

Nissan scientists crack the code for football fan excitement

- Nissan and Loughborough University have joined forces to identify a formula that reveals what gets fans so excited about football
- The Nissan Excitement Index aims to explore and understand the science behind football fans' excitement
- Official global automotive sponsor Nissan is helping drive football fan excitement in the build up to the UEFA Champions League Final in Milan

Rolle (Switzerland), 4th May 2016 – With the UEFA Champions League finalists due to be determined this week, Nissan, the Official Global Automotive Sponsor of the UEFA Champions League, has revealed the scientific formula for excitement in football.

In partnership with sports science experts at Loughborough University, the Nissan Excitement Index utilises data gathered through physiological reactions of football fans watching UEFA Champions League matches. Based on these reactions, a formula – the Nissan Excitement Index – has been developed.

Nissan and Loughborough University have been conducting live 'excitement experiments' on pairs of football fans in the stands during six UEFA Champions League matches. Fans were fitted with wearable technology to monitor and gather a combined index of data, including: heart rate, breathing rate and electro-dermal activity, in order to examine the physiological effect excitement has on them. Loughborough University combined this data with official match statistics from Opta in order to develop the formula at the heart of the Nissan Excitement Index.

"Excitement is at the heart of everything we do at Nissan" said Jean-Pierre Diernaz, vice president for marketing at Nissan Europe. "Our iconic GT-R super car and sponsorship of the exciting UEFA Champions League, are just two examples of how we strive to bring innovation and excitement to everyone" He continued. "Whilst we will carry on exploring the science behind football thrills with Loughborough University, Nissan is also committed to exploring excitement further, whether that's through the effects of our cars or our other partnerships in sports."

WHAT MAKES FOOTBALL SO EXCITING?

The football based formula measures all key elements that go into making an exciting football game including number of goals scored, time of goals and cards shown.

NISSAN EXCITEMENT INDEX

Scientific formula for an exciting football match =

$$\left[G_H + \left(\frac{Y_H}{2} + R_H \right) + S_H + \left(\frac{MA_H}{C_H} \right) + (TG_H) - \left(\frac{U_H}{100} \right) \right]$$

$$\times \left[G_A + \left(\frac{Y_A}{2} + R_A \right) + S_A + \left(\frac{MA_A}{C_A} \right) + (TG_A) - \left(\frac{U_A}{100} \right) \right]$$

$$\begin{cases} 0 & \text{if Time of goal} < 80th \\ 0.5 & \text{if time of goal } 80 - 90 \\ 1 & \text{if time of goal} > 90th \end{cases}$$

Red = home Blue = away

G= Goals scored	TG = Time of goals
Y= Yellow Cards	U = UEFA team ranking
R= Red Cards	H= home team
S = Presence of Star players	A= Away team
C = Stadium Capacity	
MA = Match Attendance	<i>N.B. H=Home team, A=Away team</i>

THE PHYSICAL EFFECTS OF FOOTBALL EXCITEMENT

The data showed participants’ average heart rate reached a peak 122 bpm during exciting moments in the match, which is comparable to the peak heart rates found in scientific studies of couples having sex. This comes as a recent Nissan survey* showed fans admit to finding football more exciting than having sex or spending time with their partner. The highest peak heart rate monitored during a home team goal was 154bpm, when Paris Saint Germain scored against Chelsea.

The research also shows a spike of excitement when a yellow card was given to a player on the home team – in some cases provoking an increase in heart rate by more than 30bpm – compared with their opponents.

Commenting on the research, Dr Dale Esliger from Loughborough University said: “Our team at Loughborough University have spent the last few years developing world-leading scientific expertise in wearable/digital technologies applications in health and human performance. With Nissan, we have the opportunity to apply these innovative sensing or measurement in the realm of sports entertainment.

“Where we once subjectively judged how exciting a football match was using our ‘gut feeling’ we can now use this methodology to objectively quantify the excitement of fans second by second throughout an entire match. Combining all of this innovative sensor data allowed us to engineer the Nissan Excitement Index that can now be used to rank the top UEFA Champions League football matches.

“In the future this type of research could also be extended into other areas of excitement, such as the physical responses which come from driving a thrilling super car like the Nissan GT-R”.

