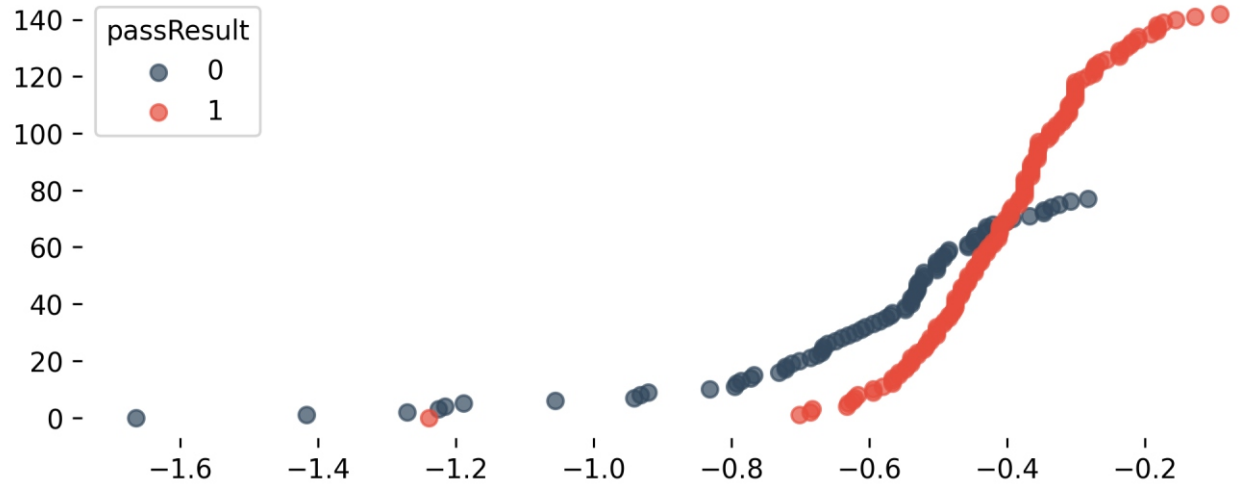
Analysis of Metrics Affecting Shotgun Formation for Pass Results (Complete or Incomplete)

by : Adi Kusuma

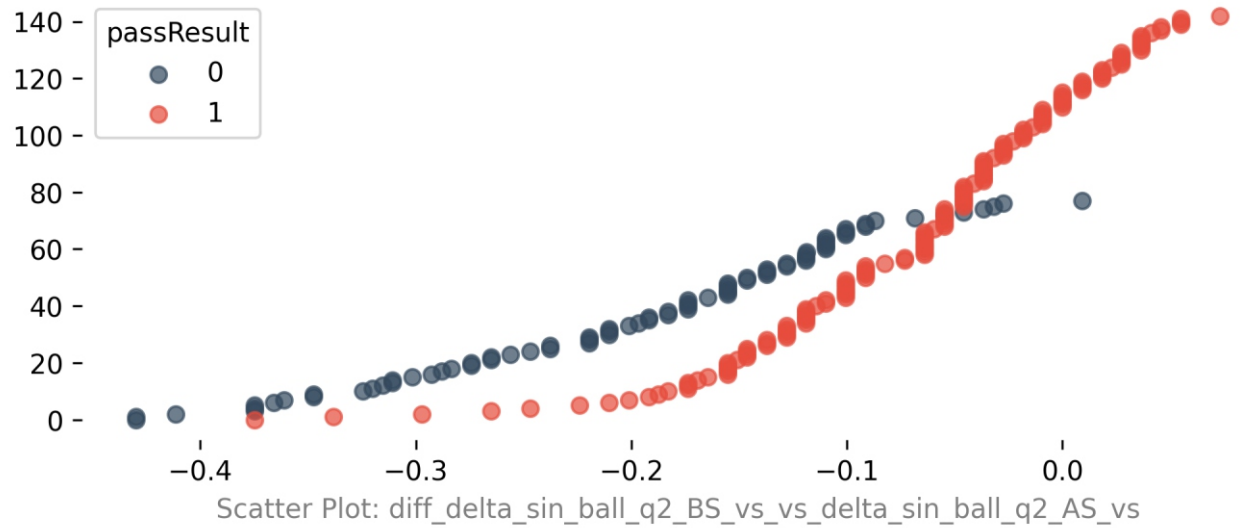
To improve the chances of a **PassResult: Complete**, the following metrics with the highest correlation to presnap data should be considered:

