# INSTRUCTIONS TO USE LHT\_CI.py

The file LHT\_CI.py is a Python3 program that performs the calculations.

1. Data should be in a .csv file with only three columns, for instance:

|  |  |  |
| --- | --- | --- |
| **t** | **n** | **h** |
| 1 | 50 | 0 |
| 2 | 50 | 0 |
| 3 | 50 | 0 |
| 4 | 49 | 0 |
| 5 | 49 | 0 |
| 6 | 49 | 0 |
| 7 | 49 | 0 |
| 8 | 48 | 0 |
| 9 | 46 | 0 |
| 10 | 44 | 28 |
| 11 | 44 | 28 |
| 12 | 44 | 10 |
| 13 | 43 | 118 |
| 14 | 41 | 111 |

The **first column** are the units of time. The **second column** contains number of individuals alive at that unit of time. The **third column** contains offspring production in that unit of time.

1. Inside the code, modify the alpha required and change the file name:

*alpha = 0.05*  # 1-alpha is the confidence level of CI,

*fnam = "Data.csv"* # Change file name.

1. Change directory path here, live commented if file is in current directory:

*# dir\_path = "/Users/datasets/"*

1. Run the program, an example output is:

Initial number of individuals N : 50 ----(Initial number of individuals)

Offspring size K : 2430 ----(Total offspring)

R0 : 48.6 ----(R0, the basic reproductive number)

Longevity : [ 28.34 302.0644 23.5226 33.1574] ---- (mean variance and CI for longevity)

Generation time : [ 26.884 151.77 26.3945 27.374] ----(mean variance and CI for gen. time)

r : [0.20209, 0.198870, 0.2055] -----(mean and CI for r)

lambda: [1.223964994, 1.22002366, 1.22814391] -----(mean and CI for lambda)

Saved to: Data\_added.csv -----(outcome was saved to this file)