The Big Leagues

The Economics of Sports

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2 INTRODUCTION

Congratulations, you are now the owner of a major sports franchise in the Big Leagues! You will be responsible for making every decision facing your team, from where to locate to whom to draft. In this section is a basic introduction to the game. Next, we will go over the rules of the game, then how some of those rules can be changed as an action of the league. In the last section of this rulebook some additional notes and strategy suggestions will be discussed. To keep things clear, you will always we referred to as *owners*, while the fictional athletes you employ are referred to as the *players*.

The Big Leagues is a game of entrepreneurship, economics, politics, industrial organization, and statistical acumen. As an owner, you will need to both compete and collude with other owners to put together a team that is both dominant on the field *and* profitable. It is no easy task, but it should be said at the start that while this game appears at first glance to be overly complicated, it gets smaller the more you play it.

The Big Leagues consists of two major components: team management and league building. As managers, you will need to field a team of five players acquired through the draft, free agency, or through trades with other teams. You will also have the option to build a backbench of up to three players who can be substituted in when your starting players falter. To support these players, you will also hire a coach whose special traits bring additional benefits, and you'll select a General Manager who orients your team to a specific long-run strategy. Once set, your team will play the teams of the other owners in a 56-game season, and those teams with the best records will go on to the playoffs.

You will also be responsible for managing your team's finances and resources. This means building a stadium, setting ticket prices, and selecting actions which can produce a wide range of benefits from upgrading your stadium to improving the performance of your players. On the financial side, you will also have to negotiate contracts with players and maintain your stadium.

The second major component of The Big Leagues, league building, involves changing the rules which govern the owners. Most of the rules covered in this rulebook are immutable and cannot be changed. These are the rules about how the universe of Big works. They are like the laws of physics for this game. They are written into the formulas and code of the spreadsheets you will play on. However, anything that isn't written into the formulas and code of the spreadsheets is fair game.

You and your fellow owners will need to create a set of rules that align the self-interest of the owners with the general interest of the league. Certain elements of this game, from performance enhancing drugs to free agency to coaches to trades are not always beneficial to the bottom line of other teams. By writing new rules, and enforcing those rules with fines and other punishments, the owners of the league can try to minimize loss and maximize gain. Of course, some rules may benefit some more than others, so you'll want to keep a sharp political eye.

In total, 10 seasons will be played, hundreds of players will come through the ranks, and billions of dollars will be made. Good luck!

3 Rules of the Game

What follows are considered the "hard rules" of the game. That is, these are the rules that cannot be changed by the owners. You can think of them as the "laws of physics" in our game's universe. They are how everything works. Rules that can be changed, and how to change them, are discussed in section 4.

3.1 The Commissioner

The commissioner of the Big Leagues is Dr. Brian Goegan, Ph.D. He, and he alone, has the authority to change the rules stated here and may do so at his discretion. Dr. Goegan is the sole arbiter of what is allowed, and the settler of all disputes.

3.2 League Formation

Leagues can be formed from the Commissioner Portal spreadsheet in the "Startup" tab.

Team Data				Stadium Data							Owners
Team	Name	City	City Value	Name	Seats	Boxes	Total Cost	Public Funding	Team Funding	Tax Rate	Emails

Each group of owners should be assigned a team number running from 1 to 30. If there are fewer than 30 teams, the remainder will be operated by the computer. In order of team number, the Commissioner will enter in the information for each team, including the **team name**, **city**, **stadium name**, **seats**, **boxes**, and percentage of **public funding** for the stadium. The Commissioner will also need to enter in the **email addresses** of the owners for each team so that a link to their spreadsheet can be sent out. Note that this order means team 001 will choose their city first, and team 030 will choose their city last. This draft order will be reversed when drafting players in season one to balance out. If a team is to be controlled by a computer, the Commissioner will make these decisions for the team.

3.3 CITIES

Teams can choose to locate in one of 50 markets. Each market has a **City Value** (**CV**) which contributes to a team's fan base. These values correlate roughly to the metropolitan size of each city. If more than one team locates in a city, the CV is divided evenly among the teams located there.

City/Region	City Value
New York	24
Los Angeles	18
Chicago	12
London	10
Washington	10
Mexico City	9
San Francisco	9
Tokyo	9
Boston	8
Dallas	8
Philadelphia	7
Miami	7
Houston	7
Toronto	6
Atlanta	6
Detroit	5
Seattle	5

City/Region	City Value
Phoenix	5
Montreal	4
Minneapolis	4
Cleveland	3
Denver	3
San Diego	3
Vancouver	3
Portland	3
Orlando	3
St. Louis	3
Tampa	3
Pittsburgh	3
Sacramento	3
Charlotte	3
Kansas City	2
Salt Lake City	2
Columbus	2

City/Region	City Value
Indianapolis	2
Las Vegas	2
San Antonio	2
Cincinnati	2
Milwaukee	2
Raleigh	2
Nashville	2
Austin	2
Greensboro	2
Providence	2
Jacksonville	2
Hartford	2
Louisville	1
New Orleans	1
Memphis	1
Oklahoma City	1

If, for example, only one team locates in New York, their **CV** would be 24. If two teams locate their, they would split this value, and each team would have a **CV** of 12. With three teams, the **CV** would be 8, and so one with additional teams. There is no limit to the number of teams that share a city, but there is a limit to the number who can share a stadium (4).

3.4 STADIUMS

To play, teams need stadiums. Stadiums can be built in any of the listed cities and can be built to any size. When building a new stadium, teams must determine the number of regular seats the stadium will hold, and how many luxury boxes will be available. These choices cannot be changed once the stadium is built, but methods of adding seats are available at an extra cost.

3.4.1 Construction Costs

The cost to construct a new stadium is $15,000 per regular seat and $500,000 per luxury box. For example, a 60,000-seat arena with 100 luxury boxes would cost $900,000,000 + $50,000,000 = $950,000,000 to build. Once built, the only changes that can be made are the ones described in the sub-sections below. Stadiums are always considered to be owned by the team, even if a city pays for most of the construction costs. Teams are free to sell or rent their stadium to other teams.

3.4.2 Stadium Deals

Teams can negotiate a deal with their host cities to receive financial support for construction of their stadium. Cities levy a tax rate on profits earned by the team and this rate is set according to a simple formula based on the financial supported requested and the city value. That equation is as follows:

$$T = \frac{Financial\ Support}{2{,}500{,}000{,}000 - 100{,}000{,}000 * CV}$$

Here T is the tax rate on profits, $Financial\ Support$ is the cost of the stadium paid by the city, and CV is the city value faced by the team[1]. As an example, suppose there were three teams in Los Angeles, and one of those teams wanted to build a $1 billion stadium. Their city value is 18/3 = 6. If they want the city to give them $500 million towards the building of this stadium, then the city will levy a 26.32% tax on all that team's future profits earned while located in that city.

3.4.3 Stadium Grades

A new stadium starts off with a grade of 20 and loses one point each season. Stadium grades are an important component of demand for tickets to games. A higher stadium score draws more fans to games. The stadium score can be increased through upgrades constructed by spending an action (described later).

3.4.4 Upkeep

Stadiums degrade over time, which is not only reflected in the decay of the stadium grade, but also in the need to pay upkeep costs. The general cost of operating the stadium is $200 per seat, $20,000 per luxury box, and $200,000 per stadium score. For example, a 65,000-seat stadium with 100 luxury boxes and a Stadium Grade of 25 would cost $13,000,000 + $2,000,000 + $5,000,000 = $20,000,000 per season to operate.

[1] The city value divided by the number of teams located in that city.

3.4.5 Renovations and Modification

Stadiums can be renovated and returned to their highest grade. The cost of renovation is determined by the following formula:

$$\$20{,}000{,}000 * \ln(Age + 1)$$

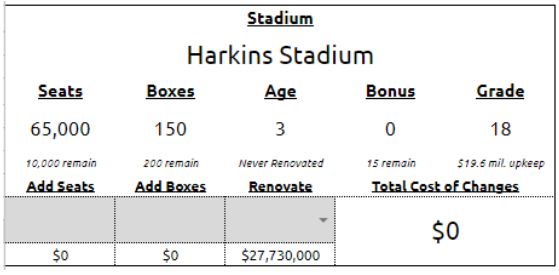
Or in words: $20 million multiplied by the natural log of the age of the stadium plus one. The effect of renovation is to set the age back to 1, returning the stadium to a grade of 20 plus whatever other bonuses have been previously applied to the stadium. You do not lose any stadium upgrades when you renovate. However, the renovation does not take effect until the season after it is selected.

