MEASURING YEARS OF INACTIVITY, YEARS IN RETIREMENT, TIME TO RETIREMENT, AND AGE AT RETIREMENT WITHIN THE MARKOV MODEL: SUPPLEMENTARY WEB SITE FIGURES

Figure S1 illustrates the YA and YI probability mass functions for initially active 30-year-old men in 2003.[1] The most prominent point in the figure is $p_{YI}(30,a,0) = .102$, the probability of zero years of future inactivity for those active at age 30. Said differently, the probability of some future inactivity is almost 90%.

Figure S1. YA and YI Probability Mass Functions for 30-Year-Old Active Men

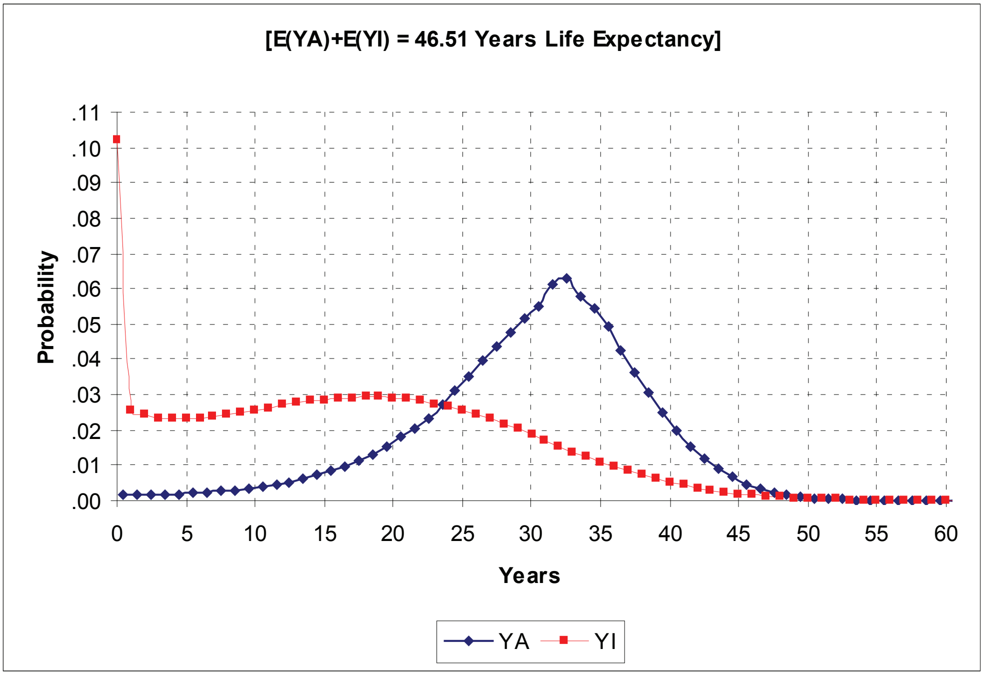


Figure S2 illustrates the YFS and YIR probability mass functions for initially active men aged 30. The probability that an active 30-year-old male will never retire is $p_{YIR}(30,a,0) = .219$, the large probability spike in the figure. Figure S3 depicts the probability mass functions for YFS and CYIR (i.e., YIR conditioned on $YIR_{x,a} > 0$).

1. We choose age 30 for illustrative purposes only in Figure S1. Similar charts could be drawn for any exact age between 16 and 75, although the shapes of probability mass functions change with age. Figure S1, based on age 30, also shows that the expected values of YA and YI sum to life expectancy. Had any other age been selected for illustrative purposes, the expected values of YA and YI would sum to life expectancy for that selected age. Figures S1–S6 and S8 are based on transition probabilities computed from matched CPS samples (Krueger 2004). Figure S7 is based on 1970 transition probabilities from Bureau of Labor Statistics (1982).

Figure S2. YFS and YIR Probability Mass Functions for 30-Year-Old Active Men

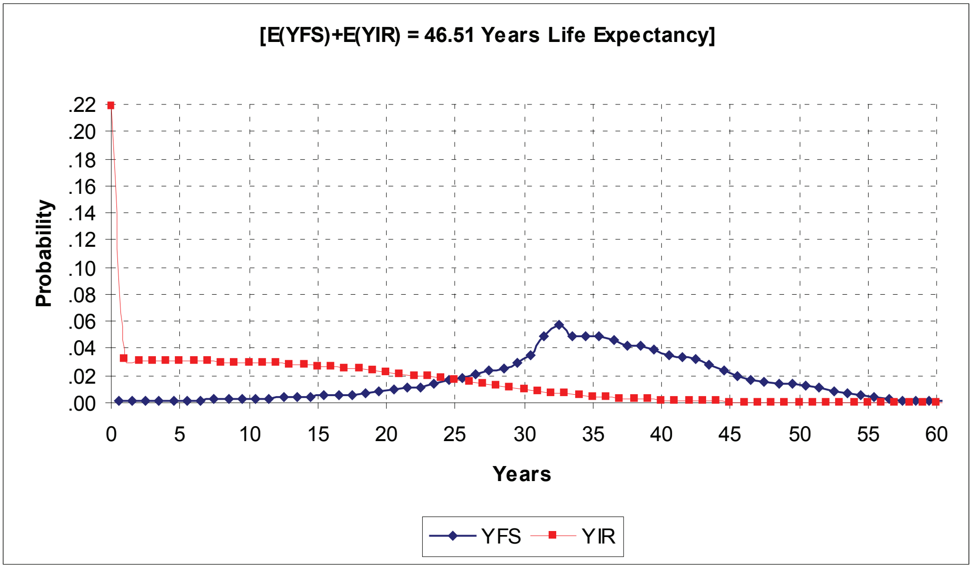


Figure S3. YFS and CYIR Probability Mass Functions for 30-Year-Old Active Men

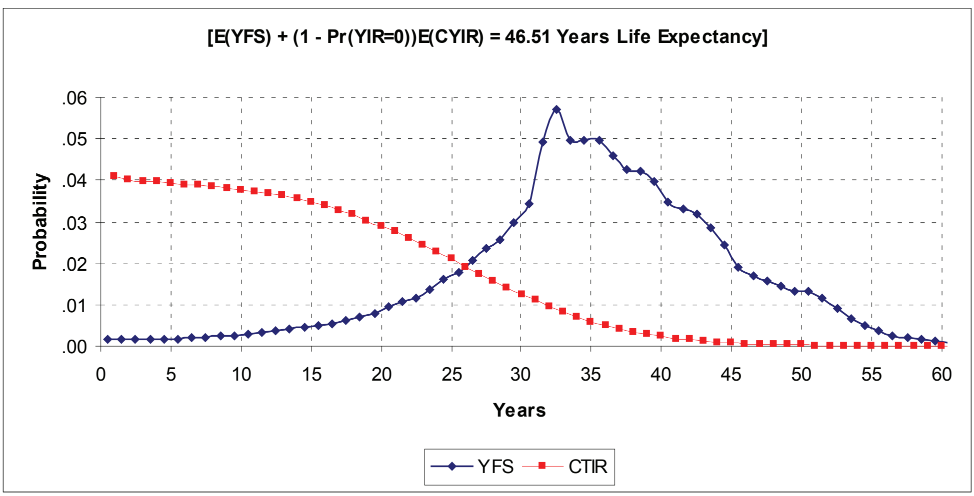


Figure S4. CYTR, YFS, and YTR (defective) Probability Mass Functions for 30-Year-Old Active Men

