

AN EMPIRICAL ANALYSIS OF THE INFIELD FLY RULE

Howard M. Wasserman[†]

INTRODUCTION

Supporting events may be analogized to judicial proceedings, in that both are contests to determine a victor; it follows that the rules governing sporting events may be analogized to the rules that govern and define judicial proceedings, such as the Rules of Civil Procedure.¹ The recent trend in civil procedure scholarship has run toward the empirical.² So has the recent trend in the study of sports.³ It thus makes sense to cast that same empirical eye on the scholarly field of law and baseball,⁴ the “jurisprudence of sport,” and sports rules as legal rules.⁵

No rule of sports law is riper for empirical study than baseball’s most known and studied provision – the Infield Fly Rule (“IFR” or simply the “Rule”). Under the rule, when the batting team has run-

[†] Professor of Law, FIU College of Law. This paper was presented at a faculty workshop at American University Washington College of Law in March 2014. Thanks to Eric Carpenter, Clem Comly, David Hoffman, Peter Oh, Alex Pearl, and Spencer Webber Waller for comments on early drafts. FIU College of Law students Brittany Dancel, Mark Erdman, Megan Gil, Sara Gordils, Daniel Horton, Alex Levia, and Ryan Maguire provided outstanding (if apparently enjoyable) research assistance on this project.

¹ Howard M. Wasserman, *The Economics of the Infield Fly Rule*, 2013 UTAH L. REV. 479, 483-84 (2013).

² David Freeman Engstrom, *The Twiqbal Puzzle and Empirical Study of Civil Procedure*, 65 STAN. L. REV. 1203, 1205-06 (2013).

³ See, e.g., Phil Birnbaum, *A Guide to Sabermetric Research*, SOCIETY FOR AMERICAN BASEBALL RESEARCH, sabr.org/sabermetrics (last visited Apr. 9, 2014); ADVANCED FOOTBALL ANALYTICS, www.advancedfootballanalytics.com (last visited May 11, 2014).

⁴ Charles Yablou, *On the Contribution of Baseball to American Legal Theory*, 104 YALE L.J. 227, 233 (1994).

⁵ Mitchell N. Berman, *“Let ‘Em Play” A Study in the Jurisprudence of Sport*, 99 GEO. L.J. 1325, 1328-29 (2011).

ners on first and second base or the bases are loaded with fewer than two outs, and the batter hits a fly ball in fair territory that an infielder can catch with “ordinary effort,” the batter is called out. The rule prohibits the defense from getting a double play by intentionally failing to catch an easily catchable fair ball.⁶

Legal scholars have long been fascinated by this rule, what it tells us about law,⁷ and what law tells us about it.⁸ Others are less enamored, questioning its comprehensibility,⁹ logic, wisdom, and necessity, both in particular applications¹⁰ and as a general matter.¹¹ In a recent article, I defended the rule as a normative part of baseball’s internal logic and structure, as an appropriate way to avoid overwhelming and inequitable cost-benefit disparities between teams on individual plays. The rule appropriately eliminates the incentive for the defense to intentionally act contrary to the game’s ordinary practices and expectations to gain an extraordinary advantage and to impose extraordinary costs on the opposing side.¹²

But normative policy judgments may yield to, or at least be in-

⁶ Official Baseball R. 2.00 (Infield Fly), OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_baseball_rules.pdf (last visited May 11, 2014); *id.* (cmt.); Wasserman, *supra* note 1, at 491-92; *infra* Part I.

⁷ Neil B. Cohen & Spencer Weber Waller, *Taking Pop-ups Seriously: The Jurisprudence of the Infield Fly Rule*, 82 WASH. U. L.Q. 453, 454 (2004); Anthony D’Amato, *The Contribution of the Infield Fly Rule to Western Civilization (and Vice Versa)*, 100 NW. U. L. REV. 189 (2006).

⁸ Aside, *The Common Law Origins of the Infield Fly Rule*, 123 U. PA. L. REV. 1474 (1975); see also Wasserman, *supra* note 1, at 487-89.

⁹ As journalist John Dickerson put it in Slate, the “Catholic Church has no papal decree so complicated and misapplied as the infield fly rule.” John Dickerson, *Wait, Am I That Baseball Dad?*, SLATE (June 19, 2013), www.slate.com/articles/sports/sports_nut/2013/06/baseball_parents_how_dads_stress_their_kids_out_during_little_league_games.html (last visited Apr. 9, 2014); see also *The Ability Timeline*, ESQUIRE, June/July 2014, at 103 (unsigned sidebar as part of Tom Junod, *Sports Are Not Only to be Played*, ESQUIRE, June/July 2014, at 102-03) (stating that 34 years old is the age at which a child is capable of understanding the infield fly rule).

¹⁰ Kevin Kaduk, *Bad infield fly rule call mars Cardinals victory over Braves in NL wild card game*, YAHOO! SPORTS (Oct. 5, 2012), sports.yahoo.com/blogs/mlb-big-league-stew/bad-infield-fly-rule-call-mars-cardinals-victory-003924296-mlb.html (last visited Apr. 9, 2014).

¹¹ Ebenezer Barnes, *Baseball Should Encourage Creative Thinking, Abolish Infield Fly Rule*, BLEACHER REPORT (Aug. 24, 2008), bleacherreport.com/articles/50636-baseball-should-encourage-creative-thinking-abolish-infield-fly-rule#articles/50636-baseball-should-encourage-creative-thinking-abolish-infield-fly-rule (last visited Apr. 9, 2014).

¹² Wasserman, *supra* note 1, at 493.

formed by, empirical analysis.¹³ For our purposes, empirical analysis can show whether the risk of the double play – and the overwhelming cost-benefit advantage the defense gains from it – is sufficiently great to support the policy arguments justifying a special rule. Or perhaps the IFR is a century-old solution in search of a problem, resolving an injustice that is, if not non-existent, infrequent.

We can explore four empirical questions about the IFR. The first is frequency, considering how often batters come to the plate in infield fly situations (plays on which the rule could be applied) and how often easily catchable fair fly balls trigger the rule. Perhaps the IFR is unnecessary if the potential inequitable double play does not happen very often. The second question is the likelihood of the evil to be prevented – the likelihood of an inequitable double play and the incentive for the defense to seek it. In a counterfactual world without the IFR, would infielders have any incentive to intentionally fail to catch easily catchable fly balls in search of that double play and, if they did, how likely are they to succeed? The third question is the effect of the IFR, measured by the runs a batting team is statistically likely to lose if, absent the IFR, the defense could have turned double plays by intentionally failing to catch these easily catchable fly balls. The fourth question compares infield fly balls with a different baseball situation and rule – the dropped third strike – that raises similar policy and logical concerns.

This paper addresses all four empirical questions from a data set covering every plate appearance in an infield fly situation and every IFR call for Major League Baseball from 2010 to 2013. It looks at the frequency of IFR calls, the likelihood of double plays in the absence of the IFR, the practical effects of application of the rule, and the possible practical effects if the rule were repealed.

Ultimately, I doubt the debate over the merits of the IFR can be resolved quantitatively or empirically; as with debates over “judicial activism,” resort to underlying normative or qualitative value judg-

¹³ Richard L. Revesz, *A Defense of Empirical Legal Scholarship*, 69 U. CHI. L. REV. 169, 188 (2002) (“[E]mpirical legal scholarship has a great deal to contribute to the understanding of law and legal institutions.”); see also Stephen B. Burbank, *Pleading and the Dilemmas of Modern American Procedure*, 93 JUDICATURE 109, 114, 116-17 (2009).

ments in inevitable.¹⁴ The normative conclusions one draws about the IFR by looking at the empirical record likely depend on where one starts – both supporters and critics of the rule will find confirmation and support in these statistics. Nor can we test the counterfactual, so as to genuinely know what might have happened in the games in our four-year sample played under different rules allowing for different strategies.

Nevertheless, these numbers remain interesting and worth examining, even if purely descriptive. They shed specific light on the realities of baseball's most unique play and on how its most famous (or infamous) rule operates as part of the fabric of the game.

I. A PRIMER ON THE INFIELD FLY RULE

Contrary to frequent complaints about its complexity,¹⁵ the IFR can be stated in simple, comprehensible terms.

When the batting team has runners on first and second base or the bases are loaded with fewer than two outs and the batter hits a fly ball (but not a line drive or a bunt) in fair territory that an infielder can catch with “ordinary effort,”¹⁶ the batter is out, regardless of whether the infielder catches the ball. The base runners are not forced to advance. If the ball is not caught, it is live and they can try to advance at their own risk; if the ball is caught and the runners have strayed too far, they can be thrown out at the previous bases.¹⁷ The rule prevents the defense from getting what is regarded as a “cheap” double play. Rulemakers were concerned that infielders would intentionally fail to catch easily catchable pop flies, allow the ball to fall to the ground, then turn a double play on the base runners (at home and third, third and second, or home and second)

¹⁴ Cf. Caprice L. Roberts, *In Search of Judicial Activism: Dangers in Quantifying the Qualitative*, 74 TENN. L. REV. 567, 619 (2007) (“Even if some of the definitional dimensions of ‘judicial activism’ lend themselves to empirical work, value judgments persist.”).

¹⁵ *Supra* note 9.

¹⁶ Official Baseball R. 2.00 (Ordinary Effort) (“[T]he effort that a fielder of average skill at a position in that league or classification of leagues should exhibit on a play, with due consideration given to the condition of the field and weather conditions.”), OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_baseball_rules.pdf (last visited May 11, 2014).

¹⁷ Official Baseball R. 2.00 (Infield Fly); *id.* cmt.; Wasserman, *supra* note 1, at 490-92.

trapped and unable to beat the throws to the next bases.¹⁸ The IFR instead gives the defense one out on the batter – the same out as if the fielder catches the fly ball – and allows the base runners to remain in place.

In *The Economics of the Infield Fly Rule*, I defended the IFR as a matter of baseball's internal structure and logic, as a way to ensure relatively equitable cost-benefit exchanges between teams on given plays and game situations. The IFR is what I call a "limiting rule," a situation-specific rule that prohibits one side from exploiting holes or gaps in the game's default rules to gain an extraordinarily imbalanced competitive advantage.

