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Status Ambiguity and Multiplicity in the Selection of NBA Awards

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Abstract: Sociologists of culture have long noted that contrasting cultural frames can lead to status ambiguity and status multiplicity. We explore these phenomena in the domain of professional sports by first replicating and then extending and challenging recently published findings on selections for the National Basketball Association (NBA) All-Star game. Relying on a large data set that includes more than 10,000 player–years, we show that accounting for better-justified performance measures reduces but does not nullify the effects of status cumulative advantage on All-Star selections. However, when replacing All-Star selections with a less ambiguous measure (selections to All-NBA teams), we no longer find evidence of decoupling between player performance and award nomination. From this we conclude that cumulative status advantage only affects selection when voters view factors other than statistical performance as legitimate, perhaps even desired, selection criteria. These findings have relevance for our understanding of status evaluations beyond professional sports, including in domains as diverse as the film industry, the performing arts, literature, politics, and the sciences.

Keywords: status; sports; prestige; NBA; basketball

Replication Package: Reproduction package is available at https://github.com/mcmahanp/nba_status.

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STATUS is a thorny problem for social scientists. On the one hand, it is a social construct that is as "pure" as one is likely to find—what is status if not the aggregation of subjective, individually judged esteem? On the other hand, status is fundamentally understood as a reflection of a person's achievements, based on skills, accomplishments, and value. Status has a dual nature, embodying simultaneously the nebulous construct of collective judgment and the concrete measurement of individual achievement. Studies of status must cope with this essential tension. Insofar as status is the sociocultural articulation of differences in individuals' worth, research on this concept must account for the objective "quality" of individuals, as well as the social processes of path dependency (Berger and Fişek 2006), influence (Correll et al. 2017), perception (Ridgeway and Cornell 2006), and structure (Gould 2002) through which status is constructed.

Status is further complicated by an inherent ambiguity in the quality it is understood to reflect. Clearly, status is domain specific—the status judgment of a politician may be based on starkly different criteria than that of a popular musician. Yet, even within a specific domain there may be multiple and at times contrasting dimensions on which socially legitimate status assessments can be made. A film actor who is widely esteemed for their acting talent may be recognized with Academy Awards for specific performances, whereas another actor, more well known for

their charisma or physical appearance, may be rewarded with sponsorships and media attention. Thus, certain cultural domains may include divergent (or even contradictory) hierarchies of status.

In some respects, the difficulty with disentangling the status–quality link is one of data and measurement. To account for the ambiguity in the social construction of the "quality" of individuals on the one hand and the multiplicity of status dimensions on the other hand, one needs clear and reliable measures, such as those often available in the domain of professional sports. For example, the National Basketball Association (NBA) provides an excellent empirical site to examine questions about status. Players' "quality" in terms of on-court performance is carefully measured, and dedicated websites offer elaborate game-by-game, or even minute-by-minute, data for thousands of players over many years. At the same time, the NBA has a rich array of awards for the recognition of high-status players, based on their performance on court. These awards range from those focused on a particular aspect of player's performance (e.g., selection to an All-Defensive team) to those that aim to reward players for their all-around on-court value (e.g., Most Valuable Player award or selection to an All-NBA team). The NBA also features an All-Star game that, although similar to other award selections in some respects, also emphasizes the spectacle of the sport with a focus on attractive play style and player celebrity (up until 2016, the selection process for the NBA's All-Star teams was based exclusively on fan voting).

The analysis presented in this article exploits the combination of the NBA's rich performance measures and diverse status designations to untangle the performance–status link. We build on the efforts of a recently published article by Biegert, Kühhirt, and Van Lancker (2023) in the American Sociological Review, replicating and expanding their analysis. Biegert et al. collected a large data set and performed a range of analyses examining the annual elections to the NBA All-Star game between 1984 and 2016, in a commendable effort to disentangle performance-based components of the Matthew effect from the cumulative effect of status recognition on its own. They found that prior All-Star performances were associated with improved chances for a player to be selected for another All-Star game even when controlling for performance indicators. They therefore concluded that All-Star voters' evaluations are biased by a player's prior status as an All-Star, with a growing decoupling of productivity and status, which undermines the meritocratic allocation of status and resources.

We challenge the interpretation of such decoupling as *bias*. Recognizing the inherent complexity of status as a cultural object, we instead argue that reputation is a legitimate component of many status orders and should not be framed as the corruption of the status attribution process. The influence of unmeasurable and accrued characteristics on status—characteristics like *celebrity* or *respect* that are often difficult to measure—is not necessarily evidence of a biased selection process. In certain status contests, such as (we argue) the NBA All-Star, the consideration of such characteristics is intentional and expected. We illustrate this point by reanalyzing selection to the NBA All-Star team and comparing that to a different status contest: selection to All-NBA teams.

Following important coding and estimation corrections, we reanalyze Biegert et al.'s data, showing that their main finding—interpreted in their analysis as evidence of cumulative status bias—is better understood as an indication of status multiplicity in the NBA. Although the original analysis assumes that disconnect between performance measures and All-Star selections is evidence of bias, our reanalysis shows that this interpretation is sensitive to (1) the performance measures used in the analysis and (2) the choice of All-Star selections as the measure of status. Indeed, we demonstrate that if one incorporates more complete measures of on-court performance to predict a better-matched outcome, the evidence for cumulative advantage in the selection process disappears. Rather than anointing one type of status ideal (measurable performance) as the "real" status and all others as "sources of bias," we argue that a theory of status that accounts for the interplay of multiple status ideals provides a richer framework for understanding status ascription.

Our analysis thus contributes to the broader sociological literature on status in two important ways. First, it suggests that in status contests wherein the relevant performance under consideration is clear, the Matthew effect in status attribution may be minimized. Second, by showing that All-Star selections consider broad-based esteem rather than merely on-court performance, we demonstrate that status can be multifaceted even within a single domain.

Status Ambiguity and Multiplicity

It is hardly surprising that a status ascription in a public-facing institution such as NBA All-Star selection can entail a feedback effect in which recognition begets further recognition (Merton 1968; de Sola Price 1976; Barabási and Albert 1999). Indeed, several studies described the mechanisms through which status recognition leads to increased opportunity and resources, and therefore to a legitimate improvement in the measurable quality of a person or product (Sauder, Lynn, and Podolny 2012; Ridgeway 2014). However, much of the literature has focused instead on the sociostructural aspects through which status assessment diverges from (rather than directly affects) the underlying quality that the assessment is supposed to reflect (Lynn, Podolny, and Tao 2009; Sauder et al. 2012; Zuckerman 2012; Ridgeway 2014; Bol, de Vaan, and van de Rijt 2018).

Ambiguity in status assessment has been suggested as a key mechanism underlying the status–quality disparities (Lynn et al. 2009; Sauder et al. 2012; Correll et al. 2017). If a person's status is supposed to reflect their quality, and if quality in a particular domain is difficult to ascertain or measure, then one may turn to cultural or social indicators to compare the otherwise incomparable. Status assessment thus becomes socially endogenous (Correll et al. 2017) and diverges from a purely meritocratic ideal. Although scholars have suggested several means by which status ambiguity is resolved and the status–quality relationship is weakened, research often focuses on cultural processes of social inference, examining the ways in which people turn to the judgment of others to discern uncertain status differences (Gould 2002). Such "third-order inference" (Correll et al. 2017) is especially relevant in the context of public-facing and large-scale domains (Stuart, Hoang, and Hybels 1999; Stewart 2005; Kim and King 2014; Norris and Moss-Pech 2022).

