Work In Progress Report – CSE 478

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Project Title: The 3-Point Revolution: How the NBA Game Has Evolved Since 2000
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1. Current Project Status

Up to this point, our group has already done approximately half of the entire project. We worked on developing the basis of our visual narrative, preparing the data, and applying the initial group of visual interactive display.

What we have finished

1. Data Collection
We downloaded the full NBA Games Dataset (1995–2023) from Kaggle.
This includes:

- games.csv
- games_details.csv
- players.csv
- teams.csv
- ranking.csv

2. Data Preprocessing Pipeline
Initnially, a python script named preprocess_data.py, which combined and aggregated the raw CSVs into both season- and team-levels of use in our visualizations was written.
The script produces json file:

- league_trends.json
- scoring_mix.json
- team_scatter.json

3. Website Layout & Styling
Then we created the entire page layout named index.html and built a modern, responsive dark-theme design by implementing styles.css that includes:

- Hero section with summary text
- Metric cards
- Visualization sections
- Containers for D3 charts
- Consistent spacing, color themes, and typography

4. Three Interactive Visualizations (using D3.js)
We then built & connected the following visualizations in our website:

- **League Trends Line Chart**
  This chart shows that how 3-point attempts, efficiency, and scoring have changed by season. It includes tooltips, a legend, and the smooth line transitions.

- **Scoring Mix Stacked Area Chart**
  This chart shows how the share of points from 2s, 3s, and free-throws changed from 2003–2022.

- **Team Scatter Explorer**
  It is an interactive scatter plot where an user can slide through the seasons to compare teams by 3-point volume, accuracy, and win rate. Includes tooltips and season insights.

These three charts are currently working end-to-end with real data.

What still needs to be completed

1. Additional Required Visualizations
According to our project proposal and course requirements, we still need to implement:

- A heatmap showing team-wise 3-point behavior over seasons
- A geographic map of NBA teams colored by offensive efficiency
- Our innovative visualization ("momentum spiral")

2. Scrollytelling Narrative
We plan to convert the page into a scroll-based storytelling flow using Scrollama.
Currently, everything is displayed in a dashboard layout.

3. Final polishing & annotations
We still need to add:

- Text panels for each section
- Axes labels, improved legends, and additional annotations
- Better transitions between visual sections

4. Final write-up, the poster, and the demo
These will be completed toward the end of the project timeline.

2. Changes Since the proposal
Compared to the original proposal, we made a few small adjustments based on what worked best during development:

1. We started with a dashboard layout first
Originally, we planned to implement scrollytelling from the start.
Instead, we first built a simpler dashboard layout to make development easier.
We will still add scrollytelling later, but building the visualizations first helped us test them faster.

2. Some visual designs evolved naturally
Our current styling (dark theme, glowing hero section, metric cards, etc.) is more refined than what we imagined in the proposal.

3. Order of visualization development changed
We originally planned to start with the stacked area chart. Instead, we found it easier to begin with the league-wide line chart and then expand from there.

4. The innovative "momentum spiral" is still planned
We haven't changed or removed it.
We just haven't built it yet because it requires more design time.

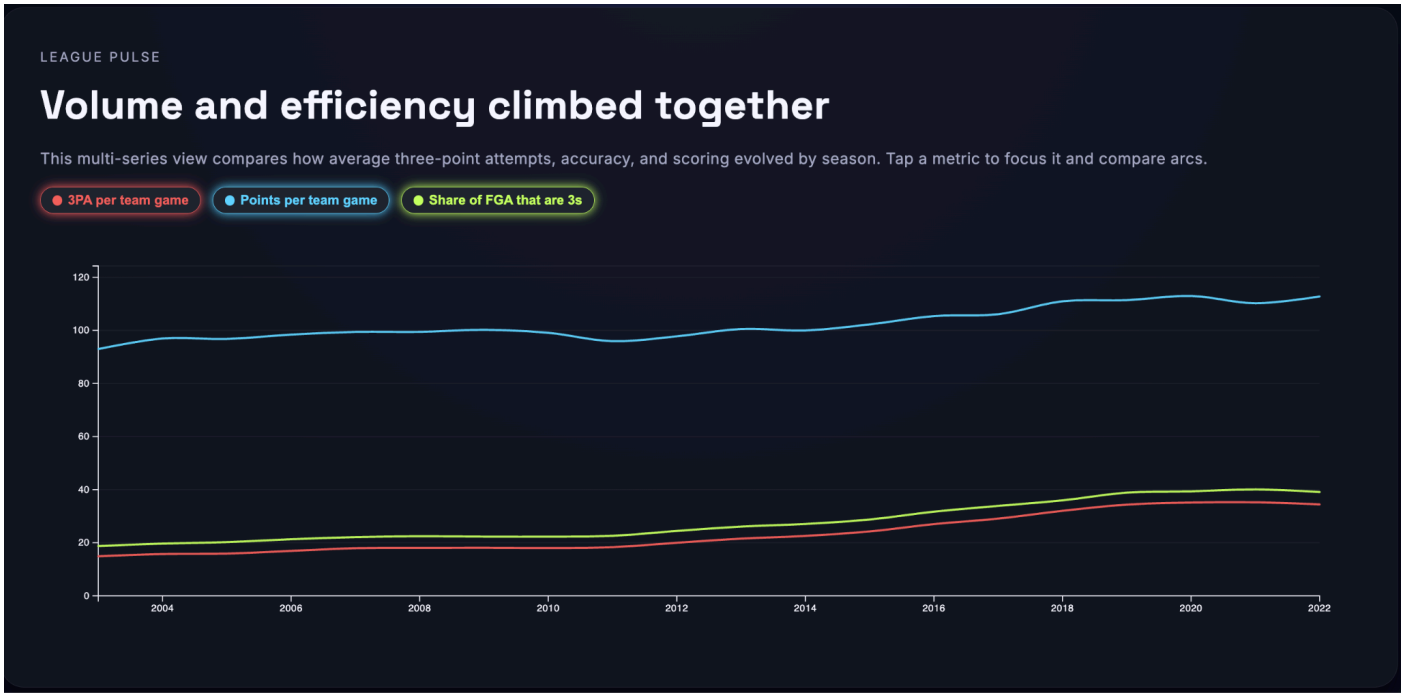
No major concept changes were made. The core story is still the same:
How the NBA's 3-point revolution transformed the league.

