# Too Young To Be A Top Soccer Player?

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A recent article[1] points that most of the top players in Europe in 2019-20 season are no younger than 29 years old. It also refers to a statistics study which finds the peak age for the UEFA Champions League is 26-30. We try to answer the following questions using the evidence from MLS: Does a soccer player need to get older in order to perform better? Should the contract of a younger player be longer until "peak age"? How should age be factored into value assessment for different positions?

Insight 1   Soccer player's market value and age have a U-shape relation. The peak point is $age = 27$.

First, the effects of the age, the playing position and the number of seasons in the club on the market values of the players are examined through a linear regression model. Figure below depicts the quadratic trend, as summarized in this formula, where variables in bold are significant at 1% level:

$$Log(\text{Market Value}) = 0.66\textbf{Age} - 0.01\textbf{Age}^2 + 0.03\text{Season} + 0.92\textbf{D} + 1.44\textbf{M} + 1.40\textbf{F}$$

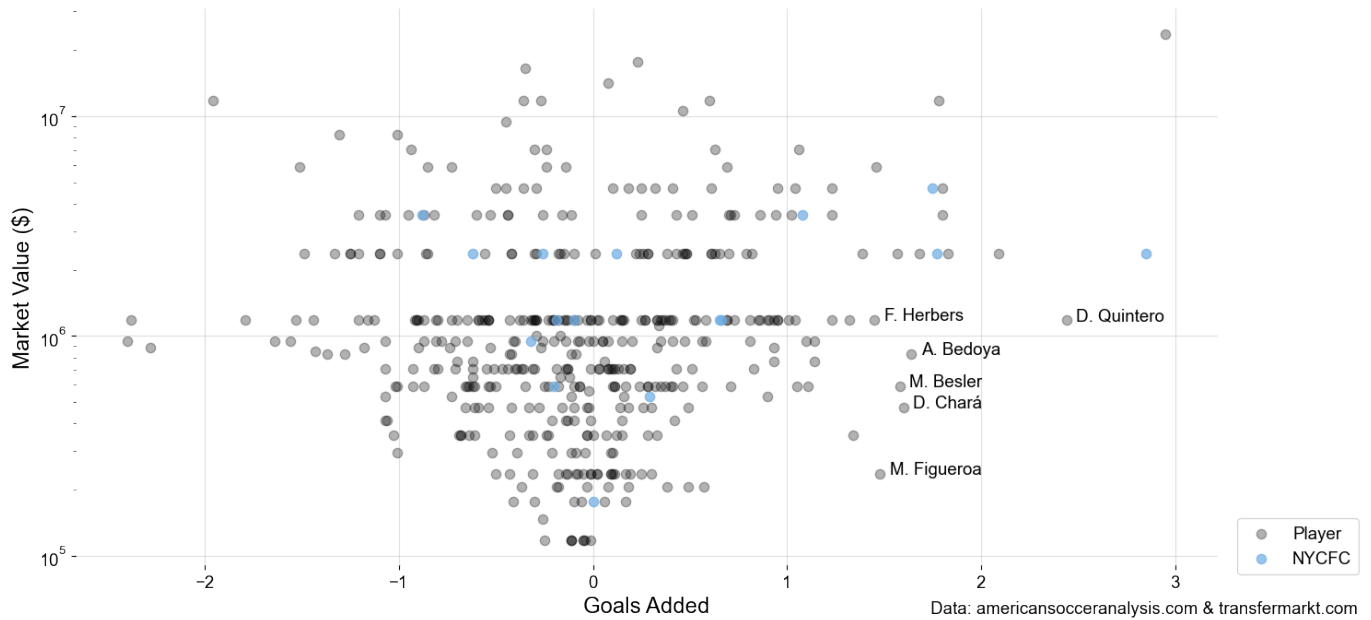**Market Value VS Age
Major League Soccer 2020**
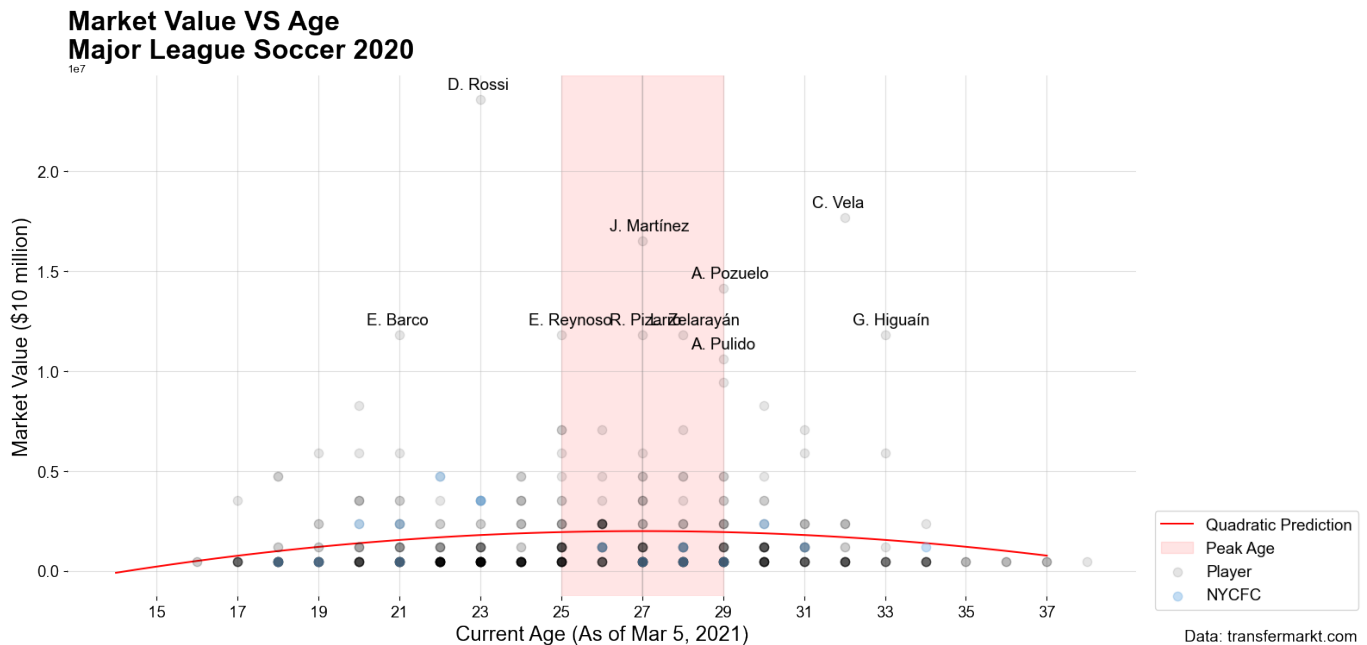
However, market value does not necessarily evaluate a player's on-pitch performance. Here we choose Goals Added (g+) by American Soccer Analysis as performance rating metric. Being very similar to VAEP, g+ models goal equivalent values to on-ball actions. It estimates every action's net xG gained based on current and post-action game situation by comparing with similar plays in the past.