For status attributions to diverge from their meritocratic ideal, the quality that status is meant to reflect in a particular domain must afford an objective (though possibly difficult to observe) ranking or scale. Complicating the assumption of the meritocratic foundation of status is key to the argument we present in this article. Sociologists of culture have long argued that status boundaries are multifaceted, and that different criteria of status distinction are employed in different social contexts (Bourdieu 1984; Lamont 1992; Lamont and Molnár 2002). They pointed to the simultaneous ways in which contrasting cultural frames can lead to conflicting markers of high versus low status (e.g., Bellavance 2015). The multifaceted, symbolic nature of status boundaries has important implications for mass-market domains in which the effects of audience attention and formal status measures interact with the social processes of status determination (Sauder 2006; Kovács and Sharkey 2014; Kovács and Liu 2016).

Status multiplicity is particularly relevant in professional sports. On the one hand, sports allow unusually detailed observation and measurement of player performance (Millington and Millington 2015), suggesting a straightforward instance of objective status. On the other hand, professional sports also play a central role in popular culture, underscoring the role of celebrity and star power as a contrasting ideal of player status (Andrews and Jackson 2001). Professional sports thus embody a particular tension, wherein players' in-game performance interacts with their media depiction and with public opinion (Kim and King 2014; Tulle 2016). A host of research on professional sports has found that "superstardom" yields its own status dynamics (Berri, Schmidt, and Brook 2004; Berri and Schmidt 2006; Jane 2016) that are often at odds with performance-based status ideals (Brown, Spiro, and Keenan 1991; Hausman and Leonard 1997).

NBA awards and honors exemplify the multiplicity of status particularly well, as the league features a range of formal recognitions for players each season. The different awards are implicitly understood to recognize different aspects of players' value. This diversity of awards offers an opportunity for researchers of status. Not only does it allow for a fine-tuned analysis of the role of measurable performance on status processes, it also allows for implicit dimensions of status to be untangled. When distinct status-laden awards are given to different players, the multiplicity of status within the league can be more clearly delineated. For example, if All-Star and All-NBA selections were intended to reflect the same notion of status, then we would not expect them to differ. In the analysis below, we leverage this multiplicity of status indicators to differentiate performance-focused status from the more "socially endogenous" status contests.

How Do Status Distinctions Operate? The Case of NBA Awards Selections

We expand the investigation of status multiplicity in professional sports through a replication and expansion of the previous analysis, reassessing the role of cumulative status in NBA player selections through the lenses of status multiplicity and status ambiguity. We take as our point of departure the recent study by

Biegert et al. (2023), who collected a large data set and conducted a thorough analysis that provides a solid foundation for further investigation. Our original intention was to simply replicate the authors' original study using their data and code before examining the robustness of their findings through the introduction of additional and alternative performance measurements, as well as a different outcome variable that allows an examination of our theoretical arguments regarding the roles of quality and measurement in processes of status assessment. However, although we were able to fully replicate the results reported in Biegert et al.'s study using the authors' replication code and the data set they provided, we identified serious coding and assessment errors during this process. These necessitated re-scraping the original data and applying substantial corrections to coding and variable calculations.

We therefore proceed in three distinct stages. We begin with a brief description of our replication of the study by Biegert et al. (2023), while correcting for substantial coding errors and miscalculations in the original analysis that led the authors to underestimate the main effect. Second, we assess the sufficiency of the performance measures in the original analysis and add advanced metrics to account for defensive aptitude, shooting efficiency, and overall impact on winning. This addition results in a notable decline in the magnitude of the estimated cumulative effect of All-Star performances, indicating that the status–quality divergence identified by Biegert et al. is explained in part by imprecise measures of performance. Finally, we address the possibility of a status–quality mismatch by introducing an alternative predicted status outcome, one that is more plausibly and directly linked to players' on-court performance. We show that with this more complete and theoretically grounded model, the cumulative status bias identified in Biegert et al.'s original analysis vanishes. We conclude that the apparent bias in status assessment they identified can be more parsimoniously explained as a misalignment between indicators of player merit and the type of status being considered.

Data and Methods

The recently published article by Biegert et al. (2023) presents a thorough analysis of the relationship between NBA players' performance and All-Star selections. The authors used models that carefully considered causal pathways over players' careers, controlling for current, previous, and cumulative aspects of the players' demographics, on-court performance, and situation. Our analysis follows the methodological approach suggested by Biegert et al. as closely as possible, adopting their general methodological assumptions and statistical modeling. Code to replicate our data collection and statistical analysis is available at https://github.com/mcmahanp/nba_status.

Data

Information on minute-by-minute player statistics, awards and selections, and team-level performance were scraped from Basketball Reference (BR; https://www.basketball-reference.com) using a custom Python script. The website makes official NBA statistics publicly available, providing rich, reliable, and detailed

information. The statistical analysis required careful aggregation of player data to calculate various player statistics over relevant temporal windows, as detailed in the online supplement and in our replication code. For information on players' race, we relied on Biegert et al.'s (2023) player-level "Black" variable, which was hand-coded by multiple research assistants and validated by the authors. This yielded a final sample of 12,711 player–season observations in the complete data set.

Methods

The analyses presented below follow Biegert et al. in their basic structure. Each model predicts selection into All-Star or All-NBA teams for each player and eligible season using a logistic regression with either standard errors clustered at the player level or player random effects. Results are reported as average marginal effects (AMEs).

Stage 1. Replication and Correction

Although the analysis of Biegert et al. is well suited to identifying divergence between status and the quality of a player's performance, our efforts to replicate their findings revealed significant coding and calculation errors. We identified four major types of errors in the authors' data: (1) temporal misalignment of variables resulting in the assignment of values to the wrong season; (2) a large number (more than 1,000) of nonexistent (phantom) player–seasons that were erroneously included in the data; (3) players' seasons that are missing from the data; and (4) miscalculated averages and aggregations. Although these are substantial errors, which, as we show below, considerably affect the results of the analysis, the focus of the current article is not merely on replication but rather on the expansion of the original study and the theoretical implications of this expansion. We therefore provide a fuller and more detailed account of these errors and miscalculations, as well as the ways we corrected them, in the online supplement.

To assess the impact of the various coding and calculation issues on Biegert et al.'s original analysis, we recreated the measures in the authors' data set using game logs that we independently scraped from BR. In Table **??**, we present the original results from Biegert et al.'s primary analysis (adapted from Table 3 of their article), which we were able to replicate in full both using their code in Stata and again using our own replication of the code in R. We then reran the exact same analysis on the data set we re-scraped from basketball-reference.com, producing corrected average marginal effects and standard errors for each of the models in the original analysis. In every model, the corrected average marginal effect suggests a stronger effect of previous All-Star selections on current-year All-Star selection. Importantly, the average marginal effect for cumulative All-Star selections in M6 indicates an increase from 0.41 percentage points in Biegert et al.'s results to 0.56 percentage points. That is, using corrected data, the magnitude of the cumulative status bias is 35 percent larger than the authors themselves found. Although one must be careful comparing the magnitude of estimates calculated from differing

Table 1: Replication of the results from Biegert et al.'s (2023) Table 3 using the authors' original data (left) and the corrected data (right).

	Original analysis		Corrected analysis	
	AS t-1	Cumulative AS	AS t-1	Cumulative AS
M1: unadjusted				
B	0.607***		0.635***	
SE	0.026		0.027	
M2: adjusted for baseline confounders				
B	0.445***		0.508***	
SE	0.031		0.032	
M3: M2 + adjusted for prior situation + performance				
B	0.048***		0.056***	
SE	0.008		0.010	
M4: M3 + adjusted for current performance				
B	0.035***		0.046***	
SE	0.007		0.008	
M5: M4 + adjusted for current situation				
B	0.024***		0.034***	
SE	0.006		0.007	
M6: M5 + cumulative AS + cumulative mediators				
B	0.020***	0.0041***	0.022***	0.0056***
SE	0.005	0.001	0.006	0.002

B: Estimated average marginal effect. SE: Standard Error; AS: All-Star.
$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

data sets, the consistency of the pattern suggests that Biegert et al.'s data and calculation errors led them to underestimate the main effect in their analysis.

