

SOA Pension Section Research Summary

This paper summarizes third millennium pension research available on the Society of Actuaries Website. The research is organized by categories. In some cases research is assigned to more than one category due to overlap. The goal is to enable a pension actuary who is looking for a research resource to ascertain if there is relevant research and if so to be able to find and download the information.

For each item, the year the research was released, the form of research (e.g. literature search, paper, survey) and a brief synopsis are provided.

Demographic Assumptions

Withdrawal Rates

[2003 SOA Pension Plan Turnover Study](#)

Year Published: 2003

Form of Research: Experience Study

Synopsis: The purpose of this study is to summarize recent turnover experience in a form that pension actuaries may use in pension plan valuations and contribution studies. Tables that are currently used in practice include the classic "Sarason T-tables" (Crocker et al 1955, see Section 2.1) as well as the Vaughn (1992) tables (see Section 2.2). In Canada, the Ontario medium tables are sometimes used (Coward et al 1961).

Retirement Rates

[2003 SOA Pension Plan Turnover Study](#)

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Form of Research: Experience Study

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[Retirement Literature: An Interdisciplinary Review of Pre-retirement Influences on Attitudes and Decisions Regarding Retirement](#)

Year Published: 2005

Form of Research: Literature Search

Synopsis:

This report reviews sixty papers written since 1990, and summarizes their important points under seven topic areas. The seven topics addressed are:

- Retirement Trends
- Influences on the Retirement Decision

- Participation Decisions
- Effects of Employer–Sponsored Pension Plans
- Effects of Health
- Effects of Stock
- Effects of Pension Plans on Employee Attitudes and Behaviors

Mortality

[Selecting Mortality Tables: A Credibility Approach](#)

Year Published: 2008

Form of Research: Paper

Synopsis: The paper demonstrates how credibility theory can be used to adjust and select standard mortality tables for pension and OPEB valuations.

[Impact of Mortality Projection Scales on Defined Benefit Pension Plan Valuations](#)

Year Published: 2004

Form of Research: Paper

Synopsis: The purpose of the study was to provide quantitative information illustrating the impact of reflecting mortality improvement using a “generational approach” in the actuarial valuations of defined benefit pension plans versus reflecting mortality improvement by more traditional methods.

[Factors Affecting Retirement Mortality](#)

Year Published: 2004

Form of Research: Literature Search

Synopsis: The first phase of this project includes a comprehensive literature search and summary identifying 10 factors, in addition to age and gender, linked to mortality experience at or after age 65.

In the second phase of the project, existing Society of Actuaries experience studies were reviewed to see which factors could be added to the studies. This phase also considers methods for reflecting the additional factors in the mortality tables.

[The RP–2000 Mortality Tables](#)

Year Published: 1996

Form of Research: Experience Study

Synopsis: Mortality Study of United States Private Sector Single Employer Pension Plan. Includes comparison of employee and retiree, blue versus white collar, and mortality experience by income.

[2001–02 Group Annuity Experience Report](#)

Year Published: 2005

Form of Research: Experience Study

Synopsis: Biannual experience study of group annuity mortality experience.

Other Assumptions

[Aging Curves for Health Care Costs in Retirement](#)

Year Published: 2003

Form of Research: Paper

Synopsis: This paper explores the relative significance of aging as a determinant of financial cost of health care beyond age 50, with particular attention to the effect for ages 65 and older. The paper presents concepts of aging factors and aging curves, which define relative values between ages for utilization or cost of health care services.

[Single Life vs. Joint and Survivor Pension Payout Options: How Do Married Retirees Choose?](#)

Year Published: 2003

Form of Research: Study

Synopsis: This study measures the share of married retirees with pension annuities who forgo survivor protection and examines the factors influencing their decisions. It also measures the share of retirees whose decisions to forgo survivor protection can be justified by its high costs or low benefits, such as the presence of other types of financial protection for the spouse, poor health of the spouse, and low income.

