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Pro Forum

Pressing Times: Can Data Tell us When & How to Navigate Out of a Counter Press?

Gerald Lim, Ashley See &
Zhi Yuan Chua

Key Takeaways

- ➔ Using a physics and rule-based based approach to quantify counterpressing via the pitch control model → Identify team-specific pressing styles and rate

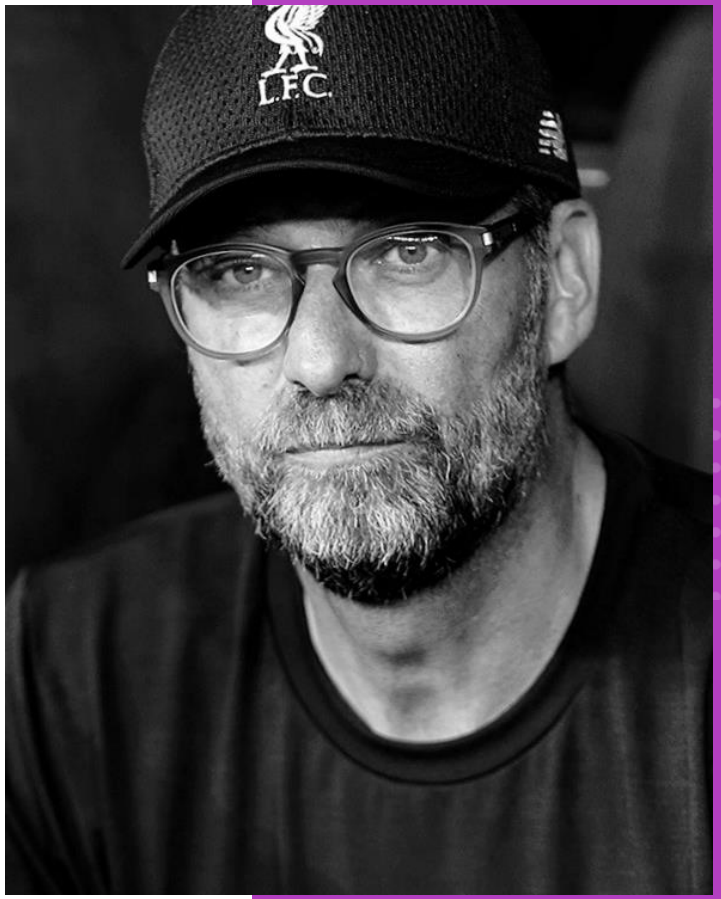
- ➔ Frequentist approach for evaluating decisions taken by a possession-regaining team facing a counterpress → Long forward balls appear to give the best return, but are only played in 12.6% of all opportunities

- ➔ Avenues for data application:
  - ❖ Performance Analysis → How successful are my team's strategies?
  - ❖ Opposition Analysis → Where and how does the opponent like to counterpress?
  - ❖ Recruitment → Who's good at supporting plays against the counterpress?

Why Counterpressing?

“No playmaker in the world can be as good as a good counterpressing situation”

- Jürgen Klopp



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Pressed For Time

Prevalence Of The Counterpress

From 2013/14 to 2019/20, Bundesliga teams counterpressed on average 23% of their turnovers, of which 31% were successful[1]

In 2020/21, teams in the top 5 European league averaged 1.1 shots from high turnovers per game, accounting of 13% of open-play goal attempts[2]

As the defending team, how can you do better?

[1] Data-driven detection of counterpressing in professional football, Bauer and Anzer, 2021

[2] Season Review 2020-21, The Analyst, 2021

Questions And Challenges

- How can teams improve their decision making upon an opponent's turnover and possible counterpress? E.g. should they (1) play against the press, or (2) clear to safety?

- What's a good strategy to employ to play against the press? How can my team be best set up to execute it?

- Is a "good" strategy always the best way forward against any opponent? Seemingly wrong decisions may also turn out to be the right one
  - e.g. Red Star Belgrade vs Marseille (1991 UCL Final)

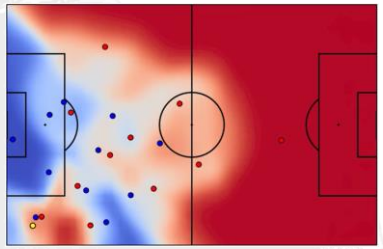
Our Approach

1. Pitch control-based approach to quantify counterpressure

2. Identify and evaluate potential counterpressing scenarios and trends

3. Identify and evaluate common decisions and strategies against counterpressing

4. Applications in opponent analysis, training, recruitment, etc.



LIGUE 1 Uber Eats

Tracking + Event Data (2020/21 Season)

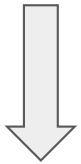
1. Pitch Control-based Approach To Quantify Counterpressure

Measuring Counterpressure

Previous studies → Yes/No detection of counterpressing e.g. rule-based/machine learning on “engineered” features

Can go we gather finer details via a different approach?

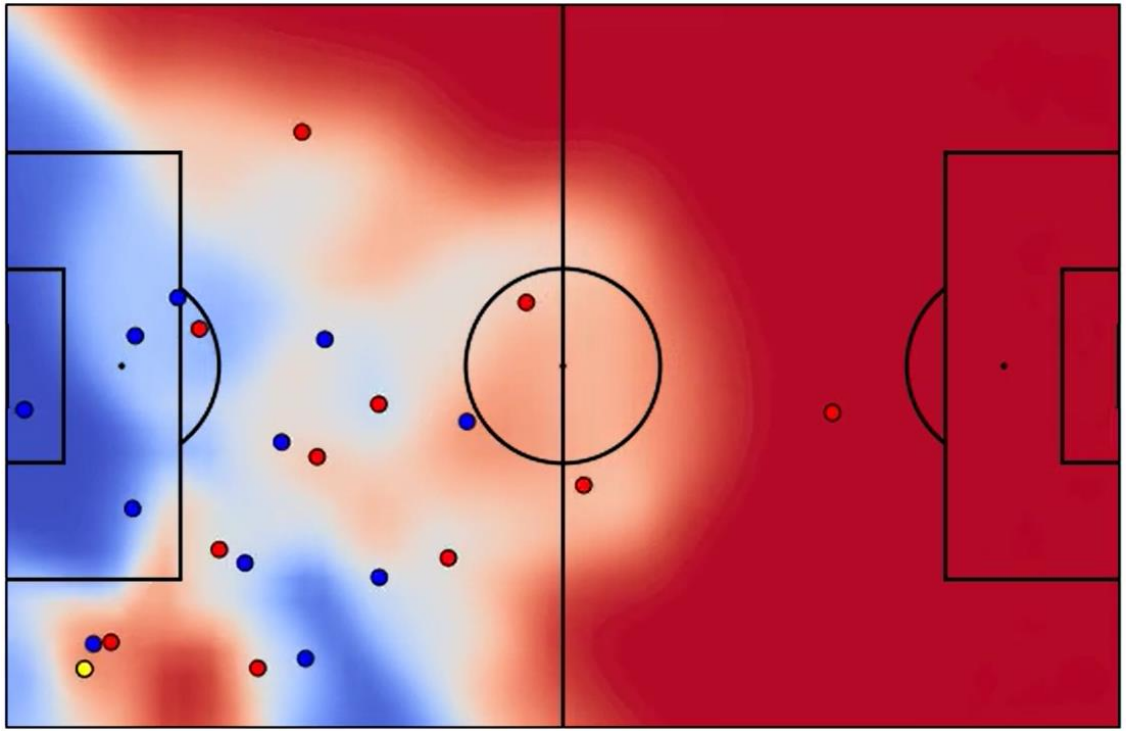
- Measure pressure like a continuous variable
- Type of counterpress?
- Time taken for the pressure to be applied/felt?
- How “good” was the counterpress? Where was its peak?



Pitch Control

1. Pitch Control-based Approach To Quantify Counterpressure

Pitch Control in a Nutshell



Advantages

- No need for manual feature engineering
- Pitch Control condenses the multi-dimensional tracking information onto a 2D grid

Produced by the Gauss-Legendre adaptation of the pitch control model used in Friends of Tracking (2020)

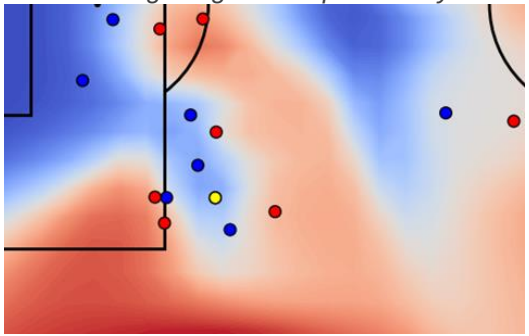
1. Pitch Control-based Approach To Quantify Counterpressure

A. Ball-orientated Counterpressure (Calculation)

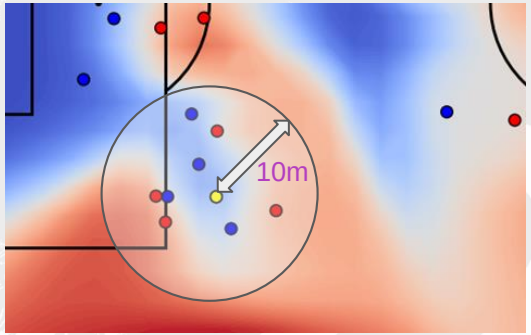
For every frame:

1. Pitch Control Data

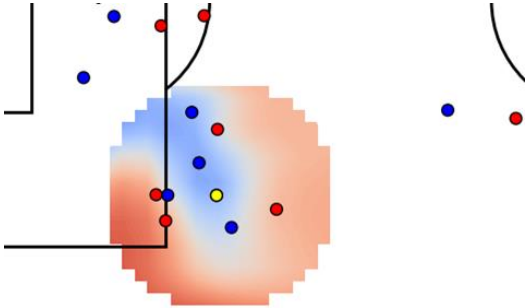
Blue team getting counterpressed by Red



2. Identify the area(s) of strategic interest: 10m circular radius around the ball



3. Keep only the area of interest



4. Calculate the average pitch control of the pressing team

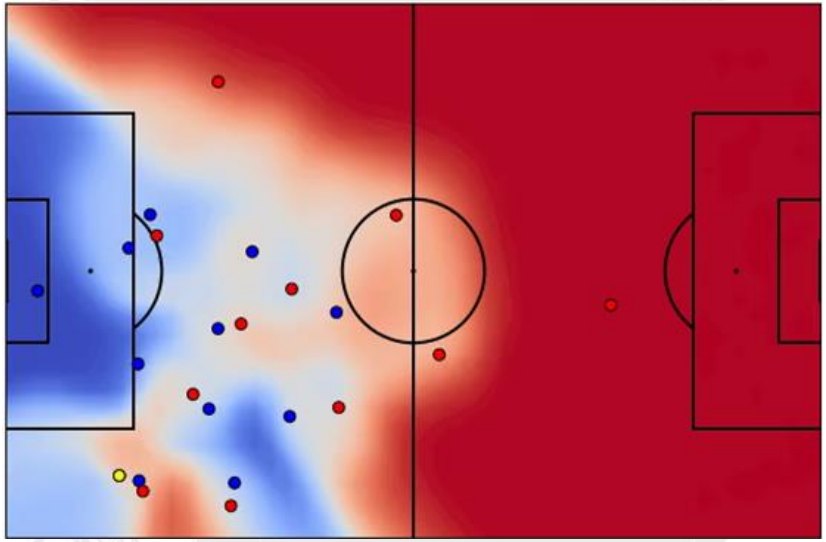
$$\Sigma\ (\textit{Pitch Control in}\ \ \textit{Number of grid cells in radius}$$