At the start of a season, teams can choose to add seats or luxury boxes to their already built stadium. Additional seats cost $20,000 each, while additional luxury boxes cost $1,000,000 each. The total expenditure on these expansions across all seasons for a single stadium cannot exceed $200,000,000. If a team adds 10,000 seats to their stadium, they are not able to add any new luxury boxes. Likewise, if a team adds 200 luxury boxes to their stadium, they cannot add any new seats.

Alternatively, a team can convert seats into luxury boxes and vice versa. It costs $5,000 to remove a seat, and $250,000 to remove a luxury box. You must remove 50 seats to build one luxury box and vice versa. The price of replacement is the same as above. These costs do not count toward the $200 million cap on stadium expenditures.

For example, suppose we started with a 60,000 seat / 100 box stadium, but we soon found that we need more seats. We decide to add 10,000 seats for $200 million, hitting our cap for additions to the stadium. Soon after we find that we would benefit from having more luxury boxes, even at the expense of fewer seats, and so we decided to convert what is now a 70,000 seat / 100 box stadium to one with 150 boxes. To make room for the extra 50 luxury boxes, we need to give up 2,500 regular seats (50 per box). To remove those seats, we will pay 2500x5000 = $12,500,000. Then to construct the 50 new boxes, we will pay an additional $50,000,000 for a total of 62,500,000 for the conversion.

3.4.5.1 Making These Changes in the Team Portal



To renovate or make modifications to your stadium, you will use the "Stadium" tile in the "Team" tab of the Team Portal. This tile will show all your stadium information. To add seats or luxury boxes, simply enter in the number you want to add in the grey box underneath "Add Seats" or "Add Boxes" respectively. To renovate your stadium, select "Yes" from the dropdown menu underneath "Renovate". To remove seats or boxes, simply enter in a negative value for the changes. For example, to remove 100 seats, you would enter in "-100" in the grey box underneath "Add Seats".

3.4.6 Sharing a Stadium

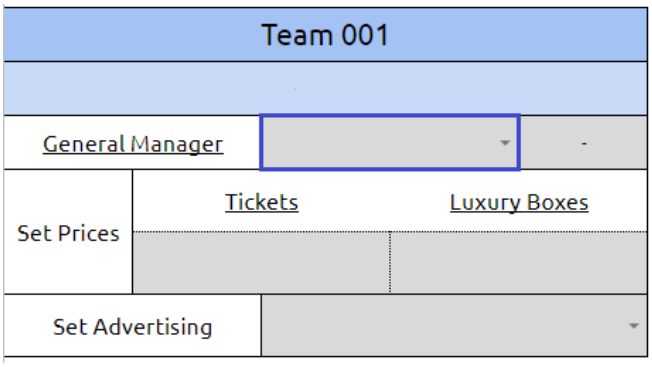
Teams located in the same city may come to an agreement about the sharing of a stadium. Team's may split the costs of the stadium however they would like, but must negotiate with the city individually. For example, if two teams agree to split the cost of a $1 billion stadium in Chicago (and assuming they are the only two teams located in that city), each team can ask the city to finance any portion of their $500 million share. One team might choose to finance only half that amount, and ask the city for $250 million, which would result in a tax rate of 13.16%. The other team might ask for the full $500 million, giving them a tax rate of 26.32%. Teams must also pay their own upkeep costs, which are not reduced. A maximum of four teams may share a stadium.

3.5 General Managers

The first employee that team owners must hire is a General Manager. GMs play a similar role on a Big Leagues team as they do in other professional sports, they set the tone and mission of the franchise. Unlike other hires, owners do not need to worry about the market for GMs. Instead, at the start of each season, owners simply choose which GM trait they are setting for their franchise. Those traits are as follows:

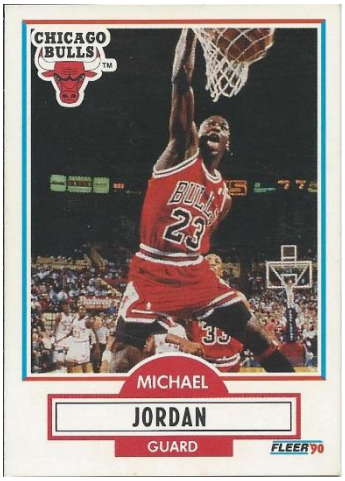
Fixer	Raises the threshold of PED accusations to 99% and unlocks '*Bribe*' actions.
Facilitator	Gives the team two additional actions for the season.
Farmer	Unlocks *Farm System* action, allowing the team to train non-starting players.
Promoter	Unlocks all the *Promotions* actions.
Recruiter	Provides a +2 bonus to all player contracts.
Scouter	Reduce EPV error by 50%.
Suitor	Disables all suit effects on players.
Trainer	Unlocks *Personal Trainers* actions and can train one player per action.

You can select your GM in the "Team" tab of the Team Portal spreadsheets where it says "General Manager". Once selected, a link will appear in the adjacent cell to "Lock Your GM". The benefits of a GM will not be applied until the choice is locked in. This will happen automatically later in the season, but a team may wish to do it themselves so that the benefit is applied before events like the draft or to begin selecting actions.



The specifics of what each General Manager does will be covered in more detail in the following sections.

3.6 PLAYERS



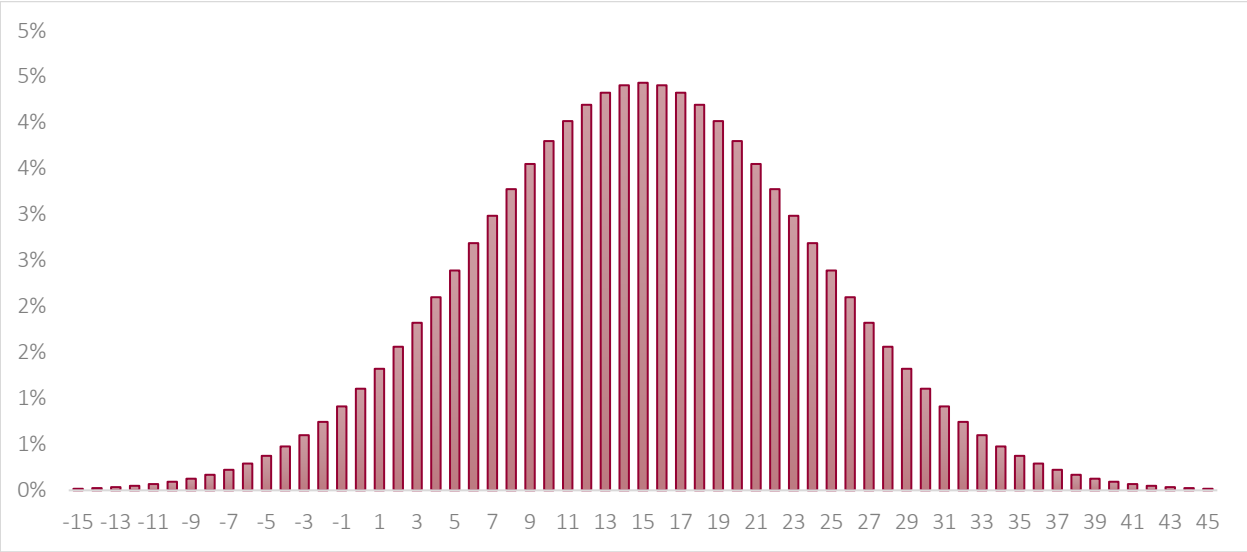
Each team will need to field a minimum of five starting players, with the option of fielding three additional players known as the bench players. Each player as accompanied by three statistics: **age**, **player value**, and **suit**. Together, these three factors will determine the player's contribution in each game that they play in. Each of these factors is explained below.

3.6.1 Age

A player's age can range from 18 to 30 and impacts their development. Most players will enter the game of Big at the age of 22, but some in the first season will be older, while some seen in later drafts may be younger. All players retire after age 30, or when their player value drops below 8.

3.6.2 Player Value

The **player value** or **PV** is the player's average score per game before any adjustments are made. Initially, these values range from 10 to 20, where a 10 would mean the player scores an average of 10 points per game and a 20 means they score an average of 20 points per game. The player's actual score in each game will be determined randomly, according to the normal distribution with the given mean and a standard deviation of 9. For example, for a PV of 15, the score distribution will look like this:



One important thing to note is that scores for individual players are drawn from the normal distribution, so the final values can be negative, and they will be precise to 13 decimal places.