Bias or Confounding?

Before moving on to the substantive changes to the models just presented, it is worth considering possible sources of confounding in Biegert et al.'s model. The authors interpreted the positive coefficient they found for cumulative All-Star selections to be evidence of bias in the evaluation of players' performance. However, as the authors acknowledge, it is also possible that the result is due to confounding factors not taken into account by the model. In particular, if there are player characteristics besides the statistics included in the model that could contribute to past and future

All-Star selections, traits like celebrity, personality, or an exciting style of play, then it is possible that the positive coefficient on cumulative selections does not indicate status bias at all. Rather, as we argue, it could be an indicator of unmeasured (or unmeasurable) criteria being used in status assessment.

Biegert et al. confronted this possibility with two analyses intended to probe the role of confounding. First, they found that the covariates from their complete model (M6) can predict a player's *initial* All-Star selection with an R^2 of 0.60. Although this may suggest that the performance indicators they use contribute to All-Star selection, it does not rule out confounding factors completely. Second, they used a regression discontinuity design to predict the effect of a previous season's selection on a player's chances of selection in the current season. This design implicitly matches players based on votes received in the previous year. The results indicated a threshold effect, suggesting that winning an All-Star nomination the previous year provides a boost beyond what simple vote share would predict. This analysis considers only one-season lags and cannot address the cumulative status bias that is at the heart of their argument. Moreover, this analysis cannot rule out confounding entirely.

Fixed- and random-effects models provide a more thorough class of models for assessing whether individual player characteristics may be driving Biegert et al.'s results. By estimating a separate intercept for each player, such models allow for latent characteristics of the players to be incorporated into the model. This approach has the advantage of controlling for unobserved player-level characteristics, whether they are simple performance omissions (e.g., measurements that examine advanced player statistics) or even harder to measure features, such as players' charisma or specific public narratives about players' careers. To investigate this, we estimated a model identical to M6 above except for the addition of player-level random intercepts.[1] Table **??** reproduces the average marginal effects from M6 reported in Table **??**, comparing them to the same average marginal effects when including player random effects. Unsurprisingly, the standard errors on the estimates remain essentially the same across the two models. The estimated effect of All-Star selection in the previous season drops from 0.022 to just 0.014 ($p = 0.018$). More strikingly, the estimated effect of cumulative All-Star selections appears to go away entirely when incorporating player random effects, with the coefficient estimate dropping from 0.0056 to a value not significantly different from zero (0.0031, $p = 0.089$). These results suggest that the bias identified by Biegert et al. is at least partly a spurious result of unaccounted-for player characteristics.

These results suggest that there is something about certain players that makes them uncharacteristically likely (or unlikely) to be selected for the All-Star team. However, the results do not indicate what it is about those players that causes the disparity. Still, a look at the players that were most likely to be voted to the All-Star game beyond what their performance statistics would suggest offers some potential explanations. Among these players are names such as Dikembe Mutombo, Ben Wallace, Kobe Bryant, Allen Iverson, and Yao Ming. The first two on this list were exceptional defenders (an aspect of the game that traditional statistics often fail to adequately capture), who also led their teams to great success (championships and deep playoff runs). Bryant and Iverson were two very charismatic players with

Table 2: Average marginal effects of lagged and cumulative All-Star selection in model M6, with and without player random effects.

	AS t-1	Cumulative AS
M6 (no random effects)		
B	0.022***	0.0056***
SE	0.006	0.002
M6.RE: M6 + player random effects		
B	0.014*	0.0031
SE	0.006	0.002

B: Estimated average marginal effect. SE: Standard Error; AS: All-Star.
$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

exciting and highly esthetic playing styles, who had an especially large following by NBA fans. Yao Ming was a basketball icon as the first Chinese player to star in the NBA, attracting outsized attention from the public. On the other hand, Monte Ellis stands out in the analysis as one of the most notable players not voted to the All-Star game despite statistics that would suggest otherwise. In his case, we argue that this can be explained with an examination of advanced statistics. We discuss each of these names in more detail in the following sections.

In the remainder of this article, we consider two possible explanations for the dominance of player-level effects in All-Star selection. First, in the following section we investigate whether player-level differences in NBA selections are a result of insufficiently measured performance by incorporating a wider array of performance indicators. We then consider whether the apparent effect of cumulative and lagged selections is due to a mismatch between the status contest under consideration (All-Star selections) and the underlying merit being considered (on-court performance).

Stage 2. Accounting for Insufficient Performance Indicators

The results of the corrected analyses we present in Table **??** support Biegert et al.'s (2023) argument about the cumulative advantage of previous All-Star selections, while suggesting that the effect might have been previously underestimated. However, as a first correction, we suggest that at least part of the divergence they estimate between performance and recognition with an All-Star nomination is due to limited performance measures. Specifically, the performance and situational measures used in the original study to identify these "best" players are limited and fail to fully capture players' performance and their contributions to team success. The analysis by Biegert et al. relied primarily on what many around the NBA call "traditional statistics" (see, for example, https://www.nba.com/stats/players/traditional). They collected data on points, rebounds, assists, steals, blocks, and turnovers (all standardized per 36 minutes of play). Although these measures undoubtedly capture certain important aspects of players' performances, they fail to capture other

important aspects, most notably offensive shooting efficiency, defensive aptitude, and players' overall impact on team achievements. We propose that various advanced statistical metrics are better equipped to capture scoring efficiency (e.g., True Shooting Percentage), defensive metrics (e.g., Defensive Box Plus-Minus), and players' overall effect on team performance and wins (e.g., Box-Plus-Minus). Although no single-statistic indicator can fully capture all aspects of a player's performance, these measures are today widely considered crucial in measuring performance quality (Kubatko et al. 2007; Fromal 2012; Khan 2013).

Failure to Account for Defensive Aptitude

The game of basketball is played on both ends of the court. Biegert et al.'s approach, however, emphasizes offensive measurements and underplays indicators of defensive aptitude. Defensive capabilities are notoriously hard to quantify. Traditional statistics such as steals and blocks (for which the authors adjust) should certainly be considered, but they tell only part of the story. First, these statistics largely depend on one's position (guards, for example, rarely register many blocks). Second, some exceptional defenders did not excel in these statistics (e.g., Denis Rodman), whereas other players who did were still not considered very good defenders (e.g., Hassan Whiteside). Indeed, some players "hunt" steals or blocks, taking gambles, while neglecting basic defensive coverages. Advanced defensive metrics (e.g., Defensive Box Plus-Minus [BPM]) are able to better capture defensive capabilities and should thus be considered. In addition, winning the Defensive Player of the Year award or being selected to the All-NBA Defensive Team recognizes players for their holistic defensive contributions, and may also be considered by All-Star voters.

Although many fans value offensive production more than defensive acumen, a few examples might help illustrate the problem with ignoring defensive measurements and awards. In 1990, the Detroit Pistons' forward Denis Rodman was elected to the All-Star game despite his unimpressive traditional statistics (8.8 points, 9.7 rebounds, 0.9 assists, 0.6 steals, and 0.7 blocks per game). However, the authors' model is unable to capture Rodman's defensive impact. Indeed, he was a key part of the Pistons "Bad Boys" championship in the previous year and was eventually elected as the Defensive Player of the Year in 1990, which ended with a second straight Detroit championship. A decade later, another Detroit Pistons' player, Ben Wallace, was selected to the All-Star game four years in a row (2003-2006), despite scoring less than 10 points per game in all of these years. Like Rodman, Wallace was an excellent rebounder, but even more importantly, he was considered a defensive specialist. Wallace was ranked top-5 in the league in defensive BPM in each of these four years and won the Defensive Player of the Year Award in three of these four seasons. Like Rodman, Wallace also anchored a Pistons defense that propelled them into a surprising championship in 2004, defeating the star-studded Los Angeles Lakers despite lacking clear superstars of their own.