During this season’s UEFA Champions League Final in Milan, Nissan are creating an exciting experience for football fans allowing them to experience the thrill of driving the new 2017 Nissan GT-R through the streets of Milan, culminating at the iconic San Siro stadium, via a virtual reality experience in partnership with another official sponsor Sony PlayStation. Follow the excitement in Milan via #GetMilanExcited.

Nissan unveiled the 2017 GT-R at the New York International Auto Show in March this year, highlighted by an exciting new look both inside and out, as well as major driving-performance enhancements and key new features. They represent the most significant changes made to the model since it was introduced in 2007. To find out more visit: www.newsroom.nissan-europe.com.

-ENDS-

NOTES TO EDITORS

Nissan Excitement Index ranks for the UEFA Champions League Quarter Finals

Match	Score	Total	Ranking	
FC Barcelona vs Atletico Madrid	2-1	60.6	1	Most Exciting
Atletico Madrid vs FC Barcelona	2-0	48.4	2	
Paris Saint-Germain vs Manchester City	2-2	38.5	3	
Benfica vs FC Bayern Munich	2-2	29.1	4	
VfL Wolfsburg vs Real Madrid	2-0	24.4	5	
Real Madrid vs VfL Wolfsburg	3-0	22.0	6	
FC Bayern Munich vs Benfica	1-0	19.9	7	
Manchester City vs Paris Saint-Germain	1-0	17.5	8	Least Exciting

Nissan Excitement Index peak heart rates monitored during Round of 16 and Quarter Final Games

Match	Score	Peak heart rate recorded on home fan	Event during peak heart rate
FC Barcelona vs Atletico Madrid	2-1	128bpm	Final whistle
Paris Saint-Germain vs Chelsea	2-1	165pm	Chelsea goalkeeper makes a save two minutes into the game
Arsenal vs Barcelona	0-2	124bpm	Arsenal attempt on goal at 0-0
Manchester City vs Dynamo Kiev	0-0	106pm	Dynamo Kiev attempt on goal
FC Bayern Munich vs Juventus	4-2	129bpm	Bayern Munich attempt on goal at 2-0

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FC Barcelona vs Atletico Madrid	2-1	128bpm	down
Real Madrid vs VfL Wolfsburg	3-0	152bpm	Final whistle
			Cristiano Ronaldo second goal

***Survey of over 5,000 European consumers conducted by Norstat Ltd. on behalf of Nissan Europe in February 2016 (UK, Germany, France, Italy and Spain).*

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ABOUT NISSAN IN SPORT: The UEFA Champions League partnership – Nissan’s largest sponsorship deal – is another example of Nissan’s dedication and growth in global sports which also includes the International Cricket Council (ICC), Nissan Brazil’s proud sponsorship of the Rio 2016 Olympic and Paralympic Games, Team Brazil and Brazil Paralympic Delegation, official sponsorship of the Colombia and Mexico Olympic Teams in their respective regions, Team GB and Paralympics GB in the UK, Orange Africa Cup of Nations 2013 and 2015, NCAA Football, Canadian Football League, corporate partner for Heisman Trust/Heisman Trophy and the official global automotive partner of City Football Group. Nissan has a number of sporting ambassadors including Olympic and Paralympic Gold Medallists Usain Bolt, Sir Chris Hoy and Richard Whitehead, Brazilian Olympians Jovane Guissone and Vitor Felipe as well as footballers Andrés Iniesta, Thiago Silva, Yaya Touré and Max Meyer.

ABOUT NISSAN IN EUROPE: Nissan has one of the most comprehensive European presences of any overseas manufacturer, employing more than 14,500 staff across locally-based design, research & development, manufacturing, logistics and sales & marketing operations. Last year Nissan plants in the UK, Spain and Russia produced more than 635,000 vehicles including mini-MPVs, award-winning crossovers, SUVs, commercial vehicles and the Nissan LEAF, the world’s most popular Electric Vehicle with 97% performance satisfaction and 95% of customers willing to recommend the car to friends. Nissan now offers 24 diverse and innovative products for sale in Europe today, and is positioned to become the number one Asian brand in Europe.