In summary, four features mark a game situation as sufficiently imbalanced and inequitable as to warrant a limiting rule. And the infield fly situation possesses all four features.

First, absent the limiting rule, the infield fly produces a uniquely and extraordinarily inequitable cost-benefit disparity. Without the IFR, an infielder could get two outs on a play by intentionally letting the ball fall to the ground untouched and throwing the runners out at the bases, perhaps ending the inning (if there already was one out) and certainly dampening a rally (by removing two runners from the bases). This means a dramatic cost-benefit advantage for one side only – overwhelming benefits for the defense (two outs, one less runner on base, perhaps the end of the inning) with no offsetting costs, which the offense experiences as overwhelming costs with no offsetting benefits. With the IFR, by contrast, the defense gets only one out – either under the rule or because the infielder catches the ball – with the runners likely remaining in place.

Second, the defense exercises nearly complete control over the infield fly play and the offense is powerless to counter it. A ball subject to the IFR is, by definition, an easy play for an average Major League infielder. But that means it is just as easy for an average Major League infielder not to catch that ball. The fielder controls whether and how to catch this easily playable ball and to prepare himself to make a play; he has time to settle under the ball, wait for

¹⁸ Wasserman, *supra* note 1, at 496.

it to come down, decide whether to catch it, and decide where to throw if he does not catch it. His teammates similarly have time to get to their positions to field any throws. By contrast, the base runners are trapped, entirely reactive, and arguably helpless. They are forced to run if the ball drops to the ground, but they will be thrown out if the ball is caught and they have strayed too far from their current bases. So they must remain on or near their current bases until the ball hits the ground, at which point they have too far to run to beat the throws.

Third, the overwhelming cost-benefit advantage arises because the defense intentionally fails to perform the athletic skills that fielders ordinarily try and are expected to perform. Here, that skill is catching an easily playable fair fly ball on or near the infield. Absent the IFR, this would become the only situation in all of baseball in which a team would be significantly better off not catching a batted ball in fair territory than catching it.

Finally, absent the IFR, the overwhelming cost-benefit advantage incentivizes infielders to intentionally fail to perform those athletic skills most (if not all) times the game situation arises. The incentive – getting two outs instead of one on a play – makes it worthwhile for the defense to eschew the simple catch and instead to seek out the inequitable double play by intentionally not performing the expected athletic skill in the expected manner.¹⁹

Like all limiting rules, the IFR imposes a particular outcome on the play, thereby eliminating the defense's opportunity and incentive to act contrary to athletic expectations. The batter is out regardless of whether the ball is caught and the runners are not forced to advance. Thus the outcome of the play – one out and the runners likely remaining in place – is the same whether the infielder catches the ball or not. This removes any incentive for the infielder to intentionally fail to catch it, since he gains no additional benefits beyond that one out.²⁰ On the other hand, perverse incentives remain without the IFR – if a double play is possible under the rules, infielders

¹⁹ *Id.* at 493-96.

²⁰ *Id.* at 496-97

may regularly seek those overwhelming cost-benefit advantages by intentionally failing to catch that easily catchable fly ball.

That, at least, was the policy judgment when the rule was introduced and modified between 1894 and 1904 and that continues to justify modern retention of the rule. The empirical questions explored in this paper go to whether those overwhelming cost-benefit imbalances and perverse incentives would, in fact, arise absent the rule. The goal is to decide whether the normative policy judgments underlying the IFR are practically founded.

II. METHODOLOGY

Designing a study of the IFR is not an easy or obvious task. Major League Baseball does not officially track infield fly calls, so there was no single source for this information. Instead, I followed three steps to find, identify, and chart all the plays on which the rule was put into effect.

Step one was to review narrative play-by-play reports for every game in the four-season period from 2010 to 2013,²¹ as reported on a number of web sites.²² This revealed every time the infield fly situation (runners on first and second base or bases loaded with fewer than two outs) arose; the number of times a batter came to the plate in each of the four possible infield fly situations (runners on first and second base with no outs; runners on first and second base with one out; bases loaded with no outs; and bases loaded with one out); and the number of fly balls caught by an infielder in those four situations. In collecting these numbers, I counted plate appearances in which there was an infield fly situation at the beginning and end of that plate appearance, but not if the situation changed during the appearance. For example, imagine a player came to the plate with runners on first and second base and one out (an infield fly situation), but the second pitch thrown to him was a wild pitch allowing

²¹ This was done with the help of a group of enthusiastic research assistants, who jumped at the opportunity to do “legal” research that involved reading about and watching baseball games. They tell me it made for great job-interview fodder.

²² See www.baseball-reference.com (last visited Apr. 10, 2014); www.retrosheet.org (last visited Apr. 10, 2014).

both runners to advance. The batter remained at the plate and there remained only one out, but runners now were on second and third base; this no longer was an infield fly situation and was not counted as such in the study. This portion of the study produced raw numbers on how often players batted in infield fly situations and provided a broad set of potential IFR calls. Unfortunately, these narrative play-by-play reports generally do not indicate whether the IFR actually was applied on any particular play.

At step two, I cross-referenced all the fly balls identified in step one against detailed coded reports of every game, maintained by the web site RetroSheet.²³ These reports record, in coded form, whether a fly ball was hit, the position of the player who caught it, and whether the IFR was invoked on the play. Comparing these reports with the data from step one provided an initial count of IFR calls, broken down by each of the four situations for each of the four seasons.

Step three entailed watching video, through Major League Baseball's web site,²⁴ of every play identified in the first two steps as a fly ball caught by an infielder in an infield fly situation, whether or not RetroSheet flagged it as an IFR call. This revealed two things.

First, and importantly, this completed the count of IFR calls. On a significant number of plays, RetroSheet did not record IFR as having been invoked, but the video clearly showed it was, either because the umpire can be seen signaling IFR (raising his right arm while the ball still is in the air) or because the announcer reported the rule was in effect. I counted a play as an IFR call if the video made clear the rule was applied, regardless of how coded reports identified the play. In addition, the videos revealed approximately fifty plays on which IFR either was not invoked or it was impossible to tell from the video (the announcers did not say anything and the umpire was not visible on the play), but on which it looked as if the fair fly ball was catchable by an infielder with ordinary effort. Importantly, this suggests that, to the extent the figures discussed below

²³ *Play-by-play Data Files (Event Files)*, RETROSHEET, www.retrosheet.org/game.htm (last visited Apr. 10, 2014).

²⁴ See, e.g., *October 30, 2013*, MLB.COM MEDIA CENTER, mlb.mlb.com/mediacenter/index.jsp?c_id=mlb#date=10/30/2013 (World Series Game 6) (last visited May 11, 2014).

are inaccurate, they almost certainly under-report the IFR; the rule may have been invoked slightly more often than this study suggests.

Second, the videos showed where on the field the ball was caught or where it fell to the ground on every play on which the IFR was called or should have been called.

I augmented this self-created study with information gathered from two advanced statistics databases. The first looked at “run expectancy,” which calculates how many runs, on average, a team is likely to score from a given base-out situation (for example, runners on first and second base with one out) until the end of that inning. The second looked at the frequency of strikeouts in all four infield fly situations.

Having gathered these numbers, I explore four empirical questions about the IFR. The first is frequency – how often do infield fly situations arise and how often is the IFR applied? The second is likelihood of the evil to be prevented – how likely is a double play if, absent the IFR, an infielder could intentionally fail to catch an easily catchable fair fly ball? I measure likelihood by tracking the location of every IFR call, relying on an inference from location of the ball on which IFR is invoked to likelihood of the double play without the rule. The third question is the practical effect of the IFR (or of repealing the IFR), measured by what might change in a game absent the rule; that is, what might happen in a baseball world in which infielders are able to act on the perverse incentives inherent in the infield fly situation? Unfortunately, there is no place where baseball is played without the IFR to use as a control. Instead, I use these numbers to speculate about how the games might have played out differently – recognizing, of course, that there is no way to test that hypothetical or to truly know what might have happened in baseball games played under different rules allowing for different strategies. The fourth question is how IFR frequency and effect compares to the frequency and effect of a different baseball play governed by a limiting rule – the dropped third strike – that raises similar policy and logical concerns.

III. FREQUENCY OF INFIELDFLY FLIES

The easiest empirical question is the frequency of infield fly situations and of IFR calls. That numerical question provides the starting point for the analysis. If the game situation in which infield fly would be called – and thus the perverse incentive and risk of the extreme cost-benefit disparity the rule seeks to prevent – does not arise very often, perhaps the limiting rule is unnecessary and normatively unwarranted.

TABLE 1: TOTAL INFIELDFLY RULE CALLS, 2010-2013

Infield Fly	2010			2011			2012			2013			Totals		
	PA	IFR	%	PA	IFR	%	PA	IFR	%	PA	IFR	%	PA	IFR	%
1st & 2d-0	2658	65	2.4	2373	58	2.4	2403	52	2.2	2464	51	2.1	9,898	226	2.3
1st & 2d-1	4566	132	2.9	4532	106	2.3	4275	106	2.5	4399	115	2.6	17772	459	2.6
Bases Loaded-0	721	21	2.9	662	24	3.6	637	19	3	620	17	2.7	2640	81	3.1
Bases Loaded-1	1771	42	2.4	1677	59	3.5	1534	57	3.7	1602	51	3.2	6584	209	3.2
Totals	9716	260	2.7	9244	247	2.7	8849	234	2.6	9085	234	2.6	36894	975	2.6

Table 1 shows all IFR calls for each year (regular season and post-season) from 2010 to 2013. Each large column captures a season, while each row covers one of the four infield fly situations. Within each season, the first column shows the number of plate appearances, the second shows the number of IFR calls, and the third shows IFR calls as a percentage of plate appearances. The main column on the far right shows totals for each game situation over those four seasons. The lower right-hand box shows total plate appearances, IFR calls, and percentage for the full sample.

