Baseball Data Variable Glossary

Quick Links:

PlayResult

- Single
- Double
- Triple
- Homerun
- Reach on Error
- Fielder's Choice (No Out Recorded
- Out
- Sacrifice
- Undefined (if ball is not put In Play)

OutsonPlay

Number of outs recorded on that pitch (0, 1, 2, or 3).

RunsScored

Number of runs scored on that pitch.

Notes

Comments entered by system operator.

Pitch Tracking

RelSpeed

Speed of pitch, reported in *miles per hour*, when it leaves the pitcher's hand.

VertRelAngle

Initial vertical (up-down) direction of the ball when it leaves the pitcher's hand, reported in *degrees*. A positive number means the ball is released upward, while a negative number means the ball is released downward.

HorzRelAngle

Initial horizontal (left-right) direction of the ball when it leaves the pitcher's hand, reported in *degrees*. A positive number means the ball is released to the right from the pitcher's perspective, while a negative number means the ball is released to the left from the pitcher's perspective.

SpinRate

How fast the ball is spinning as it leaves the pitcher's hand, reported in the number of times the pitched ball would spin per minute (*"revolutions per minute"* or *"rpm"*).

SpinAxis

Direction the ball is spinning, reported in *degrees of tilt*.
Note that:

a) A ball thrown with a spin axis of 0 has pure top spin. The top of the ball is moving away from the pitcher and the bottom of the ball is moving away from the batter. This is a classic "12 – 6" curveball. This kind of spin will cause the ball to drop more than gravity would cause alone.
b) A ball thrown with a spin axis of 180 has pure backspin and is a classic four seam fastball, with the top of the ball moving towards the pitcher and the bottom of the ball moving toward the batter. This kind of spin will cause the ball to drop less that gravity would cause alone.
c) A ball thrown with a spin axis of 90 is spinning squarely toward the left, from the pitcher's perspective (and would create a break to the left), while a ball thrown with a spin axis of 270 is spinning squarely toward the right, from the pitcher's perspective (and would create a break to the right).

Tilt

Spin axis converted into clock time, rounded to the nearest 15 minutes. As a rule of thumb, the ball will break in the direction of the number on the clock face. For example:

a) 6:00 is perfect top spin (classic "12 – 6" curveball), causing the ball to break down.
b) 12:00 is perfect back spin (Four seam fastball, with no left-right movement), causing the ball to break upward relative to how it would have moved due to gravity alone – cutters are around 11:00 and sinkers are around 2:00 for a RHP (right handed player), while cutters are around 1:00 and sinkers around 10:00 for a LHP (left handed player).

RelHeight

Height, reported in *feet*, above the home plate at which the pitcher releases the ball.

RelSide

Distance from the center of the rubber, reported in *feet*, at which the pitcher releases the ball. Balls thrown from the right side of the mound from the pitcher's perspective will have a positive number, and balls thrown from the left side of the mound from the pitcher's perspective have a negative number.

Extension

The distance, reported in *feet*, from which the pitcher releases the ball relative to the pitching rubber.

VertBreak

Distance, measured in *inches*, between where the pitch actually crosses the front of the home plate height-wise, and where it would have crossed home plate height-wise in a perfectly straight line from release, completely unaffected by gravity.

Note: This number will be quite large for pitches released with positive vertical release angle.

InducedVerticalBreak

Distance, measured in *inches*, between where the pitch actually crosses the front of the home plate height-wise, and where it would have crossed home plate height-wise if had it traveled in a perfectly straight line from release, but **affected** by gravity.

Note: If this number is positive, the ball broke "upwards", or in reality dropped less than it would have due to gravity – it does not necessarily mean that the ball actually rose.

HorzBreak

Distance, measured in *inches*, between where the pitch actually crosses the front of home plate side-wise, and where it would have crossed home plate side-wise if had it traveled in a perfectly straight line from release. A positive number means the break was to the right from the pitcher's perspective, while a negative number means the break was to the left from the pitcher's perspective.

