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# The effect of inter-wave interval lengths on healthy life expectancy estimates

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# Focus of the Study

- ❑ Compared to cross-section surveys, longitudinal surveys are more difficult to conduct, time consuming and expensive.
- ❑ Hence, in most longitudinal surveys, the intervals between the base-year survey and the first interview and between all subsequent interviews are longer than a year.
- ❑ The issue under consideration
  - ❑ Do expected years of healthy life estimated based on survey data collected at one-year intervals differ from corresponding estimates based on data collected at two-year intervals?

# Source of Data

## The U. S. Medicare Current Beneficiary Survey

- ❑ A longitudinal panel survey
- ❑ With a sample size of about 12,000 completed interviews
- ❑ A rotating panel design with one third of the sample replaced each year
- ❑ Includes both community residents as well as the institutionalized population
- ❑ Over samples the oldest old (age 85 years and older) and the disabled (age 64 and younger)

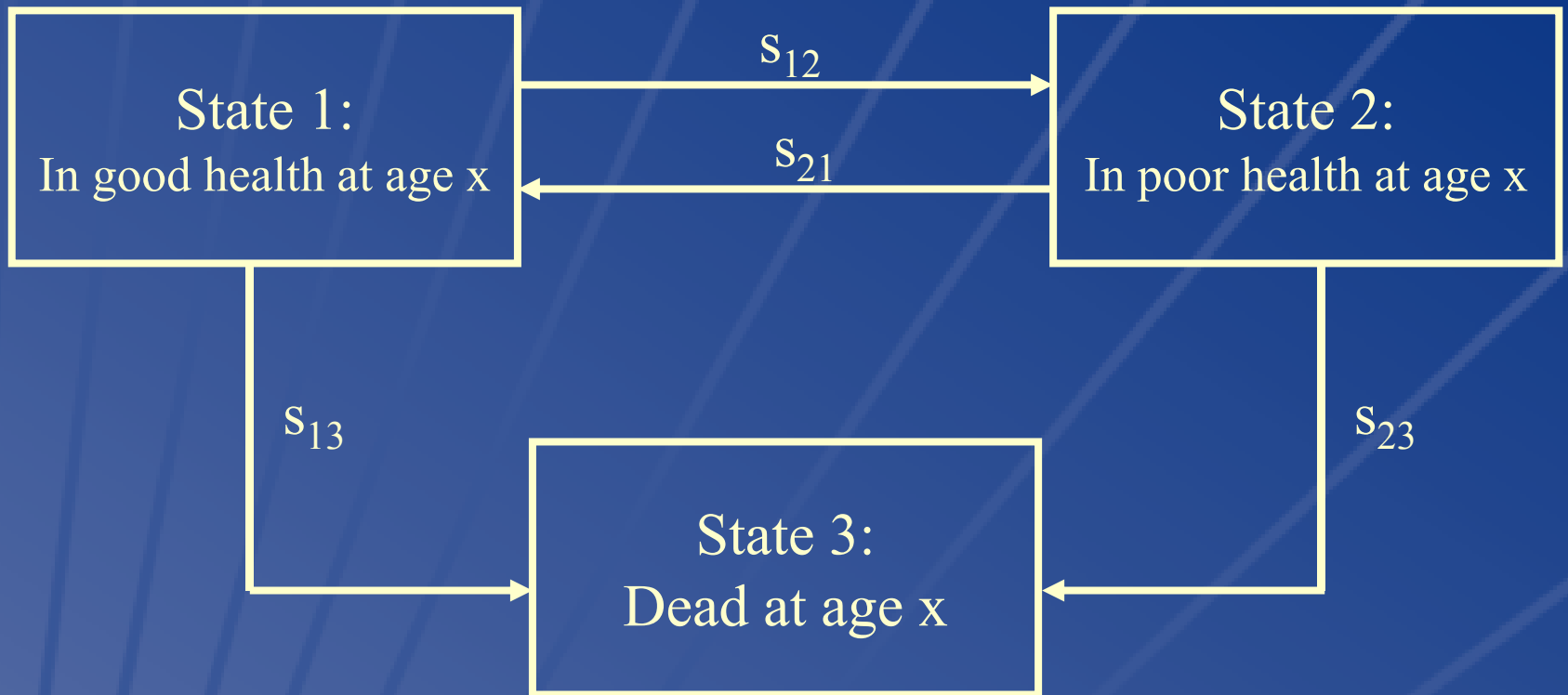
# The Study Sample

- ❑ 6,546 respondents of age 70 years and older
- ❑ 39.5% male and 60.5% female
- ❑ 27.6% with some college level education and 72.4% with less than college level education
- ❑ 92.8% community residents and 7.2% institutionalized
- ❑ with 91.0% self-reported and 9.0% proxy reported responses