1. Pitch Control-based Approach To Quantify Counterpressure

A. Ball-orientated Counterpressure (Example)

Broadcast View

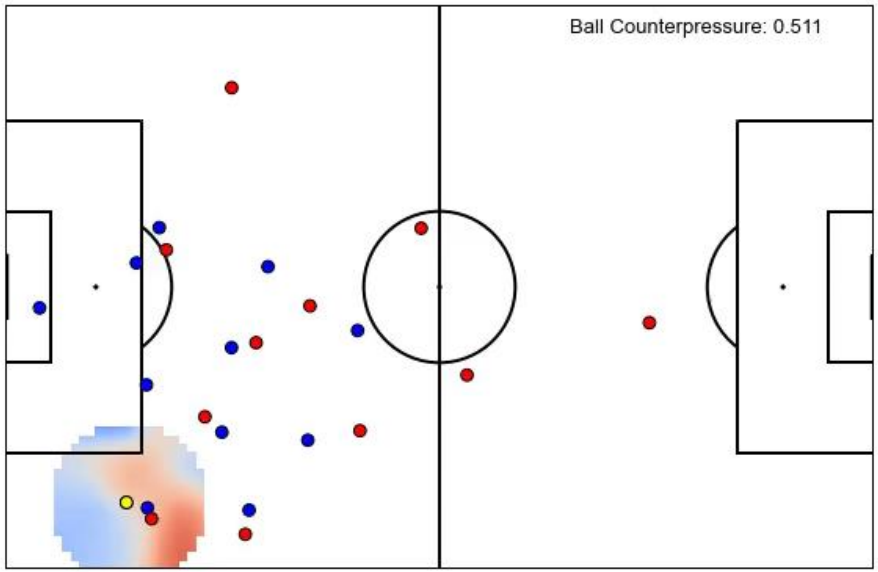
Tracking Data View



1. Pitch Control-based Approach To Quantify Counterpressure

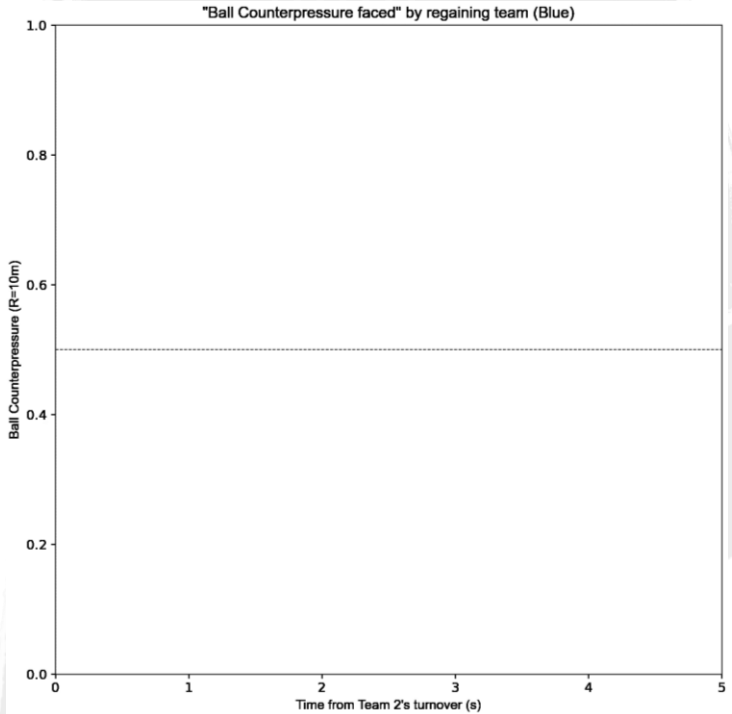
A. Ball-orientated Counterpressure (Example)

Tracking Data View



Counterpressure score: Average pitch control value of Red within the selected area

Time Series View

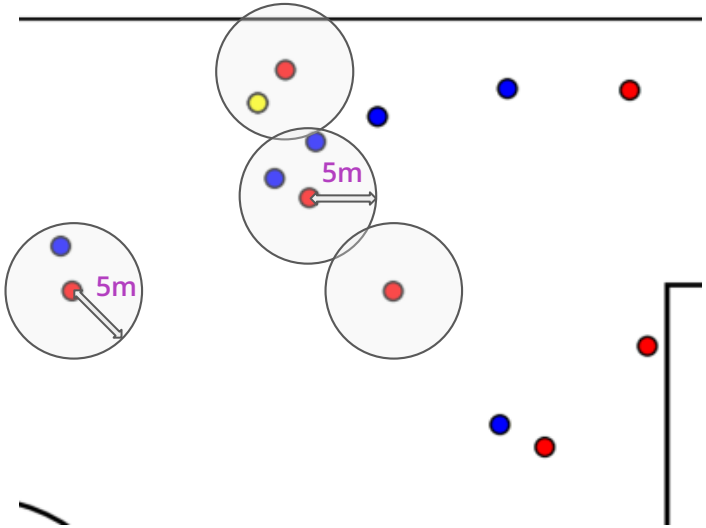


1. Pitch Control-based Approach To Quantify Counterpressure

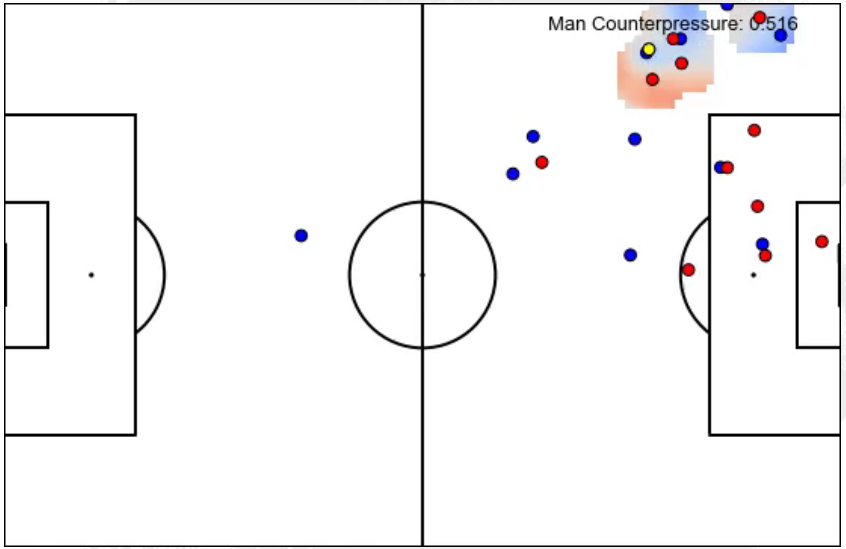
Other ways to apply pressure:

B. Man-orientated Counterpressure

Area(s) of strategic pressure interest:
5m circular radii around 4 closest players to the ball



Tracking Data View

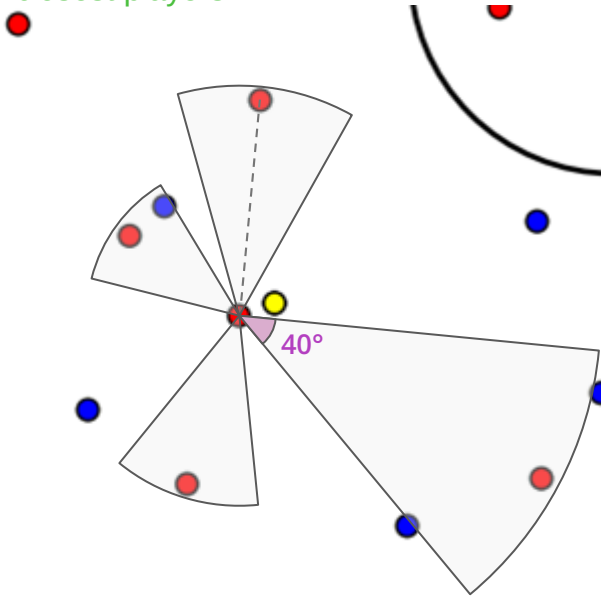


1. Pitch Control-based Approach To Quantify Counterpressure

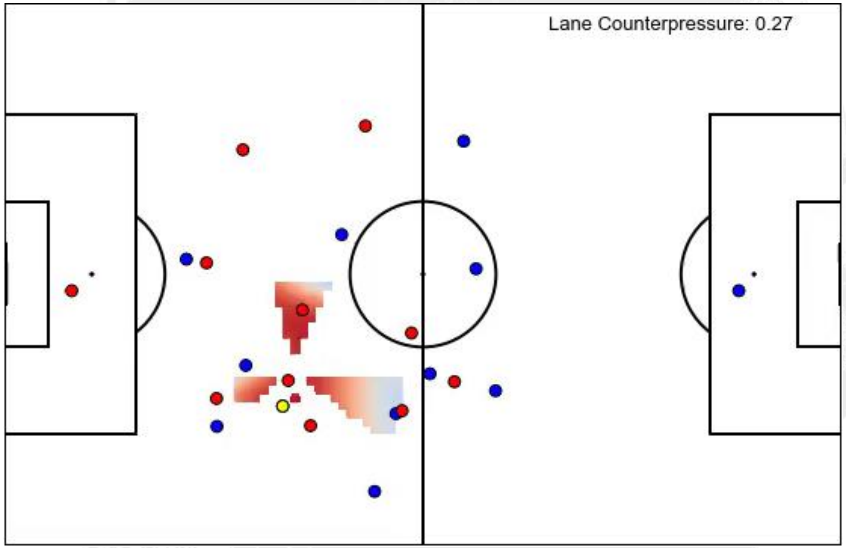
Other ways to apply pressure:

C. Passing Lanes-orientated Counterpressure

Area(s) of strategic pressure interest:
40° arc between the closest player to the ball and the next 4 closest players



Tracking Data View



2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

1. Counterpressure metrics
2. Deep* turnover scenarios
3. Identify counterpresses
4. Evaluate statistical trends

* Occurring in the regaining team's defensive third

2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

Identifying counterpresses (Sustained Counterpressure)

1. Measure counterpressure for valid[1] deep opposition turnover sequences i.e.
   Duration from the time of the turnover to the regaining team's loss of possession

   or

   6 seconds[2] from the turnover, whichever less

2. At least half of the measured sequence was spent under pressure (i.e. counterpressure metric > 0.5)

[1] Excluding first regain events that were clearances or tackles that put the ball out of bounds

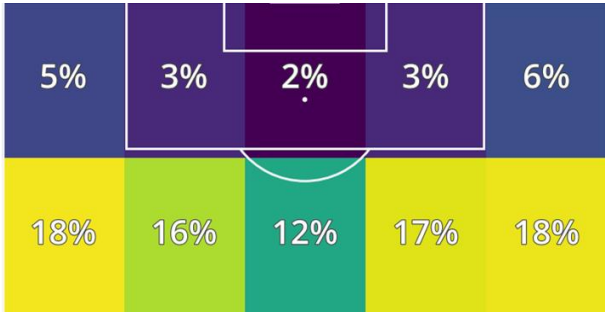
[2] Motivated by the popular "6 second rule" name given for the counterpress of Pep Guardiola's Barcelona

2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

Ligue 1 2020/21 Counterpressing distribution by turnover/regain location

All deep regains

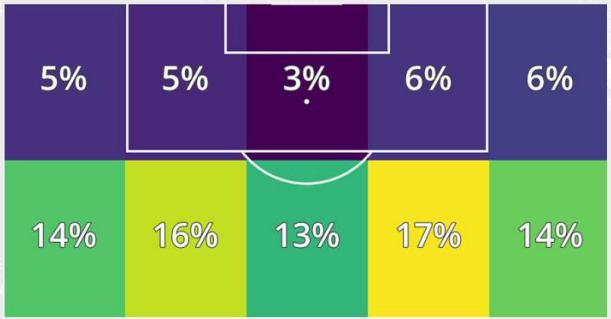
All counterpresses by regain location



Higher Frequency (in zone)

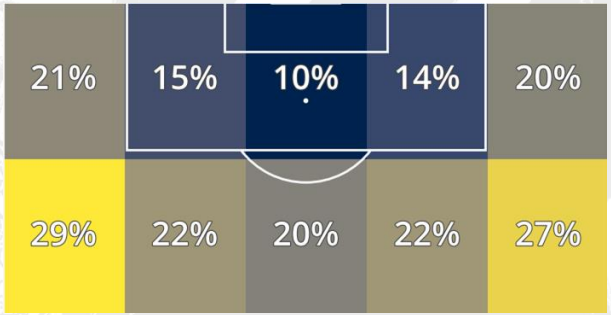
Lower Frequency

Deep regains with counterpressing opportunities



Higher % counter-pressed

% of eligible regains counterpressed



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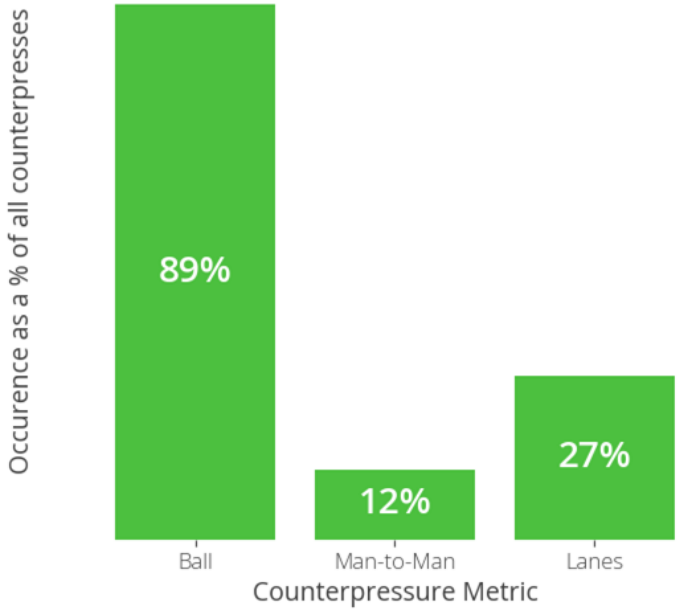
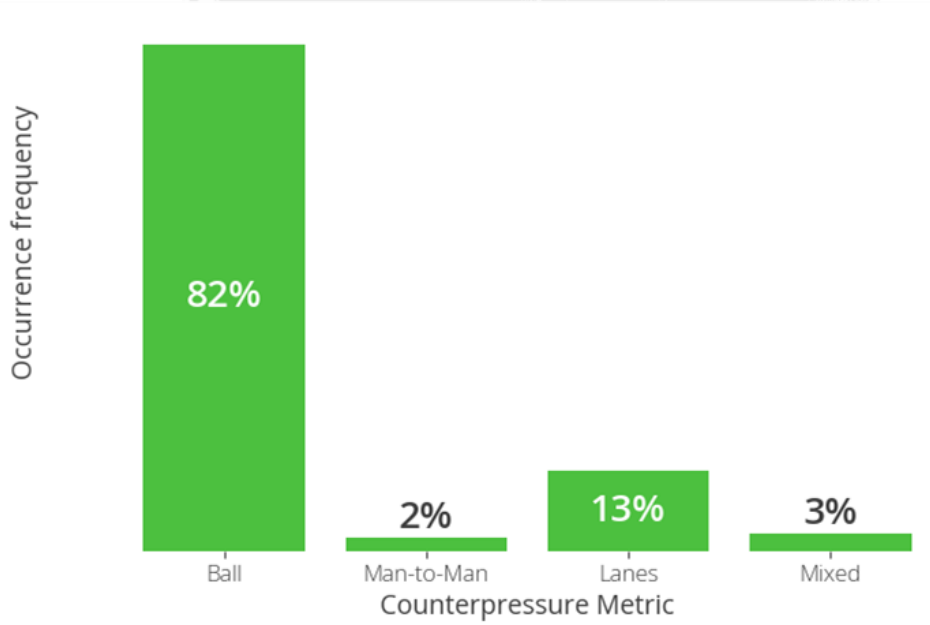
Ligue 1 Counterpressing by strategy employed