As shown in figure below, and examined by Gaussian Mixture Model, there is no pattern between market value and g+. (But we can spot undervalued player in the lower right corner).

[1]"30-Somethings Rejoice: Soccer Says You Are Now At Your Athletic Peak", https://the18.com/en/soccer-entertainment/soccer-players-peak-age-growing-older

Market Value VS Goals Added (G+)
Major League Soccer 2020

Data: americansocceranalysis.com & transfermarkt.com

Insight 2   Mean g+ balances throughout the age range. No significant age effect.

Linear regression was used as before to examine the effect of age on g+ but nothing statistically significant. As you can see from the figure below, despite a surge between 31 and 34 due to lack of sample, g+ fluctuate little around 0. We can also find great players at different ages.

Goals Added (G+) VS Age
Major League Soccer 2020

Data: americansocceranalysis.com
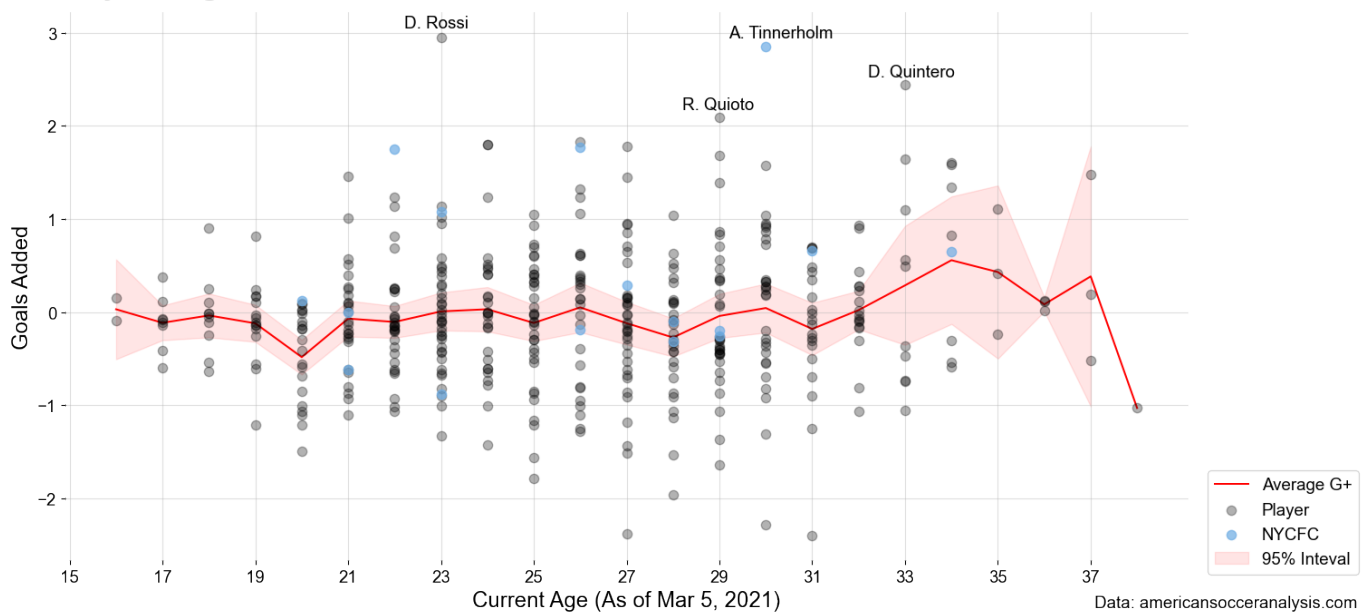
Insight 3   In terms of market value, *defender* peaks earlier and usually achieves less at peak. When it comes to g+, *defender* and *forward* experience a dip around 28 followed by an uptick around 30 while *midfielder* plays better at younger age and reaches peak at 33.