Economic Assumptions

Investment Return

No Research Identified

Long Term Medical Trend

[Modeling Long Term Healthcare Cost Trends](#)

Year Published: 2007

Form of Research: Excel Model with Supporting Documentation and Research Paper

Synopsis: The model projects per-person expenditures and growth rates through 2099 using a set of equations and assumptions developed by Professor Getzen with assistance from the Society of Actuaries Project Oversight Group appointed to oversee the effort. The data sources underlying the model assumptions have been clearly specified in the Technical Documentation providing transparency and support for the ultimate results. The model, programmed in Microsoft Excel, includes baseline assumptions as well as flexibility for user-inputted alternative assumptions. In addition, the Project Oversight Group has written a document describing practical issues for actuaries using the model.

Actuarial Cost Methods

[Survey of Asset Valuation Methods for Defined Benefit Pension Plans](#)

Year Published: 2004

Form of Research: Survey

Synopsis: Pension actuaries who are members of the Society were surveyed and asked to provide details on the asset valuation methods used on each pension plan they valued, and some details about the plan, its investment mix and other related information. Approximately 6,000 questionnaires were mailed out and responses for a total of 9,983 plans were returned. Out of those responses, 9,670 were determined to be complete and consistent enough to be included in the study. This total included 9,026 U.S. plans (about 13% of all U.S. plans), 612 Canadian plans (about 9% of all Canadian plans) and 32 other plans.

Plan Design

[Phased Retirement](#)

Year Released: 2004

Research Form: PPT Presentation at SOA Meeting

Synopsis: A summary of the reasons phased-retirement programs are desirable to employees and employers and the legislative and plan design hurdles in implementing them.

Investments (Actuarial Liability Modeling)

Adequacy of Bond Supply and Cost of Pension Benefits: A Financial Economics Perspective

Year Released: 2010

Research Form: Paper

Synopsis: The paper attempts to fill the gap in the literature by empirically assessing the adequacy of the supply of bonds, quantifying the price impact, gauging the actuarial cost, and proposing appropriate government policy measures. It was found that the supply of long-term bonds is far from sufficient to meet the growing demand by pension funds. The inadequate supply may result in a statistically and economically significant impact on bond yields and an actuarially significant impact on the cost of providing pension benefits. The ramifications should not hold back the shift to bonds by pension funds. Instead, governments should take effective measures to spur bond supply.

Pension Risk Management: Derivatives, Fiduciary Duty and Process

Year Published: 2008

Form of Research: Paper

Synopsis: The report explores pension risk management, and is based on a survey of benefit professionals that investigated:

- a. why and how plan sponsors employ derivative instruments, if at all;
- b. what plan sponsors are doing to address investment risk in the context of fiduciary responsibilities; and
- c. if and how plan sponsors vet the way in which their external money managers handle investment risk, including valuation of instruments which do not trade in a ready market.

30-Year Treasury Rates & Defined Benefit Pension Plans

Year Published: 2006

Form of Research: Paper

Synopsis: The objective of this research was to identify one or more indices, for calculating Current Liability, designed to approximate the interest assumption underlying annuity rates that might be found in a group "close out" quotation for a terminating plan. Part of the motivation was related to a concern over the use of a rate tied to 30-year US Treasury securities for calculating current liability, PBGC variable premiums, and other statutory purposes.

Pension Finance Resources

Year Published: 2007

Form of Research: Literature Summary

Synopsis: Financial economics is influencing the way financial professionals view shareholder risk, including the risk from pension plans. Actuaries and others have been examining what place financial economics might have in the pension actuarial paradigm. The report is an informational tool to aid actuaries

in learning more about the issues.

Employer Perspectives

The Impact of Reversion Taxes on Pension Plan Funding

Year Published: 2006

Form of Research: Paper

Synopsis: Prior to the 1980's, if a pension plan terminated, the pension plan's surplus assets reverted to the plan sponsor and were subject to regular corporate taxes. This process is commonly known as a "reversion" in the U.S. This research report explores the impact of reversion taxes on pension plan funding and calculates an equitable level of reversion tax that would compensate for the tax exempt earnings of the pension fund. The report was authored by Victor Modugno.

