**The Postal Service Pension System and Alternative
Methods for Providing Long-term Financial Welfare to Retirees**

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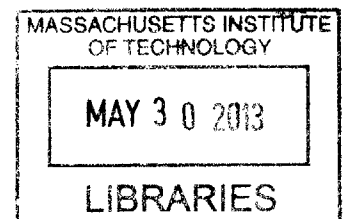MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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ABSTRACT

The United States Postal Service continues to face difficult financial conditions, due primarily to electronic diversion of mail volume. The largest component of the Postal Service's cost structure is labor, with retirement benefits representing a significant portion of those costs. This thesis provides a historical retrospective of the development of the pension system that the Postal Service currently participates in, and assesses the impact that the pension system has had on the Postal Service through history. The ultimate objective of this thesis is to study the United States Postal Service pension system as it relates to its current obligations to the United States federal government, provide a review of alternative pension arrangements operating in other sectors, and analyze the leading alternatives as they apply to the Postal Service to understand their potential impact on the finances of the United States Postal Service.

Two simulations models are developed in the study, based on an analysis of the current workforce, historical and projected retirement patterns, and the current pension contribution profiles of workers. The models are used to assess the impact of various plan designs on the Postal Service's cost structure, and on a typical individual employee's post-retirement income.

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Disclaimer

The views expressed in this thesis are those of the author and do not reflect the official views, policies or positions of the United States Postal Service.

No official United States Postal Service approval is expressed or implied.

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Chapter 1 <u>Introduction</u>

United States Postal Service Overview

The United States Postal Service is an independent agency of the Executive Branch of the United States Federal Government, having received its independence from a cabinet department in 1971. From its beginnings in the 13 colonies of America, the Postal Service has evolved to one of the most complex logistic organizations in the world, delivering 160 billion pieces of mail to 152 million homes, businesses and Post Office Boxes in every state, city, town and borough of the U.S.; this is more mail to more addresses over a larger geographic area than any other post in the world (United States Postal Service (a) 4). The Postal Service is governed by Title 39 of the U.S. code and its mission has been defined as follows:

> The United States Postal Service shall be operated as a basic and fundamental service provided to the people by the Government of the United States, authorized by the Constitution, created by Act of Congress, and supported by the people. The Postal Service shall have as its basic function the obligation to provide postal services to bind the Nation together through the personal, educational, literary, and business correspondence of the people. It shall provide prompt, reliable, and efficient services to patrons in all areas and shall render postal services to all communities. The costs of establishing and maintaining the Postal Service shall not be apportioned to impair the overall value of such service to the people
> (United States Government Code)

Over the past decade, the Postal Service has faced significant financial pressures in delivering on its mission due to declining mail volume precipitated by changing consumer habits and electronic diversion, exacerbated during the financial crisis of 2008. The Postal Service has been unable to pare back its cost structure in keeping with declining revenues, leading to significant deficits. Much of the cost structure of the Postal Service is mandated by law, including provisions to maintain delivery levels to what they were in 1983, and mandatory participation in federal government benefit programs, including health and pension systems. These mandates constrain the decisions of Postal management, and limit its control over the finances of the Postal Service. The Postal Service's 10-k states, "We participate in federal government pension and health and benefits programs for employees and

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retirees, including the Federal Employees Health Benefit (FEHB) Program, the Civil Service Retirement

System (CSRS), and the Federal Employees Retirement System (FERS). We have no control or influence

over the benefits offered by these plans and make contributions to these plans as specified by law or

contractual agreements with our unions (in the case of health benefits for most active employees).

Several factors could cause us to make significantly higher future contributions to these plans; and many

of these factors are beyond Postal management's control." (United States Postal Service (b) 14).

This thesis provides a historical retrospective of the development of the pension system that the

Postal Service is currently a participant in, and assesses the impact the pension system has had on the

Postal Service through history. The ultimate objective of this thesis is to study the U.S. Postal Service

pension system as it relates to its current obligations to the U.S. federal government, provide a review of

alternative pension arrangements operating in other sectors, and analyze the leading alternatives as

they apply to the Postal Service to understand their potential impact on the finances of the U.S. Postal

Service.

Restructuring the Postal Serve pension system is not a new idea, in fact it is one that the Postal

Service itself has proposed to Congress as a method to deal with the ongoing financial issues impacting

the organization. Among the challenges are a number of complicated legal issues that arise due to the

complex relationship between the U.S. Postal Service and the Federal government. Those issues are

summarized in this thesis, but the required legal changes for any action to occur are beyond the scope

of the analysis. The Postmaster General recently testified before the Senate requesting Congress allow

the Postal Service to transition to a defined contribution plan for employees joining the Postal Service

after 2015, citing the ongoing need to control costs associated with employee benefits as well as provide

future employees retirement flexibility. The Postal Service has not yet proposed a level of matching or

agency contributions that would be made towards employee's defined contribution plan (Losey).

The Postal Service: Financial Reality and Political Constraints

The Postal Service receives no tax dollars, and is self-supported through its sale of stamps and services. Its revenue in Fiscal Year 2012 was $65 billion. Labor costs include all costs associated with individuals working for the Postal Service. These costs include wages in the form of salary or hourly pay, overtime pay, as well as benefits in the form of health benefits, life insurance benefits, and pension benefits. In Fiscal Year 2012, total compensation and benefits for employees were $47.7B, retirement health benefits were $2.6B, prefunding of future retiree health care benefits were $11.1B and workers compensation was $3.7B[1]. Non-labor costs include those costs not associated with employee costs, such as transportation, contracts with suppliers, supplies, and facility costs. In Fiscal Year 2012, transportation costs totaled $6.6B and other expenses totaled $9.2B. The total expenses of the Postal Service in Fiscal Year 2012 were $80.9B leading to a total loss from operations of $15.7B. Labor costs accounted for over 80% of costs for Fiscal Year 2012 (United States Postal Service (b)).

Figure 1: Operating Statistics of the U.S. Postal Service (2001 – 2012):

Revenue and Expenses	2001	2002	2003	2004	2005	2006
Operating Revenues	$ 65,900	$ 66,463	$ 68,529	$ 68,996	$ 69,907	$ 72,650
Total Operating Expenses	$ 67,600	$ 65,234	$ 63,902	$ 65,851	$ 68,281	$ 71,681
Income from Operations:	*$ (1,700)*	*$ 1,229*	*$ 4,627*	*$ 3,145*	*$ 1,626*	*$ 969*

Mail Volume and Delivery Point:	2001	2002	2003	2004	2005	2006
Total Mail Volume (,000,000s)	207,462.6	202,821.9	202,184.7	206,105.7	211,742.7	213,137.7
Total Delivery Points (,000,000s)	135.0	139.4	141.3	142.3	144.3	146.2
Pieces/Delivery Point/Day	5.09	4.82	4.74	4.80	4.86	4.83

Revenue and Expenses	2007	2008	2009	2010	2011	2012
Operating Revenues	$ 74,778	$ 74,932	$ 68,090	$ 67,052	$ 65,711	$ 65,223
Total Operating Expenses	$ 80,105	$ 77,738	$ 71,830	$ 75,426	$ 70,634	$ 80,964
Income from Operations:	*$ (5,327)*	*$ (2,806)*	*$ (3,740)*	*$ (8,374)*	*$ (4,923)*	*$ (15,741)*

Mail Volume and Delivery Point:	2007	2008	2009	2010	2011	2012
Total Mail Volume (,000,000s)	212,234.0	201,128.0	177,057.8	170,573.7	167,934.4	159,858.9
Total Delivery Points (,000,000s)	148.0	149.2	150.1	150.9	151.5	152.1
Pieces/Delivery Point/Day	4.75	4.46	3.91	3.74	3.67	3.48

[1] Total compensation and benefits includes payments of cash wages to employees, overtime pay, as well as payments made for their health insurance and retirement premiums. Retirement health benefits are the actual cash payments made for health insurance premiums for current retirees. Prefunding of future retiree health benefits are the payments accrued based on the Postal Accountability and Enhancement Act which are owed, but not yet paid to the Treasury department, and workers compensation charges paid to the Department of Labor.

The operating statistics of the Postal Service contained in Figure 1 highlight the major issues facing the organization. A growing delivery network, encapsulated in the number of delivery points, combined with declining revenues associated with falling mail volumes. As volume has declined and the number of delivery points has increased, the pieces per delivery point per day has fallen from approximately 5.09 in 2001 to 3.48 in 2012. Labor within a fixed delivery network cannot fall commensurately with volume declines and therefore structural changes within the network are required, such as delivery frequency changes and/or service standard changes, or the unit cost of labor has to decline. For the Postal Service, its current financial situation combined with the anticipated decline in future volume suggests both may be necessary in order to bring costs and revenues into balance.

Postal Service management proposed to align the cost structure of the Postal Service with its anticipated revenues through a multi-pronged strategy released in February of 2012, entitled the Plan to Profitability, 5 Year Business Plan. The plan identifies four interrelated problems contributing to the financial problems at the Postal Service. They include declining volumes, a fixed cost base due to the universal service obligation, prices capped by inflation, and rising labor costs which represent approximately 80% of total costs. Of labor cost, approximately 40% are benefits-related which are nearly all outside of the control of the Postal Service (United States Postal Service (c) 4).

In the Plan to Profitability, management identifies three key elements including an USPS-sponsored healthcare plan; network changes to address the declining volume base--that include consolidation of mail processing facilities and changes to service levels that include modifying service standards and delivery frequency; and finally revenue management that includes targeted price increases and the pursuit of new marketing initiatives which align with the competencies of the Postal Service (United States Postal Service (c) 13). Taken together, these initiatives have the potential to reduce costs by up to $22.5B by 2016, which would provide a significant opportunity for the Postal

Service to align its costs and revenues. Much of the savings associated with the plan, however, require Congressional approval through the revision of the laws governing the Postal Service. The Senate was able to pass a Postal Reform bill containing some, but not all of the components of the plan during the 112th Congress. The House of Representatives did not bring a Bill to the floor for consideration during the last session providing no changes to the laws governing the Postal Service. At the point this thesis was written, it was unclear how Congress planned to move forward with changes in the laws governing the Postal Service.

Thesis Overview

Within this framework of aligning the business of the Postal Service to the financial realities of today as well as of the future, this thesis will assess the impact the pension system has had on the organization and look at alternative methods for providing employee benefits that balance the needs of the organization with the needs of the employee. The next chapter summarizes the major private pension developments within the U.S., specifically focusing on the post-World War II period. It begins with a historical overview of private pension development and then looks at the legal frameworks that have impacted private pension systems since the Studebaker default and passage of ERISA.

Chapter 3 provides an overview of the academic literature that serves as the foundation of the modern theory of pension economics, and that explain the rationale behind pensions.

Chapters 4 through 6 review the history of the federal pension system as it relates to the Postal Service. Chapter 4 looks at the period of time when the Postal Service was a cabinet level department within the U.S.. Chapter 5 reviews the period between the Postal Reorganization Act and the introduction of the Federal Employment Retirement System in 1986. Chapter 6 seeks to understand the recent issues surrounding the pension plans of the Postal Service and their impacts on the development of recent Postal laws.

Chapter 7 assesses the current fundamentals of the Pension systems, reviewing the levels of contributions and benefits to the defined benefit plans. In addition, patterns and determinants of Postal employee contribution choices for the defined contribution portion of benefits are analyzed. The age demographics of the Postal Service, as well as the recent retirement characteristics of employees, are also summarized.

Chapter 8 discusses alternative pension arrangements and explains the basics of the leading alternatives. In addition, this chapter looks at current contribution rates made towards defined contribution plans by employers in the private sector.

Chapter 9 employs the data collected on employee demographics and behavior to simulate future expected retirement payments from the Postal Service. This simulation is utilized to determine the financial impact of 10 alternative pension plans on the Postal Service. In addition, a simulation is performed at the individual employee level to understand the expected income an employee could expect in retirement under each alternative.

Chapter 10 assesses the legal, union and human resource issues the Postal Service should anticipate in advancing a change for their pension plan.

Chapter 11 provides a summary of the findings of this research, as well as offers a series of policy considerations. Additional areas of future research also are highlighted.

Chapter 2 <u>Understanding Private Pension Development and Financing</u>

Private pensions provide an important source of income for retirees. Pension income derives from savings invested over the workers career, funded through employer and/or employee contributions. The contributions substitute for take-home pay, effectively creating a mandatory savings scheme. Plans fall into two major categories: (1) defined benefit, where workers receive a contractual benefit and employers bear investment risk; and (2) defined contribution, where worker benefits depend on investment returns. The evolution of employer sponsored pensions from the 1910s until the passage of the Employee Retirement Income Security Act (ERISA) in 1974 was strongly influenced by the tax code, evolving regulatory restrictions and incentives, and the implementation of Social Security (McGill, Brown and Haley 25-26). Post-World War II labor market demographics also had a strong influence on the trajectory of modern private pension development.

Private Pension Development

The first private pension offered in the U.S. was offered by American Express in 1875, a stagecoach delivery service, and the railroads soon followed suit. These pension systems typically required workers to remain with the company for 30 years to obtain benefits, making pensions a tool of retention, as well as a means to place older workers into retirement. The first half of the 20th century saw a growth in pension promises, partly in response to the creation of a tax deduction for pensions. This became abused as companies used pension payments to provide additional benefits to their executives. In order to combat that practice, the government tightened control and forced plans to include their regular employees (Lowenstein).

During World War II, the dynamics of the labor market changed as younger men went to fight in the war leaving the workplace to older men and women. After the war, many businesses found they had a high proportion of older workers. The inflation of wartime had reduced the value of Social Security many workers of retirement age did not want to leave the workplace. The "Lazear trap" (which will be

discussed in Chapter 5) was at work in these industries, much as it was in the Federal Government during the 1920s. Without an effective means of retiring workers, firms were unable to bring younger, more productive individuals into the workplace. In addition, unions had bargained for systems of seniority in which employers lay off employees starting with the least senior, hence, younger workers first, created unemployment for younger workers which from a pragmatic perspective could diminish the power of the union in the long-term if younger workers came to believe unions were only for the protection of older workers (Wooten 687-688).

In the 1940s, unions sought an expansion of Social Security to guarantee private pension benefits, but after Republicans took control of Congress in 1946 the political environment was not conducive to such a change. During that same period the National Labor Relations Board (NLRB) held that the Inland Steel Company committed unfair labor practices when it refused to negotiate with the Steelworkers Union over a pension plan. Wooten writes, "This combination of demographics, congressional politics and a legal mandate to negotiate pension issues prompted unions to pursue "social security" in the private sector." (Wooten 689). Pensions soon became a standard request in collective bargaining and pension plans began to expand rapidly in the private sector.

The plan structures left workers vulnerable to possibility of default. Many companies did not accept contractual liability for paying retirement benefits, but rather agreed to make contributions to a trust with the plan responsible for making payments to the retirees (Wooten 692). One of the main issues in the creation of a retirement plan was the past service liability created. This past service liability arose from workers being credited with accrued benefits from the period before the plan existed and before the company initiated contributions. Tax laws at the time discouraged employers from rapidly funding the past liability due annual deduction limits. Many plans utilized a 30 year window to pay off this past liability (Wooten 702). The other major issue with the pension plans negotiated at this time was they developed funding schedules that did not take into account higher benefits to be negotiated in

the future (Wooten 703). Many of the plans that were developed would prove to be expensive. Alfred

P. Sloan warned in the 1940s that pensions and like benefits would be "extravagant beyond reason"

(Lowenstein). Lowenstein writes, "Companies might establish plans, but many were derelict when it

came to funding them. When companies failed, the workers lost much of their promised benefit."

One of the major reasons for the regulation of pension plans by the government includes the

belief that extended periods of employment under a plan generate a moral if not contractual obligation

for a plan sponsor to deliver those benefits. By the time people are old enough to qualify for benefits,

their ability to make alternative provisions for their economic needs may be limited (McGill, Brown and

Haley 27). In addition, the favorable tax treatment provides the government with an incentive to

restrict the value of tax exemptions, as well as to impose regulations that further social goals such as

ensuring the benefits be equitably distributed among workers across the earnings distribution (McGill,

Brown and Haley 27). Most importantly, pension regulations were put into place in order to protect

beneficiaries from a loss of benefits. The rationale for special protections is that retirees and older

workers have few or no alternatives to make up the lost income when a plan defaults. The event which

precipitated the enactment of comprehensive federal regulations of pensions was the default of the

Studebaker-Packard Corporation pension system.

Studebaker Pension Default

Studebaker, a car manufacturer, had fallen on difficult economic circumstances due to falling

demand for its vehicles. In order to appease its employees, in 1959 it agreed with the UAW to increase

pension benefits for a third time in six years, in return for stretching out its pension funding schedule.

This allowed for increased wages, as well as reduced costs which in turn would hopefully lead to

profitability. This agreement also required all parties to "pretend that Studebaker could afford a

pension plan that was clearly beyond its means. Four years later, the company collapsed." (Lowenstein).

When the facility closed in December 1963, the plan assets were insufficient to pay for the pensions of

hourly workers, and it defaulted on the obligations to younger workers. Some workers received lump sum payments worth a fraction of what was expected while others receiving nothing. Retirees and retirement eligible employees aged sixty years and older did receive their benefits (Wooten 683-684).

Employee Retirement Income Security Act of 1974

The Employee Retirement Income Security Act of 1974 came about as a means to regulate private pension plans so as to limit default risk. The default of the Studebaker pension plan allowed the United Autoworkers Union to propel the issues around pension risk front and center on the legislative agenda (Wooten 684). Wooten writes of Studebaker as a "focusing event" for pension reform. He reiterates political scientist John Kingdon's observation that social problems often "need a little push to get the attention of people in and around government. That push is sometimes provided by a focusing event like a crisis or disaster that comes along to call attention to the problem." (Wooten 684) In addition, Wooten writes, "A calamity is more likely to draw attention to a social problem when people interested in the problem are prepared to take advantage of the opportunity the calamity presents". In this case, the United Auto Workers union (UAW) had been aware of the default risk inherent in many of the pension plans that they had negotiated and had already devised remedies to this risk including pension reinsurance. The default of Studebaker and its direct impact to so many individuals allowed the UAW to push the default risk of pension plans onto the legislative agenda (Wooten 684-685). In response to this focusing event, Congress passed the Employee Retirement Income Security Act of 1974 which has come to be known as ERISA. ERISA does the following:

- Requires plans to provide participants with information about the plan including important information about plan features and funding. The plan must furnish some information regularly and automatically. Some is available free of charge, some is not.
- Sets minimum standards for participation, vesting, benefit accrual and funding. The law defines how long a person may be required to work before becoming eligible to participate in a plan, to accumulate benefits, and to have a non-forfeitable right to those benefits. The law also establishes detailed funding rules that require plan sponsors to provide minimum funding levels for their plans.

- Requires accountability of plan fiduciaries. ERISA generally defines a fiduciary as anyone who exercises discretionary authority or control over a plan's management or assets, including anyone who provides investment advice to the plan. Fiduciaries that do not follow the principles of conduct may be held responsible for restoring losses to the plan.
- Gives participants the right to sue for benefits and breaches of fiduciary duty.
- Guarantees payment of certain benefits if a defined plan is terminated, through a federally chartered corporation, known as the Pension Benefit Guaranty Corporation. (Department of Labor)

These changes provided considerable security to workers' pension plans, especially through the establishment of the Pension Benefit Guaranty Corporation which provided insurance to participants in covered plans. In addition, a key component of ERISA is that it places legal constraints on the ability of companies to make changes that impact the accrued pension benefits for employees. Specifically, benefits earned to date are irrevocable, but employers are allowed to change future benefits in response to economic conditions (Munnell 218). ERISA created an environment in which pensions would have to be more fully funded, which would lead to the true costs of the pension plans that existed to become more obvious.

The stricter rules also have had the unintended consequence, of causing many firms to move away from defined benefit plans of the past. The benefits that were promised to workers are exceptionally expensive even when spread over a long period of time. To fund such benefits would require the appropriate funding be made and insurance premiums be paid to the Pension Benefit Guarantee Corporation (PBGC). These changes led to higher expenses for pension plans (which should have been in place since inception), forcing many companies to reassess their pension plans due to the actual expense. This has led to many of the pension changes that have been witnessed over the last 20 years. Such changes are not necessarily to be frowned upon, for if a company cannot afford to pay for generous pension benefits, they should not be promised. These issues have led to many alternative pension arrangements including defined contribution plans.

Moral Hazard and the Pension Benefit Guarantee Corporation

Moral Hazard is a situation where a party has the tendency to take risks because the costs that could result will not be felt by the party taking the risk. There are several parties that face moral hazard arising from PBGC insurance. Because the consequences of pension underfunding are mostly absorbed by the PBGC, union leaders were less concerned about excessive benefit promises, and had little incentive to demand that pensions be fully funded (Lowenstein). Firms too faced an incentive to avoid making contributions in order to utilize the money for other purposes. In addition, in order to make up shortfalls, firms could take excessive risks with the plan assets under the assumption that if the risky bets paid off they would be rewarded with lower contributions, and if the risky bets did not meet their objectives and the firm became insolvent, their shortfall would be covered by the PBGC.

The result of those incentives led to a precarious situation for the PBGC by 2005. The economic environment at that time led to the termination of several large underfunded pension plans, with nine of the ten largest pension claims in history occurring between 2001 and 2005. In addition, the agency itself was legally limited in terms of setting appropriate insurance premiums or funding levels because Congress sets premiums and funding rules (McGill, Brown and Haley 573-574). If the agency were to become financially insolvent and Congress did not authorize additional funding, it could impact the retirement income of millions of Americans who had earned benefits under defined benefit plans (Purcell, Summary of the Pension Protection Act of 2006 2). These issues led to the passage of the Pension Protection Act of 2006 which led to many of the developments in the private pension market that have occurred (Purcell, Summary of the Pension Protection Act of 2006 2).

Pension Protection Act of 2006

The Pension Protection Act of 2006 was signed into law on August 17, 2006 receiving overwhelming support in both the House of Representatives and the Senate. The act established new funding requirements for defined benefit plans and included reforms to cash balance plans, defined contribution plans, and deferred compensation plans for executives and highly compensated employees

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(Purcell, Summary of the Pension Protection Act of 2006 2). An exhaustive list of the provisions can be found at http://www.dol.gov/ebsa/pensionreform.html; the key effect of the bill was to establish new rules for determining whether a defined benefit plan is fully funded, the contribution needed to fund the benefits that the plan participants will earn in the current year, and the contribution to the plan that is required if previously earned benefits are not fully funded. The bill strengthened the PBGC through stricter standards related to premiums and created an incentive for the automatic enrollment of employees into 401(k) plans (Purcell, Summary of the Pension Protection Act of 2006).

The Migration of Defined Benefit Plans to Defined Contribution Plans

The Revenue Act of 1978 included a provision that became Section 401(k) of the Internal Revenue Code which allowed tax deferral on employees' income that was received as deferred compensation rather than as a direct cash payout (Employee Benefit Research Institute 1). It was not until 1980 when Ted Benna, a benefits consultant, was assessing a client's profit-sharing plan and realized this provision of the tax code could be used for employees to save for retirement (Fetini). As more and more companies realized the risks associated with defined benefit plans, corporations modified plans to reduce the risk and cost. Robert Merton argues that "the simplest explanation for what happened to defined-benefit plans is that they were mispriced, not three or five years ago but from the outset…From the very beginning, providers and sponsors should have recognized that the accounting treatment of these plans was systematically underpricing the cost of benefits. Because of this underpricing, I can say with confidence that we will not go through a cycle that brings us back to defined-benefit plans, at least not to plans with such a pricing structure." (Merton, The Future of Retirement Planning 5). The underpricing of cost was largely hidden from view for the first two decades after ERISA due to increasing equity prices and interest rates that provided returns in excess of inflation. As the world stock markets began declining with the dot-com bust in 2000 through 2002, combined with falling interest rates, pension fund assets declined in value just as pension liabilities

increased. This perfect storm of pension underfunding combined with bankruptcies at large firms in the

steel and airline industries showed surviving companies the significant extent to which pension plans

could impact the ongoing operation of the firm. The result of these events was the movement of many

companies toward defined contribution plans (Allianz Global Investors 34).

This trend towards defined contribution plans was highlighted when IBM announced in 2006

that it intended to close its defined benefit plan to both existing and new employees. IBM is known as

employee-centric with strong financials and with an overfunded defined benefit plan which made this

shift noteworthy (Merton, The Future of Retirement Planning 5). The following table shows the change

in private pension plan participation from 1990 to 2008 based on the Statistical Abstract of the U.S. from

2012 by the U.S. Census Bureau:

Table 1 - Private Pension Plan Summary - 1990 to 2008

Item	Unit	Total				Defined contribution plan				Defined benefit plan			
		1990	2000	2005	2008	1990	2000	2005	2008	1990	2000	2005	2008
Number of plans	1000	712.3	735.7	679.1	717.5	599.2	686.9	631.5	669.2	113.1	48.8	47.6	48.4
Total participants	Million	76.9	103.3	117.4	124.9	38.6	61.7	75.5	82.5	38.8	41.6	41.9	42.3
Active participants	Million	61.5	73.1	82.7	86.2	35.6	50.9	62.4	67.3	26.2	22.2	20.3	19
Assets	Bil. dol	1674	4203	5062	4704	834	2216	2808	2663	962	1986	2254	2041
Contributions	Bil. dol	98.8	231.9	341.4	419	80.9	198.5	248.8	311.7	24.7	33.4	92.7	107.3
Benefits	Bil. dol	129.4	341	354.5	431.1	64	213.5	218	265.1	66.4	127.5	136.6	166

(U.S. Census Bureau 359)

The total active participants in defined contribution plans from 1990 to 2008 have just about

doubled, while the total active participants in defined benefit plans during this same time period have

decreased by 27%.

Chapter 3 <u>Overview of Academic Research on the Modern Theory of Pension Economics</u>

Pensions are a form of compensation for an employee. Various economic rationales have been suggested for why firms offer pensions in lieu of higher wages. One set of views focuses on the use of pensions to defer compensation for employees in order to achieve a level of efficiency in the long-term employer-employee relationship. Another perspective focuses on the superior ability of the employer to manage money for the employee over the long-term career of the employee giving rise to the employer centric source of pensions. There is also the notion that pensions are a means of managing worker attraction, retention and performance.

The migration of the U.S. economy from small family owned and operated farms and businesses where every member of a family was part of the production process to large scale industrialization changed individual economics. When the economy was dominated by small family businesses, as the productivity of older family members declined, the family reshuffled tasks and moved less demanding tasks to the older generation. In addition, the family structure, as well as generational involvement within the family business gave rise to the protection of older individuals well into later years. This combined with a lower life expectancy meant the need for pension systems was limited. As industry grew and employers at large scale operations demanded increased efficiency, older workers could not meet the new standards. Early in the industrial revolution, employers would simply fire older employees. Compounding the difficulty for these individuals was the fact that new employment was difficult to find; by 1930, 54 percent of men over 65 were out of work and looking for a job (McGill, Brown and Haley 5-6).

Deferred Compensation

Birchard Wyatt, an early promoter of private pension systems, developed the idea of an efficiency cycle of typical employees in most organizations. The idea was that a worker's marginal contribution reaches a peak and then declines to less than the associated compensation cost. Early in an employee's career, generally, the value of services rendered actually exceeds worker compensation,

which was known as a period of "efficiency surplus". This surplus could be utilized to finance a pension benefit to discourage workers from becoming a hidden pensioner on the active payroll. A hidden pensioner was someone who simply remained employed, while not contributing to a level commensurate with their compensation (McGill, Brown and Haley 5-6).

The notion of pensions as deferred compensation is known as the labor economics perspective. This idea is that pension benefits are deferred compensation and therefore designed to achieve efficiency in a long-term relationship between employer and employee. This idea explains the vesting and retirement provisions of pension plans. The vesting rules reduce turnover and early retirement incentives to encourage less productive workers to retire more quickly. (Bodie 29).

Many defined benefit pension systems have been established to provide incentives for workers to retire within a range of specific ages or for early retirement age (McGill, Brown and Haley 167). For example, the rationale for the development of the first public pension systems was the retirement of superannuated workers. This impetus for the development of the Civil Service Retirement System (CSRS) will be explored in Chapter 5. The Postal Service itself has relied upon the incentives offered within the retirement system to encourage early retirement as a means to reduce employee headcount through attrition to deal with its current financial condition.

The type of pension, whether defined benefit or defined contribution, also plays a role in the retirement of workers. Friedberg and Webb found that workers with defined benefit plans retire almost two years earlier on average than workers with defined contribution plans (Friedberg and Webb 306). Of important note, legislation passed in 1967 prohibits mandatory retirement because of age. This has limited the ability of employers to control the age composition of their workforce by any means other than financial incentives (McGill, Brown and Haley 6).

Economic Security

Zvi Bodie in his research paper entitled "Pensions as Retirement Income Insurance" writes of the many sources of economic security provided through pension schemes. One such component of economic security is the insurance-like features designed to protect an employee from economic uncertainty. Sources of retirement income risk include: replacement rate inadequacy, social security cuts, longevity, investment risk and inflation risk (Bodie 31). The crux of the argument is that individual workers face a great deal of uncertainty, and that by sponsoring retirement plans for their employees, employers can utilize economies of scale to provide benefits that an individual could not achieve as efficiently on their own (McGill, Brown and Haley 145).

The efficiency that can be achieved by companies also includes the use of tax shelters. Under the U.S. tax code contributions towards qualified pension plans are tax deductible and earnings of the investments are tax-exempt. Only when benefits are paid to the employees are taxes paid. This provides the company the ability to utilize pension plan payments as a means to limit their tax liability. The fact that the limits as to what a company can contribute exceed what an individual can contribute tax free means a company can realize greater tax advantages for themselves, their employees and their shareholders.

Worker Attraction, Retention and Performance

Many have viewed traditional defined benefit plans as 'golden handcuffs' that discourage covered workers from changing jobs . This desire to restrict workers' mobility relates to the costs of turnover, their investment in their workers and a desire to minimize labor costs over time (McGill, Brown and Haley 147). These types of plans are structured in a way to link job-turnover patterns with substantial financial losses or gains at different points in the career. A key component of the benefit formula is the measure of pay on which benefits are based, as well as the timing of benefits. Many of these types of plans base retirement benefits on average pay levels in the three to five years immediately prior to retirement. However, the evidence is mixed; a number of studies discount the

notion of the pension providing the impetus for employment longevity. Specifically, Gustman and Steinmeier found that pension covered workers in general received higher cash wages than similar workers in non-pension jobs. In addition, they found that turnover among workers covered by a defined contribution plan was almost identical to turnover among workers covered under defined benefit plans: 6.2 and 6.0 percent, respectively (McGill, Brown and Haley 151). Steven Allen, Robert Clark and Ann McDermed also looked to identify the effects of pensions and tenure due to pensions, and concluded that it was higher overall pay levels rather than the level of pension compensation that lead to lower turnover (McGill, Brown and Haley 152). Ippolito remarked that pensions bond the worker's promise to stay with the firm thereby attracting those who anticipate staying for the long term. This idea explains why pensions are affiliated with lower quit rates and on time retirement (Ippolito 17).

Richard Ippolito in his analysis in *Pension Plans and Employee Performance, Evidence, Analysis and Policy* looked at two hypotheses, the first being the traditional view that defined benefit pensions help employers reduce quit rates at early ages and increase retirement rates at later ages.

The second less traditional view he explores is that pensions sort workers based on characteristics desirable to the firm. This mechanism is not based on the ability of pensions to influence behavior, but rather the ability of the firm to attract workers who have desirable behavior patterns (Ippolito 3). That perspective suggests 401k plans can also help the firm to obtain the best workers and reduce quit rates (Ippolito 4). Ippolito utilizes what is known as implicit contract theory as the basis for establishing the productivity theory of pensions. A policy that returns pension contributions contingent upon the fulfillment of tenure is a tool that a firm can use to influence its workforce (Ippolito 17). He found the following impacts on employee performance:

- Defined Benefit Pensions reduce quit rates by approximately 20 percent and increase tenure levels at older ages by over 25 percent (Ippolito 27)

- The matching feature of 401k plans allows the firm to selectively pay higher wages to those who reveal themselves as savers based on their elected contributions (Ippolito 85)

- 401k contributors are less likely to quit than are non-contributors, more likely to obtain pay raises, and more likely to obtain higher job performance ratings (Ippolito 139)

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Chapter 4 The history of the U.S. Postal Service Pension System - Foundation (1792-1971)

To understand the Postal Service Pension system is to first and foremost understand the development of the U.S. Civil Service pension system. The U.S. Postal Service was established as a cabinet level department in 1792 (National Postal Museum). From 1792 until 1971, the U.S. Postal Service was known as the Post Office Department, and all decisions related to the pensions of Postal employees were in the hands of the federal government.

Early Pensions Systems

The federal government has a history of involvement with pension systems beginning with the development of military pensions for the Navy and Army. The American Revolution ushered in a pension plan for naval personnel. The creation of this plan was one of necessity; American naval personnel were promised pension benefits if they were injured during their service, which became a recruitment tool to populate the early Navy ships (Clark, Craig and Wilson 43). This pension plan was paid out of a fund which was financed by the sale of prizes captured by the Navy. The benefits of this system were twofold. First, by linking some form of compensation to prizes, the government could incentivize Naval personnel who could not be directly supervised to meet the objectives set out for them, and do so in a way that could be quantified, i.e., through the sale of prizes captured (Clark, Craig and Wilson 43). The second was to develop a reserve fund for payment to naval veterans. The initial payments were for those men disabled in service, with retirement pensions developing later in the nineteenth century. A unique aspect of the Navy Pension fund was that it was the earliest examples of pension fund management by the government (Clark, Craig and Wilson 63). Important parallels will be drawn in later chapters to some of the issues that government management of pension funds has and methods employed to mitigate mismanagement of assets.

