

Discussion

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- Which country has a better soccer club performance at the European level competition in past 10 years? Do both competitions show similar or different results?
- To measure soccer club performance of a country at European level, we use $win\ rate = \frac{\# \text{ of winning matches clubs played}}{\# \text{ of matches clubs played}}$.
- During the past ten years, we find that soccer clubs from Spanish league had the best winning rate in the Champions League, it won approximate 55% of matches. German and English teams also had a winning rate about 51%. The other two leagues had winning rates of less than 50%. The French teams had the worst performance (39%), which indicated that it had poor performances comparing to other nations in last 10 years.
At the Europa league, the Premier League still had the worst performance (40%). On the other hand, soccer clubs in Spain had the best performance with a winning rate of 57%. The premier league was following closely with a winning rate of 54%. The other two leagues won less than half of matches in past ten years (both are about 47%). In general, both the Champions League and the Europa League showed similar results: clubs in Spain are the best in past ten years, and English, German and Italian clubs were in the middle, french teams was weak comparing to them.
- Does top-class soccer club's performance in its own country's league relate to its performance in Champions League in past 10 years?
- To measure a club's performance in its own league, we use $average\ league\ position = \frac{\sum leagueposition}{\# \text{ of domestic seasons that team played}}$, and a smaller *average league position* indicates a stronger performance for a team in domestic league in past ten years. Again, we use *win rate* to measure a team's performance in the Champions League. Under this context, we define *top-class soccer club* as those clubs which participated in at least 6 times in the Champions League in the past ten years.
- From results of the query, Bayern München, Real Madrid and FC Barcelona had the strongest performances at European stage among all top-class teams, they had winning rate over 60%. Take a look at their performances in the domestic leagues, all of them had average ranks below 2.0, which indicated their dominant positions in their own countries. On the other hand, Juventus had the strongest domestic performance since it had average rank of 1.0, this showed that it won every domestic league title in past ten years. However, its European performance was not so outstanding as in its own country, and its winning rate (0.52) in Europe was about average among all top-class teams. Contrast to Juventus, Arsenal is a team that had poor performance in domestic league (average league position = 4.4), but had a stronger performance in Europe (winning rate = 0.55).
Through these observations, we may conclude that if a top-class soccer club's performance is strong in the European Champions League, it always dominant position in its own country. While, the reverse is not necessary true.
- Is there a 'Natural Enemy' for clubs in one country to another country (That is, clubs in one country beat clubs in another country for most times) in past 10 years? Did teams play at home always have a stronger performance than away teams for different countries?
- We use *win rate*, and similar *lose rate* and *draw rate* to measure team's performance.
- From results of the query, we observe that French teams were at disadvantage for every other league. Despite of this, we see that teams in Spain beat Italian soccer clubs for most of times. At home, Spanish teams won 73% matches against Italian team. In Italy, Spanish teams kept unbeaten for about 72% of matches. There are not many "Natural Enemies" in Europe. However, we do see that teams at home often had stronger performances comparing to when they played away. For example, consider matches between England teams and Italian teams. In England, English teams were unbeaten for 70% of matches, on the other hand, in Italy, Italian teams beat English teams for 65% times. These evidence indicates that place of the matches have some effect on the results of matches.
In conclusion, there are some natural enemies (i.e between Italy and Spain). However, we see that home teams are in advantages for many times comparing to away teams despite of countries themselves.