Variation of Employee Benefit Costs by Age

Year Published: 2006

Form of Research: Paper

Synopsis: This research shows that there are major differences in benefit cost by age. These costs vary greatly depending on the structure of employers' benefit plans. The authors also observe that the extent to which the packages offer incentives for retirement at a specific time is also radically different. An employer can shift the variation in cost by age by changing the structure of the benefit program.

Retiree Perspectives

Post-Retirement Financial Strategies from the Perspective of an Individual Who is Approaching Retirement Age

Year Published: 2010

Form of Research: Literature Review

Synopsis: This report provides a literature review of post-retirement financial strategies from the perspective of an individual approaching retirement age. The literature surveyed focuses on the risks of longevity, inflation, and investment.

Simple Life Expectancy Calculator

Year Published: 2008

Form of Research: Excel Tool

Synopsis: This Excel tool is used for calculating the life expectancies of an individual and/or couple at different ages. The life expectancies are based on either the SOA Annuity 2000 or Social Security Administration Tables—the calculator allows a user to select either one. The calculator was created by Mary Pat Campbell, and she has donated it to the SOA.

Spending and Investing in Retirement—Is There a Strategy?

Year Published: 2006

Form of Research: Study

Synopsis: This study examines how retirees approach key financial decisions about managing their money in retirement. The objective of the research, conducted by LIMRA International and Mathew Greenwald & Associates, was to collect first hand accounts from six focus groups comprised of retirees in several

locations nationwide. The resulting report presents key findings from these focus groups, including verbatim comments from the participants and interpretive comments from the researchers.

Retirement Literature: An Interdisciplinary Review of Pre-retirement Influences on Attitudes and Decisions Regarding Retirement

Year Published: 2005

Form of Research: Literature Search

Synopsis:

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- Retirement Trends
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- Effects of Health
- Effects of Stock
- Effects of Pension Plans on Employee Attitudes and Behaviors

Retirement Planning Software

Year Published: 2005

Form of Research: Review of Available Software

Synopsis: The goal of this research was to determine how prevailing programs treat the retirement phase and, more specifically, how they treat retirement risks. This report reviews retirement planning software programs currently available to individuals and their professional advisors. Such programs can help individuals decide how much to save toward retirement, how to invest these savings, when they can afford to retire, and how to manage their financial affairs after retirement.

This report does not rate or recommend specific programs. Rather, it explains how programs that are currently available work, and what features can be improved. This presentation should assist individuals and their advisors in choosing the kinds of programs that will be useful, and encourage software firms and financial institutions to improve the software they make available.

Psychological Adjustment to Widowhood: The Role of Income, Wealth and Time

Year Published: 2010

Format: Longitudinal Study

Synopsis: This study uses data from two longitudinal surveys to examine the relationship between psychological well-being and financial well-being of older women and men, with specific interest in differences by marital status and duration of widowhood.

Retirement Income Calculator- Beta Version

Year Published: 2006

Form of Research: Excel Tool

Synopsis: This free Beta version of the Retirement Income Calculator software was developed as a pedagogical tool to help demonstrate the impact of a change in Retirement Income strategy on potential

financial outcomes. A user can consider various strategies of longevity and asset performance risk transferral and observe the resulting changes on a range of modeled outcomes. The overall purpose is to provide an understanding of the trade-offs of risk and reward in retirement strategies.

[2009 Risks and Process of Retirement Survey](#)

Year Published: 2009

Form of Research: Survey

Synopsis: This report presents the results of a telephone survey among Americans aged 45 to 80 conducted by Mathew Greenwald & Associates, Inc., and the Employee Benefit Research Institute (EBRI).. The purpose of the study was to evaluate Americans' awareness of potential financial risks in retirement, how this awareness impacts the management of their finances with respect to retirement, and how Americans are managing the process of leaving the workforce.

[Retirement Plan Preferences Survey](#)

Year Published: 2004

Form of Research: Survey

This report presents the results of a survey on pension and retirement plan preferences conducted by Mathew Greenwald & Associates, Inc.. The purpose of this study was to evaluate worker and retiree preferences for different types of employer-sponsored retirement plans and better understand which plan characteristics have the most appeal. The study was conducted among employed individuals who have a retirement plan through their current employer and retired individuals who receive or received retirement benefits from an employer-sponsored retirement plan.

