Lecture 2 Module 3 Exercises

Exercise 2.1: Ted Williams Batting Statistics

Here are Ted Williams's career statistics:

Statistics	Value
Plate appearances	9,792
At-bats	7,706
Hits	2,654
Doubles	525
Triples	71
Home Runs	521
Bases on balls	2,021
Hit by a pitch	39
Sacrifice flies	20

Part (a)

Calculate Ted Williams' career batting average.

Part (b)

Calculate Ted Williams' career on-base percentage.

Part (c)

Calculate Ted Williams' career slugging average.

Solution

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Statistics	Value
At-bats	7,706
Hits	2,654
Doubles	525
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Hit by a pitch	39

Statistics	Value
Sacrifice flies	20

Part (a)

Calculate Ted Williams' career batting average

Solution

Let's start by creating a set of variables to hold Williams' career batting statistics:

```
ted.williams.at.bats <- 7706

ted.williams.hits <- 2654

ted.williams.doubles <- 525

ted.williams.triples <- 71

ted.williams.home.runs <- 521

ted.williams.bases.on.balls <- 2021

ted.williams.hit.by.a.pitch <- 39

ted.williams.sacrifice.flies <- 20
```

Now let's calculate the batting average for Ted Williams:

```
ted.williams.batting.average <- ted.williams.hits / ted.williams.at.bats

cat( "Ted Williams batting average:",
     formatC(
         ted.williams.batting.average,
         format = "f",
         digits = 3
     )
)
```

```
## Ted Williams batting average: 0.344
```

Part (b)

Calculate Ted Williams' career on-base percentage

Solution

Next, let's calculate Ted Williams's on-base percentage:

```
ted.williams.on.base.percentage <-
    (ted.williams.hits +
         ted.williams.bases.on.balls +
```

```
        ted.williams.hit.by.a.pitch) /
    (ted.williams.at.bats +
        ted.williams.bases.on.balls +
        ted.williams.hit.by.a.pitch +
        ted.williams.sacrifice.flies)

cat( "Ted Williams on-base percentage:",
     formatC(
        ted.williams.on.base.percentage,
        format = "f",
        digits = 3
     )
)
```

```
## Ted Williams on-base percentage: 0.482
```

Part (c)

Calculate Ted Williams' career slugging percentage.

Solution

Remember that we have to first compute the number of singles before we can calculate the total bases:

```
ted.williams.singles <-
    ted.williams.hits -
    ted.williams.doubles -
    ted.williams.triples -
    ted.williams.home.runs

ted.williams.total.bases <-
    ted.williams.singles +
    2 * ted.williams.doubles +
    3 * ted.williams.triples +
    4 * ted.williams.home.runs
```

Finally, we can calculate Ted Williams's slugging percentage:

```
ted.williams.slugging.percentage <-
    ted.williams.total.bases / ted.williams.at.bats

cat( "Ted Williams slugging percentage:",
     formatC(
        ted.williams.slugging.percentage,
        format = "f",
        digits = 3
     )
)
```

```
## Ted Williams slugging percentage: 0.634
```