

How Much Life Does a Good Education Buy?

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What Do We Really Know about How Education is Related to Mortality?

- ✎ Despite enormous volume of research documenting importance of education for mortality, a surprising lack of basic information about this fundamental association
 - ✎ Education-specific life tables not available for the U.S.
 - ✎ Little systematic assessment of the functional form of the associations
 - ✎ Diminishing returns? Benefits of certification? Linear association (learned competence)?
 - ✎ Declining benefits of education with aging? Cumulative advantage of a good education?
 - ✎ Empirical evidence (e.g., Kitagawa and Hauser and Molla, Wagener and Madans) based on death counts paired with census-based estimates of “at risk” population
 - ✎ Unclear whether benefits of education are equally shared by men and women

Our Goals are Modest

- Document association between education and mortality for Males and Females Aged 50 and Older in the U.S.
 - Functional form of the association between education and the risk of death
 - Diminishing returns? Certification effects? Learned competence?
 - Functional form of the association between education, age, and the risk of death
 - Declining benefits of a good education with aging versus cumulative advantage throughout life
- Develop education-specific life tables for males and females
- Set the stage for replication with two decades of mortality data linked to the National Health Interview Survey

Data and Measures

- 🔥 Health and Retirement Survey (1992-2004)
 - 🔥 Representative of civilian, non-institutionalized Americans ages 51 and older and their spouses
- 🔥 Mortality documented using linked information from National Death Index supplemented with HRS reports of vital status
- 🔥 Education references self-report of the number of years of completed schooling
- 🔥 Age refers to exact age x

