

How can I create a three-way table in R with examples?

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A three-way table, also known as a contingency table, is a useful tool for organizing and summarizing data with three variables. In R, this can be done using the "table" function, which takes in three variables and displays the frequencies of their combinations. For example, if we have data on the gender, age group, and income level of individuals, we can use the "table" function to create a three-way table that shows the number of individuals in each category. This allows for easy comparison and analysis of the relationships between the variables. Another way to create a three-way table in R is by using the "ftable" function, which produces a more visually appealing table with row and column labels. Overall, creating a three-way table in R is a simple and effective way to organize and analyze data with three variables.

Create a Three-Way Table in R (With Examples)

A three-way table is a type of table that displays the frequencies for three categorical variables.

The easiest way to create a three-way table in R is to use the `xtabs()` function:

```
three_way <- xtabs(~ var1 + var2 + var3, data=df)
```

If you'd like to view the three-way table in a more compact manner, you can use the `ftable()` function:

```
three_way_ftable <- ftable(three_way)
```

Note: Both the `xtabs()` and `ftable()` functions are built into base R.

The following example shows how to use these

functions to create three-way tables in R in practice.

Example: How to Create Three-Way Tables in R

Suppose we have the following data frame that contains information about various basketball players:

```
#create data frame
```

```
df <- data.frame(team=c('A', 'A', 'A', 'A', 'A', 'B', 'B', 'B',  
'B', 'B'),  
position=c('G', 'G', 'G', 'F', 'F', 'G', 'G', 'F', 'F', 'F'),  
starter=c('Yes', 'No', 'No', 'Yes', 'No',  
'Yes', 'No', 'Yes', 'Yes', 'No'),  
points=c(30, 28, 24, 24, 28, 14, 16, 20, 34, 29))
```

```
#view data frame
```

```
df
```

```
team position starter points
```

```
1 A G Yes 30
```

```
2 A G No 28
```

```
3 A G No 24
```

```
4 A F Yes 24
```

```
5 A F No 28
```

```
6 B G Yes 14
```

```
7 B G No 16
```

8 B F Yes 20

9 B F Yes 34

10 B F No 29

Suppose we would like to create a three-way table to view the frequency of players based on three variables: team, position, and starter.

We can use the function to create this three-way table:

```
#create three-way table
```

```
three_way <- xtabs(~ team + position + starter, data=df)
```

```
#view three-way table
```

```
three_way
```

```
, , starter = No
```

```
position
```

```
team F G
```

```
A 1 2
```

```
B 1 1
```

```
, , starter = Yes
```

```
position
```

```
team F G
```

```
A 1 1
```

```
B 2 1
```

The first table in the output shows the frequency of players by team and position where the starter variable is equal to No.

The second table shows the frequency of players by team and position where the starter variable is equal to Yes.

If we'd like, we can use the `ftable()` function to "flatten" these tables into one table:

```
#convert table to ftable
```

```
three_way_ftable <- ftable(three_way)
```

```
#view ftable
```

```
three_way_ftable
```

```
starter No Yes
```

```
team position
```

```
A F 1 1
```

```
G 2 1
```

B F 1 2

G 1 1

For example, we can see:

There was 1 player who was on team A, position F, and was not a starter. There was 1 player who was on team A, position F, and was a starter. There were 2 players who were on team A, position G, and were not starters.

And so on.