Spectator Age and Periodic Changes in the Effects of Quality and Uncertainty on Game Viewership

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Introduction and Review of Literature
National Football League (NFL) television viewership continues to outpace other sports, recent declines across most demographics (Forbes, 2017) notwithstanding. Broadcast rights comprised $20.4 billion in 2013 and have grown to $39.6 billion under the current contracts (ESPN, 2011). According to (Paul & Weinbach, 2007), the belief that on “any given Sunday” any NFL team has the potential to defeat its opponent is largely responsible for league popularity. By implementing a hard salary cap, with a narrow margin between the cap and payroll floor, the NFL has long taken an active approach to reducing gaps in quality across teams, thus maximizing both game and championship uncertainty (Larsen, Fenn, & Spenner, 2006).

A tension exists between the well-established fan preference for high team quality (e.g., Borland & Macdonald, 2003; Falter & Perignon, 2000; Krautman & Hadley, 2017; McDonald & Rascher, 2000) and uncertainty (e.g., Lee & Fort, 2008; Pawlowski, 2013; Salaga & Tainsky, 2015). Of course in zero sum games in a closed league context all teams fielded cannot be high quality relative to one another (Kesenne, 2000). Given a fixed input of talent, viewers may also want to see high quality opponents (Marburger, 1999; Salaga, 2012). Although the relative value of quality and uncertainty has been discussed and examined empirically, not often has this analysis been at the game level while incorporating aspects of game and seasonal uncertainty.

Indeed, there is great breadth in the coverage of demand with particular attention to match uncertainty (e.g., Forrest & Simmons, 2002; Garcia & Rodriguez, 2002; King, Owen, & Audas, 2012; Tainsky, Xu, & Zhou, 2014). Still, a limited amount of research has considered the factors that influence viewership within market segments and as a season progresses. The concepts of age and time have the potential to explain a number of phenomena. The positivity effect maintains that motivation to approach positive stimuli changes with age (Carstensen & Mikels, 2005), whereby older individuals exhibit greater tendencies to approach positive inducements. Carstensen (2006) suggested that this is more salient among older adults not because of age itself, rather the duration of time left in processes. As individuals draw closer to the end of horizons, time remaining becomes more prominent, and positive outcomes yet more desirable.

That age and time remain largely unstudied in the sport demand research is concerning, as fan bases are not monolithic (Bradley, 2006; Funk, Mahony, & Ridinger, 2002; Gantz & Wenner, 1995), and thus factors appealing to one segment may not exert similar influence on another. Moreover, and similarly, existing research has established that overall levels of consumption experience changes over the course of a single season; yet little attention has been devoted to variation in the influence of factors on viewership. Collectively, this leaves several gaps. The current research focuses on two questions. One, how do quality and outcome uncertainty contribute to differences in consumption levels for youth versus adults and older adults? Two, to what extent do the impacts of quality and uncertainty vary across the season? This is particularly relevant to viewership ratings for NFL contests, as sport management needs to better understand how these competing constructs differentially impact groups.

Methodology and Data Analysis
This in-progress study uses several seasons of NFL data. The dependent variable is ratings for individual games at the market level according to the Nielsen’s Local People Meter market ratings, which first became available in 2005. Proxies of team quality and uncertainty were calculated from freely-available standings and betting data. The variables of interest are the local team’s winning percentage, opponent’s winning percentage, and game spread. Control variables were adopted from previous research on demand for sporting contests with particular attention to those examining television viewership (e.g., Alavy, Gaskell, Leach, & Szymanski, 2010; Buraimo, 2008; Tainsky,
The basic model follows Borland and Macdonald’s (2003) adaptation of the theoretical model of consumer demand for the sports audience.

The data set was divided into monthly periods, closely corresponding to the four quarters of the NFL season. Generalized Linear Models were estimated in each of these quarters for different age groups. The ‘youth’ group was defined as 2-17 years old, ‘adult’ 18-plus years of age, and ‘older adult’ 50-plus years of age, as is conventional in the aging literature (e.g., Sarkisian, Hays, & Mangione, 2002; Zickuhr & Madden, 2012). Additional models partitioning the data into two half seasons were run to ensure robustness. Finally, preliminary models incorporating playoff probability were run for all games in the final quarter of the season. Based on the significant results, these data will be collected for all second half of season games prior to conference presentation.

Our preliminary results show many of the control variables were significant in the hypothesized direction for each age group. As far as the variables of interest go, in the quarterly analysis local team quality is positively related to viewership for all age groups at all times, however opponent quality is only significant in the second half of the season. Consistent with mixed results from the existing literature, the effect is equivocal for game spread, with the significance and direction of the effect varying by age group and quarter. However, when playoff probability is added to the estimation, spread is negative among youth (i.e., indicating increased viewership for games anticipated to be close), but not significant for either adults or older adults. Interestingly, high away team quality is no longer significant when accounting for playoff probability, yet home team quality remains significant in addition to playoff probability. Both local teams and opponents more likely to qualify for the playoffs draw more viewership across all groups. Wald Tests will be conducted to identify differences across age groups and periods of the season.

Discussion, Implications, and Application
Although preliminary results of this study support the idea that preferences evolve as the end of the horizon draws nearer. In particular, opponent quality takes on additional significance in the second half of the season. For adults and older adults, an opponent’s likelihood of qualifying for the playoffs may supplant simple winning percentage in the last quarter of the season. Further analysis will be conducted on these tendencies.

Additionally, there is a great need to understand preferences as they relate to younger and older market segments. While some preferences may vary, in support of the positivity effect, toward the end of the season youth want to see close games, however this is not a significant consideration for adults or older adults. Besides supporting the positivity effect, this result also reveals differences in support for anticipated outcome uncertainty according to spectator age. Further tests of difference will establish whether the impact of a quality local team is yet greater for adults and older adults than youth.

Contribution to the body of knowledge
In this research we utilize data that segment the market by age. It is noteworthy that the publicly-available gate attendance data utilized in much of the demand literature cannot be separated by age or any other factor. That is not to say that gate attendance ought not be examined in similar fashion to the analysis conducted in this research. Current gate attendance data ought to be researched for differences by market segment. In so doing, more can be learned regarding the manifestation of the positivity effect among consumers of sport. The degree of the effect can inform how individuals internalize short- and long-term horizons in their consumptions choices in sport and inform related industries.