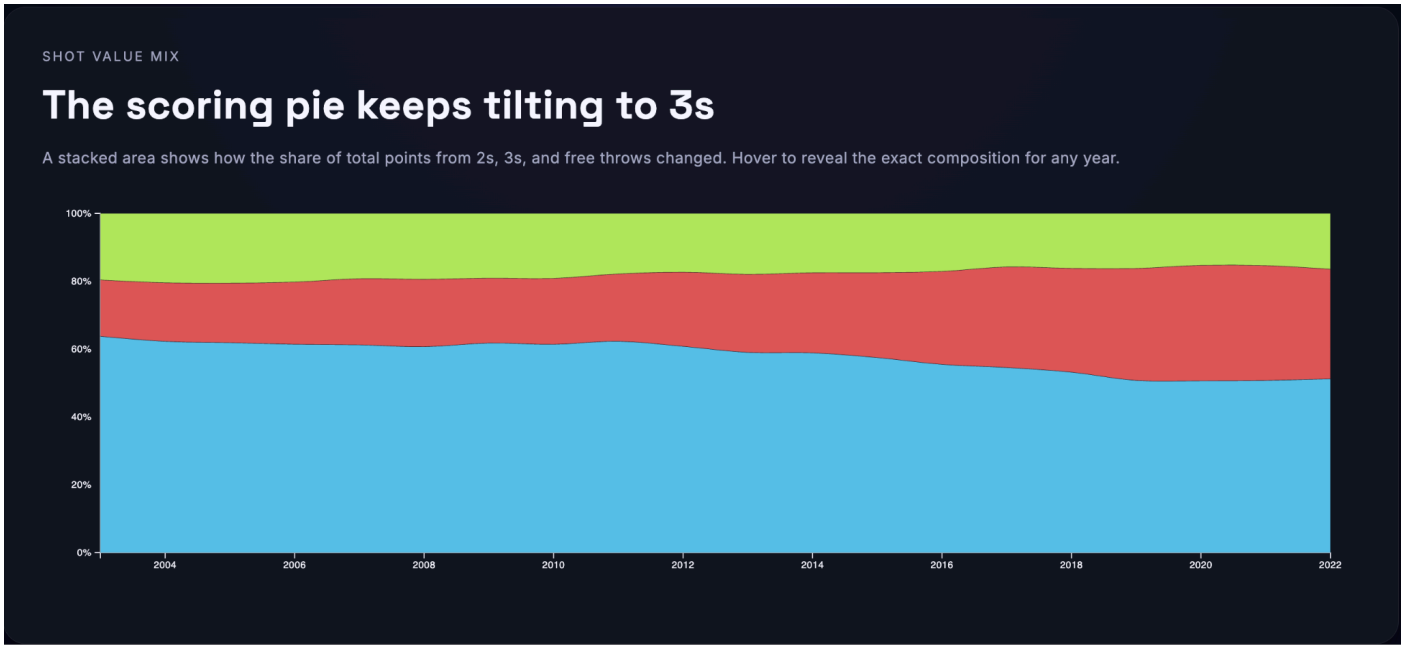
3. Screenshots of Current Project Status

