



GROUP LIFE DEMOGRAPHIC TRENDS AND MORTALITY IMPROVEMENT

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Purpose



To assess the impact of recent trends in aging and mortality improvement on Group Life experience and to provide a framework for developing future best estimate assumptions

Agenda



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1. Demographic Trends
 - Historical Changes
 - Future Projections
 - Cost of Aging
 2. Mortality Improvement
 - Historical Population Trends
 - Segmentation
 3. Mortality Improvement and Aging Projections
 - Current Industry Practices
 - Considerations for Future Projections



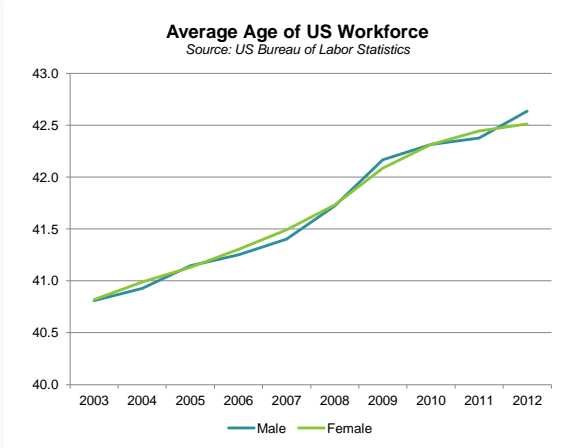
DEMOGRAPHIC TRENDS



Recent Aging Trends in the US Workforce



Stable growth in average age over the past decade

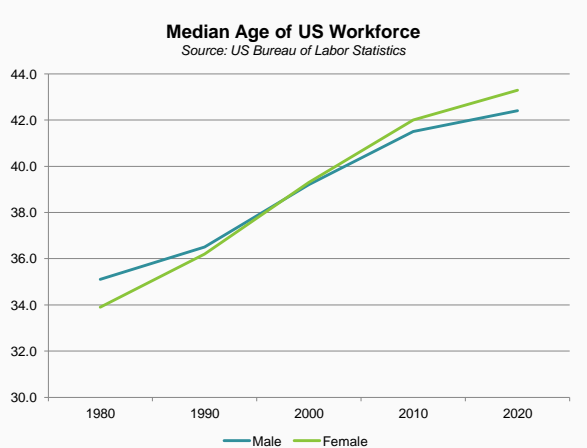


- Population as driver of work force
- Labor force participation rate impact
- Aging of Baby Boomer population
- Impact of 2007-2009 recession
- Group Life insured trends

Future Demographic Trends in the US Workforce



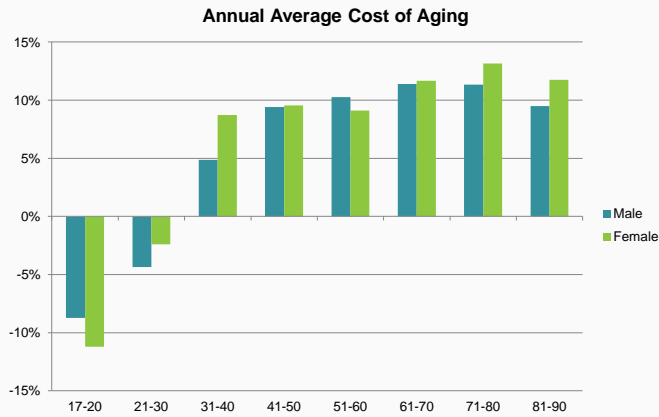
Stable growth in average age over the past decade



- Aging projected to continue through 2020
- Aging rate expected to decline in post-recession period
- Females expected to continue to represent 47% of US workforce
- Future drivers include fertility, mortality, immigration, education
- Older work force driven by financial conditions and access to healthcare

The Cost of Aging

Cost of one year of aging varies based on age of the insured population



MORTALITY IMPROVEMENT



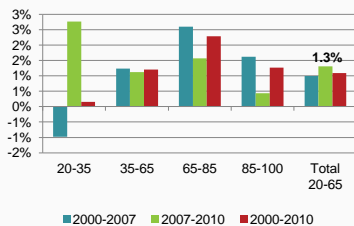
Population Mortality Improvement



Population mortality improvement steady at 1% per year for working ages

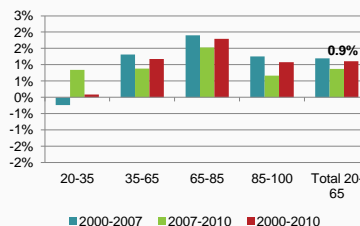
Male Avg Mortality Improvement

Compressed Mortality File



Female Avg Mortality Improvement

Compressed Mortality File



Lifestyle Drivers of Mortality Improvement – Obesity Levels



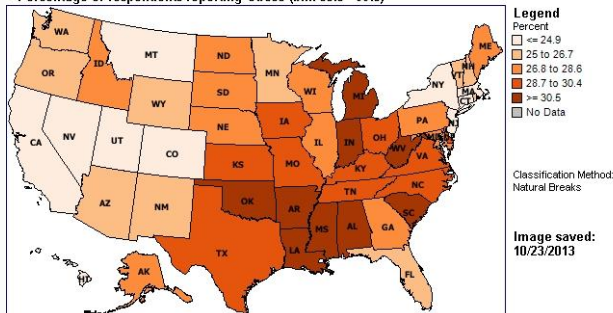
Rates of obesity drive mortality improvement rates and vary by geographical location

BRFSS Maps

Year - 2011

Weight classification by Body Mass Index (BMI)

Percentage of respondents reporting Obese (bmi 30.0 - 99.8)



Source: CDC Behavioral Risk Factor Surveillance System



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Lifestyle Drivers of Mortality Improvement - Smoking



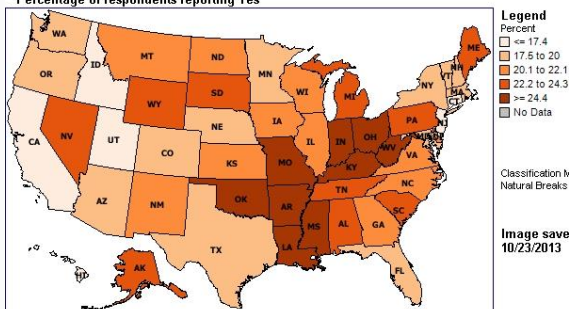
Smokers experienced little or no mortality improvement over past decade

BRFSS Maps

Year - 2011

Adults who are current smokers

Percentage of respondents reporting Yes



Legend
Percent
 <= 17.4
 17.5 to 20
 20.1 to 22.1
 22.2 to 24.3
 >= 24.4
 No Data

Classification Method:
Natural Breaks

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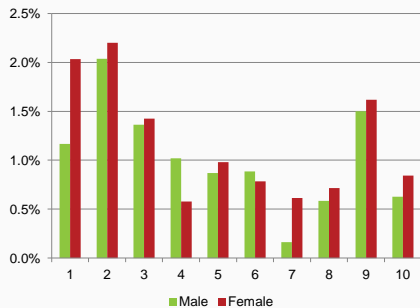
Source: CDC Behavioral Risk Factor Surveillance System



Mortality Improvement by Region



Mortality improvement variation reflected by geographical region



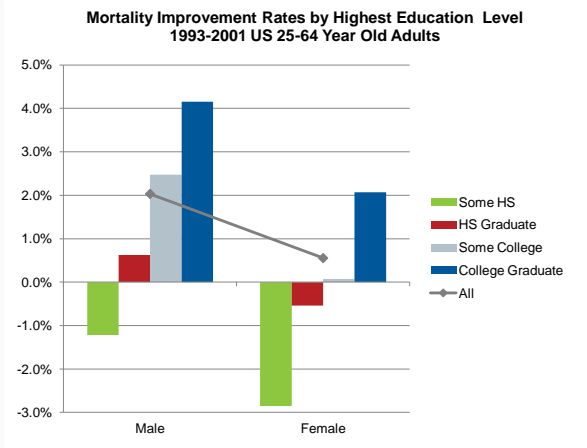
Region	States
1	CT, ME, MA, NH, RI, VT
2	NJ, NY
3	DE, DC, MD, PA, VA, WV
4	AL, FL, GA, KY, MS, NC, SC, TN
5	IL, IN, MI, MN, OH, WI
6	AR, LA, NM, OK
7	TX
8	IA, KS, MO, NE
9	AZ, CA, HI, NV
10	AK, ID, OR, WA

- Up to +/- 2% variation in mortality improvement by geographical region
- Lifestyle variances including obesity and smoking
- Access to health care as driver – potential for narrower gap with health care reform

Mortality Improvement by Education Level



Mortality improvement varies significantly by education level

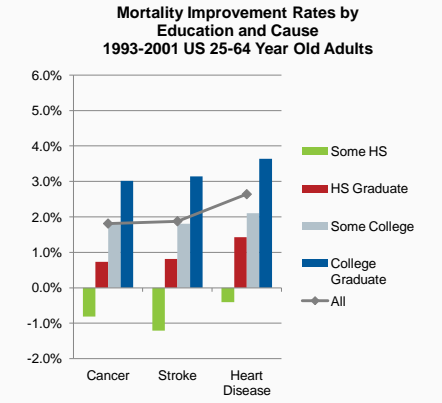
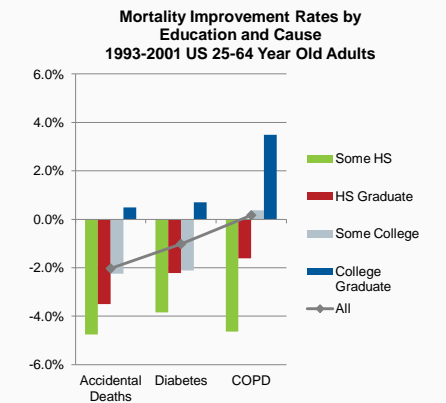


- Indicator of MI by socioeconomic status
- Highest education levels reflect MI approximately double population levels
- Mortality deterioration at lowest education levels
- 1999-2011 NCHS MI of counties by per capita income reflect consistent patterns

Mortality Improvement by Education Level and Cause



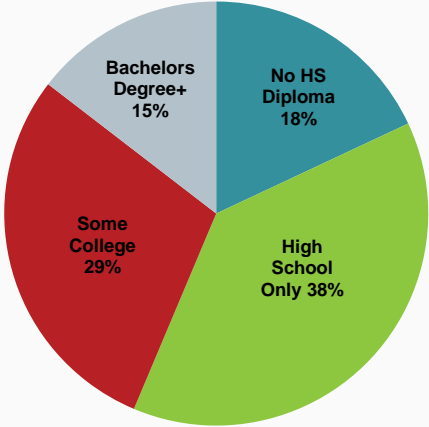
Significant spread in mortality improvement by education regardless of cause of death



Industries with Lowest Education Level Attained

Education Level of US Workforce by NAICS Segment

Source: Bureau of Labor Statistics, 2009



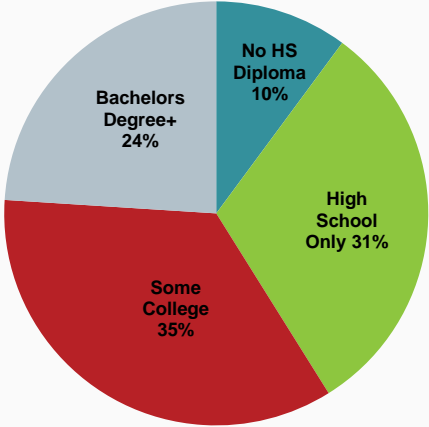
- Agriculture
- Forestry, Fishing and Hunting
- Accommodation and Food Services
- Construction
- Administrative and Support and Waste Management Services
- Transportation and Warehousing
- Mining
- Quarrying, and Oil and Gas Extraction Manufacturing

➤ **Potential Reduction in Mortality Improvement of 0.5-1% Below Standard MI Assumption**

Industries with Average Education Level Attained

Education Level of US Workforce by NAICS Segment

Source: Bureau of Labor Statistics, 2009



- Retail Trade
- Health Care and Social Assistance
- Real Estate and Rental and Leasing
- Arts, Entertainment, and Recreation
- Wholesale Trade
- Utilities

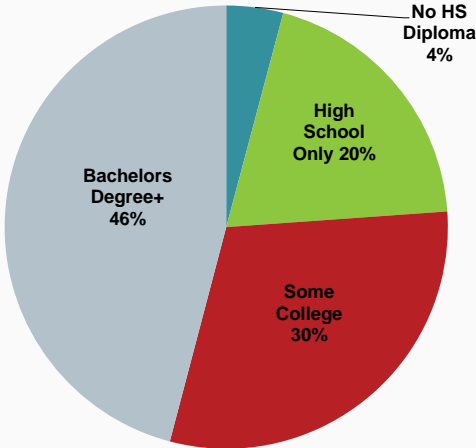
➤ **Assume Standard MI Assumption**

Industries with Highest Education Level Attained



Education Level of US Workforce by NAICS Segment

Source: Bureau of Labor Statistics, 2009

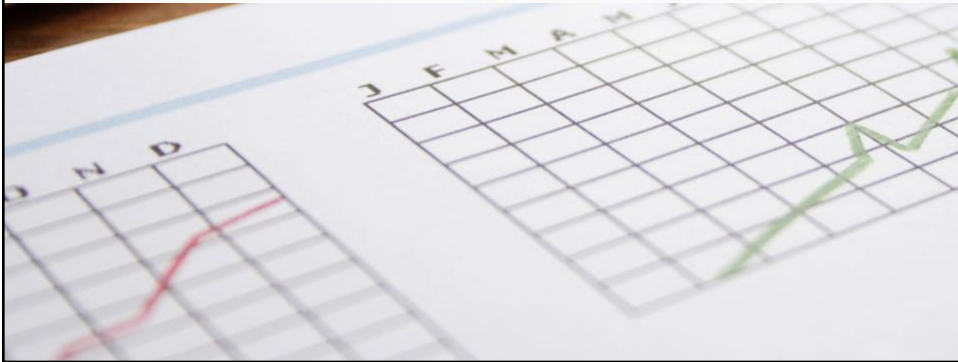


- Federal, State and Local Government
- Educational Services
- Information
- Finance and Insurance
- Management of Companies and Enterprises
- Professional, Scientific, and Technical Services

➤ **Potential Increase in Mortality Improvement of 0.5-1% Above Standard MI Assumption**



MORTALITY IMPROVEMENT AND AGING PROJECTIONS



Current Industry Practice



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- 2013 Munich Re survey of 27 Group Life carriers
 - 45% of carriers incorporate mortality improvement assumptions in pricing active lives (includes most large carriers)
 - 17% apply MI assumption to retirees and spouses
 - 11% apply MI assumption to dependents
 - Review of 10 carriers' income statements for 2008-2012
 - Claims as % of volume has been stable, indicating MI offset by aging
 - Higher rate of aging during recession 2007-2009 indicates potentially higher mortality improvement during that period
 - Industry rule of thumb assumptions of 1-1.5% per year MI for males, 0.5-0.75% for females

Monitoring Historical Experience



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- SOA 2013 Group Life Mortality Study
 - Comparison with 2006 study to assess trends by segment (age, gender, traditional/voluntary, industry)
 - Consider data limitations of study comparison such as company mix, changes in risk control
 - Carrier level historical experience to set manual rate MI assumptions
 - Monitor trends in A/E incidence
 - Regression model fitting study year as variable
 - Case level MI trends for experience rating
 - Monitoring system for census changes at case level is key to understanding
 - Isolate impact of aging against mortality improvement

Setting Future Aging and Mortality Improvement Assumptions



- Consider timeframe between experience period and rate effective period
 - Years of experience used in setting manual/experience rate
 - Gap between experience period and rate effective date
 - Rate Guarantee period, renewal practices, manual rate filing frequency
- Baseline aging/mortality improvements derived based on historical population and industry trends
- Segmentation of MI assumptions
 - Age/gender
 - Socioeconomic drivers – industry, salary, average face amount
 - Geographical location
 - Active/Spouse/Retiree
 - Traditional vs. Voluntary – consider impact of anti-selection

Group Life Demographic Trends and Mortality Improvement

15/11/2013

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Considerations for using Past Experience to set Future Aging and Mortality Improvement Assumptions



- Medical advances
 - Potential for new diseases/pandemics
 - Impact of health care reform, lower overall spend but smaller gap by income
 - Lifestyle trends such as obesity, smoking, alcohol consumption and driving habits
- Consideration of potential human lifespan – will expected lifetime converge to certain limit?
- Shifts in makeup of insured population
- Changes in employers offering Group Life and mix of employees covered
- Changes in Medical UW practices including simplified/automated UW over GI limit
- New distribution channels such as health care exchanges

Group Life Demographic Trends and Mortality Improvement

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THANK YOU FOR YOUR ATTENTION

