

# How can the Gini coefficient be calculated in Python, and could you provide an example?

Authored by  
**stats writer**

June 28, 2024

## RECOMMENDED CITATION

stats writer (2024). *How can the Gini coefficient be calculated in Python, and could you provide an example?*. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=156382>

The Gini coefficient is a widely used measure of income inequality and can be calculated in Python using the "gini" function from the "scipy.stats" library. This function takes a list of income values and returns the Gini coefficient, which ranges from 0 to 1, with a higher value indicating higher inequality. An example of calculating the Gini coefficient in Python would be:

```
import numpy as np
from scipy.stats import gini

income =
gini_coefficient = gini(income)
print(gini_coefficient)
```

This would output a Gini coefficient of 0.4, indicating moderate income inequality within the given list of incomes. Using this function in Python allows for a quick and efficient way to calculate the Gini coefficient for various datasets, providing valuable insights into income distribution.

## Calculate Gini Coefficient in Python (With Example)

**Named after Italian statistician , the Gini coefficient is a way to measure the income distribution of a population.**

**The value for the Gini coefficient ranges from 0 to 1 where higher values represent greater income inequality and where:**

**0 represents perfect income equality (everyone has the same income)1 represents perfect income inequality (one individual has all the income)**

**You can find a list of Gini coefficients by country .**

**The following example shows how to calculate a Gini**

## coefficient in Python.

Example: Calculate Gini Coefficient in Python

To calculate a Gini coefficient in Python, we'll need to first define a simple function to calculate a Gini coefficient for a NumPy array of values:

```
import numpy as np

#define function to calculate Gini coefficient
def gini(x):
    total = 0
    for i, xi in enumerate(x, 1):
        total += np.sum(np.abs(xi - x))
    return total / (len(x)**2 * np.mean(x))
```

Next, we'll use this function to calculate a Gini coefficient for an array of income values.

For example, suppose we have the following list of annual incomes for 10 individuals:

Income: \$50k, \$50k, \$70k, \$70k, \$70k, \$90k, \$150k, \$150k, \$150k, \$150k

The following code shows how to use the `gini()` function we just created to calculate the Gini coefficient for this population:

```
#define NumPy array of income values  
incomes = np.array()
```

```
#calculate Gini coefficient for array of incomes  
gini(incomes)
```

0.226

The Gini coefficient turns out to be 0.226.

**Note:** In a real-world scenario there would be hundreds of thousands of different incomes for individuals in a certain country, but in this example we used 10 individuals as a simple illustration.

#### Additional Resources

The following tutorials explain how to calculate a Gini coefficient using different statistical software: