



# PERSONALIZED VS AVERAGE ASSESSMENTS OF LIFESPAN

Estimating how long someone might live has been done since the first life table was created by John Graunt in 1661. Life tables are used by governments and public health officials to gauge the health and longevity of a population. Life expectancies are derived from a life table. If life expectancy at birth in 2021 is 80 years for females, this is how long an average female baby born today would live if death rates at all ages prevailed for the life of the newborn. Life expectancy can be estimated for people of any age.

## CLASS I LIFE EXPECTANCY CALCULATORS

Class I calculators operate under the assumption that everyone is average. In this example, if applied to a male this age in the U.S. with no additional information, there is a:

**39%** chance the person will die before age 86

**56%** chance this person will live beyond age 86

Even if we include a 10-year range of error where a "correct" estimate is defined as an observed lifespan within 5 years on either side of the estimate, there is a:

**25%** chance the person would die before age **81.4**

+

**25%** chance the person would live past age **91.4**



There is a **95%** chance a Class I calculator will be wrong in predicting death age.



There is a **50%** chance a Class I calculator will be wrong in predicting death age, even when using a broad error range.



The U.S. Social Security Administration uses a Class I life expectancy calculator to help prospective retirees decide when to begin taking Social Security.

## CLASS II LIFE EXPECTANCY CALCULATORS

All life expectancy calculators in use today are of the Class II variety. The premise is simple – not everyone is average. People acquire different behavioral risk factors during life, and some risk factors are inherited, but all of them explain why some die early while others live longer than average.

Body mass index (BMI) was the first personal attribute formally used to differentiate survival – it was used in 1912 by insurance companies to assess risk and determine premiums – it's still in use today.

Class II calculators are simple to create and easy to use because the algorithm is based on what's called an "additive model". That is, life-extending and life-shortening risk factors are added or subtracted from a Class I life expectancy estimate under the assumption risk factors operate independent of each other.

Class II calculators are best used to encourage people to adopt healthier lifestyles because they reveal the independent influence of risk factors on survival.

Class II calculators will almost always lead to estimates of life expectancy for individuals that are too high or too low and should never be used for life insurance underwriting or by people planning for retirement.

## CLASS III LIFE EXPECTANCY CALCULATORS



This version of a life expectancy calculator operates on the same basic principle of Class II calculators, but a new algorithm is introduced that solves the issue of additivity by weighting all of the variables used to estimate duration of life, by their documented relative influence on survival.

It is well known in public health that risk factors for longevity are not additive – they are highly correlated with each other.

The risk factor list used in Class II calculators has expanded in some cases to include:

- medical information such as blood pressure, blood sugar, cholesterol, etc
- physical activity
- marital status
- stress
- smoking

## CLASS IV LIFE EXPECTANCY CALCULATORS

This type of life expectancy calculator also solves for additivity, but in addition it introduces biological and genetic factors that influence duration of life and includes a thorough review of a person's medical records to determine whether there are any documented medical issues that could influence duration of life.

Class IV estimation procedures have been shown to be up to

**95% ACCURATE**

in predicting duration of life with a small range of error.

"social determinants of health" known for more than a half century to exert a powerful influence on duration of life

CALCULATORS	AGE	GENDER	SDH <sup>1</sup>	DOB <sup>2</sup>	SOLVES FOR ADDITIVITY	BIOLOGICAL FACTORS	GENETICS	PHYSICIAN REVIEW
CLASS I	✓	✓						
CLASS II	✓	✓	✓					
CLASS III								
CLASS IV								

<sup>1</sup> Social determinants of health (SDH). There is a lot of variation on what's included from the SDH list. A general rule of thumb is that once you go beyond about 12 questions, a point of diminishing returns is reached in the accuracy of the life expectancy estimate. <sup>2</sup> Date of birth means the algorithm is adjusted to interpolate life tables to the day. This is valuable because it enhances precision – especially at older ages where the use of age rather than date of birth can lead to significant differences in survival estimates.

**WEALTHSPAN HAS BOTH CLASS III AND CLASS IV CALCULATORS AVAILABLE**

FIND OUT MORE AT [SUPPORT@WEALTHSPANADVISORS.COM](mailto:SUPPORT@WEALTHSPANADVISORS.COM)