PlateLocHeight

The height of the ball relative to home plate, measured in *feet*, as the ball crosses the front of the plate.

PlateLocSide

Distance from the center of the plate to the ball, measured in *feet*, as it crosses the front of the plate. Negative numbers are to the left of center from the pitcher's perspective (outside to a right-handed batter). Positive numbers to the right of center from the pitcher's perspective (inside to a right-handed batter).

ZoneSpeed

Speed of the pitch, measured in *miles per hour*, as it crosses the front of home plate.

VertApprAngle

How steeply up or down the ball enters the zone, reported as the angle in *degrees*, as the pitch crosses the front of home plate. A negative number means it is sloping downward, while a positive number (rare) means it is sloping upward.

HorzApprAngle

Left-right direction at which a pitched ball crosses the front of home plate, reported as an angle. A negative number means that the ball is moving from right to left from the pitcher's perspective (away from a right-handed batter) as it enters the zone, and a positive number means that the ball is moving from left to right from the pitcher's perspective (in on a right-handed batter) as it enters the zone.

ZoneTime

Amount of time elapsed from pitcher's release until it crosses the front of home plate. Also, may be referred to as "**batter reaction time**."

ExitSpeed

The speed of the ball, measured in *miles per hour*, as it comes off the bat at the moment of contact.

Angle

How steeply up or down the ball leaves the bat, reported as an angle. A positive number means the ball is initially traveling upward, while a negative number means the ball is initially traveling downward.

Direction

Left-right (horizontal) direction in which the ball leaves the bat, reported as an angle. A negative number represents a ball initially travelling toward the third base side of second base while a positive number represents a ball initially travelling toward the first base side.

HitSpinRate

How fast the ball is spinning as it leaves the bat, reported in the number of times the hit ball would spin per minute ("*revolutions per minute*" or "*rpm*").

PositionAt110X

The distance forward (in *feet*) that the batted ball travels before it lands, or would have landed if it were not caught or obstructed at a 100-fot distance away from home plate.

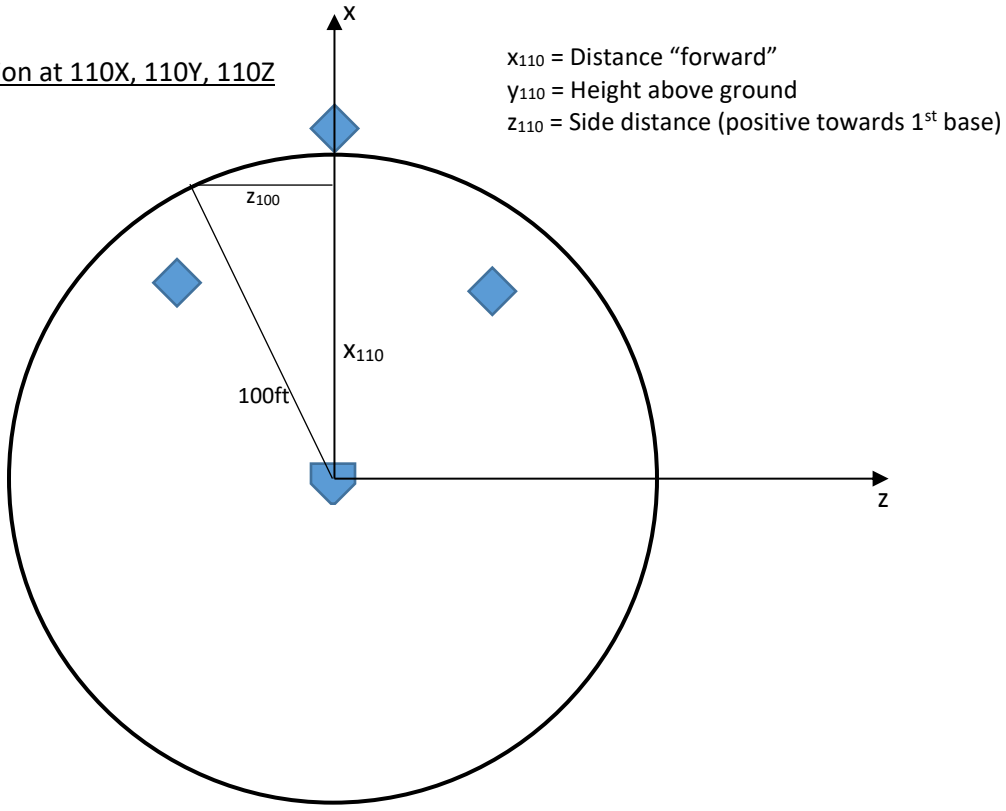
PositionAt110Y

The height of a batted ball (in *feet*) when it crosses the plane 110 feet away from home plate horizontally.

PositionAt110Z

The left-right position (in *feet*) when the ball crosses the plane of 110 feet away from home plate horizontally.

Graphic Depiction of Position at 110X, 110Y, 110Z



x_{110} = Distance "forward"
y_{110} = Height above ground
z_{110} = Side distance (positive towards 1st base)

Distance

The estimated “carry flat” distance, measured in *feet*, meaning the distance that the ball travels before it lands, or would have landed if it were not caught or obstructed.

LastTrackedDistance

The distance, measured in *feet*, that the radar actually tracks the ball. In some cases, the radar tracks the ball only for a portion of the hit trajectory and in this case the remaining part of the trajectory is estimated by the software using a ball flight model. This means that the Distance and Bearing reported is partially estimated and can have a reduced accuracy.

Bearing

Indicates where on the field the ball lands or would have landed, had it not been caught or obstructed. It is reported in *degrees* relative to home plate. A bearing of 0 degrees means the ball landed on a straight line from home through second base. A positive number means the ball landed on the first base side, while a negative number means the ball landed on the third base side.

Hangtime

Amount of time, measured in *seconds*, elapsed from when the ball hits the bat until the ball lands or would have landed, had it not been caught or obstructed.

pfxx

The horizontal (left-right) movement of the pitch during the last 40 feet before the front of home plate, as compared to a theoretical pitch thrown at the same speed with no spin-induced movement.

Note: Unlike the Horizontal Break number above, this movement is from the batter’s perspective, meaning positive numbers break towards the 1st base, while negative numbers break to the 3rd base.

pfxz

The vertical (up-down) movement of the pitch during the last 40 feet before the front of home plate, as compared to a theoretical pitch thrown at the same speed with no spin-induced movement.

x0

The horizontal (left-right) location of the pitch 50 feet before the front of home plate. Positive numbers are toward the 1st base side, while negative numbers are toward the 3rd base side, relative to a straight line drawn from the tip of home plate to the center of the rubber.

y0

The distance from home plate, along a straight line drawn from the tip of home plate to the center of the rubber, 50 feet before the front of home plate. By definition this will always be 50 feet.

z0

The height of the pitch, relative to home plate, 50 feet before the front of home plate.

vx0

The velocity (speed) of the pitch in the left-right direction, 50 feet before the front of home plate.

vy0

The velocity (speed) of the pitch in the direction toward home plate, 50 feet before the front of home plate.

vz0

The velocity (speed) of the pitch in the up-down direction, 50 feet before the front of home plate.

ax0

The acceleration (how much speed is changing) of the pitch in the left-right direction, 50 feet before the front of home plate.

ay0

The acceleration (how much speed is changing) of the pitch in the direction toward home plate, 50 feet before the front of home plate.

az0

The acceleration (how much speed is changing) of the pitch in the up-down direction, 50 feet before the front of home plate.

HomeTeam

The designated home team in the game.

AwayTeam

The designated away team in the game.

Stadium

Venue that game is taking place in.

Level

Level of play associated with game.

League

League affiliated with the game. In the case of interleague play, or minor league playoffs, the league will default to the home team.

GameID

Unique ID associated with game.

PitchUID

A unique identifier for each pitch in the TrackMan database.