

# Package ‘baseballDBR’

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**Type** Package

**Title** Sabermetrics and Advanced Baseball Statistics

**Version** 0.1.2

**Description** A tool for gathering and analyzing data from the Baseball Data-bank <<http://www.baseball-databank.org/>>, which includes player performance statistics from major league baseball in the United States beginning in the year 1871.

**Depends** R (>= 3.3.3)

**Imports** rvest, xml2, magrittr, dplyr

**Suggests** testthat, tidyr, rmarkdown, knitr, Lahman

**License** MIT + file LICENSE

**URL** <https://github.com/keberwein/moneyball>

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---

BA *Batting: Calculate batting average*

---

**Description**

Find batting average for batters with more than zero at bats. Required fields from the Batting table are; "AB", and "H."

**Usage**

BA(dat = NULL)

**Arguments**

dat A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$BA <- BA(Batting2016)
```

---

BABIP

*Batting: Calculate batting average on balls in play (BABIP)*

---

**Description**

Find BABIP for batters with more than zero at bats. Required fields from the Batting table are: "AB", "BB", "H", "HBP", "SF", "SH", "HR" and "SO."

**Usage**

```
BABIP(dat = NULL)
```

**Arguments**

<code>dat</code>	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
------------------	--

**See Also**

Other Batting functions: [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$BABIP <- BABIP(Batting2016)
```

---

baseballDBR	<i>baseballDBR: A package for working with data from the Baseball Databank/Lahman Database.</i>
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---

### Description

baseballDBR: A package for working with data from the Baseball Databank/Lahman Database.

---

BBpct	<i>Batting: Calculate base on ball percentage</i>
-------	---

---

### Description

Find base on ball percentage for batters with more than zero at bats. Required fields from the Batting table are; "AB", "SO", "BB", "HBP", "SF", and "SH." Intentional base on balls (IBB) is added for the years that metric is available.

### Usage

```
BBpct(dat = NULL)
```

### Arguments

dat	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
-----	--

### See Also

Other Batting functions: [BABIP](#), [BA](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

### Examples

```
data("Batting2016")
head(Batting2016)

Batting2016$BBpct <- BBpct(Batting2016)
```

---

BB\_9

*Pitching: Calculate walks per nine innings*

---

### Description

Find batting average walks per nine innings for pitchers with more one or more inning pitched. Required fields from the Pitching table are; "IPouts", and "BB."

### Usage

```
BB_9(dat = NULL)
```

### Arguments

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

### See Also

Other Pitching functions: [FIP](#), [HR\\_9](#), [H\\_9](#), [IP](#), [K\\_9](#), [LOB\\_pct](#), [WHIP](#)

### Examples

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$BB_9 <- BB_9(Pitching2016)
```

---

Ch

*Fielding: Calculate defensive chances*

---

### Description

The number of chances a player had to make a defensive play. Required fields from the Fielding table are; "PO", "A", and "E."

### Usage

```
Ch(dat = NULL)
```

### Arguments

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Fielding functions: [Fld\\_pct](#)

**Examples**

```
data("Fielding2016")
head(Fielding2016)

Fielding2016$Ch <- Ch(Fielding2016)
```

---

CTpct

*Batting: Calculate a batter's contact rate*

---

**Description**

Find the contact rate for batters. Required fields from the batting table are "AB" and "SO."

**Usage**

```
CTpct(dat = NULL)
```

**Arguments**

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$CTpct <- CTpct(Batting2016)
```

---

FIP *Pitching: Fielding Independent Pitching (FIP)*

---

**Description**

Find the FIP for all pitchers with one or strike outs in a particular season. Required fields from the Pitching table are "BB", "HBP", "SO", and "IPouts."