The player value will never be known precisely to anyone. Owners will only have access to an estimate of this player value made with error, but can also make conclusions based on the real performance of the players in games, which can be tracked in the Community Viewer.

3.6.3 Suits

Each player also comes with a **suit** (♠, ♥, ♦, and ♣). These suits, when mixed in different ways, impact the performance of the players on the team. Those impacts are as follows:

Spades (♠) are typically highly skilled players who tend to dominate the game, but they don't mix well with other spades. Each spade on a team subtracts one point from the Player Value of each other spade on the team. For example, if my team has only one spade on it, then that spade suffers no penalty. If my team has two spades on it, then both of those players suffer a -1 penalty to the player value. If there are three spades, each of them suffers a -2 penalty. If there are four or five spades, then the penalty for each of them suffers a -3 and -4 respectively. Note that this means if I had five players, all spades and all with a player value of 20, their total player value would be reduced from 100 to 80.

Hearts (♥) find their glory in the success of the team, and play with everything they have. Each heart adds one point to the Player Value of each other non-heart on the team. This means that a team with just one heart on it would get a +4 bonus, +1 for each of the other four players. Likewise, a team with 2 hearts on it would get a +6 bonus, +2 for each of the other 3 players. With 3 hearts, the bonus is also +6, and with four it is +4. A team of 5 hearts receives no bonus.

Diamonds (♦) fill in gaps in a team, and are at their best when they fill a unique role on the team. However, tend to get in each other's way. A team with just 1 diamond player gets a +2 bonus, and that bonus is reduced by one for each additional diamond on the team. So, a team with 2 diamonds gets a +1 total, a team with 3 gets no bonus, a -1 for four diamonds, and a -2 for 5 diamonds.

Club (♣) players support the team's star, aiding spades on the field. Each spade on a team receives a +1 bonus for each club on the team. This can prove a bonus for a single spade, or it could cancel out the multiple-spade penalty. For example, a team of 3 spades and 2 clubs would receive no bonus because they would get a -6 penalty for the 3 spades (-2 each) and a +6 penalty from the 2 clubs (+2 to each spade). However, a team of 1 spade and 4 clubs would get a +4 bonus, because each of the 4 clubs gives the sole spade a +1. Or, 2 spades and 3 clubs would give a net of +4 (-2 for the spades, and +6 for the clubs).

Only the suits of the five starting players are taken into consideration when determining bonuses or penalties, and those bonuses or penalties are applied to the team for the entire season, regardless of substitutions. For those doing the math, you will note that the maximum total bonus for suits is 9, while the minimum is -20. Regardless of what the bonus would be, teams who select the **Suitor** GM will see the bonuses and penalties due to suits for all players set to zero.

3.6.3.1 How Values and Suits are Assigned

When the league is formed, each of the 780 players in the game will be randomly assigned a player value and age, and then given a suit based in part on their player value. For this reason, you should not read too much into the names of the players, which were drawn from the real (and fictional) world of sports.

3.7 TEAMS

Your team will consist of five **starting players** and up to three **bench players**. Your score in a particular game will be determined by calculating the individual contributions of the five starting players and adding them together with their bonuses. The table below gives an example:

Player	PV	Suit	Adjusted PV	Example from Single Game
Michael Jordan	20	♠	21	3
John Elway	17	♠	18	24
Roy Halladay	16	♥	16	13
Carmelo Anthony	15	♦	18	16
Russell Wilson	13	♣	14	14
Totals	**81**	**-**	**87**	**70**

With two spades, each of them face a -1 penalty, but this is canceled out by the +1 given to each of them by the heart, and then boosted by the +1 to each of them given by the club. The heart receives no bonus, but also gives it's +1 bonus to the diamond and club. The diamond also gets a +2 for being the only diamond.

The sum of these adjusted player values is 87, meaning that on average these five players will score 87 total points. In the example game provided, all the players except John Elway end up under-performing, and the team only scores 70 points. The team will win the game if their opponents score less than 70 points. Notably, these values are rounded, and ties are a statistical impossibility.

3.7.1 The Bench and Substitution

Your bench can consist of up to three players, though owners can also opt not to field a bench or to field only one or two bench players. These players will only come into play if a starting player is performing at two standard deviations or more below their adjusted player value. When that is the case, your coach will substitute in another player whose adjusted player value is higher than the reduced player value of the starting player. Keeping the table above in mind, imagine that we had the following bench:

Player	PV	Suit	Adjusted PV	Actual Contribution
Jason Kidd	14	♣	14	12
Phil Esposito	12	♦	12	14
Mary Lou Retton	12	♥	12	13

All players have a standard deviation of 9, and to get an understanding of when a player is substituted in we can look at Michael Jordan in the table from the last section. His contribution to the game was only 3 points, a full 18 points lower that his expected performance of 21 points, because he has fallen on the lower end of his distribution. This value is twice Jordan's standard deviation, and so Jordan will be benched

and replaced by the best player available, in this case is Jason Kid. This would alter the team's final score from 70 to 79, as Kidd ends up scoring 12 points for the team. Notably, it is possible for the substitute player to do *worse* than the starting player they are replacing, but luckily this is unlikely. None of the other starting players scored two or more standard deviations below their average, so only Jason Kidd will be substituted in. If, however, more than one starting player falls so far below their average, the other two bench players may be substituted in.

Two things worth noting about the bench are that bench players do not see their PV adjusted for any suit effects, and the **Substitution** coach would change things significantly. The former opens many avenues for strategy in how you stack your starting line-up and your bench. The latter would substitute poorly performing players much more often, requiring a performance just one standard deviation below the mean. Importantly, if for example Michael Jordan scored 12 points and you have the substitution coach, he would be eligible for replacement. However, only Jason Kidd would be able to replace him, as the other two have PV equal to or less than this score, making them unwise replacements.

3.7.2 Farm Players

All players signed with a team that are not starting players are **farm players**. It is assumed that these players are being groomed in some other league, still playing but not playing on the main team. As such, these players still experience development, and still must be paid whatever their contract stipulates.

3.7.3 Observing Player Performance

All players' game-by-game performance can be observed in the Community Viewer spreadsheet. The "Full Seasons" tab lists all games played to date. The score generated by the player in each position will be shown for each game. It is important to note that the record of who played in each position is kept in the "Prospectus" tab for only the most recent season. If you which to analyze a player's performance over several seasons, you will need to copy and store this data yourself.

3.8 Player Development

After each season, a player develops, which could mean growth in PV or decay. Their development is drawn from the normal distribution, with an age-adjusted mean and a standard deviation of one. Noting first that the convention N(0,1) represents the standard normal distribution with a mean of zero and a standard deviation of one, the following table describes the base rates of development:

Ages	Development Distribution
18 – 20	N(1,1)
21 – 23	N(0,1)
24 – 26	N(-1,1)
27 – 30	N(-2,1)

What this means is that players develop randomly. A 19-year-old player is expected to improve in player value by 1 for the next season, but it is possible for them to improve by more or even decay. These distributions can be altered using the *Training* or *Farming* General Manager. Below is a table giving the odds of each outcome based on the distribution:

Change	N(2,1)	N(1,1)	N(0,1)	N(-1,1)	N(-2,1)
-4	0.00%	0.00%	0.01%	0.44%	5.40%
-3	0.00%	0.01%	0.44%	5.40%	24.20%
-2	0.01%	0.44%	5.40%	24.20%	39.89%
-1	0.44%	5.40%	24.20%	39.89%	24.20%
0	5.40%	24.20%	39.89%	24.20%	5.40%
1	24.20%	39.89%	24.20%	5.40%	0.44%
2	39.89%	24.20%	5.40%	0.44%	0.01%
3	24.20%	5.40%	0.44%	0.01%	0.00%
4	5.40%	0.44%	0.01%	0.00%	0.00%

Like player value itself, a player's development is never reported. However, if a player develops into a higher or lower tier, this will be revealed by the Scouting GM.

SEASON	1	2	3	4	5	6	7	8	9	10
PV	18	19	21	20	20	19	21	21	19	16
CHANGE	+1	+2	-1	+0	-1	+2	+0	-2	-3	-

In the chart above, let's assume the player started at age 20. This would mean that their development should average a +1, and indeed at the end of the season the change was +1, pushing the player up to a 19 PV. However, now at age 21, we now expect the player to stay stagnant, but this player got lucky and drew a +2, pushing them up to a 21 PV for season 3, and so on. If the player is trained by the team using either the Trainer GM or Farmer GM, then the average of the distribution would be increased by 1 or 2 respectively, increasing the chances of a positive development draw.

3.8.1 Retirement

After the age of 30, players retire from the game of Big. Players cannot be signed to play beyond the age of 30. Players will also retire should their development result in a PV less than 8. If a player is under contract when this retirement occurs, that contracts is voided and the team is no longer responsible for paying that player for future seasons.

3.9 COACHES

Each team is required to hire a coach from the pool of available coaches. Each coach is different, and has two of ten possible attributes which modify your team's performance. Those attributes are listed in the table below:

Clutch	Adds +6 to the score in all losing games.
Fame	Adds a +5 bonus to your fan index.
Focus	Reduces the S.D. for each player by 2.
Guts	Increases the S.D. for each player by 5.
Momentum	Adds +6 to the sum of player values in the playoffs.
Road	Negates the opponents home-field advantage.
Substitution	Calls in a bench player at 1 S.D. below expected value.
Teamwork	Adds +3 to sum of player values for all games.
Underdog	Adds 40% of the difference in player values to our value.
Wildcard	Switch the suit of one of your players for 1 season.

For the Clutch, Momentum, Teamwork, and Underdog coaching traits, the scoring bonus is added to the team's total in a category separate from the player's scores. In section 3.6, the "Actual Contribution from Single Game" shows a game where the players have scored 70 points. If the coach for this team had the Momentum trait, then 3 points would be added, giving them a score of 73 points. If the coach also had the Clutch trait, and the opposing team had a total score of 75 points, then 6 points would be added to our score, for a new total of 79, enough to now win the game. If the opposing team had only scored 70 points, however, our score would remain a 73.

The Underdog trait applies its bonus only when the other team would be expected to win. In section 3.6, the adjusted PV total is 87. If our opponent had an adjusted PV total of 95, we would get 40% of the difference added (which would be 3.2 points here) to our score. The Road coach cancels the home-field advantage of your opponent, a bonus which would normally be added to their score. For example, if we play a team at their stadium, and they normally get a +3 home field advantage when playing at home, the Road coach would reduce that bonus to 0.

There are 47 coaches in all representing most of the possible pairing of these traits. When signed, coaches stay with the team until they are fired or offered a 10% higher salary than their current team is offering.

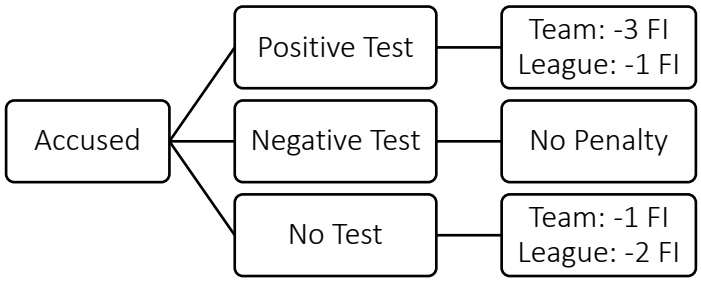
3.10 Performance Enhancing Drugs

No simulation of the world of sports would be complete without **performance enhancing drugs**, or PEDs. In the game of Big, no substance does more to enhance a player's performance than Juice. Sweet, delicious juice. For each consecutive season a player 'juices', their player value will increase by one. That is, in the first season a player juices, their player value increases by 1. If they juice in the next season, their player score will increase by an additional point, for a total of +2 to their player score. If, for any season, a player stops juicing, they will lose all their PED boosts, dropping to a +0.

Whether a player uses PEDs is entirely at the discretion of the owners, but that decision is submitted in secret, and is not revealed to anyone at any time. However, using PEDs is not looked on favorably by the fans, and the media is very unforgiving in making its accusations. The media will accuse any player whose performance is significantly better than expected. More specifically, they will accuse any player that it is 97.5% sure to be performing above their adjusted PV level. For the statistically astute, this amounts to a one-tailed t-test using an alpha of 0.025, or a two-tailed test with an alpha of 0.05.

Once a player has been accused, they have two options. First the player may attempt to clear their name by taking a drug test, though this test is not perfectly accurate. If a player *has* used PEDs during the season, there is an 80% chance that the test will detect it and a 20% chance that the test will come back negative. If the player *has not* used PEDs during that season, there is a 10% chance the test will come back positive for use, and a 90% chance it will come back negative. These errors have fundamental causes that mean repeated tests after the same season will always return the same results.

The second option is to refuse a test, and accept the accusation. This option benefits the team, but at the expense of the league. The penalties for PEDs are as follows:



Notably, league penalties apply to every team in the league, including the team of the accused player. For example, if Team 001 has a player accused of using PEDs, and they choose *not* to test that player, then Team 001 will experience a -3 total penalty to their Fan Index, while every other team in the league will experience a -2 penalty. If they test the player and it comes back positive, these penalties are reallocated to be -4 to the Fan Index of Team 001 and -1 to the Fan Indices of the rest of the teams in the league. These penalties stack as additional players are accused. These penalties are applied to the season in which the accusations are made.

It is important to re-emphasize here that these are the hard-coded rules of the game. Changes and modifications are only done in cases deemed to be game-necessary by the commissioner.

3.11 Player Contracts

Whenever you sign a new player, you will need to negotiate a contract with them. Contracts consist of three elements: salary, term, and clauses. Players grade the contract offered to them based on these elements.

3.11.1 Estimated Player Value

Each player is given an EPV based on the following:

$$EPV = PV + \varepsilon$$

Where *PV* is the player's true Player Value, or the average points per game they will score on their own, and ε is a random error term, drawn from a normal distribution with a mean of 0 and standard deviation of 3. The Scouter GM reduces the standard deviation of this error term to 2. This is, essentially, an estimate of the players skills. It is rarely exact but is correct on average.

3.11.2 Clauses

There are three different clauses that can be inserted into player contracts.

- Dismissal Clause: allows the team to terminate a player's contract at the beginning of a season, even if that contract was supposed to continue.
  - Example: The Rockets have signed Walter Peyton to a 6-year contract, but it includes a dismissal clause after 3 years. So, at the start of the 4th, 5th, and 6th year the Rockets have the option of terminating Walter Payton's contract and sending him to free agency.
- Player Option: allows a player to choose to terminate their contract with a team and become a free agent. If the option is in effect, the player will leave the team if their salary is less than 75% of the average for their estimated player value.
  - Example: The Rockets have signed Walter Peyton to a 6-year contract, but it includes a player option after 3 years. So, at the start of the 4th, 5th, and 6th year, Walter has the option to leave the Rockets and become a Free Agent. His contract pays him $17 million per year. In his 4th year, the average salary for this EPV is $20 million. Since his salary is 85% of the average, he chooses to stay with the Rockets. However, in his 5th year, the average salary for his EPV jumps to $23 million. Now making only 74% of the average, Walter chooses to end his contract at the end of the season and become a free agent.
- Reserve Clause: allows the team to re-sign a player after their contract ends for the same salary for one additional year. Teams can choose to make this clause repeatable, meaning the team could force a re-sign each year indefinitely.
  - Example: The Rockets have signed Walter Peyton to a 6-year contract, but it includes a reserve clause. At the beginning of his 7th year, Walter would normally become a free agent, but due to the reserve clause, the Rockets have the option to sign him for a 7th season at his same salary. If the reserve clause is *repeating*, then the Rockets will have this same option for the 8th, 9th, and even 10th seasons. If the reserve clause is *non-repeating*, then Walter will become a free agent in the 8th season.

A reserve clause *cannot* override a player option. If a player has an option, and chooses to leave, nothing can stop that from happening. If a team invokes a repeating reserve clause for a player with an option, that option continues. Should the player ever make less than 75% of the average for their EPV, the player will terminate the contract. Dismissal clauses also carry over when a reserve clause is invoked, but they are rendered irrelevant by the year-to-year nature of the reserve clause.

3.11.3 Player's Contract Grades

Players will grade the contracts offered to them based on the terms. To calculate the grade, follow the following procedure:

- Take the annual salary offered and divide by 1 million.
- Multiply that number the term of the contract.
- Divide that number by the player's estimated player value.
- Subtract 1 point for each year of the contract that the player can be dismissed.
- Add ½ point for each year of the contract the player has an option to leave.
- Subtract 2 points for a non-repeating reserve clause.
- Subtract 4 points for a repeating reserve clause.
- Add 1 point for each year over the age of 26 (1 point if 27, 2 if 28, etc.).
- Add 2 points if the team has the Recruiter GM.