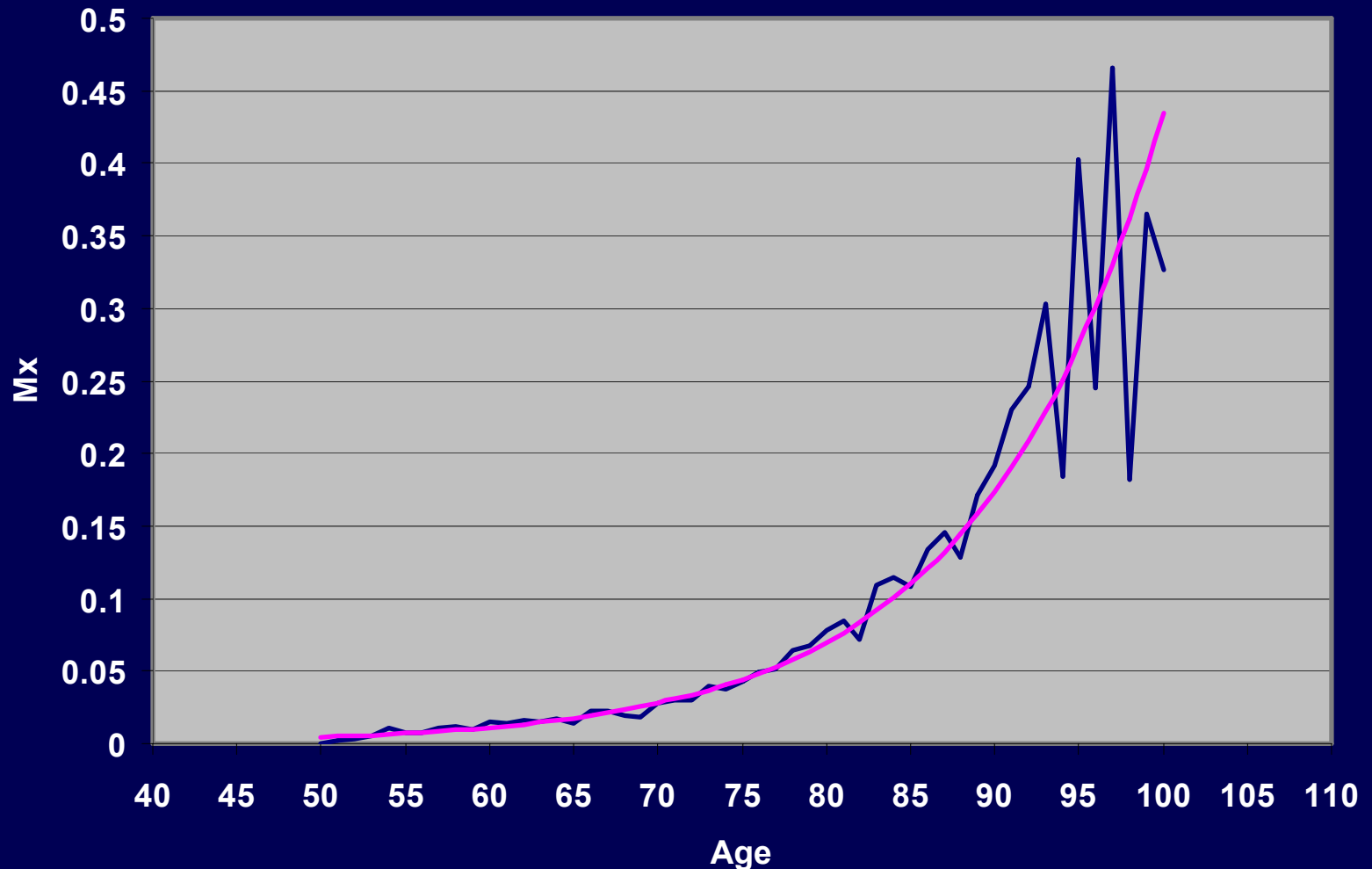
Analytical Approach

- 🦘 Estimation of piece-wise exponential hazard models
 - 🦘 Categorical specification of age used to derive classical occurrence/exposure rates for the sample
 - 🦘 Linear (and polynomial) specification of age used to examine alternative functional forms
- 🦘 Categorical and continuous measures of education used to examine educational differences in mortality
- 🦘 All models are estimated separately for males and females

Caveats

- Analysis is based on a sample drawn from the civilian, non-institutionalized population
 - Although sample becomes increasingly similar to the population as a whole over the observation period, mortality is undercounted relative to the population
- Despite being a very large survey (N= XX,XXX) and long-running (currently 12 years), the density of mortality is still relatively low at the oldest ages
- Possible cohort effects unaccounted for