# Method of Analysis

- ❑ Data were analyzed using the multi-state life table technique.
- ❑ Health expectancies were computed using IMACH, (version 0.97, 2004).
- ❑ At age 70 and over:  
Difference = EYHL(1-year interval) – EYHL(2-year interval).
- ❑ One-year interval (3 waves) and two-year interval (2 waves).

# A Three-State Health Model



# Years of Healthy Life Estimates

- ❑ Sample total:
  - ❑ Sample without weights
  - ❑ Sample with weights
  - ❑ without proxy response (weighted)
  - ❑ without the institutionalized population (weighted)
- ❑ Population subgroups:
  - ❑ Males and females separately (weighted)
  - ❑ Subgroup without college education (weighted)
- ❑ Based on monthly and bimonthly health transition probabilities (weighted)



## Life Expectancy and Years of Healthy Life Estimates

Age	[1]	[2]	[3]	[4]
70	14.4	14.3	10.6	74.1
75	11.3	10.9	7.9	72.5
80	8.6	8.1	5.6	69.1
85	6.3	5.8	3.9	67.2
90	4.7	4.1	2.6	63.4
95	3.5	2.8	1.7	60.7

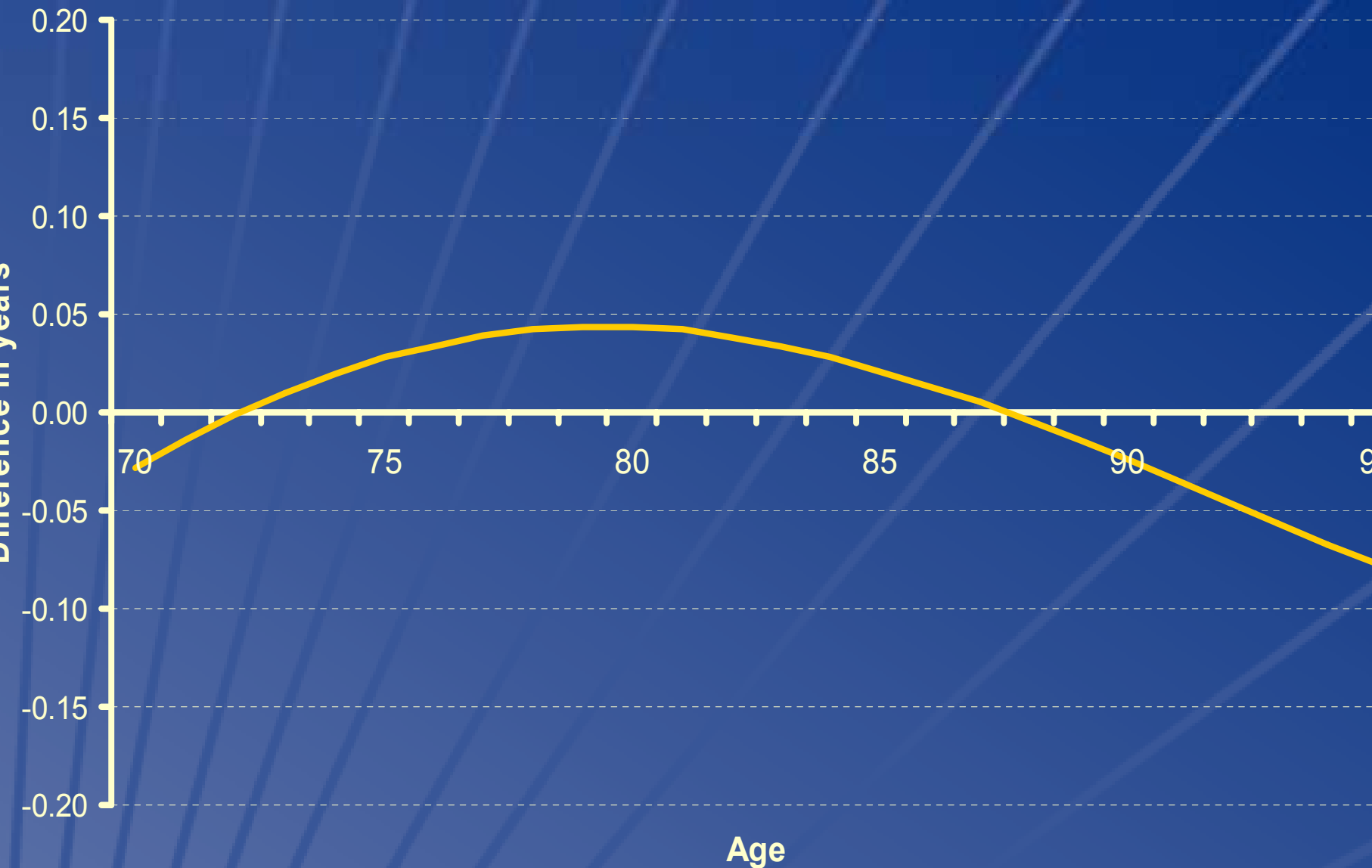
[1] Life expectancy for the year 2000, U.S. Vital Statistics.