1. Outer Offensive Player's Position Change:
   The difference in the outer offensive player's position relative to the ball (pre-snap vs. post-snap) should approach **-0.091436**. This means the player should move **further away from the ball**.

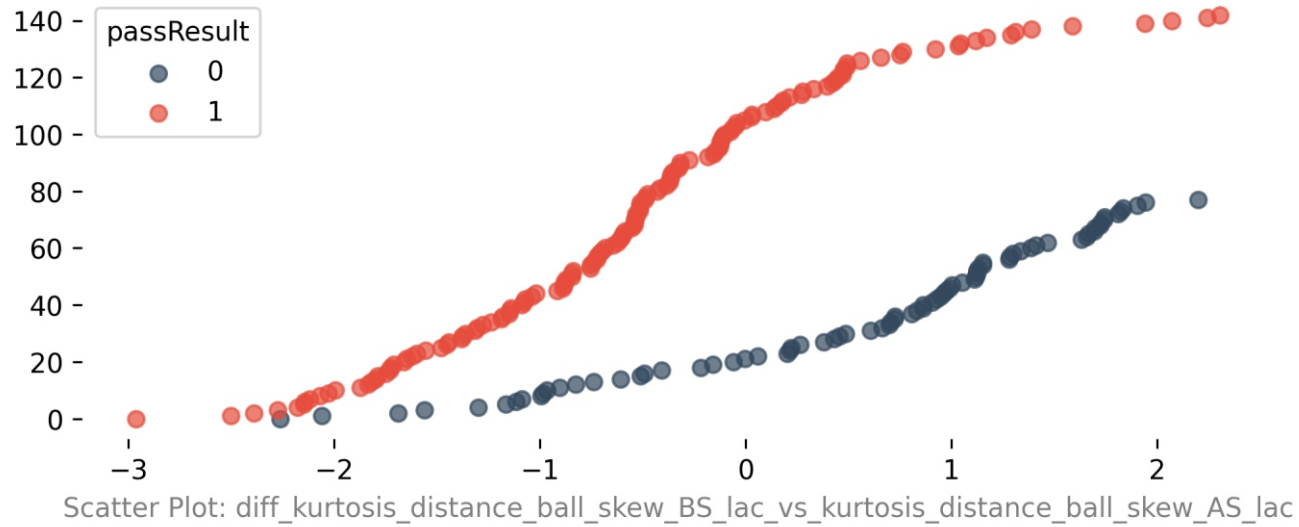


Scatter Plot: diff_delta_sin_ball_q3_BS_lac_vs_delta_sin_ball_q3_AS_lac

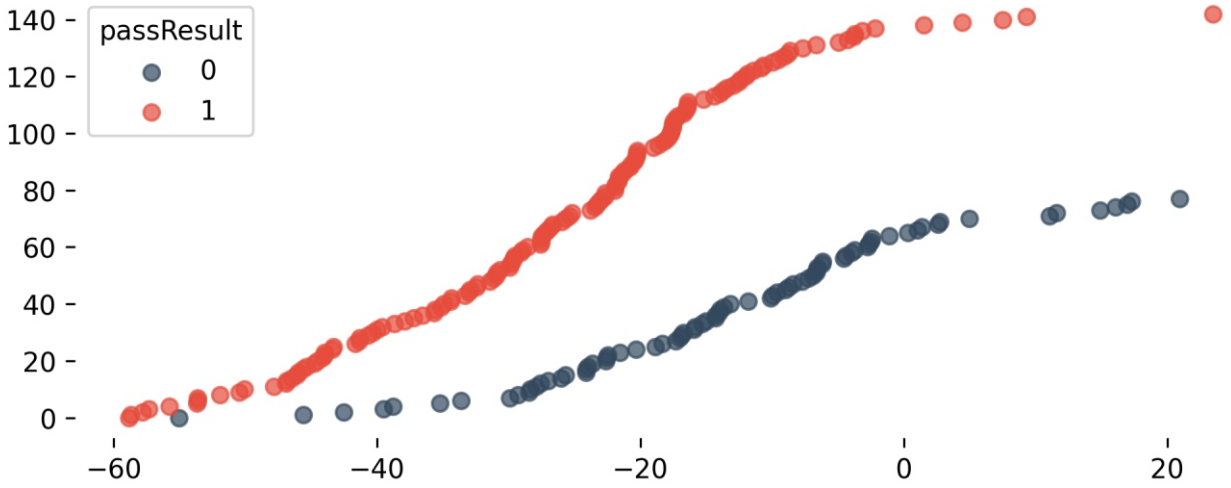
2. Middle Defensive Player's Position Change:
   The difference in the middle defensive player's position relative to the ball (pre-snap vs. post-snap) should approach **0.073156**. This means the defender should move **further away from the ball**.