Players of Rodman and Wallace's archetype (other notable examples from the last few decades include Michael Cooper, Dikembe Mutombo, Tyson Chandler, Joakim Noah, Draymond Green, Rudy Gobert, and Marcus Smart) were never considered as offensive savants. Indeed, none of these players were able to exceed

15 points per game in any given year during their NBA careers. Yet, all were (or still are) part of successful teams that profited from their defensive prowess, and nearly all of them were rewarded with multiple All-Star selections. A model relying on traditional statistics might suggest that the last few years in which they were selected to the All-Star game were "unmerited": the result of feedback loops and accumulated status advantage due to their former performances. However, it seems more plausible that in these later years, like in previous years, these players made contributions that Biegert et al.'s model is simply unable to capture, and their selection was still merited.

Failure to Account for Advanced Statistics

The selections to the 2010 All-Star game provide another good illustration of the problem in relying merely on traditional statistics. Voters for the Western Conference reserves preferred guards Chauncey Billups (19.5 points per game; 20th in the league) and Jason Kidd (10.3 points; 101st in the league) over Golden State's guard Monta Ellis (25.5 points per game; 6th in the league). Ellis also had more combined assists and rebounds than Billups and more steals than both Billups and Kidd. Biegert et al.'s model might suggest that the selection was driven by Kidd's (nine previous All-Star appearance) and Billups' (four previous appearances) cumulative status bias, while Ellis suffered from never having been selected to the game. However, advanced performance indicators, which consider shooting efficiency and defensive aptitude, tell a different story. Although Billups and Kidd had a true shooting percentage of 60.1 percent and 57.7 percent respectively, Ellis had a below-average mark of only 51.7 percent. Kidd and Billups were also ranked 13th and 17th, respectively, in BPM, clearly within the top 24 players in the league (24 players are selected to the All-Star game each year). Conversely, Ellis, a poor defender who never met a shot he did not like (his career 52 percent true shooting is considered low) and did not contribute to team winning (his teams never made it past the first round of the playoffs with him as a key player), was ranked only 159th in BPM (out of 197 qualified players) in the 2009-10 season.

The case of Ellis provides a vivid illustration of the limitations of relying merely on traditional statistics to assess player contributions. Many other players (Stephon Marbury, Steve Francis, Antoine Walker, Jerry Stackhouse, Kemba Walker, Jamal Mashburn, and Andre Drummond, to name a few more) were similarly able to rack up remarkable traditional offensive statistics (e.g., high point, rebound, or assist numbers), yet looked much less impressive when accounting for their shooting inefficiency, limited defense, and weak impact on team wins. In some cases, these traditional statistics were enough to propel inefficient players into the All-Star game, particularly before advanced statistics were introduced and popularized to quantify the more holistic assessments of players' performance, becoming the new "gold standard" among coaches and other professionals in the basketball community. However, such selections do not suggest that these players were indeed deserving according to the criterion of being among "the best" current players in the league, a trait that is often better captured by more advanced statistical indicators.

Although the use of advanced statistics can sometimes help us determine that certain players are overvalued when considering only their traditional statistics, it might also assist in identifying undervalued performers. In 2015, San Antonio Spurs forward Tim Duncan was selected to the All-Star game despite his mediocre traditional statistics. Duncan scored only 13.9 points per game (65th in the league), adding 9.1 rebounds (17th), and 3.0 assists (96th). He was given preference in the Western Conference roster over Sacramento's forward Rudy Gay, who registered many more points (21.1; 12th in the league), assists, and steals per game. Biegert et al.'s model might therefore consider this selection as evidence for accumulated status bias and the breach of meritocratic ideals (this was Duncan's 15th All-Star appearance, whereas Gay was never selected to the All-Star game). However, a look at advanced statistics reveals that Duncan was in fact ranked 4th in the league in defensive BPM and 8th in overall BPM, making him a very deserving selection even if one believes that All-Star selections should indeed be based solely on current production (that is, ignoring the fact that Duncan was also one of the best power forwards to ever play the game and this was possibly his last All-Star appearance, which may have propelled voters to pay him tribute; more on this below). In contrast, Gay was only 33rd in the league in BPM.[2]

Of note, there is certainly a correlation between traditional statistics and advanced ones, as the latter are at least partly based on the former. However, as the cases of Ellis, Duncan, and others demonstrate, for certain players there are substantial discrepancies between rankings in traditional statistics and rankings in advanced statistics. And these may be influential cases that could potentially bias the analysis.

Failure to Consider Players' Recent Playoff Success

Michael Jordan is considered by many as the greatest basketball player of all time. This reputation is partly based on Jordan's scoring aptitude and his graceful and highly athletic playstyle. Yet, although Jordan is indeed one of the greatest scorers of all time and was a phenomenal athlete, these traits are not unparalleled. Other players have scored more than him in their career (e.g., Karl Malone and Kobe Bryant), in single seasons (e.g., Wilt Chamberlain and Elgin Baylor), and in single games (e.g., Bryant, Chamberlain, and others). Others were equally athletic and explosive (e.g., Julius Erving or Vince Carter). For many, then, what truly distinguishes Jordan as the greatest NBA player of all time is the combination of these traits with team success. In the 1990s, Jordan led the Chicago Bulls to six NBA championships in eight years, with the team winning each of the six NBA finals series in which it participated. Indeed, the assessment of greatness in basketball is frequently tied to team success and players who fail to lead their teams to a title are often regarded less favorably by fans and commentators.

Biegert et al. controlled in their analyses for whether a player's team reached the playoffs in the former year. Although important, the cases of Tim Duncan, Denis Rodman, Ben Wallace, and Chauncey Billups (and, conversely, that of Monta Ellis), described in the previous two subsections, demonstrate that it is perhaps even more important to consider how well the team performed in these playoffs and the

team's list of achievements in recent years. This can be measured by examining appearances in regional finals, league finals, and, most importantly, winning NBA championships. For many around the NBA, great players are truly measured by their ability to lead their teams to playoff success, rather than just regular season success. Indeed, San Antonio, Duncan's team, won the league's championship in 2014, the year before his final All-Star selection, and the team also reached the NBA finals in 2013, due in large part to Duncan's offensive and defensive abilities. Similarly, Rodman was selected to be an All-Star in 1990, despite his unimpressive scoring numbers, immediately following the Pistons' first franchise championship. And in 2006, Wallace's and Billups' All-Star selection were certainly influenced by Detroit reaching the league finals in the previous two years (and also winning the championship in 2004). In fact, these accomplishments had benefitted two other Detroit players (Richard Hamilton and Rasheed Wallace), as all four were selected to the All-Star game that year despite none of them being ranked among the top 20 in the league in scoring.

A more recent example can demonstrate how playoff failure in the previous year might affect voters' perceptions of a player's All-Star worthiness. Atlanta's Trae Young reached the All-Star break in 2023 with nearly 27 points per game (10th in the league) and more than 10 assists per game (3rd in the league). Yet, although he was selected to the All-Star game in two of the three previous seasons, and although his team reached the playoffs in the previous year, Young was not selected in 2023. His advanced statistics (he was ranked only 71st in Win Shares per 48, due to his weak defense and inefficient shooting numbers) and Atlanta's somewhat disappointing 2022-23 season tell part of the story. But his performances in the 2022 playoffs, in which his team lost 4-1 in the first round while he was playing very poorly (a -8.1 BPM for the series) probably also contributed to voters' reservations.

These examples suggest that models seeking to predict All-Star appearances should account not only for playoff appearances, but also for team achievements in the playoffs during the years that preceded the selection, particularly league championships.

An Empirical Examination of Advanced Performance Metrics and Team Success

To examine the implications of failing to include advanced statistical metrics and recent team success, we added these metrics to the authors' model. In Table **??**, we present results for both one-year-lag and cumulative All-Star selections. We begin with the final corrected model from our first table (M6), which includes the result for cumulative All-Star selections, the key element in Biegert et al.'s argument about cumulative advantage effects. Consequently, we add measures for shooting efficiency (M6.2), various defensive measures (M6.3), and the team's playoff success in previous years (M6.4). In model M6.2, when adding shooting efficiency (measured as true shooting percentage in season t and average true shooting percentage up to season t-1), the cumulative effect of previous All-Star selections does not change. In model M6.3, wherein we adjust for defensive measurements (steals, blocks, Defensive Box Plus-Minus, and selections to the all-defensive team in previous years, each

Table 3: Adding advanced performance metrics to the original model.

	AS t-1	Cumulative AS
M6: original estimate (model 6 from Table ??)		
B	0.0216***	0.0056**
95% CI	[0.009, 0.034]	[0.002, 0.009]
M6.2: M6 + adjusted for shooting efficiency		
B	0.0199**	0.0056**
95% CI	[0.008, 0.032]	[0.002, 0.009]
M6.3: M6 + adjusted for defensive estimates		
B	0.0195***	0.0048**
95% CI	[0.008, 0.031]	[0.001, 0.008]
M6.4: M6 + adjusted for team playoff performance		
B	0.0216***	0.0053**
95% CI	[0.010, 0.034]	[0.002, 0.009]
M6.5: M6 + adjusted for all-in-one composite performance metric (BPM)		
B	0.0208***	0.0046*
95% CI	[0.009, 0.032]	[0.001, 0.008]
M6.6: M6 + adjusted for shooting efficiency, defensive estimates, team playoff performance, and BPM		
B	0.0191***	0.0042*
95% CI	[0.008, 0.030]	[0.001, 0.007]

B: Estimated average marginal effect. CI: Confidence Interval; AS: All-Star.
$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

measured at time t and averaged up to time t-1), the cumulative effect decreases substantially to a 0.48 percentage point. Adjusting for the player's previous team achievements in model M6.4, which accounts for teams' previous-year and cumulative participation in semifinals, finals, and winning the championship, does result in a slight decrease of the effect of previous All-Star selections to a 0.53 percentage point. Next, adjusting for a comprehensive advanced statistical metric — BPM in model M6.5 — results in the effect of previous All-Star selections decreasing even more to a 0.46 percentage point. Finally, in model M6.6 we adjust for the entire set of variables presented in the previous models, resulting in the estimate of the cumulative effect of previous All-Star selections dropping a bit further to a 0.42 percentage point.

In sum, we find that controlling for advanced statistical metrics that account for shooting efficiency and defensive aptitude reduces the cumulative effect of previous All-Star selections by an estimated 25 percent. Although this difference is prominent, it is important to note that the average marginal effect of cumulative All-Star selections has a relatively large standard error across these models, and

our confidence in the differences between the estimates should be tempered by the relative uncertainty around the point estimates. The results suggest that although there is something to be gained from a more comprehensive treatment of players' performance in league matches, it is unlikely that the status effects identified by Biegert et al. are primarily an artifact of incomplete or ambiguous performance measures.

Stage 3. Reexamining the Status–Performance Link

Biegert et al.'s (2023) underlying assumption is that selection to the NBA All-Star game aims to be based on recent meritocracy. Indeed, they write that the game's "purpose is to pit the best players of the ongoing season against each other… with the intention to reward productivity, as the game is supposed to be played by the best players" (p. 7). Yet, for many around the game, players' current performance, although important, is certainly not the only meritocratic criteria for selection to the All-Star game. We argue that All-Star selection is a poor measure of status attainment when player quality is measured merely by recent on-court performance. By measuring status bias as divergence between players' performance and their chances of All-Star selection, the authors risk conflating bias with simple confounding from nonperformance characteristics. Specifically, we make the case that hard-to-measure aspects of a player's public persona such as reputation, play style, or career narrative contribute substantially to the probability of selection, and that such characteristics are legitimate status considerations for the All-Star contest.

What Are the Actual Criteria for Selecting a Player to the NBA All-Star Game?

Beyond rewarding recent performance, the All-Star game is also a spectacle: a commercial entertainment product that is marketed to viewers in North America and around the world as a glamourous celebration of physical dominance and remarkable skill (Grimshaw and Larson 2021). Evidence for this perception of the game can be found in the game's very high scores and lack of defensive effort, as well as its focus on crowd-pleasing spectacular plays. Therefore, players who have a particularly graceful or attractive playing style often become fan favorites and are more likely to win votes. This approach may, in turn, explain why players like Julius Erving (1987), Vince Carter (2005), and Kobe Bryant (2014-2016) were selected to the game (often as starters) even during seasons in which they did not perform very well. Conversely, players with an efficient yet less attractive playing style, which might not translate as well to the contours of the All-Star game, may not enjoy such a privilege. These players are often overshadowed in the All-Star game by more explosive athletes and struggle to leave their mark on the game, which potentially hinders future selections.

As part of the spectacle, the NBA All-Star game is also about larger-than-life stories and narratives. Some of the most memorable All-Star games included rivalries between legends of the game, even when these legends were past their career prime. Examples include Michael Jordan's last All-Star game in 2003, Kobe

Bryant's last game in 2016, and the 2009 game that reunited teammates/rivals Kobe Bryant and 36-year-old Shaquille O'Neal (Zunic 2022). Indeed, the media often focuses on these rivalries when covering the games and many fans, players, and managers around the league believe that it is legitimate, even desirable, that selection to the game would also serve as a way to celebrate and pay tribute to the careers of exceptional superstars, even if these superstars are no longer performing at the highest level (Pandian 2015). Perhaps most telling, the NBA commissioner Adam Silver himself has espoused this approach in the 2019 All-Star game, for which he selected the aging Dwayne Wade (37) and Dirk Nowitzki (40) to the roster in what was clearly a tribute to their long and successful careers. For much the same reason, three years earlier, Silver also supported the selection of Kobe Bryant to the game despite his mediocre production on the court (see Pincus 2015).

Biegert et al. recognize this point when they discuss the case of Ervin (Magic) Johnson's selection to the game in 1992. Yet, they treat this case as an exception; a unique nonmeritocratic tribute selection. Indeed, following the mention of Johnson's case, they immediately reiterate the notion that "there is evidence that a public meritocratic ideal aligns All-Star status with highly productive players" (p. 22). However, beyond the four players mentioned above (Wade, Nowitzki, Bryant, and Johnson), there are multiple other examples for the notion that voters oftentimes deviate from this meritocratic ideal. To name just a few, the list of questionable (at best) All-Star selections also includes the likes of Julius Erving in 1987 (at age 37), Kareem Abdul-Jabbar in 1989 (age 41); John Stockton in 2000 (age 38); David Robinson in 2001 (age 36); Alonzo Mourning in 2001 (at age 30, after a kidney disease kept him sidelined for the entire season); Michael Jordan in 2002 and 2003 (at ages 39 and 40, playing for a team that did not make it to the playoffs); a quickly-deteriorating Shaquille O'Neal in 2007 and 2009 (at ages 34 and 36); Jason Kidd in 2010 (age 37), Kevin Garnett in 2013 (age 37); and Kobe Bryant in 2014 through 2016 (ages 35 to 37).