The U.S. Army Pension plan also was established by the Continental Congress during the Revolution. The Army Pension plan, like the Navy pension plan, developed out of necessity. In order to

attract troops, the continental Congress offered a disability plan to provide for soldiers injured as a result of their military service. In addition, the Army pension plan, unlike its Navy counterpart also initially provided retirement pensions for officers of the Continental Army. Much of the reason for the retirement pension was to provide an incentive for the officers to remain with the Army until the end of the Revolution (Clark, Craig and Wilson 123). A major difference in the funding of the Army Pension plan was that it was funded on a pay-go basis based on the general revenues of the government, as opposed to a fund set aside to cover liabilities. The reasons for this difference were in general the Army could be more directly supervised being a land force, with relatively strong chains of command. In addition, prizes captured by troops on land were not officially sanctioned by national governments as prizes at sea (Clark, Craig and Wilson 123).

The Army and Navy pension plans continued to develop throughout the nineteenth century. Each began to expand who would be covered, and eventually became retirement pension plans. The other development during this time was the conversion of the Navy pension plan from a funded system to a pay-go pension plan (Clark, Craig and Wilson 119). These early precursors to other federal pension plans provide an early understanding of the rationale of pensions and various schemes utilized to ensure funding availability.

Civil Service Act of 1883
Discussions around a federal service pension dated from the late nineteenth century. A prerequisite for a pension plan, however, was the establishment of a civil service system whereby employees could retain their positions beyond the tenure of their political benefactors. Prior to 1883, civil service employees of the U.S. were essentially patronage employees. Post Office jobs up until the passage of the Pendleton act were provided to the party faithful. Local politicians utilized the Post Office as patronage. The result was with any turnover in power, postal personnel could be completely changed (Walsh and Mangum 47). During the nineteenth century, there was a tremendous growth in

federal employees and the benefits of the patronage system were outweighed by the costs of managing it, for example, over the course of the nineteenth century, the number of Post Offices went from 906 to 44,848 (Clark, Craig and Wilson 157). With the passage of the Civil Service Act of 1883, a system of meritocracy within the Federal government and Postal organization began. It would take an additional 90 years, however with the passage of the Postal Reorganization Act of 1971 for the spoilage system to be completely eradicated within the Postal Service (Public Law 91-375 - August 12, 1970 §1001).

The rationale for a stable civil service system was to ensure continuation of knowledge within the organizations of the federal government. Managing the growth of the federal government within the spoilage system became practically impossible and the Republicans in control of Congress and the White House felt the passage of this act would provide an opportunity to gain the loyalty of an entire cohort of federal workers. This opportunity, however, came at a price, and once federal workers were protected from changes in employment due to the whims of the political environment, they did not want to give up their jobs (Clark, Craig and Wilson 158).

"The Lazear Trap"
From 1792 until 1920, most Federal employees including Postal employees were paid salary, but were not entitled to a pension. Until 1920 there was no mandatory retirement arrangement, and without benefits provided, the only source of income in retirement was private savings. The Civil Service Act of 1883 led directly to many instances of employees remaining employed even in advanced years since the employment of the Civil Service was firmly established as a lifetime entitlement. This issue was seen within the Navy and Army early in the development of their pension plans, and is one of the reasons those organizations began offering retirement benefits.

This issue around those advanced in age refusing to retire is known as the "Lazear trap" and was coined by Lee A. Craig based on Edward P. Lazear of the University of Chicago's paper "Why is there Mandatory Retirement" (Craig 312). The crux of the argument made by Lazear is that it is beneficial for

both employer and employee to agree to a long-term wage stream which pays workers less than their value of the worker's marginal product when young and more when old so long as there is a date at which employment ends. The reason for this benefit is that both workers and firms benefit from the existence of mandatory retirement; lifetime wealth is increased for workers, and firms gain from the ability to reduce the workforce commensurate with matching the lifetime marginal product with wages. This ensures the overall stream of payments matches the marginal product over the life of the employment (Lazear 1283). Lazear found that mandatory retirement is more likely to be found where job tenure is long and wages are paid based on salary as opposed to piece-rates (Lazear 1277).

What Craig found was that based on the Civil Service Act of 1883, civil service employees shared many of the attributes associated with Lazear's findings of employees likely to have mandatory retirement, however, there was no mandatory retirement scheme in place. This created an environment in which there was no financial incentive for employees to retire since there was no pension system. After nearly a generation of meritocracy within the Federal government, officials discovered many employees receiving wages much greater than their marginal product. This created a less than efficient environment for productivity and the pension became one of the methods to compensate federal workers for their loss of income beyond their retirement age (Craig 312).

The Lazear Trap was seen within the Post Office Department during the time period between the Civil Service Act and the passage of the Civil Service Retirement Act, specifically in January of 1920, the Postal Record of the National Association of Letter Carriers wrote the following under the heading "Retirement":

> The department has gone on record many times urging Congress to provide some retirement measures for superannuated employees in the postal service. To dismiss these employees who have been faithful because they have become inefficient on account of increasing age is very hard, yet to continue them in office to the detriment of the service cannot be justified under the law. It is hoped that some legislation of this character will be enacted before the end of the present Congress. (National Association of Letter Carriers 7)

Civil Service Retirement Act of 1920

The Civil Service Retirement Act of 1920 (also known as the Sterling-Lehlbach Act) put in place a

consistent pension system for the Civil Service of the United States federal government, of which the

Post Office Department was a part. This act culminated almost two decades of Congressional debate

whereby every session of Congress going back to the beginning of the twentieth century had seen a bill

to create a pension plan for non-military personnel debated but not passed (Craig 306).

Significant lobbying pressure came from the postal unions, U.S. Civil Service Retirement

Commission, and the National Association of Civil Service Employees, which joined forces to form the

Joint Conference on Retirement, which led the campaign to push for passage of Federal Employment

Retirement Act (FERA) (Clark, Craig and Wilson 158). The Postal Service employees were involved in

lobbying Congress and the administration to approve a retirement plan. To understand the level of

interest in the proceedings of the debates of the FERA act by the Post Office employees, one can look to

the National Association of Letter Carriers Postal Record from 1920 which published the entire debate

proceedings of the House and Senate throughout 1920. The following Resolution, published by the

National Association of Letter Carriers in the Postal Record in February of 1920, exhorts policymakers to

take action:

> Whereas It Is in most part well-nigh, if not absolutely, Impossible for the average civil service
> employee to secure a competency that will guarantee a civilized maintenance for his declining
> years; and
> Whereas a retirement plan has come to meet with the distinct favor of the popular mind of our
> country, as evidenced by the constantly growing number of business enterprises that are
> retiring their aged faithful employees with a generous annuity; and
> Whereas It is a conceded fact that the corporate business of the future will be conducted on a
> retirement basis; and
> Whereas the enactment of a retirement measure Into law will directly operate to increase the
> efficiency of every department of administrative and executive government and will especially
> rehabilitate the postal service by removing Its worn-out element of senility, and recruiting it
> with the vigor and elasticity of youth; and
> Whereas two civilized countries only on the face of this great globe are yet withholding
> annuities from their faithful superannuated civil service employees, the United States of
> America being as yet one of this Ignoble twain; and

Whereas an equitable retirement plan has the unqualified endorsement of the heads of the administrative and executive branches of the government, not excluding the President himself; and

Whereas two great political parties have recently pledged their support to civil service retirement—the so-called Sterling-Lehlbach bill having already been favorably reported in committees of both Houses; and

Whereas a well defined public sentiment is now prevalent throughout the wide domain of the Eleventh Congressional District In substantial support of the immediate enactment of some suitable retirement measure into the statutes; therefore be it

Resolved, That at this ripe and propitious time we, the members of the Eleventh Congressional District Civil Service Association, will, through committee of this convention and otherwise, redouble our energy and assiduously employ every available means looking to the immediate statutory relief of the poor old men of the service who, frail, stooped and enfeebled, have drawn their last draft on their physical resources, and can totter their weary way but a little longer. And be it further

Resolved, That a copy of these resolutions be sent to our President of the National Association of Letter Carriers, one to each of our Congressmen, one to the Postal Record, and one to the central organ of the Rural letter Carriers for publication; as well as one to each publication from the various presses throughout the district.

(Resolution Committee of the National Association of Letter Carriers 30)

Much of the discussion in Congress during the debates of over the final structure of Federal Employees Retirement Act of 1920 centered on a few concerns which included the contribution level of the government, whether there should be a mandatory retirement age and whether in the postwar budgetary situation it was feasible to undertake such large financial commitments (Clark, Craig and Wilson 156-161). Many of these debates were similar to those that are occurring today. The question then and now is not whether there should be a pension plan or system, for there is general agreement in principle that some form of pension system for retirees should exist; but rather it is what the system should look like and how it should be paid for.

The retirement act became law on May 22, 1920. The following is a summary of the key provisions of the Retirement Act of 1920:

Retirement Age: The retirement age was set at 70 years with fifteen years of service for Civil Service employees. Postal employee retirement ages were set separately. Mechanics, city and rural letter carriers and post-office clerks were eligible for retirement at 65 years of age and railway clerks were set at 62 years of age with both requiring at least 15 years of service (United States Civil Service

Commission 1-2). An employee could be maintained two years beyond the mandatory age if his or her

department head and the head of the Civil Service Commission approved (Clark, Craig and Wilson 163).

Classification and Rates: The act created 6 classes of employees and corresponding rate

schedules (See figure 2 below).

Figure 2 - Classification of Retirees - 1920

Class	Years of Service	Max percent of employee's avg 10 year pay	Avg Salary Period for Percentage	/ Year	
				Min	Max
A	30+	60%	10 Years	$ 360	$ 720
B	27-30	54%	10 Years	$ 324	$ 648
C	24-27	48%	10 Years	$ 288	$ 576
D	21-24	42%	10 Years	$ 252	$ 504
E	18-21	36%	10 Years	$ 216	$ 432
F	15-18	30%	10 Years	$ 180	$ 360

(United States Civil Service Commission 5-6)

Disability Protection: Individuals who after 15 years of service become disabled prior to reaching

retirement age could receive an annuity pursuant to the provisions of the act so long as they are

examined by a medical official and deemed disabled (United States Civil Service Commission 8).

Payroll deductions to support the system: Payroll deductions in the amount of 2.5% of basic pay

were authorized for all employees the Act applied (United States Civil Service Commission 11).

Treasury Directives: The Treasury Department was to create a special fund for the payroll

deductions to be deposited in known as the Civil Service Retirement and Disability Fund, which still

exists today and is similar to the Social Security trust fund. Any excess funds not required for the

immediate payment of annuities, refunds and allowances were to be invested in interest-bearing

securities of the United States government (United States Civil Service Commission 11-12).

The Federal pension plan that was created was a rarity at the time within the broader economy

of the United States. Approximately 13 percent of the private nonfarm labor force was covered by a

retirement plan, and over 75% of workers lost their pension benefits during the first years of the Great

Depression. The few plans that remained were not as generous as the plan for federal civil servants, echoing many of the debates that are occurring within the United States regarding pension benefits for private versus public workers in a time of financial unease (Clark, Craig and Wilson 164-165). The issues concerning a minimum of retirement security for all individuals within the United States was addressed during the Great Depression leading to the Social Security Act of 1935.

Social Security Act of 1935

The Social Security Act of 1935 was signed into law by President Roosevelt on August 14, 1935. The Act provided for old-age pensions of two types: The first was for those individuals 65 and over who were considered indigent, or those individuals without other income or means of support. This provision provided support to those who were unable to contribute to the fund since the law did not exist at the time they had wage income. The second type of pension was an annuity plan sponsored by the government. Social Security was to be funded jointly through a 3% payroll tax on both employee and employer up to the first $3,000 of income. Pensions would vary in amounts based on the period of employment and the salary, with a range of $17.50 – $81.25 per month (Special to the New York Times 4). The Social Security Act of 1935 did not apply to the Civil Service since pensions were already in place.

Amendments to the Civil Service and Social Security Acts

Until the passage of the Social Security Reform Act of 1983 and the Federal Employee Retirement System Act of 1986, only piecemeal changes had been made to both laws, which included expansions in coverage, and changes to benefits and benefit formulas. Changes were also made to the Civil Service Act prior to the major reform that established the Federal Employee Retirement System in 1986. The list below highlights some of those more critical changes that affected the postal pension system and that contributed to the current financial predicament of the Postal Service:

- Withdrawal of retirement funds: Individuals with between 10 and 19 years of service could withdraw their contributions from CSRS, previously only those with less than 10 years of service could withdraw their funds (Social Security Bulletin 14).

- Automatic cost of living adjustments: Cost of living increases in retirement annuities were provided in the Amendments of 1952, and were made permanent by the Amendments of 1954. (Social Security Bulletin 24).

- Calculation of annuity: The calculation of the annuity changes from an average of 10 years of salary in 1920, to an average of 5 years of salary to ultimately an average of the 3 years of highest salary that exists today (Jones).

- Employee contributions: contributions were modified and increased during the time period up to 6.5% of base wages by 1959 (Jones).

- Fund management: The Treasury department was required to set the interest rate on the special issue bonds within the CSRS fund according to the current average coupon rate on all outstanding U.S. public marketable interest-bearing securities with greater than 5 year maturity (Jones).

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Chapter 5 <u>The history of the United States Postal Service Pension System – Independence (1971 –1989)</u>

Postal Reorganization Act of 1970

The Postal Reorganization Act of 1970 established, "as an independent establishment of the executive branch of the Government of the United States, the United States Postal Service" (Public Law 91-375 - August 12, 1970 720). The Act was signed into law after significant upheaval within the nation's postal network. Due to issues around compensation and fragmented control of facilities, and equipment and management efficiency, mail movement ground to a halt in 1966 in Chicago under significant mail volumes (United States Postal Service (d) 38). In March of 1970, after extensive hearings, the House Post Office and Civil Service Committee reported a compromise measure with a 5.4 percent retroactive pay raise. Postal employees were not impressed and began a work stoppage on March 18, 1970. After much discussion between the Post Office Department, the unions, Congress and the Administration, a compromise agreement was reached which ultimately became Public Law 91-375, the Postal Reorganization Act on August 12, 1970 (United States Postal Service (d) 39). As part of the Act, officers and employees of the Postal Service were deemed part of the civil service, subject to the provisions of Title V of the United States Code (Public Law 91-375 - August 12, 1970 §1001). In addition, the Act restricted patronage in employment.

The Postal Reorganization Act of 1970 ushered in a new and complex relationship between the Postal Service and the Federal Government. One of its key objectives was to establish the Postal Service as a financially independent entity that would pay its costs from its own revenues (Purcell and Stevens, Funding Postal Service Obligations to the Civil Service Retirement System 3). While the Postal Service was to be financially independent, it remained subject to the rules governing the Civil Service system. Hence the Postal Service's pension system remained tied to Federal pension policy and outside of its

control. This complex financial relationship, especially as it relates to pensions, will be further explored in chapters 7 and 8.

Social Security Reform Act of 1983

The Social Security Reform Act of 1983 was signed into law on April 20, 1983 and represented a bipartisan effort to deal with the short and long-term financing problems of the Old-Age, Survivors, and Disability Insurance (OADSI) program, of which Social Security was a major component. Expenditures had exceeded revenues since 1975, and without legislative action, it would not be possible to continue paying cash benefits by July 1983. In addition, the program faced a projected long-range deficit of almost 1.80 percent of taxable payroll (Svahn and Ross 3). In order to deal with these fundamental issues, President Reagan, working with a Democratic House of Representatives and a Republican Senate, passed the bipartisan agreement. The core components of the law included the following changes related to Social Security:

- Coverage: Coverage became mandatory for newly hired federal employees hired on or after January 1, 1984. In addition, current and future employees of nonprofit organizations were to be covered effective January 1, 1984 on a mandatory basis (Svahn and Ross 25).

- Revenue: Social Security tax rates were increased faster than had been previously proscribed. Previous law had established the increase to go to 5.7% in 1985 and 6.2% in 1990, whereas the new law provided an increase from 5.7% effective in 1984, 6.06% in 1988 and 6.2% in 1990 (Svahn and Ross 27-28).

- Retirement age: The normal retirement age was to be gradually increased from age 62 to age 67 for those reaching age 62 after 2022. Reduced benefits would still be available at age 62 (Svahn and Ross 30).

- Cost of living adjustments: Cost of living adjustments were to be made in January as opposed to July of each year. In addition, the cost of living increases were to be based on a lower of wage or price increase if the trust fund balances were low (Svahn and Ross 25).

They key provisions of the reform act which affected the Postal Service as it relates to pensions was the fact that newly hired employees would be required to participate in Social Security. This created a new complexity within the pension retirement system not just for the Postal Service, but for the entire CSRS. With Social Security in effect, offering and paying for full CSRS benefits no longer made sense; the contribution rate to CSRS was 7%, adding the additional 6.2% of Social Security contributions would require a contribution of 13.2% of compensation to fund retirement. This was deemed excessive and therefore, civil service retirement benefits would have to be redesigned to accommodate these changes (Schreitmueller 545). In the interim period, a temporary plan was enacted whereby employees hired after January 1, 1984 would receive CSRS benefits offset by social security benefits earned during their federal service. These employees would contribute 1.3% of pay to CSRS which when added to the 5.7% contribution rate for social security would match the 7% of pay for employees hired prior to January 1, 1984 (Schreitmueller 545).

Federal Employee Retirement System Act of 1986 (P.L. 99-335)

Richard Schreitmueller in his article on the Federal Employee Retirement System Act (FERS) of 1986 stated, "The design of FERS reflects technical, actuarial, and investment decisions that were made in a political environment" (Schreitmueller 543). This keen insight as to the role of politics within the design of the system is critical as we review the development of the FERS system.

The design of the Federal Employee Retirement System Act occurred during a period of time in which defined contribution plans had become popular in the private sector. The growth of 401(k) plans and their deferral of taxes on contributions and investment income made these a good option for organizations looking to attract talent, in a much more mobile labor market. A key element within the

design of FERS therefore was the recognition that employment patterns were much different than they had been when CSRS was designed in the 1920s. A more highly flexible labor force created an environment in which many employees were unlikely to spend their entire career with one employer. As a consequence, the framework of FERS provided for a portability of benefits through its three tiers of benefits (Hustead and Hustead 69). These three tiers included the Social Security component for federal workers agreed to in 1983, a less generous defined benefit annuity component, and a 401(k)-like defined contribution option including a match of contributions.

The most innovative feature of the FERS system was this 401(k)-like option, the Thrift Savings Plan (TSP). With TSP, the United States government allowed employees to choose to invest a portion of their retirement in the private market. This would be the first time retirement savings of federal workers was placed in the private markets since the elimination of the Naval Pension fund in the 1800s.

Throughout the debates in Congress there was much discussion around concerns of governmental control of private assets. Robert J. Myers explained the following concerns for private investment (Schreitmueller 21-22):

> 1. Investing in corporate securities implies government control of much of the private economy, assuming that government officials would control investment decisions. If funds instead were invested widely and indiscriminately, there might be loss of principal or investment return.
> 2. Another possibility would be for agency officials to invest the funds in activities deemed socially and economically desirable, such as housing. This would be even more objectionable, involving government control by persons not directly accountable to voters.

Other concerns that arose during the debates around a private investment vehicle included concerns that investment decisions could be influenced by social and political considerations. This was seen during the United States' management of the Navy fund. The big questions to be answered were who would decide the investment vehicles, what the process would be and how such large decisions could be separate from politics (Schreitmueller 564-565).

On the positive side, there was a recognition that greater investment returns could be realized through the private sector which also would provide additional savings invested in the private sector contributing to increased capital formulation and long-term economic growth. In addition, Jamie Cowen, counsel for Senator Ted Stevens (AK)'s subcommittee and the principle draftsman for the FERS legislation gave the following reasons for offering such a plan (Schreitmueller 563-565):

- Employees would be encouraged to save toward their retirement.
- Employees would appreciate the early vesting and loan provisions.
- Employees would have portable benefits, allowing them to change jobs without heavy forfeitures of benefits.
- Employees would own their accounts, which would not be subject to possible benefit cuts to help balance the budget.
- The plan would use private investments, producing higher investment returns and aid capital formation in the U.S. economy

In the discussions around what type vehicles were to be utilized, Congress developed four alternatives which included: (1) government securities only, (2) active investments, with investment managers insulated from elected officials, (3) IRA-type investments with employees having full control and (4) passive investments, controlled by statute, with an index fund. The final legislation provided for some governments securities, as well as index funds. The initial thrift savings plan offerings provided just 3 index funds: the first was the government securities fund mentioned previously, the second was a fixed income fund, and the third was an index fund invested in common stocks (Schreitmueller 565-567). The rationale for such a choice was summed by the Senate committee:

> By offering only a few alternative choices of investment funds, just as private plans do, this plan uses its size and mass purchasing power to make the funds available for investment work harder and more efficiently than is otherwise possible, and avoids turning the workplace into a marketplace where numerous promoters would contact employees to sell them investment products.

The final FERS legislation was enacted into law on June 6, 1986 (Schreitmueller 1). A further discussion of all of the components and benefits offered through FERS as they relate to the United States Postal Service will be provided in chapter 8.

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Chapter 6 <u>The history of the United States Postal Service Pension System - Surplus and Deficit (1989 –Present)</u>

The special status of the Postal Service as an independent agency has implications for how it affects the federal budget. In contrast to most federal agencies whose cash flows are directly tracked in the budget, only the net cash flows between Treasury and the Post Office have a budgetary effect. Therefore, any increases or decreases of payments by the Postal Service to Treasury affect the reported surplus or deficit. This budgetary relationship helps to explain many of the legislation changes regarding the Postal Service throughout the last 20 years.

Background on USPS Payments for Pensions

The independence of the Postal Service from the federal government added additional complexity to the funding of the federal pension systems. Historically, the contributions to CSRS made by employees and their employing agencies were not adequate to fully fund CSRS. The amendments of 1969 required both employer and employee to pay 7.0% of basic pay into the system. This contribution funded CSRS as if there were neither annual pay raises nor cost of living adjustments to annuitants. In order to deal with this shortfall, for non-Postal employees the federal government paid little more than half of the spread between the required funding and agency funding. (Purcell and Stevens, Funding Postal Service Obligations to the Civil Service Retirement System 2-4). From 1974-1993, Congress passed several laws that required the Postal Service to pay all costs associated with CSRS accrued by employees since July 1971, the date the Postal Service came into existence. This included the additional contributions to the CSRS system to fully fund the future retirement costs of increases to pay that were granted to employees through labor contracts and cost of living adjustments. The Postal Service made these payments without additional contributions from employees (General Accounting Office 4-5).

Graph 1 - USPS Contributions towards CSRS since 1970
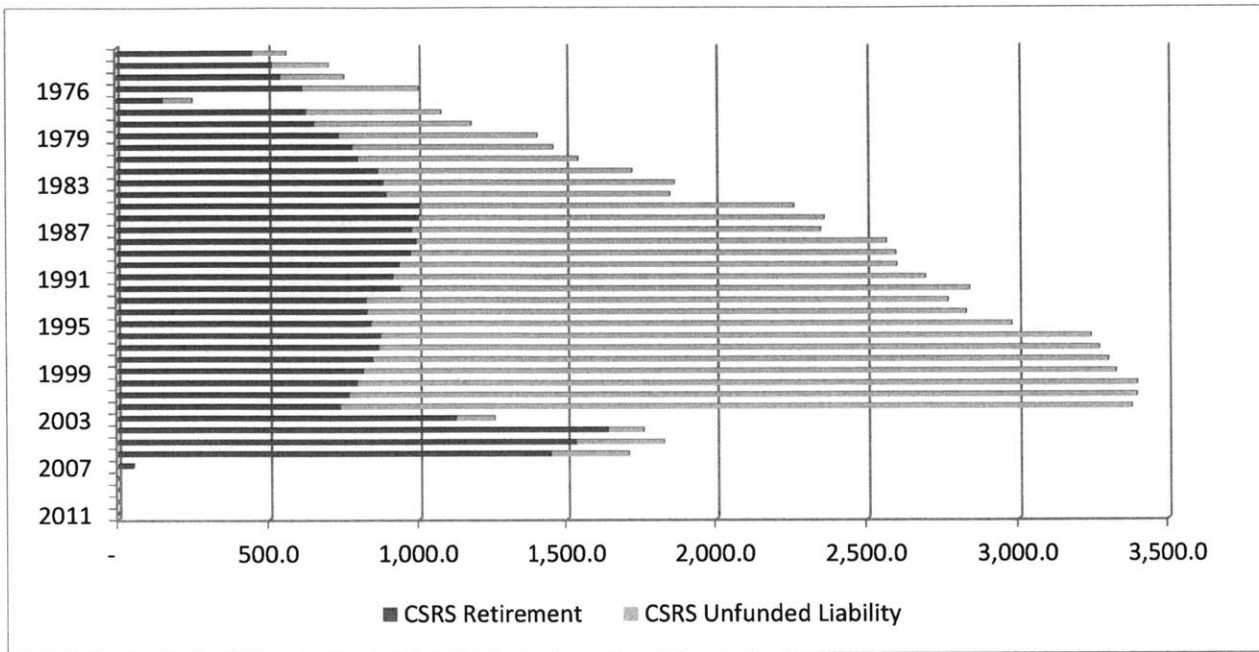
There were two components which affected the unfunded liability payments to be made by the Postal Service. Those were the increases in pay and cost of living adjustments. When pay was increased, the Postal Service was liable to the Office of Personnel Management (OPM) for the present value of the additional future retirement benefits to be paid to employees upon retirement from the Postal Service. The Postal Service was required to pay for the additional liability over 30 annual payments with interest, utilizing the rate used in the most recent valuation of CSRS, which had been 5 percent for the previous 29 years. In fiscal year 1972, the first year of operation for the Postal Service, the unfunded liability to be paid over 30 years was calculated to be approximately $1 billion, with an initial payment of $63 million in 1972. In each year following the initial year, additional liabilities were added as a result of pay increases. The effect of this process created an environment whereby liabilities were added each year to be paid over 30 years, causing the unfunded liability to grow dramatically, reaching $25.9 billion by 2000. From 1972 through 2000, the total assessments to the Postal Service for pay increases was $42.1 billion, with the Postal Service contributing $16.2 billion in principal payments, along with interest of $21.6 billion (General Accounting Office 17-18).

The second component which impacted the Postal Service's payment into CSRS was the portion

of liability attributable to cost of living adjustments. As prescribed by law, CSRS retirees and survivors

receive annual cost of living adjustments. Each year, OPM determines the estimated increase in the

Postal Service's liability for these COLAs and establishes the amount to be paid on an installment basis

over 15 years with an interest rate of 5 percent. Since fiscal year 1990, the first year it was required to

make such payments, the Postal Service recorded a total liability of $11.1 billion for retirement COLA

increases over that period with payments to OPM of $4.8 billion plus interest of $2.3 billion (General

Accounting Office 18).

The other component of the Postal Service's pension system is FERS, which had grown by March

of 2002 to include 66% of the active workforce of the Postal Service. Unlike CSRS, FERS has no unfunded

pension liabilities. The full cost of the FERS annuity is proscribed by law to be fully funded by the sum of

employee and agency contributions. This includes the effect of employee pay raises and cost of living

adjustments (Purcell and Stevens, Funding Postal Service Obligations to the Civil Service Retirement

System 4).

It is against this financial background that we can understand the laws that have been enacted

most recently as they relate to the pension system of the Postal Service. In April of 2001, the General

Accounting Office placed the United States Postal Service on their high risk list due to their

transformational efforts and their long-term outlook as it related to their finances. The major issues

identified by the GAO included declining net income, with a fiscal year deficit in 2001 of $2 billion to $3

billion combined with an increase in outstanding debt to the Treasury at the end of each fiscal year since

1997. The Postal Service was facing competition both domestically and abroad, with significant

electronic diversion expected to cause substantial declines in First Class mail volume. There were

concerns related to whether the Postal Service could achieve the agency announced $2.5 billion in cost

reductions by 2003 through increased productivity and improved human capital programs due to

historic difficulties in achieving such objectives. Finally, it was noted the Postal Service had periodic

conflicts with some of its major stakeholders including postal unions and the Postal Rate Commission.

Most importantly, the Postal Service was placed on the high risk list "so that we and others can focus on

its financial, operational, and human capital challenges before the situation escalates into a crisis where

the options for action may be more limited." (Government Accounting Office 2-3)

As part of the GAO's review of the Postal Service, they released a report on the Postal Service

retirement plans in December of 2001. Following this report, the GAO in the course of its review of the

Postal Service recognized there was no contemporary accounting of the Postal Service's obligations to

CSRS. The Postal Service had been carrying a $32 billion liability for CSRS pension obligations that had

not been analyzed to determine if it were an accurate figure. The GAO along with most postal analysts

believed it would turn out to be too low (Stevens, Pension Issues Cloud Postal Reform Debate 2). To

address this question, the GAO was asked in May of 2002 to review the CSRS financing as if a separate

retirement account had been established for the Postal Service in 1971 (Purcell and Stevens, Funding

Postal Service Obligations to the Civil Service Retirement System 4). The results of the analysis were

provided in a memorandum to the Postmaster General on November 1, 2002 by the director of OPM

indicating the actuaries "project that future payments required under current legislation will overfund

your estimated CSRS liability by approximately $71 billion." (Purcell and Stevens, Funding Postal Service

Obligations to the Civil Service Retirement System 5). Because the potential overfunding of CSRS was

prescribed by law, and there was nothing that could be done from a payment perspective without

legislation, OPM provided to Congress a legislative proposal to address the situation. OPM found there

were two elements which distinguished the Postal Service from any other agency:

> First, the Postal Service is responsible only for CSRS benefits that were earned by USPS
> employees after June 30, 1971. Consequently, a significant proportion of the Postal Service's
> early contributions to the Civil Service Retirement and Disability Fund have remained in the
> Fund for a number of years, during which interest has accrued. Second, due to a series of laws
> passed between 1989 and 1993, USPS is required to pay for the increases in CSRS pensions that
> result from annual cost-of-living adjustments. As a result, the Postal Service—unlike any other

federal agency—is required to pay into CSRDF an amount that approximates the full cost of the CSRS. It is these two factors, in combination with the interest earnings in excess of the assumed 5 percent rate of return that have led to projected pension contributions and interest earnings exceeding the value of CSRS benefits owed to USPS retirees and survivors.

According to OPM, the assumed interest rate used in CSRS financing has been set at 5 percent since 1972. However, while OPM uses a 5 percent interest rate in its static valuation of CSRS, it currently uses a nominal interest rate of 6.75 percent when valuing the liabilities of the CSRS on a dynamic basis. The dynamic valuation of CSRS liabilities is a more accurate measure of the present value of future CSRS annuities. Since the enactment of the Omnibus Budget Reconciliation Act (OBRA) of 1990—which required the Postal Service to pay for the increase in CSRS liabilities resulting from COLAs granted since 1971 and to amortize the cost of future COLAs—USPS has been paying the full dynamic cost of its CSRS liabilities.

(Committee on Governmental Affairs United States Senate 3)

Congress asked the GAO to review the calculations made by OPM as well as the legislative proposal provided, and on January 31, 2003, the GAO released their findings (Purcell and Stevens, Funding Postal Service Obligations to the Civil Service Retirement System 7). The GAO had found that when OPM developed their analysis they had treated the retirement benefits associated with postal employee veteran service as obligations of the Postal Service, which was inconsistent with current law. By eliminating this funding requirement, GAO concluded the projected overfunding was as much as $103.1 billion. On net, instead of a current underfunding of $20.5 billion, USPS had overfunded its obligation by $4.5 billion (Purcell and Stevens, Funding Postal Service Obligations to the Civil Service Retirement System 8).

Federal Budget Scoring and the Postal Service

During the review process that took place in 2002 for the Postal Civil Service Retirement System Funding Reform Act of 2003, the Congressional Budget Office said the proposed changes could increase the federal deficit by as much as $41 billion in the unified budget over the 10 year period depending on what the Postal Service did with the savings associated with the reduced contribution to CSRS. If USPS utilized the savings to hold down rates, government receipts would be reduced by the full amount of reduced payments. If, however, USPS utilized the money to pay down debt to Treasury, the impact on the federal deficit would be limited to the foregone interest payments on the debt owed. In addition,

the report emphasized the unfunded liability associated with its retiree health care benefits. Due to this report, the Postal Service was directed to utilize the savings to reduce the outstanding debt, which at this time was approximately $11.9 billion. In addition, future reductions in CSRS payments were to be held in escrow until later proscribed by law as to what those funds could be utilized (Stevens, Pension Issues Cloud Postal Reform Debate 2-3).