3. Crowd Position Difference (Offense vs. Defense):
The difference between the crowd positions of all offensive and defensive players relative to the ball during the pre-snap should approach **2.306657**. This means the offensive players should **cluster closer to the ball** compared to the defensive players.

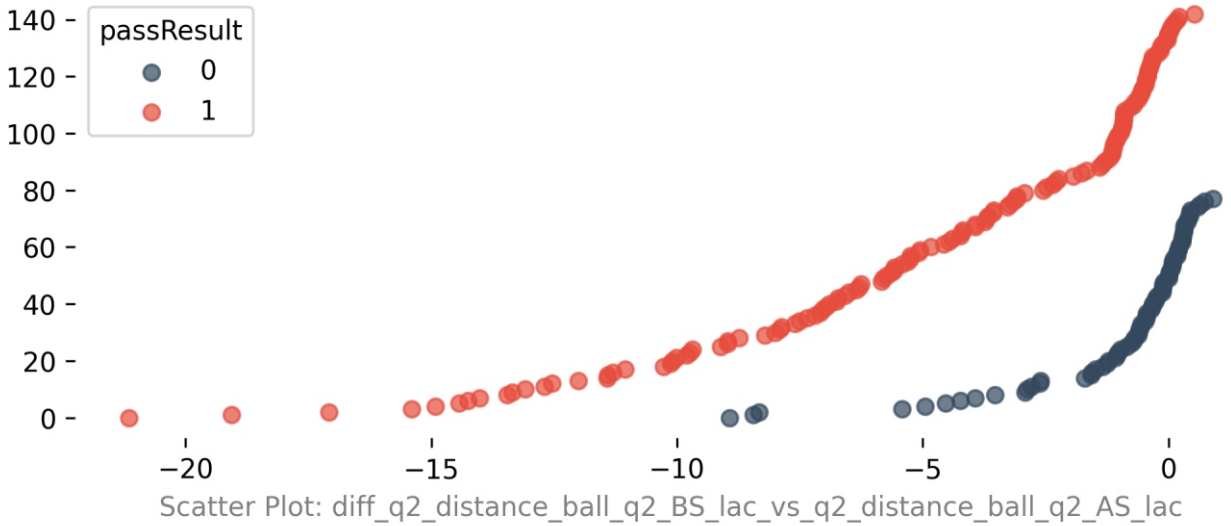


4. Defensive Players' Position Range (Middle Area):
The difference in the range of positions of middle defensive players relative to the ball (pre-snap vs. post-snap) should approach **23.475106**. This suggests defensive players in the middle should move **closer to their teammates**.