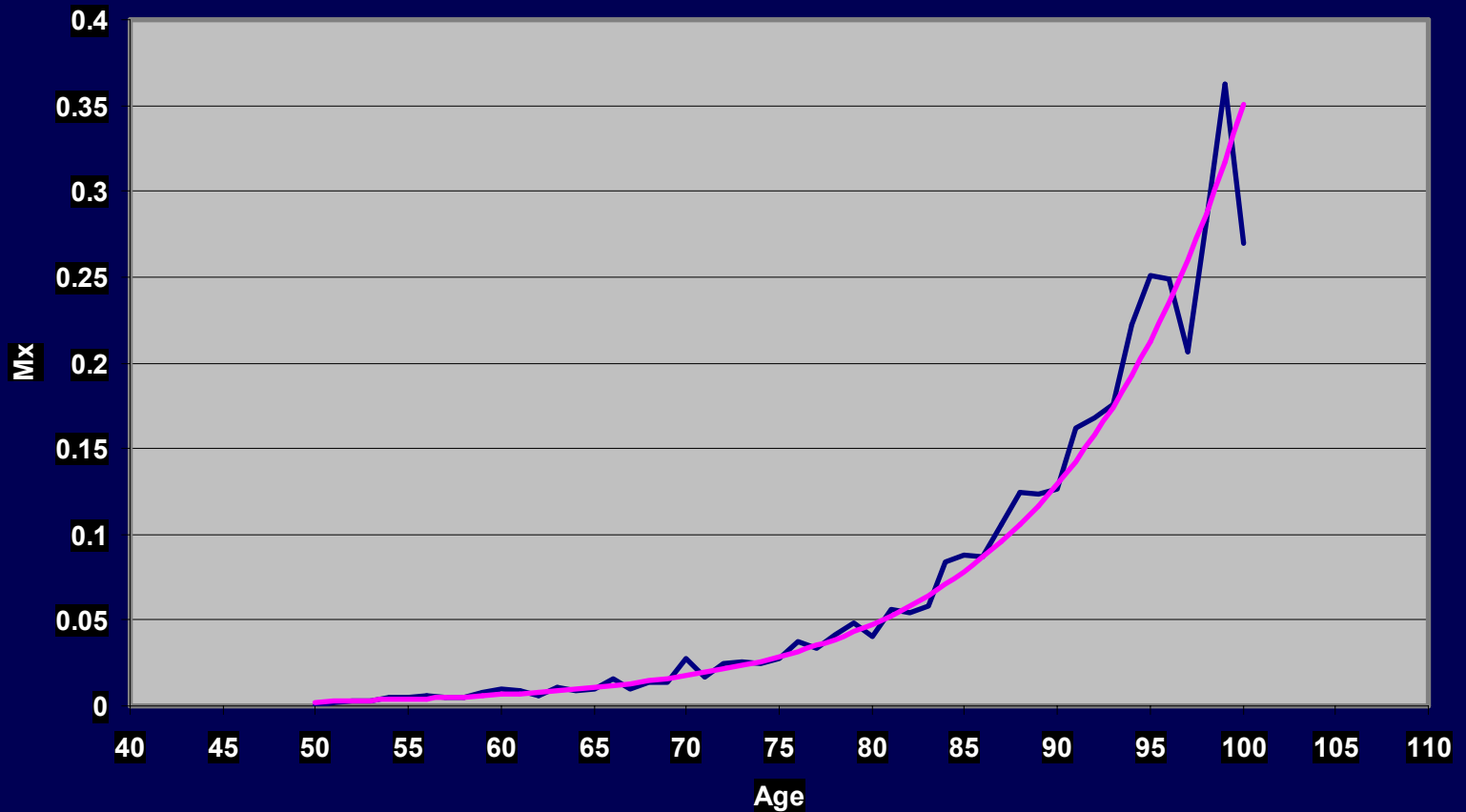
Occurrence/Exposure and Gompertz Specification of the Risk of Death, U.S. Males Ages 50 and Older



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Occurrence/Exposure and Gompertz Specification of the Risk of Death, U.S. Females Ages 50 and Older