We argue that many NBA fans, players, and coaches were in fact aware of the players' declining performance, yet they still voted for them or at least saw these selections as legitimate, even justified, given these players' charisma and popularity, and their legacy as some of the greatest to ever play the game. For many of the voters, selecting these players was not merely (and perhaps not even primarily) the result of cumulative status inertia. Rather, they recognized that this might be the player's last appearance in the game (which often was indeed the case) and believed it was a merited tribute for an accomplished career and, equally important, a choice that contributed to making the All-Star spectacle more interesting and exciting, improving its commercial and sentimental value as a highly-marketed entertainment product (see, for example, Montell 2010; Kenyon 2015; Rapp 2020; Bieler 2021).

Anecdotal Evidence for Nonperformance Considerations in All-Star Selections

Three cases of specific All-Star selections may further demonstrate that recent player performance might not be the only criteria considered legitimate by voters. First, the

aforementioned Vince Carter, a highly dynamic and explosive athlete, was selected as an All-Star starter in 2005. This selection seemed to ignore a sharp drop in Carter's production during a season in which he was (by all accounts deliberately) playing poorly as he was trying to be traded to a new team. Was this 2005 selection the result of cumulative status advantage coming from Carter's selection to the All-Star game in the five previous years? Or was it perhaps a function of his great popularity around the league due to his highly attractive playing style and signature dunks, which had previously made him the winner of the NBA Slam Dunk Contest? The All-Star game as a designated showcase of athleticism and creative plays relishes players of Carter's type, a fact which was surely not lost on both the voting public and the coaches.

Former Philadelphia 76ers player, Allen Iverson, is another example of a highly popular NBA player, both on and off the court. On the court, Iverson's game was considered attractive due to his diminutive measurements for a professional basketball player (his 6-feet stature, weighing only 160 pounds, made him a perpetual underdog), as well as his speed, fearlessness, and graceful and creative playing style. Off the court, Iverson became an inspiration to many due to his ability to overcome unfavorable life circumstances and achieve stardom against all odds. He was also perceived as an innovator, helping to popularize various fashions that were considered authentic to the Black community, while also maintaining an independent career as a rap artist. Iverson's last two All-Star berths in 2009 and 2010, in which he was also a starter, could not be justified by his middling scoring and passing statistics during these seasons. For Biegert et al., these appearances may be taken as evidence for the cumulative status effect of Iverson's multiple former All-Star performances. Although plausible, Iverson's vivid personality and attractive style of play, which made him a worldwide household name, may have been even more influential in his selection (Montell 2010). To reiterate, many voters might still consider such voting as meritocratic, recognizing that the All-Star game is not only designed to reward those players who currently perform best. Rather, it is also a crowd-pleasing popularity contest, wherein voters consider factors such as attractive playing style, showmanship, career achievements (beyond former All-Star appearances), charisma, and even off-the-court influence.

Finally, the case of former Houston Rockets player, Yao Ming, is also telling. Ming was first selected to the All-Star game (as a starter) in 2003, during his rookie NBA season. Clearly, this initial selection was primarily driven by the mobilization of Chinese voters rather than by his performances on the court (he had 13.5 points and 8.2 rebounds per game that year). Ming was then selected as an All-Star game starter in each of the next six years, in which his on-court production had improved substantially and by all accounts merited an All-Star berth. However, these consequent selections were clearly still also a function of voting mobilization by the Chinese population, as he was repeatedly selected as a starter, which was not always deserving when considering his on-court metrics. Finally, Ming's selection as an All-Star in 2011, a year in which he played only five games, scoring about 10 points per game, again demonstrates that All-Star voting is knowingly based not only on performance merit criteria. According to the Biegert et al., this selection may have been driven by cumulative status bias related to Ming's previous

All-Star performances. However, a more convincing explanation would be that this final selection was motivated by the same reasons that led to Ming's (statistically unmerited) first selection in 2003, as well as by the motivation to pay tribute to an ending basketball career.

Biegert et al. made commendable efforts to address these challenges through various robustness checks. However, questions remain regarding the degree to which the All-Star selection process is driven by cumulative status bias and voter inertia versus what many see as other legitimate considerations (apart from performance measurements) given the multiple parameters and goals of the All-Star game. To be clear, we are not suggesting here that recent statistical production is immaterial to voters, nor that previous All-Star appearances are ignored. In fact, we believe that in most cases recent production is indeed a major consideration in the selection process—but not the only type of merit considered. Instead, we argue that at least for a handful of potentially influential cases—legends of the game with many former appearances in the game who are no longer performing at the same level—it is impossible to use on-court statistics to isolate the influence of previous appearances from the influence of other merit considerations that voters may believe are legitimate, including paying tribute to a career or wanting to make the All-Star game more exciting and memorable.

All-NBA Teams as an Alternative Outcome Variable for Measuring Cumulative Status Bias Among NBA Players

Given the problems with the assumptions about the nature of All-Star selection criteria and the difficulty with measuring play style and celebrity, we suggest an alternative outcome variable, one that we argue is more appropriate for identifying current meritocratic performance evaluations in the selection of players. At the end of each regular season, the league selects three All-NBA teams (a total of 15 players per year). These 15 players, selected by a global panel of sportswriters and broadcasters, are more carefully chosen through a process that indeed prioritizes players' current performance. These selections therefore rely much less on considerations such as paying tribute to a great career, charisma, playing style, and off-the-court influence. Because there is no game to be played, considerations of the spectacle are also muted. Although the spectacle of the All-Star game may reward players for an "engaging" performance in previous years, All-NBA selections are free to focus on players' value across the rest of the season and may instill less pressure toward consistent year-to-year selections.[3] Furthermore, unlike All-Star nominations, selections to one of the three All-NBA teams carry very substantial monetary implications, as they qualify players for a rookie maximum contract extension worth 30 percent of the team's salary cap (instead of 25 percent) and a veteran maximum contract extension (a "super-max" contract) worth 35 percent of the cap (instead of 30 percent). This difference may be worth up to 50 million dollars for certain players in the coming years.

Getting back to the example of Yao Ming, discussed above, Ming was selected as an All-Star starter eight times (in each season of his NBA career), which might suggest that he was one of the best 10 players in the league in each of these years if

selection was indeed strictly based on current merit (there are 10 All-Star starters each year). However, only in two of these years (2007 and 2009) was he among the 10 players selected for the first or second All-NBA team (second team in both cases), a much better reflection of his actual career production and merit. Less anecdotally, out of the 15 players selected for the three All-NBA teams in 2022, only two were ranked out of the top 15 league leaders in scoring. These two (who were both selected to the third All-NBA team) were Chris Paul, who was ranked first in the league in assists and led his team, the Phoenix Suns, to the best record in the league by a wide margin, and Toronto's Paskal Siakam, who also had an excellent and productive season on a successful team.

We therefore suggest that the annual voting for All-NBA teams comes much closer to Biegert et al.'s ideal of meritocratic selections based on recent performance metrics. It provides a substantially "cleaner" and more suitable outcome variable for testing cumulative advantage, as considerations of the spectacle or paying tribute to an ending career should be immaterial or at least much less influential in these selections. Moreover, the measurement of players' in-game performance is as clear to voters when considering selection to All-NBA teams as it is in All-Star selections. That is, if selections to All-Star teams display more "social endogeneity" than those to All-NBA teams, it is not because of an increase in ambiguity in performance metrics. We argue that such a difference would indicate a fundamentally different idea of "merit" between the two contests. If a cumulative advantage related to past selections to All-NBA teams (or the All-Star game) can still be detected in the selections of current All-NBA teams, while controlling for performance measures, then the case for status bias would be significantly stronger than it is when examining All-Star selections.