**Usage**

```
FIP(dat = NULL, Fangraphs = FALSE, NA_to_zero = TRUE,
    Sep.Leagues = FALSE)
```

**Arguments**

dat	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
Fangraphs	If TRUE the function will download wOBA values from Fangraphs. If FALSE the function will use the internal formula adapted from Tom Tango's original wOBA formula. Note, the internal formula is typically identical to Fangraphs and does not require an external download. If not specified, the default is set to FALSE.
NA_to_zero	If TRUE this will replace NAs with 0 for years that certain stats were not counted. For example, sacrifice hits were not a counted statistic until 1954, therefore we are technically unable to calculate wOBA for any player prior to 1954. The default is set to TRUE. Even though this is bad practice mathematically, many in the sabermetrics community accept the practice. If FALSE, the wOBA calculation will return NaN for years with missing data.
Sep.Leagues	If TRUE the algorithm will calculate different run environments for the National and American leagues. Grouping the leagues can solve problems introduced by the designated hitter and hitting pitchers. It also serves to further isolate for park factors between the American and National leagues. The default for this argument is FALSE.

**See Also**

Other Pitching functions: [BB\\_9](#), [HR\\_9](#), [H\\_9](#), [IP](#), [K\\_9](#), [LOB\\_pct](#), [WHIP](#)

**Examples**

```
data("Pitching2016")
head(Pitching2016)
```

```
Pitching2016$FIP <- FIP(Pitching2016, Fangraphs=FALSE, NA_to_zero=TRUE, Sep.Leagues=FALSE)
```

---

fip_values	<i>Return FIP constants per season</i>
------------	--

---

### Description

Get fip constants for each season. By default the function uses a method adapted from Tom Tango and used by Fangraphs. The function returns FIP constants based on ERA FIP\_ERA as well as constants based on RA FIP\_RA. Both the Tango and Fangraphs formulas use ERA for their FIP constants.

### Usage

```
fip_values(dat = NULL, Sep.Leagues = FALSE, Fangraphs = FALSE)
```

### Arguments

dat	A full pitching table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
Sep.Leagues	If TRUE, this will split the calculation and return unique FIP constants for the various leagues. This can be helpful in handling Designated Hitters and National League pitchers. It also isolates the park factors to their respective leagues.
Fangraphs	If TRUE the function will return the Fangraphs FIP constants. This can not be used in conjunction with the Sep.Leagues argument because Fangraphs does not separate FIP constants by league.

### Examples

```
data("Pitching2016")
head(Pitching2016)

fip_df <- fip_values(Pitching2016, Fangraphs=FALSE)
head(fip_df)
```

---

Fld_pct	<i>Fielding: Calculate batting average</i>
---------	--

---

### Description

Find batting average for batters with more than zero at bats. Required fields from the Fielding table are: "PO", "A", and "E."



**Usage**

```
Fld_pct(dat = NULL)
```

**Arguments**

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Fielding functions: [Ch](#)

**Examples**

```
data("Fielding2016")
head(Fielding2016)

Fielding2016$Fld_pct <- Fld_pct(Fielding2016)
```

---

get\_bbdb

*Get an up to date copy of the Baseball Databank.*


---

**Description**

Download the newest version of the Baseball Databank from the Chadwick Bureau GitHub repository. This is the source of Sean Lahman's baseball database and is always under development. This function will read the .csv files and return them as data frames. There is also an option to download the entire directory.

**Usage**

```
get_bbdb(table = NULL, downloadZip = FALSE, AllTables = FALSE)
```

**Arguments**

**table** The tables you would like to download. Uses Lahman table names Ex. "Batting", "Master", "AllstarFull", etc... If this argument is left as NULL, the function will download all twenty-seven tables.

**downloadZip** If true, this will download a zip file of all twenty-seven tables in .csv format to your working directory.

**AllTables** If true, this will download all the tables in the database. The default is set to false.

**Examples**

```

get_bbdb(table = "Batting")

## Not run:
get_bbdb(table = c("Batting", "Pitching"))

## End(Not run)

## Not run:
get_bbdb(downloadZip = TRUE)

## End(Not run)

```

---

HRpct

*Batting: Calculate home run percentage*


---

**Description**

Find home run percentage for batters with more than zero at bats. Required fields from the Batting table are "AB" and "HR."