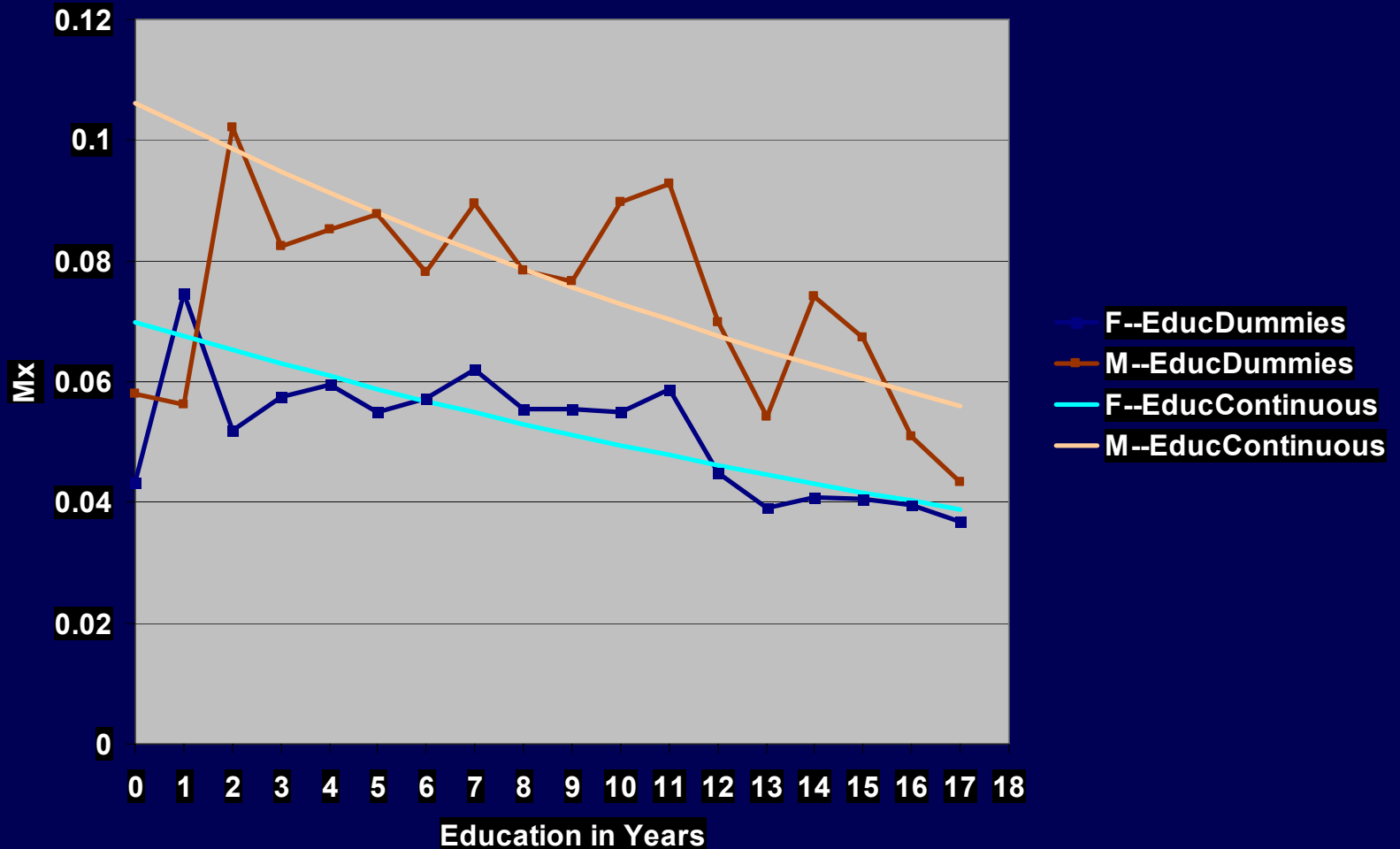


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How is Education Associated with the Risk of Death?