% of all counterpresses detected in each strategy



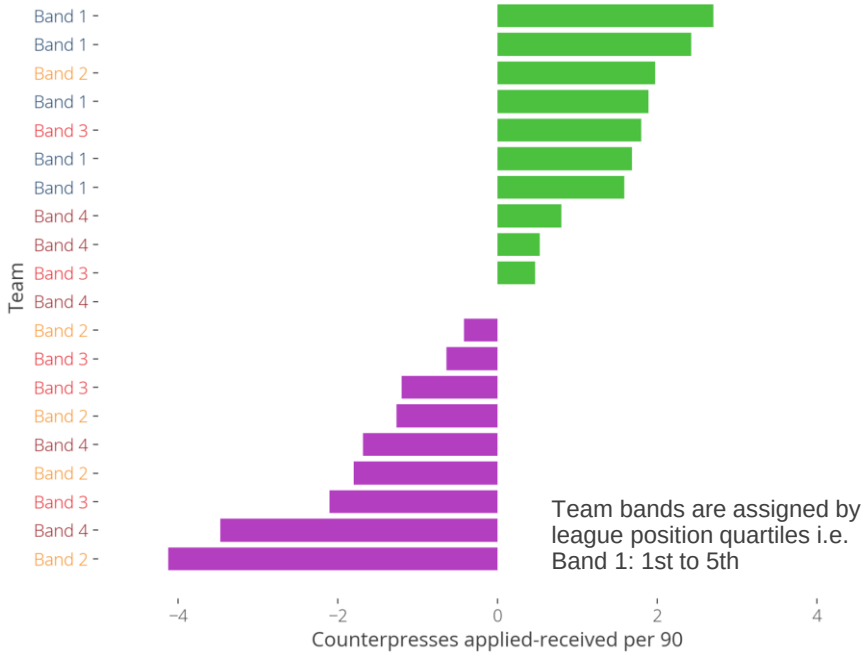
Distribution of counterpresses via simple ranking classification method



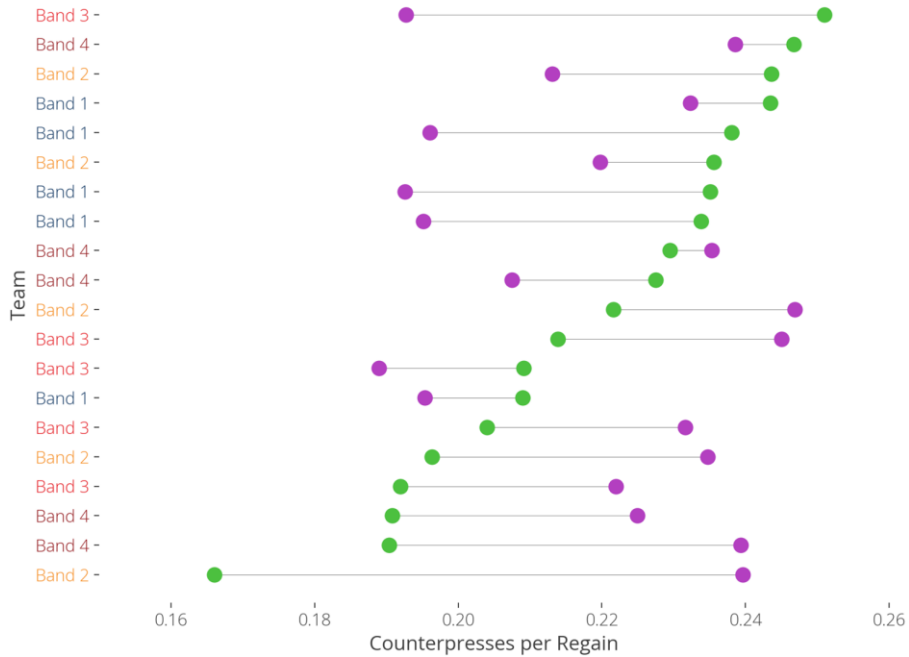
2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

Ligue 1 Counterpressing Team Analysis

Deep Counterpresses applied-received differential per 90



Counterpresses applied and received per deep regain per 90



2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

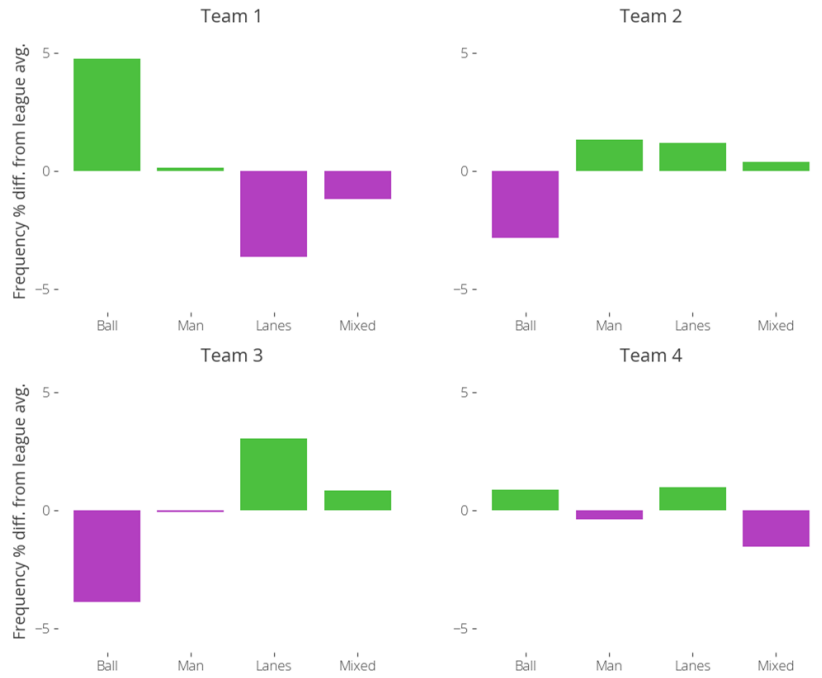
Ligue 1 Counterpressing Team Analysis

Distribution of counterpresses received by regain zones

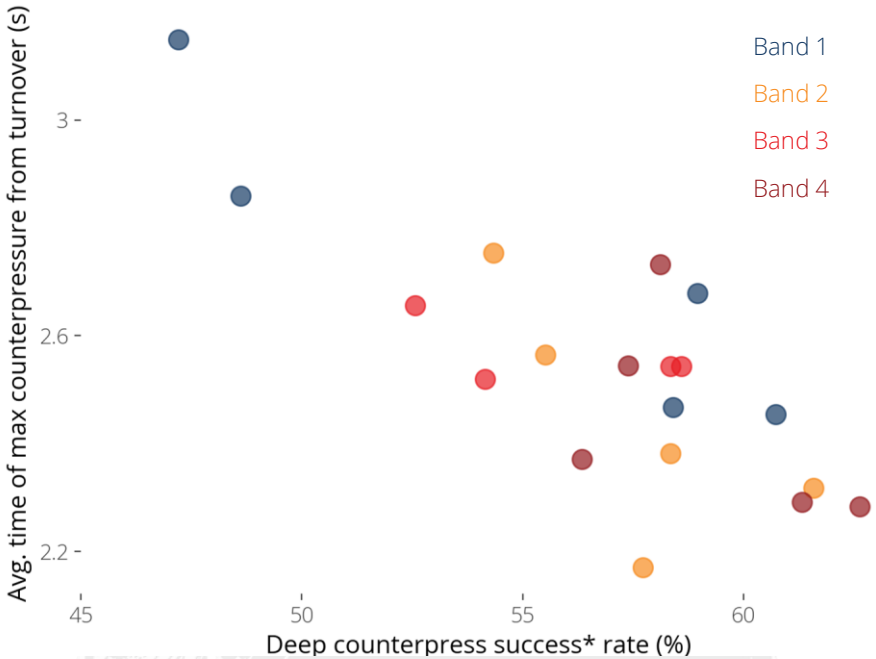
2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

Ligue 1 Counterpressing Team Analysis

Team counterpressing tendencies relative to league average



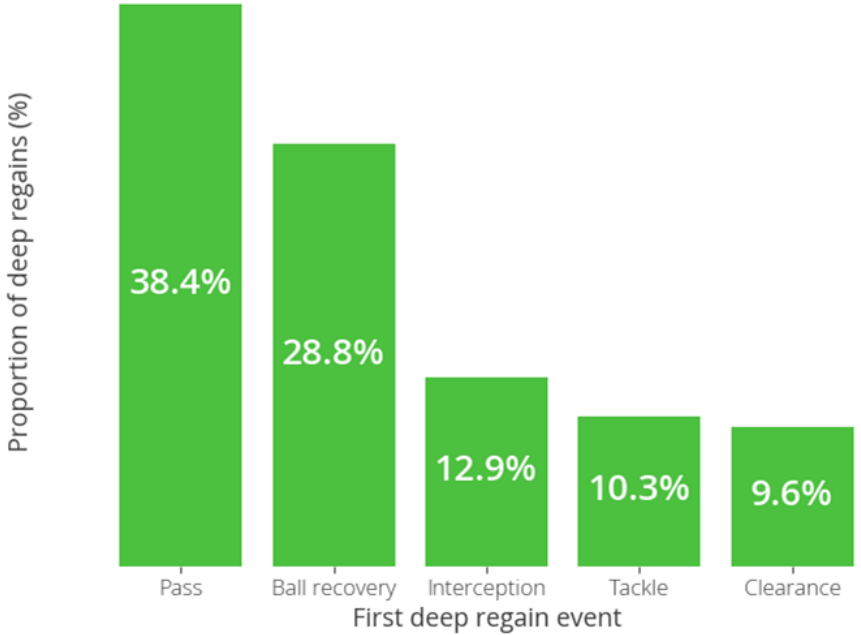
Comparing “time taken to apply maximum pressure” to pressing success



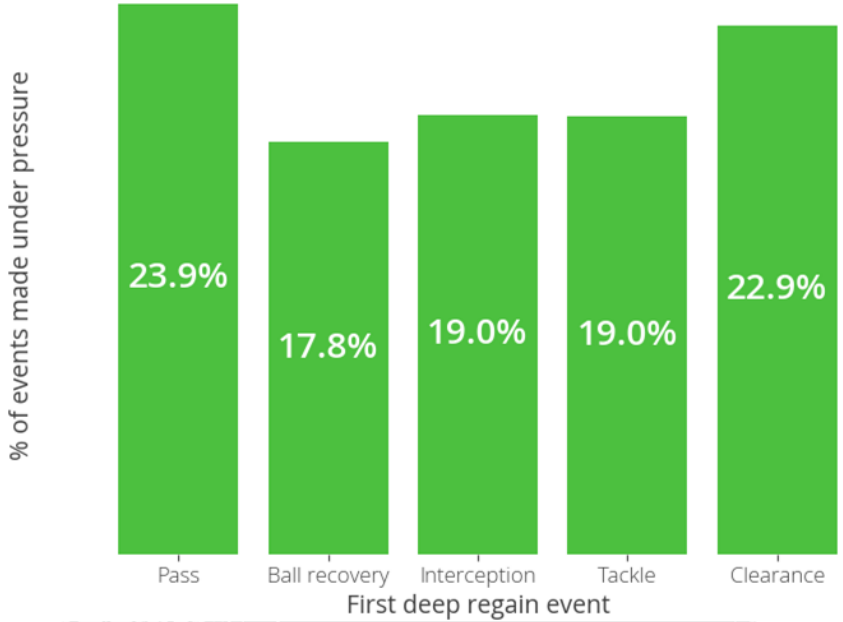
2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

How do teams handle deep opponent turnovers?

Distribution of events that follow/force a deep turnover, under pressure (outside the penalty box)

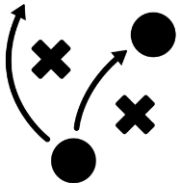


Percentage of events that were made “under pressure” (outside the penalty box)



2. Identify And Evaluate Potential Counterpressing Scenarios And Trends

Data Applications



Opposition Analysis

- Opponent counter pressing strategies → How, When, Where, Who?
- Use information to adopt opponent-specific strategies

Performance Analysis

- What + Where are my team's vulnerabilities?
- Streamline video analysis: "Find all counterpresses
  Where…
  When… "
- Generalise pitch control method for other passages of play e.g. passing options

Recruitment

- Calculate individual player contributions to the counterpressure metrics
- Identify or rank players who press/play well against the press

3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

1

Identifying common strategies against the counterpress

- ➔ Clearing the ball
- ➔ Attempting a long pass
- ➔ Stringing short passes to beat the immediate press

2

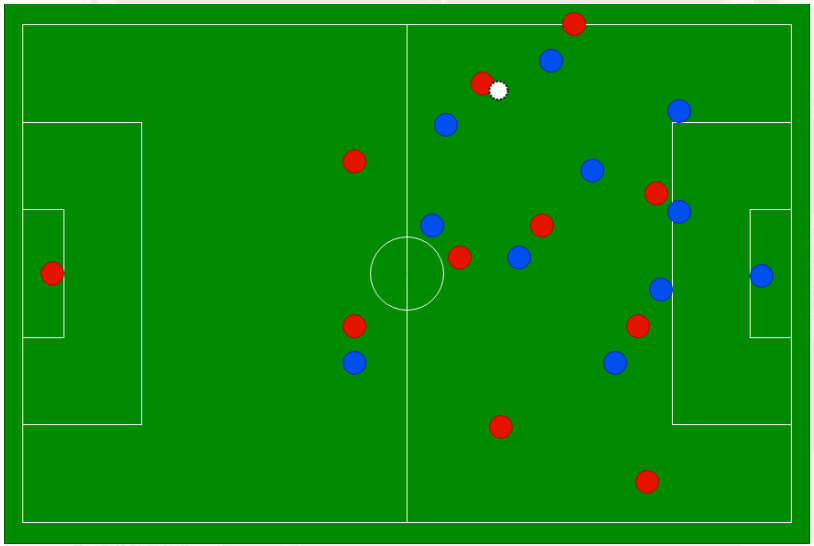
Rules to automatically determine strategies

- ❖ Applying on all event frames within the first 6 seconds of the turnover
- ❖ Limitation - Unable to consider unrealised attempts or intent as event data only reflects on-ball outcomes

