

Trends in Longevity and Implications for Retirement Planning

Presented by Michael Heller

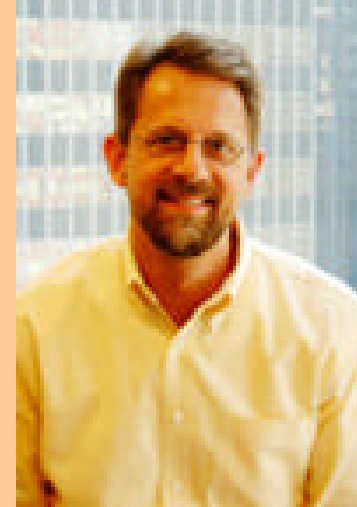
Vice President, Actuarial Pension Services

July 29, 2003

Today's Presenters



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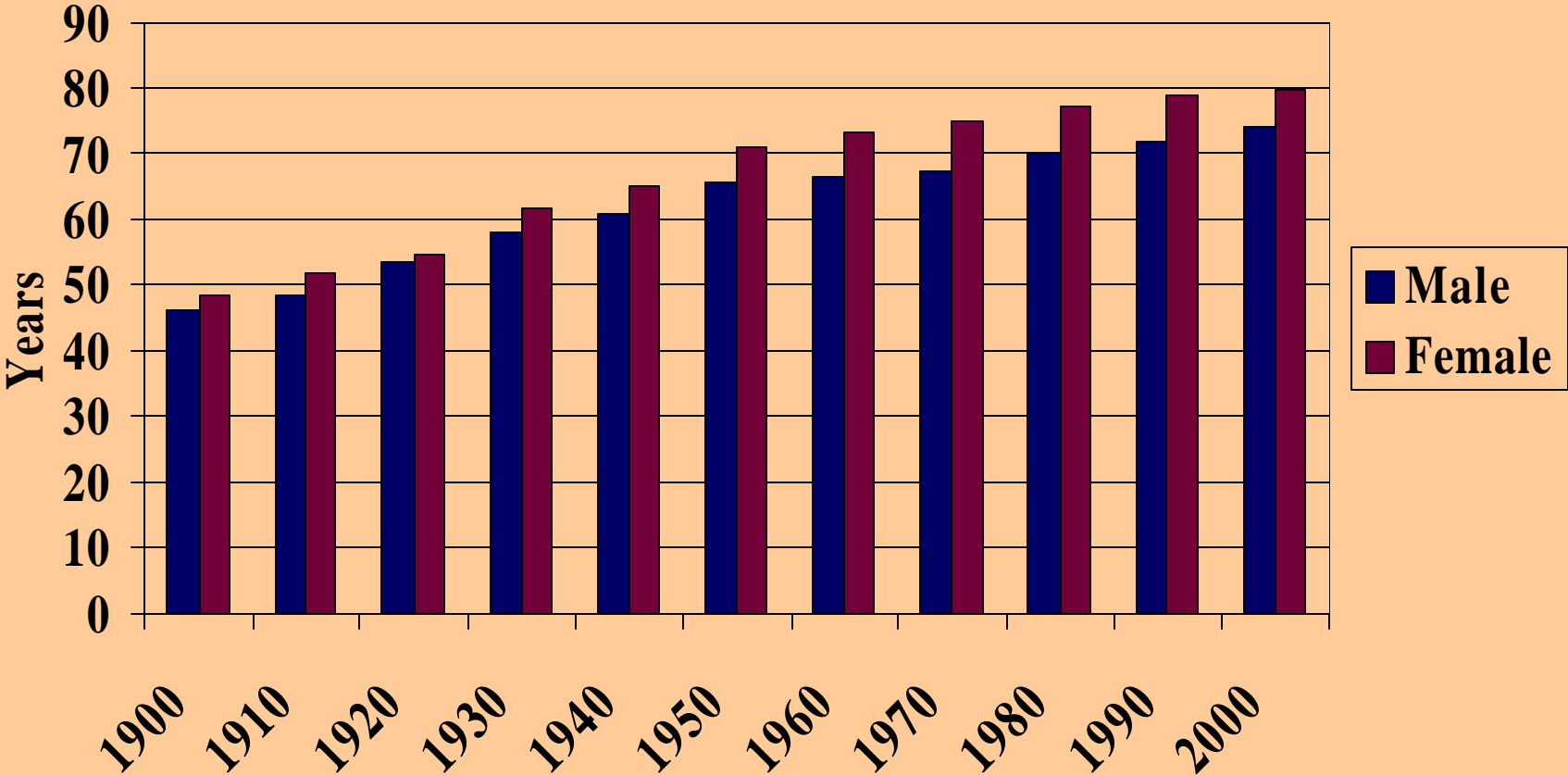
Overview of Presentation