U.S. Population Ages 50+, Health and Retirement Survey

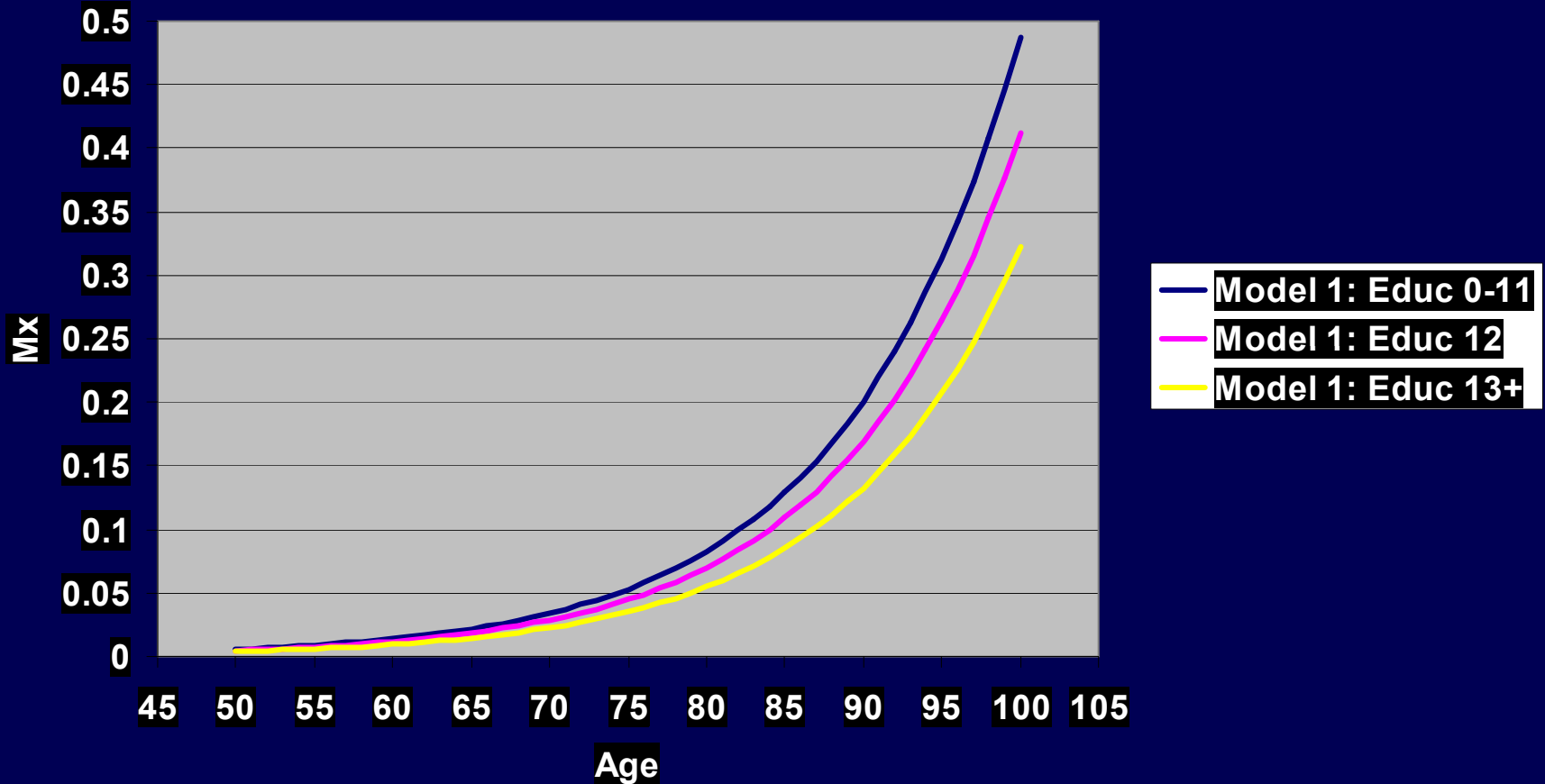


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Education Differences in $M(x)$ —Main Effects Model

