

Target Field factor: Twins sluggers constantly battle stadium's wind currents

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Before Target Field opened in 2010, the main concerns about the park came from outside the stadium: National pundits worried whether outdoor baseball would work in Minnesota without a retractable roof.

But as the Twins played their first two years at the gleaming ballpark on the west end of downtown Minneapolis, the questions were coming from the home clubhouse: Why were so many well-hit balls - particularly off the Twins' bats - staying in the yard?

There appears to be a reason for their frustration.

After studying all 164 Twins regular-season and playoff home games in 2010 and 2011, the Pioneer Press found that wind conditions have played a significant role in turning Target Field into one of the toughest places to hit in the majors. The park, which faces the Minneapolis skyline, opens into winds that blow into the park for much of the summer, making right and right-center field especially hostile toward left-handed hitters like the sluggers in the Twins' lineup.

Check out the statistics:

- Target Field allowed the third-fewest home runs per game in the American League in 2010 and 2011, according to ESPN's Home Run Tracker.
- It is the fourth-toughest park in the AL for hitters, according to ESPN's Park Factors, which calculates how each ballpark plays in comparison to the league average.
- Target Field was the toughest park in the major leagues for left-handers to hit a homer for the past three seasons (though it was open for only two of the three), according to Baseball America. Lefties homered just once every 61 plate appearances there.
- The Twins hit just 100 homers in their first two years at the park, but their opponents didn't have as much trouble, slugging 146.

Why has Target Field been such a tough place in which to hit? The Pioneer Press studied National Weather Service data and on-field results from all the Twins' home games in 2010 and 2011. We calculated extra-base hits, homers and where those homers landed against temperature, wind direction, wind speed and relative humidity. We talked with local meteorologists who have taken an interest in the stadium's climate and its effect on baseball. And we asked the Twins what they've studied about the stadium, how they feel about it and whether they plan to make any changes to the park.

And though there's little question on-field talent will influence how Target Field plays - the Twins won the AL Central Division in 2010 before posting the second-worst record in baseball last year - the conditions at the stadium have helped turn what was expected to be a neutral ballpark into one of the most pitcher-friendly in the major leagues.

WINDS PREVAIL OVER HITTERS

The prevailing wind in Minnesota during the summer comes from the southeast, meaning the wind is blowing in from right field, Minnesota Public Radio chief meteorologist Paul Huttner said. That also means the elements are working against hitters in what should be the most offense-friendly months of the year.

Right field at the ballpark opens to Target Plaza, giving southeast winds a better chance to affect balls hit in that direction.

"When it's warm, and the ball wants to carry, the winds are fighting that, and they're blowing through that gap in right," Huttner said. "It boils down to the way the park is laid out. The wind and weather is almost always working against the ball traveling out of Target Field."

Only 26 percent of homers at Target Field in 2010 and 2011 were hit to right field, a mere 8 percent to right-center. By contrast, 44 percent went to left field, 17 percent to left-center. The remaining 6 percent were to center.

Homers were tougher to hit on days with southeast winds than in all but one other wind condition: the teeth-chattering winds that blow from the north early and late in the season.

And a southeast wind was the second-most common condition in the first two seasons at Target Field, meaning on many days, the elements are working against hitters - especially those who are left-handed.

Morneau homered just four times in 74 games at Target Field in 2010-11. Joe Mauer hit his second homer there - and his first one to right field - on Thursday, April 12, after homering just once in his first 114 games there.

"It's definitely frustrating as a left-handed hitter," Mauer said. "I'd be lying if I told you there aren't times at the plate where you're like, 'Oh, I've got to maybe pull a ball,' or things like that. It messes with your approach a little bit."

Even though the ball leaves the yard more frequently with northwest winds - the most common wind in spring and fall - Huttner theorizes that the design of Target Field knocks down some would-be homers in that scenario, too. As an air current approaches Target Field from behind third base, it must climb the stadium structure and the canopy stretching over the infield seats. Once the wind has entered the stadium, it spins back downward, creating a "rotor" that can drag some balls toward the grass before they reach the stands.

