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INFO 4310: Homework 4

Part 1: Existing Visualization Critique

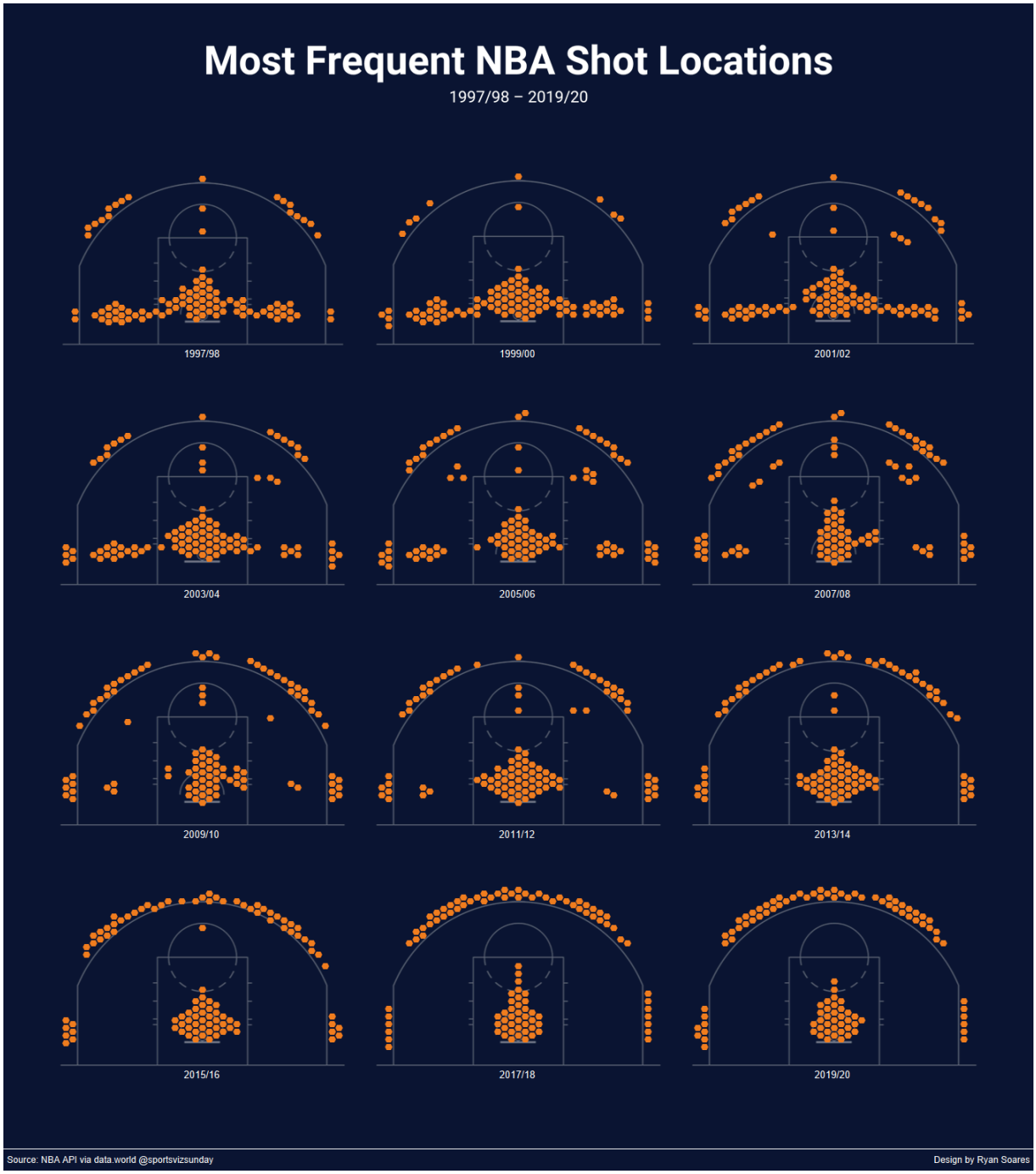

Fig 1: **Original Visualization**: Design by Ryan Soares via r/dataisbeautiful

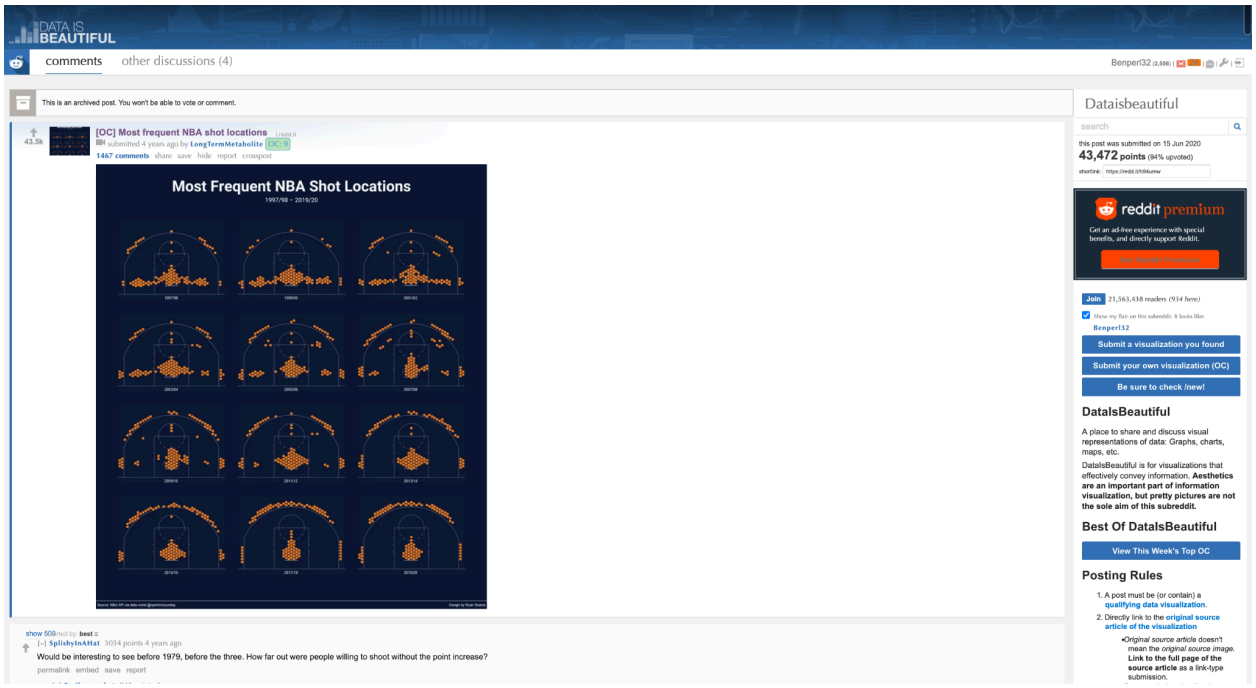

Fig 2: **Screenshot of source**

[Link to Data World (Data Source)]

Written Piece:

This visualization illustrates how NBA shot selection has evolved over time. By displaying shot location data from alternating seasons between 1997 and 2020, it highlights key trends, such as the increasing reliance on three-pointers and the decline of mid-range attempts. The side-by-side layout allows for effortless comparisons across different years, making long-term patterns in shot distribution immediately apparent.

The design is highly intuitive and does not require prior training to understand. The placement of dots naturally corresponds to shot locations, making it accessible to anyone with a basic understanding of basketball. There is no need for additional context or a legend to decipher the information presented.

Several visual elements are used effectively to encode the data. The position of each shot on the court is directly mapped, while orange hexagons emphasize high-frequency shooting areas. The grid structure, employing small multiples, enhances comparability across different seasons. However, the visualization only depicts shot volume and does not provide insights into shooting accuracy. This

omission leaves a gap in understanding whether these high-frequency shots were effective or merely frequent. Additionally, the frequency threshold for the hexagons is not specified, potentially leading to ambiguity.

There are inherent trade-offs in the design. By prioritizing shot volume over efficiency, the visualization effectively showcases where players take their shots but does not indicate how successful they are. This could mislead some viewers into assuming that the most common shots are also the most effective. Furthermore, densely packed hexagons in certain court areas may obscure finer details, making it difficult to detect subtle year-to-year changes.

As a static visualization, there is no interactive component. Introducing interactive features, such as hover-over tooltips displaying shooting percentages and team-based filters could enhance its analytical depth and user engagement.