The IFR was definitely invoked 975 times in slightly fewer than 37,000 plate appearances. This is an average of approximately 243 calls per season on approximately 9,200 situational plate appearanc-

es per season. And it represents 2.6% of plate appearances in all infield fly situations.²⁵

The 2010 season represents the high-water mark for both IFR calls and plate appearances, with 260 calls in more than 9,700 plate appearances.

Breaking it down by game situation, the greatest number of plate appearances and IFR calls in each season (and overall) involved runners on first and second base with one out – this arose around twice as often as runners on first and second base with no outs. There also were more plate appearances with runners on first and second base (regardless of number of outs) than with the bases loaded (regardless of number of outs), producing more than twice as many IFR calls. By contrast, the percentage of IFR calls per plate appearance was slightly higher with the bases loaded, even though the raw numbers were lower. Over the full study period, the percentage of IFR calls with bases loaded was 3.2 % with one out and 3.1 % with no outs. This includes the highest mark of the study – in 2012, IFR was called in 3.7% of plate appearances with the bases loaded and one out.

Another point of interest involves plate appearances with runners on first and second base and no outs compared with plate appearances with bases loaded and one out – the situations that alternate for second-highest frequency of IFR calls. Overall, there were just seventeen more IFR calls in the former situation than in the latter (226 to 209), but in 1/3 more plate appearances. In other words, batters come to the plate more frequently with runners on first and second base and no outs than with the bases loaded and one out, but fly balls triggering the IFR were hit in the same raw numbers. A likely explanation is that the former is a common sacrifice bunt situation, meaning the batter does not try to hit the ball far and is thus less likely to hit a fly ball resulting in an IFR call.²⁶

²⁵ Prior to the study and with no statistical sense of how often the infield fly situation even arose, I guessed that IFR would be called in about 5 % of applicable plate appearances, which would have meant just under 2000 IFR calls in four seasons.

²⁶ The IFR does not apply if the batter pops up an attempted bunt. Official Baseball R. 2.00 (Infield Fly), OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_

To the extent these numbers are off, they undercount application of the IFR. Table 1 does not include approximately fifty plays over the four seasons in which neither coded game reports nor video show the rule being applied, but the rule appears to have been warranted – the ball was hit higher than a line drive, the infielder was settled under the ball and waiting for it to come down, and he easily caught the ball or was in a position to easily catch it. In other words, the infielder had sufficient control over the play that, if the rules permitted, he could have intentionally allowed the ball to fall to the ground, then picked it up to begin the double play the IFR was designed to prevent. Table 1 also does not include one fly ball, from July 2013, in which IFR was not called and a double play resulted, although the video again suggests a call was warranted.

Finally, Table 1 does not include approximately 500 fly balls on which video suggests IFR was properly not invoked. These include bunts, line drives, foul balls, and balls that were not playable with ordinary effort, usually because the infielder had to catch the ball on the run – all plays to which the rule, by its terms and its logic, does not and should not apply.²⁷ Note that I attempted to take a strict approach in coding plays, only counting a play as “should have been called” if IFR was clearly appropriate; if it was close, I accepted the non-call as correct.

The unanswerable question is what policy norms flow from these numbers. The conclusion one draws likely depends on one’s *ex ante* normative preferences about the IFR before looking at the rule’s frequency.

Someone who already considers the rule unwise or unnecessary will find confirmation in these numbers. Even accepting that there is a risk of an undesirable inequitable double play on an intentionally uncaught fair fly ball, that problematic play occurred fewer than 1,000 times in four seasons, fewer than 250 times per season, and less than 3% of the times it might have. This renders any harm *de*

baseball_rules.pdf (last visited May 11, 2014); Wasserman, *supra* note 1, at 505-06.

²⁷ See Official Baseball R. 2.00 (Infield Fly), OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_baseball_rules.pdf (last visited May 11, 2014); Wasserman, *supra* note 1, at 491, 502-07.

minimis; the “injustice,” if it is one, simply does not occur frequently enough to justify a special rule. An additional 200 double plays each year from infielders intentionally not catching fly balls is not intolerable within the game’s structure. Infrequency also means the rule likely does not affect the outcome of many innings, games, or over-all seasons. Finally, even without the IFR, infielders may not be tempted by the cost-benefit incentive; they may prefer the simple act of catching an easily catchable fly ball for one out to attempting the riskier, even if more rewarding, play of not catching that ball in search of two outs.²⁸ Fielders caught (or at least attempted to catch) the easily playable ball on all but one of the plays in this study.

On the other hand, someone who accepts the IFR as a matter of baseball’s internal structure and logic (as I concededly do²⁹) can argue that 1,000 unwanted, significantly imbalanced outcomes in four seasons are still too many, thereby justifying a limiting rule. It is enough that the cost-benefit disparity can and should be avoided in those 3% of cases and that the IFR achieves that goal. Baseball is a better game without plays that potentially produce overwhelming cost-benefit disparities, especially when the imbalance results from players intentionally acting contrary to ordinary athletic expectations and failing to perform athletic skills as expected. Rulemakers thus should retain a rule that succeeds in maintaining cost-benefit equity, even if the cost-benefit disparity it remedies is rare.

IV. LIKELIHOOD OF THE EVIL: DOUBLE PLAYS AND PERVERSE INCENTIVES

The second empirical question examines the link between the likelihood of the evil the rule is designed to remedy and the limiting rule – whether, absent the IFR, an intentionally uncaught fly ball will produce the feared double play and the consequent overwhelming cost-benefit disparity. This involves two distinct but related questions: First, how likely is the double play if the rules

²⁸ See Wasserman, *supra* note 1, at 513-14.

²⁹ See *id.* at 481.

allowed the defense to attempt it? And second, would the infielder have the incentive to intentionally not catch the ball in search of the double play and, if so, how often? Neither sub-question is empirically answerable, as both require speculating as to what would have happened in the same game played under different rules that allowed for different strategies and different player skills.

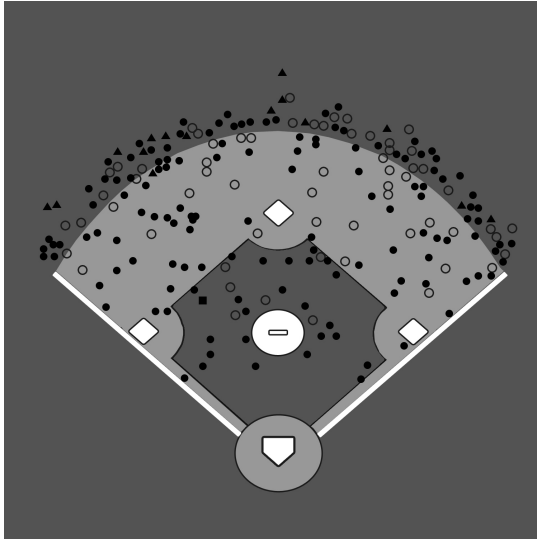
Instead, I adopt a rough empirical proxy: where on the field a fly ball is hit as an indicator of likelihood of the double play in the absence of the IFR.³⁰ A general inference seems possible. The closer to the infield or to the first target base (the base the infielder will throw to first when he picks the uncaught ball off the ground) a ball is hit, the closer to their bases the runners must remain, the shorter and quicker the throws for the double play, and thus the more likely the double play. And the more likely the double play, the greater an infielder's incentive to intentionally fail to catch the easily catchable fly ball in search of that double play.

Figures 1 through 4 below show the location of every ball on which IFR was invoked in our four-season sample, as well as the fifty plays in which it could (or should) have been applied. We thus have location information on approximately 1,025 batted balls. Each mark reflects the spot on the field where the ball was caught by an infielder, where it touched the fielder's glove, or where it hit the ground untouched (twelve balls either were dropped or fell to the ground untouched). For each season, Figure (a) shows plays with runners on first and second base and Figure (b) shows plays with the bases loaded.

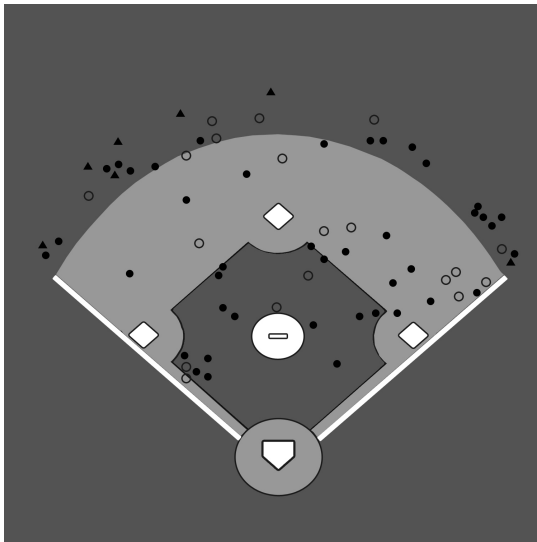
³⁰ I use this measure knowing that baseball's rules expressly reject location on the field as a relevant consideration for whether the IFR should be invoked. Official Baseball R. 2.00 (Infield Fly) cmt, OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_baseball_rules.pdf (last visited May 11, 2014).

