by **high FTA** instead of high 3PA.

Overall, the chart shows that stars can reach similar scoring levels through **very different combinations** of threes and free throws.

Uncertainty and Limitations

- The analysis uses **only one season** (2024–25 regular season), so results may not generalize to other years.
- Only **rotation players** (≥ 20 MPG and ≥ 40 games) are included, which removes bench players and some injured stars.
- I work with **season totals and per-game averages** only; I do not adjust for pace, offensive rating, or shot efficiency beyond basic attempts and points.
- Plot choices (axes scales, filters, and ordering) emphasize clarity and may hide smaller differences among lower-usage players.
- Correlations shown are **descriptive**; they do not imply that either 3PA or FTA directly causes higher scoring.

Manifest of Project Resources

Name	Type	Description	Location / Link
Basketball_Data_2024-2025_Season.csv	Data file	2024–25 NBA player season totals	`data/Basketball_Data_2024–2025_Season.csv`
01_data_setup.ipynb	Notebook	Loads data and documents variables	`notebooks/01_data_setup.ipynb`
02_exploration.ipynb	Notebook	Cleaning, filtering, and creation of all plots	`notebooks/02_exploration.ipynb`
03_final_product.ipynb	Notebook	Final infographic, interpretation, and this manifest	`notebooks/03_final_product.ipynb`

| infographic.png | Image (PNG) | Final infographic
| `infographic.png` | | GitHub repository | External | Public repo with all files | *https://github.com/mknoww/Design-final* |

In [ ]: