The Stolen Base

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What is the Goal?

The goal is to determine when each team should attempt to steal.

- When should a team steal in order to gain more wins?
- Is there a stolen base strategy that leads to more wins per season than the current strategy?
- Is there a stolen base strategy that is better for every team? Or should each team's strategy be different?
- How successful does the runner have to be at stealing a base in order to risk the steal attempt?

Description of Data

- Our data consists of opportunities and attempts to steal second base during the 2012 and 2013 Major League Baseball seasons (baseballreference.com [2]).
  - Taken from every tenth home game for each team starting with the fifth home game of the season and ending with the 75th.
  - 9.88% of the total games played during the 2012 and 2013 seasons (480 total games).
- We focused solely on stolen base attempts that occurred with just a runner on first base (no runner on third base).
  - 7,364 opportunities to steal second base (15.34 opportunities per game)
  - 646 attempts to steal second base (8.77% of opportunities)
  - 461 successful attempts (71.36% success rate)

Base/Out States and Run Expectancy

- A base/out state indicates which bases have a player on them and how many outs there are.
  - Example: 1.0.0 0 outs indicates a player is on first base with 0 outs.
- Run expectancy is how many runs on average a team will score in an inning based on a given base/out state (Tango et al. [11]).
- It is found by taking the total number of runs scored until the end of the inning for each given base/out state and then dividing by the total amount of times teams were in that base/out state (Tango et al. [11]).

Change in Adjusted Run Expectancy

We took the run expectancy values from the 1999-2002 baseball seasons (Tango et al.) [11] and adjusted them for the 2012 and 2013 seasons (Baseball Almanac [8]).
There were 13.36% fewer runs on average for 2012 and 2013.
Here is a table showing the change in run expectancy based on each possible outcome of a stolen base attempt with each number of outs:

Initial B/O	RE	Stolen Base	Gain	Extra Base	Gain	Out	Gain
1.0.0 0 Out	0.826	1.030	0.204	1.284	0.458	0.257	-0.569
1.0.0 1 Out	0.496	0.628	0.132	0.852	0.356	0.101	-0.395
1.0.0 2 Out	0.217	0.298	0.081	0.335	0.118	0.000	-0.217

Formula Introduced by Bill James for Batter/Pitcher Matchup

- Bill James introduced a formula that estimates what the resulting batting average of each batter will be for any batter/pitcher match-up.
- It uses the batting average of the batter compared to the league batting average and each pitcher's batting average against compared to the league average (Levitt [7]).
- Justifications for the equation have been proposed by Fox [5] and Levitt [7].
- We applied this equation to a player's steal percentage in order to take into account how each batter's steal percentage is affected by a specific pitcher.

Formula for Batter/Pitcher Matchup Applied to Stealing Percentage

The formula is as follows:

$$\text{NewBatSteal} = \frac{\frac{\text{BatSteal}\times\text{PitSteal}}{\text{LgSteal}}}{\frac{\text{BatSteal}\times\text{PitSteal}}{\text{LgSteal}} + \frac{(1-\text{BatSteal})\times(1-\text{PitSteal})}{1-\text{LgSteal}}}$$

where NewBatSteal is each batter's estimated steal percentage against the opposing pitcher. BatSteal is the individual batter's overall steal percentage, PitSteal is the steal percentage success of batters against the specific pitcher, and LgSteal is the league's overall successful steal percentage from our data based on each situation.

Justin Upton's Estimated Steal Percentage with Zero Outs

Justin Upton against a pitcher with the league team average steal percentage against of 0.7278:

$$\text{NewBatSteal} = \frac{\frac{0.8889 \times 0.7278}{0.7261}}{\frac{0.8889 \times 0.7278}{0.7261} + \frac{(1-0.8889) \times (1-0.7278)}{1-0.7261}} = 0.8897$$

Justin Upton against Chris Tillman (Orioles) with steal percentage against of 0.11:

$$\text{NewBatSteal} = \frac{\frac{0.8889 \times 0.1100}{0.7261}}{\frac{0.8889 \times 0.1100}{0.7261} + \frac{(1-0.8889) \times (1-0.1100)}{1-0.7261}} = 0.2717$$

Note: Justin Upton's overall steal percentage is 0.8889.

Simulations Description

- Wrote program in R to simulate a baseball game with the ability to change stolen base strategies.
- Simulated seasons of 162 games containing 9 innings with extra innings in the event of a tie.
- The lineups that we used for each team were the most frequent lineups used during the 2013 baseball season.
- Each of the 2013 statistics for each batter was converted using the batter/pitcher matchup formula to account for the pitcher he was facing.
- We only input the stolen base percentages of players who attempted to steal in at least 5% of the games that they played in (7.45 steal attempts per season). Otherwise, we put their steal percentage in as zero.

Current Stolen Base Strategy

The current strategy is defined as follows:

1. The percentage of times a runner attempted to steal out of the stolen base opportunities for each run differential and each number of outs was calculated.
2. Each percentage was then multiplied by $\frac{270}{117} = 2.3077$ (total players divided by base-stealing players).
3. The code decides whether or not a player should steal based on these percentages using a Bernoulli trial.
4. If a player decides to steal, his success probability is calculated using the formula described earlier.
5. This success probability is then combined with the stolen base, extra base, and caught stealing percentages for the number of outs to determine the outcome (Multinomial Distribution).

Stealing to Increase Run Expectancy

- The purpose of stealing a base is to put the runner in scoring position, that is, to increase the chance of scoring a run.
- With this in mind, we decided that a runner should only attempt to steal a base when it would increase his team's run expectancy.
- We used both the batter/pitcher matchup formula and the adjusted run expectancy discussed earlier.
- We needed to not only include the league steal success percentage in each case for our data, but also the percentage of successful attempts that resulted in a steal and the percentage of successful attempts that resulted in an extra base.

Justin Upton Stealing to Increase Run Expectancy Example

- In the case when there are 0 outs:
  - a steal increases run expectancy by 0.204
  - an extra base increases run expectancy by 0.458
  - if the runner is caught stealing the run expectancy decreases by 0.569
- Justin Upton's estimated steal percentage:
  - with Chris Tillman pitching is 0.2717
  - against the league team average pitcher is 0.8897
- From our data, with 0 outs there was an overall successful steal percentage of 0.7261
  - 92.98% of the time the runner ended up on second base
  - 7.02% of the time the runner obtained an extra base due to some type of error

Justin Upton Stealing Example Continued

Using this information facing Chris Tillman, we see:

$$\Delta\text{RunExpectancy} = 0.2717 \times (0.9298 \times 0.204 + 0.0702 \times 0.458) + (1 - 0.2717) \times (-0.569) = -0.3541$$

As the run expectancy decreases, Justin Upton should not attempt to steal in this situation.
Now we look at Justin Upton versus the average pitching team in the league:

$$\Delta\text{RunExpectancy} = 0.8897 \times (0.9298 \times 0.204 + 0.0702 \times 0.458) + (1 - 0.8897) \times (-0.569) = 0.1346$$

Since the change in run expectancy is positive, Justin Upton should attempt to steal.

Interval of Wins per Season

- We compared the average number of wins per season for the current stolen base strategy to the stealing to increase run expectancy strategy.
- We ran simulations for each team playing against themselves with the exception of the steal percent against of the pitcher.
- In order to create an interval of average number of wins per season, we simulated using the steal percentage against of the pitcher for:
  - the lowest (LOW %) 2013 steal percentage against pitching team, the St. Louis Cardinals (60% steal percentage against).
  - the highest (HIGH %) 2013 steal percentage against pitching team, the Washington Nationals (82.61% steal percentage against).

Stealing to Increase Run Expectancy vs. Current Strategy

Team	RE vs. Current LOW , HIGH	Team	RE vs. Current LOW, HIGH
Arizona Diamondbacks	(82.59, 86.55)	Milwaukee Brewers	(84.75, 88.11)
Atlanta Braves	(83.61, 83.43)	Minnesota Twins	(81.61, 83.82)
Baltimore Orioles	(82.77, 84.44)	New York Mets	(84.41, 87.52)
Boston Red Sox	(83.46, 86.46)	New York Yankees	(83.34, 86.86)
Chicago Cubs	(80.96, 83.35)	Oakland Athletics	(82.11, 82.90)
Chicago White Sox	(83.10, 86.97)	Philadelphia Phillies	(85.35, 87.92)
Cincinatti Reds	(82.42, 88.54)	Pittsburgh Pirates	(81.96, 84.42)
Cleveland Indians	(83.79, 88.61)	San Diego Padres	(82.80, 84.24)
Colorado Rockies	(81.00, 85.83)	San Francisco Giants	(83.68, 87.14)
Detroit Tigers	(81.87, 84.16)	Seattle Mariners	(81.71, 84.47)
Houston Astros	(82.08, 83.90)	St. Louis Cardinals	(84.32, 85.27)
Kansas City Royals	(86.23, 90.49)	Tampa Bay Rays	(82.03, 85.01)
Los Angeles Angels	(83.70, 87.56)	Texas Rangers	(85.22, 89.82)
Los Angeles Dodgers	(81.69, 85.85)	Toronto Blue Jays	(82.11, 83.80)
Miami Marlins	(81.90, 83.02)	Washington Nationals	(83.19, 87.30)

Results Against LOW % Pitcher

- For twenty-eight of the thirty teams, stealing to increase run expectancy wins an average of more than half of the games per season (81) against the team using the current strategy.
- The Chicago Cubs and the Colorado Rockies had 80.96 and 81 average wins per season, respectively. Stealing to increase run expectancy and the current strategy yield the same results.
- Twenty-two of the thirty teams increase their average wins per season by at least one win.

Results Against HIGH % Pitcher

- The average number of wins per season using the stealing to increase run expectancy strategy is greater than when using the current strategy for all thirty teams.
- The average number of wins using the run expectancy strategy ranges from 82.90 per season for the Oakland Athletics to 90.49 per season for the Kansas City Royals.

Less Predictable 80-20 Run Expectancy Strategy

- Stealing to increase run expectancy increases the wins per season for all teams against the HIGH % pitcher and for twenty-eight of the teams against the LOW % pitcher.
- We introduced a strategy for which each team would steal 80% of the time the run expectancy increases and 20% of the time the run expectancy decreases (80-20 run expectancy strategy).
- If there is not a significant difference in the number of wins for a team stealing with this strategy versus stealing every time it increases run expectancy, this strategy would be preferable. This way it would be harder to predict whether or not a runner will steal.

Comparing Run Expectancy Strategy to 80-20 Strategy

Team	RE vs. 80-20 LOW , HIGH	Team	RE vs. 80-20 LOW, HIGH
Arizona Diamondbacks	(80.19, 81.23)	Milwaukee Brewers	(81.91, 83.04)
Atlanta Braves	(80.62, 81.75)	Minnesota Twins	(81.74, 82.03)
Baltimore Orioles	(82.26, 82.00)	New York Mets	(81.50, 81.74)
Boston Red Sox	(80.69, 80.59)	New York Yankees	(81.18, 82.40)
Chicago Cubs	(80.44, 82.35)	Oakland Athletics	(81.63, 81.48)
Chicago White Sox	(80.76, 81.67)	Philadelphia Phillies	(80.69, 81.62)
Cincinatti Reds	(80.62, 81.75)	Pittsburgh Pirates	(81.24, 81.48)
Cleveland Indians	(81.87, 81.91)	San Diego Padres	(81.22, 81.34)
Colorado Rockies	(82.64, 81.76)	San Francisco Giants	(81.26, 81.32)
Detroit Tigers	(80.62, 82.04)	Seattle Mariners	(81.17, 83.07)
Houston Astros	(80.74, 81.73)	St. Louis Cardinals	(80.90, 80.09)
Kansas City Royals	(82.02, 82.69)	Tampa Bay Rays	(80.90, 81.96)
Los Angeles Angels	(81.90, 81.73)	Texas Rangers	(81.66, 82.22)
Los Angeles Dodgers	(81.42, 81.90)	Toronto Blue Jays	(80.91, 82.11)
Miami Marlins	(81.56, 81.89)	Washington Nationals	(80.19, 81.23)

Results of Less Predictable 80-20 Run Expectancy Strategy

- The greatest number of wins per season using the stealing to increase run expectancy strategy vs. the 80-20 run expectancy strategy is 83.07 wins per season for the Seattle Mariners against the HIGH % pitcher.
- Only seven of the thirty teams increase their average number of wins by more than one win against the HIGH % pitcher and three teams do against the LOW % pitcher.
- As there isn't a great difference in the number of wins, and this is a less predictable strategy, the 80-20 run expectancy strategy would be preferable.

Simulating the 2013 Baseball Season

- Using the 80-20 run expectancy strategy, we then simulated the real 2013 baseball season for all 30 teams against their actual opponents.
- We simulated:
  - the season where the specified team uses the 80-20 run expectancy strategy and all of its opponents use the current strategy
  - the season where the specified team and all of the opponents use the current strategy.
- This way we could see how the 80-20 run expectancy strategy would compare to the current strategy in a real season.
- We simulated 100 seasons for each team using each of these two strategies.

Real 2013 Season Results

TEAM	80-20	Current	Difference	% Difference
ARI	75.14	74.28	0.86	1.158
ATL	94.68	92.47	2.21	2.390
BAL	82.28	80.90	1.38	1.706
BOS	101.58	96.50	5.08	5.264
CHC	72.86	70.77	2.09	2.953
CHW	74.22	72.33	1.89	2.613
CIN	98.14	93.98	4.16	4.426
CLE	84.12	80.66	3.46	4.290
COL	82.02	79.5	2.52	3.170
DET	103.53	101.99	1.54	1.510
HOU	57.81	59.13	-1.32	-2.232
KCR	80.39	71.52	8.87	12.402
LAA	84.14	81.08	3.06	3.774
LAD	101.96	100.23	1.73	1.726
MIA	62.88	66.86	-3.98	-5.953

TEAM	80-20	Current	Difference	% Difference
MIL	87.12	78.99	8.13	10.292
MIN	69.14	67.21	1.93	2.872
NYM	78.11	76.51	1.60	2.091
NYY	75.89	71.98	3.91	5.432
OAK	93.48	91.34	2.14	2.343
PHI	72.55	71.26	1.29	1.810
PIT	79.78	78.35	1.43	1.825
SDP	77.53	74.77	2.76	3.691
SEA	81.48	80.71	0.77	0.954
SFG	82.66	78.38	4.28	5.461
STL	92.54	89.32	3.22	3.605
TBR	94.31	90.20	1.26	4.557
TEX	89.86	84.16	5.70	6.773
TOR	76.46	75.20	1.26	1.676
WSN	98.79	95.64	3.15	3.294

Real 2013 Season Results

- The 80-20 run expectancy strategy increases the average number of wins per season for twenty-eight of the thirty Major League Baseball teams.
- For these teams, the difference varies from 0.77 wins per season for the Seattle Mariners to 8.87 wins per season for the Kansas City Royals. This is a percent increase of 0.954% to 12.402%.

Extending Strategy with More Information

- This strategy could be extended if knowledge of pitch timing and running speed of stealing batters was also incorporated.
- It would not be difficult to modify the code to include these factors instead of just looking at steal percentage success for the runner and steal percentage against for the pitcher. This would give a more accurate representation of the average number of wins per season.

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Any Questions?

Adjusted Run Expectancy

We took the run expectancy values from the 1999-2002 baseball seasons [11] and adjusted them for the 2012 and 2013 seasons. [8] (There were 13.36% fewer runs on average for 2012 and 2013).

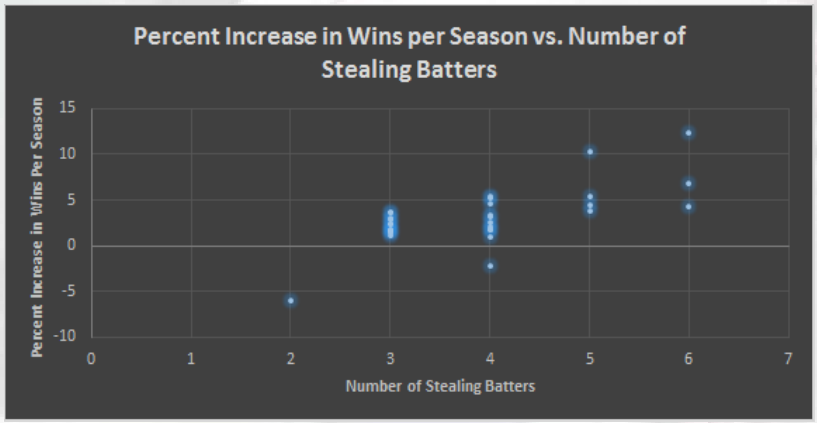
1B	2B	3B	0 Outs	1 Out	2 Outs
–	–	–	0.481	0.257	0.101
1B	–	–	0.826	0.496	0.217
–	2B	–	1.030	0.628	0.298
–	–	3B	1.284	0.852	0.335
1B	2B	–	1.363	0.841	0.404
1B	–	3B	1.650	1.077	0.466
–	2B	3B	1.778	1.271	0.549
1B	2B	3B	2.094	1.430	0.706