[2] Life expectancy for the period 1999 -2001, the study sample.

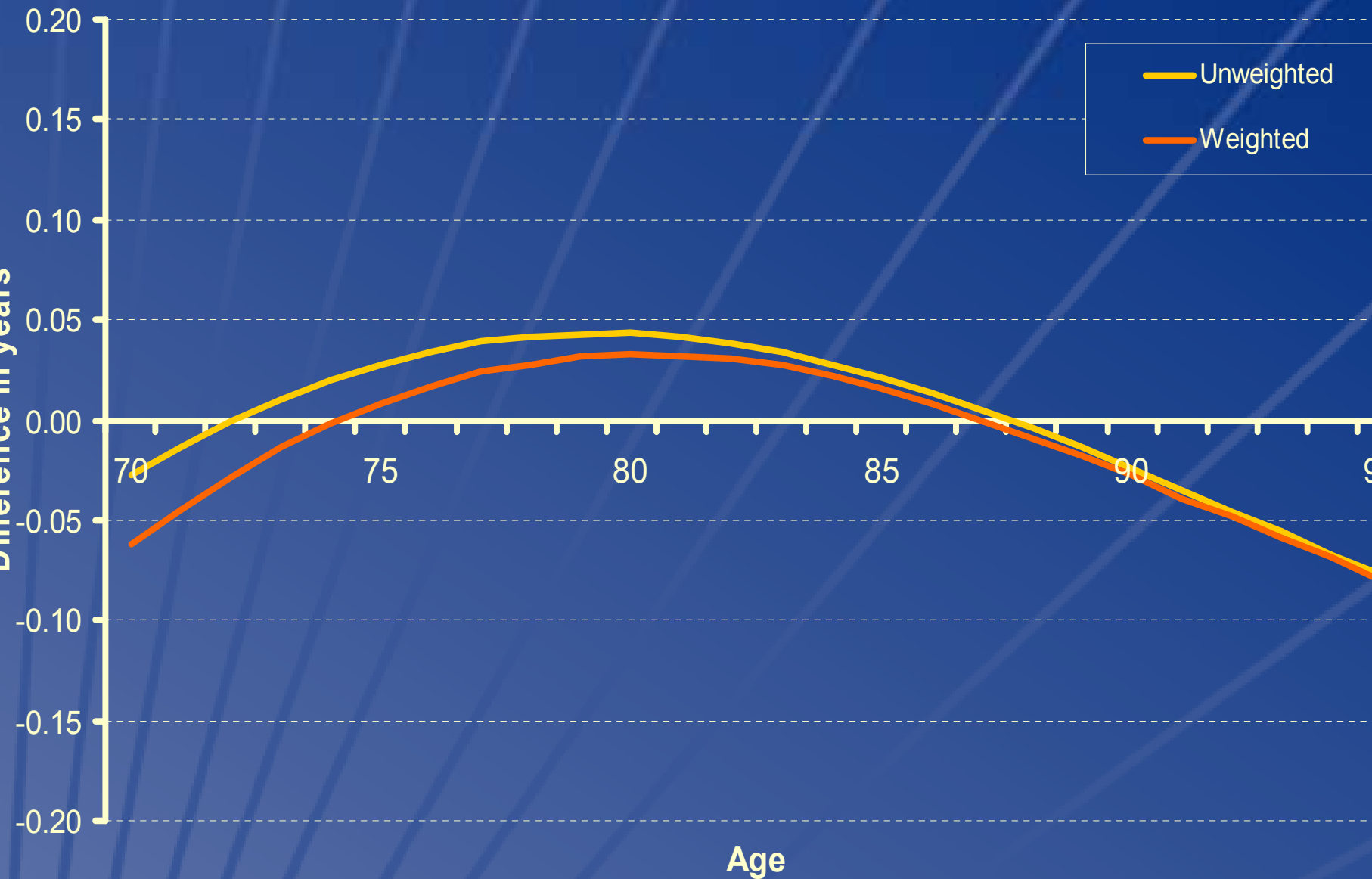
[3] Expected years of healthy life (i.e. expected years in good or better health), the study sample.