FIGURE 1: 2010

1(A) RUNNERS ON FIRST AND SECOND BASE



1(B) BASES LOADED



(○) Ball hit with no outs

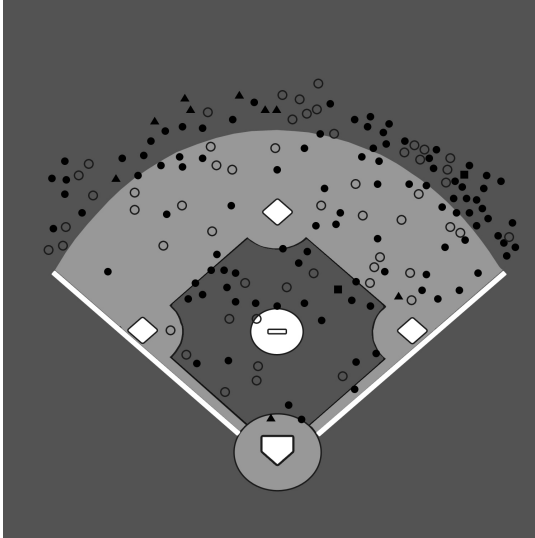
(●) Ball hit with one out

(□) Ball not caught; Infield Fly invoked

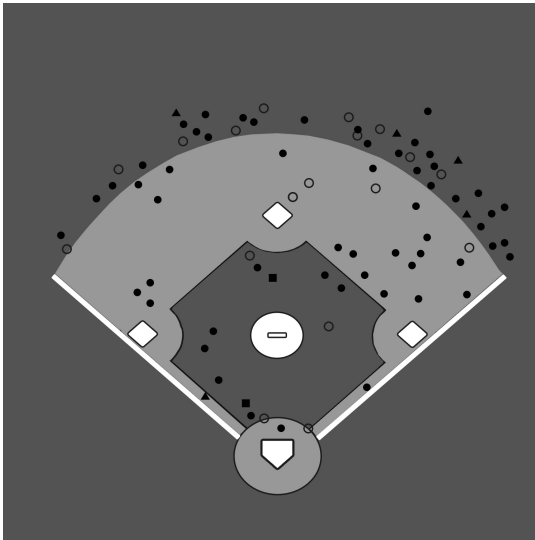
(*) Ball caught; unclear if Infield Fly was applied

FIGURE 2: 2011

2(A) RUNNERS ON FIRST AND SECOND BASE



2(B) BASES LOADED

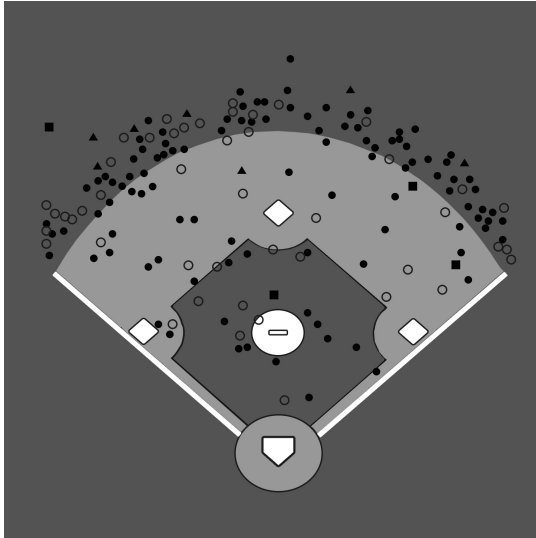


- (○) Ball hit with no outs
- (●) Ball hit with one out

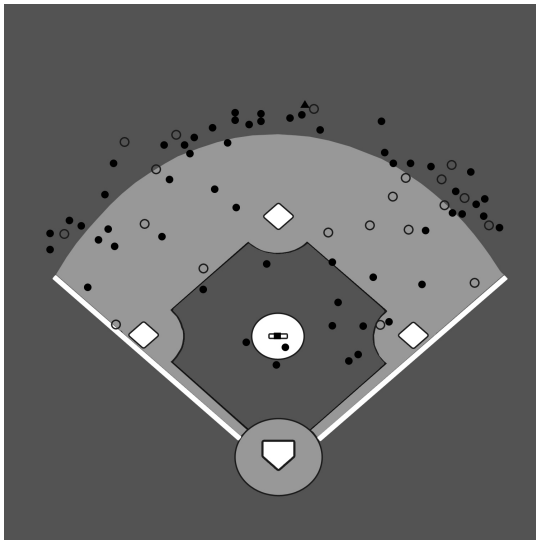
- (□) Ball not caught; Infield Fly invoked
- (*) Ball caught; unclear if Infield Fly was applied

FIGURE 3: 2012

3(A) RUNNERS ON FIRST AND SECOND BASE



3(B) BASES LOADED



(○) Ball hit with no outs

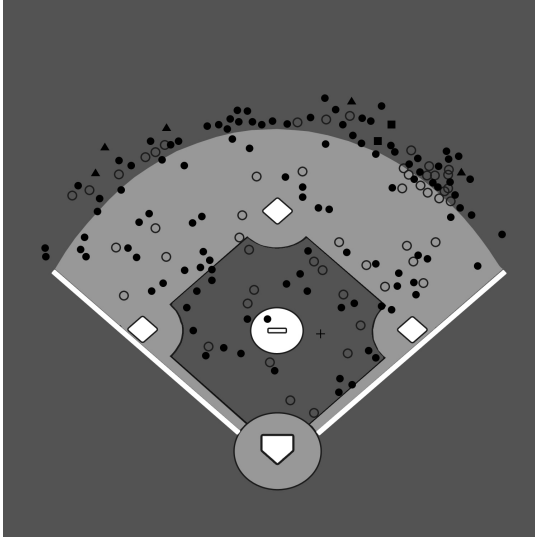
(●) Ball hit with one out

(□) Ball not caught; Infield Fly invoked

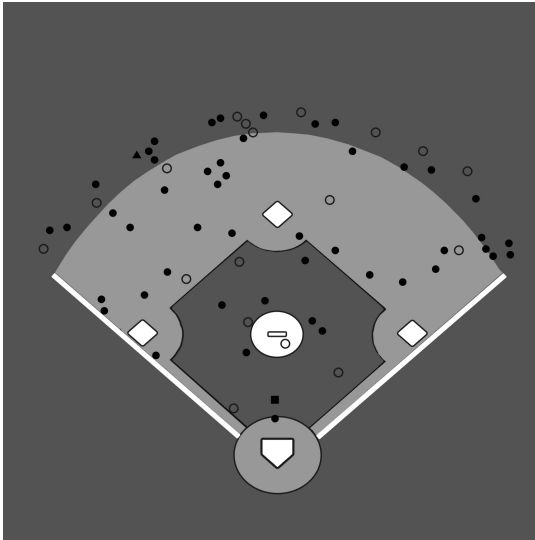
(*) Ball caught; unclear if Infield Fly was applied

FIGURE 4: 2013

4(A) RUNNERS ON FIRST AND SECOND BASE



4(B) BASES LOADED



- (○) Ball hit with no outs
- (●) Ball hit with one out

- (□) Ball not caught; Infield Fly invoked
- (*) Ball caught; unclear if Infield Fly was applied

There is a fairly wide distribution of balls across left, center, and right fields and the infield grass, infield dirt, and outfield grass, with balls bunched in different areas. The distributions are fairly consistent across the four seasons, with a few small outliers. Figures 3a and 3b show that 2012 had fewer balls hit on the infield dirt. Figure 2a shows that in 2011 there were more balls hit into the shallow outfield on the right side than the shallow outfield on the left side. And Figures 4a and 4b show very few balls hit along the right-field foul line behind first base in 2013.

Looking at actual plays under current rules leaves much unknown about a hypothetical non-IFR world. Under current rules, infielders always want to catch the ball; they are trained by practice and repetition and the rules give them no incentive to do otherwise. This explains why all but twelve balls in our sample were caught, whether or not IFR was in effect.

We also cannot test the counterfactual of whether a double play would have resulted had infielders intentionally failed to catch any of these balls. We do not know how the ball might have bounced when it hit the ground and we do not know what the base runners would have done knowing there was a chance the ball might not be caught. Except for one, the failure to catch the ball was never intentional or strategic, so we do not regularly see infielders deliberately put themselves in position to play the ball off the ground and we do not see runners regularly look to advance to the next base. Similarly, we do not know how cleanly the infielder would have fielded the ball off the ground or whether the defense would have made two accurate throws – although we do know that infielders commit errors less than 2% of the time, suggesting a bad throw is not likely.³¹

We also do not know how good infielders might become at this play and at the new, heretofore unnecessary, skill of intentionally not catching fly balls. Infielders always want to catch the ball under baseball's current rules and have developed that talent rather than mastering the opposite. But that would change without the IFR. Infielders and teams would practice these plays, getting better and

³¹ Wasserman, *supra* note 1, at 516 & n.141.

more skillful at (paradoxically) failing to catch a batted ball, by positioning themselves so the ball drops in an advantageous way and they can pick it off the ground, covering the bases, and making the necessary throws. A successful double play becomes more likely as infielders adjust to that new system, whereas current rules remove any incentive to practice or perfect this play and the necessary skills. An infielder also is more likely to turn a successful double play on a ball he intentionally does not catch and is able to control than on a ball that he tries, but fails, to catch.

Of course, changing the rules also may change what the base runners do – perhaps they run immediately, risking that the infielder will not catch the ball and trying to beat the throws to the next bases. This, in turn, would prompt infielders to practice (and master) disguising their intent – waiting until the last instant to decide whether to catch the ball or let it fall to the ground and hoping to fool the runners or make them guess wrong.³² Importantly, absent the IFR, infielders retain first-move advantage; the infielder decides whether to catch the ball and the runners always must react, for fear of leaving too soon and being doubled off if the ball is caught. Thus, under both the current and counterfactual rules, the defense always controls the play.³³

Fortunately, we need not rely solely on counterfactuals. Our sample includes one play that illustrates the purpose and necessity of the IFR – it features an intentional failure to catch an easily catchable ball, no IFR call, and a resulting double play. It thus illustrates the precise evils that baseball’s rulemakers targeted when they created the IFR and the reason they have retained it for more than 110 years.

The play occurred in a July 2013 game between the Minnesota Twins and the Anaheim Angels; it is marked by the single plus sign (+) to the right of the pitcher’s mound in Figure 4a.

With runners on first and second base and no outs in the top of the ninth inning and trailing 1-0, a Twins player hit a low, looping pop fly to the right of the pitcher’s mound. The pitcher moved to-

³² *Id.* at 513-14.

³³ *Id.* at 495.

ward the easily catchable ball then stopped, intentionally letting the ball fall at his feet. He picked it up and threw out the batter running to first base and the first baseman completed the double play by throwing out the runner trying to advance from first to second base.