- **Trends in general population mortality**
- **General population vs. annuitants**
- **TIAA-CREF mortality studies**
- **Probabilities of Survival**

Mortality Trends in the General Population

- Life expectancy increased dramatically throughout the 20th century
- In 1900, life expectancy in the U.S. was 47 years. Today, it's about 77 years
- Male life expectancy: 74 years
Female life expectancy: 80 years
- Highest life expectancy: Japan, 81 years

Life Expectancy at Birth



Source: National Vital Statistics

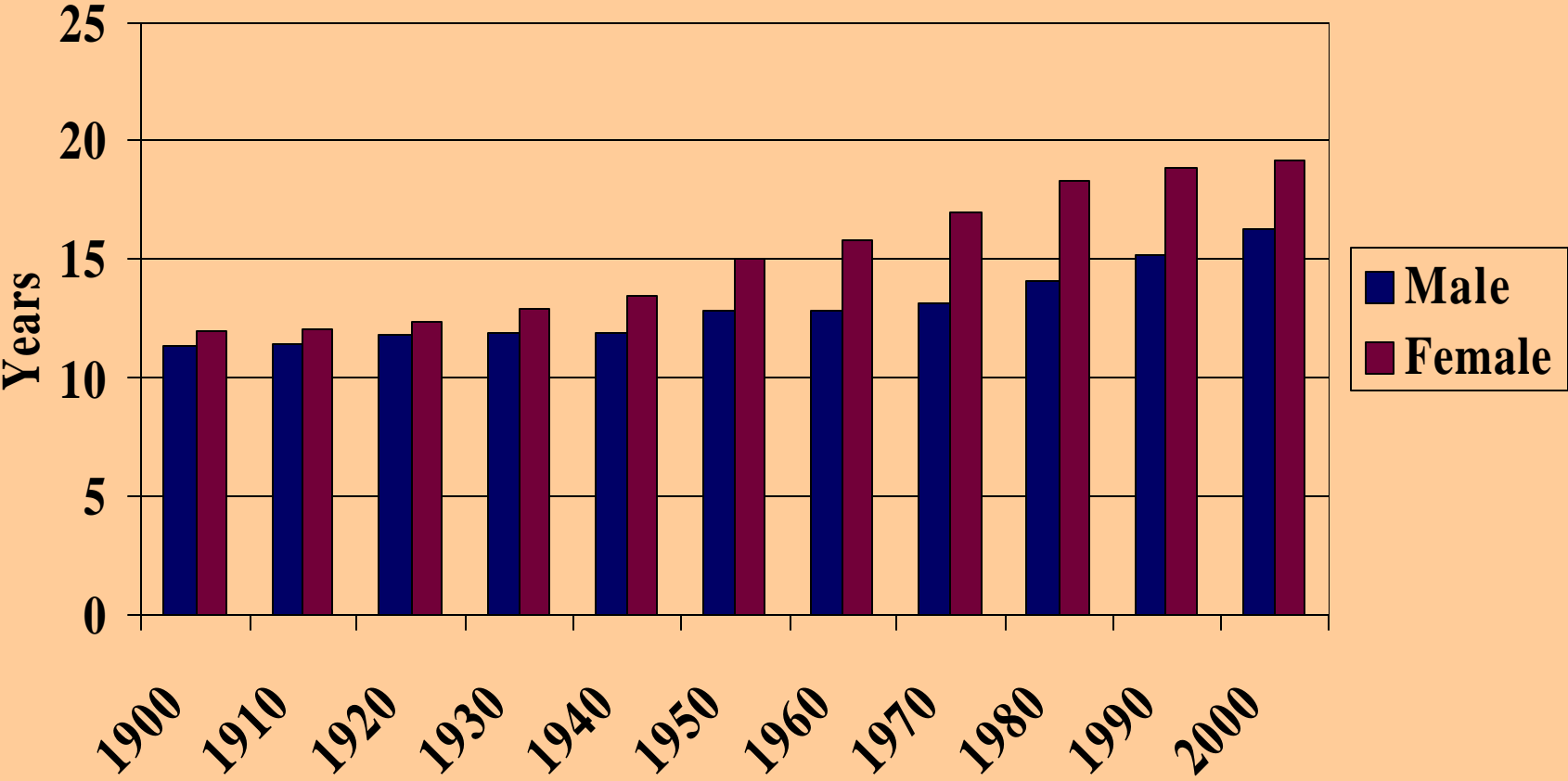
Why Life Expectancy Improved Dramatically

- **First half of 20th century – Great improvements in public sanitation, personal hygiene and food safety**
- **Second half – Development of antibiotics, vaccines and many drugs to fight and prevent diseases**

Trends in Life Expectancy

- **Improvement in life expectancy during the 20th century about equal to improvement over previous 2,000 years**
- **Life expectancy at birth is slowly increasing, about 1% every five years**
- **Age 65 life expectancy increasing at about 1.5 to 2% every five years**

Life Expectancy at Age 65



Source: National Vital Statistics, SSA

Trends in Life Expectancy

- **Growing number of centenarians – people age 100 and over**
- **Very small but growing number of supercentenarians, those age 110+**
- **Human life span, which is the maximum number of living years, has remained unchanged at about 120 years**

Trends in Life Expectancy

- **Many advances in understanding age-related diseases, but few advances in understanding the human aging process**
- **Elimination of cardiovascular disease, stroke and cancer would increase life expectancy by about 15 years**

Annuitant Mortality Tables

- **Mortality rates and life expectancies differ significantly between annuitant and general population mortality tables**
- **General population statistics include very ill and disabled individuals**
- **Also reflects all socioeconomic groups**

Annuitant Mortality Tables

- **People who purchase annuities generally come from the higher socioeconomic groups**
- **They tend to have healthier life styles and better access to healthcare**
- **Accordingly, their overall mortality rates are lower than that of the general public**

Annuitant Mortality Tables

- **Annuitant mortality tables reflect large element of anti-selection**
- **Less healthy individuals tend to avoid annuitization - This leaves mostly healthier people in the annuitant pool**
- **As a result, annuitant mortality tables reflect significantly lower mortality rates and higher life expectancies than other mortality tables**

TIAA-CREF Mortality Studies

- **Need to accurately measure mortality risk in order to properly price annuity products**
- **TIAA-CREF conducts annual mortality studies to compare our actual experience to expected mortality rates**
- **We can then adjust our assumed mortality rates to reflect emerging experience**

TIAA-CREF Mortality Studies

- **As TIAA-CREF has nearly 300,000 annuitants, we can use the “law of large numbers” to reasonably predict the mortality experience of our annuitants**
- **Based on our annual studies, we find that mortality is constantly improving**
- **Male mortality has been improving faster than female mortality**

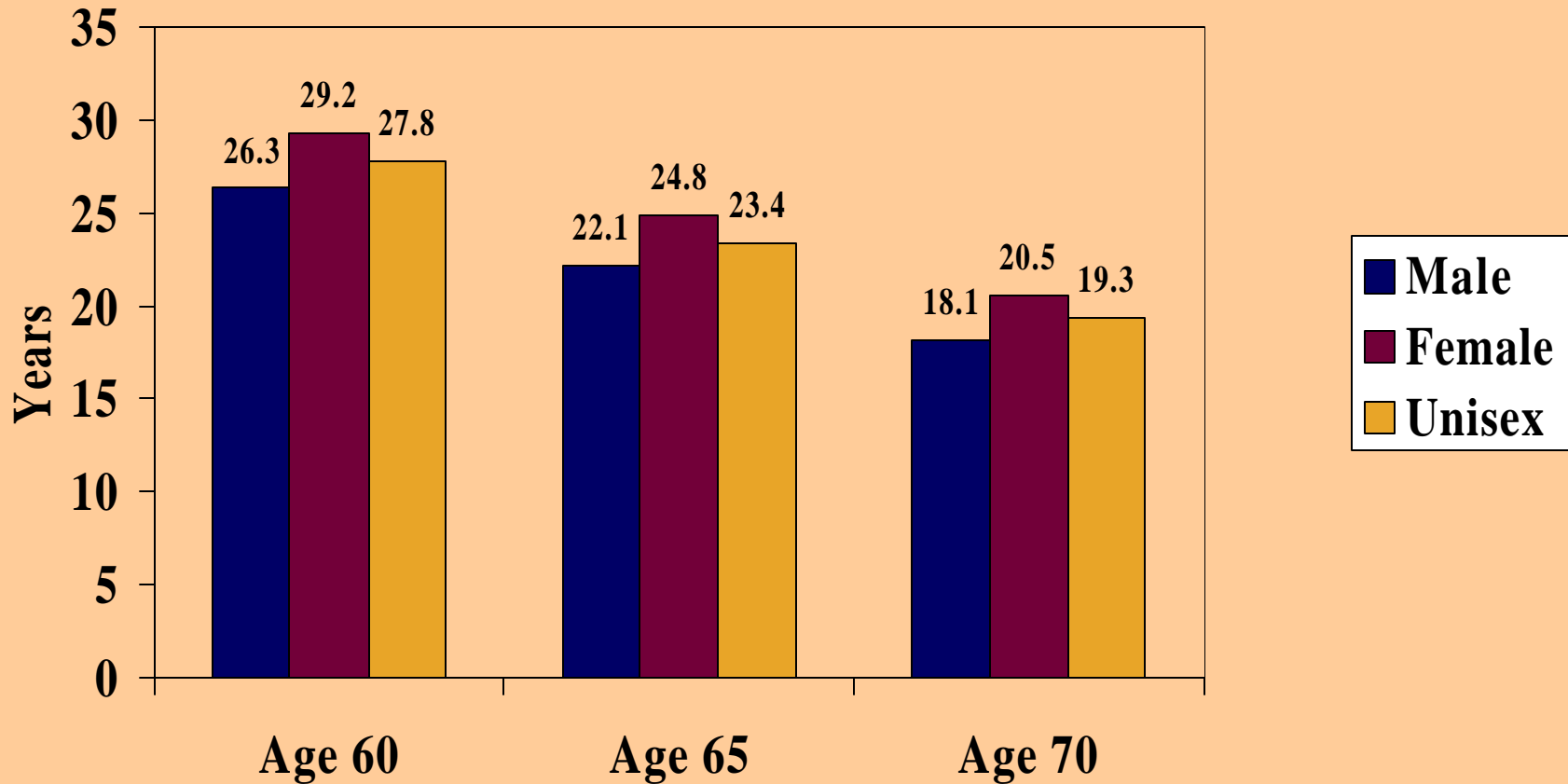
Annuitant Statistics

- **287,000 annuitants currently receiving lifetime annuity income**
- **There are currently 9,800 annuitants who are age 90 or over**
- **About 200 annuitants are age 100 or over**
- **Oldest living annuitant: Age 110**

TIAA-CREF Mortality Tables

- TIAA and CREF annuity benefits are based on the Annuity 2000 mortality table, with adjustments to reflect our emerging mortality experience
- This basic table was developed by the Society of Actuaries using a large volume of data provided by many companies
- A merged-gender version is used as pension plans cannot vary benefits by gender

TIAA Mortality Table Life Expectancies



Basis: 2003 TIAA Mortality Table

TIAA Mortality Table Survival Probabilities

	Probability of Surviving to Age:			
Current Age	80	85	90	95
60	78%	64%	45%	26%
65	80%	65%	47%	27%
70	83%	68%	49%	28%

Basis: 2003 TIAA Mortality Table (merged gender)

TIAA Mortality Table Survival Probabilities

	Probability of Male surviving to Age:			
Current Age	80	85	90	95
60	73%	58%	39%	22%
65	75%	60%	41%	22%
70	79%	63%	43%	23%

Basis: 2003 TIAA Mortality Table (male rates)