Postal Civil Service Retirement System Funding Reform Act of 2003

With the GAO analysis of the OPM legislative proposal and evaluation of the Postal Service's contributions to CSRS, Congress introduced the Postal Civil Service Retirement System Funding Reform Act of 2003 which became law on April 23, 2003. The key provisions of this act included the following:

- Changed USPS funding of its Civil Service Retirement System pension liabilities based on dynamic assumptions as opposed to static assumptions while retroactively transferring responsibility for the funding of the cost of CSRS benefits attributable to the military service of postal employees from the U.S. Treasury to USPS;
- Reduced payments into CSRS by $3.5 billion in FY2003 and $2.7 billion in FY2004 with resultant savings going towards debt reduction (Stevens, Postal Reform 5)
- Required USPS to escrow the reduction in annual CSRS payments resulting from the funding changes in the Act (about $3 billion)
- Required USPS to report to Congress on how it could use the CSRS savings realized after fiscal year 2005. USPS proposed to Congress in 2003 that the responsibility for funding the cost of CSRS benefits attributable to the military service of postal employees be transferred back to the U.S. Treasury and that it use the resulting savings to prefund its retiree health benefit liability.
  (General Accounting Office 5-6)

Three issues were not settled through the Postal Civil Service Retirement System Funding Reform Act of 2003 and would require additional legislation. Those three issues were:

- Use of the savings associated with the reduction in retirement funding
- Military retirement costs
- Unfunded liability for the health care costs of retirees
  (Stevens, Postal Reform 5-6)

Postal Accountability and Enhancement Act of 2006

The Postal Accountability and Enhancement Act of 2006 was passed by voice vote on December 08, 2006 in the House of Representatives and December 09, 2006 in the Senate during a lame duck of Congress after the Republicans lost control of both the House of Representatives and the Senate. The pursuit of Postal reform legislation began in 1996 with the recognition of the financial challenges of the Postal Service. These challenges included both revenues and costs. On the revenue side, the decline in First Class mail as customers migrated to electronic means, such as e-bill pay and e-mail would lead to lower funds to finance the organization. In addition, the rate-setting process that was in place was criticized for the length of time required which did not allow for the Postal Service to respond quickly to changes in the competitive landscape. On the cost side, increasing labor cost due to the addition of over 2 million addresses each year and obligations for future retirees created a burden that many felt could not be overcome with the existing framework. The eventual reform measure had over 150 changes to postal law with significant alterations that would dramatically affect their finances (Kosar 1). This framework will also provide the backdrop for the current financial issues plaguing the organization.

The key provisions of the 2006 Act which relate to the pension systems and long-term liabilities include the following:

- Return of military obligations to the Treasury department.
- OPM estimated the Postal Service to be fully funded with CSRS obligations and therefore suspended employer contributions to CSRS until 2017 at which point OPM will determine the unfunded liability to be paid by the Postal Service
- Repeal of the escrow account provision of the Postal Civil Service Retirement System Funding Reform Act of 2003
- Establishment of the Postal Service Retiree Health Benefits Fund with payments of more than $5 billion annually from FY2007 through FY2016
- Initial funding of the Retiree Health Benefits Fund would come from any CSRS surplus attributable to Postal employees which were estimated to be $17.1 billion and 2006 escrowed savings of $2,958 billion
(United States Postal Service (e) 46)

The final passage of Postal Reform in 2006 ushered in a new period for the Postal Service and provides the framework for the current state of the Postal Service Pension Systems. The key element to

be recognized through the preceding historic review is the extent to which the pension system financing has driven Congressional decisions as they relate to the Postal Service. Other methods of providing pension benefits could allow for reduced costs for both the Postal Service and the Federal Government, while allowing the Postal Service to develop a system that is beneficial to its specific pool of workers.

Chapter 7 <u>An Overview of the Fundamentals of the Current United States Postal Service Pension System</u>

The current United States Postal Service pension system is governed by Title V of the United States Code which sets the framework for the Civil Service employment including the Civil Service Retirement System (CSRS) and the Federal Employee Retirement System (FERS). The history of the evolution of the system has been provided in Chapters 5-7. This chapter provides an overview of the current pension system of the Postal Service, including metrics on employees and contribution levels.

Civil Service Retirement System (CSRS)

The Civil Service Retirement System offers a basic annuity computed on the length of service of an employee and high 3 year average salary. The basic annuity is calculated by adding 1.5% of the high-3 year average basic pay times the years of service up to 5 years plus 1.75% of the high-3 year average basic pay times the years of service over 5 and up to 10 years plus 2% of the high-3 year average basic pay times the years of service over 10 years. The annuity is capped, however, at 80% of the high-3 year average pay (United States Office of Personnel Management 4). An example of the calculation is as follows for an individual whose average high 3 years was $50,000 over a career of 35 years: $50,000 * 5 * 1.5% + $50,000 * 5 * 1.75% + $50,000 * 25 * 2.00% = $33,125 per annum with COLA adjustments made each year. This would provide an income replacement rate of 66.3%.

Federal Employee Retirement System (FERS)

The Federal Employee Retirement System provides a three-tiered retirement plan consisting of Social Security benefits, a basic annuity and the Thrift Savings Plan.

Social Security benefits are defined by law and the benefits received in general are based on average earnings upon which Social Security taxes have been paid, family composition and the consumer price index which dictate cost of living adjustments. In addition, benefits are subject to individual and family maximums (United States Office of Personnel Management 4). For example, an individual who had worked steadily until retiring at age 62, starts collecting Social Security beginning at

age 62, and whose final salary was $50,000, can expect of benefit of approximately $13,044 per annum based on the calculator provided at the Social Security Administration website (Social Security Administration).

The retirement age for collecting full Social Security benefits has been modified throughout the history of the program. Beginning with a retirement age of 62, the retirement age was raised to 67 based on the reforms of 1983. A retirement age of 67 portends an environment in which employees will have to work almost 47 years assuming a starting age of 20 before receiving full Social Security benefits. The applicability of Social Security to retirees at a certain age is critical to determine the amount of funding required prior to the eligibility for benefits from Social Security. In some instances, stopgap measures are necessary to provide for the gap in income between actual retirement and when Social Security benefits become available.

The second component of FERS is a basic annuity plan which is computed based on the length of service of an employee and high 3-year average salary. The basic annuity is calculated by multiplying the 1% of the "high-3" average basic pay times the years of service. If an individual retires at age 62 or later with at least 20 years of service, a factor of 1.1% is utilized (United States Office of Personnel Management 8). An example of the calculation is as follows for an individual retiring at age 60 whose average high 3 years was $50,000 over a career of 35 years: $50,000 * 35 * 1.0% = $17,500 per annum.

The final component of FERS is the Thrift Savings Plan, which is similar to a 401(k) plan with tax deferred contributions made by employees and matched by the agency. The Postal Service contributes automatically to the Thrift Savings account of employees in an amount of 1% of their basic salary. In addition, employees may choose to elect contributions up to the maximum amount governed by IRS regulation. The Postal Service matches those additional contributions. For the first 3% of basic pay contributed, the Postal Service matches 100% of contributions, for the next 2% of basic pay, the Postal Service matches 50%. In effect, if an employee elects 5% of their basic pay to be contributed to their

Thrift Savings Plan account, the Postal Service will match 4% (United States Office of Personnel

Management 13). The expected income to be derived from the Thrift Savings Plan is based on a number

of assumptions including rates of elected contribution, asset allocations, investment returns, and the

decision after retirement about annuitization.

Adding together the three components of the Federal Employee Retirement System yields total

estimated retirement income from this source. In the previous example, the defined benefit annuity

and Social Security would provide approximately $30,544 per annum with the defined contribution

portion providing the remainder through the investment gains realized and the decision of annuity at

the end of the career (Chapter 9 provides various current FERS retirement income levels based on a

simulated investment environment. Utilizing this analysis, an individual can expect total retirement

income of $39,112-$46,079 depending on the type of annuity selected assuming the use of a risk free

investment).

The contributions that are collected for these pension benefits includes the following:

- Social Security payroll taxes of 6.2% for each the employer and the employee for a total of 12.4% of basic pay
- Thrift Savings Plan contributions of 5% of basic pay by employees, and agency match of 5% for a total of 10% of basic pay
- FERS annuity contribution of 0.8% of basic pay by employees and agency contribution of 11.9% of basic pay for a total of 12.7% of basic pay

The combined amount of contribution is 35.1% of basic pay.

For this hypothetical employee, total contributions over the career of this worker were

$410,472.84 by both employee and employee.

Table 2 - Contributions for hypothetical employee to each component of FERS over 35 year career

Year of Svc	Income	Employee	USPS	Employee	USPS	Employee	USPS	Total	Indiv Pmt.	USPS Pmt
Percent:		6.2%	6.2%	5.0%	5.0%	0.8%	11.9%	35.1%	12.0%	23.1%
PV:	$ 787,996	$ 48,856	$48,856	$ 39,400	$39,400	$ 6,304	$ 93,771	$276,586	$ 94,559	$182,027
Total:	$1,169,438	$ 72,505	$72,505	$ 58,472	$58,472	$ 9,356	$139,163	$410,473	$140,333	$270,140
1	$ 19,417	$ 1,204	$ 1,204	$ 971	$ 971	$ 155	$ 2,311	$ 6,815	$ 2,330	$ 4,485
2	$ 19,999	$ 1,240	$ 1,240	$ 1,000	$ 1,000	$ 160	$ 2,380	$ 7,020	$ 2,400	$ 4,620
3	$ 20,599	$ 1,277	$ 1,277	$ 1,030	$ 1,030	$ 165	$ 2,451	$ 7,230	$ 2,472	$ 4,758
4	$ 21,217	$ 1,315	$ 1,315	$ 1,061	$ 1,061	$ 170	$ 2,525	$ 7,447	$ 2,546	$ 4,901
5	$ 21,854	$ 1,355	$ 1,355	$ 1,093	$ 1,093	$ 175	$ 2,601	$ 7,671	$ 2,622	$ 5,048
6	$ 22,509	$ 1,396	$ 1,396	$ 1,125	$ 1,125	$ 180	$ 2,679	$ 7,901	$ 2,701	$ 5,200
7	$ 23,185	$ 1,437	$ 1,437	$ 1,159	$ 1,159	$ 185	$ 2,759	$ 8,138	$ 2,782	$ 5,356
8	$ 23,880	$ 1,481	$ 1,481	$ 1,194	$ 1,194	$ 191	$ 2,842	$ 8,382	$ 2,866	$ 5,516
9	$ 24,597	$ 1,525	$ 1,525	$ 1,230	$ 1,230	$ 197	$ 2,927	$ 8,633	$ 2,952	$ 5,682
10	$ 25,335	$ 1,571	$ 1,571	$ 1,267	$ 1,267	$ 203	$ 3,015	$ 8,892	$ 3,040	$ 5,852
11	$ 26,095	$ 1,618	$ 1,618	$ 1,305	$ 1,305	$ 209	$ 3,105	$ 9,159	$ 3,131	$ 6,028
12	$ 26,877	$ 1,666	$ 1,666	$ 1,344	$ 1,344	$ 215	$ 3,198	$ 9,434	$ 3,225	$ 6,209
13	$ 27,684	$ 1,716	$ 1,716	$ 1,384	$ 1,384	$ 221	$ 3,294	$ 9,717	$ 3,322	$ 6,395
14	$ 28,514	$ 1,768	$ 1,768	$ 1,426	$ 1,426	$ 228	$ 3,393	$ 10,009	$ 3,422	$ 6,587
15	$ 29,370	$ 1,821	$ 1,821	$ 1,468	$ 1,468	$ 235	$ 3,495	$ 10,309	$ 3,524	$ 6,784
16	$ 30,251	$ 1,876	$ 1,876	$ 1,513	$ 1,513	$ 242	$ 3,600	$ 10,618	$ 3,630	$ 6,988
17	$ 31,158	$ 1,932	$ 1,932	$ 1,558	$ 1,558	$ 249	$ 3,708	$ 10,937	$ 3,739	$ 7,198
18	$ 32,093	$ 1,990	$ 1,990	$ 1,605	$ 1,605	$ 257	$ 3,819	$ 11,265	$ 3,851	$ 7,414
19	$ 33,056	$ 2,049	$ 2,049	$ 1,653	$ 1,653	$ 264	$ 3,934	$ 11,603	$ 3,967	$ 7,636
20	$ 34,048	$ 2,111	$ 2,111	$ 1,702	$ 1,702	$ 272	$ 4,052	$ 11,951	$ 4,086	$ 7,865
21	$ 35,069	$ 2,174	$ 2,174	$ 1,753	$ 1,753	$ 281	$ 4,173	$ 12,309	$ 4,208	$ 8,101
22	$ 36,121	$ 2,240	$ 2,240	$ 1,806	$ 1,806	$ 289	$ 4,298	$ 12,678	$ 4,335	$ 8,344
23	$ 37,205	$ 2,307	$ 2,307	$ 1,860	$ 1,860	$ 298	$ 4,427	$ 13,059	$ 4,465	$ 8,594
24	$ 38,321	$ 2,376	$ 2,376	$ 1,916	$ 1,916	$ 307	$ 4,560	$ 13,451	$ 4,599	$ 8,852
25	$ 39,470	$ 2,447	$ 2,447	$ 1,974	$ 1,974	$ 316	$ 4,697	$ 13,854	$ 4,736	$ 9,118
26	$ 40,655	$ 2,521	$ 2,521	$ 2,033	$ 2,033	$ 325	$ 4,838	$ 14,270	$ 4,879	$ 9,391
27	$ 41,874	$ 2,596	$ 2,596	$ 2,094	$ 2,094	$ 335	$ 4,983	$ 14,698	$ 5,025	$ 9,673
28	$ 43,130	$ 2,674	$ 2,674	$ 2,157	$ 2,157	$ 345	$ 5,133	$ 15,139	$ 5,176	$ 9,963
29	$ 44,424	$ 2,754	$ 2,754	$ 2,221	$ 2,221	$ 355	$ 5,286	$ 15,593	$ 5,331	$ 10,262
30	$ 45,757	$ 2,837	$ 2,837	$ 2,288	$ 2,288	$ 366	$ 5,445	$ 16,061	$ 5,491	$ 10,570
31	$ 47,130	$ 2,922	$ 2,922	$ 2,356	$ 2,356	$ 377	$ 5,608	$ 16,543	$ 5,656	$ 10,887
32	$ 48,544	$ 3,010	$ 3,010	$ 2,427	$ 2,427	$ 388	$ 5,777	$ 17,039	$ 5,825	$ 11,214
33	$ 50,000	$ 3,100	$ 3,100	$ 2,500	$ 2,500	$ 400	$ 5,950	$ 17,550	$ 6,000	$ 11,550
34	$ 50,000	$ 3,100	$ 3,100	$ 2,500	$ 2,500	$ 400	$ 5,950	$ 17,550	$ 6,000	$ 11,550
35	$ 50,000	$ 3,100	$ 3,100	$ 2,500	$ 2,500	$ 400	$ 5,950	$ 17,550	$ 6,000	$ 11,550

Recent legislation increased the required contribution rate to the FERS annuity by newly hired workers after December 31, 2012 by 2.3%, for a total employee contribution of 3.1% (current law is 0.8%) (Isaacs, Federal Employees' Retirement System: Benefits and Financing 15).

Postal Service Contributions to Retirement Systems

 Graph 2 shows the total contributions into the pension systems since independence. This includes all contributions made by the Postal Service for its employees for both CSRS and FERS, as well as the Social Security contributions for FERS. Contributions have been adjusted for inflation based on the Consumer Price Index for All Urban Consumers in 2012 dollars. The complete table broken down by each category is provided in Appendix 7-1.

Graph 2- Contributions of USPS towards Pension Costs Since 1970
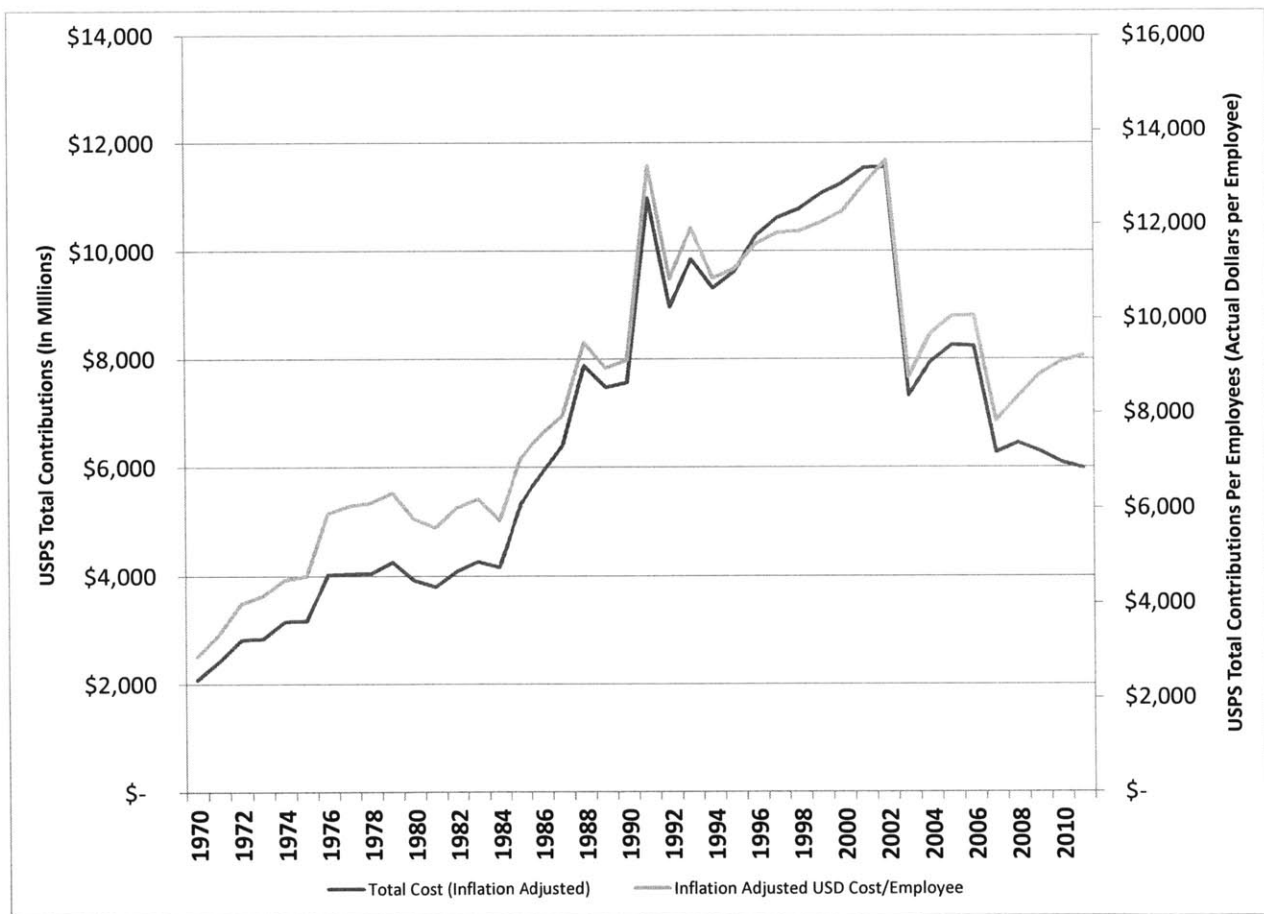
 Under the Postal Accountability and Enhancement Act of 2006, the Postal Service is not required to make contributions to the CSRS fund until 2017, at which time OPM will determine whether additional funding is required (United States Postal Service (b) 97). Therefore, the only contributions from the Postal Service into the system are through employee contributions of 7.8%. The Postal

Service's total contributions to the FERS system for fiscal year 2010 through 2012 (in current dollars) are

broken out in Table 3.

Table 3 - Postal Service contribution to FERS - 2010-2012

FERS Retirement Contributions:

	2012	**2011**	**2010**
FERS	2,980	2,983	2,904
Social Security	1,853	1,856	1,856
FERS Thrift Savings Plan	1,021	1,040	1,049
Total Retirement Expense:	$ 5,854	$ 5,879	$ 5,809

(Dollars in Millions)

(United States Postal Service (b) 97)

The enrollment of Postal Service employees by type of retirement system is shown in Table 4 for

2010 through 2012. The population of CSRS and dual CSRS employees has been declining as those

workers hired prior to 1983 leave the Postal Service. The population of FERS employees has also been

declining as the Postal Service adjusts its workforce to workload declines.

Table 4 - Postal Service retirement enrollment by program type - Fiscal Year 2012

Retirement Enrollment by Program:

	2012	**2011**	**2010**
CSRS	67,224	79,014	90,480
Dual CSRS	3,942	4,551	5,206
FERS	457,292	473,686	488,222
Total Enrollment:	528,458	557,251	583,908

(United States Postal Service (b) 98)

Thrift Savings Plan Analysis

The Thrift Savings Plan is a key component of retirement security, yet, much of that security is

dependent on the decision of employees to elect to contribute to their retirement. Many postal

employees choose not to contribute to TSP or contribute very little, which threatens their retirement

security and is a source of concern to policy makers. As a response to those concerns, the Thrift Savings

Plan Enhancement Act was enacted in 2009 as P.L. 111-31. The law required automatic enrollment of

newly hired workers at a default contribution rate of 3% of basic pay to enhance employee

contributions; it required the Federal Retirement Thrift Investment Board to establish within TSP a

qualified Roth contribution program providing after-tax contributions with tax free accumulation and

distribution; and it provides the Board the authority to allow TSP participants to invest in mutual funds

in addition to the five investment funds included within the TSP (Isaacs, Federal Employees' Retirement

System: The Role of the Thrift Savings Plan 18).

In order to understand current TSP contribution rates of the Postal Service and its employees,

data was acquired from the United States Postal Service on January 15, 2013 which contained

information for the last pay period of calendar year 2012. This data included the basic salary earned by

each employee, their elected contribution, and the agency match. In addition, the analysis incorporated

demographic information. This data was used to understand how different types of FERS employees

elect to contribute by age, years of service, wage level, as well as position within the organization. The

data provided was a list of each employee with their FICA code, which determines which retirement

system they are under, date of birth, years of service, RSC code which represents the type of employee,

basic pay, employee TSP contribution, USPS 1% agency match, and additional matching contribution by

the Postal Service. Additional fields were created including the percent contribution of pay elected by

the employee and an estimate of basic pay when basic pay was not included for some types of

employees, utilizing the information provided within the 1% match. This data accounted for 524,893

employees who were paid during Pay Period 26 in 2012. That headcount does not match the numbers

reported in the Annual Report since each provides different snapshots in time. Of the 524,836

employees in the dataset, 449,555 (or 85.6%) of the employees were coded as FERS employees with a

FICA code equal to 8. These are the employees whose contributions are matched by the Postal Service up to 5%, and for whom the Thrift Savings Plan is a vital component of their retirement security.

Tabulations using this data provide several new insights, including to what extent age is a factor in the contribution rate of the employee, whether the type of employee is a critical factor, i.e., union versus non-union, and how much the level of basic pay affects contribution rates.

An initial data cleansing step was performed on the data; in some instances, the basic pay was simply unknown, and that data was removed from the dataset. There were 5,624 (or 1.2%) records for which the basic pay could not be calculated. In addition, there were some negative estimated contributions, which accounted for 59 records (or .0131%), as well as estimated contribution percentages in excess of 100% which accounted for 15 records (or .003%) for a combined elimination of 1.2671% of the dataset. The remaining dataset had 443,857 records.

An important goal of this data analysis is to better understand the population of individuals who are contributing nothing to the Thrift Savings Plan; the analysis looks at that group by age, years of service, type of employee, and salary range. Those individuals are foregoing saving for their own retirement and missing out on the match of the organization.

Employee Age: Of the 443,857 individuals in this dataset, 72,198 employees are not contributing to TSP, accounting for 16.27% of employees in FERS. The average age of employees not contributing to their TSP account is 49.8 years old, with a median of 50 years old. An estimate of the relative propensity not to save was calculated by employee age. This was calculated by taking the population of individuals contributing zero to the Thrift Savings Plan and dividing that by the count of all employees of that age. Graph 4 shows that a substantial share of very young employees (under the age of 23, of which there are relatively few) are contributing to their TSP accounts, whereas those employees in the age 28-44 age cohort have the greatest percentage of employees not contributing. After age 44, however, the percentage of employees not contributing declines. These findings are consistent with a

body of research that suggests age as a key factor in motivating retirement saving. As one gets closer to retirement, the more real retirement becomes.

Graph 3 - USPS Distribution of Employee Ages for individuals contributing 0 to the Thrift Savings Plan
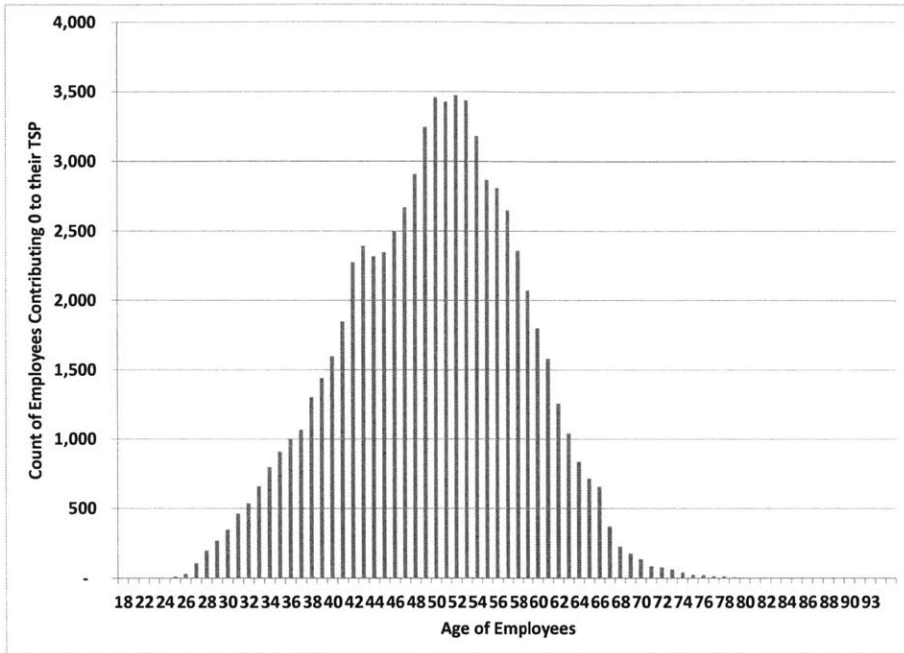
Graph 4 - Percentage of Employees Contributing 0 to their TSP
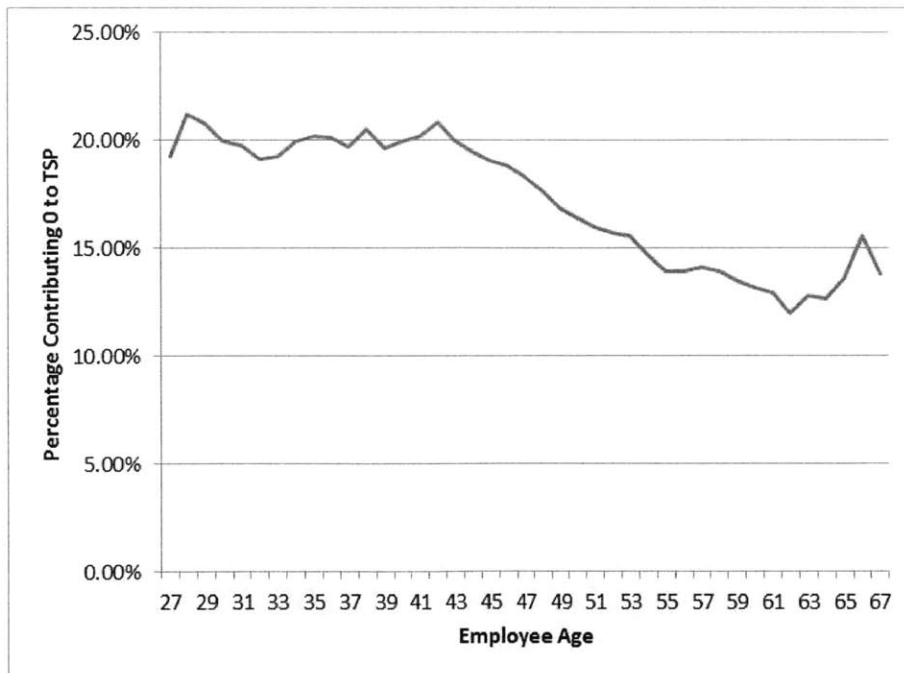
Years of Service: The years of service of employees was also assessed to determine its impact on the relative propensity not to save. Years of service is highly correlated with the employee's age, therefore the same pattern is exhibited. As the years of service increased, the relative propensity not to save decreased.

Table 5 - Employees contributing 0% to the Thrift Savings Plan by years of service

Yrs	Count of 0s	Count of All	Relative propensity not to save
0-5	3,134	16,836	18.6%
6-10	12,719	68,631	18.5%
11-15	19,157	109,399	17.5%
16-20	14,820	89,849	16.5%
21-25	11,626	80,425	14.5%
26-30	10,696	78,135	13.7%
31+	46	582	7.9%

Graph 5 - Percentage of Employees contributing 0 to their TSP by years of service
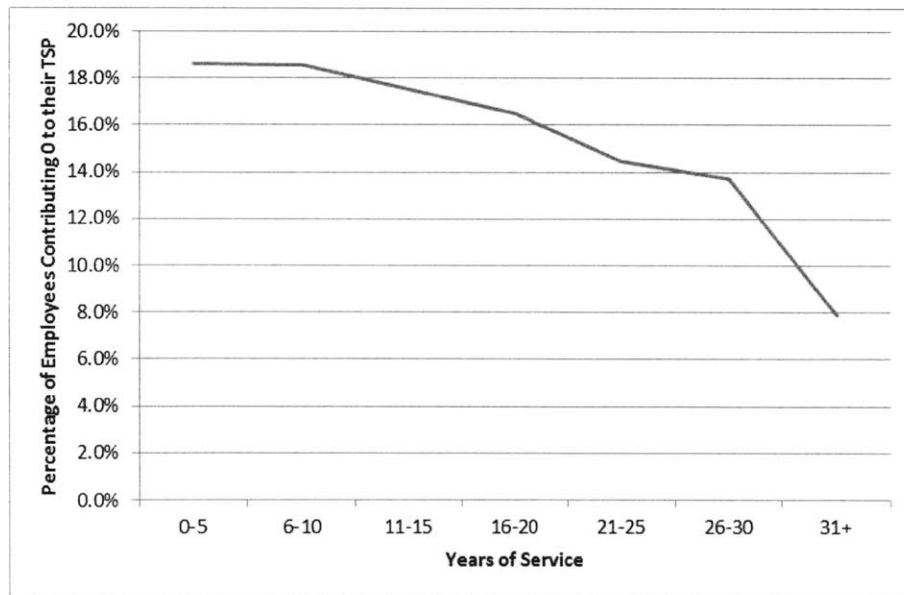
Employee Type: Employees are classified according to 1 of 17 rate schedule codes. Graph 11 provides the percentage of employees by rate schedule codes that are not contributing to TSP. The highest percentage of employees not contributing are the unionized employees, specifically mail handlers, city carriers, APWU employees and rural carriers.

Table 6 - Percentage of employees contributing 0% to the Thrift Savings Plan by Employee Type

Rate Schedule Code	Type of Employee	Total in dataset	Total 0s in dataset	Percent
K	OSD - HQ Operating Services Division	2	1	50.0%
F	EPM - Postmasters (Part time postmasters)	605	169	27.9%
M	MH - Mail Handlers	35,895	7,889	22.0%
Q	CC - City Carriers	151,759	24,940	16.4%
P	PS - Postal Service - APWU	150,430	24,362	16.2%
R	RC - Rural Carriers	62,922	10,030	15.9%
Y	PPO - Postal Police Officers	425	60	14.1%
G	PNS - Postal Nurses	66	8	12.1%
E	EAS - Executive & Administrative Schedule	39,416	4,588	11.6%
C	MESC - Mail Equipment Shops and Material Distribution Centers	98	11	11.2%
N	IT/ASC - Information Technology / Accounting Service Centers	886	76	8.6%
U	APS - Attorneys	177	10	5.6%
Z	OIG - Office of the Inspector General	506	26	5.1%
V	HQPB - Headquarter Pay Bands	266	13	4.9%
S	PCES - Postal Career Executive Service	345	15	4.3%
D	Postal Regulatory Commission	58	-	0.0%
B	RAUX - Rural Authority	1	-	0.0%
	Total:	443,857	72,198	16.3%

To determine whether union employees have in general a higher propensity not to save which does not relate to wage levels, a summary of the data was developed that looked at the propensity not to save by salary range for union and non-union employees. The results of this analysis are provided below and indicate for a given salary level, union employees have a higher propensity not to save than non-union employees. The reason for this is unknown, but is of importance to the financial security of these employees to determine the impediments towards voluntary saving by these employees.

Table 7 - Propensity not to save by salary level and union membership

Salary Range	Propensity Not to Save	
	Non-Union	Union
0-15000	20.63%	30.37%
15001-30000	12.00%	20.63%
30001-45000	18.79%	23.89%
45001-60000	10.75%	16.19%
60001-75000	12.82%	10.89%

Salary Level: The relative propensity not to save was also assessed by salary level. Table 8 shows the relative propensity not to save falling as salary level increases.