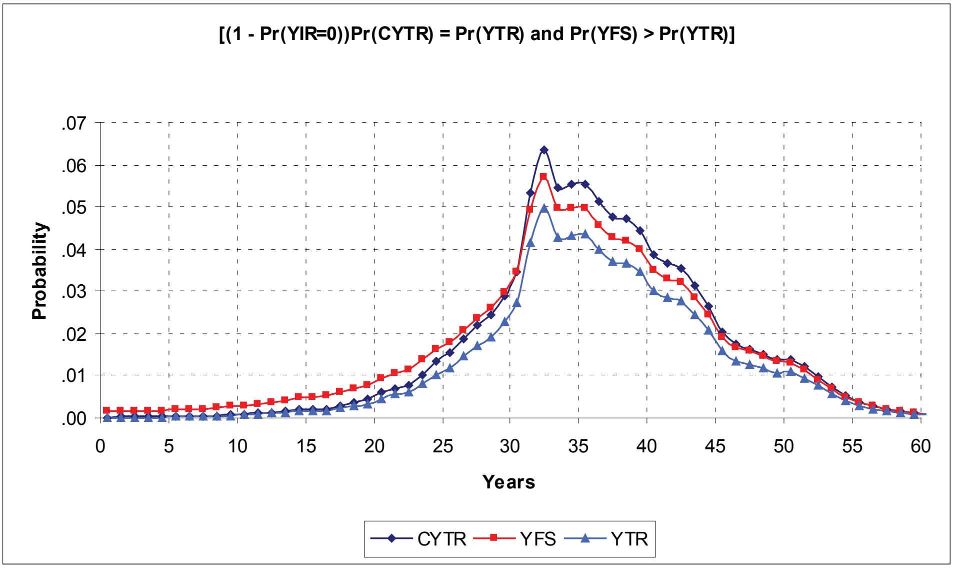


Figure S4 shows the YTR, CYTR, and YFS probability mass functions for initially active 30-year-old men. Each CYTR probability mass value is the corresponding probability mass for YTR divided by (1 – .219), where .219 is the probability of zero YIR shown in Figure S2.

Figure S5 shows probabilities by age that inactive men and inactive women are indeed retired.[2] For example, the probability is .62 that inactive men age 65 are in fact retired, while the probability is .73 for inactive women. If an inactive person subsequently enters the labor force, a switch in status occurs from inactive to active. Figure S6 illustrates probability mass functions for the number of years until such a switch occurs for 65-year-old inactive men and women, conditional on a switch actually occurring at some future time.[3] The figure shows rapidly declining probabilities; that is, if a person is going to reenter the labor force after age 65, it will more likely occur sooner rather than later. However, there still is a probably of .40 that the reentry will not occur until age 70 or beyond.

Figures S7 and S8 illustrate average years in retirement using actual 1970 and 2003 populations. By comparing Figures S7 and S8, we see large increases in years spent in retirement for men and much smaller increases for women. Men allocated much more of their increase in life expectancy between 1970 and 2003 to retirement years. For example, life expectancy for 45-year-old males increased by approximately 5.5 years, from 27.3 to

2. These probabilities are computed with recursion (3c) in the main article, which gives the probability of a currently inactive person accumulating no additional years of labor force activity. Alternatively, the same probabilities could be computed with recursion (5d), which yields the probability of an inactive person accumulating no time before final separation from the labor force occurs.

3. The probability mass function for years until a switch in state (YSS) is defective because a switch may never occur. If we assume that a switch will occur, we have CYSS measuring the conditional number of years until a switch in labor force status. We are interested in the probability $p_{CYSS}(x,i,y)$, the probability that an inactive person will switch to active in y years. Recursions defining this switch probability are given in the appendix in the article.

Figure S5. Probability of Inactive Men and Inactive Women Remaining Inactive

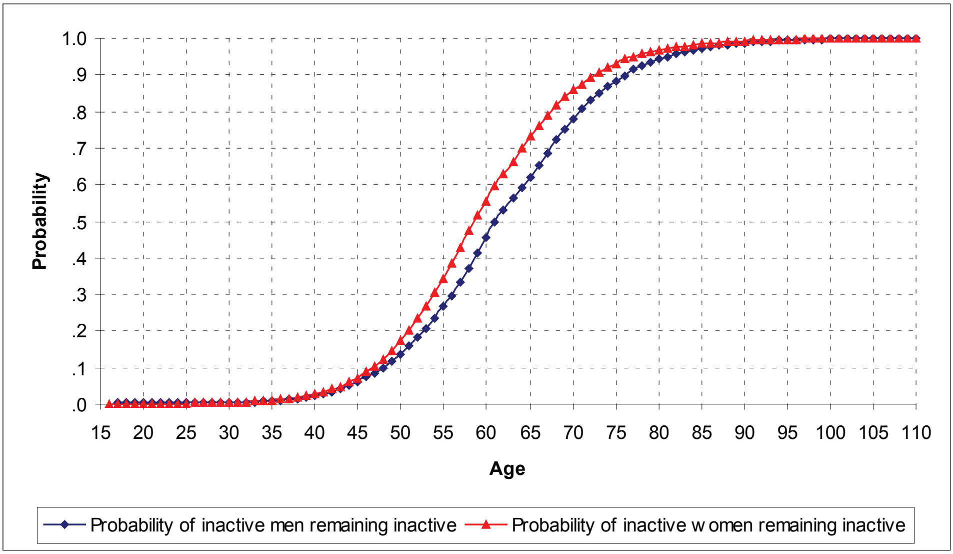


Figure S6. Conditional Probability of Inactive Men and Women at Age 65 Becoming Active in the Future

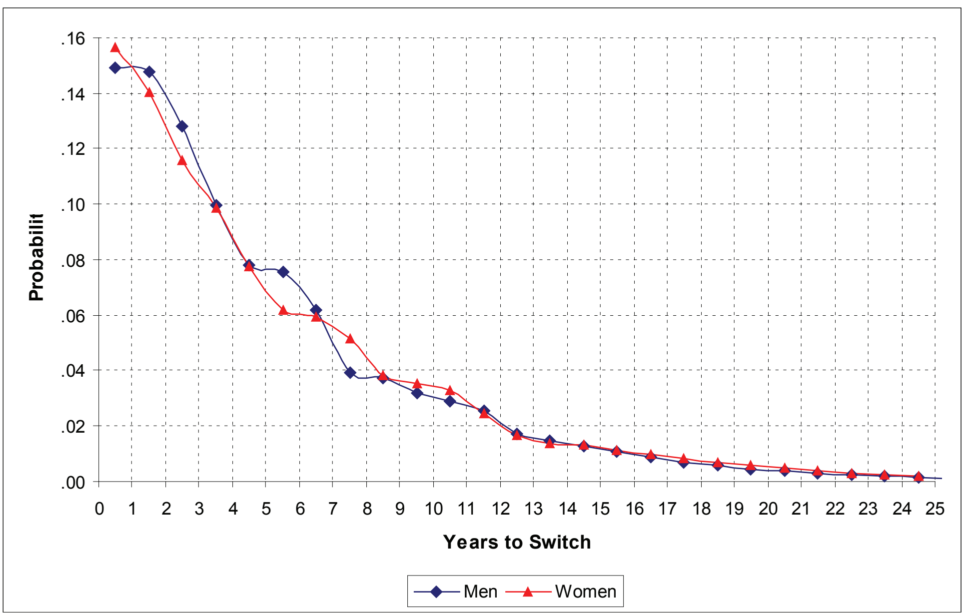
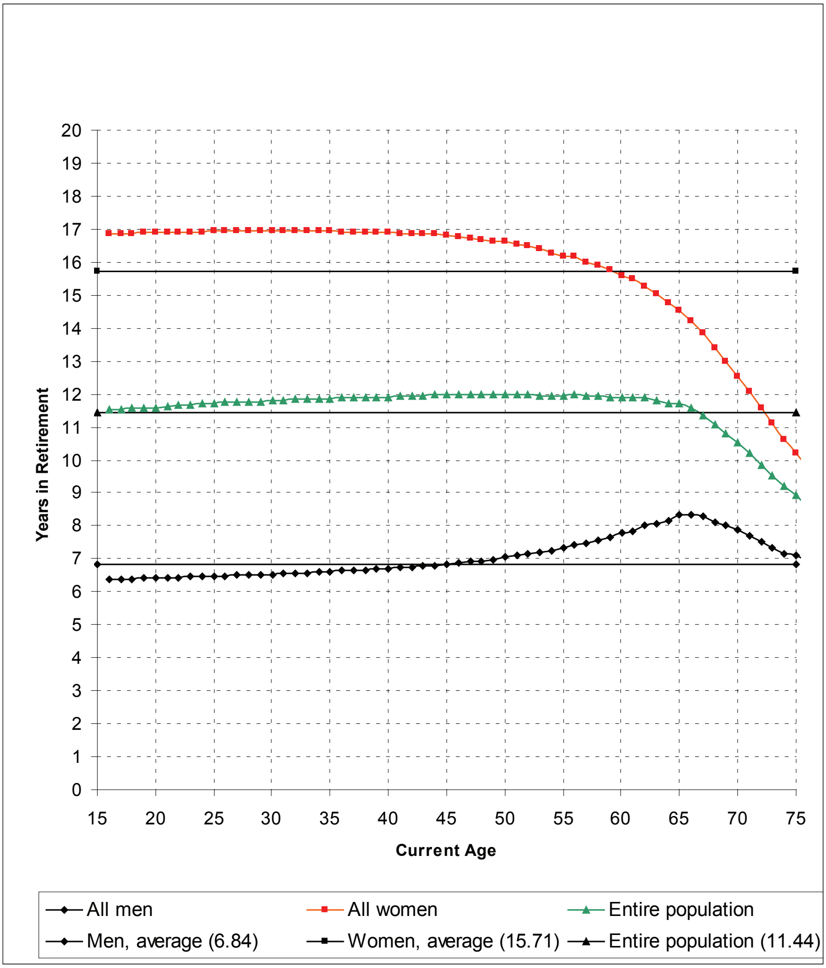