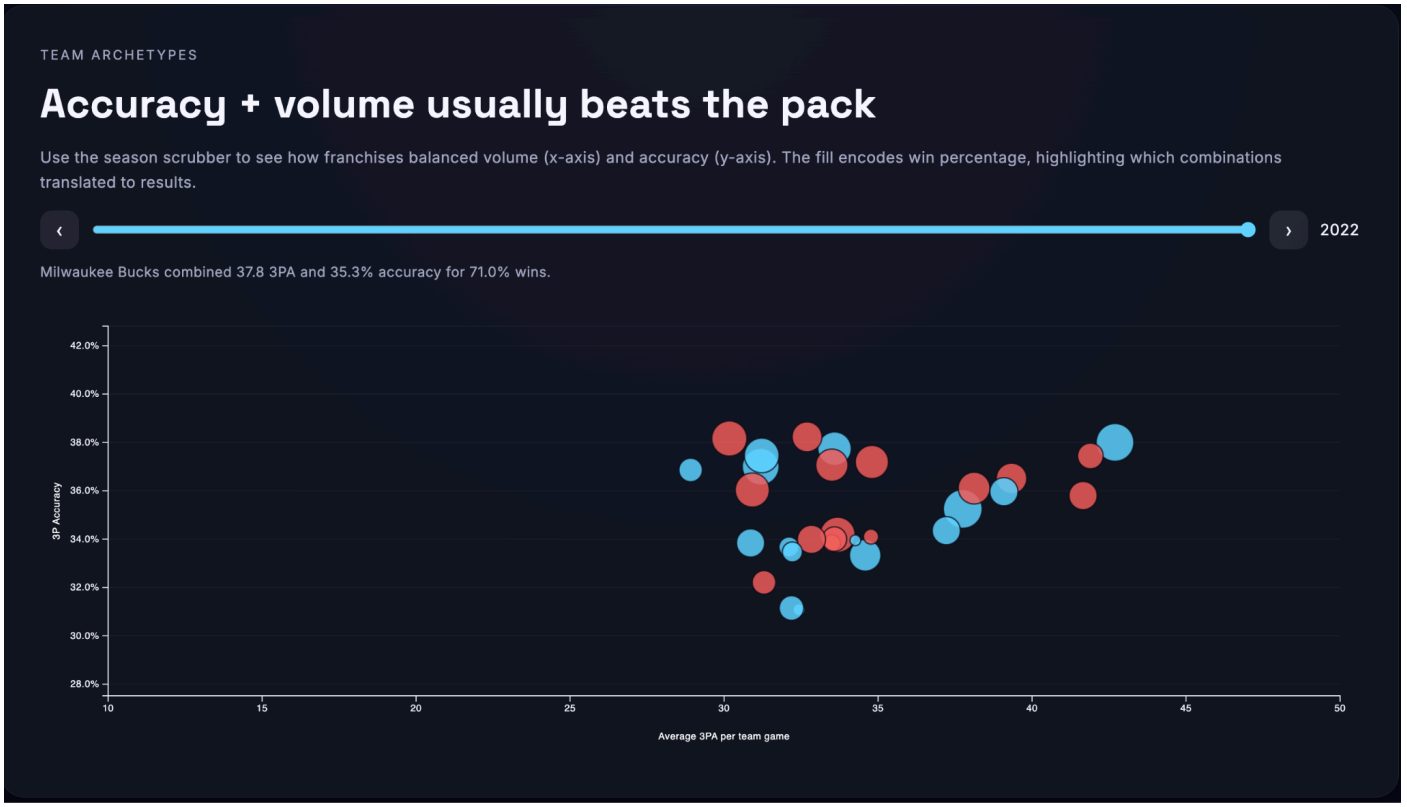
Include an image showing:

- The hero section
- The line chart
- The stacked area chart
- The scatter plot with the slider

You may choose to use multiple screenshots if one cannot fit everything.







4. Data Source & Pre-Processing Summary

Original dataset link:

NBA Games Dataset (1995–2023) by Nathan Lauga
https://www.kaggle.com/datasets/nathanlauga/nba-games

What we did to preprocess the data:

We combined five CSV files from Kaggle and cleaned them into season-ready JSON files.

Our preprocessing steps included:

- Mapping every game to its correct season
- Aggregating game-level stats to team-season totals
- Calculating league-wide averages
- Computing metrics like:
    - 3PA per game
    - 3-point rate (percentage of shots that are 3s)
    - 3-point accuracy
    - scoring composition (2s vs 3s vs FTs)
    - team win percentage
- Filtering seasons 2003–2022 for consistent data
- Exporting all results into three clean JSON files for use in D3

This preprocessing lets the website load and visualize data efficiently without performing heavy calculations in the browser.

5. Overall summary

At the currentt stage, our team has completed these:

- Set up the entire website structure
- Designed the theme and layout
- Completed the preprocessing pipeline
- Implemented three major interactive visualizations

Now we are all set to work on the remaining visualizations, the innovative view, and turn the dashboard into a scrollytelling story. Our team is on track, and each member has contributed clearly defined parts of the project so far.