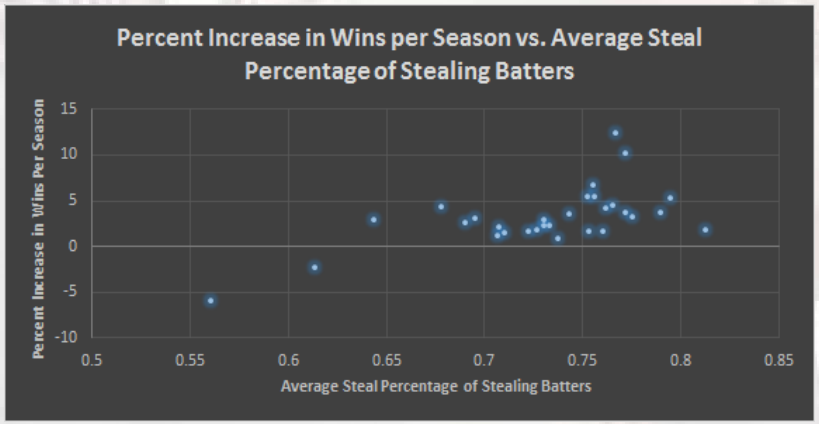
Further Investigation

Since the average number of wins per season differs for each team, we looked to see if there was any relationship between the average number of wins per season and:

1. the number of stealing players
2. the average steal percentage of the stealing players
3. the average on base percentage of the stealing players
4. the average grounded into double play percentage (GDP) for the team

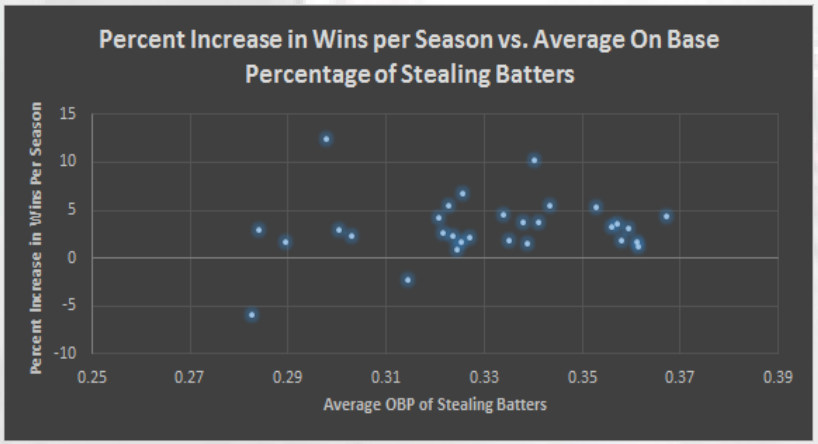
Percent Increase in Wins per Season vs. Number of Stealing Batters and Average Steal Percentage

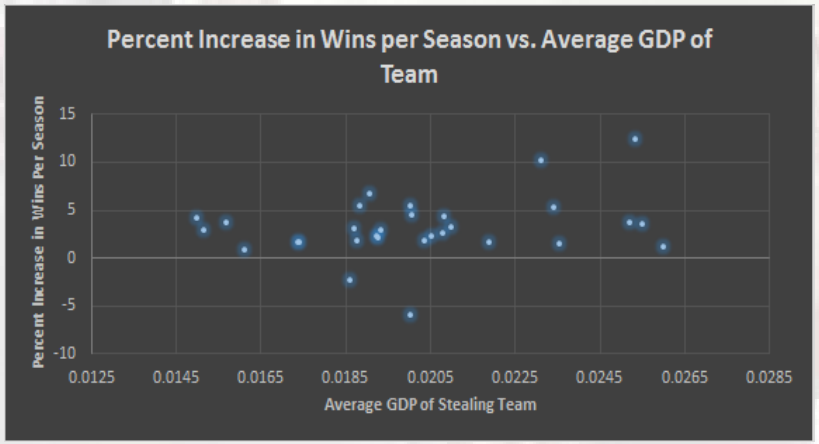




- Using the 80-20 run expectancy strategy is likely to have a bigger percent increase in wins per season for teams that have more stealing batters.
- As the average steal percentage of stealing batters increases, the percent increase in wins per season increases ($r = 0.6280$, $p < 0.001$).

Percent Increase in Wins per Season vs. OBP and GDP





- After removing outlier of (0.298, 12.40), as the average on-base percentage of stealing batters increases, the percent increase in wins per season increases ($r = 0.3687$, $p = 0.0242$).
- We cannot conclude that as the average GDP increases for a team, the percent increase in wins per season increases ($r = 0.2706$, $p = 0.064$).

What Happens if Every Team Uses the 80-20 Run Expectancy Strategy?

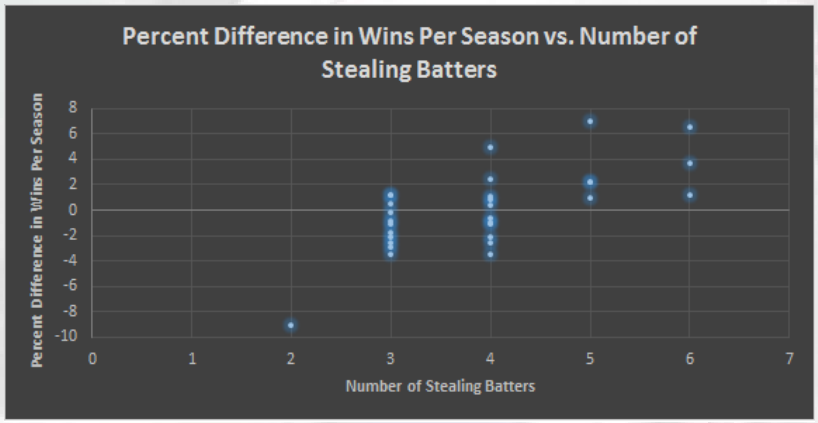
- If every team were to use this strategy some teams would likely benefit more than others, causing other teams to win less games than if every team used the current strategy.
- We simulated 100 real 2013 seasons for all 30 teams where every team uses the 80-20 run expectancy strategy to see how each team would be affected.

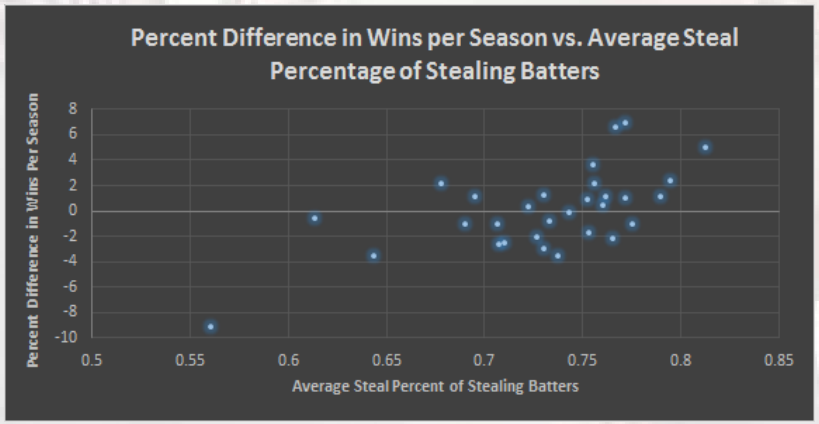
All Teams Using the 80-20 Run Expectancy Strategy Results

TEAM	80-20	Current	Difference	% Difference
ARI	73.53	74.28	-0.75	-1.020
ATL	91.71	92.47	-0.76	-0.829
BAL	81.28	80.90	0.38	0.468
BOS	98.90	96.50	2.40	2.427
CHC	68.37	70.77	-2.40	-3.510
CHW	71.60	72.33	-0.73	-1.020
CIN	96.10	93.98	2.12	2.206
CLE	81.62	80.66	0.96	1.176
COL	80.38	79.5	0.88	1.095
DET	99.45	101.99	-2.54	-2.554
HOU	58.78	59.13	-0.35	-0.595
KCR	76.57	71.52	5.05	6.595
LAA	81.91	81.08	0.83	1.013
LAD	100.62	100.23	0.39	0.388
MIA	61.30	66.86	-5.56	-9.070

TEAM	80-20	Current	Difference	% Difference
MIL	84.90	78.99	5.91	6.961
MIN	68.04	67.21	0.83	1.220
NYM	74.59	76.51	-1.92	-2.574
NYY	73.59	71.98	1.61	2.188
OAK	88.73	91.34	-2.61	-2.942
PHI	74.98	71.26	3.72	4.961
PIT	76.74	78.35	-1.61	-2.098
SDP	75.67	74.77	0.90	1.189
SEA	77.97	80.71	-2.74	-3.514
SFG	79.07	78.38	0.69	0.873
STL	89.19	89.32	-0.13	-0.146
TBR	88.32	90.20	-1.88	-2.129
TEX	87.39	84.16	3.23	3.696
TOR	73.92	75.20	-1.28	-1.732
WSN	94.68	95.64	-0.96	-1.014

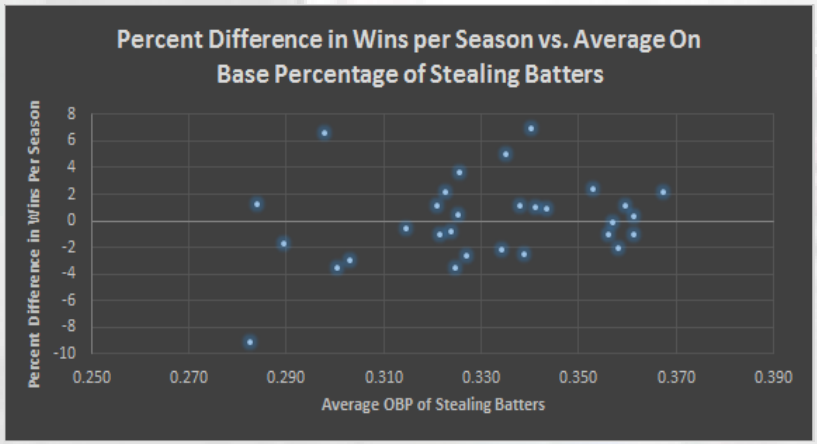
Percent Increase in Wins per Season vs. Number of Stealing Batters and Average Steal Percentage

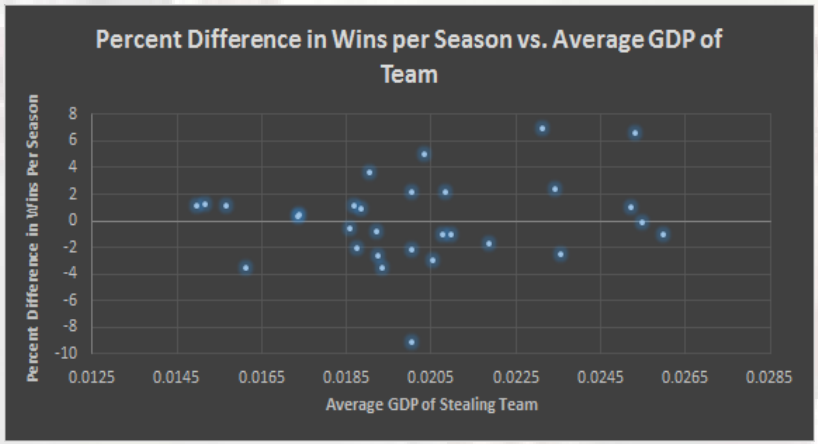




- When all teams use the 80-20 run expectancy strategy, the teams with more stealing batters are likely to have a bigger percent increase in average number of wins per season.
- As the average steal percentage of stealing batters increases, the percent increase in wins per season increases ($r = 0.6349$, $p < 0.001$).

Percent Increase in Wins per Season vs. OBP and GDP





- After removing outlier of (0.298, 6.595), as the average on-base percentage of stealing batters increases, the percent increase in wins per season increases ($r = 0.4000$, $p = 0.0154$).
- We cannot conclude that as the average GDP increases for a team, the percent increase in wins per season increases ($r = 0.1688$, $p = 0.1879$).

Future Work

We would like to:

- compare the 80-20 run expectancy strategy and the current strategy for the 2013 season with more simulated seasons
- simulate another season with real opponents to see if the results vary by season
- examine where in the lineup a stealing player should be in order to maximize the increase in average number of wins per season

Choosing the 80-20 Run Expectancy Strategy

- The choice of a team stealing 80% of the time its run expectancy increases and 20% of the time its run expectancy decreases was arbitrary.
- We chose these numbers for the sole purpose of making it less predictable for another team to determine when a team would steal.
- We simulated 100 seasons of each team playing against itself using the 80-20 run expectancy strategy versus several other random options to see if there was a noticeable difference in the average number of wins per season.