The pitcher easily could have caught this ball, but he clearly made no effort to do so and knew precisely what he was doing by not catching it.³⁴ It is true that the defense did not turn the double play the IFR is designed to prevent, which generally involves multiple base runners and not the batter. But because the ball was not hit very high in the air and fell to the ground near first base, and because the batter did not run hard to first base (likely expecting either the ball to be caught or to be called out on the IFR), the easiest initial throw was to first base.³⁵ In any event, the defense had multiple ways to gain a double play on this play. Both runners were standing one or two steps off their bases when the ball landed, with little chance of beating any throws. Had the batter run hard to first (as he is ordinarily expected to do), the pitcher simply could have turned and thrown to third base to start the third-base-to-second-base double play on the forced runners. The point is that the pitcher had every incentive to do exactly what he did in search of the overwhelming cost-benefit advantage of gaining two outs on the play, even if he initially threw to the “wrong” base.³⁶

³⁴ The umpire later justified not invoking IFR because the pitcher was not “comfortably underneath” the ball waiting for it to come down, although he acknowledged that the ball did have enough arc to fall within the rule. The video seems to confirm the arc. But it also shows that the pitcher intentionally did not run underneath the ball, precisely so it would drop at his feet, placing him in a better position to field it off the ground and throw it.

³⁵ Howard Wasserman, *Rage against the Infield Fly Rule*, PRAWFSBLAWG (Jul. 26, 2013, 9:13 AM), prawfsblawg.blogs.com/prawfsblawg/2013/07/rage-against-the-infield-fly-rule.html; Matthew Pouliot, *Isn't this why we have an infield-fly rule?*, *HARDBALL TALK* (Jul. 24, 2013, 8:01 PM), hardballtalk.nbcsports.com/2013/07/24/isnt-this-why-we-have-an-infield-fly-rule. Video of the play can be found at mlb.mlb.com/shared/flash/mediaplayer/v4.4/R10/MP4.jsp?calendar_event_id=14-348251-2013-07-24&content_id=&media_id=&view_key=&media_type=video&source=MLB&sponsor=MLB&clickOrigin=&affiliateId=&team=mlb (last visited May 11, 2014) (go to the 2:55:44 mark).

³⁶ Of course, even had IFR been invoked on the play a double play remained possible. Perhaps one of the base runners would unthinkingly have run upon seeing the ball fall to the ground, forgetting that infield fly had been called, and the pitcher could have thrown him out for the double play (with the automatic out on the batter, it would have been a tag

That double play knocked the Twins out of a potential rally late in a one-run game they ultimately lost by that score. While the outcome of the game would not necessarily have been different, having two outs and a runner on third base (the situation the Twins faced after the play) was disadvantageous to the offense and advantageous for the defense. And it was decidedly different from having one out and runners on first and second base (the situation the Twins would have faced had the umpire applied the IFR).

As with the raw quantity of IFR calls, the evidence of location is illustrative and interesting, but does not necessarily answer the policy question without resort to normative value judgments. Figures 1 through 4 function like Rorschach Tests – one can see different things in them, again likely influenced by *ex ante* preferences as to the IFR. Nevertheless, the inferential move from location to likelihood and incentive allows for some educated guesses about what might have happened on these 1,025 plays absent the IFR as a limiting rule.

The balls most likely to produce double plays are those hit on the infield grass and dirt, which represent a majority of the batted balls in our overall study and in most individual years; once these balls fall to the ground, the defense has two short throws to get the two lead runners on force outs. Double plays also are likely on balls hit just on the edge of the outfield grass, especially to the middle and left sides of the field; the initial throw to get the lead runner at third base remains short and relatively easy. This covers that large swath from the right of second base (just behind where a second baseman stands) all the way to the left-field foul line.

The double play becomes less likely on balls hit deeper into the outfield and on balls on the outfield grass near the right-field line and behind first base. We see roughly twenty such balls in each season in our sample, except 2013 (depicted in Figures 4a and 4b), which saw fewer than ten balls in that area of the field. Fewer than ten of the “should-have-been-called” plays (marked as triangles (•))

play on the runner, since he was not forced to run). But limiting rules are not designed to protect base runners from themselves – the runners bear the risk of unwise base-running decisions caused by not knowing the rules or by allowing themselves to be fooled by the defense. Wasserman *supra* note 1, at 497-98.

traveled to that area of the field in four years. Again, the further into the outfield or the further to the right side of the field the ball lands, the longer the throw to get the lead runner and the more difficult it will be to make the second throw to complete the double play. And the less likely the double play, the less incentive an infielder has to intentionally not catch the fair fly ball – if the defense gets only one out either way, the easier play is simply to catch the ball. Much may depend on the specifics of the play – the speed of the runners, the strength of the infielder's arm, how able the infielder is to set himself to play the ball off the ground and to make the first throw with his momentum moving forward.

Balls hit to the short outfield grass with the bases loaded (Figure (b) for each season) present an interesting strategic quandary for the defense, depending on whether there are no outs or one out and whether the ball is hit to the left or right side of the field. With one out, expect the defense to try for a double play that will end the inning, especially on balls hit to the left side of the field; the throws to get the runners at third and second base remain relatively short.

With no outs, however, that third-base-to-second base double play does not end the inning, meaning the lead runner scores from third base. To get the lead runner, the infielder would have to throw home, perhaps too long a throw to get the out or to allow for a second throw to complete the double play (at third or at second base, assuming the batter runs hard to first base). Again, the incentive to not catch the ball disappears; the infielder should and will catch the easy ball for the single out and have the runners remain in place. Alternatively, the defense might go for the third-to-second double play anyway, allowing the runner to score from third in exchange for two outs on the play. The wisdom of this strategy depends on the game situation – the score and the inning – and the importance of the single run.³⁷

³⁷ For example, with a four-run lead in the fifth inning, the infielder may go for the third-to-second double play and allow the runner to score, but with a one-run lead in the ninth inning, he will take the sure one out on the fly ball and keep the runners in place. Of course, defenses regularly look at score and time in the game when choosing whether to accept additional outs in exchange for allowing a runner to score or whether to attempt the

Figures 1 through 4 appear to validate one common criticism of the IFR – over-inclusiveness, not only as written,³⁸ but also as applied. Accepting the inference from location to likelihood of the double play, IFR was invoked on at least some balls in our sample when there was no realistic possibility of a double play and thus no real incentive for the infielder to intentionally fail to catch the ball in pursuit of that double play. Although the rule is designed to eliminate the incentive for infielders to intentionally fail to perform the expected athletic skills in an attempt to reap overwhelming benefits and impose overwhelming costs, it arguably is applied even where that incentive is absent.

The most notorious example of this – and the play that triggered both criticism of the IFR and scholarly interest in defending it³⁹ – occurred in the 2012 National League Wild Card game on a ball hit well into left field (marked as a square all alone in medium left field in Figure 3a, where the ball fell to the ground untouched). The batter was called out on the IFR even though the ball was hit so far into the outfield that the runners advanced easily when the ball landed on the ground. A double play on the base runners would have been difficult given the depth of the hit, making it unlikely that the infielder ever would have intentionally failed to catch the ball.⁴⁰

This play and the one from July 2013 illustrate the competing ends of the IFR's over-inclusiveness. Even if the inequitable double play is unlikely or impossible on some plays to which IFR may ap-

play that keeps the runner from scoring. Dan Agonistes, *Playing the Infield In*, DAN AGONISTES (Dec. 7, 2005, 11:47 PM), danagonistes.blogspot.com/2005/12/playing-infield-in.html.

³⁸ Wasserman, *supra* note 1, at 512-13.

³⁹ *Id.* at 480-81; Howard Wasserman, *The Return of the Infield Fly Rule*, CONCURRING OPINIONS (Oct. 6 2012), www.concurringopinions.com/archives/2012/10/the-return-of-the-infield-fly-rule.html.

⁴⁰ Kaduk, *supra* note 10; *Infield Fly Rule Controversy: Braves vs. Cardinals Wild Card Game Includes Disputed Call*, HUFFINGTON POST (posted Oct. 5, 2012; updated Oct. 6, 2012), www.huffingtonpost.com/2012/10/05/infield-fly-rule-braves-cardinals-wild-card_n_1944240.html (includes video). Ironically, the runners advanced because the infielder tried to catch the ball; thus, he was not in a position to play the ball quickly once it fell to the ground (due to unintentional confusion between the infielder and his teammate in left field). An intentional failure to catch, for which the fielder was prepared and set and in position to play the ball, might have played out differently.

ply, it is possible, and even highly likely, on others. The numbers support this. Fewer than 100 balls in our four-year sample (namely those deeper in the outfield and on the right side of the outfield behind first base) are highly unlikely to produce double plays, as opposed to more than 900 balls (on the infield grass or dirt or in the shallow outfield on the left side) where a double play is more likely. While the incentive to intentionally not catch the ball is absent in the first set of plays, it remains present in the second set.

Whether such over-inclusiveness is a problem is again not an empirical question, but a value question – whether 900 potential inequitable double plays each year without the IFR outweigh 100 IFR-imposed automatic outs each year on plays where the rule’s targeted evil is absent. The answer again depends on the normative preferences one brings to the discussion. For a supporter of the rule, these figures demonstrate that the need to prevent a potential overwhelming cost-benefit disparity arises nine times as often as unnecessary IFR calls. Moreover, because the infielder virtually always catches the ball, the IFR-imposed automatic out typically does not change anything about the play’s outcome – the batter will be out and the runners likely remain in place either way. In addition, over-inclusiveness will vary across seasons – consider the smaller number of balls hit on the outfield grass behind first base (on which a double play is unlikely) in 2013.

This can be framed in the familiar distinction between Type I errors (“false positives,” in which a rule applies when it should not, erroneously halting desirable behavior) and Type II errors (“false negatives,” in which a rule does not apply when it should, erroneously permitting undesirable behavior).⁴¹ Rulemakers often must accept more of one type of error than the other, and the choice between them reflects a policy preference. The costs of Type II errors tend to be more noticeable and tangible, often causing rulemakers to favor rules allowing Type I errors in the interest of limiting Type

⁴¹ See Kevin M. Clermont, *Jurisdictional Fact*, 91 CORNELL L. REV. 973, 1000 (2006); Engstrom, *supra* note 2, at 683 n.220; Alan A. Fisher and Robert H. Lande, *Efficiency Considerations in Merger Enforcement*, 71 CAL. L. REV. 1580, 1586, 1669 (1983).

