

# Comparison of Comment Trends Regarding the Characteristics of Videos posted on YouTube about Japanese Professional Sports: A Case Study of the “2004 Nippon Professional Baseball Realignment”

Hiroharu Matsubara<sup>1,2†</sup> and Tomonori Hashiyama<sup>1</sup>

<sup>1</sup>Graduate School of Information Science and Engineering, The University of Electro-Communications, Tokyo, Japan  
(E-mail: h.matsubara@uec.ac.jp)

<sup>2</sup>National Institute of Technology, Tokyo College, Tokyo, Japan  
(E-mail: h\_matsubara@tokyo-ct.ac.jp)

**Abstract:** This study investigates fan comments on YouTube related to professional sports. It has been pointed out that professional sports fans have had an “Imagined Community” that talks about sports even before the spread of the Internet. Fans are known to act in response to events such as the relocation or disappearance of their favorite baseball team. Therefore, this study focuses on the “2004 Nippon Professional Baseball realignment” as a discussion topic among Japanese sports fans on YouTube. As for our methodology, we collected 5,551 comments from 36 related videos on YouTube, classified them into four categories based on the characteristics of the videos, and analyzed the comment trends through text mining using the machine learning platform DataRobot. In conclusion, we propose future research directions based on the characteristics of the YouTube platform in analyzing social systems from social media.

**Keywords:** User-generated media (UGM), Text mining, Sports fandom, YouTube, DataRobot

## 1. INTRODUCTION

The recent spread of user-generated media (UGM) has provided a forum for sports fans to “speak out” in the form of comments[1]. According to the latest survey results (n=1000) conducted in January 2025 by Neo Marketing, Inc., a company that provides consumer-centric marketing support services, 88.6% of people in Japan have used YouTube, surpassing LINE to become the top user[2]. It was found that people tend to use YouTube for the purpose of “collecting information related to hobbies and interests”. Professional sports fans actively exchange opinions on online platforms. In particular, the YouTube comment section plays an important role in allowing fans to interact with each other and express their opinions. In this paper, we focus on professional baseball, which has a long history and many fans among Japanese professional sports. As a case study, this study focuses on the “2004 Nippon Professional Baseball realignment (2004 NPB realignment),” one of the most notable events in Japanese sports history. This affair generated the largest social movement in sports in Japan, collecting signatures from 1.22 million fans nationwide in opposition to the reduction in the number of NPB teams. This study aims to clarify what kind of videos are posted on YouTube about this Japanese sporting event and the comments' reactions to the features of the videos.

## 2. LITERATURE BACKGROUND

### 2.1 Behavioral characteristics of professional sports fans and social reactions to the disappearance of their favorite team

Previous studies indicate that online sports fan behavior encompasses various themes. Bryant & Raney identified key motivations for sports participation, such

as improving physical and mental health, reducing aggression, relaxation, learning fairness, and controlling emotions[3]. In contrast, watching sports on TV or in sports bars offers attractions like emotional involvement with teams, hoping for favorable outcomes, enjoying game drama and suspense, and experiencing novelty or achievement. Fan segmentation research by Tapp & Clowes revealed several types of soccer fans: carefree casuals who watch games casually, professional wanderers who travel to matches, and repertoire fans who support multiple teams[4]. These segments help inform targeted sports marketing strategies by recognizing the diversity in fan loyalty and engagement.

Professional sports fandom extends beyond simply watching games; it also thrives on the active exchange of opinions and stories among fans. Sato's analysis of postwar Japanese sports magazines highlights how these publications became platforms for fans to communicate, especially through reader columns in soccer magazines [5]. In these spaces, fans did not just passively consume information—they engaged in lively discussions, shared experiences, and debated their views, effectively building a sense of community. Sato argues that this interaction fostered what B. Anderson calls an “imagined community”—a group of individuals who, though mostly strangers to one another, feel a deep sense of connection through shared symbols, narratives, and rituals[6]. In the Japanese context, the development of these imagined communities through media is especially significant given the country's postwar social changes and the rise of mass communication. Through these mediated interactions, fans construct shared meanings and emotional bonds, reinforcing their identification with teams and fellow supporters. The process of “talking about” sports thus play a crucial role in the formation and maintenance of sports fan communities, making media essential not just for information, but for community-building and collective identity.

† Hiroharu Matsubara is the presenter of this paper.