Market Value, G+ VS Age By Position
**Major League Soccer 2020**
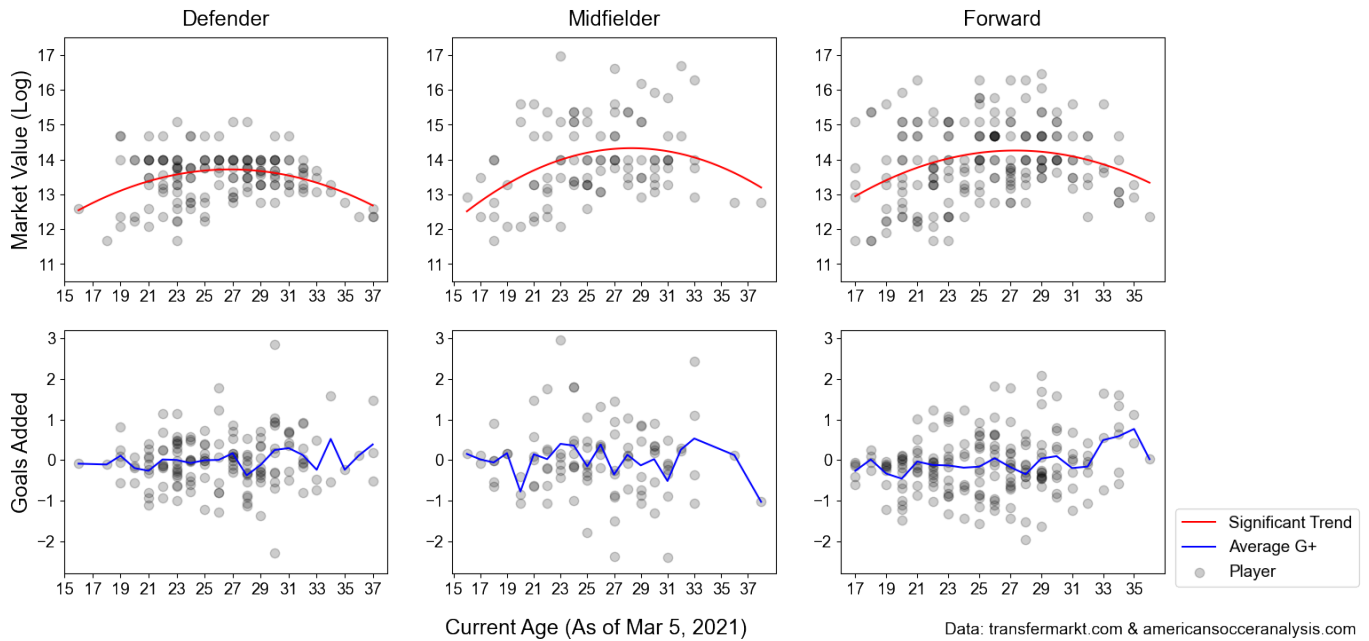
Conclusion and Recommendation

1. Soccer player does not have fixed peak age in terms of performance. Clubs can spot undervalued players by differentiating the "peak age" between market value and performance. For example, a midfielder's market value generally peaks later than performance.

2. When extending a contract, age can be considered: Midfielders and forwards have higher potential during 21-25; Players at 27-29 should be alarmed of performance drop and get ready for the 30s rejoice.

3. When it comes to team assessment, squad age profile depicts their strategy and player potential to some extent. As shown below, compared to Philadelphia Union, NYCFC used more younger players in season 2020 and maintained a stronger composition of players in peak value age.

New York City FC Squad Age Profile
Major League Soccer 2020

Data: transfermarkt.com & mlssoccer.com
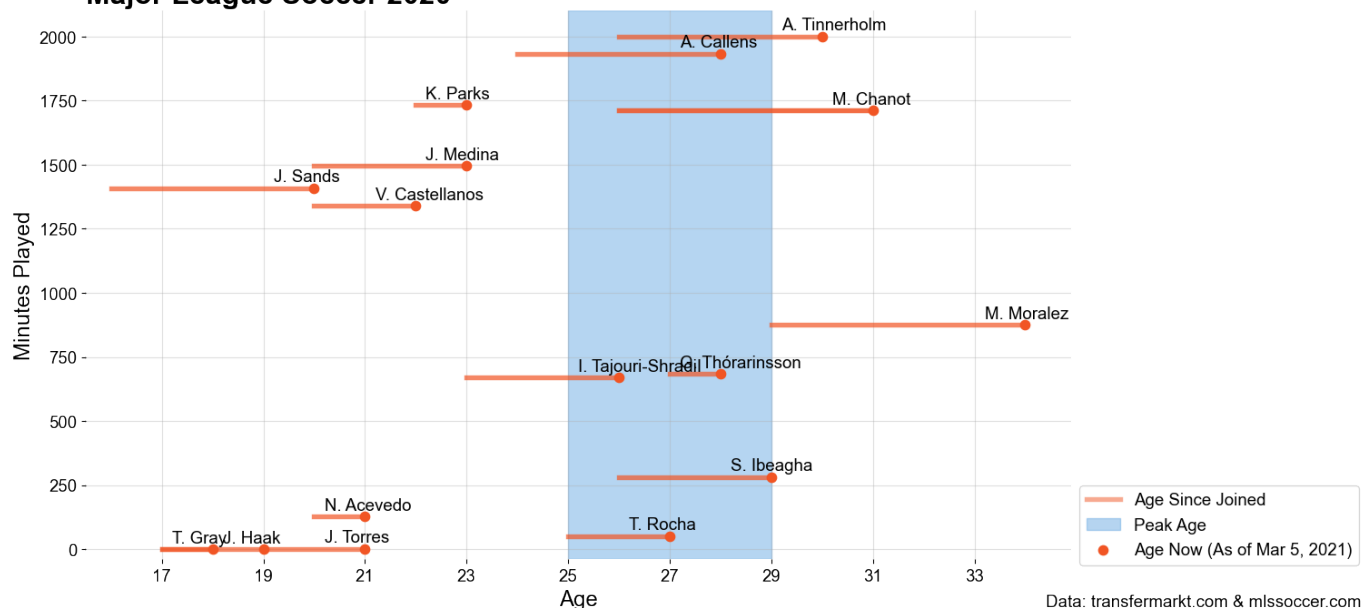
Philadelphia Union Squad Age Profile
Major League Soccer 2020