Here are a few examples:

Player	EPV	Age	Salary	Term	Dismiss	Option	Reserve	Recruiter	Grade
Pele	17.54	27	$20 mil.	3	No	After 1 Season	No	Yes	7.42
Pete Rose	35.14	25	$45 mil.	6	No	No	Non-Repeat	No	5.68
Bill Russell	22.85	20	$30 mil.	5	After 2 Seasons	No	No	No	3.56

For Pele, I take $20,000,000 and divide by 1,000,000 to get 20. Then I multiply by the term of 3 years to get 60. Next, I divide by 17.54 to get 3.42. I add ½ point for each season of the play option. Pele is signed for 3 seasons, and has an option after the first, so he has the option in the 2nd and 3rd season. That means I add a total of 1 point for the player option to bring us to 4.42. Because Pele is 27, I would add 1 point for age. Lastly, with the Recruiter GM, I get to add 2, for a grand total of 7.42.

3.11.4 The Big League Players Association

The Big League Players Association (BLPA) mandates that all player contracts have a minimum grade of 5 at the time the contract is signed. This minimum applied to both drafted players and players signed in free agency. Once the contract is signed, it is enforced by law and cannot be violated in any way. Teams which violate the mandate of the BLPA or violate the terms of their contract will be subjected to legal fines.

The BLPA also mandates that contracts for newly drafted player not exceed 5 years in length.

3.11.5 Drafting Players

The Draft will be conducted per league rules. When a team drafts a player, they are free to write any contract they please so long as it complies with BLPA mandates. To ensure this compliance, salaries will be automatically adjusted to the minimum needed to reach 5 points for the offer.

After drafting a player, go to the "Contracts" tab of your Team Portal. You'll find that player listed at the bottom of your roster, with the status of "Drafted". Use the drop-down menus to select a contract term and clauses. Formulas have been entered to set the "Years Remaining" and "Salary".

5 Contracted Players - Total Salary: $142,445,461												
Player	EPV	Scout	Suit	Age	Status	Term of Contract	Years Remaining	Salary	Reserve	Dismiss	Option	Action
Dan Marino	11.93		♠	26	Signed	4	2	$26,098,565	No	No	No	
Henrik Sedin	10.17		♥	30	Signed	3	1	$28,508,478	No	No	No	
Moses Scurry	19.22		♣	19	Signed	4	4	$24,024,471	No	No	No	
Albert Pujols	19.89		♦	27	Signed	5	3	$22,413,079	No	No	No	
Reggie Miller	24.84		♥	21	Drafted	3	3	$41,400,868	No		No	

No
After 1 Season
After 2 Seasons
After 3 Seasons
After 4 Seasons

Once the draft has concluded, these selections will be locked in, and the player will be signed to the contract. You must offer a contract to ***every*** player that you draft.

3.11.6 Managing Your Roster

At the same time as the draft contracts are being settled, you will also need to manage the contracts signed in previous seasons. In the "Action" column of the "Contracts" tab in the Team Portals, you can select which option you would like to take with each player. Often you will be limited to only one choice, "Retain", but if there is a reserve or dismissal clause on the contract which you can activate, you may have the choice to "Release" or "Re-sign" your player. You should take the time to make this selection for every player, even if you have only one option.

3.11.7 Free Agents

Players whose draft contracts end, or who are not drafted, become Free Agents and can be signed by any team in the league. Teams bid for Free Agents in an open market each season by offering complete contracts. The player will always select the contract with the highest grade. For logistical reasons, the market for free agents opens after all draft contracts have been signed, and all clauses resolved.

3.11.7.1 How to Bid on Free Agents

You can bid on Free Agents in the "Free Agents" tab of your Team Portal. Simply enter in the salary, term (or 'years') of the contract, and select options for each of the clauses. Upon doing so, the contract will be graded. If the grade is above 5 (the BLPA minimum), then a link to "Submit Bid" will appear in the adjacent column. Open that link to submit your bid.

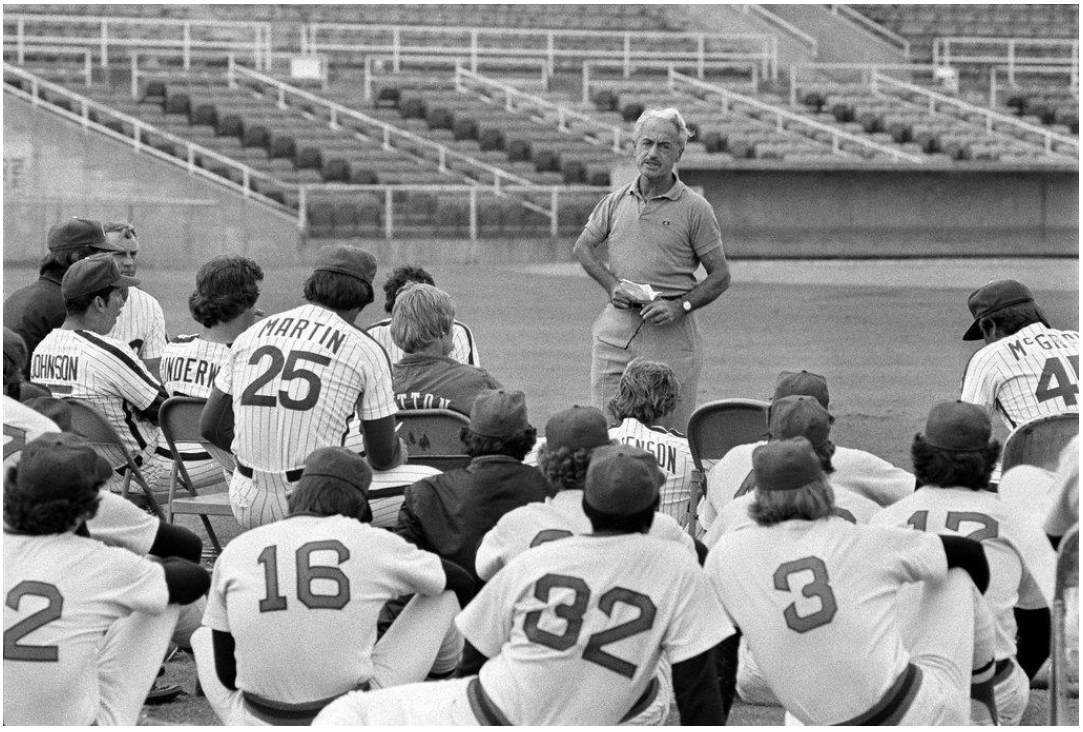
Player	EPV	Scout	Suit	Age	Salary	Years	Reserve	Dismiss	Player Option	Grade	Submit Bid	Current Leader	Leader Grade
Ivan Rodriguez	25.35		♥	22	$40,000,000	4	No	No	No	6.31	Submit Bid		
Jimmie Foxx	24.73		♠	20							-		
Antonio Gates	23.71		♠	23							-		
Bernie Williams	23.57		♣	20							-		
J.J. Watt	22.82		♠	22							-		
John Smoltz	22.20		♣	23							-		

For your convenience, the "Salary" cell offers a drop-down menu that allows you to select the salary that would result in a contract grade of exactly five. You are, of course, allowed to bid with salaries higher than this number, which you can simply enter in manually. If you do, just ignore the little red triangle that appears on the top right of the cell. It won't do anything.

When you submit your bid, the player will review it, and if it is higher than their current offer, you will be set as the "Current Leader" in the bidding for that player. You will be able to see the contract grade of the leader in the "Leader Grade" column so you know what you would have to beat to unseat them as the leader. When Free Agent bidding is locked by the Commissioner, the player will then sign with the leader.

3.11.7.2 Deleting or Changing Your Bid

If you are the current leader in the bidding for a player, you can alter your bid at any time by simply submitting a new one. This new bid will replace your old one. If you would like to delete your bid altogether, submit a blank bid.



Marvin Miller, who changed baseball forever as the Executive Director of the Major League Baseball Players Association from 1966 – 1983. When Curt Flood stood up to owners on being traded against his will, Miller came to his defense, and worked the issue to bring about free agency and a new era for America's pastime.

3.12 Actions

Teams are given two actions per season, and can spend them on the following:

Action	Requirements	Effect	Length	Additional Cost
Stadium Upgrades				
Improved Bathrooms	-	+1 Stadium Score	Permanent	$5 million
Improved Concessions	-	+1 Stadium Score	Permanent	$5 million
Jumbotron	-	+1 Stadium Score	Permanent	$5 million
Upscale Bar	*Imp. Concessions*	+1 Stadium Score	Permanent	$5 million
Hall of Fame	*Win Championship*	+2 Stadium Score	Permanent	$10 million
Improved Seating	-	+2 Stadium Score	Permanent	$10 million
Improved Sound	-	+2 Stadium Score	Permanent	$10 million
Party Deck	-	+2 Stadium Score	Permanent	$10 million
Wi-Fi	-	+2 Stadium Score	Permanent	$10 million
Promotions				
Fan Night	*Promoter GM*	+6 to Fan Index	One Season	$2 million
Family Game	*Promoter GM*	+6 to Fan Index	One Season	$2 million
Door Prizes	*Promoter GM*	+6 to Fan Index	One Season	$2 million
MVP Night	*" + Championship*	+10 to Fan Index	One Season	$5 million
Parade of Champions	*" + Championship*	+10 to Fan Index	One Season	$5 million
Home Field Advantage (HFA)				
Bribe the Refs	*Fixer GM*	+1 to HFA	One Season	$5 million
Easy Runs	-	+1 to HFA	Permanent	$20 million
Fan Factor	*Fan Index > 120*	+1 to HFA	Permanent	$50 million
Player Development				
Train Player	*Trainer GM*	+1 to single PD[2]	One Season	$5 million
Farm System	*Farmer GM*	+2 to farm PD[3]	One Season	$20 million
Concessions and Revenue				
Fan Favorites	*Imp. Concessions*	+1 SS & +1 FI[4]	One Season	$10 million
Gourmet Restaurant	-	Varies[5]	Permanent	$10 million
Beer Garden	*Upscale Bar*	+2 FI & +1 HFA	One Season	$6 million
Naming Rights	-	Varies[6]	Permanent	-
Event Planning	-	Varies[7]	One Season	-
Bribe City Officials	*Fixer GM*	½ Tax Rate	One Season	$10 million

[2] Use this action to select a player. That players gets a +1 boost to their player development at the end of the season. This can be repeated up to six times if you have the actions to spend.

[3] All players on the roster who are not among the five starting players get a +2 boost to their player development at the end of the season.

[4] +1 to Stadium Score & +1 to Fan Index

[5] The Restaurant is a gamble. It earns a variable amount of money for you each season, drawn randomly from a normal distribution with a mean of $10 million but a standard deviation of $5 million.

[6] Take your Fan Index from last season and divide by 10. Multiply by the number of seasons left in the game, and then multiply by $1,000,000. This is how much you will get for selling the naming rights to your stadium.

[7] Hold events like concerts and conventions in the off season. Revenue is 5*SS*CV*Seats. So, a new 60,000 seat stadium in Phoenix would earn $30 million in revenue.

3.13 TRADES

The trade system in the game allows **players**, **money**, and **actions** to be exchanged between teams. It is also possible for teams to arrange to exchange **draft picks**, but these trades must be made with the help of the commissioner.

3.13.1 How to Arrange a Trade

Trades must be arranged between the teams involved. Once the details of a trade are agreed upon, each team can then send the other what is theirs to send. In the Team Portal, this can be done in the "Trades" tab.

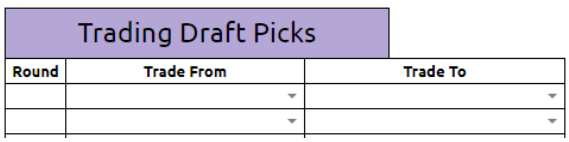
In the "Make a Trade" tile, fill in the **Player**, **Money**, and/or **Actions** sections. You do not need to fill in all of these sections if the trade does not involve all of those elements. You may also optionally add a note to the trade, which will appear in the trade log. Then select the team you are sending these items to. Once entered, a link to "Submit Trade" will appear. Open that link to send the items to the receiving team. The receiving team will then have to do the same on their end to send items to you in order to complete the trade.

3.13.2 Limits to Trades

Teams are limited to their running profits plus $500 million in credit when making trades, however, the cost of building a stadium in season one is not counted in the running profits calculation in this case. For example, suppose in Season 3, a team's running profits total -$750 million. That is, the team is 750 million in the hole. In season one, they built a stadium, which they paid $800 million out-of-pocket for. This would mean that the team would be limited to -$750 million + $800 million + $500 million = $550 million when making trades. They will not be able to spend more than $550 million on trades in that season. It should go without saying that if a team does dip into the $500 million in credit, it will of course have to be paid back out of the profits they earn going forward.

3.13.3 Trading Draft Picks

To trade future draft picks, teams must involve the Commissioner, who can arrange the swap in the Season Player spreadsheet. If one team agrees to give another their 2nd round draft pick in Season 3, then during that season, prior to running the Draft, the commissioner will simply enter in the round (2) and teams into the "Trading Draft Picks" tile and the swap will be made in the draft order.



3.14 The League

The league is broken into two conferences each with three divisions. The 30 teams in the league are then split among them as follows:

	Normal Conference	Binomial Conference
Left Division	Team 001 Team 002 Team 003 Team 004 Team 005	Team 016 Team 017 Team 018 Team 019 Team 020
Central Division	Team 006 Team 007 Team 008 Team 009 Team 010	Team 021 Team 022 Team 023 Team 024 Team 025
Right Division	Team 011 Team 012 Team 013 Team 014 Team 015	Team 026 Team 027 Team 028 Team 029 Team 030

3.14.1 Regular Season

Each team in the league will play 56 regular season games, broken down as follows:

- 16 games playing each team in your divisional conference four times.
- 20 games playing each team in your conference, but outside your division, twice.
- 10 games playing each team in your division, but outside your conference, twice.
- 10 games playing each team outside your division and conference once.

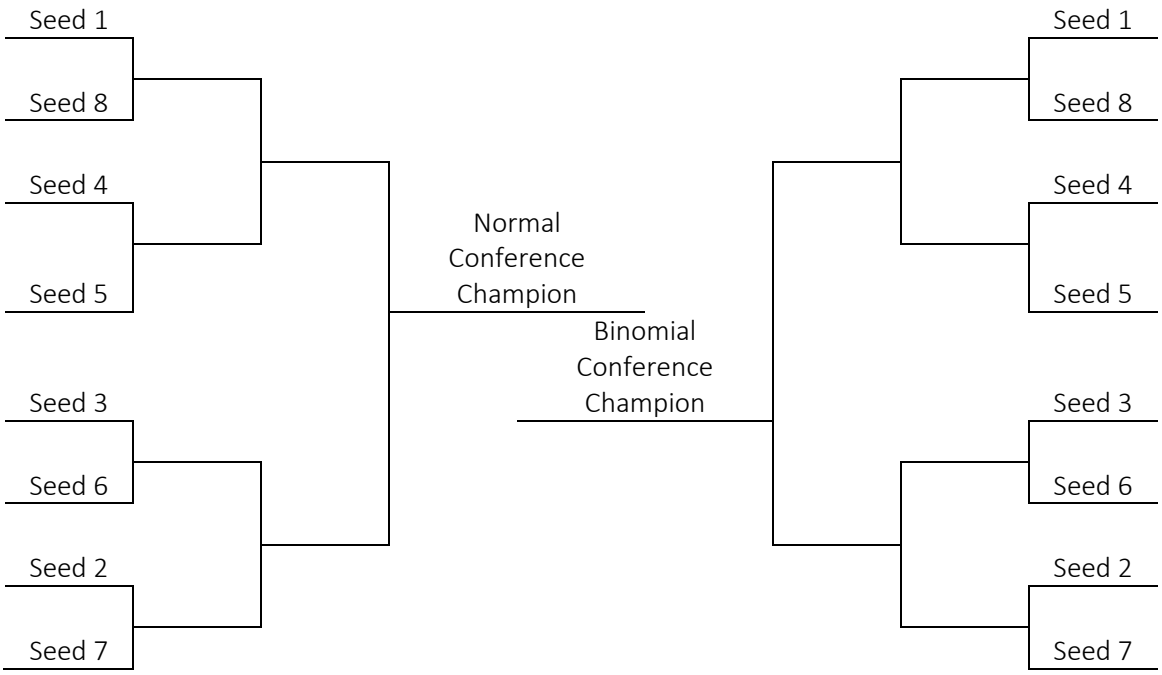
For example, Team 001 will play Teams 002-005 four times a piece, Teams 006-015 twice, Teams 016-020 twice, and Teams 021-030 once. Where the match-ups are even, half of them will be played at home while the other half are played away. One-off match-ups are determined as follows:

- NL vs. BC is played at the NL stadium.
- NL vs. BR is played at the BR stadium.
- NC vs. BL is played at the BL stadium.
- NC vs. BR is played at the NC stadium.
- NR vs. BL is played at the NR stadium.
- NR vs. BC is played at the BC stadium.