At times, the Twins have been able to make Target Field work for them; they took advantage of the park's big gaps for 166 doubles, 27 triples and a .422 slugging percentage on the way to baseball's best home record in 2010. A year later, their slugging percentage plummeted to .359 at Target Field, and they finished with a 33-48 home record, the worst in the American League.

But left-handed hitters such as Mauer, Morneau, Jason Kubel and Denard Span were frustrated with a lack of home runs even in 2010, and as it turns out, they had a good reason.

The Twins have been outhomered in seven of the 10 wind directions measured by the National Weather Service. In month-by-month terms, though they hold slight advantages over opponents in June and July, they're far less likely to hit home runs in the other four months of the season. In August alone - when high humidity should help the ball travel - the Twins have hit only 17 homers, half as many as they've allowed.

WHAT THE TWINS COULD DO

The Twins could make a handful of changes to stoke their offensive results at Target Field. They did change the batter's eye in center field after the 2010 season, removing a row of pine trees after hitters complained about them. But they've been unable, or reluctant, to enact larger alterations.

Huttner said moving the fences 10 feet closer to home plate would lead to a noticeable uptick in home runs. But Major League Baseball requires fences to be at least 325 feet from home plate, which would prevent the Twins from doing anything but nudging in the right-field fence, which sits 328 feet from home at the foul pole. And though the team could bring fences closer to the plate in other areas of the park, Twins President Dave St. Peter said the team has no plans to alter the dimensions of the park.

They also might be able to mitigate the effect of the wind by closing off part of Target Plaza, where Huttner said the "shimmer wall" on the adjacent parking ramp helps create a wind tunnel. The shimmer wall is the stainless steel wind veil that runs along the north side of Target Plaza and reflects the direction of the wind as the breeze moves the steel panels.

But closing off Target Plaza would require major aesthetic changes to the park; Target Plaza is one of the key entry

points to the stadium, and St. Peter made it clear there are plenty of considerations to the Target Field experience other than just how the park plays.

The Twins have studied the weather and wind conditions at the park, but they want to compile more information before drawing any conclusions or sharing the results of those studies, St. Peter said. He pointed out that the weather in 2010 was more conducive to hitting than the weather last summer.

"For every hitter that wants to move the fences in, I've got a pitcher who says he wants the fences moved back," St. Peter said.

And as a catcher, Mauer said, the current setup of the ballpark makes part of his job easier.

Finally, if the Twins want to become a better power-hitting team at home, the easiest way might be to stock up on right-handed hitters, who tend to hit their home runs to left and left-center field.

They made a point to replace the right-handed Michael Cuddyer - who homered 17 times in 149 games at Target Field before he left in free agency - with right-handed outfielder Josh Willingham, who had hit 105 of his 131 career homers to left field before this year. So far, that's worked well; Willingham homered in each of his first three games at the park.

But Willingham and Danny Valencia are the team's only legitimate power threats from the right side, with switch-hitter Ryan Doumit batting that way against left-handed pitchers. And the Twins are constructed around Mauer and Morneau, two former MVPs who will pull down a combined \$38 million this season and who spent the first two seasons stymied by Target Field.

Lastly, of course, the Twins can ignore the effects of the ballpark. That's the approach recommended by the all-time leader in homers at Target Field, Jim Thome, who also happens to be a left-handed hitter.

Thome, who signed with the Philadelphia Phillies this past winter, hit 22 homers in 96 games at Target Field, rejuvenating his career with the Twins on his way past the 600-homer plateau. The future hall of famer said he's excited to be playing in Philadelphia's homer-happy Citizens Bank Park this season, but echoed what Twins manager Ron Gardenhire and hitting coach Joe Vavra have been saying for two seasons: Ultimately, how Target Field plays isn't as important as how it plays with hitters' minds.

"There were some balls that you hit that would get knocked down, sure, I think maybe (it's) the weather or something," Thome said. "Whatever. You just go hit. You don't really worry about all that."

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