Data: transfermarkt.com & mlssoccer.com
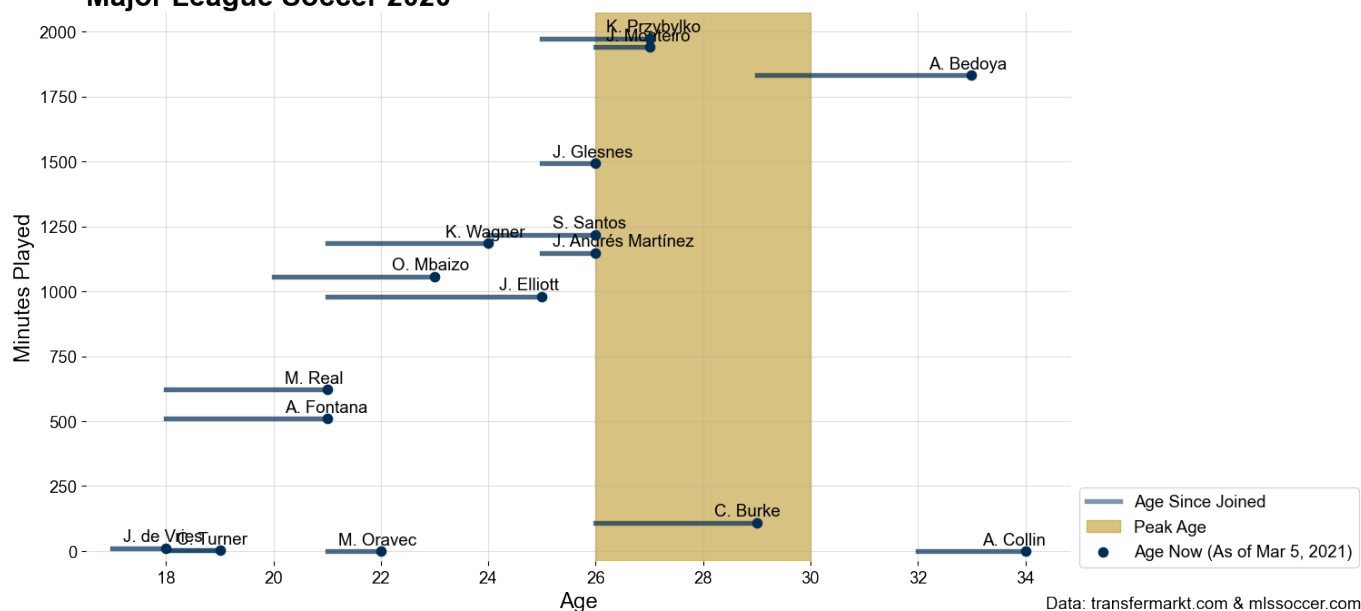
The limitations of the study come from data quality, rating reliability and sample bias.