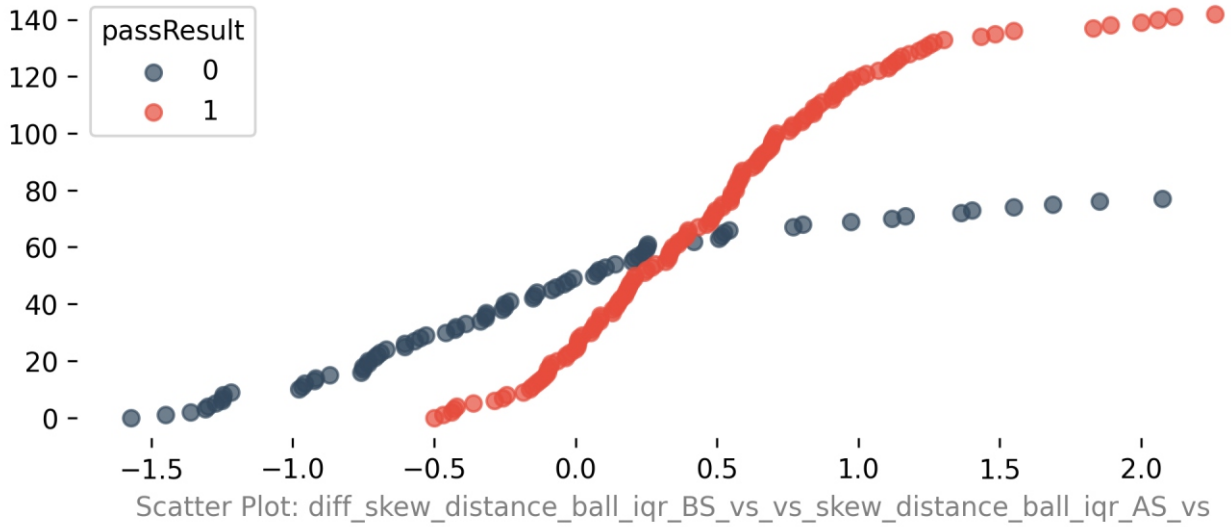


Scatter Plot: diff_iqr_degrees_ball_q2_BS_vs_vs_iqr_degrees_ball_q2_AS_vs

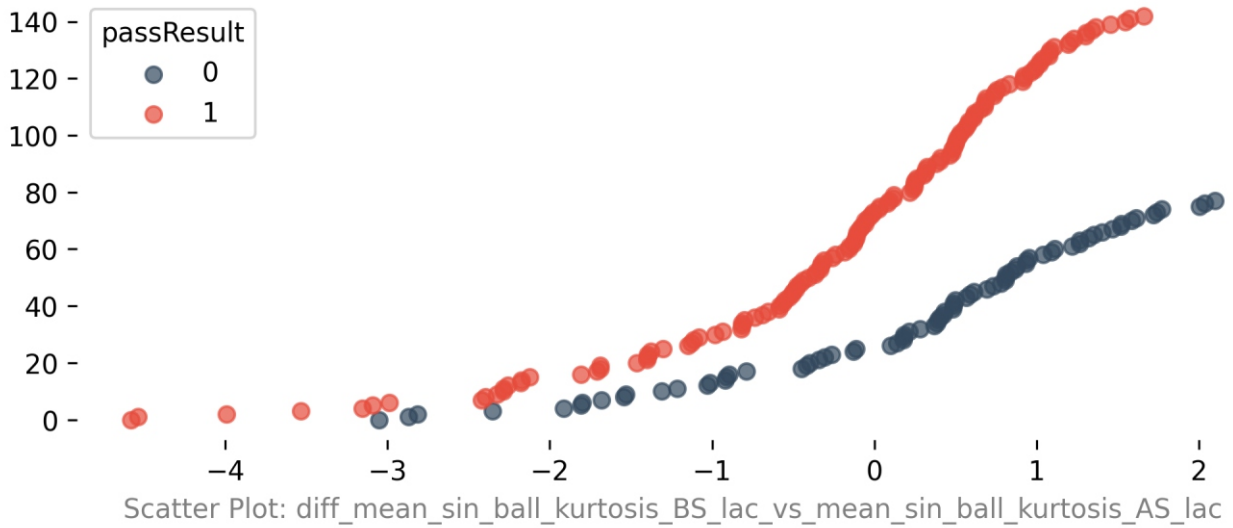
5. Middle Player Position Change (Second Farthest):
The difference in the position of a middle player among the second farthest players relative to the ball (pre-snap vs. post-snap) should approach **0.533165**.
This means the player should move **closer to the ball**.