[Policy Maker Perspectives and Tools](#)

[Models for Retirement Policy Analysis](#)

Year Published: 2003

Form of Research: Paper

Synopsis: This draft report describes existing models and data sources for projecting the effect of changes in environment on the design and cost of retirement benefit plans. It is a living document and will keep changing and evolving based on comments sent to the SOA and continuing work of the researcher. In addition, an actuarial critique of each model will be added as they become available.

[Research By Types of Plan](#)

Defined Benefit Plans

No Research Identified

Defined Contribution Plan

No Research Identified

Hybrid Plans

[The Total Career Benchmark Process—A First Step in Redefining Canadian Pension Plans](#)

Year Published: 2008

Form of Research: Paper

Synopsis: This paper explores the current state of defined benefit plans in Canada and future visions of them. The author suggests that it is necessary to go back to first principles and develop a system that recognizes the underlying purpose of retirement savings from the perspectives of an employee, an employer and the government.

The Nature of the Pension “Promise”

Year Published: 2008

Form of Research: Paper

Synopsis: This paper explores the current state of defined benefit plans in Canada and future visions for them. The author proposes a national regimen which recognizes and preserves the structure of defined-benefit plans in order to ensure that employers and/or employee representatives are able to equalize benefits as opposed to contributions, if their objective is to weight contributions towards older, long-service employees.

Survey on the Prevalence of Traditional and Hybrid Defined Benefit Pension Plans

Year Published: 2005

Form of Research: Survey

Synopsis: A survey intended to examine the prevalence of traditional and hybrid defined benefit pension plans in large organizations with operations in the U.S.

Actuarial Aspects of Cash Balance Plans

Year Published: 2004

Form of Research: Paper

Synopsis: The purpose of this study is to provide the actuarial profession with a review of the actuarial aspects of cash balance retirement plans and original actuarial research regarding the design and valuation of such plans. Cash balance plans present design and valuation issues not found in traditional retirement plans. Real world cash balance issues include:

- The choice of appropriate interest credit rates and related valuation assumptions;
- The valuation of fixed minimum interest credit rates;
- The valuation of interest credit rates tied to equity returns; and
- The valuation of qualified plan rollovers into a cash balance plan

There are real risks associated with each of these issues. There may be disagreement on the extent to which they should be considered when determining a cash balance plan’s actuarial liability and cost.

Actuaries will increasingly be asked to address and measure the costs and risks associated with cash balance plans, both in plan design and ongoing valuation.

This report discusses cash balance plan features and methods to measure the associated risks.

Public Sector/Social Security

Autopilot: Self-Adjusting Systems for Sustainable Retirement Systems

Year Published: 2007

Form of Research: Paper

Synopsis: This paper focuses on automatic adjustment mechanisms for social security and employer-provided pension systems, examining the experience around the world. Since the late 1990s, starting with an innovative reform in Sweden, a growing number of countries has reformed their social security systems

to include automatic adjustment mechanisms. At least twelve countries have adopted life-expectancy indexing of benefits or automatic adjustments tied to social security insolvency. Both types of reforms provide automatic adjustment mechanisms for sustaining the solvency of social security systems.

Design and Actuarial Aspects of Deferred Retirement Option Programs

Year Published: 2003

Form of Research: Paper

Synopsis: The main purpose of this study is to provide actuaries with enough information to gain a detailed understanding of the issues involved in Deferred Retirement Option Programs (DROP) plan design and funding.

Multi Employer

No Research Identified

OPEB Plans

Aging Curves for Health Care Costs in Retirement

Year Published: 2003

Form of Research: Paper

Synopsis: This paper explores the relative significance of aging as a determinant of financial cost of health care beyond age 50, with particular attention to the effect for ages 65 and older. The paper presents concepts of aging factors and aging curves, which define relative values between ages for utilization or cost of health care services.

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Canada

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