II errors.⁴² Other times,⁴³ rulemakers specifically target Type I errors, even at the risk of additional Type II errors.⁴⁴

For our purposes, a Type I error occurs when IFR is invoked on a play on which a double play from an infielder intentionally failing to catch the ball is unlikely, so there is no incentive to intentionally not catch the ball (as in the 2012 NL Wild Card Game). A Type II error occurs when IFR is not called when the inequitable double play is highly likely, thereby allowing the defense to gain an overwhelming cost-benefit advantage when the infielder intentionally fails to catch the ball (as with the July 2013 non-catch). Given the location and distribution of batted balls shown in Figures 1 through 4 – and using location as proxy for likelihood and incentive – it appears that not having the IFR would produce significantly more Type II errors than having the IFR produces Type I errors.

Moreover, measuring the error cost of a purportedly over-inclusive rule and choosing between the two types of errors must account for “categories of practices so rarely beneficial that it makes sense to prohibit the whole category even with knowledge that this will condemn some beneficial instances.”⁴⁵ An over-inclusive rule – one that bans all of some conduct – becomes problematic only when it somehow prohibits significant beneficial instances of the targeted conduct in addition to the problematic instances the rule is designed to prohibit.⁴⁶ Stated differently, a rule preventing even rare unwanted conduct is worthwhile, so long as it does not erroneously prohibit desirable conduct. The question is whether baseball loses something by always disincentivizing infielders from intentionally failing to catch an easily catchable ball in search of the extraordinary cost-benefit advantage, even when the circumstances of the play already remove any incentive to actually do so.

⁴² See Engstrom, *supra* note 2, at 683 n.220; Fisher & Lande, *supra* note 41, at 1671.

⁴³ Consider, for example, the recent heightening of federal civil pleading standards. *Ashcroft v. Iqbal*, 556 U.S. 662 (2009); *Bell Atlantic v. Twombly*, 550 U.S. 544 (2007).

⁴⁴ Ronald J. Allen & Alan E. Guy, *Conley as a Special Case of Twombly and Iqbal: Exploring the Intersection of Evidence and Procedure and the Nature of Rules*, 115 PENN. ST. L. REV. 1, 7 (2010).

⁴⁵ Frank H. Easterbrook, *The Limits of Antitrust*, 63 TEX. L. REV. 1, 10 (1984).

⁴⁶ Wasserman, *supra* note 1, at 512-13.

As a policy matter, the best answer is no. There are no beneficial instances of infielders intentionally failing (or declining) to catch easily catchable fair fly balls and no instances in which the game benefits from or should encourage infielders to intentionally fail (or decline) to catch easily catchable fair fly balls. The rule's only possible cost is not allowing infielders the athletic freedom to avail themselves of every strategic option, even ones involving intentional failure to perform expected athletic skills in the expected manner, thereby eliminating one cat-and-mouse game between the teams. But rulemakers must balance that freedom against overwhelming situational cost-benefit disparities on the more-frequent plays in which the double play is likely. And the continued existence of the IFR shows how rulemakers made that qualitative, rather than quantitative, choice.⁴⁷ Baseball rightly chooses to live with the small number of Type I errors under an overbroad IFR because those errors impose no additional costs to the players or to the game.

Additional concerns sometimes arise from costs associated with a rule's enforcement – what Fisher and Lande call Type III errors.⁴⁸ For the IFR, this may include umpires having difficulty identifying the plays that actually warrant application of the rule. It also may include player, manager, and fan controversy and anger resulting from a particular erroneous or disputed application – perhaps the IFR is not costless if fans respond to a particular call by hurling debris on the field and delaying the game for ten minutes.⁴⁹ But our sample does not reveal excessive enforcement costs. It shows fewer than fifty plays in four years where the IFR should have been invoked but was not or may not have been (marked as triangles (▴) in Figures 1 through 4), and only one play where the defense manufactured a double play by intentionally failing to catch such a ball. Because infielders are trained and incentivized by the IFR to catch the

⁴⁷ *Id.* at 493. Historically, the rule also was justified in terms of sportsmanship, although that has largely disappeared in the modern game. *Id.* at 492-93; Aside, *supra* note 8, at 1478-79.

⁴⁸ Fisher & Lande, *supra* note 41, at 1586.

⁴⁹ This was the response to the IFR call in the 2012 National Wild Card Game. Kaduk, *supra* note 10.

ball, the result of virtually every play is the same, meaning erroneous failure to call IFR imposes no enforcement costs.

Video does show that a handful of IFR calls arguably should not have been made under the rule as written, usually because the catch demanded more than “ordinary effort.” But many of those difficult balls were hit on the infield, close to the target bases, such that base runners had to stay close to their bases and would not have been able to get to the next base safely if the ball had fallen to the ground. Of the eleven IFR calls in our sample that were unintentionally not caught (marked as squares (□) in Figures 1 through 4), runners advanced on only two; this suggests that runners still might be doubled off on an infield fly ball, even where the infielder’s failure to catch the ball is unintentional. Thus, over-calling the IFR still maintains a useful cost-benefit balance, by preventing the defense from gaining extraordinary benefits (and imposing on the offense extraordinary costs) through its unintentional miscues.

Finally, to the extent the IFR’s over-inclusiveness is the real concern, the solution is a more narrowly tailored rule – a rule that prevents an infielder from seeking a double play on the July 2013 play, but not the play from the 2012 NL Wild Card or other balls hit into the outfield or to the right side. In other words, the solution is a narrower rule that will not cause Type I errors, rather than eliminating the IFR altogether, which would produce a flood of Type II errors.

The problem is how to draft such a rule. One obvious alternative would expressly define an infield fly in relation to the likelihood of a double play; that is, the IFR applies when the umpire determines that a double play is a possible or plausible or likely (or some other standard) result if the infielder fails to catch the ball. In other words, the touchstone is not whether the ball is catchable with ordinary effort, but whether the defense likely can turn a double play on an uncaught ball and thus has an incentive to intentionally fail to catch it.

But, as I argued previously, such a rule is impossible to administer, raising the very Type III problems about which Fisher and Lande warned. Umpires cannot determine the likelihood of a double play while the ball is still in the air and before it has hit the

ground or the runners have run.⁵⁰ For the same reasons we cannot look at the plays in Figures 1 through 4 and do more than speculate whether a double play would have resulted had any ball not been caught, umpires cannot watch any of those plays as they happen and do more than guess what might happen if the infielder does not catch the ball and the runners are forced to advance. Umpires likely would begin to use location as a pure proxy for the likelihood of a double play – IFR applies to balls in the infield but not to balls off the infield – something the current rule expressly (and rightly) eschews.⁵¹ While location functions well as a proxy absent any alternative empirical measure, the correlation between location and double play is not so definitive (given the unknowns) as to make it an effective alternative rule.

V. PRACTICAL EFFECTS OF THE INFIELD FLY RULE

Knowing the frequency and location of balls on which IFR was invoked and having some vague sense of the likelihood of a double play had infielders intentionally not caught those balls, the next question is the practical effect of the IFR and the possible effect of the rule's absence on innings and games.

The obvious way to answer this question would be to compare baseball played under the IFR with baseball played without the rule, seeing whether and how often easily playable fair fly balls are intentionally not caught to trigger double plays. Unfortunately, no such control group exists – the IFR is part of organized baseball at all levels, including Little League⁵² and overseas.⁵³ Instead, we must con-

⁵⁰ Wasserman, *supra* note 1, at 514-15 & n.132.

⁵¹ *Supra* note 30.

⁵² See *Infield Fly? Easy!*, LITTLE LEAGUE ONLINE, www.littleleague.org/learn/rules/ruleinterpretations/0709ruleinterpretationsept07.htm (last visited Apr. 11, 2014). There perhaps is some merit to the argument that, whatever the IFR's merits in professional baseball, it has no place in Little League, because there are very few balls that are presumptively catchable with "ordinary effort" by eleven-year olds. But the IFR accounts for that, by defining the rule to account for the "league or classification of leagues" involved. Official Baseball R. 2.00 (Ordinary Effort), OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/download/y2014/official_baseball_rules.pdf (last visited May 11, 2014).

⁵³ See *Infield Fly Controversy Mars Tension Filled Baseball Grudge Match*, ROCKET NEWS 24 (July

sider the games in this study from a counterfactual perspective, imagining how they might have played out without the IFR and with players free to act on perverse incentives in search of overwhelming cost-benefit advantages. Once again, it remains an untestable counterfactual, but still one that serves a useful descriptive purpose.

Recall how the IFR is designed to work. Rulemakers were concerned that infielders would intentionally fail to catch easily catchable fly balls, then turn double plays on trapped base runners (likely the two lead runners), although not on the batter, who should reach first base safely before the ball falls to the ground.⁵⁴ Because the batter is out under the IFR, the base runners are not forced to advance even if the ball is not caught; the defense gets one out on the play and the runners likely remain at the same bases. Because this is the same outcome as if the infielder catches the ball, the infielder has no incentive to intentionally not catch it. Without the IFR, on the other hand, infielders would have an incentive to intentionally not catch the ball in order to turn the double play on many of these plays; if successful, the defense gets more outs on the play, leaving fewer runners on base.⁵⁵

Comparing those two possible outcomes, the circumstances of subsequent plate appearances (the batters following the infield fly) become significantly less favorable to the offense and more favorable to the defense in the latter case – the offense has more outs, fewer base runners, fewer base runners in scoring position, and therefore a smaller likelihood of scoring runs in the inning. And if the fly ball is hit when there is already one out, that double play ends the inning, preempting subsequent plate appearances and the runs they may have produced.

For simplicity sake, I make three assumptions, reflecting the most common results on these plays. First, with the IFR, the batter is out (either on the call or the catch) and the runners remain where they are; the next batter comes to the plate in the same base-runner

16, 2012), en.rocketnews24.com/2012/07/16/infield-fly-controversy-mars-tension-filled-baseball-grudge-match.

⁵⁴ Wasserman, *supra* note 1, at 492, 494-95.

⁵⁵ *Id.* at 493-94.

situation, but with one additional out. Second, absent the IFR, the defense would turn a double play on the lead runners every time. While not true in all cases, it reflects a probable result on a substantial majority of IFR calls in our study.⁵⁶ It also simplifies the analysis. Assuming that double play, the next batter comes to the plate with one more out in the inning, one less runner on base, and one less runner in scoring position. Third, if the double play on the uncaught fly ball occurs when there already is one out, the inning ends and the next batter does not appear at the plate at all in that inning.