3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Strategy Definitions

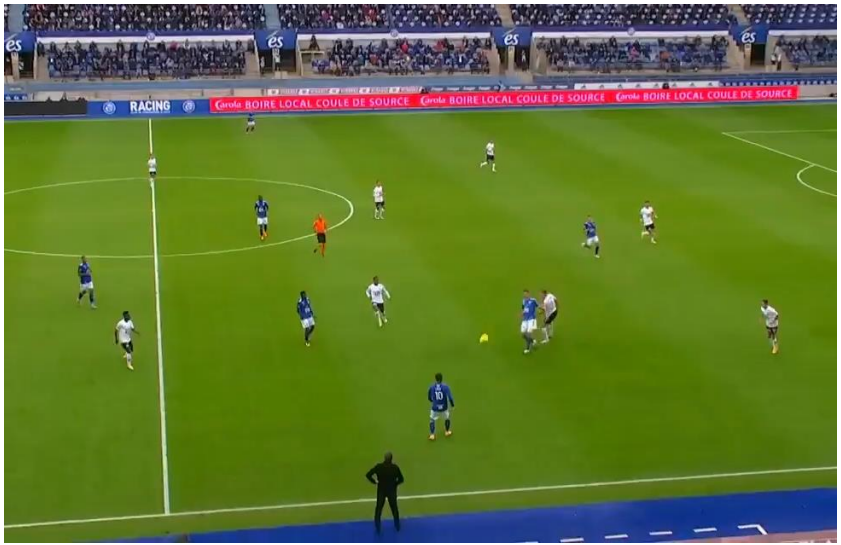
Clearances - A player clearing the ball in an attempt to mitigate the risk in the immediate counter press region

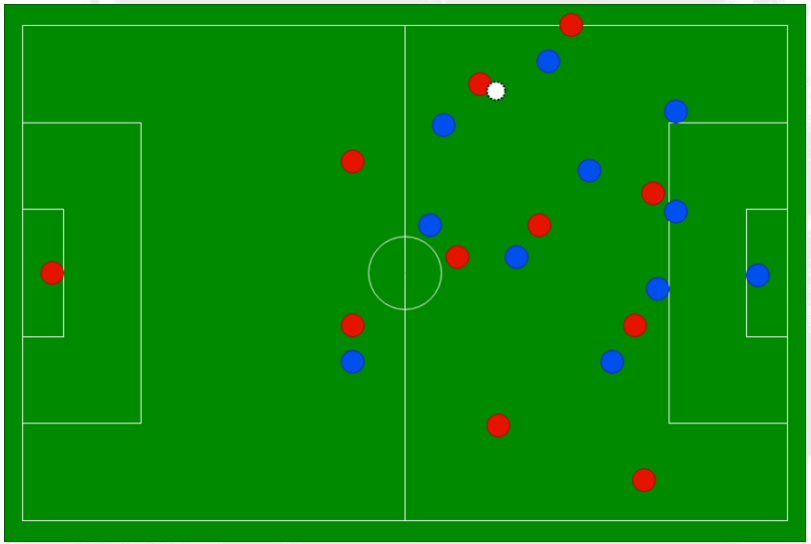


3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Strategy Definitions

Long passing - A player looking for a teammate deeper in the opposition half in an attempt to seize advantage of counterpressing team's disorientated defensive shape

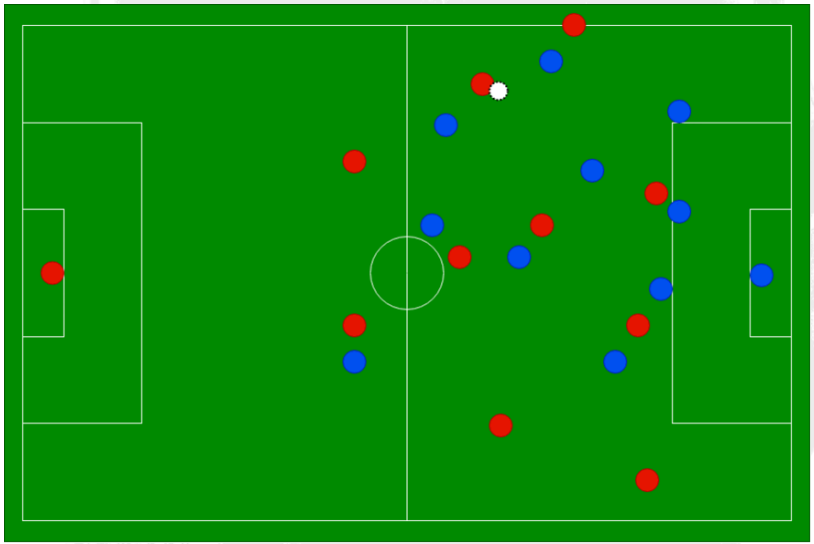




3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Strategy definitions

Short passing - A team attempting to overload the immediate counter pressing area with more players, allowing them to play short quick passes to escape the counter press

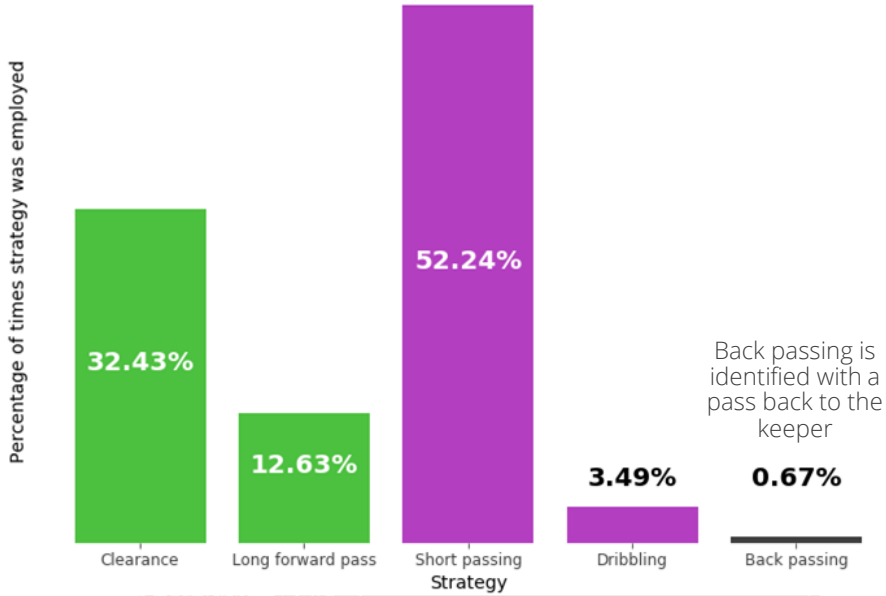


3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Strategy identification and distribution

- Strategies were successfully identified for ~66% of deep regains.
- Clearances includes both those made as the first regain event (to completely avoid the counterpress), and those made when already facing a counterpress.

