Over the past decade, football has experienced significant transformations. The introduction of new tools, the evolution of tactics, and the shifting emphasis on possession and complex tactical structures have all reshaped the landscape of the game. Amidst these changes, we set out to explore the impact on one of the most fundamental elements of the game: shots on goal.

To analyze this, we delve into data from four leagues spanning across seven seasons. Thanks to data provided by ..., we're well-equipped to explore this question and uncover the answers.

Part 1: Contexts of Shots

Initially, we turn our attention to the circumstances leading up to shots. Remarkably, there's an impressive consistency both across seasons and leagues. Approximately 70% of shots originate from open play, followed by corners (15%), set pieces (5%), direct free kicks (3%), and penalties.

This uniform distribution is captivating. Delving further into open play shots, we investigate their origin - are they a product of strategic passing or the result of individual skills, rebounds, or serendipity? Generally, the ratio remains steady, floating between 50 to 60%. Notably, aside from Serie A, there's an upward trend, most pronounced in Bundesliga, where the percentage of shots in open play resulting from passes escalated from 52% to 58%.

Part 2: Accuracy of Shots

Having established shot contexts, we now shift our attention to the accuracy of shots taken. As a proxy to gauge this, we examine the median expected goals (xGoals) across the leagues over the seven seasons. There's a conspicuous improvement in each league, signifying an increase in the quality of goal opportunities.

The boost in xGoals might be due to either an enhancement in shot precision or an increase in shot attempts. To disentangle this, we delve into the shot conversion rate, the ratio of shots resulting in goals. Except for Serie A, where there's a considerable rise, signifying a more prolific and accurate shooting rate, the rate remains relatively stable.

Part 3: Shot Distances

Finally, we explore the aspect of shot distances. In particular, we question how shot locations have changed over time.

The last segment of our analysis focuses on the location of shots. We represent this visually using heatmaps over football pitches, displaying the percentage change in the number of shots based on pitch location between the 2014/15 and 2020/21 seasons. Collectively, the heatmaps hint at a strategic shift towards more shots within the penalty area, accompanied by a decrease in shots from further out.

This pattern appears to corroborate the rise in xGoals, suggesting that players are opting for higher quality shots from within the penalty area over long-range attempts. This shift is likely driven by a refined understanding of risk-reward trade-offs in football tactics. We further complement this analysis with an interactive 2D density plot, offering users a visualization of shot density in each season across different leagues.

Our investigation provides a comprehensive overview of the basic mechanics of football, tracing the consistencies and shifts in shot contexts, accuracy, and locations. As the game continues to advance, such data-driven insights will play an increasingly crucial role in comprehending and mastering the intricate dynamics of football.