U.S. Males Ages 50+, Health and Retirement Survey

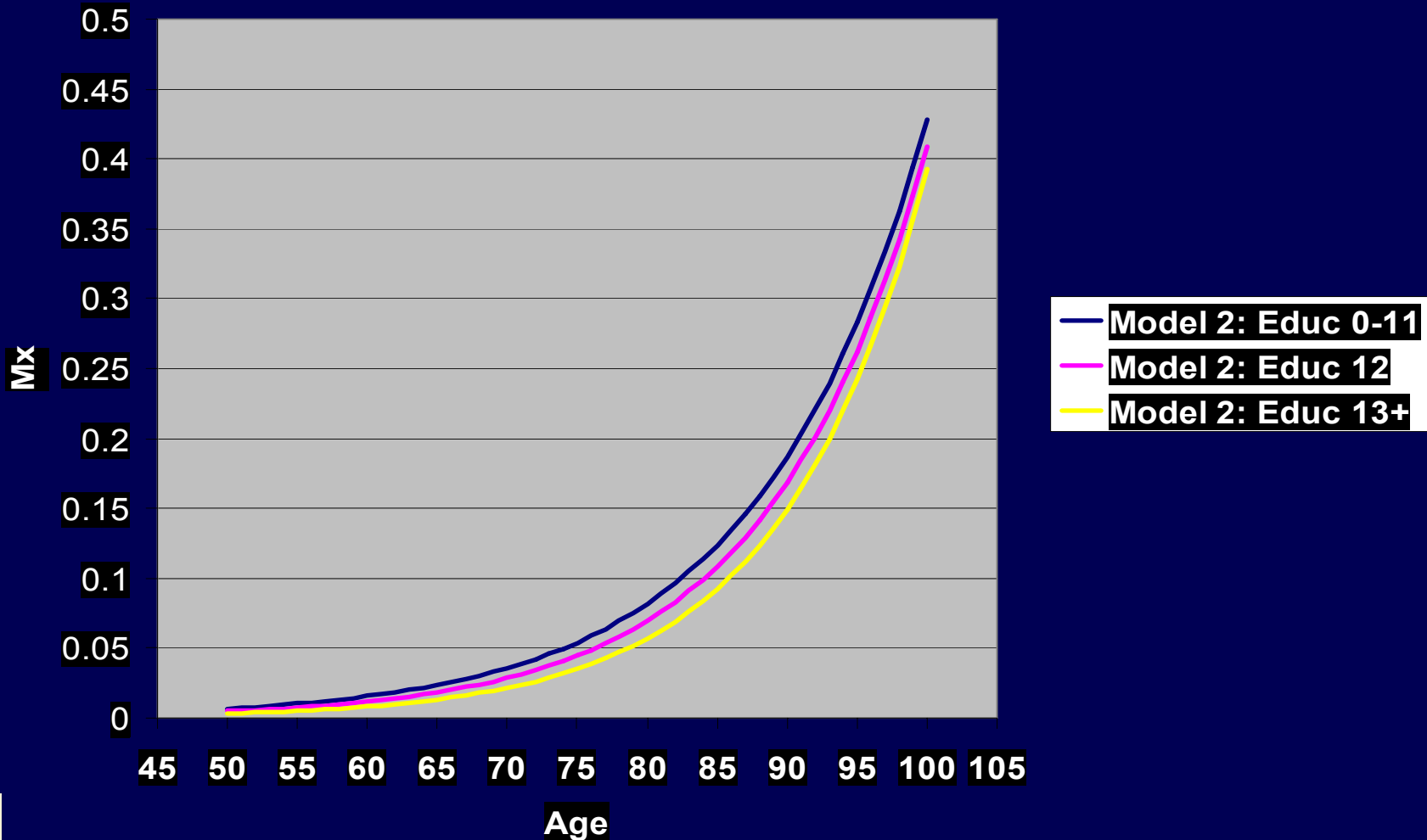