[4] Years of healthy life as a percent of life expectancy.

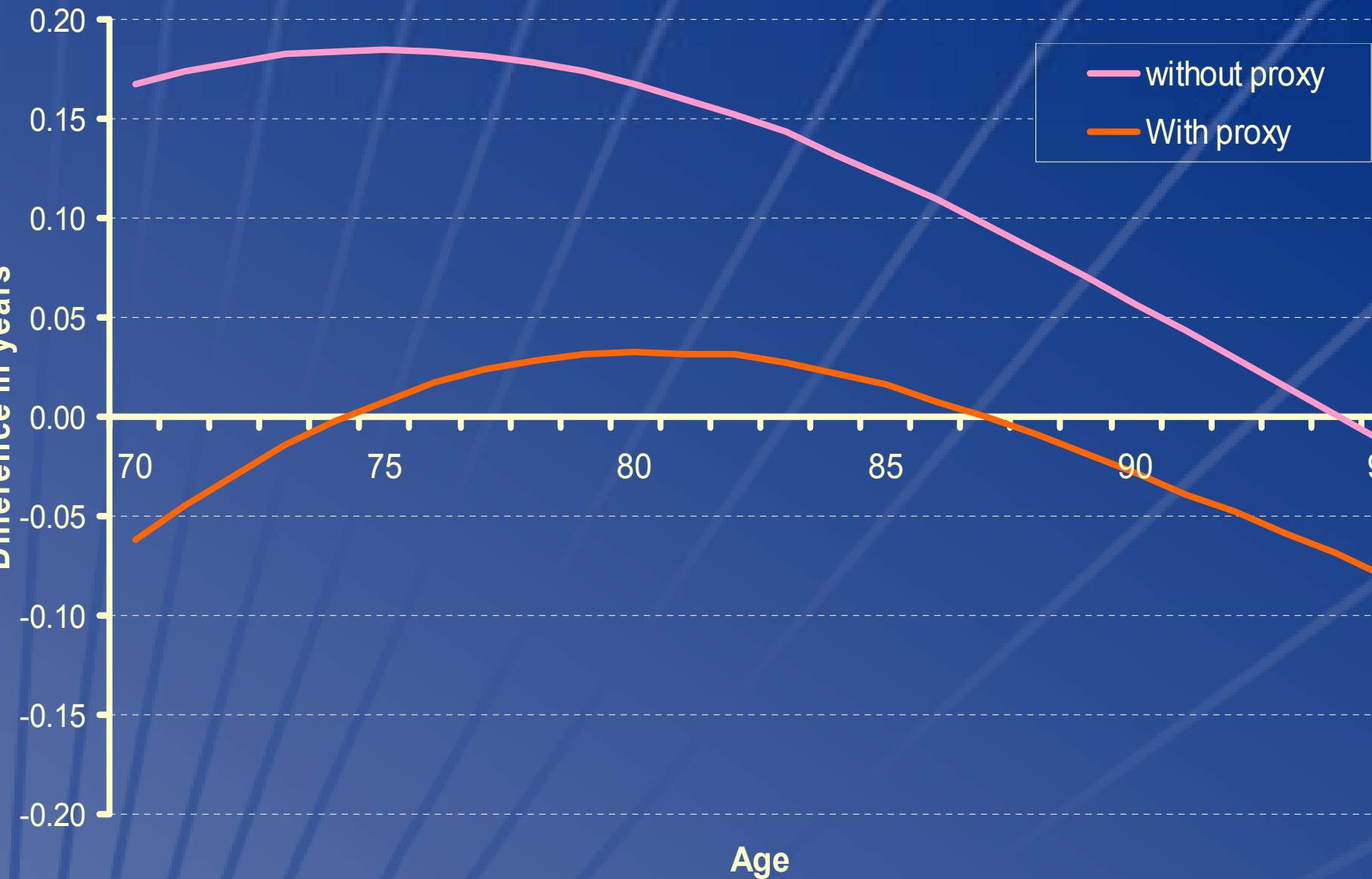
**Figure 1 . Difference between years of healthy life estimated using data with one and two-year intervals by age, sample without weights**