Table 8 - Percentage of Employees contributing 0% to the Thrift Savings Plan by Salary Level

Salary Range	Count of 0 Contribution	Percent of 0 Contribution Employees	Total Employees in Dataset	Percentage of employees in dataset	Relative Propensity not to Save
0-15000	1,499	2.08%	4,987	1.12%	30.06%
15001-30000	1,864	2.58%	9,131	2.06%	20.41%
30001-45000	6,815	9.44%	28,732	6.47%	23.72%
45001-60000	56,626	78.43%	352,568	79.43%	16.06%
60001-75000	4,418	6.12%	36,899	8.31%	11.97%
75001-90000	765	1.06%	8,092	1.82%	9.45%
90001-105000	138	0.19%	2,014	0.45%	6.85%
105001-120000	49	0.07%	818	0.18%	5.99%
120001-135000	12	0.02%	277	0.06%	4.33%
135001-150000	8	0.01%	174	0.04%	4.60%
150000 +	3	0.00%	165	0.04%	1.82%

Graph 6 - Relative Propensity not to save by salary level
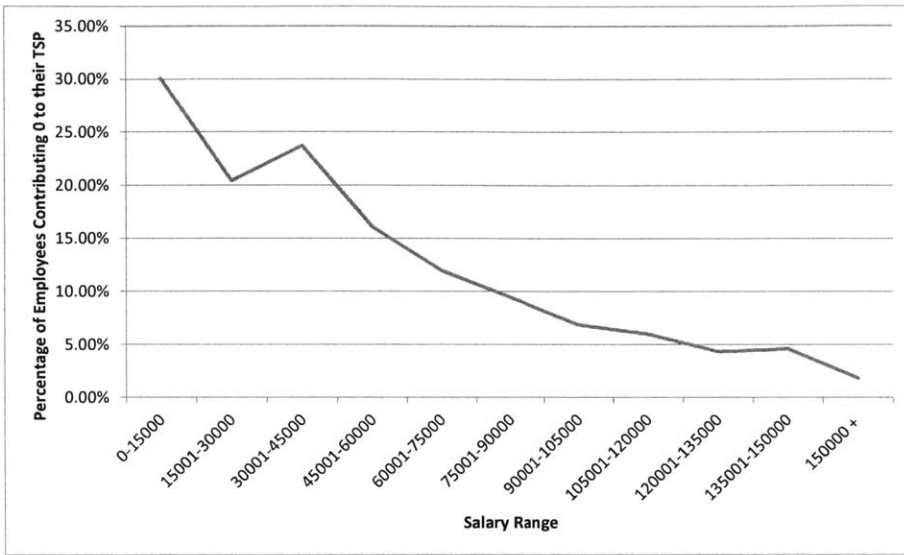
Summary of TSP Contribution Data

The TSP contribution data provides useful insights as to the factors that influence employees of the Postal Service whether to contribute to the Thrift Savings Plan or not. Through the focus on those employees that are contributing 0% to the defined contribution portion of their retirement plan, the savings decision can be isolated. Each of these contributors are correlated with each other, i.e., within the Postal Service, increasing years of service lead to higher salary levels, and increasing age also is associated with higher years of service. To understand the combined impact each of these components has on the decision to contribute towards the thrift savings plan, a regression analysis was run utilizing the binary choice of contribution or no contribution as the dependent variable, and years of service, age, union/non-union and salary bucket as the independent variable. The results of the regression analysis are provided below:

Figure 3 - TSP Regression Analysis-

Regression Statistics	
Multiple R	0.094831892
R Square	0.008993088
Adjusted R Square	0.008984157
Standard Error	0.367394479
Observations	443857

ANOVA

	df	SS	MS	F	Significance F
Regression	4	543.6702618	135.9175654	1006.955635	0
Residual	443852	59910.56721	0.134978703		
Total	443856	60454.23747			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.595326803	0.005685673	104.7064814	0	0.584183058	0.606470547	0.584183058	0.606470547
Years of Svc	0.000530885	8.98416E-05	5.909124726	3.4418E-09	0.000354798	0.000706972	0.000354798	0.000706972
Age	0.002268815	7.39879E-05	30.66465933	2.774E-206	0.002123801	0.002413829	0.002123801	0.002413829
Union/NonUnion	-0.013704439	0.002191572	-6.253246455	4.02371E-10	-0.017999853	-0.009409025	-0.017999853	-0.009409025
Salary Bucket	0.032299844	0.000890993	36.25151925	2.4865E-287	0.030553525	0.034046162	0.030553525	0.034046162

In addition, a correlation matrix was developed to determine whether collinearity could impact the results. The correlation matrix is provided below and indicated that correlations are not high enough to render the results inoperable.

Figure 4 - TSP Correlation Matrix

	Years of Svc	Age	Union/Non Union	Salary Bucket	Contribute, No Contribute
Years of Svc	1.0000				
Age	0.4781	1.0000			
Union/NonUnion	-0.0582	0.0122	1.0000		
Salary Bucket	0.1820	0.0811	-0.5041	1.0000	
Contribute,No Contribute	0.0474	0.0621	-0.0429	0.0753	1.0000

The results of the regression analysis suggest the greatest impact on an individual's decision to contribute or not contribute towards their defined contribution plan is their salary level followed by union membership, age and years of service. The results suggest an increase of 1 year of age has 4 times the impact of an increase of a year of service, suggesting age is more critical in the contribution decision. The results also highlight the difference between union and non-union employment in the sense that union employees are less likely to contribute towards their retirement savings holding all

other factors constant. Overall, the results highlight younger, lower paid workers are more likely not to contribute to their defined contribution plan, thereby forgoing the opportunity to benefit from the compounding of returns over time, and making it more likely that they will be dissatisfied with their standard of living in retirement. Any shift in plan design will have to include educational resources that encourage individuals who are the least likely to contribute to contribute to their retirements.

Current Potential TSP Cost Liability

The Thrift Savings Plan data can also be used to estimate the cost that would be borne by the Postal Service costs if all employees were to contribute to the Thrift Savings Plan so as to receive the full match. That calculation shows that in 2013(?) there would be approximately $238,908,125 of additional contributions required by the Postal Service to fully match employees not currently contributing to the maximum extent allowable.

Postal Service Age Demographics

The age of employees will determine how an alternative system may be transitioned to, as well as whether such a transition could occur, and at what point. The estimated age was calculated from the dataset obtained by the Postal Service by subtracting the employees year of birth from 2013. The average age was estimated at 52.17, with a median of 53.00. The distribution of these ages is provided in the following graph:

Graph 7 - USPS Distribution of Employee Ages

Graph 7 - USPS Distribution of Employee Ages
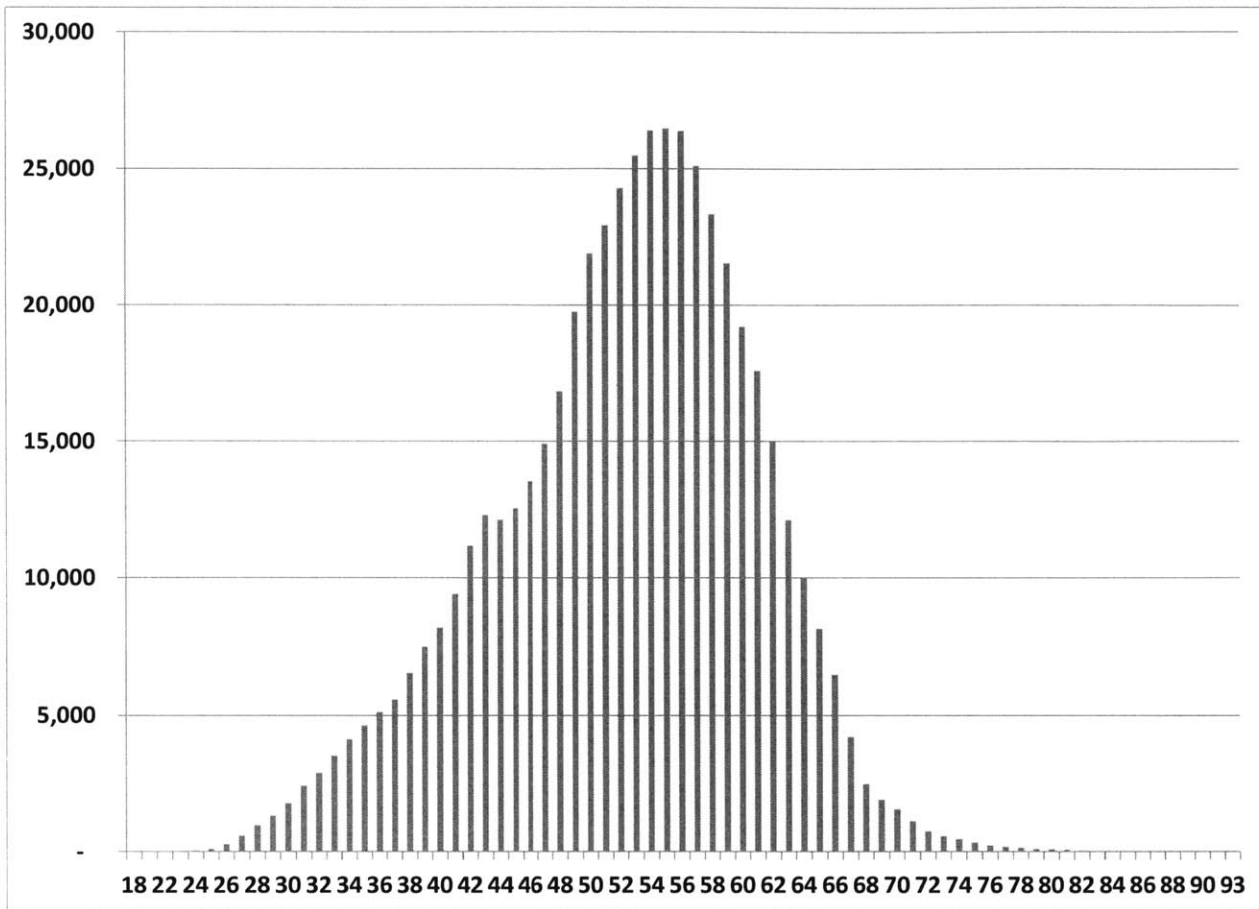
The following table provides the percentage of employees by age decile and highlights the age of the

current USPS workforce.

Table 9 - USPS Employee age distribution by decile

Age Decile	0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Count of Employees	-	1	5,109	50,458	144,542	241,107	79,424	4,027	222	3
Cumulative 0-100	-	1	5,110	55,568	200,110	441,217	520,641	524,668	524,890	524,893
Cumulative 100-0	524,893	524,893	524,892	519,783	469,325	324,783	83,676	4,252	225	3
Percentage	0.00%	0.00%	0.97%	9.61%	27.54%	45.93%	15.13%	0.77%	0.04%	0.00%
Cumulative 0-100	0.00%	0.00%	0.97%	10.59%	38.12%	84.06%	99.19%	99.96%	100.00%	100.00%
Cumulative 100-0	100.00%	100.00%	100.00%	99.03%	89.41%	61.88%	15.94%	0.81%	0.04%	0.00%

Postal Service Retirement Age Analysis

To understand the average age of retirement within the Postal Service, a dataset was obtained

from the United States Postal Service which provides information on the retirement age of workers,

their number of years of service, and whether they are CSRS, FERS, or dual eligible(?), for the period for 2000 through early 2012. Tables 10 and 11 summarize the average age at retirement, the standard deviation of age at retirement, the average number of service years and the standard deviation of service years for CSRS employees, and FERS employees.

Table 10 - USPS Retirement Summary - CSRS Employees

Year	Average of Svc Yrs	StdDev of Svc Yrs	Average of AgeAtASD	StdDev of AgeAtASD
2000	31.24	6.54	60.07	4.60
2001	31.76	6.23	59.63	4.66
2002	32.29	5.84	59.04	4.61
2003	31.67	5.73	57.92	4.79
2004	31.96	5.66	58.00	4.82
2005	32.67	5.55	58.58	4.85
2006	33.57	5.45	59.25	4.67
2007	33.81	5.29	59.51	4.48
2008	33.94	5.41	59.31	4.48
2009	33.50	5.52	58.50	5.29
2010	34.78	5.47	60.00	4.40
2011	35.17	5.00	59.85	4.41
2012	35.23	4.80	60.06	4.61
Overall Avg	*32.93*	*5.77*	*58.97*	*4.81*

(Note, ASD = Actual separation date)

Graph 8 - CSRS Employee Age Distribution
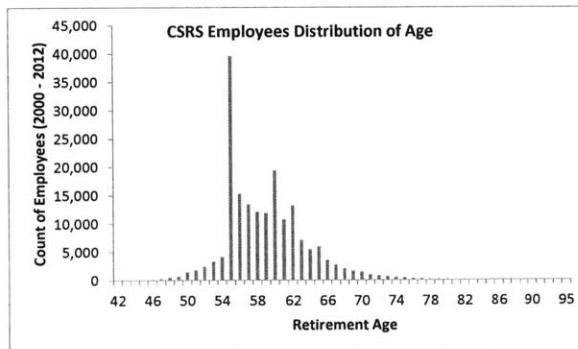
Graph 9 - CSRS Years of Service Distribution

Table 11 - USPS Retirement Summary - FERS Employees

Year	Average of Svc Yrs	StdDev of Svc Yrs	Average of AgeAtASD	StdDev of AgeAtASD
2000	15.25	6.02	61.82	4.26
2001	15.78	6.00	61.72	4.28
2002	16.35	6.04	61.56	4.30
2003	17.50	6.41	61.25	4.50
2004	17.96	6.48	61.20	4.44
2005	18.13	6.10	61.51	4.24
2006	18.61	6.11	61.72	4.06
2007	19.36	6.13	62.04	3.94
2008	19.98	6.26	61.76	3.99
2009	21.93	5.54	59.47	5.35
2010	20.64	6.81	62.32	3.78
2011	21.50	6.84	61.93	4.31
2012	20.92	7.63	62.52	3.60
Overall Avg	*19.65*	*6.50*	*61.21*	*4.59*

Graph 10 - FERS Age Distribution

Graph 11 - FERS Years of Service Distribution
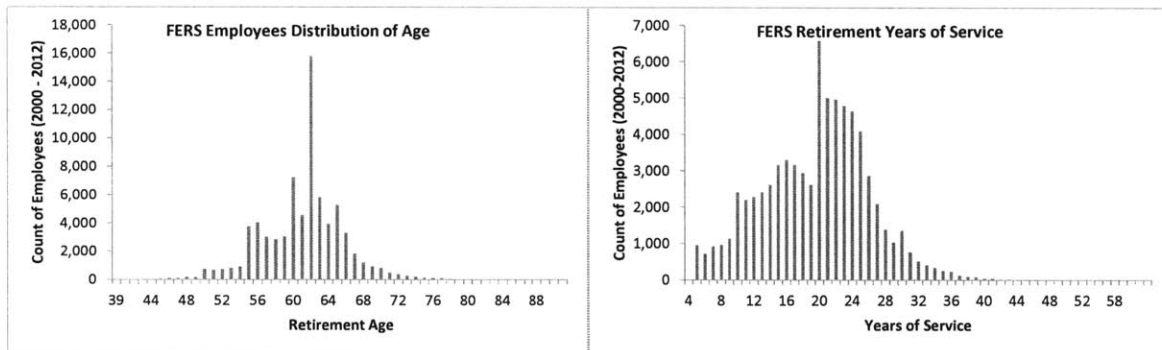
Postal Service Retirement Age Insights

Comparing the retirement age data for CSRS employees and FERS employees highlights the differences between these two employee populations. CSRS employees on average retire approximately 2 years younger than FERS employees, with significantly more years of service. Much of the difference in the years of service at this point can be explained by the fact that the FERS system began in 1983, and for the pool of employees retiring between 2000 and 2012, they necessarily can only have between 17 and 29 years of service (2012-1983=29, 2000-1983=17). We see in the data that as time passes, the years of service for retiring FERS employees also increases (15.25 in 2000 to 21.5 in

2011 [the last full year of data]). Of particular interest, however, is the fact that the average age for

FERS retirement age has held relatively steady over the entire period averaging 61.21 years with a low

standard deviation of .742 years (61.8 years in 2000 to 61.93 years in 2011 [the last full year of data]).

The average age of retirement falls close to the earliest point at which an employee becomes eligible for

Social Security benefits, with the largest spike in the data occurring at age 62 which is the point at which

employees can apply for social security benefits which suggests Social Security eligibility may play a key

part in an employee's decision to retire.

A similar pattern is seen for CSRS employees with regards to years of service and retirement

age. As for FERS employees, we see that over time, the years of service for retiring CSRS employees

increases (31.24 in 2000 to 35.17 in 2011 [the last full year of data]). The population of CSRS employees

is declining because no additional CSRS employees are being hired; the only remaining employees are

those that were hired prior to 1983. Therefore, the years of service for this employee pool must increase

over time. For CSRS employees, the average retirement age has held steady over the entire period,

averaging 58.97 years with a low standard deviation across the years of .756 years (60.1 years in 2000 to

59.9 years in 2011 [the last full year of data]). The largest spike within the data occurs at the age of 55,

which is the earliest point CSRS employees can retire; the ability to retire provides an incentive for

retirement. Since CSRS employees are not eligible to collect Social Security, the eligibility to collect

Social Security is not a factor in the decision to retire, and therefore leads to an employee focusing on

their years of service and the defined benefit annuity earned.

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Chapter 8 – <u>Alternative Approaches to Pensions – Public and Private</u>

In laying out the features of an ideal pension system, Robert Merton posits that "The pension goal is to obtain the desired income at retirement. That desired income represents an inflation-protected annuity for life, adequate to maintain the standard of living enjoyed in the latter part of work life." (Merton, Developing the Potential of the Individually Funded Pension Systems) This pension goal is unique to each individual and must take into account various components of an individuals' life situation.

Retirement systems generally are classified as defined benefit, defined contribution, or some combination of the two. As discussed in Chapter 3, in the private sector there has been significant movement away from defined benefit plans due to the risks to the employers associated with such systems. The movement towards defined contribution plans, however, has placed additional risks and responsibilities on employees. The following section will discuss some of the different approaches to retirement systems that exist, specifically looking at benefit systems, as well as contribution levels made by employers to fund employee retirement.

Types of Pension Plans

Defined Benefit & Defined Contribution Plans

There are two main designs to pension plans – defined benefit and defined contribution plans. In a defined benefit plan, a life annuity is paid to an employee in an amount based on a formula that typically includes years of service and salary history. In a defined contribution plan, the employer maintains what is essentially an investment account on behalf of each employee. A certain dollar amount or percent of salary is contributed to into this account and invested in various financial instruments such as stocks and bonds. When the employee retires, they receive the balance of the account which includes all contributions and investment returns, net of management fees. The distribution at retirement can be provided as a lump sum, or as a structured income stream such as a term or life annuity. A key difference between the plan types is that with a defined benefit plan the

employer bears the investment risk, whereas with a defined contribution plan the employee bears the investment risk (Isaacs, Federal Employees' Retirement System: Benefits and Financing 1).

Cash balance plans
A cash balance plan is a form of a defined benefit plan in which an employee is credited each year with a percent of their pay, as well as an interest credit from the employer. Relative to a defined contribution plan, there is little investment risk for participants, as the only uncertainty arises from variations in the interest rate. When a participant becomes eligible to receive benefits, the benefits are defined in terms of the account balance, as opposed to the traditional defined benefit arrangement in which a percentage of final salary and years of service define the benefit. The cash balance plan differs from the 401k type plan in that: generally employees do not directly contribute; the investment risks are managed solely by the employer; participants must be offered the opportunity to receive their benefit as lifetime annuities; and the plans are insured by the Pension Benefit Guarantee Corporation (United States Department of Labor).

Hybrid Offerings
The current FERS system is a hybrid defined benefit and defined contribution plan. Taking into account that FERS participants also receive Social Security, the defined benefit portion of retirement income is provided by Social Security and the FERS annuity, while participation in the Thrift Saving Plan provides a defined contribution portion component.

Public and Private Sector Trends
The private sector has generally led the way towards adapting pension plans to fit ongoing economic and labor market realities. IBM is an example of a company that was in the forefront of change within the private pension arena, and the changes they have made over the last two decades have dramatically influenced the pension policies of many other private companies.

More recently, due to ongoing budgetary and economic constraints, increasing numbers of

public plans also have introduced changes to their pension plans aimed at managing costs and avoiding

the need for increased taxes to fund them. Recent changes by state and local governments have

included suspending the cost of living adjustment for current and future retirees. Some have also linked

the future COLA to the funded status of the plan or returns on the assets of the fund. Other states have

raised employee contribution rates for current and future employees. Some states have reduced

benefits for new employees primarily through increasing the age when full benefits are paid, and some

have introduced less expensive hybrid defined benefit/defined contribution systems for new employees.

Munnell argues that these changes will reduce the pension compensation received by new employees

(Munnell 216).

Pension Benefits Offered in the Private Sector

The U.S. Department of Labor released in 2011 the National Compensation Survey, which

reviewed employee benefits in private industry in the United States in 2010[2]. Of particular interest is

information provided on contribution levels, matching policies, and participation rates by plan type.

Table 12 below provides a summary of the three components that determine the maximum level an

employer contributes to an employees' defined contribution account each year. The first component is

the maximum amount of salary the employee can contribute that will be fully or partially matched. The

second component is the employer's match rate. The final component is the combination of the two,

which provides the effective maximum potential contribution provided by the employer which assumes

the employee contributes to the maximum percentage. As an example, for the median unionized

private employee in the United States, the employer matches 50% of up to 6% of an employee's salary

for an effective maximum contribution of 3% of salary. The combined total contribution in this instance

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[2] The 2010 survey included a sample of approximately 3,200 establishments. The NCS samples a portion of all occupations in a portion of all establishments in a portion of all local areas in the Nation to obtain a representative sample of the population. (Bureau of Labor Statistics)

towards retirement would be 9% of salary. Similarly, the 90th percentile for a union employee is between 5 and 6% of salary for a total contribution towards retirement of 12% of salary. Detailed tables providing additional employee characteristics are included in appendix 8-1.

Table 12 - Private Sector Defined Contribution Benefits

Worker Characteristics	10th Percentile	25th Percentile	50th Percentile (median)	75th Percentile	90th Percentile
Maximum employee contribution matched by employer					
All workers............................	3	4	5	6	6
Union..................................	3	4	6	6	6
Nonunion..............................	3	4	5	6	6
500 workers or more..................	3	4	5	6	6
Specified matching percent					
All workers............................	25	50	50	100	100
Union..................................	50	50	66	100	100
Nonunion..............................	25	50	50	100	100
500 workers or more..................	35	50	75	100	100
Maximum potential employer contribution					
All workers............................	1.5	2	3	4.8	6
Union..................................	1.5	2	3	4.5	5
Nonunion..............................	1.5	2	3	5	6
500 workers or more..................	2	2.1	3.5	5	6

(U.S. Bureau of Labor Statistics 103-116)

The survey also provides information on the types of retirement plans offered and the degree of worker participation in them. This is of interest for understanding the prevalence of employers offering multiple or hybrid plans to employees. Table 13 below indicates that multiple or hybrid plans are relatively rare. Approximately 64% of all workers have access to retirement benefits, 20% of all workers have access to defined benefit plans and 58% have access to defined contribution plans. The combination of that exceeds 64%, because 14% of employees have access to both types of plans. In those cases, the employer contribution rates reported in Table 12 may understate the total retirement benefit provided each year by the employer.

Table 13 - Retirement Plan Types Access and Participation

Worker Characteristics	All retirement benefits			Defined benefit			Defined contribution		
	Access	Participation	Take-up rate	Access	Participation	Take-up rate	Access	Participation	Take-up rate
All workers	64	49	76	20	18	91	58	41	70
Union	90	83	93	70	67	96	53	42	79
Nonunion	61	45	74	14	13	89	59	41	69
500 workers or more	86	76	88	46	43	94	77	60	77

(U.S. Bureau of Labor Statistics)

Risks Associated with Participating in the Federal Retirement Plans

The Postal Service in its annual 10-k filing has identified risks associated with its participation in the federal retirement plans which are different than single-employer retirement systems. These key risks were identified as follows:

- Assets contributed to the plans by one agency may be used to provide benefits to employees of other participating agencies.
- If a participating agency stops contributing to the plans, the unfunded obligations of the plan may be borne by the remaining participating agencies.
- Postal Service participation in the federal retirement plans is required by law. If the Postal Service were permitted by a change in law to stop participating in some of the Federal retirement plans, it may be required to pay those plans an amount based on the underfunded status of the plan, referred to as a withdrawal liability if such a liability exists at that time (United States Postal Service (b) 97)

Along with increasing the financial viability of the Postal Service, and reducing those risks are a consideration in evaluating alternatives for reforming the postal pension system.

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Chapter 9 – <u>Application of Alternative Pension Systems to the Postal Service</u>

Any redesign of the Postal Service pension system would ideally take into account the unique

circumstances and characteristics of its employees, which differ from those of other Federal government

employees. Further, it would allow the Postal Service more flexibility to deal with the severe economic

challenges it is facing, treat employees equitably, and borrow from the best evolving practices in private

sector pension designs. In evaluating alternative pension systems, it is essential to consider both the

costs to the employer and the benefits to the employee. This section will look at various alternative

plan designs and contribution rates, and assess the impact of each on the finances of the Postal Service

and the well-being of Postal Service employees.

Any change to the system would raise transition issues, importantly, which employees would be

covered under the new plan. One possibility would be to limit participation to new employees, leaving

current FERS and CSRS participants in their respective systems. Over time, the percentage of employees

covered under those older systems would decline. Another alternative would be to allow employees to

elect whether to switch into the new system or remain with their current plan. A third but more

complicated possibility would be to switch all employees over to the new system immediately, freezing

their currently earned benefits and accruing future benefits under the new system.

It should be recognized that the stylized plans considered in the analysis that follows are

designed to put the retirement benefits offered by the Postal Service more in line with private sector

offerings. Chapter 1, Section 101 of Title 39 U.S.C. governing the Postal Service stipulates the following:

> "As an employer, the Postal Service shall achieve and maintain compensation for its officers and
> employees comparable to the rates and types of compensation paid in the private sector of the
> economy of the United States. It shall place particular emphasis upon opportunities for career
> advancements of all officers and employees and the achievement of worthwhile and satisfying
> careers in the service of the United States. (United States Government Code 8)

Comparison of Postal Service Compensation Levels with Other Sectors

Studies of Public versus Private Compensation Levels

There have been numerous students over time comparing federal and private sector compensation, but no recent study has made the comparison specifically for the Postal Service. For example, Congressional Budget Office (CBO) recently undertook such a study, but the data did not include the Postal Service. CBO's main findings were that the differences in wages of federal civilian employees between 2005 and 2010 differed widely depending on the educational attainment of the employee. Specifically the lower the educational attainment, the higher the wages for federal employment compared to a private sector employer on average, and the higher the educational attainment, the lower the wages for federal employment compared to a private sector employer on average. In addition, on average the federal workforce is older, more educated and more concentrated in professional jobs than the private sector (Falk VII-VIII).

With regard to benefits, the CBO study found that Federal workers received more generous benefits than their private sector counterparts, with the extent of the premium dependent on educational level. On average, the CBO found the cost of hourly benefits was 48 percent higher for federal civilian employees than for private sector employees. This premium was 46 percent for employees with a bachelor's degree, and 72 percent for employees with no more than a high school education when compared to private sector employees. The key driver of the premiums was the defined benefit plan available to Federal employees; that benefit is becoming increasingly rare in the private sector (Falk VIII-IX).

While the CBO study did not include the Postal Service, one can reasonably draw inferences about the likely relative compensation of the Postal Service workforce. Postal workers by and large fit into the lower skilled tier of the federal workforce. Because the Postal Service workforce receives the same benefits as other federal employees, CBO's benefit comparisons are applicable, and suggest that

postal workers probably receive significantly more generous benefits than similar private sector employee.

Aggregate Wages

In order to provide more direct evidence on how the Postal Service pension benefits and other components of compensation compare with those of other sectors, this study analyzes data from the Bureau of Labor Statistics (BLS) on employer costs for employee compensation in September 2012 in combination with data reported by the Postal Service. The BLS estimates the various components of compensation on an hourly basis. The BLS found an average total compensation of $30.80 per hour worked in September 2012, with wages and salary averaging $21.32 per hour worked, and benefits averaging $9.48 per hour worked. The total employer compensation costs for private industry averaged $28.95 per hour worked (Bureau of Labor Statistics 1).

In order to compare the Postal Service's compensation to these averages, its financial statements of 2012 were utilized. Employee costs were broken down in the Postal Service's 10-k filing, which show total compensation, retirement payments, health care benefit payments, and other. In addition, total work-hours for Fiscal Year 2012 were provided. Total costs were divided by work-hours to estimate the average cost per hour for various categories. The data provided by the BLS was also adjusted to be comparable to the data available from the Postal Service 10-k (the BLS provides data at a more granular level, and therefore was aggregated to the same categories provided by the Postal Service in order to make a level comparison). The BLS also provides data by various occupational groups, industry group, and government versus private enterprise. Table 14 summarizes the comparisons, which show that postal workers receive considerably higher levels of compensation than do other categories of workers.

Table 14 - USPS Employee Expenses by Hour compared to Private Sector Expenses by Hour

Category of Wages	Total USPS Cost (Millions)	USPS Employees	All Workers	Union Bargaining	Goods Producing	Service Producing
Wages and Other Benefits*	$ 36,279	$ 32.33	$ 24.94	$ 28.56	$ 27.17	$ 24.54
Retirement	$ 5,854	$ 5.22	$ 2.81	$ 4.62	$ 3.13	$ 2.75
Health Benefits	$ 5,187	$ 4.62	$ 2.62	$ 5.07	$ 3.05	$ 2.55
Other	$ 369	$ 0.33				
Total Compensation:	*$ 47,689*	*$ 42.50*	*$ 30.37*	*$ 38.25*	*$ 33.35*	*$ 29.84*
USPS Total Workhours	*1,122*					
Excluded Categories:						
Workers' Comp	3,729	$ 3.32	$ 0.44	0.89	0.75	0.38
Retiree Health Benefit Premiums	$ 2,629	$ 2.34				
PSRHBF Prefunding	$ 11,100	$ 9.89				

* Other benefits include paid leave, supplemental pay, insurance, medicare contributions, and federal and state insurance
(United States Postal Service (b) 33-36), (United States Department of Labor 5)

Alignment Requirements

An estimate was made of the average pension benefits received by a Postal Service employee for comparison with other workers to determine the percent change required to align benefits. The results are provided in table 15. The first estimate is based on the current retirement cost per work-hour. The remaining three estimates are based on the estimated annual salary for a new employee grown through time utilizing the methodology employed later in this chapter. This salary estimate was multiplied by the contribution level of USPS assuming a 9.6% FERS annuity contribution rate, a 6.2% Social Security rate and a 5% TSP match rate. It was assumed employees would work 40 hours per week for 50 weeks a year. The results indicate that for almost every class of employee, the benefits provided by the Postal Service exceed those provided by the private sector. The only case in which they do not is for an employee early in their career compared to a current union bargaining employee within the aggregate economy. Once that employee reaches the 10 year mark, however, their retirement benefit exceeds that of a union bargaining employee. These results will be utilized for comparison purposes with the plans simulated in the proceeding section.

Table 15 – Required percent change necessary to align USPS retirement cost per work-hour with alternative worker categories

Type of Worker:	Current USPS Rate	USPS Est. 5 Yr Employee	USPS Est. 10 Yr Employee	USPS Est. 15 Yr Employee
All Workers	-46.2%	-34.4%	-44.6%	-50.1%
Union Bargaining	-11.5%	7.8%	-8.9%	-17.9%
Goods Producing	-40.0%	-27.0%	-38.3%	-44.4%
Service Producing	-47.3%	-35.8%	-45.8%	-51.2%

Retirement Required Replacement Rates

A major component of pension planning is to understand the replacement rate of salary an individual should target. The RETIRE project at Georgia State University estimates the replacement income required to continue a pre-retirement standard of living into post-retirement. They take into account various components of the change in an individual's financial needs post retirement including tax changes, elimination of FICA tax, pre-retirement savings (assuming one would no longer be saving for retirement) and changes in household expenditures to arrive at an estimate (Palmer 5). Their estimates suggest that a single worker retiring at age 65 with an average salary of $50,000 would require a replacement ratio of approximately 80% -81% (Palmer 14). A similar academic analysis was performed by Marlena Lee, who estimated a target replacement rate utilizing similar changes in an individual's financial needs post retirement including changes in the tax framework, pre-retirement savings, and changes in household expenditures. The estimates provided by Lee suggest required replacement rate for an individual making between $49,941 and $86,882 approximately 61-73% of pre-retirement income (Lee 17). The range of these two estimates suggests a required replacement ratio of 61-81%. Both papers acknowledge the replacement ratio declines as income increases and that each individual's unique situation ultimately will inform the best target replacement level. The alternative retirement plans analyzed later in this chapter will be compared to these suggested replacement ratios to determine if the plan is likely to provide an adequate income.