Results

TEAM	70-35 vs. 80-20 LOW , HIGH	75-25 vs. 80-20 LOW , HIGH	80-35 vs. 80-20 LOW , HIGH	85-15 vs. 80-20 LOW , HIGH	85-35 vs. 80-20 LOW , HIGH	90-25 vs. 80-20 LOW , HIGH
ARI	80.65 , 80.92	80.37 , 81.12	80.16 , 80.97	81.28 , 82.29	81.25 , 79.76	81.11 , 81.58
ATL	81.26 , 80.81	80.89 , 80.82	80.65 , 80.76	81.05 , 82.31	81.51 , 80.38	81.02 , 80.60
BAL	81.50 , 80.65	80.90 , 80.63	80.44 , 80.65	81.40 , 81.51	82.04 , 81.38	80.96 , 81.06
BOS	80.34 , 80.43	81.39 , 81.47	81.59 , 80.07	81.41 , 80.79	80.82 , 81.41	81.24 , 80.95
CHC	81.44 , 80.32	80.91 , 79.50	81.32 , 82.36	80.51 , 81.28	81.28 , 81.98	80.47 , 80.39
CHW	81.88 , 82.08	82.18 , 80.16	80.28 , 80.58	81.59 , 80.70	80.48 , 81.89	79.75 , 81.04
CIN	80.12 , 80.96	79.89 , 80.87	81.31 , 80.73	80.73 , 81.14	80.91 , 82.46	80.99 , 81.06
CLE	80.85 , 81.95	79.95 , 80.81	80.71 , 81.52	80.10 , 81.26	82.34 , 81.36	81.65 , 81.95
COL	82.22 , 80.56	80.67 , 80.45	80.86 , 80.80	81.01 , 81.47	81.01 , 82.39	82.14 , 81.01
DET	80.48 , 81.65	80.12 , 80.53	81.01 , 80.56	80.28 , 81.95	82.09 , 80.27	80.63 , 81.91
HOU	80.68 , 81.02	80.92 , 80.46	80.38 , 80.81	81.45 , 82.16	80.90 , 80.83	81.38 , 82.56
KCR	81.48 , 80.21	80.43 , 80.61	81.71 , 80.32	81.05 , 80.06	80.21 , 81.64	82.11 , 82.01
LAA	80.18 , 80.62	82.61 , 80.44	81.02 , 80.48	81.65 , 80.82	81.64 , 81.72	81.39 , 81.28
LAD	82.14 , 80.99	80.87 , 80.51	81.17 , 81.05	82.03 , 81.04	81.27 , 81.07	81.69 , 82.22
MIA	81.49 , 80.77	81.10 , 81.18	81.75 , 81.44	81.63 , 81.31	81.19 , 81.59	81.90 , 81.45

Results

TEAM	70-35 vs. 80-20 LOW , HIGH	75-25 vs. 80-20 LOW , HIGH	80-35 vs. 80-20 LOW , HIGH	85-15 vs. 80-20 LOW , HIGH	85-35 vs. 80-20 LOW , HIGH	90-25 vs. 80-20 LOW , HIGH
MIL	80.88 , 80.74	80.57 , 82.71	80.91 , 80.87	81.10 , 81.01	80.91 , 81.60	82.35 , 82.16
MIN	81.27 , 80.00	81.73 , 81.41	80.94 , 81.97	81.57 , 81.27	81.27 , 81.26	80.32 , 83.05
NYM	79.86 , 81.05	81.55 , 80.50	81.02 , 80.91	81.84 , 80.67	82.46 , 82.39	79.33 , 81.95
NYY	80.94 , 82.02	81.38 , 80.74	81.52 , 81.92	81.82 , 82.12	81.20 , 80.61	80.21 , 82.54
OAK	80.90 , 79.34	81.97 , 80.33	81.64 , 80.40	81.06 , 81.41	81.64 , 81.17	81.29 , 82.11
PHI	80.28 , 81.17	79.71 , 80.48	80.16 , 81.24	80.50 , 81.02	82.47 , 81.41	80.66 , 81.02
PIT	81.84 , 81.52	80.73 , 81.48	81.16 , 81.69	81.89 , 81.94	80.33 , 81.55	81.56 , 81.45
SDP	80.69 , 79.95	80.77 , 78.93	81.26 , 82.11	81.22 , 81.58	80.64 , 81.10	82.25 , 82.50
SEA	80.80 , 80.97	80.96 , 81.65	80.60 , 81.61	80.52 , 82.06	81.60 , 81.15	80.81 , 81.96
SFG	81.99 , 80.37	80.41 , 80.66	81.68 , 80.71	81.16 , 80.63	81.77 , 79.30	81.43 , 80.58
STL	81.18 , 80.72	80.77 , 81.17	80.76 , 80.88	83.35 , 81.71	80.92 , 79.64	80.69 , 81.23
TBR	80.50 , 81.18	80.74 , 80.81	81.72 , 82.04	82.14 , 80.80	80.21 , 81.21	81.01 , 81.76
TEX	80.72 , 80.21	81.39 , 80.91	81.15 , 81.71	81.23 , 81.60	81.04 , 82.78	81.99 , 82.02
TOR	81.30 , 79.94	80.67 , 81.07	81.26 , 80.86	80.57 , 81.60	81.37 , 80.83	81.50 , 81.31
WSN	81.48 , 80.09	81.72 , 81.22	81.42 , 81.62	81.78 , 81.19	80.56 , 81.25	81.36 , 80.94