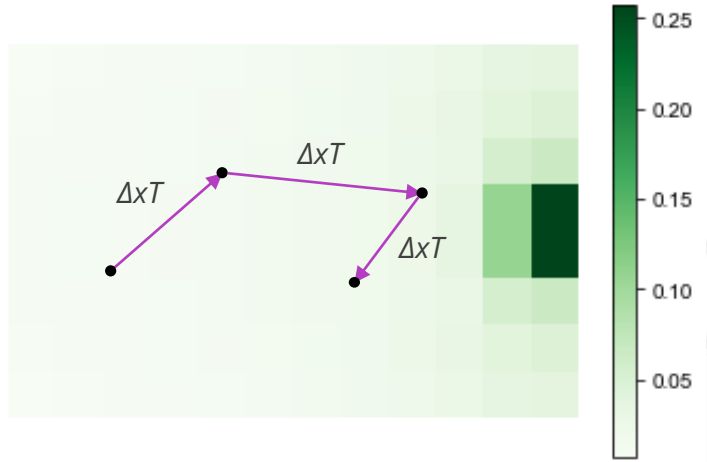
Distribution of long and short strategies employed against the counterpress from within the defensive third



3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Success metrics for strategy evaluation

- Shots attempted/conceded per counterpress sequence[1]
- Using an event based Expected possession value (EPV) model such as Expected Threat (xT) and determining the xT gained/conceded[2] throughout each sequence



Calculating xT gained for sequences of play

[1] Analysis was performed on the 20 seconds after the team's regain, similar to Bauer and Anzer (2021)

[2] xT values from Karun Singh's open-source grid, trained from the 2017-18 Premier League season were used

3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Ligue 1 teams' performances per counterpress received

Offensively

Team	xT gained	Shots attempted
Band 1	0.0095	0.096
Band 1	0.0066	0.067
Band 2	0.0066	0.034
Band 2	0.0060	0.034
Band 3	0.0060	0.013
Band 1	0.0058	0.027
Band 3	0.0057	0.043
Band 4	0.0055	0.036

Defensively

Team	xT conceded	Shots conceded
Band 3	0.0058	0.055
Band 4	0.0055	0.051
Band 2	0.0047	0.070
Band 4	0.0044	0.048
Band 3	0.0039	0.029
Band 1	0.0036	0.036
Band 2	0.0035	0.036
Band 4	0.0035	0.040

3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Strategy Assessment

Mean numbers are per counterpress sequence

Strategy	Mean xT gained	Percentage of positive xT gain sequences / %	Mean shots attempted	Mean xT conceded	Percentage of positive xT conceded sequences/ %	Mean shots conceded
Clearance	0.002	14.99	0.072	0.010	9.36	0.012
Long forward passing	0.008	13.25	0.048	0.003	9.05	0.020
Short passing	0.004	15.66	0.026	0.003	5.99	0.046
Dribbling/ Take Ons	0.003	10.27	0.012	0.001	5.41	0.037
Back passing	-0.003	17.34	0.032	0.008	5.53	0.000

Clearances lead to less xT gained and more xT conceded

3. Identify And Evaluate Common Decisions And Strategies Against Counterpressing

Data Applications

Training

- Identifying opponent's weaknesses → setting up to prepare against CP

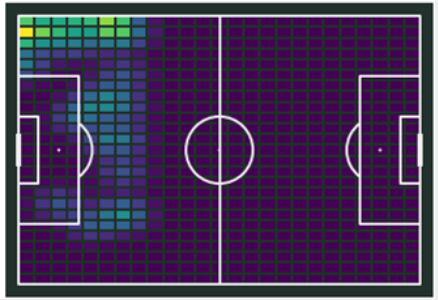
xT conceded	Goals conceded	Strategy used against
0.0099	0.10	Long Pass
0.0065	0.04	Short Pass
0.0026	0	Others

Team A's weakness when counterpressing

- Individual decision making

Recruitment

- Club – transfer strategy



Team B emphasises "long pass" play down the left

- National team – chemistry
- National team – play styles

Limitations

Data Quality

- Event-Tracking Data sync wasn't possible to verify for every regain sequence evaluated for the scope of this project
- Crucial for modelling and assessing time-sensitive decision making

Model Naivety

- Current measurement methods have no information on the context of the team's deep regain
- Selection Bias. "Counterpress" threshold may be strict and skip over counterpresses that were well dealt with → never registered "pressure" values

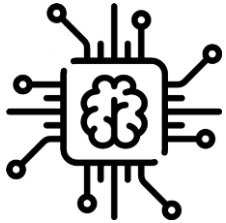
Model Skill

- Models not evaluated or validated extensively with accuracy/precision tests. How sensitive are the chosen parameters e.g. area of interest radii, time durations?

Extensions

Enhanced Metrics

- Derive more game context using tracking data e.g. turnover scenarios stemming from steady build up play/ counter-attack?
- More situational context in the metrics e.g. direction of pressure, passing lanes based on player's body orientation
- Pitch Control model improvements



Different Techniques

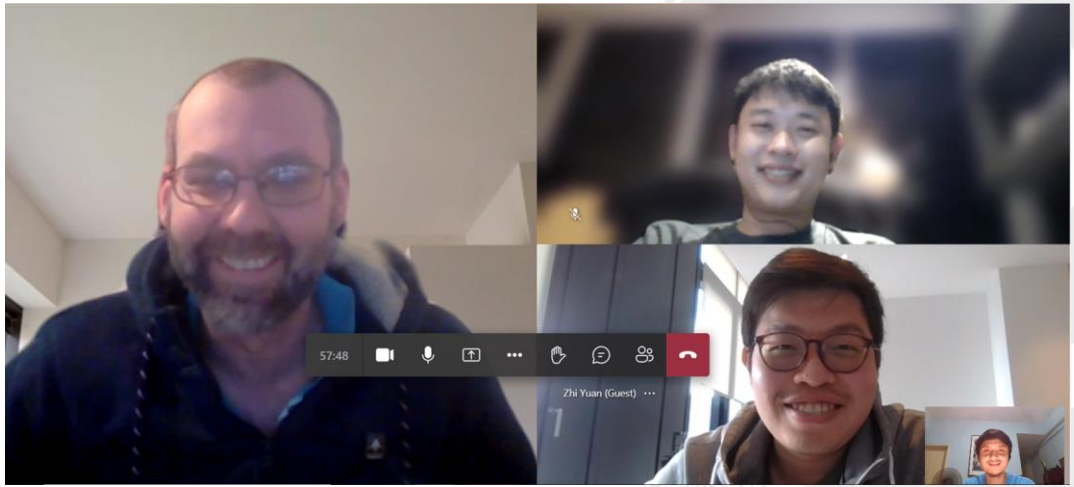
- Unsupervised learning to identify counterpressing strategies
- Counterpressure metrics and success frameworks can complement other methodologies e.g. existing detection methods, xReceiver models

Strategy evolution

- Incorporate tracking data into strategy definitions e.g. where do players provide passing support or options?
- Consider player styles e.g. Target Man approach, use of what midfielder types
- Counter strategy of counter-pressing team

Acknowledgements

- Our third teammate Ashley See, watching from Singapore
- Our mentor Dafydd Steele, Liverpool FC



- Andy Cooper and the Pro Forum team + judges

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Thank You

Questions?