* * * * *

Alternative Design Analysis

Description of Scenarios

To assess the impact of alternative pension systems on the finances of the Postal Service and its employees, simulations predicting future costs and benefit payments were run on the following scenarios:

- Reduced defined benefit plan, with more generous defined contribution plan
    - Plan 1: Current plan for comparison purposes
    - Plan 2: Current plan except for incremental increase in employee contributions of 3.1% towards the defined benefit portion of FERS (current law for new hires whose contribution has increased will be used for alternative plan comparison)
    - Plan 3: Reduce FERS defined benefit annuity by half and utilize .5% in calculation as opposed to 1%; automatically contribute 4% to TSP, make TSP match percentage 4%, and assume employees contribute 4%, so that total defined contribution is 12%.
    - Plan 4: Reduce FERS defined annuity by ¼, and utilize .25% in calculation as opposed to 1%; automatically contribute 4% to TSP, make TSP match percentage 6%, and assume employees contribute 6%, so that total defined contribution is 16%.
- Complete defined contribution plan, with employer match to encourage ownership and savings
    - Plan 5: USPS auto contribution of 6%, USPS Match of up to 6%, assumes employees contribute 6%, total defined contribution is 18%.
    - Plan 6: USPS auto contribution of 4%, USPS Match of up to 6%, assumes employees contribute 6%, total defined contribution is 16%.
    - Plan 7: USPS auto contribution of 2%, USPS Match of up to 8%, assumes employees contribute 8%, total defined contribution is 18%.
    - Plan 8: USPS auto contributions of 0%, USPS Match of up to 10%, assume employees contribute 10%, total defined contribution is 20%.
- Complete defined contribution plan of various contribution levels:
    - Plan 9: USPS auto contribution of 12%, assume employees contribute 5%, total defined contribution is 17%.
    - Plan 10: USPS auto contribution of 10%, assume employees contribute 5%, total defined contribution is 15%.
    - Plan 11: USPS auto contribution of 8%, assume employees contribute 5%, total defined contribution is 13%.
    - Plan 12: USPS auto contributions of 6%, assume employees contribute 5%, total defined contribution 11%.

Within these hypothetic plans, it is assumed an employee chooses to contribute up to the match of the company. The Thrift Savings Plan contribution data suggests the vast majority of employees

currently contribute up to the match. For those plans in which the employer automatically contributes to the defined contribution plan, and whatever savings the employee contributes is additional savings, the assumption utilized was a 5% contribution rate.

Graphs 12 and 13 summarize the 12 plan contribution levels. Graphs 14 and 15 translate those contribution shares into annual dollar amounts using the salary model described below.

Percent contributions for USPS and employee contributions:

Graph 12 - Percent Contributions for USPS and Employee for various plans
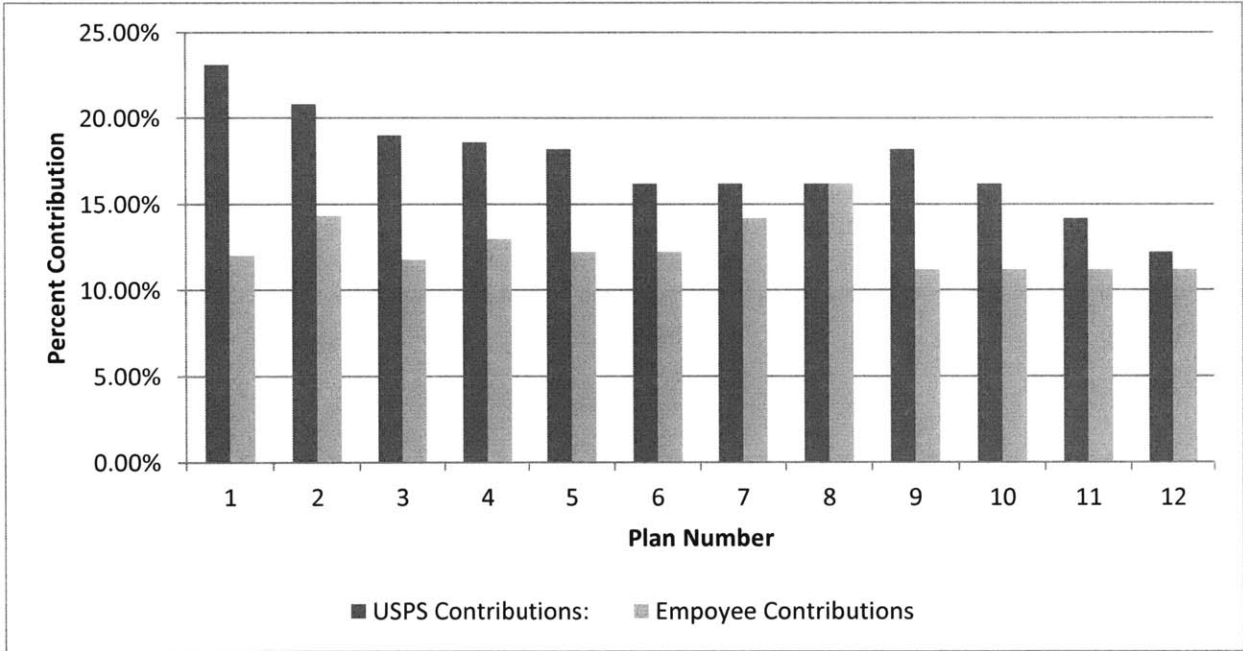
Graph 13 - Total Percent Contributions of USPS and Employee to various plans
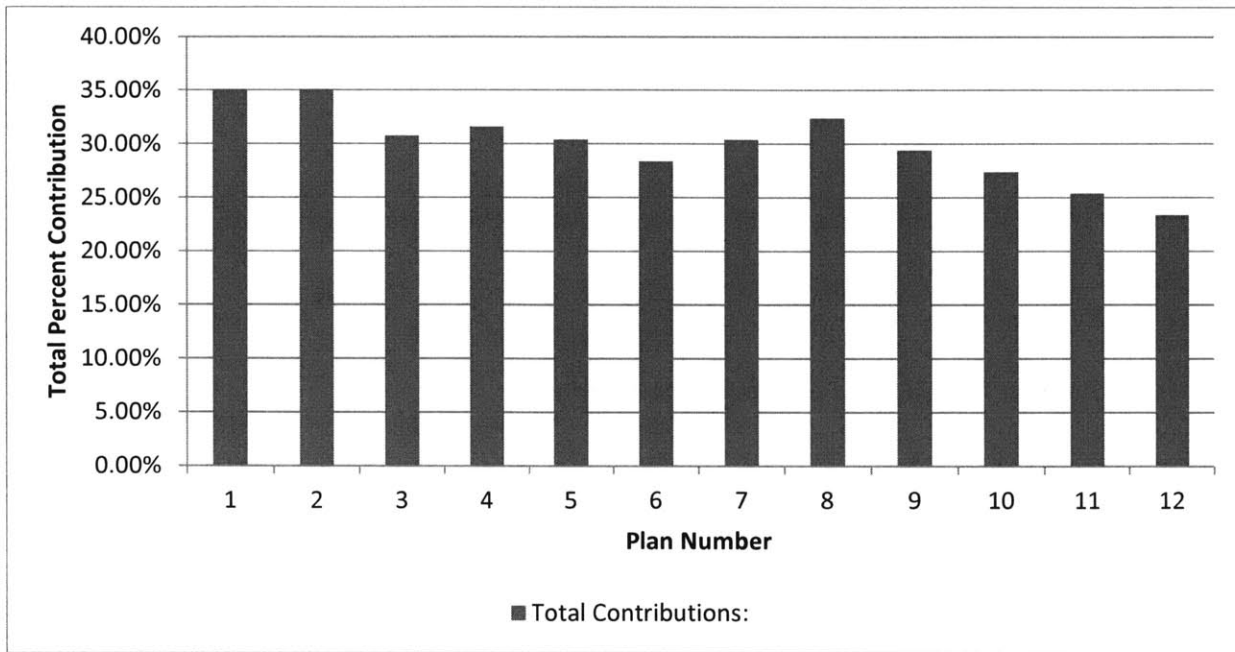
Percent contributions for USPS and employee contributions:

Graph 14 - Dollar contributions by USPS towards various plans, beginning and ending salary
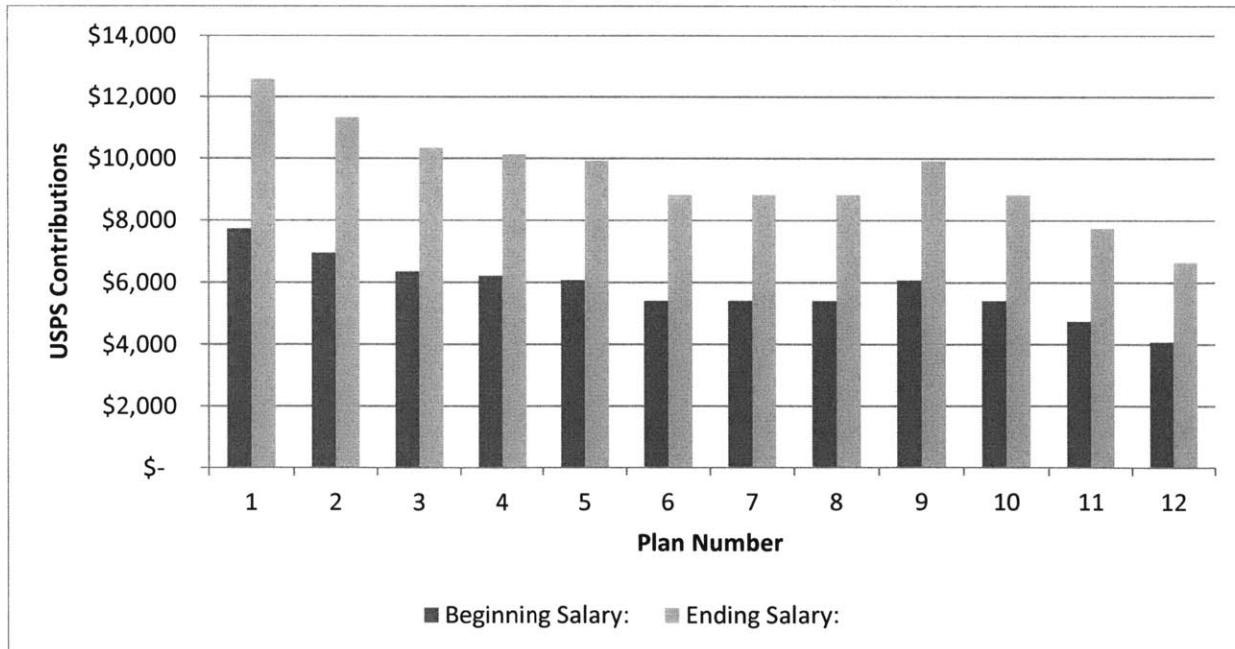
Graph 15 - Dollar contribution by Employee towards various plans, beginning and ending salary
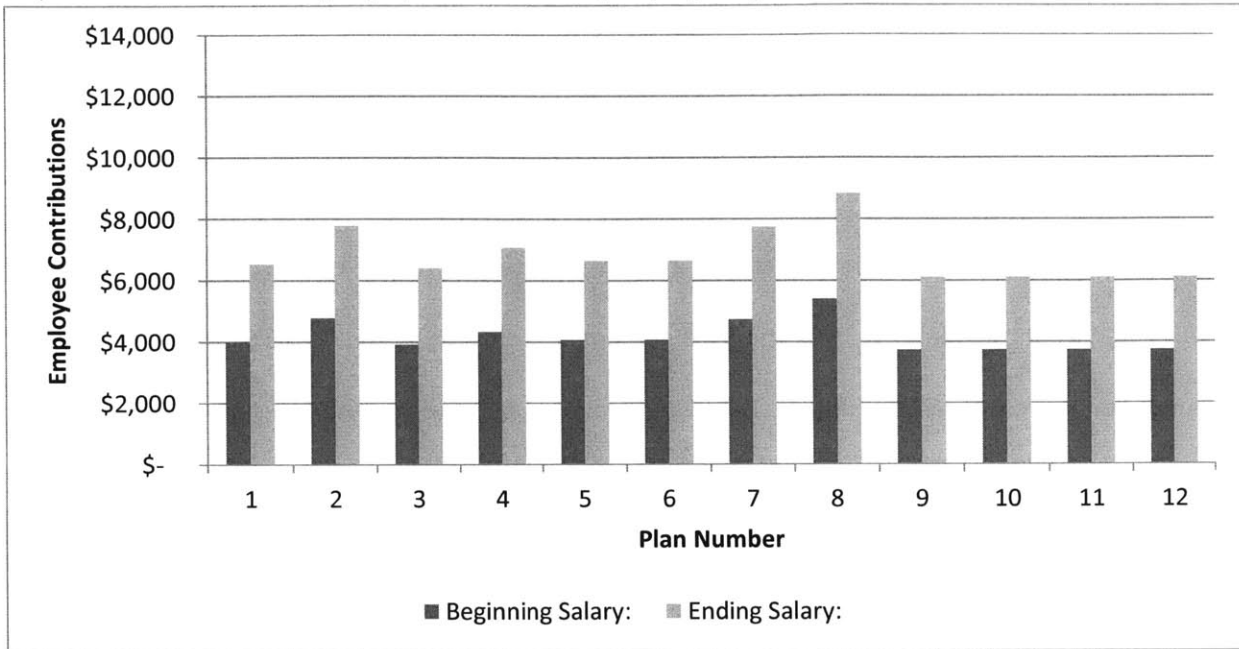
Description of Analytic Framework

This section provides an overview of the analytical framework that was used to assess the impact of these various scenarios on the Postal Service and its employees. A more detailed description of the analyses is provided in the Appendices.

Determine the new employee pool based on a simulation of the retirement of the current workforce

The first step of the analysis was to estimate future Postal Service employment levels, based on an assessment of the need for the future postal workers. In order to determine this need, and to identify the number of new workers that would be hired in each future year, a simulation was run that combined the current employee dataset with their current ages and the datasets that contain the average retirement ages and the variability of those retirement ages.

Determine the cost to the Postal Service of various scenarios

The alternative scenarios are evaluated under the assumption that only new employees would be enrolled in the new pension plan; existing workers would continue in their current plans. Based on

the estimated replacement workforce, an estimate of the benefits that would be paid under the various

scenarios is projected to determine the costs that would be borne by the Postal Service. The financial

analysis utilizes the wage rates expected for the average new employee each year and grown through

time, based on the Postal Service's current union contracts. For simplicity, results are reported in

current dollars, i.e., inflation was not taken into account, and therefore cost of living adjustments have

been excluded from the analysis. The estimated percent contribution by the Postal Service is applied to

the number of new employees multiplied by their average expected wage rate. This number is

compared to contributions by the Postal Service at the current required FERS contribution rate for new

employees to determine the savings that would occur. The second scenario which looks at costs and

benefits under current law takes into account that Public Law 112-96, Section 5001, the "Middle Class

Tax Relief and Job Creation Act of 2012,"changed the employee contribution rate for new employees

hired after January 2013. The rate for the agency is 9.6% and the rate for the employee is 3.1% (Office

of Personnel Management).

Determine the impact to individual employees through a simulation of the market environment

The final component of the analysis assesses the lifetime impact on an average new employee

of the Postal Service of each alternative scenario. The estimates take into account the tax deferred

nature of contributions. Projected benefits are estimated based on two different types of portfolios,

one in which a reasonably conservative mix of 50% stocks and 50% bonds is utilized, and one in which

100% of contributions are invested in a risk free investment (treasury bonds).

Results

Individual Employee Results

The following figures summarize the individual employee results obtained from the simulation

model. (More detailed results are provided in the appendix along with the assumptions and detailed

methodology utilized.) The first line provides the total percent of base salary which has been

contributed by employer and employee towards retirement inclusive of social security, any defined

benefit portion of the plan, and the defined contribution plan. The first section of the figure provides an

estimate of the total retirement income for the 12 plans when utilizing the risk free investment, as well

as the range of results associated with the potential outcomes based on the risky investment. The

second part of the figure provides an estimate of the replacement rate of retirement income compared

to the final year salary for the 12 plans when utilizing the risk free investment, as well as the range of

results associated with the potential outcomes based on the risky investment. There are four figures

which correspond to the type of annuity utilized: growing life annuity with no survivor benefits, a level

life annuity with no survivor benefits, a growing life annuity with survivor benefits and a level life

annuity with survivor benefits.

Figure 5 - Individual Employee Financial Impact Summary – Growing Life Annuity, No Survivor Benefits

Growing Life Annuity, No Survivor Benefits

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
USPS Cont.	23.1%	20.8%	19.0%	18.6%	18.2%	16.2%	16.2%	16.2%	18.2%	16.2%	14.2%	12.2%
Employee Cont.	12.0%	14.3%	11.8%	13.0%	12.2%	12.2%	14.2%	16.2%	11.2%	11.2%	11.2%	11.2%
Total % Cont.	**35.1%**	**35.1%**	**30.8%**	**31.6%**	**30.4%**	**28.4%**	**30.4%**	**32.4%**	**29.4%**	**27.4%**	**25.4%**	**23.4%**
TOTAL ESTIMATED INCOME												
RISK FREE												
Total:	$ 41,276	$ 41,276	$ 33,573	$ 32,469	$ 29,533	$ 27,701	$ 29,533	$ 31,365	$ 28,617	$ 26,785	$ 24,953	$ 23,121
RISKY:												
Minimum	$ 34,947	$ 34,947	$ 25,977	$ 22,342	$ 18,140	$ 17,574	$ 18,140	$ 18,707	$ 17,857	$ 17,291	$ 16,725	$ 16,158
10th Percentile	$ 41,319	$ 41,319	$ 33,624	$ 32,537	$ 29,610	$ 27,769	$ 29,610	$ 31,451	$ 28,690	$ 26,849	$ 25,008	$ 23,168
1st Quartile	$ 43,753	$ 43,753	$ 36,544	$ 36,431	$ 33,990	$ 31,663	$ 33,990	$ 36,318	$ 32,827	$ 30,499	$ 28,172	$ 25,845
2nd Quartile	$ 47,274	$ 47,274	$ 40,770	$ 42,066	$ 40,329	$ 37,298	$ 40,329	$ 43,361	$ 38,814	$ 35,782	$ 32,750	$ 29,718
3rd Quartile	$ 51,987	$ 51,987	$ 46,426	$ 49,606	$ 48,813	$ 44,838	$ 48,813	$ 52,787	$ 46,826	$ 42,851	$ 38,877	$ 34,903
PERCENT INCOME REPLACEMENT												
RISK FREE												
Percent:	75.7%	75.7%	61.6%	59.6%	54.2%	50.8%	54.2%	57.6%	52.5%	49.2%	45.8%	42.4%
RISKY:												
Minimum	64.1%	64.1%	47.7%	41.0%	33.3%	32.3%	33.3%	34.3%	32.8%	31.7%	30.7%	29.7%
10th Percentile	75.8%	75.8%	61.7%	59.7%	54.3%	51.0%	54.3%	57.7%	52.7%	49.3%	45.9%	42.5%
1st Quartile	80.3%	80.3%	67.1%	66.9%	62.4%	58.1%	62.4%	66.6%	60.2%	56.0%	51.7%	47.4%
2nd Quartile	86.8%	86.8%	74.8%	77.2%	74.0%	68.4%	74.0%	79.6%	71.2%	65.7%	60.1%	54.5%
3rd Quartile	95.4%	95.4%	85.2%	91.0%	89.6%	82.3%	89.6%	96.9%	85.9%	78.6%	71.3%	64.1%

Figure 6 - Individual Employee Financial Impact Summary - Level Life Annuity, No Survivor Benefits

Level Life Annuity, No Survivor Benefits

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
USPS Cont.	23.1%	20.8%	19.0%	18.6%	18.2%	16.2%	16.2%	16.2%	18.2%	16.2%	14.2%	12.2%
Employee Cont.	12.0%	14.3%	11.8%	13.0%	12.2%	12.2%	14.2%	16.2%	11.2%	11.2%	11.2%	11.2%
Total % Cont.	**35.1%**	**35.1%**	**30.8%**	**31.6%**	**30.4%**	**28.4%**	**30.4%**	**32.4%**	**29.4%**	**27.4%**	**25.4%**	**23.4%**
TOTAL ESTIMATED INCOME												
RISK FREE												
Total:	$ 46,079	$ 46,079	$ 39,336	$ 40,153	$ 38,178	$ 35,385	$ 38,178	$ 40,970	$ 36,781	$ 33,989	$ 31,196	$ 28,404
RISKY:												
Minimum	$ 36,431	$ 36,431	$ 27,759	$ 24,717	$ 20,812	$ 19,949	$ 20,812	$ 21,675	$ 20,381	$ 19,518	$ 18,654	$ 17,791
10th Percentile	$ 46,144	$ 46,144	$ 39,414	$ 40,257	$ 38,295	$ 35,489	$ 38,295	$ 41,101	$ 36,892	$ 34,086	$ 31,281	$ 28,475
1st Quartile	$ 49,853	$ 49,853	$ 43,865	$ 46,192	$ 44,972	$ 41,425	$ 44,972	$ 48,520	$ 43,198	$ 39,651	$ 36,103	$ 32,556
2nd Quartile	$ 55,221	$ 55,221	$ 50,307	$ 54,781	$ 54,634	$ 50,013	$ 54,634	$ 59,256	$ 52,324	$ 47,703	$ 43,081	$ 38,460
3rd Quartile	$ 62,405	$ 62,405	$ 58,927	$ 66,275	$ 67,565	$ 61,507	$ 67,565	$ 73,623	$ 64,536	$ 58,478	$ 52,420	$ 46,363
PERCENT INCOME REPLACEMENT												
RISK FREE												
Percent:	84.6%	84.6%	72.2%	73.7%	70.1%	64.9%	70.1%	75.2%	67.5%	62.4%	57.3%	52.1%
RISKY:												
Minimum	66.9%	66.9%	50.9%	45.4%	38.2%	36.6%	38.2%	39.8%	37.4%	35.8%	34.2%	32.7%
10th Percentile	84.7%	84.7%	72.3%	73.9%	70.3%	65.1%	70.3%	75.4%	67.7%	62.6%	57.4%	52.3%
1st Quartile	91.5%	91.5%	80.5%	84.8%	82.5%	76.0%	82.5%	89.0%	79.3%	72.8%	66.3%	59.7%
2nd Quartile	101.3%	101.3%	92.3%	100.5%	100.3%	91.8%	100.3%	108.7%	96.0%	87.5%	79.1%	70.6%
3rd Quartile	114.5%	114.5%	108.1%	121.6%	124.0%	112.9%	124.0%	135.1%	118.4%	107.3%	96.2%	85.1%

Figure 7 - Individual Employee Financial Impact Summary - Growing Life Annuity with Survivor Benefits

Growing Life Annuity, Survivor Benefits

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
USPS Cont.	23.1%	20.8%	19.0%	18.6%	18.2%	16.2%	16.2%	16.2%	18.2%	16.2%	14.2%	12.2%
Employee Cont.	12.0%	14.3%	11.8%	13.0%	12.2%	12.2%	14.2%	16.2%	11.2%	11.2%	11.2%	11.2%
Total % Cont.	**35.1%**	**35.1%**	**30.8%**	**31.6%**	**30.4%**	**28.4%**	**30.4%**	**32.4%**	**29.4%**	**27.4%**	**25.4%**	**23.4%**
TOTAL ESTIMATED INCOME												
RISK FREE												
Total:	$ 39,112	$ 39,112	$ 30,976	$ 29,006	$ 25,638	$ 24,238	$ 25,638	$ 27,037	$ 24,938	$ 23,539	$ 22,139	$ 20,740
RISKY:												
Minimum	$ 34,278	$ 34,278	$ 25,175	$ 21,272	$ 16,936	$ 16,504	$ 16,936	$ 17,369	$ 16,720	$ 16,288	$ 15,855	$ 15,423
10th Percentile	$ 39,145	$ 39,145	$ 31,015	$ 29,058	$ 25,696	$ 24,290	$ 25,696	$ 27,102	$ 24,993	$ 23,588	$ 22,182	$ 20,776
1st Quartile	$ 41,003	$ 41,003	$ 33,245	$ 32,032	$ 29,042	$ 27,264	$ 29,042	$ 30,819	$ 28,153	$ 26,376	$ 24,598	$ 22,821
2nd Quartile	$ 43,693	$ 43,693	$ 36,473	$ 36,336	$ 33,883	$ 31,568	$ 33,883	$ 36,199	$ 32,726	$ 30,410	$ 28,095	$ 25,779
3rd Quartile	$ 47,293	$ 47,293	$ 40,792	$ 42,095	$ 40,363	$ 37,327	$ 40,363	$ 43,398	$ 38,845	$ 35,809	$ 32,774	$ 29,739
PERCENT INCOME REPLACEMENT												
RISK FREE												
Percent:	71.8%	71.8%	56.8%	53.2%	47.0%	44.5%	47.0%	49.6%	45.8%	43.2%	40.6%	38.1%
RISKY:												
Minimum	62.9%	62.9%	46.2%	39.0%	31.1%	30.3%	31.1%	31.9%	30.7%	29.9%	29.1%	28.3%
10th Percentile	71.8%	71.8%	56.9%	53.3%	47.2%	44.6%	47.2%	49.7%	45.9%	43.3%	40.7%	38.1%
1st Quartile	75.2%	75.2%	61.0%	58.8%	53.3%	50.0%	53.3%	56.6%	51.7%	48.4%	45.1%	41.9%
2nd Quartile	80.2%	80.2%	66.9%	66.7%	62.2%	57.9%	62.2%	66.4%	60.1%	55.8%	51.6%	47.3%
3rd Quartile	86.8%	86.8%	74.9%	77.3%	74.1%	68.5%	74.1%	79.6%	71.3%	65.7%	60.1%	54.6%

Figure 8 - Individual Employee Financial Impact Summary - Level Life Annuity with Survivor Benefits

Level Life Annuity, Survivor Benefits

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
USPS Cont.	23.1%	20.8%	19.0%	18.6%	18.2%	16.2%	16.2%	16.2%	18.2%	16.2%	14.2%	12.2%
Employee Cont.	12.0%	14.3%	11.8%	13.0%	12.2%	12.2%	14.2%	16.2%	11.2%	11.2%	11.2%	11.2%
Total % Cont.	**35.1%**	**35.1%**	**30.8%**	**31.6%**	**30.4%**	**28.4%**	**30.4%**	**32.4%**	**29.4%**	**27.4%**	**25.4%**	**23.4%**
TOTAL ESTIMATED INCOME												
RISK FREE												
Total:	$ 43,559	$ 43,559	$ 36,312	$ 36,121	$ 33,642	$ 31,353	$ 33,642	$ 35,931	$ 32,498	$ 30,209	$ 27,920	$ 25,632
RISKY:												
Minimum	$ 35,653	$ 35,653	$ 26,824	$ 23,471	$ 19,410	$ 18,703	$ 19,410	$ 20,118	$ 19,057	$ 18,349	$ 17,642	$ 16,935
10th Percentile	$ 43,612	$ 43,612	$ 36,376	$ 36,207	$ 33,738	$ 31,439	$ 33,738	$ 36,037	$ 32,588	$ 30,289	$ 27,990	$ 25,690
1st Quartile	$ 46,652	$ 46,652	$ 40,024	$ 41,071	$ 39,210	$ 36,303	$ 39,210	$ 42,117	$ 37,756	$ 34,849	$ 31,942	$ 29,034
2nd Quartile	$ 51,052	$ 51,052	$ 45,303	$ 48,109	$ 47,129	$ 43,341	$ 47,129	$ 50,916	$ 45,235	$ 41,448	$ 37,661	$ 33,874
3rd Quartile	$ 56,939	$ 56,939	$ 52,368	$ 57,529	$ 57,726	$ 52,761	$ 57,726	$ 62,691	$ 55,244	$ 50,279	$ 45,314	$ 40,350
PERCENT INCOME REPLACEMENT												
RISK FREE												
Percent:	79.9%	79.9%	66.6%	66.3%	61.7%	57.5%	61.7%	65.9%	59.6%	55.4%	51.2%	47.0%
RISKY:												
Minimum	65.4%	65.4%	49.2%	43.1%	35.6%	34.3%	35.6%	36.9%	35.0%	33.7%	32.4%	31.1%
10th Percentile	80.0%	80.0%	66.8%	66.4%	61.9%	57.7%	61.9%	66.1%	59.8%	55.6%	51.4%	47.1%
1st Quartile	85.6%	85.6%	73.5%	75.4%	72.0%	66.6%	72.0%	77.3%	69.3%	64.0%	58.6%	53.3%
2nd Quartile	93.7%	93.7%	83.1%	88.3%	86.5%	79.5%	86.5%	93.4%	83.0%	76.1%	69.1%	62.2%
3rd Quartile	104.5%	104.5%	96.1%	105.6%	105.9%	96.8%	105.9%	115.0%	101.4%	92.3%	83.2%	74.0%

The results of the individual employee impact analysis suggest utilizing the risky investment will lead to returns in excess of the risk free investment in about 90% of instances. This excess return, however, is paid for with the risk that in 10% of instances, retirement income will be below the risk free rate, and in some instances significantly so. The research discussed earlier in this chapter suggests a replacement rate of approximately 60-80% of pre-retirement income for an employee on average, in most instances, the risk free rate can realize greater than 60% of pre-retirement income for retirement with a level life annuity and no survivor benefits, and in some instances reached greater than 80% of replacement income. The other types of plans would not allow for exceeding 80% replacement, with only the most generous alternatives providing greater than 60% in a risk free environment. For those plans that provide a defined benefit portion towards retirement (plans 1 – 4), the defined benefit portion can be considered a risk free investment for the employee (with the exception of changes to the law), but a risky investment by the employer, i.e., changes in discount rates can affect the payment owed by the employer. Plans that are utilizing match rates that are considered generous in the private

sector, for example plan 12 which contributes 6% of employee pay, with an assumption that the

employee contributes 5% assuming a level life annuity with no survivor benefits only provides

approximately 25% chance of supplying greater than 80% of pre-retirement income post career.

Another way of comparing the different types of annuities is to look at the risk free total

estimated income, as well as the percent income replacement for each:

Figure 9 - Comparison of Income amongst different types of life annuities utilizing the risk free investment

	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
Total Estimated Income:												
Growing Life Annuity, No Survivor Benefits	$41,276	$41,276	$33,573	$32,469	$29,533	$27,701	$29,533	$31,365	$28,617	$26,785	$24,953	$23,121
Level Life Annuity, No Survivor Benefits	$46,079	$46,079	$39,336	$40,153	$38,178	$35,385	$38,178	$40,970	$36,781	$33,989	$31,196	$28,404
Growing Life Annuity, Survivor Benefits	$39,112	$39,112	$30,976	$29,006	$25,638	$24,238	$25,638	$27,037	$24,938	$23,539	$22,139	$20,740
Level Life Annuity, Survivor Benefits	$43,559	$43,559	$36,312	$36,121	$33,642	$31,353	$33,642	$35,931	$32,498	$30,209	$27,920	$25,632
Income Replacement Percent:												
Growing Life Annuity, No Survivor Benefits	75.7%	75.7%	61.6%	59.6%	54.2%	50.8%	54.2%	57.6%	52.5%	49.2%	45.8%	42.4%
Level Life Annuity, No Survivor Benefits	84.6%	84.6%	72.2%	73.7%	70.1%	64.9%	70.1%	75.2%	67.5%	62.4%	57.3%	52.1%
Growing Life Annuity, Survivor Benefits	71.8%	71.8%	56.8%	53.2%	47.0%	44.5%	47.0%	49.6%	45.8%	43.2%	40.6%	38.1%
Level Life Annuity, Survivor Benefits	79.9%	79.9%	66.6%	66.3%	61.7%	57.5%	61.7%	65.9%	59.6%	55.4%	51.2%	47.0%

The results show the generous benefits offered through the current FERS plan. For example,

comparing the current FERS plan for new hires (plan 2) with an extraordinarily generous defined

contribution plan when compared to the private sector (plan 8), in which there is a 10% match of

employee contributions, the total contribution towards retirement has decreased from 35.1% to 32.4%

or a reduction of 7.69%, whereas the income generated utilizing a risk free investment has declined

from $41,276 to $31,365, or a difference of 21.05%. In assessing the cause of the difference, an

estimate was made as to the rate of return that would have to be realized on the contributions towards

the FERS defined benefit annuity in order to obtain the necessary funds to purchase a growing life

annuity that pays the same profile as the FERS defined benefit annuity which was $19,072 (1% times the

high-3 average salary times the number of years of employment: 1%*35 Yrs * $54,490). The cost of an

annuity that would pay a growing life annuity beginning with $19,072 in the first year was estimated

utilizing the same FERS annuity factors. That cost was $514,337.66. In order to obtain this level of

investment at the end of an individual's career, the return on the contributions would have to yield a

4.68% return. This return is significantly higher than the current risk free rate and accounts for the premium that is obtainable through the current FERS annuity.

Cautionary Note on Cost Savings Results

The reported results are quite sensitive to a number of uncertain assumptions. Of particular note is the estimate of future retirement age under the current FERS system for existing legacy employees. That age is inferred from historical FERS retirement data from 2000 to 2012, a period during which FERS employees hired in 1983 were first eligible for retirement. Graph 18 summarizes the average age at retirement for these employees. It appears to be relatively stable during this period with a standard deviation of average retirement age over the period of .742 years, which would indicate that there is an age at which retirement is most likely is to occur. However, it is also possible that this sample is not representative of future retirement trends, and in particular that the average retirement age may increase. This would render the assumed hiring needs inflated, and cause some savings to appear earlier than what would actually occur.