Table **??** lists average marginal effect estimates for two sets of models predicting All-NBA selection. The first of these models changes only the outcome variable, otherwise exactly mirroring models M6 through M6.6 from Table **??**. Columns 1 and 2 report the average marginal effect of past-year and cumulative All-Star selection on All-NBA selection in the current season. The second set of models (columns 3 and 4) replace Biegert et al.'s indicators of status (prior All-Star selection) with prior All-NBA selections. Both analyses show similarly striking results. In every case, the cumulative effect of prior selection is indistinguishable from zero. Although the results continue to support the presence of some short-term inertia in player status based on All-Star selection (in t - 1), reflected in estimates of around one percent of the probability of selection, the cumulative status bias that stands at the heart of Biegert et al.'s argument completely vanishes.

One possible explanation for the stark differences between models predicting All-Star and All-NBA nominations would be a difference in ambiguity around player performance. As we discussed above, ambiguity in quality is a key theoretical mechanism underlying divergence between quality and status. There are two ways that ambiguity could explain the differences between the lefthand and righthand columns of Table **??**. First, All-Star and All-NBA selections could be widely understood as indicators of the same underlying quality (players' performance), but the two contests entail different levels of ambiguity. In particular, the All-Star teams in our analysis are selected by NBA fans, players, and media

Table 4: Predicting All-NBA selections.

	Past All-Star selections		Past All-NBA selections	
	AS t-1	Cumulative AS	ANBA t-1	Cumulative ANBA
ANBA1: original covariates				
B	0.0116*	0.0017	0.0112	0.0018
95% CI	[0.002, 0.021]	[-0.001, 0.004]	[0.000, 0.023]	[-0.001, 0.004]
ANBA2: ANBA1 + adjusted for shooting efficiency				
B	0.0101*	0.0019	0.0084	0.002
95% CI	[0.001, 0.019]	[-0.001, 0.005]	[-0.002, 0.019]	[0.000, 0.004]
ANBA3: ANBA1 + adjusted for defensive estimates				
B	0.0109*	0.0007	0.0104	0.0009
95% CI	[0.002, 0.020]	[-0.002, 0.003]	[0.000, 0.021]	[-0.001, 0.003]
ANBA4: ANBA1 + adjusted for team playoff performance				
B	0.0123*	0.0014	0.0118*	0.0016
95% CI	[0.002, 0.022]	[-0.001, 0.004]	[0.000, 0.023]	[-0.001, 0.004]
ANBA5: ANBA1 + adjusted for all-in-one composite performance metric (BPM)				
B	0.0101*	0.0006	0.0096	0.0009
95% CI	[0.002, 0.018]	[-0.002, 0.003]	[0.000, 0.019]	[-0.001, 0.003]
ANBA6: ANBA1 + adjusted for shooting efficiency, defensive estimates, team playoff performance, and BPM				
B	0.0092*	0.0001	0.0087	0.0002
95% CI	[0.001, 0.017]	[-0.002, 0.003]	[-0.001, 0.018]	[-0.002, 0.003]

B: Estimated average marginal effect. CI: Confidence Interval; AS: All-Star.
$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$.

representatives, whereas All-NBA selections are based solely on votes from a global panel of sportswriters and broadcasters. It is conceivable that the latter group has more in-depth knowledge of the league and perceives less ambiguity in player's performance, and that the larger effect of previous selections in All-Star versus All-NBA votes is simply the result of less-informed voters. However, the analysis from Biegert et al. suggests the opposite. When they compared selections based on the public's vote to those of coaches (a group that is presumably at least as well informed as journalists and broadcasters), they found a much *stronger* effect of cumulative status bias among the coaches. For performance ambiguity to drive the differences in Table **??** would require that coaches are less well situated to observe player performance than members of the sports media, which seems like an implausible proposition.

The second way that ambiguity could contribute to a divergence in cumulative effects in All-Star versus All-NBA selections is if the competitions had different meritocratic bases. If the underlying qualities represented by the two status markers were fundamentally different, then differences in the ambiguity of those markers would be easily explained. This form of ambiguity difference is wholly compatible with our argument that the type of status indicated by All-Star selection is primarily performance based. Whether the kind of prestige driving All-Star voting is simply not captured by performance metrics or is fundamentally more ambiguous makes little difference to the quantitative results in Table **??**. In either case, interpreting the effect of cumulative selections as "bias" mischaracterizes the nature and role of status in the All-Star competition.

Conclusion and Discussion

Sociologists of culture have long pointed to the ways in which contrasting cultural frames can lead to conflicting markers of high- versus low-status boundaries (Bourdieu 1984; Lamont 1992; Lamont and Molnár 2002; Bellavance 2015). Such status multiplicity is particularly relevant in professional sports. On the one hand, American professional sports provide exceptionally detailed measurements of player performance (Millington and Millington 2015), suggesting the opportunity for a straightforward and objective evaluation of status. On the other hand, research on professional sports has repeatedly argued that "superstardom" yields its own status dynamics (Berri et al. 2004; Berri and Schmidt 2006; Jane 2016), and that these dynamics are often at odds with performance-based status ideals (Brown et al. 1991; Hausman and Leonard 1997).

We explored this status multiplicity in professional sports by first replicating and then extending the analysis of a study by Biegert et al. (2023). Our findings offer significant challenges to the conclusions of this recently published study and offer important insights on status differentiations and the processes of cumulative advantage in sports and beyond. We argue that although Biegert et al. conducted thoughtful analyses and applied multiple robustness checks, their conclusions rested on a narrow conception of status. Biegert et al.'s analysis theorized All-Stardom as a status indicator understood by its audience (NBA players, coaches, and fans) to be a meritocratic reflection resting essentially on the identification of status

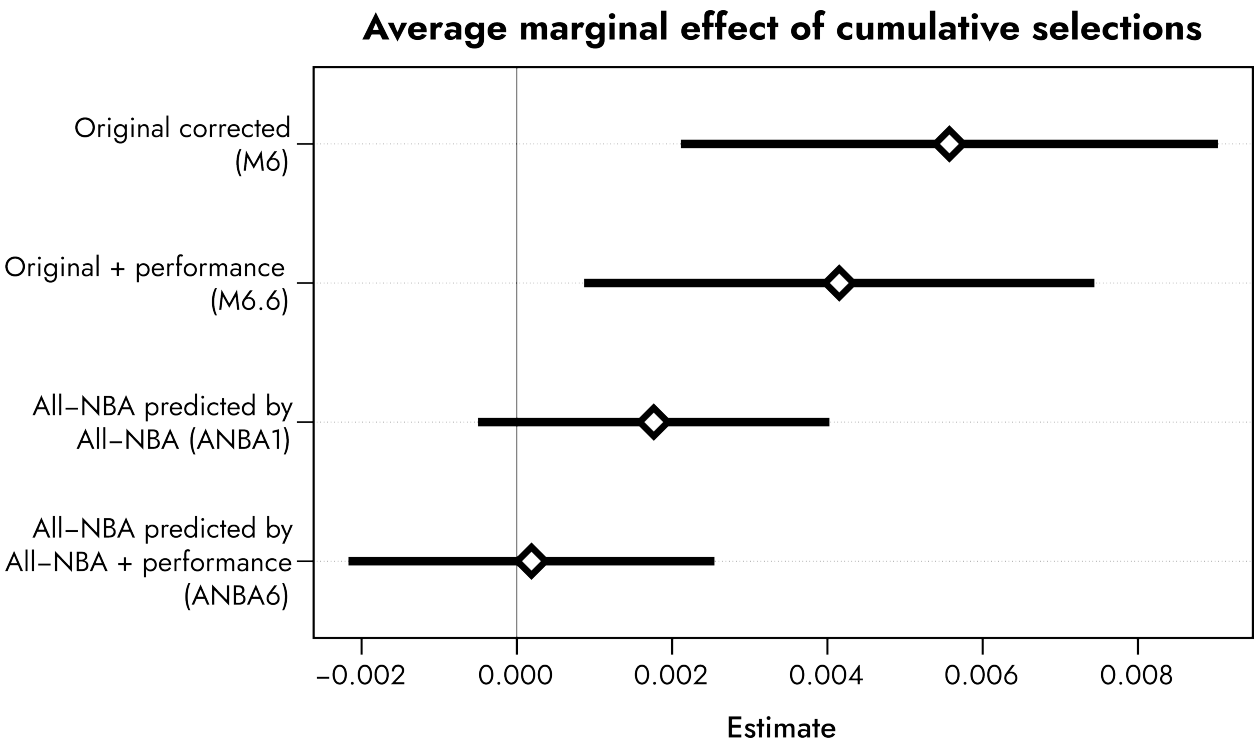

Figure 1: Estimates of average marginal effects of cumulative selection and 95 percent confidence intervals for four key models from our analysis. M6, M6.6, ANBA1, and ANBA6 refer to models in Tables 1 through 4.