Consider an example. A batter comes to the plate with runners on first and second base and no outs (an infield fly situation) and hits a fly ball that is catchable by the shortstop on the infield dirt with ordinary effort. If the IFR is invoked (or the ball is caught, because that is what the IFR incentivizes the infielder to do), the next batter also comes to the plate with runners still on first and second base, only there now is one out. On the other hand, without the IFR, if the infielder follows his incentive to intentionally not catch the fly ball and turns the double play on the two lead base runners, the next batter comes to the plate with a runner on first base only and two outs in the inning.

By measuring the differences for those subsequent batters with and without the IFR, we can quantify the cost to the offense and benefit to the defense of eliminating the IFR.

One measure of that effect is the sabermetric of “run expectancy,” which calculates how many runs, on average, a team is likely to score in an inning from a particular base-out situation until the end of that inning.⁵⁷

⁵⁶ See *supra* Part IV.

⁵⁷ *Run Expectancy Matrix*, BASEBALL PROSPECTUS, www.baseballprospectus.com/glossary/index.php?mode=viewstat&stat=576 (last visited Apr. 11, 2014).

TABLE 2: RUN EXPECTANCY, 2010-2013⁵⁸

Run Expectancy	2010			2011			2012			2013		
	IFR	No IFR	Diff	IFR	No IFR	Diff	IFR	No IFR	Diff	IFR	No IFR	Diff
1st & 2d-0	0.9032	0.2251	0.6781	0.8936	0.2174	0.6762	0.9025	0.2214	0.6811	0.8815	0.2064	0.6751
1st & 2d-1	0.4506	<u>0.4939</u>	-0.0433	0.4344	<u>0.4807</u>	-0.0463	0.4391	<u>0.4886</u>	-0.0495	0.42	<u>0.4672</u>	-0.0472
Bases Loaded-0	1.5514	0.4506	1.1008	1.5344	0.4344	1.1	1.5367	0.4391	1.0976	1.5265	0.42	1.1065
Bases Loaded-1	0.7211	<u>0.4939</u>	0.2272	0.6922	<u>0.4807</u>	0.2115	0.7012	<u>0.4886</u>	0.2126	0.6809	<u>0.4672</u>	0.2137

Table 2 shows run expectancies for the batter following an easily catchable fair fly ball to an infielder in an infield fly situation. For each season, the first column shows run expectancy with the IFR, where the next batter comes to the plate with the same base-runner situation but with one more out. The second column shows run expectancy without the IFR; assuming the double play, that batter comes to the plate with one less base runner and one more out. The third column shows the difference between those two run expectancies, which reflects the cost to the offense and benefit to the defense of repealing the IFR.

Over the four seasons, run expectancy for the subsequent batter is generally higher, often dramatically so, with the IFR. When the infield fly occurs with no outs, eliminating the IFR and allowing the double play would cost the offense more than one full run with bases loaded and at least 0.67 runs with runners on first and second base. Consider bases loaded with no outs in 2013. With the batter out under current rules (either because IFR is invoked or because the infielder catches the ball), the next batter hits with the bases loaded and one out – the offense has a run expectancy of 1.5265. Absent the IFR (and assuming a double play on the lead runners),

⁵⁸ *Custom Statistic Report: Run Expectations*, BASEBALL PROSPECTUS, www.baseballprospectus.com/sortable/index.php?cid=1408077 (last visited Apr. 11, 2014), (running searches for run expectancy for every infield-fly situation by year).

the next batter hits with runners on first and second base with two outs – the offense has a run expectancy of 0.42. The difference between those figures – 1.1065 runs – is the cost to the batting team if the defense can turn that double play (absent the IFR), rather than taking the lone out with the IFR.

Measuring the run-expectancy effect of a non-IFR double play with one out is slightly trickier, because the double play ends the inning and the offense's turn at bat, so the next batter does not come to the plate in that inning. For this situation (indicated by underlined numbers in Table 2), I measured run expectancy for the next batter leading off the following inning, hitting with no one on base and no one out. Following an uncaught-fly-ball double play with the bases loaded, we find only a slight cost to the offense – approximately 0.2 runs lost in each season. And an uncaught-fly-ball double play with runners on first and second base actually produces a statistical benefit – the run expectancy is marginally higher (almost .05 runs in each season) for a batter hitting first in an inning than for a batter hitting with runners on first and second base and two outs (the situation after the single out under the IFR). Statistics aside, of course, it is hard to believe that an offensive team would prefer an inning-ending double play to having a batter hit with runners on base and two outs. Moreover, if the double play comes in the final inning of the game, that next batter never gets the opportunity to hit.

Lastly, recall the July 2013 play, discussed in Part IV, in which the defense actually turned a double play by failing to catch an easily catchable fly ball and the umpire inexplicably failed to invoke IFR.⁵⁹ How did that intentional non-catch affect run expectancy? Had IFR been invoked on that play, the batting team would have had runners on first and second base with one out – a run expectancy of 0.8815 in 2013. Following the double play, the batting team actually had a runner on third base with two outs (following the unusual first-to-second double play) – a run expectancy of 0.3527 in 2013.⁶⁰ In other words, failing to invoke IFR and allowing the defense to get the

⁵⁹ *Supra* Part IV.

⁶⁰ *Custom Statistic Report: Run Expectations*, BASEBALL PROSPECTUS, www.baseballprospectus.com/sortable/index.php?cid=1408077 (last visited Apr. 11, 2014).

double play by failing to catch the easily playable fly ball cost the offense more than half a run on that play, a significant benefit to the defense and significant cost to the offense.

A second measure examines what actually happened subsequent to each IFR call in the study, calculating the runs that might have been lost if, absent the IFR, the defense turned double plays on the 975 IFR calls in our sample.

TABLE 3: RUNS LOST, 2010-2013

Runs Scored	2010			2011			2012			2013			Totals		
	IFR	Runs	Affect	IFR	Runs	Affect	IFR	Runs	Affect	IFR	Runs	Affect	IFR	Runs	Affect
1st & 2d-0	65	27	8	58	17	3	52	25	5	51	25	7	226	94	23
1st & 2d-1	132	25	4	106	21	4	106	27	9	115	20	6	459	93	23
Bases Loaded-0	21	10	2	24	12	4	19	13	6	17	11	3	81	46	15
Bases Loaded-1	42	14	5	59	15	7	57	18	6	51	20	5	209	67	23
Totals	260	76	19	247	65	18	234	83	26	234	76	21	975	300	84

In Table 3, for each infield fly situation for each season, the first column shows the number of IFR calls (numbers imported from the same column in Table 1), the second column shows how often runs were scored in the same inning subsequent to an IFR call, and the third column shows how often the outcome of the game would have been “affected” by those lost runs. I define a game as having been affected where runs scored subsequent to an IFR call provide the ultimate margin of victory in the game. This includes games in which, absent the post-IFR runs, the winning team loses the game or the game becomes tied; it does not include games in which subtracting those runs simply widens the margin of victory for the same team (that is, the winning team wins by fewer runs or the losing team loses by more runs).

A double play on the infield fly eliminates some or all of the base runners that scored those later runs. If the double play occurs with no one out, at least some of those runners do not score, since at least one runner is no longer on base. If the double play occurs with one out and ends the inning (and the team's opportunity to score), none of those runners score, at least not in that inning. To the extent runs would have been lost and now-unscored runs represent the margin of victory, it suggests that repealing the IFR does affect game outcomes.

Teams scored runs following 300 of 975 IFR calls (not including the fifty should-have-been called plays), representing 30.8% of calls in the sample. This includes runs following 160 of 668 calls with one out (whether with runners on first and second base or bases loaded), eliminating all subsequent runs in the inning. Eighty-four IFR calls affected the outcome, in that the winning team would have lost or tied absent the post-IFR runs, including forty-six of the one-out calls (meaning no post-IFR runs would have scored in that inning).

Simply subtracting runs from the final score is an admittedly imprecise measure of the rule's effect. Again, we are assuming that each of those 975 infield flies would have produced a double play, which does not necessarily account for location⁶¹ or for the occasional, if rare, throwing error. And even allowing for a double play on every uncaught infield fly ball absent the IFR, it is impossible to say with certainty whether that would or would not "affect" game outcomes. We simply do not know how a game would have played out under different rules and what changes in score or outcome would result.

Some post-double play runs still might have scored, since some runners remain on base. For example, following a non-IFR double play with bases loaded and no outs, the next batter hits with runners on first and second base and two outs; some of those remaining runners may have scored if the inning otherwise played out the same way, meaning the team does not lose all the runs it actually scored in the inning. And even if the double play with one out ends the in-

⁶¹ See *supra* Part IV.

ning, depriving the offense of the runs in that inning, the team might have scored those same runs later in the game. More importantly, if subtracting post-infield fly runs only results in a tie game, we do not know how the rest of the game would have proceeded or who ultimately would have won.

Altering game situations also may alter subsequent plate appearances, subsequent innings, and the rest of the game, as players and teams take different approaches and strategies in changed circumstances. For example, the batting team in our counterfactual universe may have gotten base hits where they did not in the actual game, producing different scoring opportunities. Or teams might have used different pitchers or different batters, producing different opportunities and results.

Conversely, perhaps I am defining effect on outcome too narrowly – eliminating the IFR, and allowing for more uncaught-fly double plays, might affect even games in which simply subtracting runs alters the margin of victory but not the victor. Imagine Team A actually won a game 8-4, with three runs scoring subsequent to an IFR call in the fifth inning. Simply subtracting those three runs makes the final score 5-4, with Team A still winning, not a game in which I defined the IFR as “affecting” the outcome. But this now is a closer game, one that perhaps plays differently in the final four innings, as both teams employ different strategies (who pitches, who bats, and how to approach each play) that may yield more runs by one team or the other. And those additional runs might fundamentally alter the game’s outcome, including the winner.