Sports fans have increasingly engaged in social movements in response to professional sports teams relocating or disbanding, especially as the internet became widespread. Mitran examined the 1976-77 NHL case where the Hartford Whalers announced relocation to Charlotte, North Carolina, due to failed negotiations with local authorities[7]. Fans, though aware of financial troubles, used metaphors like death and divorce to emotionally process the loss, likening their bond with the team to family or lifelong friendship, while criticizing the owner harshly. This was revealed through analysis of letters to editors, online posts, and interviews with devoted fans. Lewis analyzed fan reactions to four teams' relocations via website posts, finding that fans' attachment depended on whether they identified the team with their city (civic allegiance) or the team's symbol (symbolic allegiance). Civic allegiance tended to fade after relocation, while symbolic allegiance-maintained fan support regardless of the team's new location or name[8]. Wilson & White studied a grassroots fan movement, "Revive the Pride," which emerged after the Ottawa Rough Riders disbanded in 1996[9]. Despite lasting nearly two years, the movement ultimately failed to restore professional football to Ottawa. These examples show that fan-led social responses to team relocations or dissolutions often involve emotional attachment framed in familial or civic terms, critical views of ownership decisions, and efforts-sometimes unsuccessful-to preserve local sports identities. The internet has amplified fan voices, enabling debates and mobilization, yet outcomes vary widely depending on local contexts and the nature of fan allegiance.

## 2.2 2004 NPB realignment and its evaluation

The 2004 NPB realignment marked a major turning point for Japanese baseball, triggered by a planned merger between the financially struggling the Osaka Kintetsu Buffaloes and the ORIX BlueWave. The merger, announced in June 2004, and a simultaneously suggested "other merger," threatened to reduce the Pacific League from six teams to four, sparking intense media coverage and widespread opposition from players and fans. The following is from the Asahi Shimbun Sports Department[10].

The Japan Professional Baseball Players Association (JPBPA), led by Atsuya Furuta, strongly objected to the merger, fearing job losses and the destabilization of league competition. After failed negotiations, the JPBPA organized the first-ever player strike in Japanese baseball history on September 18-19, 2004, resulting in the cancellation of all games that weekend. Nearly 1.22 million fans supported the players by signing petitions against the merger. The strike highlighted the deep connection between fans, players, and the sport.

As a result, mergers were allowed to proceed, while the requirements for new teams to enter were relaxed. The 2005 season saw the birth of the ORIX Buffaloes, Tohoku Rakuten Golden Eagles, and the Fukuoka SoftBank Hawks, who changed their parent company, and the Pacific League's six-team system was

maintained. Interleague play was also introduced to boost the league's appeal. The resolution demonstrated the influence of collective action by players and fans and marked a significant moment in the governance and future direction of NPB.

Regarding the evaluation of the 2004 NPB realignment, Yamamuro, a baseball historian and former representative of the Tokyo Yomiuri Giants, points out the following [11]. First, he argues that the crisis in professional baseball was already known in June 2004, and the media calmly stated the facts, but in July, comments made by Yomiuri Giants owner Tsuneo Watanabe (Nabetsune) that could be interpreted as contemptuous of the players led to emotionally charged coverage leading up to the players' strike in September. He concludes that as public opinion became heated, the media adopted a stance that portrayed team owners such as Nabetsune as "evil" and the JPBPA led by Furuta as "good". On the other hand, Nagai, who has been keeping a close eye on the Pacific League since his days with the Nankai Hawks, has a different view on the media coverage in 2004.[12] Nagai also points out that the situation has been simplified to a "rewarding of good and punishing evil" situation from the perspective of whether the owners or the players are more "fan-friendly," but at the same time he criticizes the media's stance at the time as follows: First, the position taken by many media outlets in the series of reports was "completely neutral." This is because the media has a history of favoring certain teams in the past, which has been one of the major causes of the deterioration of baseball team management. He also sharply criticizes the media for not being proactive in reporting on the Pacific League, saying that they were not given the opportunity to hold them accountable or to reflect on their actions.

## 2.3 YouTube Comments Analysis

The analysis of YouTube comments has become a significant area of research, particularly in understanding user engagement and behavior on social media platforms. Studies have shown that YouTube comments provide valuable insights into how users interact with content, including sports-related videos. For instance, Madden et al. developed a classification scheme for content analysis of YouTube video comments, which helps in categorizing and understanding the nature of interactions within these platforms[13]. This scheme can be applied to analyze comments on sports videos, providing insights into fan engagement and sentiment. Schultes et al. conducted an in-depth analysis of user comments on YouTube, highlighting the importance of understanding the dynamics of online interactions. Their study emphasized the role of comments in fostering community and engagement among viewers[14]. Similarly, Thelwall discussed the potential and limitations of social media analytics for YouTube comments, emphasizing the need for nuanced approaches to analyze user behavior and sentiment[15]. In the context of sports, analyzing YouTube comments can reveal fan perceptions and reactions to various





Fig.3 WordCloud of C2.