with players' performance. We suggested two challenges to the alignment between performance statistics and All-Star selections: (1) an insufficient set of performance measures that could lead to omitted variable bias and (2) an incorrect assumption that All-Star selections are concerned principally with players' performance, which might lead to a spurious identification of cumulative advantage.

In Figure **??**, we summarize the most prominent results from our analyses. The figure depicts the average marginal effect of cumulative All-Star or All-NBA selections in four models. The original average marginal effect of cumulative All-Star selection (with corrected data) shows a significant influence on future selections, reflecting the primary evidence for cumulative status bias in the Biegert et al.'s analysis (M6 from Table **??**). Although accounting for a wider and better-justified set of individual and team performance indicators (M6.6 from Table **??**) diminishes the effect, the authors' overall findings of a cumulative advantage still hold. However, once we interrogate the appropriateness of All-Star selection as a performance-linked status indicator, the results change dramatically. When we analyze All-NBA selection (ANBA6 and ANBA6.6 from Table **??**), a measure of status that is much more clearly linked to players' performance in league games rather than to factors such as charisma, flashiness, and off-the-court influence, we no longer find a cumulative status bias.

Overall, we found that cumulative status advantage only affects selection in which voters believe that it is a legitimate, perhaps even desired, selection crite-

rion. However, when selection criteria clearly emphasize the superiority of recent performance and selections are tied to a potentially direct monetary reward, rather than just conveying respect and appreciation (as in the case of All-NBA selections), cumulative status no longer has an effect. When such clarity is available to voters, selections are entirely based on performance indicators.

We therefore conclude that the cumulative status effect reported by Biegert et al. may in fact be entirely attributed to the unique features of the NBA All-Star game, wherein status, popularity, showmanship, and former achievements are considered a legitimate part of the selection process, which both fans and basketball professionals recognize and embrace. As such, it is hardly surprising that status plays an important role in the selection process of the NBA All-Star game; it is done consciously and deliberately, rather than as an unintended and nonmeritocratic consequence of voters' unfair bias, lack of attention to details, or negligence to sufficiently consider recent performance. Indeed, we would argue that most avid NBA fans and professionals around the game—those who fully understand the criteria of the selection process—would neither be surprised by the influence of players' status on the selection process, nor would they find this influence problematic or unmerited.

These findings have relevance for processes of status recognition beyond the NBA and sports more generally. Our findings support the existing literature on status uncertainty that links cumulative status advantage to ambiguity in the measurement of performance (Sauder et al. 2012; Correll et al. 2017). This body of work suggests that the sociocultural mechanisms of status assessment (e.g., third-order inference or status characteristics) dominate when performance is unclear or difficult to observe, but that meritocratic ideals can prevail when criteria are unambiguous. Our analysis suggests that even within a domain as full of spectacle and star power as the NBA, if status criteria are well defined and performance is easy to observe and measure, the role of cumulative status effects may be minimized. All-NBA selections, with their focus on easily observed performance and carefully measured metrics, appear to provide a clear example of an entirely performance-based meritocratic status assessment.

Our findings underscore a fundamental feature of the presumed link between status and performance. Although status is often idealized as a way to recognize a person's objective value in a domain, it is a mistake to take that ideal at face value. In status rankings and competitions that explicitly reward symbolic characteristics like celebrity, personality, or biography, the accumulation of high-status reputation may not be evidence of bias. Rather, it is, at least in part, the intended outcome. A seasoned movie star being awarded an Oscar partly because of her celebrity status and her accomplished career in the industry may be judged by voters as a merited result even if another less accomplished actress happened to deliver a more impressive acting performance that year. Likewise, the selection of the most recent book written by a literary giant as the winner of the National Book Award (another sort of NBA) may be considered justified by at least some voters even if a younger less familiar author has published a modern masterpiece novel in that year.

Status evaluations that take into account career achievements, charisma, and fame are often considered legitimate and even desirable across myriad domains.

When voting for politicians running for office or when evaluating competing research funding proposals by scientists, judgments based on the person rather than on specifically relevant current performance indicators are often seen as legitimate and unproblematic. Notably, the criteria for assessing recent performance and merit in many of these fields may be less clear cut and easily measurable than in professional sports, thus making alternative evaluation criteria even more influential. However, as the case of NBA All-Star selections demonstrates, even when such criteria are clearer and readily available, voters often consider aspects such as celebrity, personality, or biography to be legitimate, perhaps even desirable, in merit evaluation processes. If the goal is to minimize the effects of such socially endogenous criteria on voting results in various social domains, the voting criteria need to be very clearly defined. They should stress that past achievements and notoriety should not be considered and highlight the immediate consequences and potential rewards coming out of the selection (as in the case of All-NBA selections). That All-Star selections diverge from the meritocratic ideal of rewarding players' recent on-court performance is not necessarily evidence of bias in the selection process. The All-Star game embraces the celebrity of superstar players, foregrounding their notoriety and careers. The contrast between All-NBA and All-Star instead underscores the inherent multidimensionality and social embeddedness of status attribution.

Notes

1 The random-intercept model was estimated using maximum likelihood with the "lme4" package in R. We considered using a fixed-effects model instead to allow for a more flexible correlation structure between player-level effects and our covariates, but two features of the data are incompatible with such a model. First, the outcome variable of All-Star selection is quite rare (achieved by only 175 of the 1,601 players in the sample), which dramatically decreases statistical power (Biegert et al. 2023) and increases risk of biased estimates (Crisman-Cox 2021). Second, many of the players had short careers, meaning they have very few observations in the data (32 percent of players have only one or two observations present). Small within-unit samples can yield strongly biased estimates, especially in combination with a rare binary outcome (Crisman-Cox 2021).

2 Of note, Biegert et al. did choose to include in their models one advanced measure—Cumulative Plus-Minus (though only for the 2001 through 2016 seasons, and only as a substitute for other individual performance measures). Unfortunately, this is a highly flawed measure, which some suggest should be altogether ignored in evaluating individual performances (see for example Scaletta 2011; Weiss 2017). To illustrate the problem with using this measure, only eight of the 24 players leading the NBA in Plus-Minus in the 2022-03 regular season were selected to the 2023 All-Star game. Many of the leaders on this Cumulative Plus-Minus list were role players on good teams who were never elected to an All-Star game and are generally not considered among the NBA's best players. Compare this with another all-in-one advanced metric, BPM, which is substantially more sophisticated and incorporates a long list of offensive and defensive box score statistics, team performance indicators, and players' position (Kalbrosky 2021). Seventeen of the twenty-four players leading the NBA in BPM were selected to the 2023

All-Star game and the seven who were not selected were primarily excluded due to lengthy injuries.

3 See, e.g., Leifer's (2009) discussion of the importance of inconsistencies in sport tournaments and Machung's (1998) argument regarding "musical chairs" in top college rankings.

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