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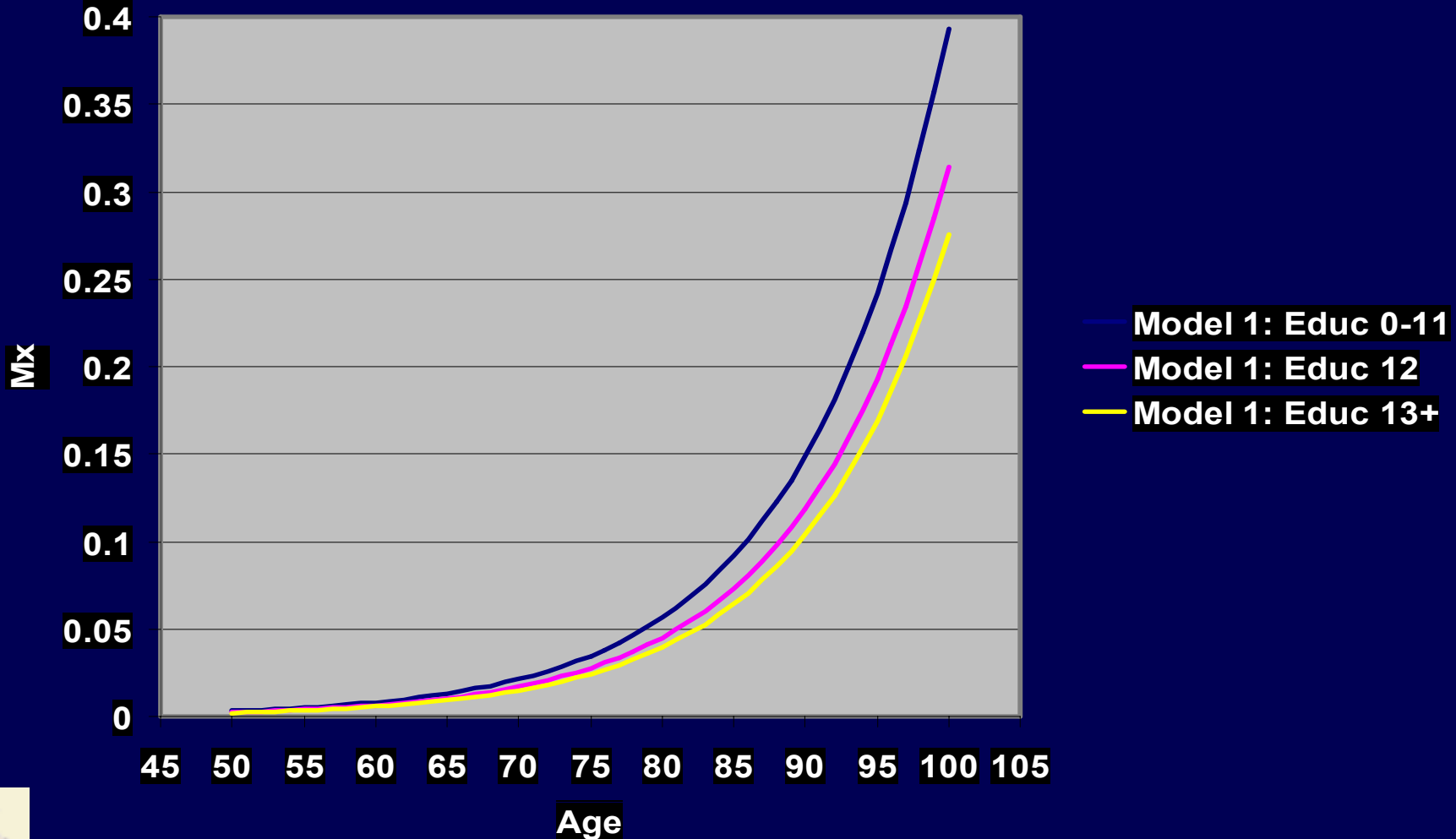
Education Differences in $M(x)$ —Main Effects Model