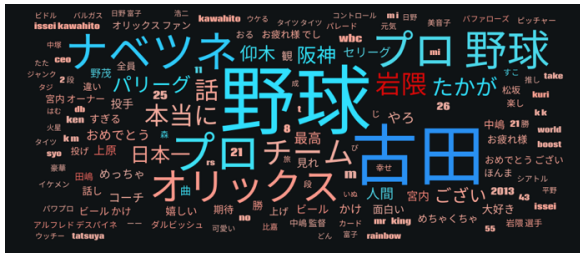


Fig.4 WordCloud of C3.



Fig.5 WordCloud of C4.

#### 4.2 Discussion for further analysis

In this study, the analysis was conducted by classifying the videos into four categories according to their characteristics. To further deepen the analysis, it is considered effective to conduct a time series analysis of events linked to the date and time the comments were posted, and an analysis of the correlation between the topics and comments based on agenda setting theory. In the events linked to the date and time the comments were posted, for example, there were many comments on topics such as the Orix Buffaloes, a merged baseball team formed because of the 2004 turmoil, becoming Japan's top baseball team in 2022. Time series analysis would be effective for such comments. Agenda setting theory, proposed by McCombs & Shaw, states that media shape public perception by deciding which issues are important (first level) and how to view them (second level)[21]. This study uses the theory to analyze differences between media themes and user perspectives in Japanese YouTube comments, considering cultural factors like anonymity[22, 23].

### 5. CONCLUSION

This study revealed the following:

- 5,551 comments from 36 YouTube videos related to the “2004 NPB realignment” were extracted.
- A ML platform was used to clarify the characteristics of the comments on the four classification codes of the videos.

- The analysis showed that the names of people that were the focus of the conversation changed depending on the class.
- In future research, we would like to conduct time series analysis focusing not only on comments about past topics, but also on events that occurred during the collection period, such as team victories, and analysis of the influence of media using agenda-setting theory.

### ACKNOWLEDGEMENT

This work was supported by JST SPRING (Grant Number JPMJSP2131) and JSPS KAKENHI (Grant Number JP24K02815).

This study was conducted using DataRobot, a machine learning platform provided by the Social Implementation Education Research Center, the National Institute of Technology (KOSEN), Tokyo College.

### REFERENCES

- [1] M. L. B. d. Santos, “The “so-called” UGC: an updated definition of user-generated content in the age of social media”, *Online Information Review*, Vol. 46, No. 1, pp. 95-113, 2022.
- [2] Neo Marketing, Inc., Survey on SNS, released on May 2, 2025. [https://corp.neo-m.jp/report/investigation/itmedia\\_055/](https://corp.neo-m.jp/report/investigation/itmedia_055/)
- [3] J. Bryant and A. A. Raney, “Sports on the screen.” In D. Zillmann and P. Vorderer (Eds.), *Media entertainment: The psychology of its appeal*. LEA., pp.153-174, 2000.
- [4] A. Tapp and J. Clowes, “From carefree casuals to professional wanderers: Segmentation possibilities for football supporters”, *European Journal of Marketing*, Vol. 36, No. 11, pp.1248–1270, 2002.
- [5] A. Sato, *Media History of Sports Magazines: Baseball Magazine Sha and Enlightened Thought*, Benseisha, Tokyo, 2018. (in Japanese)
- [6] B. Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, Verso Books, London, 2016.
- [7] J. R. Mitrano, “The ‘sudden death’ of hockey in Hartford: Sports fans and franchise relocation”, *Sociology of Sport Journal*, Vol.16, pp.134-154, 1999.
- [8] M. Lewis, “Franchise relocation and fan allegiance”, *Journal of Sport & Social Issues*, Vol.25, No.1, pp.6-19, 2001.
- [9] B. Wilson and P. White, “Revive the Pride: Social process, political economy, and a fan-based grassroots movement”, *Sociology of Sport Journal*, Vol.19, pp.119-148, 2002.
- [10] Asahi Shimbun Sports Department, *Strike Goes On: The Two Days When Professional Baseball Disappeared*, Asahi Shimbun, Tokyo, 2004. (in Japanese)
- [11] H. Yamamuro, *The Professional Baseball in 2004*, Shinchosha, Tokyo, 2024. (in Japanese)