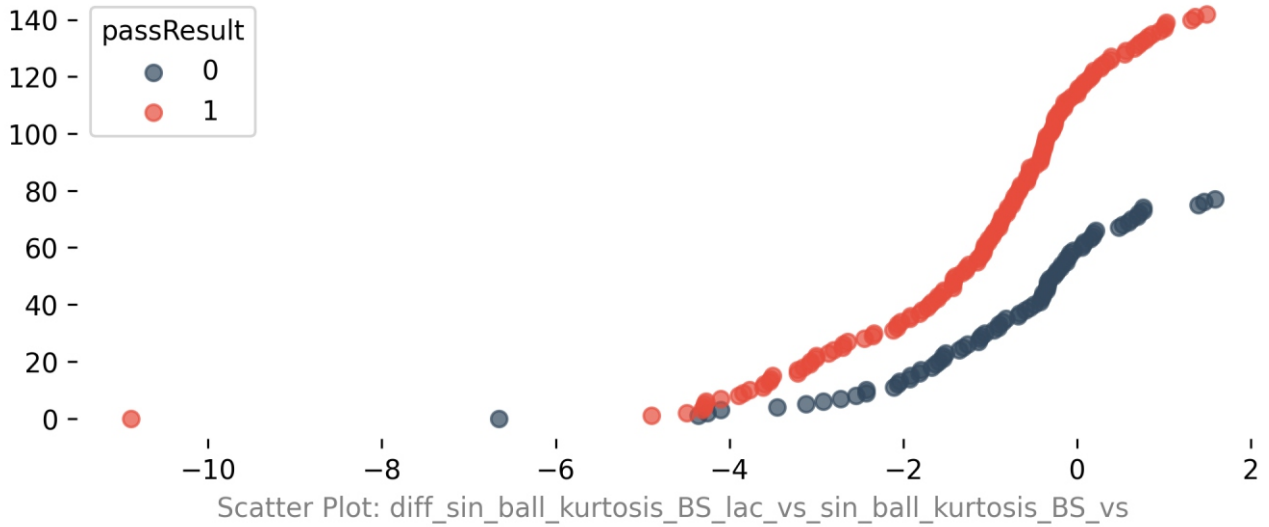
6. Defensive Players' Position Angle Change:
   The difference in the angle of all defensive players' positions relative to the ball (pre-snap vs. post-snap) should approach **2.260863**. This suggests the defensive players should **tilt more to the left**.



7. Offensive Players' Position Mean (Based on Kurtosis):
   The mean position of all offensive players relative to the ball (pre-snap vs. post-snap) should approach **1.659480**. This indicates offensive players should **cluster closer to the ball**.



8. Crowd Position Difference (Second Metric):
   Another difference in crowd positions of all offensive and defensive players relative to the ball (pre-snap) should approach **1.493160**. This further emphasizes that offensive players should **cluster closer to the ball** compared to defensive players.



Based on the conclusion, further analysis is needed to determine the distance and position of the best players, adjusted to the opposing team's positions during the pre-snap, to ensure a passResult is complete. I will work on this in the next opportunity.