U.S. Males Ages 50+, Health and Retirement Survey



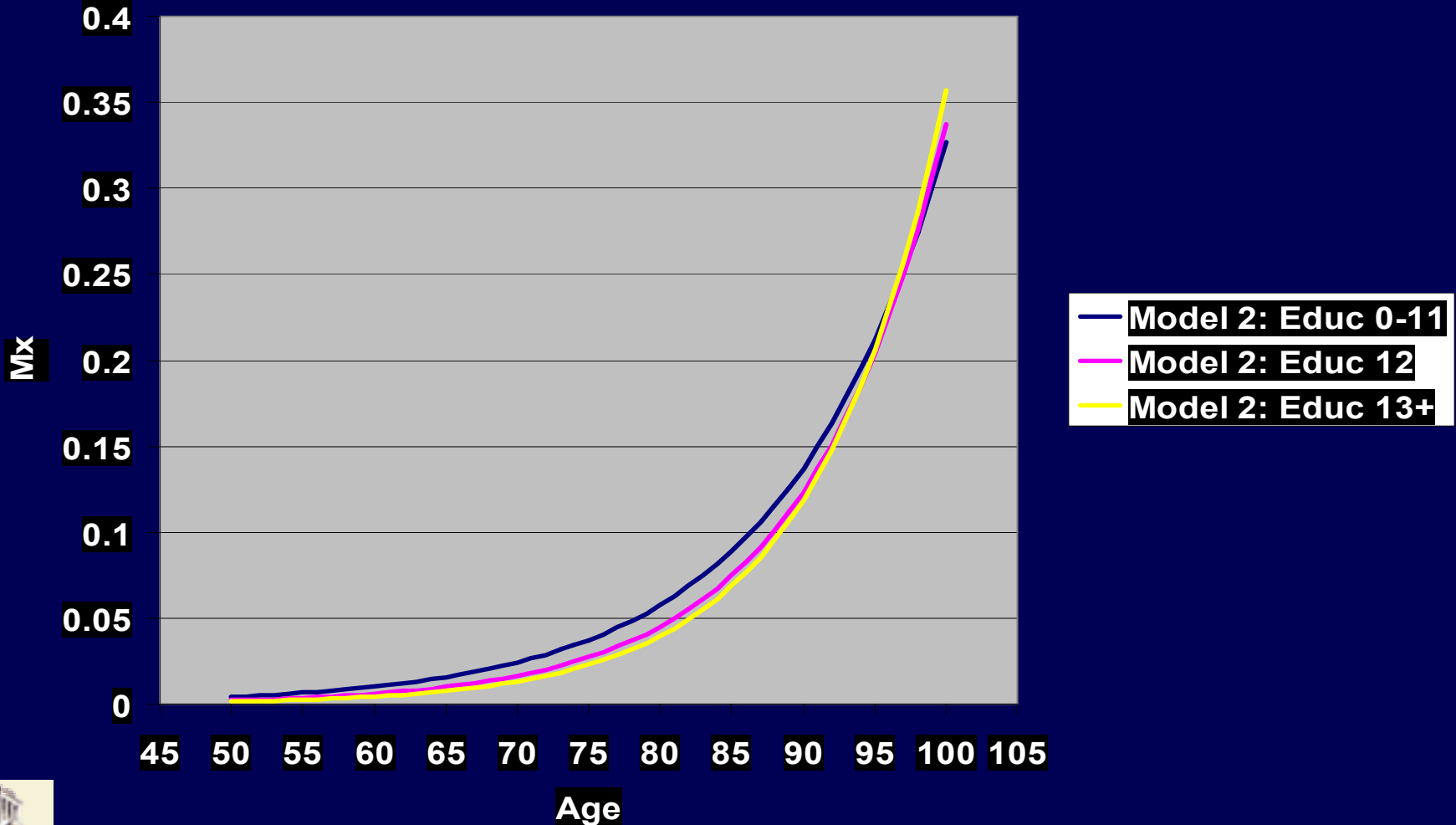
Education Differences in $M(x)$ —Main Effects Model

U.S. Females Ages 50+, Health and Retirement Survey



Education Differences in $M(x)$ —Age x Education

U.S. Females Ages 50+, Health and Retirement Survey



Education Differences in E(x) & I(x) —Age x Education

U.S. Females Ages 50+, Health and Retirement Survey

e(x)	0-11	12	13+	8	12	16
Male						
50	26.7 (1.00)	28.8 (1.00)	31.3 (1.0)	26.9	28.9	30.6
60	18.9 (.90)	20.6 (.92)	22.6 (.95)	19.1	20.6	22.0
70	12.4 (.71)	13.6 (.76)	15.0 (.83)	12.6	13.5	14.4
80	7.5 (.42)	8.1 (.47)	8.9 (.59)	7.6	8.0	8.5
90	4.1 (.13)	4.4 (.15)	4.7 (.24)	4.2	4.3	4.4
Female						
50	30.5 (1.00)	33.7 (1.00)	35.1 (1.00)	31.2	33.1	34.8
60	22.2 (.93)	24.7 (.96)	25.9 (.97)	22.7	24.2	25.6
70	15.0 (.79)	16.7 (.86)	17.4 (.90)	15.3	16.3	17.2
80	9.2 (.54)	10.1 (.64)	10.4 (.72)	9.4	9.8	10.3
90	5.2 (.22)	5.4 (.29)	5.4 (.36)	5.2	5.2	5.3

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