

How can I calculate Cramer's V in R?

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Cramer's V is a measure of association between two categorical variables. It is often used to assess the strength of relationship between two variables in a contingency table. To calculate Cramer's V in R, one can use the 'cramer.test' function from the 'vcd' package. This function takes in the contingency table as input and returns the Cramer's V value along with its significance level. In addition, the 'cramerV' function from the 'rcompanion' package can also be used for calculating Cramer's V. It is important to note that the contingency table must have at least two rows and two columns for the calculation to be valid. Overall, R provides efficient and user-friendly methods for calculating Cramer's V, making it a useful tool for assessing the association between categorical variables.

Calculate Cramer's V in R

Cramer's V is a measure of the strength of association between two .

It ranges from 0 to 1 where:

0 indicates no association between the two variables.

1 indicates a strong association between the two variables.

It is calculated as:

$$\text{Cramer's } V = \sqrt{(X^2/n) / \min(c-1, r-1)}$$

where:

X²: The Chi-square statistic

n: Total sample size

r: Number of rows

c: Number of columns

This tutorial provides a couple examples of how to calculate Cramer's V for a contingency table in R.

Example 1: Cramer's V for a 2x2 Table

The following code shows how to use the `CramerV` function from the `rcompanion` package to calculate Cramer's V for a 2x2 table:

```
#create 2x2 table
data = matrix(c(7,9,12,8), nrow = 2)

#view dataset
data

7 12
9 8

#load rcompanion library
library(rcompanion)

#calculate Cramer's V
cramerV(data)
```

Cramer V

0.1617

Cramer's V turns out to be 0.1617, which indicates a fairly weak association between the two variables in the table.

Note that we can also produce a confidence interval for Cramer's V by indicating ci = TRUE:

```
cramerV(data, ci = TRUE)
```

```
Cramer.V lower.ci upper.ci
```

```
1 0.1617 0.003487 0.4914
```

We can see that Cramer's V remains unchanged at 0.1617, but we now have a 95% confidence interval that contains a range of values that is likely to contain the true value of Cramer's V.

This interval turns out to be: .

Example 2: Cramer's V for Larger Tables

The following code shows how to calculate Cramer's V for a table with 2 rows and 3 columns:

```
#create 2x3 table
```

```
data = matrix(c(6, 9, 8, 5, 12, 9), nrow = 2)
```

```
#view dataset
```

```
data
```

```
6 8 12
```

```
9 5 9
```

```
#load rcompanion library
```

```
library(rcompanion)
```

```
#calculate Cramer's V
```

```
cramerV(data)
```

```
Cramer V
```

```
0.1775
```

Cramer's V turns out to be 0.1775.

You can find the complete documentation for the CramerV function .