Overall, this visualization successfully conveys changes in shot distribution over time. Strengths include clear shot density representation, an intuitive layout that makes trends easy to spot, and an emphasis on the growing preference for three-pointers. However, the lack of shooting efficiency data is a notable shortcoming. Differentiating player types, such as guards versus big men, could add further nuance, as their shooting habits likely vary significantly. Additionally, incorporating contextual information, such as rule changes or the rise of analytics-driven strategies, would provide a more comprehensive narrative behind the trends.

Several improvements could enhance the visualization. Displaying shot accuracy would transform it from a simple frequency map into a more insightful performance analysis tool. Breaking down shots by player type or role could reveal additional layers of strategy behind the changes in shot selection. Finally, adding annotations or historical context would help users understand why certain shifts occurred, making the visualization more informative and impactful.

Part 2: Design Rationale

[Vis Link]

Written Piece:

This visualization takes the original concept and pushes it further by adding interactivity, customizable filters, and richer data representation, making it a more

effective tool for analyzing NBA shot selection trends. The original static design provided a broad look at shot frequency over time, but this version allows users to dive deeper by toggling between shot volume and field goal percentage. This is a key improvement since the original only showed where players were shooting from, not how successful those shots were. Additional filters, such as team selection and adjustable shot thresholds, give users more control over the data, letting them focus on specific trends rather than relying on a one-size-fits-all view.

Beyond just adding features, the design also improves clarity. Hexagons have been replaced with dynamically sized circles, reducing visual clutter and making shot frequency differences easier to see. Hover-enabled tooltips provide instant details on shot volume and efficiency without overcrowding the display with labels. Stronger error handling ensures a smoother user experience even if data issues arise, something the original static version could not account for. The small multiples layout remains for easy season-to-season comparisons, but now users can actively explore different aspects of the data instead of just passively viewing a single snapshot. This version does not just replicate the original. It expands on it, offering a more flexible and insightful way to track how NBA shot selection has evolved.