- [12]Y. Nagai, Bias and inconsistency in NPB reporting: From the perspectives of Kansai, the Pacific League, and the Nankai Hawks. I. Kuroda (ed.), *Media Literacy of the Sender: The Current State of Broadcasting from a Regional Perspective*, Sekai-shissha, Kyoto, 2005. (in Japanese)
- [13]A. Madden, I. Ruthven and D. McMenemy, “A classification scheme for content analyses of YouTube video comments”, *Journal of Documentation*, Vol.69, No.5, pp.693-714, 2013.
- [14]P. Schultes, V. Dorner and F. Lehner, “Leave a Comment! An In-Depth Analysis of User Comments on YouTube”, In R. alt, B. Franczyk, (Eds.), *Proceedings of the 11th International Conference on Wirtschaftsinformatik (WI2013)*, Vol. 1. Leipzig, pp.659-673, 2013.
- [15] M. Thelwall, “Social media analytics for YouTube comments: potential and limitations”, *International Journal of Social Research Methodology*, Vol.21, No.3, pp. 303–316, 2017.
- [16]A. Ramadhan, M. Abdallah, K. Imawan and A. Hermawan, “Analysis of Spectator Behavior in Matches on UFC YouTube Account”, *Journal of Public Policy. (Social Politics Sciences)*, Vol.2, No.2, pp.86-99, 2024.
- [17]T. Gil-Lopez, S. Ahmed and L. D. Taylor, “Understanding Fandom in the Multilingual Internet: A Study of “El Clásico” Fans’ Commenting Behavior on YouTube”, *International Journal of Sport Communication*, Vol.10, Issue 1, pp.17-33, 2017.
- [18]YouTube Data API, Google for Developers Website, <https://developers.google.com/youtube/v3>
- [19]DataRobot Website, <https://www.datarobot.com/>
- [20]T. Zhang, “Solving large scale linear prediction problems using stochastic gradient descent algorithms”, *Proceedings of ICML 2004*, 2004.
- [21]M. McCombs, *Setting the Agenda: The Mass Media and Public Opinion* (2nd Edition), Polity Press, Massachusetts: Malden, 2014.
- [22]A. Demirsoy and E. Karakoç, “CONTRIBUTION OF SOCIAL MEDIA TO AGENDA SETTING APPROACH”, 2016. <https://dergipark.org.tr/en/download/article-file/397974>
- [23]K. Hull, J. Lee, R. Zapalac and M. Stilwell, “H-Town Takeover: Social Media Agenda Setting and Branding Efforts at the University of Houston,” *Journal of Issues in Intercollegiate Athletics*, Vol. 10, Article 17, 2017.

Table 1 Overview of analyzed video. The original titles are in Japanese.

Video title (English translation)	CMT	Views	Video ID	Upload date	class	
[The Truth] How Atsuya Furuta protected NPB	1040	1,433,096	8OZJV4Av7y4	2022/03/19	C1	
[Dark History] Tragedy! The details of the disappearance of the Kintetsu Buffaloes are too shocking!	620	267,695	qgciMf86iq8	2021/10/22		
[True story] How Furuta protected the NPB... The unprofitable team was dissolved. The league was merged! The players' association led by Furuta and the fans revolted against the owners' outrageous actions [Manga] [Manga video]	435	171,503	115o4c20pUg	2022/05/21		
Introducing five examples of special seasons with shortened schedules, which have only happened five times in the long history of NPB.	205	237,232	7jo9gnSbHHY	2021/01/15		
[Too unfair] Grown-up situation of the distribution draft	137	98,742	sFfswxF_g-I	2022/10/07		
[Failed Acquisition] The real reason why Horiemon failed to acquire Kintetsu	137	61,151	ToawQArKTXM	2022/05/27		
A yukkuri explanation of the NPB realignment [New team formation edition]	82	37,039	SsRq5MJBm8s	2020/10/16		
A yukkuri explanation of NPB realignment [Team mergers edition]	56	N/A	rsHhj07eAv4	2020/04/28		
[NPB] The man who stood up to the baseball league restructuring issue [Atsuya Furuta]	35	13,247	HruNC8furTU	2021/03/22		
[Furuta] 2004 NPB realignment [Yukkuri Explanation]	22	4,068	2Fc0369tCOY	2021/12/29		
[Yukkuri Explanation] Team mergers, owners going haywire, the first strike in professional baseball, the disappearance of the Kintetsu team, and new entrants... A look back at the NPB realignment [NPB]	14	6,226	pMevFEoBCsA	2022/07/30		
NPB realignment strike document	693	996,051	QQU44H02m9A	2011/04/10		C2

Nabetsune: "Just a player"	459	530,529	RLVeQMd1rvk	2019/05/03		
The Last of the ORIX Kintetsu Blue Wave Buffaloes	258	157,249	o3dVfDC9loI	2013/05/22		
One man's rebellion: Will the team disappear? The Professional Baseball Players Association's 103-day struggle	190	162,085	VDiLVaspbZw	2016/06/05		
Akira Ohgi's baseball career	129	216,018	oz5YOlvmw4	2021/08/17		
[NPB] The last day of the Kintetsu Buffaloes [Team defunct]	75	111,060	C4Mi98Xjj9o	2017/03/12		
The last day of Kintetsu... Hirotohi Kitagawa's soulful cry	85	98,760	TncHjtlWLdw	2011/10/26		
New manager Akira Ohgi ~ "Faith and integrity" with the new team	50	97,517	74-4Plh5OOE	2008/07/27		
NPB strike	52	94,822	JIECnWz0QTM	2015/04/04		
Sunday Project: NPB Issues (2005)	37	58,100	IHddGtOik-c	2022/02/09		
[Akira Ohgi] The last 120 days	37	47,954	SFbyt2tj9kM	2022/01/26		
NPB strike (No.2)	30	72,650	VRG8GykkfmQ	2015/04/05		
[Iwakuma Hisashi appears] The disparity in treatment between the Giants and Kintetsu... NPB realignment... 21 wins... Retirement... We've heard all the inside stories [including the behind-the-scenes of the no-hitter] [Handsome guy slot lol] [MLB] [Kuma-chan SP 1 / 5]	392	1,278,318	5Ehf40zqSn8	2021/01/19		C3
[The long-awaited No. 1 in Japan!] Victory celebration and beer shower	283	138,103	bcXn1jGwtyM	2022/11/04		
[NPB realignment] Team mergers, the first strike in professional baseball, the crisis of the survival of the 12-team system. Now is the time to talk about the formation of the Rakuten Eagles [Kintetsu Buffaloes, Koichi Isobe]	111	32,344	1XoC4Pv70Yw	2020/08/11		
From the acquisition of the Hankyu Braves to "Ganbaro KOBE", Ichiro's transfer to the major leagues, the baseball league restructuring issue and mergers... on his way to becoming Japan's first champion in 26 years! - ORIX owner Yoshihiko Miyauchi, who loved baseball and the team more than anyone else, talks about his 34 years.	77	41,624	Zx3KX4vIrbU	2022/11/25		
The shocking disappearance of the Kintetsu Buffaloes! The truth behind it all is revealed!	65	116,432	6yxy2KW7gYk	2022/01/14		
[From Kintetsu to Rakuten...] Hisashi Iwakuma talks about the inside story of the baseball league reorganization [MasaNOTE]	30	58,581	J-VPPmEqI54	2022/02/26		
[Kintetsu's collapse in 2004] Strikes, one-league theory... What happened behind the scenes of the NPB realignment? Kintetsu's last player's association president, Koichi Isobe, will reveal the truth tonight!	16	14,472	kmORc_BhWdc	2022/09/20		
Congratulations! ORIX won Japan's number one! Special feature: Interview with Nobuyuki Hoshino 1	11	9,923	7DbyM9U7Ebk	2022/11/30		
White Ball Fantasy	211	366,333	HnN0kMY1d4E	2008/12/17	C4	
White Ball Fantasy [ORIX BlueWave ver.]	38	31,235	I2GXkCowJLA	2013/02/08		
Professional [Mr. Swallows Atsuya Furuta] File003	10	48,441	fJw-f9EJRkQ	2022/03/04		
20040720 Osaka Kintetsu Buffaloes vs Chiba Lotte Marines. Bu Lucky 7	10	16,305	1fz0n2Ta8ws	2011/09/29		
Furuta, the player association president, was extremely busy with the NPB realignment, and his performance in 2004 [Baseball]	5	34,793	LSvITRHscnU	2018/05/04		