

# How can the number of elements equal to zero be counted using NumPy?

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## RECOMMENDED CITATION

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NumPy is a powerful Python library used for scientific computing and data analysis. One of its useful functions is the ability to count the number of elements equal to zero in an array. This can be achieved by using the "np.count\_nonzero()" function, which returns the total count of non-zero elements in an array. By subtracting this value from the total number of elements in the array, the number of elements equal to zero can be obtained. This feature of NumPy provides a convenient and efficient way to analyze and manipulate data containing zero values.

## NumPy: Count Number of Elements Equal to Zero

You can use the following basic syntax to count the number of elements equal to zero in a NumPy array:

```
import numpy as np
```

```
np.count_nonzero(my_array==0)
```

This particular example will return the number of elements equal to zero in the NumPy array called my\_array.

The following example shows how to use this syntax in practice.

**Example: Count Number of Elements Equal to Zero in NumPy Array**

The following code shows how to use the count\_nonzero() function to count the number of elements in a NumPy array equal to zero:

```
import numpy as np

#create NumPy array
my_array = np.array()

#count number of values in array equal to zero
np.count_nonzero(my_array==0)
```

3

From the output we can see that 3 values in the NumPy array are equal to zero.

We can manually look at the NumPy array to verify that there are indeed three elements equal to zero in the array.

If you would instead like to count the number of elements *not equal to zero*, you can use the `count_nonzero()` function as follows:

```
import numpy as np

#create NumPy array
my_array = np.array()
```

```
#count number of values in array not equal to zero  
np.count_nonzero(my_array)
```

**9**

**From the output we can see that 9 values in the NumPy array are not equal to zero.**

**Note: If you have any NaN values in your NumPy array, the `count_nonzero()` function will count each NaN value as an element not equal to zero.**

**The following tutorials explain how to perform other common operations in Python:**