This leaves each team with 28 home games and 28 away games each season.

3.14.2 Post-Season

The top eight teams from each conference, ranked by their season records, will be seeded in the playoffs according to that record. In the case of a tie, the team with the higher average points per game will be awarded the playoff spot. Match-ups will be determined according to the following bracket:



In each round, the higher seeded team will be considered the home team, except for the championship game, where there is no home team. As with the regular season, the home team will reap the full financial benefit of the game. The revenue generated by the championship game will be split 60-40 between the winning and losing team. Each playoff series is decided in one game.

3.14.3 Receivership

Teams that have no owners present to manage their season are placed into receivership, and operated by a designee or designees of the commissioner. The decisions of these designees are considered permanent and binding. In the event of a vote of the owners, these designees shall not be allowed to vote in place of the owners, and the team's vote will be marked as an abstention.

Teams which are abandoned by one or more of their owners may necessitate the need to reallocate enrolled students as owners. The commissioner reserves the right to reassign any owner to another team.

3.15 The Fan Index

A team's fan index is a determinant in almost every aspect of their revenue. To see how it is calculated, let's define a few key variables:

- CV is the ***city value*** of the city the team is located it, adjusted for teams sharing the city.
- PPG is the average points per game scored by the team in the regular season.
- Wins is the number of wins a team accrues in the regular season.
- Losses is the number of losses a team accrues in the regular season.
- Champs is the number of times a team has won the league championship.
- Bonuses are any increases to the Fan Index from coaches, actions, or playoff games.
- Penalties are any reductions to the Fan Index from PED use.

The Fan Index is calculated in two steps. First, you calculate your fan base for the current season and for the previous season. The Fan Base is determined as follows:

$$FB = (2 * CV) + PPG + Wins - Losses + (3 * Champs) + Bonuses - Penalties$$

Then the Fan Index is determined as follows:

$$FI_t = 0.7 * FB_t + 0.4 * FI_{t-1}$$

Where *'t'* is the season in question. The Fan Index in season 0 is 70.

Here is an example calculation:

Season	CV	PPG	Wins	Losses	Champs	Bonuses	Penalties	Fan Base	Fan Index
1	5	95.29	33	23	0	0	6	109.29	104.50
2	5	99.81	35	21	0	5	8	120.81	126.37

In season 2, this team has a Fan Index equal to 0.7*120.81 + 0.4*104.50 = 126.37.

Note the equivalencies nested into the calculation of the Fan Base. An additional city value increases your fan base by the same as two additional points per game or winning an additional game (since wins would go up by one, and losses would go down by one). There is also a memory to the Fan Index, as it is composed not only of your current fan base, but of your previous fan base as well.

An important aspect of the Fan Index is that it can only be calculated *after* the entire season has been played. City Value and Bonuses can be calculated early in the season. PPG, wins, and losses can be calculated after the regular season has been played. Champs must wait until the post-season has concluded (at least every team is hopeful this will be the case). And lastly, penalties can only be determined after all the games are played, and the accusations of PEDs are resolved. Nevertheless, teams would be well advised to invest in being able to make accurate predictions of their Fan Index *before* the season is played, as this is essential to maximizing gate revenue.

3.16 ADVERTISING

Point	Total Cost
1	$1,000,000
2	$2,000,000
3	$4,000,000
4	$8,000,000
5	$16,000,000
6	$32,000,000
7	$64,000,000
8	$128,000,000
9	$256,000,000
10	$512,000,000

Teams can boost their brand through advertising, which results in higher and more elastic demand for their games and merchandise. A team builds an advertising score by spending money on campaigns. The table to the left outlines the cost of additional **advertising points**.

Teams choose their level of advertising prior to the start of regular season games. This choice must be made each season, and no part of the advertising score carries over into future seasons.

Choosing the right level of advertising is one of the most difficult problems owners must solve. The advertising score impacts every source of revenue, but ways that are difficult to calculate. Owners are advised to invest in producing spreadsheets or other aides to help them make this decision quickly and profitably.

3.17 REVENUE

There are several sources of revenue for teams, each of which is described below.

3.17.1 Ticket Sales

Teams must choose the price of their tickets at the start of each season. This price cannot be changed during or after the season is played. The number of tickets purchased per home game is determined by the following demand curve:

$$Q = (15A + 200) * (6A + 2F + 3S - P)$$

Where *A* is a team's ***advertising score***, *F* is a team's ***fan index***, and *S* is a team's ***stadium grade***. Of course, P is the price of a ticket, and Q is the quantity of tickets sold per home game. Obviously, you cannot sell more tickets than you have seats, so Q can never exceed the seat limit of your stadium, no matter what price you set. Additionally, it is worth noting that selling out your stadium may not always be profit maximizing.

Despite its complex appearance, this demand curve is a simple linear one, and should be easy to manipulate for those adept in the art of economics. When setting your ticket price, it is important to remember that all the costs associated with the stadium and its upkeep have already been paid. Your goal, then, is to maximize the revenue generated from ticket sales. That revenue is calculated simply as price times quantity, or in the mathematical parlance above:

$$Revenue\ per\ Home\ Game = P * (15A + 200) * (6A + 2F + 3S - P)$$

Keep in mind also that this equation describes demand *per home game*. Each team will play at least 28 home games over the course of a season, and perhaps more if they play at home in the post-season.

An Example of Ticket Demand

Suppose that our team has an advertising score of 5, a fan index of 100, a stadium grade of 15. This would mean the demand equation is:

$$Q = (15 * 5 + 200) * (6 * 5 + 2 * 100 + 3 * 15 - P)$$
$$Q = 275 * (275 - P)$$

If we choose P = $120, that would mean Q = 42,625. That means that for each of our home games this season, we will average 42,625 fans per game, and they will each spend an average of $120 on their ticket, leaving us with $5,115,000 in revenue per game. If we play 28 home games in the regular season, this would add up to $143,220,000.

However, this assumes that we have 42,625 seats to sell each game. If our stadium has only 40,000 seats, then our numbers will change. If we charge the same $120 per ticket, this would yield only $4,800,000 per game, and only $134,400,000 for the season.

It is also important to note that in neither case did we charge the right price. With these figures, we should have charged $137.50 per ticket. At that price, we would have sold 37,812.5 seats per game, for a total revenue of $145,578,125. Of course, you will not be able to calculate the Fan Index so precisely when setting your prices, so some guesswork will be involved. However, it is never good to leave money on the table in the game of Big.

3.17.2 Luxury Boxes

Teams must also choose the price of their luxury boxes at the start of each season. Unlike regular seats, luxury boxes are purchased and priced for the entire season, including the playoffs. The demand for luxury boxes is given by this inverse demand function:

$$Q = \frac{A * F_{t-1} * C}{10} - \frac{P * C}{10{,}000}$$

Where *A* is a team's ***advertising score***, F_{t-1} is a team's Fan Index from the previous season, and C is the City Value facing the team. As with regular tickets, you cannot sell more luxury boxes than are available in your stadium, no matter what price you set, and it may not always be wise to sell them all.

Unlike regular tickets, there is no missing information when it comes to calculating Luxury Box revenue. The Fan Index from the previous season is known precisely, as is the City Value, and the advertising score is selected at the same time as this price is set. So, your goal is simply to maximize the revenue:

$$Revenue = P * \left(\frac{A * F_{t-1} * C}{10} - \frac{P * C}{10{,}000}\right)$$

It is worth mentioning again that luxury boxes are sold by the season, not by the game. So, the equation above describes the total season revenue from luxury box sales, and you do not multiply it by 28 or any other number in order to get the final value.

An Example of Luxury Box Demand

Suppose that last season our team had a Fan Index of 104.503. We are the one of two teams located in Washington, D.C. (CV = 5) and we have set our advertising score to 7. What would be the optimal price for our luxury boxes?

The answer is $365,760.50. At that price, we would sell 182.88 luxury boxes and we would make $66,890,371.68 worth of revenue. Figuring out how that price is determined is part of the game, but you'll at least be able to check and see if you are getting it right here. Of course, this answer assumes you have 182.88 luxury boxes to sell. If your stadium only has 150 available, you will want to charge the maximum price you can while still selling out (in this case, that price is $431,521).