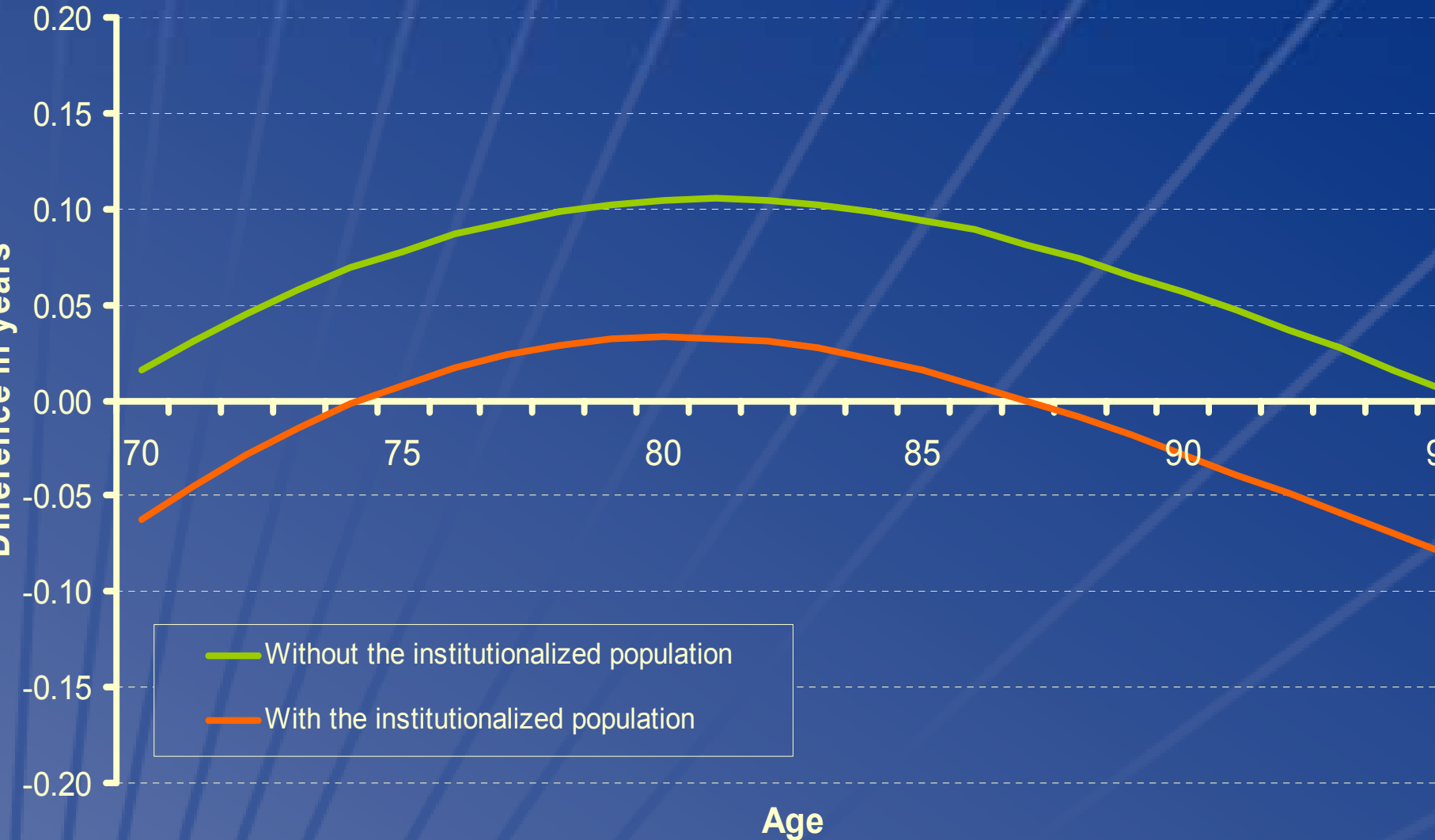
**Figure 2. Difference between years of health life estimated using data with one and two-year intervals by age, sample with and without weights**



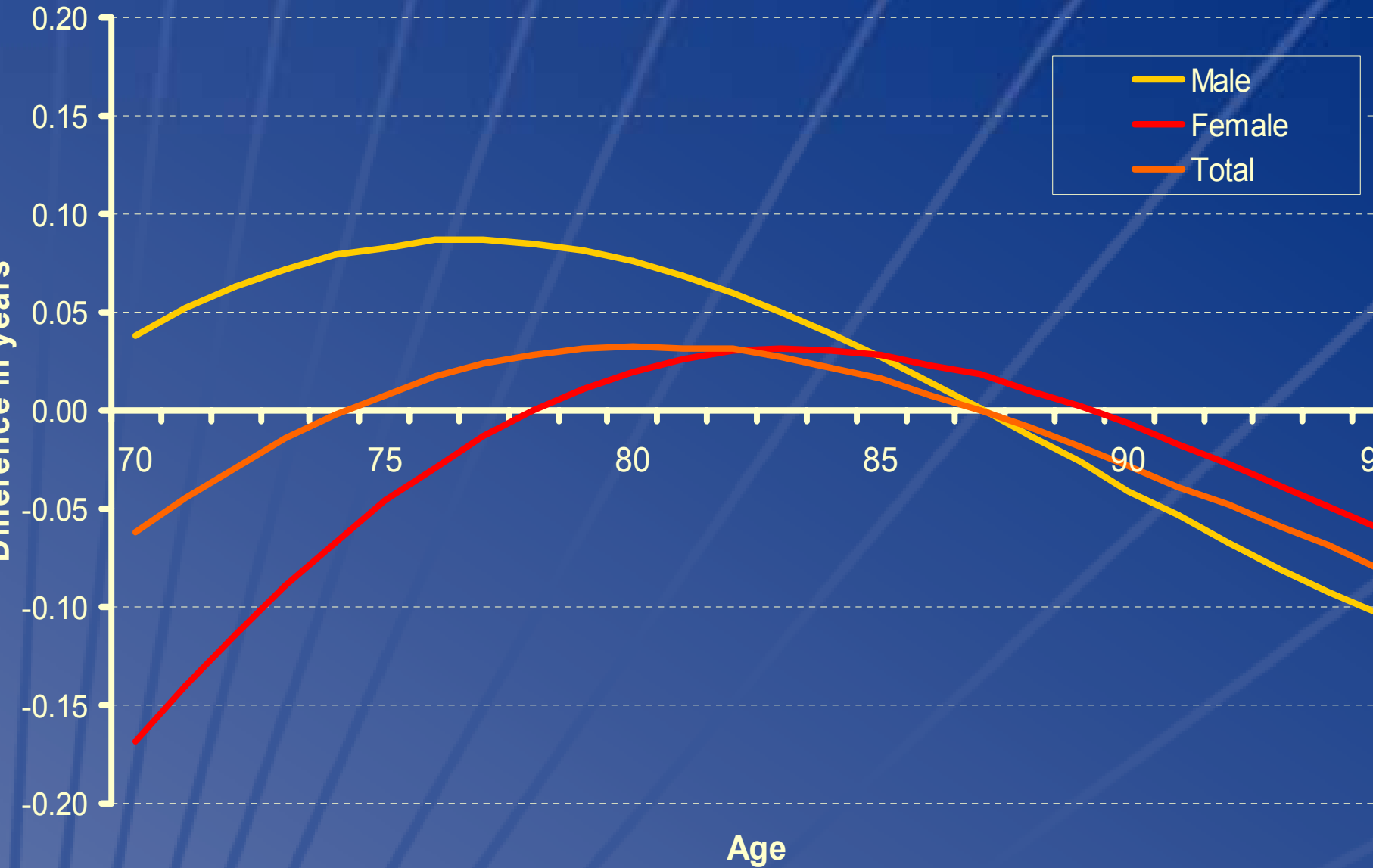
**Figure 3. Difference between years of healthy life estimated using data with one and two-year intervals, sample with and without Proxy reports**



**Figure 4. Difference between years of healthy life estimated using data with one and two-year intervals by age, with and without the institutionalized population**



**Figure 5. Difference between years of healthy life estimated using data with one and two-year intervals by age and sex**