USPS Retirement Results

Table 16 summarizes the results associated with the retirement age simulation. The first panel provides the results from 2013 – 2021 while the second provides the results associated with 2022 – 2030. The full simulation results are provided in the appendix, along with a detailed description of the assumptions and methodology.

Table 16 - USPS Workforce Projections (2013 – 2030)

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Remaining Legacy Employees									
Minimum	282,031	260,977	227,254	214,008	187,275	159,631	144,813	129,758	105,411
10th Percentile	374,191	353,915	332,832	311,168	289,320	267,502	245,957	224,546	203,678
1st Quartile	390,482	371,293	351,010	329,948	308,612	286,929	265,603	244,388	223,394
2nd Quartile	407,846	389,872	370,654	350,424	329,568	308,393	287,245	266,247	245,032
3rd Quartile	423,927	407,122	389,191	369,981	350,043	329,613	308,890	287,882	266,789
Total New Employees									
Minimum	-	-	-	-	-	-	-	-	9,343
10 Percentile	-	18,351	24,764	29,835	35,974	46,996	61,709	79,861	97,042
1st Quartile	-	32,878	39,535	44,856	51,583	63,678	79,413	98,617	116,412
2nd Quartile	-	50,128	57,202	62,889	70,082	83,310	100,055	119,943	137,957
3rd Quartile	-	68,706	76,101	81,942	89,393	103,569	121,196	141,694	159,428

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Remaining Legacy Employees									
Minimum	90,223	90,218	67,289	67,289	55,884	43,224	40,434	33,841	28,111
10th Percentile	184,178	165,467	148,301	132,153	116,998	103,293	90,966	79,843	69,178
1st Quartile	202,849	183,515	165,193	148,147	132,183	117,174	103,446	91,185	80,053
2nd Quartile	224,096	203,995	185,021	166,725	149,629	133,867	118,951	105,210	92,827
3rd Quartile	245,563	225,043	205,449	186,444	168,244	151,308	135,732	121,101	107,229
Total New Employees									
Minimum	22,718	45,569	54,390	65,579	76,117	103,903	115,030	133,238	147,668
10 Percentile	114,303	131,194	147,933	163,634	178,341	192,361	205,044	216,957	227,820
1st Quartile	133,937	150,756	166,619	181,533	195,783	208,839	220,603	231,499	241,199
2nd Quartile	155,198	171,602	186,687	200,962	214,074	225,950	236,863	246,618	255,055
3rd Quartile	176,225	191,811	206,091	219,443	231,409	242,244	251,908	260,372	267,640

Of particular note, the analysis suggests that the Postal Service could face an unstable labor force over much of the coming decade. The estimated worker need was based on workload projections into the future. The estimated number of employees that would retire was based on the distribution of retirement ages utilizing the historic retirement ages. There is significant uncertainty within this dataset; the retirement decision is an individual one and the current legacy employee profile may not conform to the historical retirement profile. Based on the current workforce age demographics and historical retirement patterns the hiring needs of the organization in the immediate future have a large distribution from a low of 0 to over 80,000 employees by 2016. This suggests significant due diligence must be taken when it comes to hiring new employees in an environment of increasing ages leading to increased retirement eligibility and declining workforce needs due to reduced workload levels. This

insight combined with the current age of the workforce will mean it is possible the average workforce age could increase even more before new hiring brings it down which could have serious impacts on productivity trends within the organization.

Effects of Contribution Changes

Table 17 highlights the recent change in the required employee contribution towards the FERS annuity, which has increased the employee's share by approximately 19.2% and decreased USPS contributions by 10%. The table also summarizes the percent change in contribution levels for alternative scenarios 3 to 12 relative to the new contribution levels for newly hired employees under FERS. In all instances the total contributions decline relative to the current system; those lower contribution levels were chosen to be more in line with private sector practice.

Table 17 - Percent change of contribution towards retirement plans from current plans

	New FERS v. Legacy FERS	3 v. New FERS	4 v. New FERS	5 v. New FERS	6 v. New FERS	7 v. New FERS	8 v. New FERS	9 v. New FERS	10 v. New FERS	11 v. New FERS	12 v. New FERS
USPS Contribution Change	-10.0%	-8.7%	-10.6%	-12.5%	-22.1%	-22.1%	-22.1%	-12.5%	-22.1%	-31.7%	-41.3%
Employee Contribution Change	16.4%	-15.6%	-8.1%	-12.8%	-12.8%	-0.6%	11.6%	-18.9%	-18.9%	-18.9%	-18.9%
Total Contribution Change	0.0%	-12.4%	-10.0%	-13.4%	-19.1%	-13.4%	-7.7%	-16.2%	-21.9%	-27.6%	-33.3%

The various alternative plans provide savings for the Postal Service of anywhere from 8.7% to 41.3% per employee due to a reduction or elimination of costs associated with the annuity portion of the benefit. In addition, all the plans, save one, lead to a reduction in the employee contributions. The current contribution by employees who are contributing up to the full match in combination with the new required FERS contribution is 8.1% (5% match + 3.1% annuity) of base salary. The sole exception is plan 8, which would match up to 10% of an employee's salary. Most of the reduction in the employee contributions is from the elimination of the 3.1% required annuity payment.

USPS Aggregate Savings Results

Table 18 summarizes the financial implications of the alternative scenarios for the Postal Service. (The Appendix provides more detailed results and a description of the methodology used.) The first panel provides the range of net present values of savings associated with the alternative plans. The

second panel provides the range of values for the year 2020 savings associated with the alternative plans. The third panel provides the range of values for the 2030 costs minus the year 2013 costs. For purposes of the table, the Current plan represents a combination of the existing legacy FERS employees and the newly hired FERS employees in which the Postal Service contribution towards the defined benefit plan has been reduced.

Table 18 - USPS Financial Impact Summary (In Thousands)

Cost Impact	Current	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
NPV - 2013 - 2030											
Minimum	n/a	$ (548)	$ (670)	$ (792)	$(1,402)	$(1,402)	$(1,402)	$ (792)	$(1,402)	$(2,011)	$(2,620)
10th Percentile	n/a	$(1,107)	$(1,353)	$(1,599)	$(2,830)	$(2,830)	$(2,830)	$(1,599)	$(2,830)	$(4,060)	$(5,290)
1st Quartile	n/a	$(1,222)	$(1,494)	$(1,766)	$(3,124)	$(3,124)	$(3,124)	$(1,766)	$(3,124)	$(4,482)	$(5,840)
2nd Quartile	n/a	$(1,351)	$(1,651)	$(1,951)	$(3,451)	$(3,451)	$(3,451)	$(1,951)	$(3,451)	$(4,952)	$(6,452)
3rd Quartile	n/a	$(1,480)	$(1,809)	$(2,138)	$(3,783)	$(3,783)	$(3,783)	$(2,138)	$(3,783)	$(5,428)	$(7,072)
Year 2020 Savings											
Minimum	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10th Percentile	n/a	$ (58)	$ (71)	$ (84)	$ (148)	$ (148)	$ (148)	$ (84)	$ (148)	$ (213)	$ (277)
2nd Quartile	n/a	$ (87)	$ (106)	$ (125)	$ (221)	$ (221)	$ (221)	$ (125)	$ (221)	$ (317)	$ (414)
3rd Quartile	n/a	$ (102)	$ (125)	$ (147)	$ (260)	$ (260)	$ (260)	$ (147)	$ (260)	$ (374)	$ (487)
Year 2030 Cost Minus Year 2013 Cost											
Minimum	$ (1,024)	$(1,187)	$(1,222)	$(1,257)	$(1,432)	$(1,432)	$(1,432)	$(1,257)	$(1,432)	$(1,607)	$(1,781)
10th Percentile	$ (1,402)	$(1,615)	$(1,662)	$(1,709)	$(1,941)	$(1,941)	$(1,941)	$(1,709)	$(1,941)	$(2,170)	$(2,397)
1st Quartile	$ (1,467)	$(1,683)	$(1,731)	$(1,779)	$(2,016)	$(2,016)	$(2,016)	$(1,779)	$(2,016)	$(2,252)	$(2,487)
2nd Quartile	$ (1,535)	$(1,753)	$(1,802)	$(1,850)	$(2,093)	$(2,093)	$(2,093)	$(1,850)	$(2,093)	$(2,336)	$(2,578)
3rd Quartile	$ (1,599)	$(1,819)	$(1,868)	$(1,917)	$(2,164)	$(2,164)	$(2,164)	$(1,917)	$(2,164)	$(2,412)	$(2,662)

Those findings suggest there is savings to be realized through a change to the retirement benefit offered to new employees. Due to the declines in labor needs, the savings associated with year 2020, a point approximately 7 years away, are not of tremendous magnitude mostly due to the labor needs of the Postal Service in the immediate future declining as individuals retire, therefore leading to little new hiring. The net present value for the period 2013-2030 is significant, and the comparison of year 2030 cost minus year 2013 cost vis-à-vis the current plan suggests savings of over $250 million (in today's dollars) can be realized through changes in the retirement plans.

Chapter 10 - Legal, Union, and Human Resource Considerations

Legal Considerations

The major impediment to change from a legal perspective is the law that requires the Postal

Service to participate in the Federal Retirement Benefit system. A change to the current requirement

would require an Act of Congress signed by the President. Such legislative changes have occurred many

times during the history of the Postal Service. Other legal considerations would be similar to those

faced by other organizations changing their pension system. If the Postal Service were to apply the new

system only to newly hired employees, many of the issues related to the legal framework of pensions

would not be of concern. In addition, many organizations have faced questions of fiduciary

responsibility and the liability associated with individuals who are not prepared for retirement based on

their decisions during their working career which is something the Postal Service will have to investigate

as part of any change to the pension system.

Union Considerations

Unions are interested in the general welfare of their members. It is critically important for them

that any changes to the system are fair and provide sufficient retirement benefits for their members. A

search of the major Postal union websites has found limited discussion regarding pension changes, with

only the Mail Handler union discussing a change to a defined contribution type of system. The major

focus of the article, however, was on changes to health benefits, with the reference towards retirement

changes made in passing. At this point, the main motivation of the Postal Service unions appears to be

the focus on the protection of their current members' wages and benefits.

Human Resource Considerations

The education of workers concerning any new pension plan is critical. Based on the findings of

the thrift savings plan analysis, many individuals are choosing not to contribute towards their own

retirement, and those individuals tend to be at the lower pay scales, heavily concentrated in the union

positions, and relatively younger. In order to ensure a reasonable replacement level of income, these employees must contribute to their retirements. In addition, mandatory default contributions in which an employee when hired automatically contributes can provide an additional method to ensure employees contribute. Most employees leave their default election unaltered.

Without adequate pension plans, and no lay-off clauses, employees will have incentive to remain in the workplace until they feel they can afford retirement. If the Postal Service implements a system that does not provide sufficient means for retirement, the ability to retire older individuals will prove difficult, and may lessen the flexibility of the Postal Service's human resource capital especially in an environment of no-layoff clauses within employment contracts. The current retirement data provides insights on the age of retirement, with FERS employees retiring at later ages as opposed to CSRS employees; those FERS employees average retirement age corresponding very closely with the earliest point in which Social Security can be collected. In addition, the academic research by Friedberg and Webb discussed in Chapter 2 found workers with defined benefit plans retire almost two years earlier on average than workers with defined contribution plans. The combination of no defined benefit portion of the retirement system, and the age of Social Security in which full benefits can be collected increasing is likely to impact the future age at which employees are likely to retire. If this is so, care must be taken in determining hiring levels, especially as they are met with changing workload needs due to changing mail volumes.

Chapter 11 – <u>Conclusions, Recommendations and Further Areas of Research</u>
Conclusions

This objective of this thesis was to perform a historical retrospective of the development of the pension system that the Postal Service is currently a participant, assess the impact the pension system has had on the Postal Service through history, and determine the impact of alternative systems on the Postal Service as well as its employees. Throughout the research, the intricate relationship between the Postal Service and the federal government has stood out, with the recognition that the pension liabilities have affected the laws governing the Postal Service since its inception. In light of this complex relationship, an assessment was made to determine the impact to the Postal Service of changing its system allowing it to migrate to a system whereby the unfunded liabilities would no longer be an issue for future employees while enabling the organization to more closely resemble the private sector in terms of benefits offered, thereby leading to a reduction in costs.

The focus of the research was to first understand why there are pensions, and how the Postal Service's pension system evolved to its current state. The initial assessment reviewed the development of private pensions, as well as the rationale for providing pensions through a review of pension economics. The next component reviewed the historical development of pensions in the federal sector in the U.S. which provided insight into the evolution of the system that the Postal Service is currently a participant. The next component focused on the Postal Service itself, looking at the current fundamentals of the system, and the contribution patterns of current Postal employees. The remainder of the thesis provided insight into alternative pension designs, and what the impact would be to the Postal Service and Postal employees based on changes to the system.

The history of pensions in both the public and private sector make it clear benefits that were promised were too expensive to provide. Many inadequate assumptions were made which precipitated many of the issues seen within pension systems throughout the country and government. The history of the Federal Pension system has greatly affected the legal framework governing the Postal Service. Every

law that has been passed over the last 10 years has come about due to the pension systems, with most of the laws passed since independence coming about due to pension issues. Long-term liabilities are a significant issue for the federal government and the relationship between the Postal Service and the Federal Government may not always leave the two in alignment in terms of strategy, specifically the unified Federal budget versus the Postal Service operating environment. A system that would eliminate the defined benefit pension plan would eliminate some of the misalignment between the two entities.

The history of the private pension system and Postal pension system highlight the unintended consequences of actions. Some of these include the creation of 401k plan, the impact ERISA legislation has had on companies and their decision to offer defined benefit plans and the suggestion by the Postal Service that they utilize the escrow account to prefund retiree health benefits. While the notion of prefunding in and of itself makes sense economically, if benefits are promised in the future, they ought to be paid for when they are earned, the accelerated timeline to make up contributions is one that can give one pause.

The research on pension economics makes it clear that pensions have evolved as a means to provide for individuals after their working career is over. Pensions provide employees a reasonably straightforward mechanism to save for retirement, either through contribution by employers which can be considered deferred compensation, or employees which can be considered retirement investment. Pensions provide companies a means of differentiation to attract and retain workers, as well as retire older workers, who without a pension may choose to stay in the workforce even when their marginal product falls below their wages.

Based on the research performed, a change in the pension system will not be a short-term fix for the Postal Service. Even the most optimistic simulation results do not show significant savings for the organization until beyond 2017 due to the declining workforce needs in the upcoming years. Due to these workforce need declines significant care must be taken over the next several years in terms of

assessing hiring needs for the organization. The analysis performed in Chapter 7, highlights the organization's aging workforce, and one in which a significant number are past the average year of retirement based on recent retirement history. This creates several risks for the organization which include productivity declines due to the labor intensive type of work performed, as well as the risk that hiring could be required to fulfill work shortages in the short term, prior to workload declines which are expected to occur in the future.

Changing the retirement system is a long term commitment to realigning the benefits of Postal Employees to the comparable private sector. As seen in Chapter 8 and 9 within the context of the private comparability standard within Title IX of the Postal Service's legal framework, the organization currently is providing significantly higher pension benefits than the private sector and is therefore an area the organization can potentially utilize to decrease its labor costs.

From an individual employee perspective, there are areas of concern with any changes to the pension plans. One consideration is how such a switch is to be performed. Within the framework of this thesis, the assumption was that the new retirement system would be for new employees hired by the organization, and existing employees would continue within the existing pension framework. This limits the disruption, but also limits the savings opportunity. For new employees entering into this new system, however, the research suggests that for Postal Employees, and in particular, unionized employees, lower wage and younger workers must be educated as to the benefits of contributing towards their defined contribution plan. Currently, these employees have the highest levels of 0 contributions towards retirement which greatly inhibit what their standard of living will be post retirement. In an alternative pension environment in which all of the benefit comes through contributions provided by the employee and matched by the employer, it is even more important that appropriate education is provided to ensure workers contribute towards retirement.

In assessing alternative plans, the current benefits offered exceed those provided within the private sector. The plan designs simulated within this thesis provide a general idea of the retirement income opportunity available to employees. There are so many options and assumptions that could have been utilized, but to be reasonable from a time perspective, as well as provide relevant information, reasonably conservative assumptions were utilizing, assessing a risk free portfolio, as well as a 50/50 portfolio containing stocks and bonds. The results of this analysis highlight that the required savings in order to provide a comfortable retirement income when retiring at 62 is significant. For current FERS employees, approximately 35% of base salary is saved through social security, the FERS annuity, or the TSP defined contribution plan, and assuming a risk free rate of return, provides 71.8% - 84.6% of final salary depending on the type of life annuity chosen for the defined contribution portion of TSP. The problem with this system, however, is it is simply too expensive in light of the current cost issues of the Postal Service. The simulated plan that provides the highest income to employees without requiring the FERS defined benefit portion is a system that matches up to 10% of employee base pay. Of interesting note with that contribution level is the fact that the 90th percentile organization in terms of defined contribution benefits provided a 6% match which should cause concern for the general opportunity for individuals to have sufficient accumulated assets for retirement. The benefit provided through the FERS defined benefit portion is available due to the rate of return inherent within the system. The current estimated rate is 4.68% is significantly higher than a 2% risk free rate.

Critique of the methods utilized

No one can forecast the future, and therefore, relying upon historical events to guide future understandings is fraught with error. The methodologies employed within this thesis are based on normal best practices within the investment community and provide a reasonable sense of what individuals can expect in retirement. That being said past is not necessarily prologue and the actual results may be more or less than those provided within this study. In addition, the current environment

related to interest rates and investment returns is one of significant turmoil. Discussions of defined contribution plans within this environment usually lead to concerns about investment returns that were not had in periods of positive investment return and higher general interest rates. Considering future estimated investments assuming a continuing period of low interest rates allows for significant conservatism in calculations and can provide comfort as to the ability to achieve such results.

Recommendations for further action

The Postal Service should begin now educating workers on the importance of planning for retirement. The research makes it clear; too many individuals within the organization are not contributing towards their retirement, foregoing the company match. Even if the employee were to contribute to receive the match, withdraw the money and pay the 10% tax penalty, they still would be better off economically than if they did not contribute, since they would receive the 1% agency match, with the 4% match of up to 5%.

Any change to the retirement system will require an act of Congress. Sufficient discussion should be held with both parties to suggest changes to the retirement system that can realize future benefits. Utilizing an approach of only applying the changes to new employees may lessen the opposition and allow for meaningful changes to the retirement systems. There have been bills introduced that would simply eliminate the FERS defined benefit portion of the retirement system. Based on the analysis performed, the current defined contribution benefit would not be sufficient to fund a reasonable retirement.

The Postal Service needs to assess its future workforce needs in light of the age of its workforce. The majority of individuals within the organization fall between the ages of 51 and 60 (over 240,000 individuals). This creates a very unstable workforce over the next 10 years when the average retirement age for a FERS employee is 61.2 which has held very stable over the past 10 years. In addition,

consideration must be given to how to make the organization attractive to younger individuals in light of the fact that less than 11% of the entire workforce is currently less than 40 years old.

Further areas of research

The arena of retirement planning and pension systems is vast, and one in which one thesis cannot possibly contain. Based on the research and analysis performed in this thesis additional avenues of additional research are suggested. Future research should assess the broader federal government and their pension systems and how any withdrawal of the Postal Service could affect the finances of the government.

The research was based on an assumed investment within certain asset classes and the risk free asset class. Other areas of investment should be assessed, looking specifically at the employee life cycle for a typical postal employee. This would allow for a broader understanding of the individual employee and provide a more tailored assessment of the retirement needs of the individual, and what contribution should be required in order to fulfill their needs. This thesis was based on an assumed contribution rate, as opposed to assessing the desired income levels and then determining the required contribution.

Many state and local governments have modified their pension systems and focused on utilizing defined contribution plans to control their costs, as well as unfunded liabilities. Assessing how these changes have impacted the employees can provide insight as to the best practices for changes, and determine what may not work when changing the pension system. In addition, understanding the union concerns and how they were dealt with would be of interest to any future changes to the retirement systems.

The defined contribution pension revolution is still very much in its infancy, even though defined contribution plans have been around for over 3 decades. Understanding how the defined contribution pension plan affects the retirement of individuals when a greater majority of individuals rely solely on

this type of plan would be of interest to determine what changes to the typical defined contribution

plan should be made. This type of research cannot come about for many years, as the dataset of

individuals who have only had access to a defined contribution plan throughout their entire career is

limited.

* * * * *

In conclusion, the creation of adequate retirement income for an employee must be balanced

with the financial realities of the organization. As Studebaker provided the "focusing event" for pension

reform in the 1970s, the realities of the Postal Service's financial condition may provide another

focusing event for pension reform in the federal sector. The question is not about whether we should

provide pension benefits to employees; the question is to what extent we can afford to provide these

benefits, and what is fair in light of the changes experienced in the private sector. This thesis provides

some insight as to what a reformed pension system might look like from a cost and benefit perspective

and provides insights into the opportunity the Postal Service currently has with an anticipated

reshuffling of its workforce due to the demographic realities. These demographic realities are

compounded across the federal government and provide a significant opportunity for controlling the

costs of the country.

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Appendix

U.S. POSTAL SERVICE
RETIREMENT COSTS
FY 1970 - 2012
($ MILLIONS)

Fiscal Year	CSRS Retirement	CSRS Unfunded Liability	CSRS OBRA of 1987	CSRS / Dual Retirement	Dual OASDI	FERS OASDI	FERS Retirement	FERS Thrift Savings	FERS Fiduciary Insurance	FERS Unfunded Liability	Other OASDI	Annuitant COLA OBRA 1990	Annuitant COLA OBRA 1990	Retroactive OBRA 1990	Retroactive OBRA 1993	Total	Employee Count	Cost/Employee	Total Cost (Inflation Adjusted)	Inflation Adjusted USD Cost/Employee
1970	347.4										13.6					361.0	725,913	$ 497	$ 2,083	$ 2,869
1971	410.1										22.4					432.5	723,581	$ 598	$ 2,416	$ 3,339
1972	445.7	63.0									12.7					521.4	707,674	$ 737	$ 2,817	$ 3,980
1973	451.7	108.1									12.4					572.2	684,192	$ 836	$ 2,844	$ 4,156
1974	517.0	182.7									14.4					714.1	704,016	$ 1,014	$ 3,159	$ 4,487
1975	544.6	207.6									14.2					766.4	693,253	$ 1,106	$ 3,171	$ 4,573
1976	616.5	385.9									17.4					1,019.8	683,590	$ 1,492	$ 4,023	$ 5,885
1977	627.3	448.8									16.1					1,092.2	667,688	$ 1,636	$ 4,038	$ 6,048
1978	655.2	522.4									14.8					1,192.4	661,958	$ 1,801	$ 4,044	$ 6,109
1979	737.3	667.2									16.0					1,420.5	673,057	$ 2,111	$ 4,252	$ 6,318
1980	782.2	675.0									15.5					1,472.7	679,184	$ 2,168	$ 3,918	$ 5,769
1981	801.4	738.1									16.7					1,556.2	680,327	$ 2,287	$ 3,801	$ 5,587
1982	868.0	852.5									16.1					1,736.6	680,280	$ 2,553	$ 4,085	$ 6,005
1983	887.0	976.6									17.5					1,881.1	688,791	$ 2,731	$ 4,264	$ 6,190
1984	897.2	949.8		15.4	25.0						20.5					1,907.9	725,086	$ 2,631	$ 4,160	$ 5,737
1985	1,008.2	1,251.8		107.0	139.3						28.9					2,535.2	755,684	$ 3,355	$ 5,326	$ 7,047
1986	1,005.2	1,354.8		186.7	240.6						36.6					2,823.9	778,470	$ 3,628	$ 5,868	$ 7,537
1987	981.6	1,366.5		76.4	97.4	209.3	397.2	50.1	0.5		35.9					3,214.9	805,085	$ 3,993	$ 6,396	$ 7,945
1988	995.8	1,568.2	350.0	20.5	21.6	365.0	665.4	106.7	0.3		39.0					4,132.5	829,899	$ 4,980	$ 7,874	$ 9,488
1989	977.4	1,617.5		27.3	25.9	456.1	783.6	143.1		32.2	40.9					4,104.0	835,024	$ 4,915	$ 7,473	$ 8,949
1990	939.7	1,658.5		27.8	28.1	534.5	879.4	185.0		32.2	44.2		73.6			4,403.0	829,033	$ 5,311	$ 7,556	$ 9,114
1991	917.2	1,775.2		28.6	29.8	612.6	992.3	229.8		32.2	52.3	421.0		1,502.8		6,593.8	829,854	$ 7,946	$ 10,979	$ 13,230
1992	941.9	1,895.8		31.2	31.7	648.7	1,060.5	275.8		32.2	61.8	490.8		64.3		5,534.7	825,737	$ 6,703	$ 8,955	$ 10,845
1993	828.1	1,938.3		31.1	32.8	701.5	1,093.0	303.5		32.2	119.6	550.7		54.3	570.5	6,255.6	826,768	$ 7,566	$ 9,851	$ 11,915
1994	830.4	1,995.9		33.6	34.8	779.5	1,230.3	339.8			135.4	620.0		41.2	28.5	6,069.4	857,590	$ 7,077	$ 9,309	$ 10,855
1995	842.9	2,133.8		34.4	34.5	838.7	1,270.0	400.1			135.0	688.7		22.4	30.0	6,430.5	870,160	$ 7,390	$ 9,619	$ 11,054
1996	877.1	2,362.1		36.3	34.5	906.5	1,472.9	489.1			141.4	749.9			31.5	7,101.3	887,546	$ 8,001	$ 10,280	$ 11,583
1997	869.8	2,396.8		36.0	34.2	1,000.1	1,590.3	551.7			142.6	817.3			21.5	7,460.3	898,384	$ 8,304	$ 10,619	$ 11,820
1998	848.9	2,447.7		36.2	34.2	1,089.9	1,640.1	607.6			116.9	859.1			11.1	7,691.7	909,639	$ 8,456	$ 10,775	$ 11,845
1999	816.5	2,505.4		35.1	32.6	1,197.4	1,823.6	681.1			109.4	902.7				8,103.8	919,214	$ 8,816	$ 11,055	$ 12,027
2000	795.1	2,597.5		35.1	32.8	1,278.1	1,943.9	750.3			116.2	980.2				8,529.2	917,223	$ 9,299	$ 11,255	$ 12,270
2001	768.5	2,623.5		33.5	31.7	1,341.3	2,046.4	788.8			125.2	1,125.9				8,884.8	899,351	$ 9,879	$ 11,545	$ 12,837
2002	739.8	2,635.1		32.6	30.6	1,369.0	2,121.4	826.9			111.3	1,238.3				9,105.0	865,242	$ 10,523	$ 11,556	$ 13,356
2003	1,127.5	124.5		52.4	28.9	1,410.9	2,172.3	853.7			104.5					5,874.7	835,853	$ 7,028	$ 7,319	$ 8,756
2004	1,640.7	115.5		75.5	28.2	1,474.2	2,255.0	877.0			108.2					6,574.3	820,157	$ 8,016	$ 7,932	$ 9,671
2005	1,533.3	290.0		77.4	28.6	1,597.9	2,510.0	912.4			123.6					7,073.2	821,684	$ 8,608	$ 8,252	$ 10,043
2006	1,449.8	257.0		75.0	27.5	1,693.6	2,652.3	959.6			122.3					7,237.1	817,540	$ 8,852	$ 8,234	$ 10,072
2007	52.3	-		2.7	27.5	1,745.3	2,771.2	1,007.0			130.8					5,736.8	801,641	$ 7,156	$ 6,271	$ 7,823
2008	0.6	-		-	28.3	1,755.2	2,909.2	1,058.1			148.0					5,899.4	773,542	$ 7,626	$ 6,443	$ 8,329
2009	0.5	-		-	27.0	1,721.6	2,962.5	1,072.6			132.6					5,916.8	713,796	$ 8,289	$ 6,291	$ 8,813
2010	0.5	-		-	21.7	1,705.0	2,904.6	1,048.9			128.8					5,809.5	670,200	$ 8,668	$ 6,086	$ 9,080
2011	0.5	-		-	18.5	1,696.7	2,982.6	1,039.6			140.9					5,878.8	649,762	$ 9,048	$ 5,981	$ 9,205
Total	30,620.9	43,689.1	350.0	1,147.8	1,208.3	28,128.6	45,130.0	15,558.3	0.8	161.0	2,936.6	9,444.6	73.6	1,685.0	693.1	180,827.7				

Source: USPS, Inflation calculated utilizing Bureau of Labor Statistics: Consumer Price Index All Urban Consumers U.S. City Average.

8-1 Private Sector Defined Contribution Contribution Rates

Table 26. Savings and thrift plans: Maximum employee contribution matched by employer, private industry workers, National Compensation Survey, 2010

(All workers participating in savings and thrift plans = 100 percent)

Maximum employee contribution matched by employer

Characteristics	Total	Specified matching percent	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	Other(1)	Not determinable
Worker characteristic									
All workers............................	100	69	3	4	5	6	6	29	2
Management, professional, and related...	100	73	3	4	5	6	6	25	2
Management, business, and financial...	100	68	3	4	5	6	6	32	1
Professional and related..............	100	77	3	4	5	6	6	20	3
Service....................................	100	75	3	4	5	6	6	25	-2
Protective service....................	100	61	4	5	5	5	5	–	–
Sales and office........................	100	68	3	4	5	6	6	30	3
Sales and related....................	100	71	3	4	5	6	6	28	2
Office and administrative support.....	100	66	3	4	5	6	6	31	3
Natural resources, construction, and maintenance............................	100	74	3	4	6	6	7	24	2
Construction, extraction, farming, fishing, and forestry................	100	65	3	4	5	6	7	–	–
Installation, maintenance, and repair	100	79	3	4	6	6	7	21	1
Production, transportation, and material moving.................................	100	57	3	4	6	6	6	42	1
Production...........................	100	56	4	4	6	6	6	41	2

Transportation and material moving....	100	58	3	4	5	6	6	42	–
Full time............................	100	69	3	4	5	6	6	29	2
Part time............................	100	73	3	4	5	6	6	26	1
Union...............................	100	62	3	4	6	6	6	37	2
Nonunion..............................	100	70	3	4	5	6	6	28	2

Average wage within the following categories:(3)

Lowest 25 percent.....................	100	74	3	4	5	6	6	26	–
Lowest 10 percent..................	100	61	4	5	5	6	6	–	–
Second 25 percent.....................	100	64	3	4	5	6	6	33	3
Third 25 percent.....................	100	66	3	4	5	6	6	32	2
Highest 25 percent..................	100	72	3	4	5	6	6	25	2
Highest 10 percent................	100	72	3	4	5	6	6	25	2

Establishment characteristic

Goods-producing industries..............	100	63	4	4	6	6	8	34	3
Construction..........................	100	72	3	4	6	6	6	–	–
Manufacturing........................	100	62	4	4	6	6	8	35	3
Service-providing industries............	100	71	3	4	5	6	6	27	2
Trade, transportation, and utilities..	100	62	3	4	5	6	7	37	1
Wholesale trade.....................	100	72	3	5	6	6	7	28	–
Retail trade.........................	100	59	–	–	–	–	–	39	2
Information..........................	100	88	4	5	6	6	6	–	–
Financial activities.................	100	78	4	4	5	6	6	22	-2
Finance and insurance..............	100	75	4	5	6	6	6	25	-2
Credit intermediation and related activities......................	100	81	4	5	5	6	6	19	–
Insurance carriers and related activities.......................	100	63	3	4	5	6	7	37	-2
Professional and business services....	100	64	3	3	5	5	6	36	–

Professional and technical services	100	72	3	3	5	5	6 –	–
Education and health services.........	100	77	3	3	4	6	6	18	5
Educational services................	100	79 –	–	–	–	–		18	2
Junior colleges, colleges, and universities......................	100	76 –	–	–	–	–		22	3
Health care and social assistance...	100	77	3	3	4	6	6	17	5
1 to 99 workers.........................	100	74	3	4	5	6	6	22	4
1 to 49 workers........................	100	76	3	3	5	6	6	20	4
50 to 99 workers......................	100	70	3	4	5	6	6	28	2
100 workers or more....................	100	66	3	4	5	6	6	32	1
100 to 499 workers...................	100	66	3	4	5	6	6	33	-2
500 workers or more..................	100	66	3	4	5	6	6	32	2

Geographic area

New England.............................	100	78	4	5	6	6	6	21	1
Middle Atlantic..........................	100	70	3	4	5	6	6	25	5
East North Central......................	100	64	3	4	6	6	6	34	1
West North Central......................	100	72	3	4	6	6	6	28 –	
South Atlantic..........................	100	72	3	4	5	6	6	28	-2
East South Central......................	100	60	4	5	6	6	6	37	2
West South Central......................	100	64	3	3	5	6	6	35	1
Mountain................................	100	79	3	4	5	6	6 –	–	
Pacific..................................	100	68	4	5	5	6	6	27	5

1 Other methods of employer matches include maximum dollar amounts specified by the employer, varying contributions by the employer based on employee contributions or service, and other matching methods.

2 Less than 0.5.

3 The categories are based on the average wage for each occupation surveyed, which may include workers with earnings both above and below the threshold. The average wages are based on the estimates published in the "National Compensation Survey: Occupational Earnings in the United States, 2009." See Technical Note for more details.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported or that data do not meet publication criteria. For definitions of major plans, key provisions, and related terms, see the "Glossary of Employee

Benefit Terms" at www.bls.gov/ncs/ebs/glossary20102011.htm.

Table 27. Savings and thrift plans: Method of employer matching contributions, private industry workers, National Compensation Survey, 2010

(All workers participating in savings and thrift plans = 100 percent)

Specified matching percent

Characteristics	Total	Specified matching percent	10th percentile	25th percentile	50th percentile (median)	75th percentile	90th percentile	Other(1)	Not determinable
Worker characteristic									
All workers..............................	100	69	25	50	50	100	100	29	2
Management, professional, and related...	100	73	25	50	66	100	100	25	2
Management, business, and financial...	100	68	–	–	–	–	–	32	1
Professional and related..............	100	77	25	50	50	100	100	20	3
Service................................	100	75	–	–	–	–	–	25	-2
Protective service....................	100	61	–	–	–	–	–	–	–
Sales and office.......................	100	68	30	50	100	100	100	30	3
Sales and related.....................	100	71	40	50	100	100	100	28	2
Office and administrative support.....	100	66	25	50	75	100	100	31	3
Natural resources, construction, and maintenance.............................	100	74	–	–	–	–	–	24	2
Construction, extraction, farming, fishing, and forestry.................	100	65	–	–	–	–	–	–	–
Installation, maintenance, and repair	100	79	50	50	50	100	100	21	1
Production, transportation, and material moving.................................	100	57	–	–	–	–	–	42	1

Production............................	100	56	–	–	–	–	–	41	2
Transportation and material moving....	100	58	–	–	–	–	–	42	–
Full time..............................	100	69	25	50	50	100	100	29	2
Part time..............................	100	73	–	–	–	–	–	26	1
Union...................................	100	62	50	50	66	100	100	37	2
Nonunion................................	100	70	25	50	50	100	100	28	2

Average wage within the following categories:(3)

Lowest 25 percent.....................	100	74	25	50	50	100	100	26	–
Lowest 10 percent...................	100	61	–	–	–	–	–	–	–
Second 25 percent.....................	100	64	25	50	50	100	100	33	3
Third 25 percent......................	100	66	25	50	50	100	100	32	2
Highest 25 percent....................	100	72	25	50	75	100	100	25	2
Highest 10 percent..................	100	72	–	–	–	–	–	25	2

Establishment characteristic

Goods-producing industries..............	100	63	25	50	50	100	100	34	3
Construction...........................	100	72	–	–	–	–	–	–	–
Manufacturing..........................	100	62	25	50	50	100	100	35	3
Service-providing industries............	100	71	25	50	75	100	100	27	2
Trade, transportation, and utilities..	100	62	25	50	70	100	100	37	1
Wholesale trade......................	100	72	–	–	–	–	–	28	–
Retail trade.........................	100	59	40	50	100	100	100	39	2
Information............................	100	88	50	50	80	100	100	–	–
Financial activities..................	100	78	50	50	100	100	100	22	-2
Finance and insurance...............	100	75	50	65	100	100	100	25	-2
Credit intermediation and related activities.........................	100	81	50	100	100	100	100	19	–
Insurance carriers and related activities........................	100	63	50	50	100	100	100	37	-2

Professional and business services....	100	64	25	50	100	100	100	36	–
Professional and technical services	100	72	–	–	–	–	–	–	–
Education and health services.........	100	77	–	–	–	–	–	18	5
Educational services................	100	79	–	–	–	–	–	18	2
Junior colleges, colleges, and universities....................	100	76	–	–	–	–	–	22	3
Health care and social assistance...	100	77	–	–	–	–	–	17	5
1 to 99 workers.........................	100	74	25	50	50	100	100	22	4
1 to 49 workers......................	100	76	25	50	50	100	100	20	4
50 to 99 workers.....................	100	70	25	25	50	100	100	28	2
100 workers or more...................	100	66	35	50	66	100	100	32	1
100 to 499 workers....................	100	66	–	–	–	–	–	33	-2
500 workers or more..................	100	66	35	50	75	100	100	32	2

Geographic area

New England.............................	100	78	–	–	–	–	–	21	1
Middle Atlantic.........................	100	70	–	–	–	–	–	25	5
East North Central......................	100	64	25	35	50	100	100	34	1
West North Central.....................	100	72	–	–	–	–	–	28	–
South Atlantic.........................	100	72	–	–	–	–	–	28	-2
East South Central.....................	100	60	25	50	50	100	100	37	2
West South Central....................	100	64	50	50	50	100	100	35	1
Mountain...............................	100	79	–	–	–	–	–	–	–
Pacific................................	100	68	25	50	100	100	100	27	5

1 Other methods of employer matches include maximum dollar amounts specified by the employer, varying contributions by the employer based on employee contributions or service, and other matching methods.

2 Less than 0.5.

3 The categories are based on the average wage for each occupation surveyed, which may include workers with earnings both above and below the threshold. The average wages are based on the estimates published in the "National Compensation Survey: Occupational Earnings in the United States, 2009." See Technical Note for more details.

NOTE: Because of rounding, sums of individual items may not equal totals. Dashes indicate that no data were reported or that data

do not meet publication criteria. For definitions of major plans, key provisions, and related terms, see the "Glossary of Employee Benefit Terms" at www.bls.gov/ncs/ebs/glossary20102011.htm.

Table 28. Savings and thrift plans: Maximum potential employer contribution,(1) private industry workers, National Compensation Survey, 2010

(Includes all workers participating in savings and thrift plans that specify matching contributions)

Characteristics	Maximum potential employer contribution				
	10th percenti- le	25th percenti- le	50th percenti- le (median)	75th percenti- le	90th percenti- le
Worker characteristic					
All workers............................	1.5	2	3	4.8	6
Management, professional, and related...	1.5	2	3	5	6
Management, business, and financial...	1.5	3	4	5	6
Professional and related..............	1.3	2	3	4.8	6
Service.................................	1.5	1.5	2.5	4	5
Protective service....................	2.5	3	5	5	5
Sales and office........................	1.5	2.5	3	5	6
Sales and related.....................	1.5	2.5	4	5	6
Office and administrative support.....	1.5	2.5	3	5	6
Natural resources, construction, and maintenance............................	1.5	2	3	4	5
Construction, extraction, farming, fishing, and forestry.................	1.5	2	3	4	4
Installation, maintenance, and repair	1.5	3	3	4.5	6
Production, transportation, and material moving.................................	1.3	2	3	3.5	5
Production............................	1.3	2	3	3	5
Transportation and material moving....	1.3	2	3	4	5

Full time..............................	1.5	2	3	4.8	6
Part time.............................	2	2.1	3	5	5
Union.................................	1.5	2	3	4.5	5
Nonunion.............................	1.5	2	3	5	6

Average wage within the following categories:(2)

Lowest 25 percent.....................	1.5	2	3	4	5
Lowest 10 percent...................	1.5	2.5	4	5	6
Second 25 percent.....................	1.5	2	3	4	5
Third 25 percent......................	1.3	2	3	4	5.1
Highest 25 percent...................	1.5	2.5	3.5	5	6
Highest 10 percent..................	1.5	3	4	5	6

Establishment characteristic

Goods-producing industries..............	1.5	2	3	4	6
Construction..........................	1.5	2	3	4	4
Manufacturing.........................	1.3	2	3	4	6
Service-providing industries............	1.5	2.1	3	5	6
Trade, transportation, and utilities..	1.5	2.5	3.5	5	5
Wholesale trade.....................	1.5	2	3	4	5
Financial activities..................	2	3	4	5	6
Finance and insurance...............	3	3	5	6	6
Credit intermediation and related activities........................	3	3	5	6	6
Insurance carriers and related activities........................	2.5	3	3.9	5	6
Professional and business services....	1.3	3	3	4.8	5
Education and health services.........	1.5	1.5	2.1	3	4
Health care and social assistance...	1.5	1.5	2	3	3
1 to 99 workers.........................	1.3	1.5	3	4	5

1 to 49 workers........................	1.3	1.5	3	4	6
50 to 99 workers......................	1	1.5	3	4	5
100 workers or more.....................	1.5	2.1	3	5	6
100 to 499 workers....................	1.5	2.5	3	5	5
500 workers or more.................	2	2.1	3.5	5	6

Geographic area

New England.............................	1.5	3	3.6	5	6
Middle Atlantic..........................	1	2.5	3.6	5	6
East North Central......................	1.5	2.1	3	4	5
South Atlantic..........................	1.5	2	3	4	5
East South Central......................	1.5	3	3	5	6
Mountain...............................	1.3	2	3	4	6
Pacific.................................	1.3	3	4	5	6

1 The maximum potential employer contribution is determined by multiplying the maximum employee contribution subject to matching by the employer matching percent, for those plans that specify both values.

2 The categories are based on the average wage for each occupation surveyed, which may include workers with earnings both above and below the threshold. The average wages are based on the estimates published in the "National Compensation Survey: Occupational Earnings in the United States, 2009." See Technical Note for more details.

NOTE: Dashes indicate that no data were reported or that data do not meet publication criteria. For definitions of major plans, key provisions, and related terms, see the "Glossary of Employee Benefit Terms" at www.bls.gov/ncs/ebs/glossary20102011.htm.

Employee Retirement Simulation Assumptions, Methodology, and Detailed Results

Employee Retirement Simulation Assumptions:
- CSRS and FERS employees will follow historical retirement ages with a normal distribution.

    o CSRS employees over the period 2000 – 2012 had an average age at retirement of 58.97 with a standard deviation of 4.81 years.

    o FERS employees over the period 2000 – 2012 had an average age at retirement of 61.21 with a standard deviation of 4.59 years.

- The hiring requirement would be based on an estimate of full time employee needs estimated from 2013 to 2020 based on declining workload

Employee Retirement Simulation Methodology:
The total estimate of employees was based on the data obtained from the Thrift Savings Plan contribution data file which includes a listing of all employees paid during pay period 26 from Calendar year 2012. It is possible employees have retired since that time, but for purposes of this analysis, this is assumed to be the starting point. Employee counts were aggregated by age and a decision variable was created for the retiree age based on the average retiree age for CSRS employees and their standard deviation, and the average retiree age for FERS employees and their standard deviation for each employee age category. This analysis did not treat each employee independently due to the constraints of both the software and hardware of the equipment utilized. This approach was deemed reasonable in light of existing computing constraints.

Employees were aged through time from 2013 – 2030. A comparison was made at each year to determine if the estimated retirement age was less than the current employee age at that point in time. If the age was less it was assumed that group of employees would retire. This was simulated utilizing the average and standard deviation of retirement ages for 226,800 trials (the allowable trials based on the memory available to the workstation, based on the results obtained this number of trials provided a

reasonable result). The total remaining employees for each trial was aggregated. The hiring requirement is estimated by comparing the total employees required and the total on roll employees which is based on the remaining legacy employees plus the total employees hired to date. The total new employees are than determined by summing the total hiring requirement to that date.

The simulation was asked to forecast the total remaining employees for each year 2013-2030, hiring requirement for each year from 2013 – 2030, total new employees from 2013-2030 and the total hiring through 2016. Those detailed results are provided in below and in summary within the document.

Employee Retirement Simulation Detailed Results:

USPS Hiring Requirement Estimates – 2013 – 2030

Statistics	Hiring Requirement 2013	Hiring Requirement 2014	Hiring Requirement 2015	Hiring Requirement 2016	Hiring Requirement 2017	Hiring Requirement 2018	Hiring Requirement 2019	Hiring Requirement 2020	Hiring Requirement 2021	Hiring Requirement 2022	Hiring Requirement 2023	Hiring Requirement 2024	Hiring Requirement 2025	Hiring Requirement 2026	Hiring Requirement 2027	Hiring Requirement 2028	Hiring Requirement 2029	Hiring Requirement 2030
Trials	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800
Base Case	0	36,000	5,288	7,638	13,266	24,875	26,509	28,566	23,687	22,894	19,920	15,783	12,666	10,596	9,023	8,301	8,309	7,156
Mean	0	51,516	6,935	5,564	7,039	13,109	16,965	19,999	17,557	16,658	15,839	14,900	13,958	12,926	11,829	10,681	9,679	8,588
Median	0	50,128	0	0	0	6,926	14,695	19,159	16,457	14,457	13,197	11,791	10,289	8,880	8,186	7,091	5,436	4,313
Mode	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Standard Deviation	0	26,090	11,383	10,581	12,061	15,958	17,479	18,450	17,714	17,283	16,813	16,142	15,529	14,720	13,885	12,950	12,023	11,043
Variance	0	680,681,872	129,563,589	111,956,291	145,461,205	254,646,395	305,522,476	340,411,131	313,792,629	298,688,188	282,684,298	260,548,353	241,142,853	216,688,740	192,787,091	167,711,061	144,545,576	121,944,762
Skewness	—	0.3246	2.13	2.48	2.20	1.39	1.10	0.9343	1.08	1.14	1.19	1.23	1.28	1.34	1.40	1.49	1.53	1.60
Kurtosis	—	2.92	8.13	9.99	8.44	4.83	4.03	3.71	4.06	4.23	4.36	4.49	4.61	4.83	5.03	5.41	5.51	5.81
Coeff. of Variability	—	0.5064	1.64	1.90	1.71	1.22	1.03	0.9226	1.01	1.04	1.06	1.08	1.11	1.14	1.17	1.21	1.24	1.29
Minimum	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum	0	179,023	105,795	106,618	116,733	128,096	140,280	150,197	139,561	137,158	132,782	129,863	120,685	115,884	125,474	114,131	106,450	89,772
Range Width	0	179,023	105,795	106,618	116,733	128,096	140,280	150,197	139,561	137,158	132,782	129,863	120,685	115,884	125,474	114,131	106,450	89,772
Mean Std. Error	0	55	24	22	25	34	37	39	37	36	35	34	33	31	29	27	25	23

Percentiles	Hiring Requirement 2013	Hiring Requirement 2014	Hiring Requirement 2015	Hiring Requirement 2016	Hiring Requirement 2017	Hiring Requirement 2018	Hiring Requirement 2019	Hiring Requirement 2020	Hiring Requirement 2021	Hiring Requirement 2022	Hiring Requirement 2023	Hiring Requirement 2024	Hiring Requirement 2025	Hiring Requirement 2026	Hiring Requirement 2027	Hiring Requirement 2028	Hiring Requirement 2029	Hiring Requirement 2030
0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5%	0	10,175	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10%	0	18,351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15%	0	24,113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20%	0	28,750	0	0	0	0	0	245	0	0	0	0	0	0	0	0	0	0
25%	0	32,878	0	0	0	0	0	2,093	0	0	0	0	0	0	0	0	0	0
30%	0	36,613	0	0	0	0	1,776	5,127	1,565	0	0	0	0	0	0	0	0	0
35%	0	40,149	0	0	0	0	3,897	7,071	4,259	3,300	2,211	1,719	541	0	0	0	0	0
40%	0	43,506	0	0	0	1,936	6,957	12,528	10,135	9,197	8,192	7,066	5,430	4,301	3,227	1,640	920	103
45%	0	46,793	0	0	0	3,688	10,892	16,695	13,442	12,621	10,818	9,460	8,451	7,556	5,657	4,473	4,025	2,540
50%	0	50,128	0	0	0	6,926	14,695	19,158	16,457	14,457	13,197	11,790	10,288	8,880	8,186	7,090	5,436	4,313
55%	0	53,478	979	0	0	10,154	17,106	20,904	17,428	16,481	15,483	14,040	12,695	10,925	9,460	8,418	8,056	6,402
60%	0	56,923	3,040	0	1,642	13,271	19,063	21,981	18,388	17,790	17,149	16,140	14,965	13,321	11,504	9,620	8,581	8,173
65%	0	60,576	4,752	1,749	4,715	16,374	20,388	23,057	19,205	18,430	18,112	17,790	17,185	15,635	14,056	12,589	10,818	8,901
70%	0	64,427	7,456	3,981	7,712	18,790	22,843	26,213	22,612	20,878	19,476	18,553	18,362	17,790	16,904	15,101	12,968	11,016
75%	0	68,706	9,995	6,862	9,889	21,236	25,959	29,869	27,295	25,762	24,324	22,753	20,825	19,067	18,388	17,473	15,863	13,885
80%	0	73,501	13,660	10,075	13,627	24,946	31,150	36,033	33,186	31,643	30,265	28,413	26,398	24,220	21,892	19,538	18,310	16,977
85%	0	79,003	18,162	14,818	18,205	30,251	36,625	40,837	37,603	36,028	34,579	32,702	30,903	29,195	26,860	24,265	21,953	19,648
90%	0	86,084	23,475	20,712	24,805	36,642	41,515	44,608	40,868	40,120	39,302	37,906	36,378	33,738	31,579	29,494	27,149	24,513
95%	0	96,739	31,282	28,905	33,222	44,979	50,717	55,394	52,703	51,274	49,455	46,708	44,664	41,828	39,751	37,063	34,094	31,026
100%	0	179,023	105,795	106,618	116,733	128,096	140,280	150,197	139,561	137,158	132,782	129,863	120,685	115,884	125,474	114,131	106,450	89,772

USPS Remaining Legacy Employee Estimates – 2013 – 2030

Statistics	Remaining Employees- 2013	Remaining Employees- 2014	Remaining Employees- 2015	Remaining Employees- 2016	Remaining Employees- 2017	Remaining Employees- 2018	Remaining Employees- 2019	Remamining Employees- 2020	Remaining Employees- 2021	Remaining Employees- 2022	Remaining Employees- 2023	Remaining Employees- 2024	Remaining Employees- 2025	Remaining Employees- 2026	Remaining Employees- 2027	Remaining Employees- 2028	Remaining Employees- 2029	Remaining Employees- 2030
Trials	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800
Base Case	425,052	404,000	380,712	355,074	328,808	300,933	272,424	243,858	216,171	189,277	165,357	145,574	128,908	114,312	101,289	88,988	76,679	65,523
Mean	406,544	388,595	369,522	349,501	328,858	307,751	286,461	265,255	244,360	223,973	204,303	185,538	167,694	150,863	135,130	120,543	106,936	94,432
Median	407,846	389,872	370,654	350,424	329,568	308,393	287,245	266,247	245,033	224,097	203,996	185,022	166,725	149,630	133,867	118,952	105,210	92,827
Mode	409,987	388,214	382,317	355,131	315,675	294,771	267,854	267,854	221,900	221,328	177,836	158,238	158,148	141,453	112,937	112,990	100,408	88,023
Standard Deviation	24,633	26,333	27,973	29,358	30,522	31,415	31,945	32,109	31,936	31,382	30,631	29,536	28,200	26,709	25,121	23,507	21,871	20,246
Variance	606,773,067	693,412,744	782,470,230	861,892,909	931,565,522	986,912,376	1,020,462,280	1,030,967,842	1,019,912,219	984,799,894	938,252,201	872,373,766	795,235,861	713,364,574	631,089,197	552,582,616	478,334,661	409,917,533
Skewness	-0.3100	-0.2677	-0.23	-0.19	-0.14	-0.10	-0.06	-0.0161	0.03	0.08	0.12	0.17	0.21	0.25	0.30	0.32	0.34	0.37
Kurtosis	3.06	3.00	2.97	2.95	2.95	2.92	2.91	2.89	2.90	2.91	2.91	2.94	2.96	3.00	3.06	3.07	3.11	3.18
Coeff. of Variability	0.0606	0.0678	0.08	0.08	0.09	0.10	0.11	0.1210	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.20	0.21
Minimum	282,031	260,977	227,254	214,008	187,275	159,631	144,813	129,758	105,411	90,223	90,218	67,289	67,289	55,884	43,224	40,434	33,841	28,111
Maximum	485,444	479,461	474,099	459,778	445,867	429,084	410,856	402,928	376,755	362,159	332,826	322,974	305,218	285,883	261,663	242,754	220,851	199,282
Range Width	203,413	218,484	246,845	245,770	258,592	269,453	266,043	273,170	271,344	271,936	242,608	255,685	237,929	229,999	218,439	202,320	187,010	171,171
Mean Std. Error	52	55	59	62	64	66	67	67	67	66	64	62	59	56	53	49	46	43

Percentiles	Remaining Employees- 2013	Remaining Employees- 2014	Remaining Employees- 2015	Remaining Employees- 2016	Remaining Employees- 2017	Remaining Employees- 2018	Remaining Employees- 2019	Remamining Employees- 2020	Remaining Employees- 2021	Remaining Employees- 2022	Remaining Employees- 2023	Remaining Employees- 2024	Remaining Employees- 2025	Remaining Employees- 2026	Remaining Employees- 2027	Remaining Employees- 2028	Remaining Employees- 2029	Remaining Employees- 2030
0%	282,031	260,977	227,254	214,008	187,275	159,631	144,813	129,758	105,411	90,223	90,218	67,289	67,289	55,884	43,224	40,434	33,841	28,111
5%	363,908	343,261	321,850	299,780	277,338	254,580	232,472	211,299	191,227	172,568	154,629	138,064	123,124	108,934	95,752	84,064	73,123	63,677
10%	374,191	353,915	332,832	311,168	289,320	267,502	245,957	224,546	203,678	184,178	165,467	148,301	132,153	116,998	103,293	90,966	79,843	69,178
15%	380,901	360,997	340,249	318,932	297,104	274,897	252,708	230,952	210,188	190,485	171,787	154,362	138,056	123,123	109,147	95,964	84,217	73,604
20%	386,078	366,499	346,004	324,706	303,073	280,966	258,960	237,655	217,158	197,658	178,495	160,578	143,511	128,112	114,083	100,820	88,487	77,133
25%	390,482	371,293	351,010	329,948	308,612	286,929	265,603	244,388	223,394	202,849	183,515	165,193	148,147	132,183	117,174	103,446	91,185	80,053
30%	394,439	375,573	355,414	334,653	313,406	291,780	270,133	248,483	227,366	206,965	187,314	168,936	151,631	135,789	120,840	106,732	93,993	82,649
35%	398,096	379,424	359,511	338,846	317,643	295,887	273,920	252,150	231,030	210,544	191,106	172,802	155,530	139,335	124,377	110,548	97,529	85,825
40%	401,470	383,076	363,332	342,829	321,575	299,873	277,974	256,348	235,297	214,988	195,685	177,518	159,432	143,084	127,739	113,839	100,616	88,392
45%	404,671	386,522	367,054	346,673	325,575	304,028	282,634	261,505	241,050	220,947	200,458	181,169	163,457	146,342	130,673	116,148	102,795	90,628
50%	407,846	389,872	370,654	350,424	329,568	308,393	287,245	266,247	245,032	224,096	203,995	185,021	166,725	149,629	133,867	118,951	105,210	92,827
55%	410,951	393,207	374,212	354,166	333,502	312,455	291,122	269,717	248,303	227,413	207,372	188,061	170,080	152,684	136,782	122,218	108,210	95,457
60%	414,096	396,494	377,765	357,956	337,374	316,333	294,740	273,118	251,550	230,750	210,712	191,711	173,556	156,434	140,249	125,447	111,667	98,650
65%	417,246	399,851	381,426	361,706	341,282	320,267	298,677	277,098	255,751	234,998	215,338	196,447	177,967	160,373	143,800	128,654	114,303	101,287
70%	420,510	403,387	385,175	365,698	345,409	324,694	303,564	282,546	261,829	241,553	221,448	201,147	182,315	164,327	147,627	132,032	117,251	103,864
75%	423,927	407,122	389,191	369,981	350,043	329,613	308,890	287,882	266,789	245,563	225,043	205,449	186,444	168,244	151,308	135,732	121,101	107,229
80%	427,719	411,249	393,630	374,710	355,048	334,796	313,827	292,466	271,077	249,863	229,423	209,679	190,736	172,858	155,874	139,880	125,018	111,166
85%	431,997	415,886	398,642	380,173	360,639	340,487	319,583	298,213	276,846	255,973	235,664	216,331	197,714	179,105	161,532	145,288	129,603	115,319
90%	437,292	421,648	404,718	386,731	367,606	347,853	327,652	307,164	286,741	265,802	244,840	224,300	205,039	186,164	168,099	151,458	135,759	121,139
95%	444,748	429,825	413,595	396,195	378,007	358,482	338,246	317,605	296,462	275,280	254,731	234,764	215,588	196,937	178,644	161,635	145,235	129,742
100%	485,444	479,461	474,099	459,778	445,867	429,084	410,856	402,928	376,755	362,159	332,826	322,974	305,218	285,883	261,663	242,754	220,851	199,282

USPS New Employee Estimates – 2013 – 2030

Statistics	Total New 2013	Total New 2014	Total New 2015	Total New 2016	Total New 2017	Total New 2018	Total New 2019	Total New 2020	Total New 2021	Total New 2022	Total New 2023	Total New 2024	Total New 2025	Total New 2026	Total New 2027	Total New 2028	Total New 2029	Total New 2030
Trials	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800
Base Case	0	36,000	41,288	48,926	62,192	87,067	113,576	142,142	165,829	188,723	208,643	224,426	237,092	247,688	256,711	265,012	273,321	280,477
Mean	0	51,516	58,451	64,015	71,054	84,162	101,128	121,126	138,683	155,341	171,180	186,080	200,038	212,963	224,793	235,473	245,153	253,740
Median	0	50,128	57,203	62,889	70,082	83,311	100,056	119,944	137,958	155,198	171,602	186,687	200,963	214,074	225,950	236,863	246,618	255,055
Mode	0	0	0	0	0	0	118,146	118,146	160,100	156,672	196,164	192,258	222,670	220,547	245,063	241,141	261,778	269,951
Standard Deviation	0	26,090	26,679	27,090	27,717	29,317	30,811	31,699	31,553	30,963	30,162	29,038	27,683	26,190	24,590	22,970	21,322	19,696
Variance	0	680,681,872	711,785,545	733,889,991	768,250,459	859,499,734	949,323,801	1,004,808,990	995,568,882	958,683,786	909,756,610	843,204,484	766,370,143	685,893,626	604,644,723	527,640,653	454,611,390	387,946,107
Skewness	—	0.3246	0.28	0.25	0.23	0.19	0.13	0.0525	-0.01	-0.07	-0.11	-0.16	-0.20	-0.25	-0.29	-0.32	-0.34	-0.37
Kurtosis	—	2.92	2.93	2.94	2.96	2.94	2.89	2.86	2.87	2.90	2.90	2.93	2.95	2.99	3.05	3.07	3.11	3.17
Coeff. of Variability	—	0.5064	0.46	0.42	0.39	0.35	0.30	0.2617	0.23	0.20	0.18	0.16	0.14	0.12	0.11	0.10	0.09	0.08
Minimum	0	0	0	0	0	0	0	0	9,343	22,718	45,569	54,390	65,579	76,117	103,903	115,030	133,238	147,668
Maximum	0	179,023	194,746	194,746	203,725	228,369	241,187	256,242	276,589	287,777	287,777	302,711	302,711	306,116	314,776	314,776	316,159	317,889
Range Width	0	179,023	194,746	194,746	203,725	228,369	241,187	256,242	267,246	265,059	242,208	248,321	237,132	229,999	210,873	199,746	182,921	170,221
Mean Std. Error	0	55	56	57	58	62	65	67	66	65	63	61	58	55	52	48	45	41

Percentiles	Total New 2013	Total New 2014	Total New 2015	Total New 2016	Total New 2017	Total New 2018	Total New 2019	Total New 2020	Total New 2021	Total New 2022	Total New 2023	Total New 2024	Total New 2025	Total New 2026	Total New 2027	Total New 2028	Total New 2029	Total New 2030
0%	0	0	0	0	0	0	0	0	9,343	22,718	45,569	54,390	65,579	76,117	103,903	115,030	133,238	147,668
5%	0	10,175	16,320	21,288	27,248	37,574	51,548	69,598	87,188	104,330	120,952	137,345	153,011	167,936	182,353	195,543	208,063	219,389
10%	0	18,351	24,764	29,835	35,974	46,996	61,709	79,861	97,042	114,303	131,194	147,933	163,634	178,341	192,361	205,044	216,957	227,820
15%	0	24,113	30,571	35,739	42,156	53,466	69,019	88,499	106,430	123,521	139,956	155,805	171,006	185,521	199,156	211,503	222,989	233,230
20%	0	28,750	35,286	40,595	47,210	58,803	74,404	94,040	112,137	129,601	146,117	161,829	176,975	191,186	204,426	216,538	227,534	237,497
25%	0	32,878	39,535	44,856	51,583	63,678	79,413	98,617	116,412	133,937	150,756	166,619	181,533	195,783	208,839	220,603	231,499	241,199
30%	0	36,613	43,333	48,780	55,580	68,043	84,438	103,913	121,376	138,529	154,986	170,791	185,928	199,729	212,665	224,366	234,908	244,374
35%	0	40,149	46,926	52,437	59,349	71,936	88,874	109,205	127,168	144,073	160,047	175,382	190,079	203,764	216,350	227,665	237,815	247,116
40%	0	43,506	50,409	55,985	62,990	75,663	92,646	113,111	131,350	148,384	164,449	179,703	193,945	207,447	219,871	230,856	240,849	249,830
45%	0	46,793	53,851	59,450	66,582	79,457	96,256	116,516	134,751	151,904	168,036	183,274	197,588	210,916	222,874	233,903	243,867	252,587
50%	0	50,128	57,202	62,889	70,082	83,310	100,055	119,943	137,957	155,198	171,602	186,687	200,962	214,074	225,950	236,863	246,618	255,055
55%	0	53,478	60,689	66,398	73,552	87,220	104,548	124,685	142,083	158,948	175,032	190,282	204,401	217,297	229,062	239,635	249,073	257,401
60%	0	56,923	64,217	69,932	77,165	90,935	108,978	129,787	147,412	163,916	179,571	194,316	207,990	220,656	232,097	242,332	251,662	259,761
65%	0	60,576	67,880	73,644	80,905	94,717	112,846	133,965	151,749	168,336	183,913	198,351	211,839	224,246	235,312	245,311	254,454	262,283
70%	0	64,427	71,803	77,659	85,002	98,775	116,649	137,623	155,502	172,128	187,707	202,222	215,541	227,619	238,786	248,726	257,406	265,104
75%	0	68,706	76,101	81,942	89,393	103,569	121,196	141,694	159,428	176,225	191,811	206,091	219,443	231,409	242,244	251,908	260,372	267,640
80%	0	73,501	80,883	86,746	94,253	109,031	127,647	148,416	165,428	181,532	196,726	210,939	223,814	235,325	245,433	254,842	263,135	270,255
85%	0	79,003	86,485	92,473	99,919	114,699	133,798	155,089	172,426	188,250	202,987	216,585	228,946	240,108	250,313	259,415	267,177	273,960
90%	0	86,084	93,659	99,639	107,540	122,145	140,534	161,503	179,024	194,785	209,519	222,875	235,051	246,141	255,801	264,303	271,607	278,036
95%	0	96,739	104,328	110,335	118,210	134,427	153,806	174,722	191,218	205,997	220,148	232,610	243,792	254,156	263,358	271,121	277,965	284,046
100%	0	179,023	194,746	194,746	203,725	228,369	241,187	256,242	276,589	287,777	287,777	302,711	302,711	306,116	314,776	314,776	316,159	317,889

USPS Financial Impact Assumptions, Methodology, and Detailed Results

USPS Financial Impact Assumptions:
- Only newly hired employees would be eligible for a new retirement plan and all remaining legacy employees would remain within their current plan (this is for simplification purposes and to provide a low end estimate of the savings that could be realized through such a change).
- The average new salary would grow through time as employees are hired based on an estimate of the average wage based on union contracts assuming no cost of living adjustments for simplification purposes
- Assumed new hires would be proportionate to the current employee types
- Assumed non-union employees (approximately 9.56% of current workforce) would maintain the same wage premium over union employees for each new hire
- The legacy salary would remain constant through time (no cost of living adjustments are taken into account)
- The savings associated with a new plan is the difference between assuming all employees remain within FERS with legacy employees contributing .8% to the annuity, and new employees contributing 3.1% compared to the new plan cost for new employees.
- Assume legacy employees are receiving a full 5% match by USPS.
- Assume future employees contribute to the match as specified in the scenario summary.

USPS Financial Impact Methodology:

Utilizing the results of the employee retirement age simulation model, financial estimates were developed for each trial associated with that assumed hiring requirement for each alternative plan design.

The first step was to estimate an average wage associated with the population of new employees. This was done by estimating a blended salary level across the organization for new employees based on the current distribution of employees across the organization. Utilizing the new salary structure associated with the 4 unions (APWU, NRLCA, NALC and NPMHU) received from USPS, a determination was made for what the salary would be for each two week period over a 35 year career for each union. That salary was blended to create an average salary for each two week period based on the percentage of employees belonging to each union (this sums to 100%). Utilizing the current wage premium for non-union employees, an estimate was made of the two week period salary for all other employees (approximately 9.56% of employees). The union employees (approximately 90.44% of

employees) were then blended with non-union employees (approximately 9.56%) to estimate the total average salary for the two week period. The salaries were aggregated to determine an average blended annual salary for use within the models.

Once the average salary was known by employee year, an estimate was made based on the simulated number of new hires through time in terms of what the salary structure would look like by year. I.e., the numbers of new hires for a given year started at the blended average salary level for a year 1 employee, new hires from the year prior were at the blended average salary level for a year 2 employee, etc. The average salary for that year was then calculated as the weighted average of salary based on the number of hires at a given year within their career salary structure. This salary was than utilized within each trial of the simulation to estimate the financial impact of the various pension plans.