3.17.3 Merchandise

Merchandise revenue is based on two factors: your fan index and your advertising score. Revenue from merchandise is calculated as follows:

$$M = 50{,}000 * AF$$

A team with an advertising score of 4 and a fan index of 120 would then get:

50,000*(4*120) = 50,000*480 = $24,000,000. This one is pretty simple.

3.17.4 TV Contract

Television contracts are negotiated league-wide and must be renewed every year. The total league contract is determined by the following equation:

$$TV = \frac{\sum F}{C} * 1{,}000{,}000$$

Where the numerator is the sum of the fan indices across all teams from the previous season, and the denominator is the ratio of the standard deviation of win percentage across all teams for the previous season divided by the expected standard deviation. For a 56-game season, the expected standard deviation is 0.0668. This means that the competitiveness of the league has large implications for the television contract. The more competitive the league, the larger the contract. For the first season, a contract of $70 million per team has been awarded.

3.18 Costs

There are seven categories in which costs fall into, most of which have already been described above.

3.18.1 Stadium Construction

Most stadium construction costs are incurred in the first season of the game when a team builds their stadium. In later seasons, the costs of adding and removing seats/luxury boxes or the cost of renovating a

stadium will appear in this category. It is important to note that the initial cost of construction for a stadium being shared by multiple teams will be split evenly among those teams, but the later costs of altering or renovating your stadium will be borne only by the team which makes those changes, even though those changes will be applied for all teams sharing the stadium. Any cost sharing of these stadium modifications should be arranged between the sharing teams and handled through the trades system.

3.18.2 Stadium Upkeep

These costs will reflect the formula for stadium upkeep described in section 3.4.4.

3.18.3 Operating Costs

Every season, each team will face $50,000,000 in operating costs regardless of their other circumstances. This amount reflects the standard costs of operating a franchise, including staff, travel, and other operations. This cost cannot be avoided and does not fluctuate

3.18.4 Advertising Costs

These costs will reflect the price schedule for advertising described in section 3.16.

3.18.5 Salaries

This category includes the salaries paid to all players and coaches signed to the team. Players and coaches which are not used in a season still must be paid the full amount of their contract.

3.18.6 Action Costs

Of the 25 available actions, 23 have associated costs, which will be added together in this category. The costs of each action are described in the table in section 3.12.

3.18.7 Trade Costs

Any money which has been sent to another team as part of a trade will appear as a trade cost. In addition to any trades, all fines levied by the commissioner on teams will appear in this category.

3.19 Profits and Taxes

Your profits could be described most simply as:

$$Profits = Revenues - Costs$$

These profits will be calculated each season, and all seasons will contribute to the running total. It is possible for costs to exceed revenues. When this is the case, your team simply experiences negative profits, and is assumed to finance them with loans. For simplicity, the interest rate on these loans is 0%. Likewise, your profits do not earn you interest when you save them.

3.19.1 Paying Taxes

Taxes which much be paid to a city as part of a stadium agreement are paid as a percentage of the profits earned in each season. If a team earns negative profits in a season, they will not pay any taxes no matter what their tax rate is. For example, if a team earns $300 million in revenue, but incurs $500 million in costs, their "gross profits" for that season would be -$200 million. No matter what their tax rate is, they will not pay anything in taxes for that season. If in the next season, revenues rise to $500 million while costs fall to $400 million, the team will have earned $100 million in "gross profits". If their stadium deal with the city requires that they pay 15% in taxes to the city, they will have to pay 0.15*100 million = $15 million in taxes. This would leave the team's "net profits" at $85 million, the $100 million less the $15 million in taxes.

4 CHANGING THE RULES

One of the major inspirations for The Big Leagues is a game called Nomic, which was developed by the philosopher Peter Suber. As he puts it, "Nomic is a game in which changing the rules is move." Suber developed it as a simulation of democracy. In The Big Leagues, owners also have the power to change the rules, and can do so at the start of every season. However, there are limitations.

I like to think of Section 3 as the immutable laws of physics governing the game. They define the universe in which this game is played, and therefore they cannot be altered. That said, there are ways in which the rules of Section 3 can be abided by, while still finding a way to work around them. Some of those methods are discussed in the appendix.

In this section I present the initial set of mutable rules, or the rules which can be changed, in the form of a League Constitution. This Constitution includes instructions for self-amendment, and in so it can be altered in any way. The only thing the Constitution cannot do is overturn the immutable laws of the universe.

4.1 THE BIG LEAGUES CONSTITUTION

We the Owners of the Big Leagues, in Order to form a more perfect League, establish Justice, insure classroom Tranquility, provide for the common entertainment, promote the student Welfare, and secure the Blessings of Good Grades to ourselves and our Transcripts, so ordain and establish this Constitution for the Big Leagues of Arizona State University.

4.1.1 Powers of the League

The owners of the league have the right to impose fines, penalties, limitations, and restrictions on any entity within the Big League by a majority vote of teams present, where each team is afforded only one vote. Ties are broken by a majority vote of owners present, where each owner is afforded one vote. If the owners are evenly split, then the motion does not pass.

The commissioner shall conduct all votes held by the league, and shall determine if the number of teams present constitutes a quorum sufficient to hold a vote.

4.1.2 The Draft

Rookie players must enter the league through a draft. In the first season, the draft will begin with Team 030 and proceed down the list to Team 001. The second round will repeat this process, but in reverse order, according to what is otherwise known as a 'snake draft'. Additional rounds will commence until either all the players available have been drafted, or until no team is interested in drafting another player. In season two and on, the draft will begin with the team with the ***worst*** record in the previous season and continue up the order to the team with the ***best*** record. Each sequential round of the proceeds in the same order (not a snake draft). Ties in the records of multiple teams will be broken by the lowest points per game.

4.1.3 Free Agency

Players whose contracts expire with a team become free agents. All teams are then free to seek that player by whatever means they wish.

4.1.4 Revenue Sharing

All revenue generated by the league-wide television contract shall be split evenly between all teams.

All revenue collected in fines, penalties, or dues shall be split evenly between all teams.

4.1.5 Banned Substances

Performance Enhancing Drugs are banned from the sport of Big.

4.1.6 Amendment and Enforcement

This constitution may be amended by a majority vote of the league, following the same procedure as outlined in section 4.1.1.

The commissioner is responsible for the proper interpretation and enforcement of this constitution and all rules, fines, penalties, and other proceedings ordered by the owners of the Big Leagues.

5 APPENDIX

Below are some clarifications, addendums, house rules, and nudges regarding the rules of the game. The rules described in 5.4 and 5.6 are coded into the game. The location of the Championship is set to be chosen randomly, but can be changed by the Commissioner per 5.5.

5.1 AUTOPLAY TEAMS

If there are not enough owners to manage 30 teams, the reminder can be permanently placed on AutoPlay, and their decisions will be made by AI. When setting up the league, the Commissioner shall determine where these teams locate, along with their name and stadium information. The following names are suggested, if not already in use, for AutoPlay teams: Androids, Astromechs, Autobots, Iron Giants, Replicants, Robocops, Sentinals, Synthetics, or Terminators.

5.2 BUYING AND SELLING SCOUTING REPORTS

Scouting reports are given to teams who select the Scouting GM. These reports are presented in parallel with the corresponding data in the draft, contracts, and line up tabs of the team viewer spreadsheet. There is no rule preventing teams from conveying any of this information to other teams, and can do so in exchange for in-game players, money, or actions.

5.3 BUYING AND SELLING TEAMS

During the game, it is likely that a small handful of teams will see profits well in excess of the $2 billion required for full credit in this section of the course grades. One way in which teams have used this wealth in the past was to buy out other teams, essentially guaranteeing them $2 billion in profits in exchange for control over their team. This sort of agreement is allowed, but regulated. Teams may only make such an offer starting in season 7. Further, teams may have such an agreement with a maximum of two other teams.

5.4 SHELL CORPORATIONS

With the approval of the commissioner, teams are able to set up shell corporations where they can transfer money via the trade system. These transfers will show up as costs on their books, allowing them to skirt taxes. However, it should be noted that this money *must* be transferred back in the course of a regular season before the end of the game, at which time it will be counted among that season's profits.

5.5 LOCATION OF THE CHAMPIONSHIP GAME

Each season, as pure patronage, the commissioner will select the location of that season's championship game. The team that owns the stadium in question will receive a $10 million bonus from the commissioner.

If multiple teams own the stadium, the commissioner will decide which team gets the bonus, or if it is to be split among the several teams.

5.6 ADVERTISING DISCOUNT

Teams which produce a quality logo and turn it in to the commissioner will receive a 50% discount on advertising costs.