**Usage**

```
HRpct(dat = NULL)
```

**Arguments**

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```

data("Batting2016")
head(Batting2016)

Batting2016$HRpct <- HRpct(Batting2016)

```

---

HR\_9

*Pitching: Calculate Home Runs per Nine innings*

---

### Description

Find the number of home runs a pitcher allows per nine innings pitched. Required fields from the Pitching table are; "H" and "IPouts."

### Usage

```
HR_9(dat = NULL)
```

### Arguments

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

### See Also

Other Pitching functions: [BB\\_9](#), [FIP](#), [H\\_9](#), [IP](#), [K\\_9](#), [LOB\\_pct](#), [WHIP](#)

### Examples

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$HR_9 <- HR_9(Pitching2016)
```

---

H\_9

*Pitching: Calculate Hits per Nine innings*

---

### Description

Find the number of hits a pitcher throws per nine innings pitched. Required fields from the Pitching table are; "H", "BB", and "IPouts."

### Usage

```
H_9(dat = NULL)
```

### Arguments

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Pitching functions: [BB\\_9](#), [FIP](#), [HR\\_9](#), [IP](#), [K\\_9](#), [LOB\\_pct](#), [WHIP](#)

**Examples**

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$H_9 <- H_9(Pitching2016)
```

---

IP

*Pitching: Calculate the innings pitched*

---

**Description**

Find the number of innings a player has pitched for a season. Required fields from the Pitching table are; "IPouts."

**Usage**

```
IP(dat = NULL)
```

**Arguments**

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Pitching functions: [BB\\_9](#), [FIP](#), [HR\\_9](#), [H\\_9](#), [K\\_9](#), [LOB\\_pct](#), [WHIP](#)

**Examples**

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$IP <- IP(Pitching2016)
```

---

ISO	<i>Batting: Calculate ISO for batters</i>
-----	---

---

**Description**

Find isolated power (ISO) for batters with more than zero at bats. Required fields from the batting table are "H", "X2B", "X3B", "HR".

**Usage**

```
ISO(dat = NULL)
```

**Arguments**

dat	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
-----	--

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$ISO <- ISO(Batting2016)
```

---

Kpct	<i>Batting: Calculate strikeout percentage</i>
------	--

---

**Description**

Find strikeout percentage for batters with more than zero at bats. Required fields from the Batting table are; "AB", "SO", "BB", "HBP", "SF", and "SH."

**Usage**

```
Kpct(dat = NULL)
```

**Arguments**

`dat` A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$Kpct <- Kpct(Batting2016)
```

---

K\_9

*Pitching: Calculate Strikes per Nine innings*


---

**Description**

Find the number of strikes a pitcher throws per nine innings pitched. Required fields from the Pitching table are; "H", "BB", "IPouts", and "SO."

**Usage**

```
K_9(dat = NULL)
```

**Arguments**

`dat` A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Pitching functions: [BB\\_9](#), [FIP](#), [HR\\_9](#), [H\\_9](#), [IP](#), [LOB\\_pct](#), [WHIP](#)

**Examples**

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$K_9 <- K_9(Pitching2016)
```

---

LOB_pct	<i>Pitching: Calculate the left on base percentage</i>
---------	--

---

**Description**

Find the percentage of base runners that a pitcher leaves on base of the course of a season. Required fields from the Pitching table are; "H", "BB", "HBP", "R", and "HR."

**Usage**

```
LOB_pct(dat = NULL)
```

**Arguments**

dat	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
-----	--

**See Also**

Other Pitching functions: [BB\\_9](#), [FIP](#), [HR\\_9](#), [H\\_9](#), [IP](#), [K\\_9](#), [WHIP](#)

**Examples**

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$LOB_pct <- LOB_pct(Pitching2016)
```

---

OBP	<i>Batting: Calculate on base percentage (OBP)</i>
-----	--

---

**Description**

Find the OBP for batters with more than zero hits. Required fields from the batting table are "H", "X2B", "X3B", "HR".

**Usage**

```
OBP(dat = NULL)
```

**Arguments**

dat	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
-----	--

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBS](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$OBP <- OBP(Batting2016)
```

---

OPS

*Batting: Calculate on base percentage plus slugging (OPS)*

---

**Description**

Find the OPS for batters with more than zero hits. Required fields from the batting table are "H", "X2B", "X3B", "HR", "BB", "HBP", "AB" and "SF."

**Usage**

```
OPS(dat = NULL)
```

**Arguments**

<code>dat</code>	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
------------------	--

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBS](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$OPS <- OPS(Batting2016)
```



---

PA *Batting: Calculate plate appearances for batters*

---

### Description

Find the plate appearances (PA) for batters. Required fields from the batting table are "AB", "BB", "HBP", "SH", and "SF."

### Usage

```
PA(dat = NULL)
```

### Arguments

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

### See Also

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBS](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

### Examples

```
data("Batting2016")
head(Batting2016)

Batting2016$PA <- PA(Batting2016)
```

---

RC2002 *Batting: Calculate Runs Created using the updated 2002 formula.*

---

### Description

The "2002 Version" is an updated version of the "Technical Version" by Bill James. The 2002 RC uses the same counting stats as the Technical Version but applies weights to many of the raw stats. Required fields from the batting table are "AB", "H", "BB", "X2B", "X3B", "HR", "GIDP", "HBP", "SB", "CS", "SF" and "SH," "SO", and "IBB."

### Usage

```
RC2002(dat = NULL)
```

**Arguments**

`dat` A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$RC2002 <- RC2002(Batting2016)
```

---

RCbasic

*Batting: Calculate Runs Created using the basic formula.*

---

**Description**

Find the runs created using the basic formula presented by Bill James in the late 1970s. Required fields from the batting table are "AB", "H", "BB", "X2B", "X3B", and "HR."

**Usage**

```
RCbasic(dat = NULL)
```

**Arguments**

`dat` A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$RCbasic <- RCbasic(Batting2016)
```

---

RCtech

*Batting: Calculate Runs Created using the technical formula.*

---

### Description

The "Technical Version" is the most well-known formula for RC. It adds several factors to the basic formula such as sacrifice hits, stolen bases and intentional base on balls. Required fields from the batting table are "AB", "H", "BB", "X2B", "X3B", "HR", "GIDP", "HBP", "SB", "CS", "SF" and "SH," and "IBB."

### Usage

```
RCtech(dat = NULL)
```

### Arguments

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

### See Also

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

### Examples

```
data("Batting2016")
head(Batting2016)

Batting2016$RCtech <- RCtech(Batting2016)
```

---

SLG

*Batting: Calculate slugging percentage (SLG)*

---

### Description

Find the SLG for batters with more than zero hits. Required fields from the batting table are "H", "X2B", "X3B", "HR".

### Usage

```
SLG(dat = NULL)
```

**Arguments**

`dat` A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$SLG <- SLG(Batting2016)
```

---

 TBs

---

*Batting: Calculate a batter's total bases*


---

**Description**

Find total bases. Required fields from the batting table are "AB", "H", "X2B", "X3B" and "HR."

**Usage**

```
TBs(dat = NULL)
```

**Arguments**

`dat` A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$TBs <- TBs(Batting2016)
```

---

urlExists	<i>urlExists</i>
-----------	------------------

---

**Description**

A utility function to run a tryCatch on a URL.

**Usage**

```
urlExists(target)
```

**Arguments**

target	url
--------	-----

---

WHIP	<i>Pitching: Calculate Walks plus Hits per Innings Pitched</i>
------	--

---

**Description**

Find the number of walks plus hits a pitcher allows per inning pitched. Required fields from the Pitching table are; "H", "BB", and "IPouts."

**Usage**

```
WHIP(dat = NULL)
```

**Arguments**

dat	A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.
-----	--

**See Also**

Other Pitching functions: [BB\\_9](#), [FIP](#), [HR\\_9](#), [H\\_9](#), [IP](#), [K\\_9](#), [LOB\\_pct](#)

**Examples**

```
data("Pitching2016")
head(Pitching2016)

Pitching2016$WHIP <- WHIP(Pitching2016)
```

wOBA

*Batting: Calculate Weighted On-Base Average (wOBA)***Description**

Find the wOBA for all players with one or more hits for a particular season. Required fields from the batting table are "AB", "H", "BB", "X2B", "X3B", "HR", "HBP", "SF", "IBB."