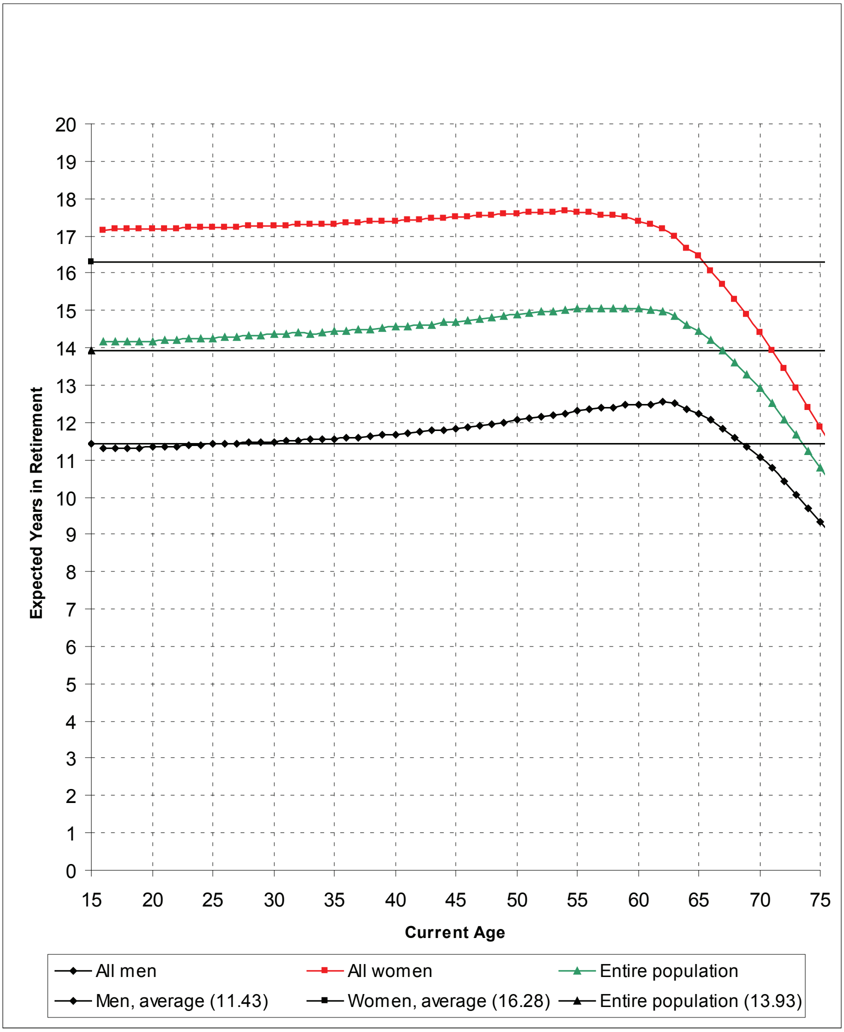
Figure S7. Average Years in Retirement for All Men, All Women, and the Entire Population in 1970



32.8 years, between 1970 and 2003. Figure S7 shows that 45-year-old males could expect approximately 6.8 years in retirement in 1970, while Figure S8 shows 11.8 years in retirement in 2003. That is, of the 5.5 years of additional life expectancy, 45-year-old males would spend approximately 5.0 of those years in retirement. The picture differs for women. Their increase in life expectancy was 3.6 years (from 33.3 to 36.9 years) over the same period, but they allocated only 0.7 of those years (from 16.8 to 17.5 years) to additional time in retirement.

Figures S7 and S8 also illustrate still higher levels of aggregation. In each figure, the highest horizontal line marks average years in retirement aggregated across all ages for women; the lowest horizontal line represents a similar aggregation for men across age; and the middle line aggregates over gender as well as age. Figure S7 shows that aggregation

Figure S8. Average Years in Retirement for All Men, All Women, and the Entire Population in 2003



across ages and genders leads to average years in retirement of approximately 11.5 years in 1970, whereas Figure S8 shows 13.9 years in retirement in 2003.

REFERENCES

Bureau of Labor Statistics. 1982. "Tables of Working Life: The Increment-Decrement Model." Bulletin 2135. U.S. Department of Labor, Washington, DC.

Krueger, K.V. 2004. "Tables of Inter-Year Labor Force Status of the U.S. Population (1998–2004) to Operate the Markov Model of Worklife Expectancy." *Journal of Forensic Economics* 17:313–81.