**Figure 6. Difference between years of healthy life estimated using data with one and two-year intervals by age, sample total and those without college education**

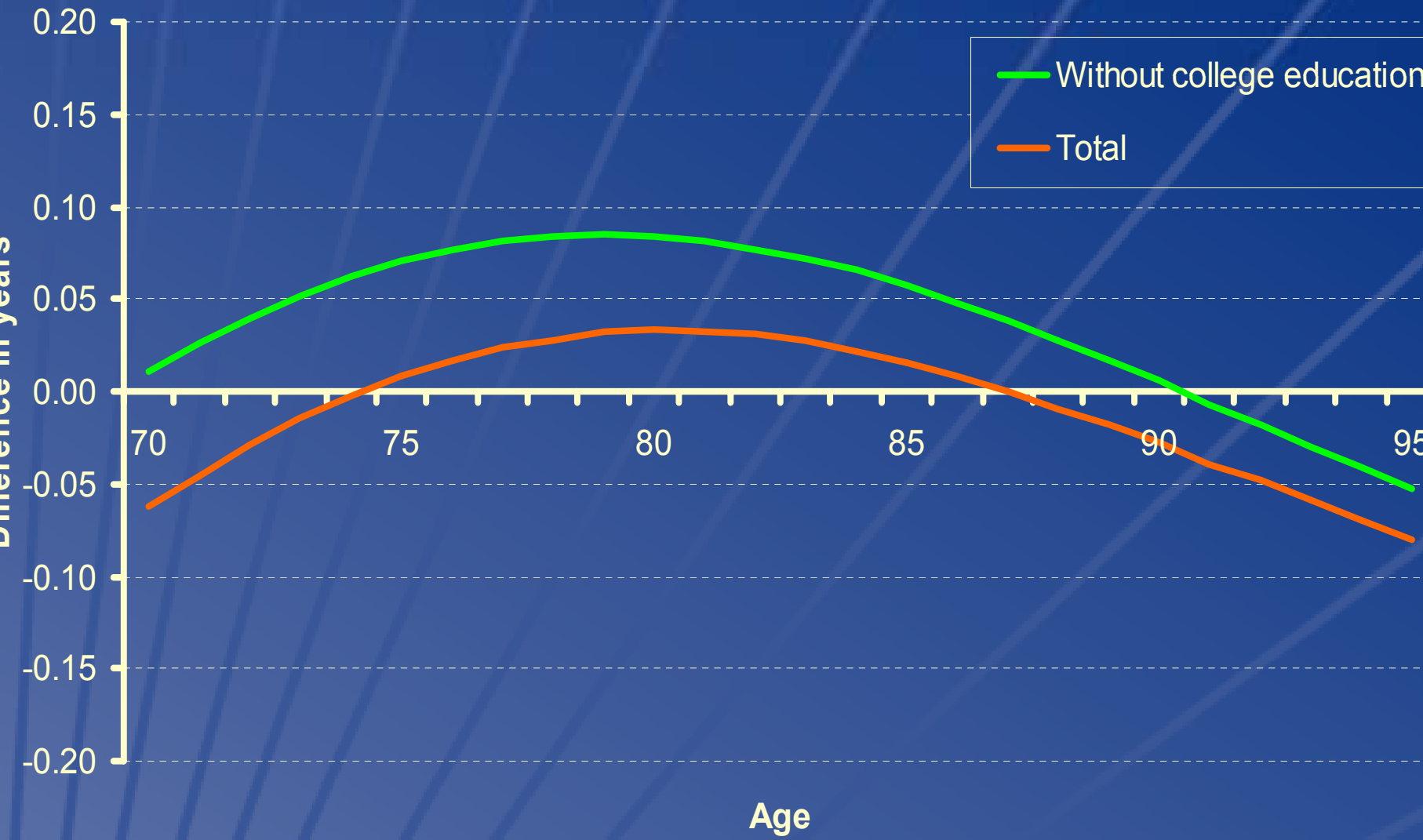
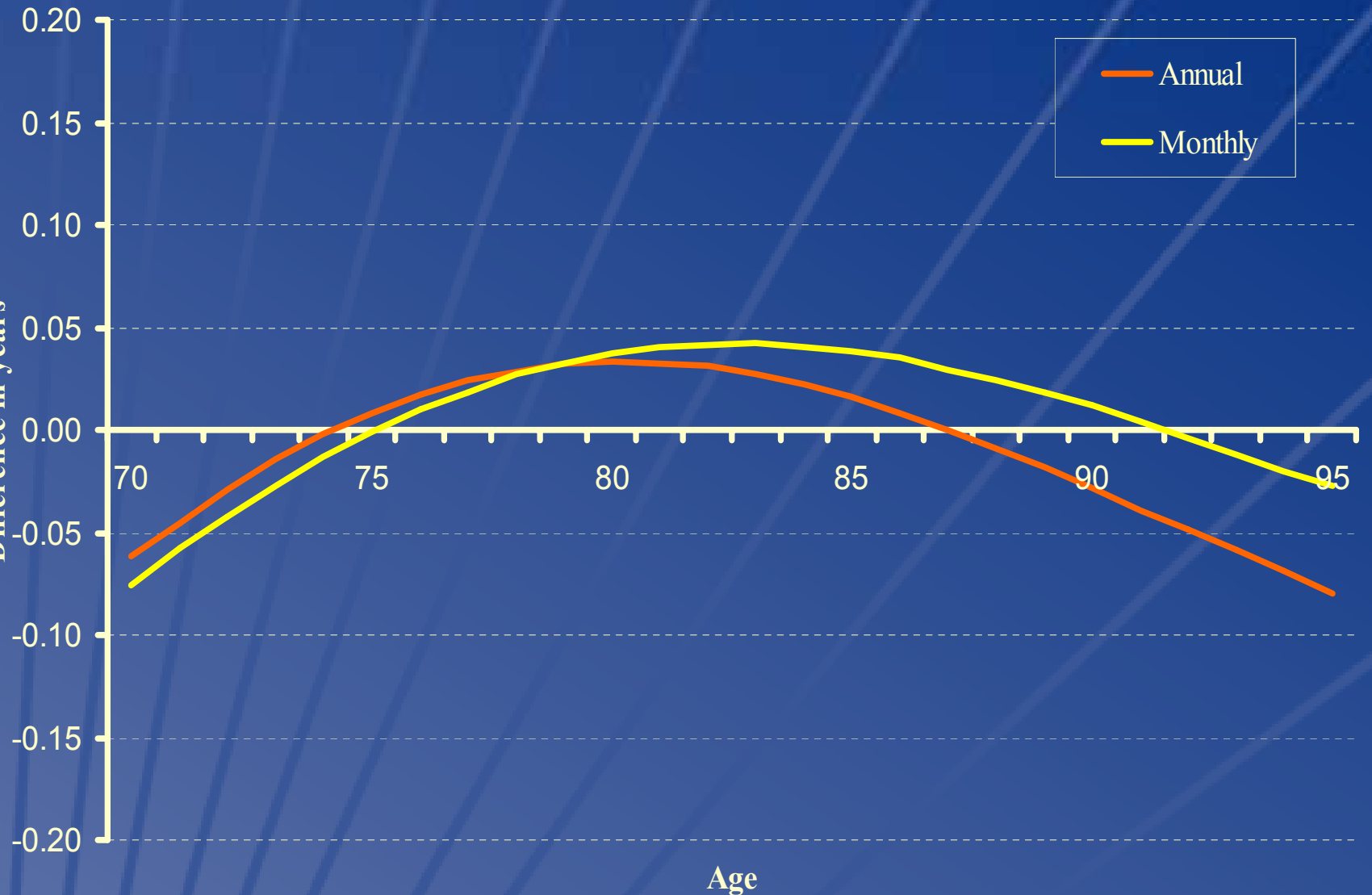


Figure 7. Difference between years of healthy life estimated based on data with one and two-year intervals and monthly health transition probabilities by age





# Summary and Conclusion

1. The lengths of the inter-wave intervals do impact years of healthy life estimates.
2. The impact varies by age, sex, type of report and type of residence.
3. For the total sample, the age-specific differences are not significant except for the last few years of life.
4. For the sub-samples, the size of the differences varies by age. Differences are significant at some ages and not at other ages.
5. Weighting the sample reduces the difference slightly at almost all ages, shortening the length of the intervals in which the transition probabilities are calculated also has the same effect.

# Possible limitations of the study

1. The analysis is based on survey respondents who were 70 years and older at the time of the 1999 interview.
2. The comparison is based only on two interviews that are two years apart and three interviews that are one year apart.
3. The underlying assumptions about missing values also might have introduced some bias with respect to the difference between estimates.