TIAA Mortality Table Survival Probabilities

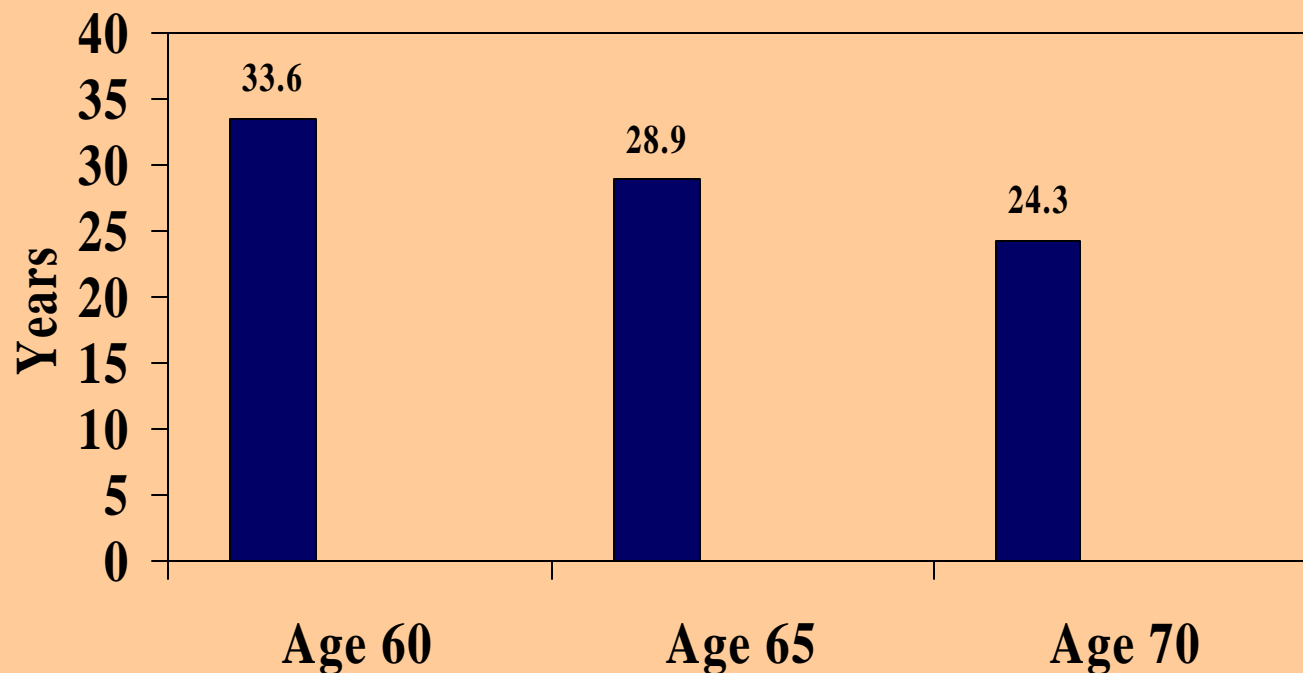
	Probability of Female surviving to Age:			
Current Age	80	85	90	95
60	83%	70%	52%	30%
65	84%	71%	53%	31%
70	87%	74%	54%	32%

Basis: 2003 TIAA Mortality Table (female rates)

TIAA Mortality Table

Joint-Life Expectancies

Both annuitants same age



Basis: 2003 TIAA Mortality Table

TIAA Mortality Table Survival Probabilities

Probability of one Annuitant surviving to Age:				
Couple				
Age	80	85	90	95
60	95%	87%	70%	45%
65	96%	88%	72%	46%
70	97%	90%	74%	48%

Basis: 2003 TIAA Mortality Table (merged gender)

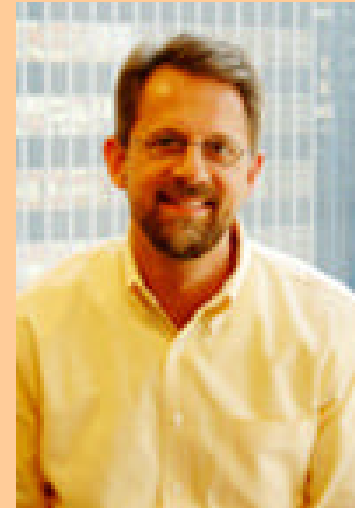
Closing Comments

- **Life expectancy will continue to improve, particularly at the older ages**
- **Probabilities of survival are a better way of measuring longevity risk**
- **An annuitant mortality table may be the best tool for determining longevity risk for healthy individuals**
- **A life annuity guarantees continuous income for as long as you live**

Questions...



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For Additional Information...

- **Your TIAA-CREF Institutional Consultant**
- ***Quarterly*, “Trends in Longevity and Retirement Planning”; M. Lord and M. Heller; Summer 2003; www.tiaa-crefinstitute.org.**
- ***Making Retirement Income Last a Lifetime*; (Recorded webcast “<http://tiaa-crefinstitute.webex.com>” “Recorded Events”; Feb. 2003).**
- ***Nature*; “The Future of Aging”; Leonard Hayflick, November 2000, Issue #408, p. 267-269.**
- **BuildingExpertiseWeb@tiaa-cref.org**

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