**Usage**

```
wOBA(BattingTable = NULL, PitchingTable = NULL, FieldingTable = NULL,
     Fangraphs = FALSE, NA_to_zero = TRUE, Sep.Leagues = FALSE)
```

**Arguments**

BattingTable	A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
PitchingTable	A full pitching table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
FieldingTable	A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
Fangraphs	If TRUE the function will download wOBA values from Fangraphs. If FALSE the function will use the internal formula adapted from Tom Tango's original wOBA formula. Note, the internal formula is typically identical to Fangraphs and does not require an external download. If not specified, the default is set to FALSE.
NA_to_zero	If TRUE this will replace NAs with 0 for years that certain stats were not counted. For example, sacrifice hits were not a counted statistic until 1954, therefore we are technically unable to calculate wOBA for any player prior to 1954. The default is set to TRUE. Even though this is bad practice mathematically, many in the sabermetrics community accept the practice. If FALSE, the wOBA calculation will return NaN for years with missing data.
Sep.Leagues	If TRUE the algorithm will calculate different run environments for the National and American leagues. Grouping the leagues can solve problems introduced by the designated hitter and hitting pitchers. It also serves to further isolate for park factors between the American and National leagues. The default for this argument is FALSE.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wRAA](#), [wRC](#)

**Examples**

```

data("Batting2016")
head(Batting2016)
data("Pitching2016")
head(Pitching2016)
data("Fielding2016")
head(Fielding2016)

Batting2016$wOBA <- wOBA(Batting2016, Pitching2016, Fielding2016, Fangraphs=FALSE,
                        NA_to_zero=TRUE, Sep.Leagues=FALSE)

```

---

wOBA_values	<i>Return wOBA values per season</i>
-------------	--------------------------------------

---

**Description**

Get wOBA values for each year in your database. This calculation requires all fields of the Pitching, Fielding and Batting tables from the Lahman package, or a comparable data set. The function uses a version of Tom Tango's wOBA formula by default, but can also return Fangraphs wOBA values.

**Usage**

```

wOBA_values(BattingTable, PitchingTable, FieldingTable, Sep.Leagues = FALSE,
            Fangraphs = FALSE)

```

**Arguments**

BattingTable	A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
PitchingTable	A full pitching table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
FieldingTable	A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
Sep.Leagues	If TRUE, this will split the calculation and return unique wOBA values for the various leagues. This can be helpful in handling Designated Hitters and National League pitchers. It also isolates the park factors to their respective leagues.
Fangraphs	if TRUE the function will return the Fangraphs wOBA values. By default the function uses a method adapted from Tom Tango. These values are often very close to Fangraphs, but are not the same due to Fangraphs using a different algorithm. This can not be used in conjunction with the Sep.Leagues argument because Fangraphs does not separate FIP constants by league.

## Examples

```
data("Batting2016")
head(Batting2016)
data("Pitching2016")
head(Pitching2016)
data("Fielding2016")
head(Fielding2016)

woba_df <- wOBA_values(Batting2016, Pitching2016, Fielding2016, Sep.Leagues=FALSE, Fangraphs=FALSE)
```

---

wRAA

*Batting: Calculate Weighted Runs Above Average (wRAA)*


---

## Description

Find the wRAA for all players with one or more hits for a particular season. Required fields from the batting table are "AB", "H", "BB", "X2B", "X3B", "HR", "HBP", "SF", "IBB."

## Usage

```
wRAA(BattingTable = NULL, PitchingTable = NULL, FieldingTable = NULL,
     Fangraphs = FALSE, NA_to_zero = TRUE, Sep.Leagues = FALSE)
```

## Arguments

BattingTable	A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
PitchingTable	A full pitching table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
FieldingTable	A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
Fangraphs	If TRUE the function will download wOBA values from Fangraphs. Both wOBA scale and league wOBA are used in the wRAA calculation. If FALSE the function will use the internal wOBA algorithm, which is adapted from Tom Tango's original wOBA formula. This algorithm produces a slightly different wOBA scale than the Fangraphs wOBA scale, so variations in wRAA should be expected. The default internal method does not require an external download from Fangraphs. If not specified, the default is set to FALSE.
NA_to_zero	If TRUE this will replace NAs with 0 for years that certain stats were not counted. For example, sacrifice hits were not a counted statistic until 1954, therefore we are technically unable to calculate wRAA for any player prior to



1954. The default is set to TRUE. Even though this is bad practice mathematically, many in the sabermetrics community accept the practice. If FALSE, the wRAA calculation will return NaN for years with missing data.

**Sep.Leagues** If TRUE the algorithm will calculate different run environments for the National and American leagues. Grouping the leagues can solve problems introduced by the designated hitter and hitting pitchers. It also serves to further isolate for park factors between the American and National leagues. The default for this argument is FALSE.

### See Also

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRC](#)

### Examples

```
data("Batting2016")
head(Batting2016)
data("Pitching2016")
head(Pitching2016)
data("Fielding2016")
head(Fielding2016)
```

```
Batting2016$wRAA <- wRAA(Batting2016, Pitching2016, Fielding2016, Fangraphs=FALSE,
  NA_to_zero=TRUE, Sep.Leagues=FALSE)
```

---

wRC

*Batting: Calculate Weighted Runs Created (wRC)*

---

### Description

Find the wRC for all players with one or more hits for a particular season. Required fields from the batting table are "AB", "H", "BB", "X2B", "X3B", "HR", "HBP", "SF", "IBB."

### Usage

```
wRC(BattingTable = NULL, PitchingTable = NULL, FieldingTable = NULL,
  Fangraphs = FALSE, NA_to_zero = TRUE, Sep.Leagues = FALSE)
```

### Arguments

**BattingTable** A full batting table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.

**PitchingTable** A full pitching table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.

FieldingTable	A full fielding table from the Lahman package or the Chadwick Bureau GitHub repository. Any subsetting or removal of players will affect your results. All players for each year are recommended.
Fangraphs	If TRUE the function will download wOBA values from Fangraphs. Both wOBA scale and league wOBA are used in the wRC calculation. If FALSE the function will use the internal wOBA algorithm, which is adapted from Tom Tango's original wOBA formula. This algorithm produces a slightly different wOBA scale than the Fangraphs wOBA scale, so variations in wRC should be expected. The default internal method does not require an external download from Fangraphs. If not specified, the default is set to FALSE.
NA_to_zero	If TRUE this will replace NAs with 0 for years that certain stats were not counted. For example, sacrifice hits were not a counted statistic until 1954, therefore we are technically unable to calculate wRC for any player prior to 1954. The default is set to TRUE. Even though this is bad practice mathematically, many in the sabermetrics community accept the practice. If FALSE, the wRC calculation will return NaN for years with missing data.
Sep.Leagues	If TRUE the algorithm will calculate different run environments for the National and American leagues. Grouping the leagues can solve problems introduced by the designated hitter and hitting pitchers. It also serves to further isolate for park factors between the American and National leagues. The default for this argument is FALSE.

### See Also

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [XBperH](#), [wOBA](#), [wRAA](#)

### Examples

```
data("Batting2016")
head(Batting2016)
data("Pitching2016")
head(Pitching2016)
data("Fielding2016")
head(Fielding2016)

Batting2016$wRC <- wRC(Batting2016, Pitching2016, Fielding2016, Fangraphs=FALSE,
                      NA_to_zero=TRUE, Sep.Leagues=FALSE)
```

---

XBHpct

*Batting: Calculate extra base percentage*

---

### Description

Find extra base percentage for batters with more than zero at bats. Required fields from the batting table are "AB", "BB", "HBP", "SF", "SH", "X2B", "X3B", "HR".

**Usage**

```
XBHpct(dat = NULL)
```

**Arguments**

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBperH](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")
head(Batting2016)

Batting2016$XBHpct <- XBHpct(Batting2016)
```

---

XBperH

*Batting: Calculate extra base per hit*

---

**Description**

Find the average extra bases per hit for batters with more than zero hits. Required fields from the batting table are "H", "X2B", "X3B", "HR".

**Usage**

```
XBperH(dat = NULL)
```

**Arguments**

**dat** A data frame you would wish to calculate. The data frame must have the same column names found in The Lahman package or the Chadwick Bureau GitHub repository.

**See Also**

Other Batting functions: [BABIP](#), [BA](#), [BBpct](#), [CTpct](#), [HRpct](#), [ISO](#), [Kpct](#), [OBP](#), [OPS](#), [PA](#), [RC2002](#), [RCbasic](#), [RCtech](#), [SLG](#), [TBs](#), [XBHpct](#), [wOBA](#), [wRAA](#), [wRC](#)

**Examples**

```
data("Batting2016")  
head(Batting2016)
```

```
Batting2016$XBperH <- XBperH(Batting2016)
```

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