Finally, even accepting that the outcome of those eighty-four games (especially the forty-six games with inning-ending infield fly double plays precluding all the runners from scoring in that inning) might have been different without the IFR, we still do not know which outcome is correct or preferable. And the question remains whether an effect on twenty games per year – spread among all infield fly situations over all games over the course of a season – is significant enough to justify a limiting rule. As with the raw numbers of IFR calls, the answer depends on underlying *ex ante* normative preferences about the IFR itself.

VI. DROPPED THIRD STRIKE: A BASEBALL COMPARATOR

A different way to measure the empirical necessity of the IFR is to compare it quantitatively with the one baseball play that is truly analogous in terms of cost-benefit disparity and to the one baseball rule grounded in the same policy rationales as the IFR – the dropped third strike.

It is axiomatic to baseball that “three strikes you’re out.”⁶² In fact, however, it is more complicated. A batter is not out on strikes, and becomes a runner free to run to first, if the catcher does not catch the third strike;⁶³ he is out only if the defense either tags him or throws him out on the bases. But a batter is out on strikes, and cannot run to first base, if the “third strike is not caught by the catcher” when “first base is occupied before two are out.”⁶⁴

The dropped third strike rule applies whenever at least first base is occupied with fewer than two outs, where the batter running forces at least one base runner to advance; this covers all four IFR situations.⁶⁵ But the rule does not apply if the ball is dropped whenever first base is unoccupied, because the batter running to first does not force the other base runners along. The rule also does not apply when there are two outs, because the defense gets the same result – one out to end the inning – whether the catcher catches the third strike or drops it to get the out on one of the runners.

The rule governing the uncaught third strike is a limiting rule, grounded in the same cost-benefit logic as the IFR. Absent the rule, a catcher could intentionally drop a third strike, allowing the batter

⁶² JACK NORWORTH & ALBERT VON TILZER, *TAKE ME OUT TO THE BALL GAME* (York Music Co. 1908).

⁶³ Official Baseball R. 6.09(b) OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_baseball_rules.pdf (last visited May 11, 2014).

⁶⁴ Official Baseball R. 6.05(c), OFFICIAL BASEBALL RULES, mlb.mlb.com/mlb/downloads/y2014/official_baseball_rules.pdf (last visited May 11, 2014).

⁶⁵ It also applies in four other game situations – (1) runner on first base with no outs; (2) runner on first base with one out; (3) runners on first and third base with no outs; (4) and runners on first and third base with one out. For purposes of comparing this rule to the IFR, we can ignore these four situations, because IFR would not apply in any of them.

to run and forcing the base runners to advance. The defense now can get a fairly easy double play (and perhaps even a triple play) on two base runners or on base runners and the batter – all because the catcher intentionally fails to catch the ball.⁶⁶ Like the IFR, the dropped third strike rule eliminates the opportunity (and thus the incentive) for the defense to gain an overwhelming benefit and to impose an overwhelming cost on the offense by intentionally failing to perform the expected athletic skills in the expected manner. And like the IFR, it does so by imposing an outcome on the play – one out on the strikeout, runners can remain in place – that would follow from the catcher performing the expected athletic skill and catching the ball for the strikeout.⁶⁷

The dropped third strike rule is logically problematic for IFR critics, since the rules are cut from the same normative policy cloth – both seek to prevent the defense from gaining an extraordinary and inequitable cost-benefit advantage by intentionally failing to catch easily catchable balls, as fielders ordinarily want and are expected to do. If the IFR is an unwarranted limit on clever strategic play that should be eliminated, then the dropped third strike rule is a similarly unwarranted limit on clever strategic play that also should be eliminated.⁶⁸

Unless, of course, empirical evidence demonstrates salient differences between the plays or the limiting rules, such that it makes sense to retain one rule while eliminating the other.

⁶⁶ Wasserman, *supra* note 1, 498-99.

⁶⁷ *Id.* at 499-500.

⁶⁸ *Id.* at 500.

TABLE 4:
STRIKEOUTS IN INFIELD FLY SITUATIONS, 2010-2013⁶⁹

Strikeouts	2010			2011			2012			2013			Totals		
	PA	K	%	PA	K	%	PA	K	%	PA	K	%	PA	K	%
1st & 2d-0	2658	418	15.7	2373	370	15.6	2403	402	16.7	2464	421	17.1	9,898	1611	16.3
1st & 2d-1	4566	866	19	4532	792	17.5	4275	817	19.1	4399	823	18.7	17772	3298	18.6
Bases Loaded-0	721	109	15.1	662	122	18.4	637	100	15.7	620	110	17.7	2640	441	16.7
Bases Loaded-1	1771	330	18.6	1677	291	17.4	1534	257	16.8	1602	301	18.8	6584	1179	17.9
Totals	9716	1723	17.7	9244	1575	17	8849	1576	17.8	9085	1655	18.2	36894	6529	17.7

Table 4 shows strikeouts in each of the four infield fly situations for each year (regular season and post-season) from 2010 to 2013. For each season and situation, the first column shows the number of plate appearances (numbers drawn from the same columns in Table 1), the second column shows the number of strikeouts, and the third column shows strikeouts as a percentage of plate appearances. The large column on the far right shows total figures for each game situation over those four seasons. The lower right-hand box shows total plate appearances, strikeouts, and strikeout-to-plate appearance percentage for the full study.

Table 4 shows that strikeouts occur with substantially greater frequency than infield fly balls. There were 6,529 strikeouts in fewer than 37,000 plate appearances in four seasons, more than six times the 1,025 fly balls on which the IFR was or should have been called. This represents 17.7% of situational plate appearances, compared to less than 3% for infield fly balls. In the most common situation of runners on first and second base with one out, there were 3,298 strikeouts, representing more than 18% of plate appearances,

⁶⁹ See *Team Batting Split Finder*, BASEBALL-REFERENCE.COM, bbref.com/play-index/split_finder.cgi?type=b&class=team (last visited Apr. 11, 2014) (running searches for strikeouts in every infield-fly situation by year).

more than seven times the 459 IFR calls in the same situation. We see similarly wide disparities between strikeouts and infield flies in all four overlapping game situations.

Again, that still leaves the question of what normative conclusions to draw from the numbers. Does the large disparity between strikeouts and infield fly balls – both in raw numbers and as a percentage of plate appearances – undermine the validity or necessity of the IFR? One might suggest (contrary to my previous normative argument⁷⁰) that the numerical gap shows that the dropped third strike rule is necessary even while the IFR is not. The feared inequitable double play from an intentionally dropped third strike would occur so much more frequently, both as a percentage of total plate appearances and relative to the same harm resulting from dropped infield flies. The frequency of strikeouts highlights the relative infrequency of infield flies, thus demonstrating the *de minimis* nature of any cost-benefit disparity from that small number of additional inequitable double plays. An inequitable cost-benefit exchange arising 17% of the time might be worth a limiting rule, even if an inequitable exchange arising less than 3% of the time is not.

The dropped-third-strike double play seems particularly obvious and likely compared with the double play on an intentionally uncaught infield fly ball, given the many uncertainties about those plays.⁷¹ The double play on a dropped third strike is simple (assuming no throwing errors) if the drop is truly intentional and controlled – the catcher knocks the ball down at his feet, then easily picks it up and throws to any base to start the double play on one or more of the base runners⁷² who remain trapped at their bases⁷³

⁷⁰ Wasserman, *supra* note 1, at 501.

⁷¹ *Supra* Part IV.

⁷² The double play is at its absolute easiest with the bases loaded, as the catcher can pick up the ball laying at his feet and step on home plate for the first out before throwing to any base to complete the double play. Wasserman, *supra* note 1, at 498. A triple play is possible, even likely, if the bases are loaded with no outs. *Id.*

⁷³ The one hope for the offense is that the runners were moving on the pitch, which would take away the double play. Of course, knowing the runners are already running, the catcher would catch the third strike for the strikeout, and try to complete the double play by throwing out the stealing base runner.

and/or on the batter. There is no uncertainty and no need for judgment calls, as with the IFR; no judgment is necessary to know that there are two strikes on the batter, a force is in effect on one or more base runners, and the catcher did not catch the third strike.

On the other hand, that one rule gets invoked more frequently than another does not tell us anything about the validity or necessity of either rule, including the less-frequently invoked one. The IFR and the dropped third strike rule are not mutually exclusive or in competition with one another; they apply to similar game situations and are designed to prevent similar harms, although they cover distinct events. In fact, we might combine Tables 1 and 4 to argue that the two rules together prevent the defense from ever creating an overwhelming cost-benefit disparity in infield fly situations by intentionally failing to perform expected athletic skills in the expected manner; they together cover a significant number of plays – approximately 7,500 over four seasons, representing 20% of all situational plate appearances.

Ultimately, this again draws us back to qualitative questions lacking a quantitative answer. After all, one could minimize the effect of dropped third strikes and that limiting rule; even if substantially more frequent than IFR calls, they still represent only 17% of all plate appearances in these game situations, nowhere near a majority. The debate returns to when a (purportedly) overwhelmingly inequitable outcome warrants a limiting rule, especially when the limiting rule otherwise imposes no costs. That remains a normative question, regardless of whether that outcome occurs on many plays, few plays, or even one play.

CONCLUSION

Sabermetrics famously entails using advanced statistics and statistical methodology to better evaluate player performance and value.⁷⁴ While the statistics and analysis here are not advanced, this paper reflects a similar effort to employ statistical analysis to evalu-

⁷⁴ MICHAEL LEWIS, MONEYBALL: THE ART OF WINNING AN UNFAIR GAME 82 (2003); Birnbaum, *supra* note 3.

ate the rules baseball imposes on itself. If law can be studied empirically, so can the law of baseball.

Ultimately, the numbers and figures in this study are inconclusive. Or, more precisely, they are conclusive, but only to the extent they are consistent with whatever *ex ante* normative policy preference a person holds and wants to bring to the discussion of the IFR. The debate, and one's position in the debate, remains qualitative rather than quantitative, and any effort to measure the latter inevitably runs into the former. Nevertheless, these numbers offer a descriptive picture of how the IFR operates as an integral, longstanding, and continuing part of the game of baseball.