Utilizing the total number of legacy and new hires based on the retirement age simulation combined with the salary information for both legacy employees (assumed the same for simplification purposes) and the new hires based on the simulated environment, a financial estimate was made. This estimate was based on multiplying the number of employees times their salary times the percent contribution by USPS. These were compared to an assumed environment of all FERS to understand the change in cost structure. For the all FERS environment, USPS contributions for FERS employees were reduced based on the new contribution requirements.

The simulation was asked to provide forecasts for the present value of the cost savings for all plans from 2013 through 2030, the total savings expected to be realized in the year 2020, and the total cost difference between year 2030 and year 2013 of the total retirement cost.

USPS Financial Impact Detailed Results

Financial Impact – 2030 Cost minus 2013 Costs

Statistics	Plan 1 & 2 - 2030 - 2013	Plan 3 - 2030 - 2013	Plan 4 - 2030 - 2013	Plan 5 - 2030 - 2013	Plan 6 - 2030 - 2013	Plan 7 - 2030 - 2013	Plan 8 - 2030 - 2013	Plan 9 - 2030 - 2013	Plan 10 - 2030 - 2013	Plan 11 - 2030 - 2013	Plan 12 - 2030 - 2013
Trials	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800
Base Case	(1,553)	(1,796)	(1,850)	(1,904)	(2,174)	(2,174)	(2,174)	(1,904)	(2,174)	(2,445)	(2,715)
Mean	(1,531)	(1,748)	(1,796)	(1,845)	(2,086)	(2,086)	(2,086)	(1,845)	(2,086)	(2,328)	(2,569)
Median	(1,535)	(1,753)	(1,802)	(1,850)	(2,093)	(2,093)	(2,093)	(1,850)	(2,093)	(2,336)	(2,578)
Mode	(1,739)	(1,962)	(2,015)	(2,067)	(2,328)	(2,328)	(2,328)	(2,067)	(2,328)	(2,589)	(2,849)
Standard Deviation	99	102	103	104	111	111	111	104	111	120	131
Variance	9,877	10,387	10,574	10,788	12,262	12,262	12,262	10,788	12,262	14,407	17,224
Skewness	0.2484	0.31	0.32	0.33	0.38	0.38	0.3787	0.33	0.38	0.41	0.43
Kurtosis	3.19	3.22	3.22	3.22	3.25	3.25	3.25	3.22	3.25	3.26	3.27
Coeff. of Variability	-0.0649	-0.06	-0.06	-0.06	-0.05	-0.05	-0.0531	-0.06	-0.05	-0.05	-0.05
Minimum	(1,928)	(2,132)	(2,177)	(2,222)	(2,469)	(2,469)	(2,469)	(2,222)	(2,469)	(2,729)	(2,994)
Maximum	(1,024)	(1,187)	(1,222)	(1,257)	(1,432)	(1,432)	(1,432)	(1,257)	(1,432)	(1,607)	(1,781)
Range Width	905	944	955	965	1,037	1,037	1,037	965	1,037	1,122	1,213
Mean Std. Error	0	0	0	0	0	0	0	0	0	0	0

Percentiles	Plan 1 & 2 - 2030 - 2013	Plan 3 - 2030 - 2013	Plan 4 - 2030 - 2013	Plan 5 - 2030 - 2013	Plan 6 - 2030 - 2013	Plan 7 - 2030 - 2013	Plan 8 - 2030 - 2013	Plan 9 - 2030 - 2013	Plan 10 - 2030 - 2013	Plan 11 - 2030 - 2013	Plan 12 - 2030 - 2013
0%	(1,928)	(2,132)	(2,177)	(2,222)	(2,469)	(2,469)	(2,469)	(2,222)	(2,469)	(2,729)	(2,994)
5%	(1,687)	(1,906)	(1,956)	(2,005)	(2,256)	(2,256)	(2,256)	(2,005)	(2,256)	(2,510)	(2,768)
10%	(1,654)	(1,874)	(1,924)	(1,973)	(2,223)	(2,223)	(2,223)	(1,973)	(2,223)	(2,475)	(2,731)
15%	(1,632)	(1,852)	(1,901)	(1,951)	(2,199)	(2,199)	(2,199)	(1,951)	(2,199)	(2,451)	(2,704)
20%	(1,614)	(1,834)	(1,883)	(1,933)	(2,180)	(2,180)	(2,180)	(1,933)	(2,180)	(2,430)	(2,682)
25%	(1,599)	(1,819)	(1,868)	(1,917)	(2,164)	(2,164)	(2,164)	(1,917)	(2,164)	(2,412)	(2,662)
30%	(1,585)	(1,804)	(1,853)	(1,902)	(2,149)	(2,149)	(2,149)	(1,902)	(2,149)	(2,396)	(2,645)
35%	(1,571)	(1,791)	(1,840)	(1,889)	(2,134)	(2,134)	(2,134)	(1,889)	(2,134)	(2,381)	(2,628)
40%	(1,559)	(1,778)	(1,827)	(1,876)	(2,120)	(2,120)	(2,120)	(1,876)	(2,120)	(2,366)	(2,611)
45%	(1,547)	(1,766)	(1,814)	(1,863)	(2,107)	(2,107)	(2,107)	(1,863)	(2,107)	(2,351)	(2,595)
50%	(1,535)	(1,753)	(1,802)	(1,850)	(2,093)	(2,093)	(2,093)	(1,850)	(2,093)	(2,336)	(2,578)
55%	(1,522)	(1,741)	(1,789)	(1,837)	(2,079)	(2,079)	(2,079)	(1,837)	(2,079)	(2,321)	(2,562)
60%	(1,510)	(1,727)	(1,776)	(1,824)	(2,065)	(2,065)	(2,065)	(1,824)	(2,065)	(2,305)	(2,545)
65%	(1,496)	(1,714)	(1,762)	(1,810)	(2,050)	(2,050)	(2,050)	(1,810)	(2,050)	(2,289)	(2,527)
70%	(1,482)	(1,699)	(1,747)	(1,795)	(2,034)	(2,034)	(2,034)	(1,795)	(2,034)	(2,272)	(2,508)
75%	(1,467)	(1,683)	(1,731)	(1,779)	(2,016)	(2,016)	(2,016)	(1,779)	(2,016)	(2,252)	(2,487)
80%	(1,449)	(1,665)	(1,713)	(1,760)	(1,996)	(1,996)	(1,996)	(1,760)	(1,996)	(2,231)	(2,463)
85%	(1,428)	(1,643)	(1,691)	(1,738)	(1,972)	(1,972)	(1,972)	(1,738)	(1,972)	(2,204)	(2,434)
90%	(1,402)	(1,615)	(1,662)	(1,709)	(1,941)	(1,941)	(1,941)	(1,709)	(1,941)	(2,170)	(2,397)
95%	(1,361)	(1,572)	(1,618)	(1,664)	(1,893)	(1,893)	(1,893)	(1,664)	(1,893)	(2,117)	(2,338)
100%	(1,024)	(1,187)	(1,222)	(1,257)	(1,432)	(1,432)	(1,432)	(1,257)	(1,432)	(1,607)	(1,781)

Financial Impact – Present Value of Plan Savings

Statistics	Plan 3 - Present Value	Plan 4 - Prent Value	Plan 5 - Present Value	Plan 6 - Present Value	Plan 7 - Present Value	Plan 8 - Present Value	Plan 9 - Present Value	Plan 10 - Present Value	Plan 11 - Present Value	Plan 12 - Present Value
Trials	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800
Base Case	1,489	1,819	2,150	3,804	3,804	3,804	2,150	3,804	5,458	7,112
Mean	1,352	1,653	1,953	3,455	3,455	3,455	1,953	3,455	4,958	6,460
Median	1,351	1,651	1,951	3,451	3,451	3,451	1,951	3,451	4,952	6,452
Mode	956	1,168	1,380	2,442	2,442	2,442	1,380	2,442	3,504	4,566
Standard Deviation	191	233	276	488	488	488	276	488	700	913
Variance	36,484	54,501	76,121	238,273	238,273	238,273	76,121	238,273	490,508	832,828
Skewness	0.05	0.05	0.05	0.05	0.05	0.0509	0.05	0.05	0.05	0.05
Kurtosis	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96
Coeff. of Variability	0.14	0.14	0.14	0.14	0.14	0.1413	0.14	0.14	0.14	0.14
Minimum	548	670	792	1,402	1,402	1,402	792	1,402	2,011	2,620
Maximum	2,234	2,731	3,227	5,710	5,710	5,710	3,227	5,710	8,192	10,674
Range Width	1,686	2,060	2,435	4,308	4,308	4,308	2,435	4,308	6,181	8,054
Mean Std. Error	0	0	1	1	1	1	1	1	1	2

Percentiles	Plan 3 - Present Value	Plan 4 - Prent Value	Plan 5 - Present Value	Plan 6 - Present Value	Plan 7 - Present Value	Plan 8 - Present Value	Plan 9 - Present Value	Plan 10 - Present Value	Plan 11 - Present Value	Plan 12 - Present Value
0%	548	670	792	1,402	1,402	1,402	792	1,402	2,011	2,620
5%	1,039	1,270	1,501	2,656	2,656	2,656	1,501	2,656	3,811	4,966
10%	1,107	1,353	1,599	2,830	2,830	2,830	1,599	2,830	4,060	5,290
15%	1,154	1,410	1,666	2,948	2,948	2,948	1,666	2,948	4,230	5,512
20%	1,191	1,455	1,720	3,043	3,043	3,043	1,720	3,043	4,366	5,689
25%	1,222	1,494	1,766	3,124	3,124	3,124	1,766	3,124	4,482	5,840
30%	1,251	1,529	1,807	3,196	3,196	3,196	1,807	3,196	4,586	5,975
35%	1,277	1,561	1,845	3,264	3,264	3,264	1,845	3,264	4,683	6,102
40%	1,302	1,592	1,881	3,328	3,328	3,328	1,881	3,328	4,775	6,222
45%	1,327	1,621	1,916	3,390	3,390	3,390	1,916	3,390	4,864	6,338
50%	1,351	1,651	1,951	3,451	3,451	3,451	1,951	3,451	4,952	6,452
55%	1,374	1,680	1,985	3,512	3,512	3,512	1,985	3,512	5,039	6,566
60%	1,399	1,710	2,021	3,576	3,576	3,576	2,021	3,576	5,131	6,685
65%	1,425	1,741	2,058	3,640	3,640	3,640	2,058	3,640	5,223	6,806
70%	1,451	1,774	2,097	3,709	3,709	3,709	2,097	3,709	5,322	6,935
75%	1,480	1,809	2,138	3,783	3,783	3,783	2,138	3,783	5,428	7,072
80%	1,513	1,849	2,185	3,866	3,866	3,866	2,185	3,866	5,547	7,228
85%	1,551	1,895	2,240	3,963	3,963	3,963	2,240	3,963	5,686	7,410
90%	1,599	1,954	2,309	4,085	4,085	4,085	2,309	4,085	5,861	7,638
95%	1,669	2,039	2,410	4,264	4,264	4,264	2,410	4,264	6,118	7,972
100%	2,234	2,731	3,227	5,710	5,710	5,710	3,227	5,710	8,192	10,674

Financial Impact – Year 2020 Estimated Savings

Statistics	Plan 3 Year 2020 Savings	Plan 4 Year 2020 Savings	Plan 5 Year 2020 Savings	Plan 6 Year 2020 Savings	Plan 7 Year 2020 Savings	Plan 8 - Year 2020 Savings	Plan 9 - Year 2020 Savings	Plan 10 - Year 2020 Savings	Plan 11 - Year 2020 Savings	Plan 12 - Year 2020 Savings
Trials	226800	226800	226800	226800	226800	226800	226800	226800	226800	226800
Base Case	(98)	(120)	(142)	(251)	(251)	(251)	(142)	(251)	(360)	(470)
Mean	(87)	(106)	(126)	(222)	(222)	(222)	(126)	(222)	(319)	(415)
Median	(87)	(106)	(125)	(221)	(221)	(221)	(125)	(221)	(317)	(414)
Mode	(91)	(111)	(131)	(232)	(232)	(232)	(131)	(232)	(332)	(433)
Standard Deviation	22	27	32	57	57	57	32	57	82	106
Variance	497	742	1,037	3,244	3,244	3,244	1,037	3,244	6,679	11,340
Skewness	-0.04	-0.04	-0.04	-0.04	-0.04	-0.0356	-0.04	-0.04	-0.04	-0.04
Kurtosis	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88
Coeff. of Variability	-0.26	-0.26	-0.26	-0.26	-0.26	-0.2565	-0.26	-0.26	-0.26	-0.26
Minimum	(178)	(217)	(257)	(454)	(454)	(454)	(257)	(454)	(651)	(849)
Maximum	0	0	0	0	0	0	0	0	0	0
Range Width	178	217	257	454	454	454	257	454	651	849
Mean Std. Error	0	0	0	0	0	0	0	0	0	0

Percentiles	Plan 3 Year 2020 Savings	Plan 4 Year 2020 Savings	Plan 5 Year 2020 Savings	Plan 6 Year 2020 Savings	Plan 7 Year 2020 Savings	Plan 8 - Year 2020 Savings	Plan 9 - Year 2020 Savings	Plan 10 - Year 2020 Savings	Plan 11 - Year 2020 Savings	Plan 12 - Year 2020 Savings
0%	(178)	(217)	(257)	(454)	(454)	(454)	(257)	(454)	(651)	(849)
5%	(124)	(151)	(179)	(317)	(317)	(317)	(179)	(317)	(454)	(592)
10%	(116)	(141)	(167)	(296)	(296)	(296)	(167)	(296)	(424)	(553)
15%	(110)	(135)	(159)	(282)	(282)	(282)	(159)	(282)	(405)	(527)
20%	(106)	(129)	(153)	(270)	(270)	(270)	(153)	(270)	(388)	(505)
25%	(102)	(125)	(147)	(260)	(260)	(260)	(147)	(260)	(374)	(487)
30%	(99)	(121)	(142)	(252)	(252)	(252)	(142)	(252)	(362)	(471)
35%	(96)	(117)	(138)	(245)	(245)	(245)	(138)	(245)	(351)	(457)
40%	(93)	(113)	(134)	(237)	(237)	(237)	(134)	(237)	(340)	(442)
45%	(89)	(109)	(129)	(229)	(229)	(229)	(129)	(229)	(328)	(427)
50%	(87)	(106)	(125)	(221)	(221)	(221)	(125)	(221)	(317)	(414)
55%	(84)	(103)	(121)	(214)	(214)	(214)	(121)	(214)	(308)	(401)
60%	(81)	(99)	(117)	(207)	(207)	(207)	(117)	(207)	(298)	(388)
65%	(78)	(96)	(113)	(200)	(200)	(200)	(113)	(200)	(287)	(374)
70%	(75)	(92)	(108)	(191)	(191)	(191)	(108)	(191)	(275)	(358)
75%	(71)	(87)	(103)	(183)	(183)	(183)	(103)	(183)	(262)	(341)
80%	(68)	(83)	(98)	(174)	(174)	(174)	(98)	(174)	(249)	(325)
85%	(64)	(78)	(92)	(163)	(163)	(163)	(92)	(163)	(234)	(304)
90%	(58)	(71)	(84)	(148)	(148)	(148)	(84)	(148)	(213)	(277)
95%	(51)	(62)	(73)	(129)	(129)	(129)	(73)	(129)	(185)	(241)
100%	0	0	0	0	0	0	0	0	0	0

Individual Employee Estimates of Retirement Contributions Assumptions, Methodology, and Results

Individual Employee Estimates of Retirement Contributions Assumptions:

- Assumed the percent contributions based on the plans defined in Chapter 9
- Tax savings were estimated based on an assumed single filer applying the standard deduction and 1 exemption based on 2013 IRS rules

Individual Employee Estimates of Retirement Contributions Methodology:

The starting salary and ending salary was multiplied by the contribution levels for both the USPS and employee across each of the various pension plan designs. Tax savings were estimated utilizing a 15% tax bracket for the initial salary level and a 25% tax bracket for the final salary level.

This provides estimates of individual employee requirements from a percentage perspective, as well as a dollar perspective.

Individual Employee Estimates of Retirement Contributions Results:

Individual Employee Analysis Contributions Estimated based on estimated initial salary (Percentages)

| | Current | Curr. New Hires | | | | | | | | | | | |
	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:
Assumed Years of Svc:	35	35	35	35	35	35	35	35	35	35	35	35
Est. Beginning Salary	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456
Percent Contributions												
USPS												
Annuity	11.90%	9.60%	4.80%	2.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Auto TSP	1.00%	1.00%	4.00%	4.00%	6.00%	4.00%	2.00%	0.00%	12.00%	10.00%	8.00%	6.00%
Match TSP	4.00%	4.00%	4.00%	6.00%	6.00%	6.00%	8.00%	10.00%	0.00%	0.00%	0.00%	0.00%
Social Security	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%
Total:	*23.10%*	*20.80%*	*19.00%*	*18.60%*	*18.20%*	*16.20%*	*16.20%*	*16.20%*	*18.20%*	*16.20%*	*14.20%*	*12.20%*
Employee												
Annuity Match:	0.80%	3.10%	1.55%	0.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
TSP	5.0%	5.0%	4.0%	6.0%	6.0%	6.0%	8.0%	10.0%	5.0%	5.0%	5.0%	5.0%
Social Security	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%
Total:	*12.00%*	*14.30%*	*11.75%*	*12.98%*	*12.20%*	*12.20%*	*14.20%*	*16.20%*	*11.20%*	*11.20%*	*11.20%*	*11.20%*
Total Overall Percent:	**35.10%**	**35.10%**	**30.75%**	**31.58%**	**30.40%**	**28.40%**	**30.40%**	**32.40%**	**29.40%**	**27.40%**	**25.40%**	**23.40%**

Individual Employee Analysis Contributions Estimated based on estimated initial salary (Dollars)

	Current	Curr. New Hires										
	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:
Assumed Years of Svc:	35	35	35	35	35	35	35	35	35	35	35	35
Est. Beginning Salary	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456	$ 33,456
Dollar Contributions												
USPS:												
Annuity	$ 3,981	$ 3,212	$ 1,606	$ 803	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Auto TSP	$ 335	$ 335	$ 1,338	$ 1,338	$ 2,007	$ 1,338	$ 669	$ -	$ 4,015	$ 3,346	$ 2,676	$ 2,007
Match TSP	$ 1,338	$ 1,338	$ 1,338	$ 2,007	$ 2,007	$ 2,007	$ 2,676	$ 3,346	$ -	$ -	$ -	$ -
Social Security	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074
Total	$ 7,728	$ 6,959	$ 6,357	$ 6,223	$ 6,089	$ 5,420	$ 5,420	$ 5,420	$ 6,089	$ 5,420	$ 4,751	$ 4,082
% Change from New Hire Current:		-10.0%	-8.7%	-10.6%	-12.5%	-22.1%	-22.1%	-22.1%	-12.5%	-22.1%	-31.7%	-41.3%
Employee												
Annuity	$ 268	$ 1,037	$ 519	$ 259	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tax Savings Estimate @15%	$ (40)	$ (156)	$ (78)	$ (39)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TSP	$ 1,673	$ 1,673	$ 1,338	$ 2,007	$ 2,007	$ 2,007	$ 2,676	$ 3,346	$ 1,673	$ 1,673	$ 1,673	$ 1,673
Tax Savings Estimate @15%	$ (251)	$ (251)	$ (201)	$ (301)	$ (301)	$ (301)	$ (401)	$ (502)	$ (251)	$ (251)	$ (251)	$ (251)
Social Security	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074	$ 2,074
Total	$ 3,724	$ 4,378	$ 3,653	$ 4,001	$ 3,781	$ 3,781	$ 4,349	$ 4,918	$ 3,496	$ 3,496	$ 3,496	$ 3,496
% Change from New Hire Current:		17.6%	-16.6%	-8.6%	-13.6%	-13.6%	-0.6%	12.3%	-20.1%	-20.1%	-20.1%	-20.1%
Total Dollar Contributions:												
Annuity	$ 4,249	$ 4,249	$ 2,124	$ 1,062	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TSP	$ 3,346	$ 3,346	$ 4,015	$ 5,353	$ 6,022	$ 5,353	$ 6,022	$ 6,691	$ 5,688	$ 5,018	$ 4,349	$ 3,680
Social Security	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149	$ 4,149
Total:	$ 11,743	$ 11,743	$ 10,288	$ 10,564	$ 10,171	$ 9,501	$ 10,171	$ 10,840	$ 9,836	$ 9,167	$ 8,498	$ 7,829
% Change from New Hire Current:		0.0%	-12.4%	-10.0%	-13.4%	-19.1%	-13.4%	-7.7%	-16.2%	-21.9%	-27.6%	-33.3%
% of Total Salary:		35.1%	35.1%	30.8%	31.6%	30.4%	28.4%	30.4%	32.4%	29.4%	27.4%	25.4%	23.4%

Individual Employee Analysis Contributions Estimated based on estimated ending salary (Percentages)

	Current	Curr. New Hires										
	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:
Assumed Years of Svc:	35	35	35	35	35	35	35	35	35	35	35	35
Est. Beginning Salary	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490

Percent Contributions

USPS

Annuity	11.90%	9.60%	4.80%	2.40%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Auto TSP	1.00%	1.00%	4.00%	4.00%	6.00%	4.00%	2.00%	0.00%	12.00%	10.00%	8.00%	6.00%
Match TSP	4.00%	4.00%	4.00%	6.00%	6.00%	6.00%	8.00%	10.00%	0.00%	0.00%	0.00%	0.00%
Social Security	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%
Total:	*23.10%*	*20.80%*	*19.00%*	*18.60%*	*18.20%*	*16.20%*	*16.20%*	*16.20%*	*18.20%*	*16.20%*	*14.20%*	*12.20%*

Employee

Annuity Match:	0.80%	3.10%	1.55%	0.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
TSP	5.0%	5.0%	4.0%	6.0%	6.0%	6.0%	8.0%	10.0%	5.0%	5.0%	5.0%	5.0%
Social Security	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%	6.20%
Total:	*12.00%*	*14.30%*	*11.75%*	*12.98%*	*12.20%*	*12.20%*	*14.20%*	*16.20%*	*11.20%*	*11.20%*	*11.20%*	*11.20%*
Total Overall Percent:	**35.10%**	**35.10%**	**30.75%**	**31.58%**	**30.40%**	**28.40%**	**30.40%**	**32.40%**	**29.40%**	**27.40%**	**25.40%**	**23.40%**

Individual Employee Analysis Contributions Estimated based on estimated ending salary (Dollars)

	Current	Curr. New Hires										
	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9	Plan 10	Plan 11	Plan 12
	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:	Employee:
Assumed Years of Svc:	35	35	35	35	35	35	35	35	35	35	35	35
Est. Beginning Salary	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490	$ 54,490
Dollar Contributions												
USPS:												
Annuity	$ 6,484	$ 5,231	$ 2,616	$ 1,308	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Auto TSP	$ 545	$ 545	$ 2,180	$ 2,180	$ 3,269	$ 2,180	$ 1,090	$ -	$ 6,539	$ 5,449	$ 4,359	$ 3,269
Match TSP	$ 2,180	$ 2,180	$ 2,180	$ 3,269	$ 3,269	$ 3,269	$ 4,359	$ 5,449	$ -	$ -	$ -	$ -
Social Security	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378
Total	$ 12,587	$ 11,334	$ 10,353	$ 10,135	$ 9,917	$ 8,827	$ 8,827	$ 8,827	$ 9,917	$ 8,827	$ 7,738	$ 6,648
% Change from New Hire Current:		-10.0%	-8.7%	-10.6%	-12.5%	-22.1%	-22.1%	-22.1%	-12.5%	-22.1%	-31.7%	-41.3%
Employee												
Annuity	$ 436	$ 1,689	$ 845	$ 422	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Tax Savings Estimates @25%	$ (109)	$ (422)	$ (211)	$ (106)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TSP	$ 2,725	$ 2,725	$ 2,180	$ 3,269	$ 3,269	$ 3,269	$ 4,359	$ 5,449	$ 2,725	$ 2,725	$ 2,725	$ 2,725
Tax Savings Estimates @25%	$ (681)	$ (681)	$ (545)	$ (817)	$ (817)	$ (817)	$ (1,090)	$ (1,362)	$ (681)	$ (681)	$ (681)	$ (681)
Social Security	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378	$ 3,378
Total	$ 5,749	$ 6,689	$ 5,647	$ 6,147	$ 5,830	$ 5,830	$ 6,648	$ 7,465	$ 5,422	$ 5,422	$ 5,422	$ 5,422
% Change from New Hire Current:		16.4%	-15.6%	-8.1%	-12.8%	-12.8%	-0.6%	11.6%	-18.9%	-18.9%	-18.9%	-18.9%
Total Dollar Contributions:												
Annuity	$ 6,920	$ 6,920	$ 3,460	$ 1,730	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
TSP	$ 5,449	$ 5,449	$ 6,539	$ 8,718	$ 9,808	$ 8,718	$ 9,808	$ 10,898	$ 9,263	$ 8,174	$ 7,084	$ 5,994
Social Security	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757	$ 6,757
Total:	$ 19,126	$ 19,126	$ 16,756	$ 17,205	$ 16,565	$ 15,475	$ 16,565	$ 17,655	$ 16,020	$ 14,930	$ 13,841	$ 12,751
% Change from New Hire Current:		0.0%	-12.4%	-10.0%	-13.4%	-19.1%	-13.4%	-7.7%	-16.2%	-21.9%	-27.6%	-33.3%
% of Total Salary:	35.1%	35.1%	30.8%	31.6%	30.4%	28.4%	30.4%	32.4%	29.4%	27.4%	25.4%	23.4%

Individual Employee Estimates of Retirement Income Methodology, Assumptions and Results

Individual Employee Estimates of Retirement Income Assumptions
- Annual salary would be based on the estimated blended salary for an average employee described in the financial analysis methodology.
- Contributions levels for each plan would be as described in the plan summary section
- Social security benefits are estimated at 13,044 per annum based on an assumed salary of 50,000 per year retiring at age 62 after 35 years of employment (hired at age 27) (Social Security Administration)
- The FERS annuity portion for those plans described that have an annuity would be based off of the final 3 years of salary averaged times 35 years of employment times the percent as described in the plan summary section.
- The risky portfolio would consist of 50% in stocks and 50% in bonds.
- The risk free asset was assumed to provide an inflation free return of 2%
- The annuity would be based on an estimation provided through the Thrift Savings Plan website (https://www.tsp.gov/planningtools/annuities/annuityCalc_select.shtml) The estimate was made for four types of annuities:
  1. Growing Life Annuity with no survivor benefits
  2. Level Payment Life Annuity with no survivor benefits
  3. Growing Life Annuity with survivor benefits
  4. Level Payment Life Annuity with no survivor benefits
- Inflation was removed from all returns based on the CPI for all Urban consumer estimates provided by the Bureau of Labor Statistics from 1914-2012

Individual Employee Estimates of Retirement Income Methodology

Utilizing the average blended salary level by year for an average employee, the total contributions provided into the defined contribution plan were estimated. These contributions were grown through time over the 35 year career of the employee based on the risk free rate, as well as the risky rate. The risky rate was estimated by utilizing the return data from 1928 – 2012 based on the work of Aswath Damodaran at the Stern School of Business at New York University. Inflation was estimated by year based on the CPI for urban consumers and was subtracted from the returns for both the 10 year bond, as well as a portfolio of the S&P 500. Based on these after inflation returns, a portfolio consisting of 50% stock and 50% bonds was constructed. The historic after inflation return for stocks was 8.11% with a standard deviation of 20.36% and the after inflation return for bonds was 2.23% with a standard

deviation of 8.56%. The correlation between the two assets was -.07212. Utilizing the formulas for the construction of a portfolio of two risky assets the expected return was estimated to be 5.17% and the standard deviation of this portfolio was estimated to be 10.75%. A simulation was run for 250,000 trials to estimate the total value of the defined contribution plan at the end of year 35 based on this level of risk. The total value was converted into annuities based on the results of the Annuity calculator. An estimate was made for the total monthly income for $100,000 investment. The monthly income was divided by $100,000 to determine a monthly income per 1$ of investment and multiplied by 12 to determine a per annum rate. A risk free estimate of total savings was also estimated for each of the plans assuming a 2% after inflation return for the contributions.

The total per annum annuity constructed was added to the annuity associated with the FERS annuities based on the percentage of the plans modeled, as well as the average annual social security income expected. For the risk free investment portfolio there was no simulation necessary since the expected return was assumed, therefore the FERS annuity portion, the defined contribution annuity portion and social security income was aggregated to determine the total income which was compared to the final salary level to determine the percent replacement level. For the risky investment portfolio, the simulation was run which estimated the total annuity income, total retirement income and total replacement income for the 250,000 trials to understand the dispersion of income and the level of risk taken which could lead to less income opportunity.

Individual Employee Estimates of Retirement Income Results (Risky Investments)

Total Defined Contribution Plan Value

Total Defined Contribution Plan Value:

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$176,753.51	$176,753.51	$212,104.21	$282,805.61	$318,156.32	$282,805.61	$318,156.32	$353,507.02	$300,480.96	$265,130.26	$229,779.56	$194,428.86
Mean	$445,559.36	$445,559.36	$534,671.23	$712,894.98	$802,006.85	$712,894.98	$802,006.85	$891,118.72	$757,450.91	$668,339.04	$579,227.17	$490,115.30
Median	$408,810.64	$408,810.64	$490,572.77	$654,097.02	$735,859.15	$654,097.02	$735,859.15	$817,821.28	$694,978.09	$613,215.96	$531,453.83	$449,691.70
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$187,738.43	$187,738.43	$225,286.11	$300,381.48	$337,929.17	$300,381.48	$337,929.17	$375,476.85	$319,155.32	$281,607.64	$244,059.95	$206,512.27
Variance	$35,245,716,599.13	$35,245,716,599.13	$50,753,831,902.75	$90,229,034,493.78	$114,196,121,781.20	$90,229,034,493.78	$114,196,121,781.20	$140,982,866,396.54	$101,860,120,971.50	$79,302,862,348.05	$59,565,261,052.54	$42,647,317,084.95
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214
Minimum	$76,357.71	$76,357.71	$91,629.25	$122,172.33	$137,443.88	$122,172.33	$137,443.88	$152,715.42	$129,808.10	$114,536.56	$99,265.02	$83,993.48
Maximum	$2,760,014.65	$2,760,014.65	$3,312,017.58	$4,416,023.45	$4,968,026.38	$4,416,023.45	$4,968,026.38	$5,520,029.31	$4,692,024.91	$4,140,021.98	$3,588,019.05	$3,036,016.12
Range Width	$2,683,656.94	$2,683,656.94	$3,220,388.33	$4,293,851.11	$4,830,582.50	$4,293,851.11	$4,830,582.50	$5,367,313.89	$4,562,216.81	$4,025,485.42	$3,488,754.03	$2,952,022.64
Mean Std. Error	$375.48	$375.48	$450.57	$600.76	$675.86	$600.76	$675.86	$750.95	$638.31	$563.22	$488.12	$413.02

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$76,357.71	$76,357.71	$91,629.25	$122,172.33	$137,443.88	$122,172.33	$137,443.88	$152,715.42	$129,808.10	$114,536.56	$99,265.02	$83,993.48
5%	$216,575.69	$216,575.69	$259,890.83	$346,521.11	$389,836.25	$346,521.11	$389,836.25	$433,151.39	$368,178.68	$324,863.54	$281,548.40	$238,233.26
10%	$248,201.03	$248,201.03	$297,841.23	$397,121.64	$446,761.85	$397,121.64	$446,761.85	$496,402.05	$421,941.74	$372,301.54	$322,661.33	$273,021.13
15%	$272,669.14	$272,669.14	$327,202.97	$436,270.63	$490,804.46	$436,270.63	$490,804.46	$545,338.29	$463,537.55	$409,003.72	$354,469.89	$299,936.06
20%	$294,215.73	$294,215.73	$353,058.87	$470,745.16	$529,588.31	$470,745.16	$529,588.31	$588,431.46	$500,166.74	$441,323.59	$382,480.45	$323,637.30
25%	$313,832.73	$313,832.73	$376,599.28	$502,132.37	$564,898.92	$502,132.37	$564,898.92	$627,665.47	$533,515.65	$470,749.10	$407,982.55	$345,216.01
30%	$332,772.34	$332,772.34	$399,326.81	$532,435.74	$598,990.21	$532,435.74	$598,990.21	$665,544.68	$565,712.98	$499,158.51	$432,604.04	$366,049.57
35%	$351,279.14	$351,279.14	$421,534.97	$562,046.63	$632,302.45	$562,046.63	$632,302.45	$702,558.28	$597,174.54	$526,918.71	$456,662.88	$386,407.05
40%	$369,739.51	$369,739.51	$443,687.42	$591,583.22	$665,531.13	$591,583.22	$665,531.13	$739,479.03	$628,557.17	$554,609.27	$480,661.37	$406,713.47
45%	$389,092.62	$389,092.62	$466,911.15	$622,548.20	$700,366.72	$622,548.20	$700,366.72	$778,185.25	$661,457.46	$583,638.94	$505,820.41	$428,001.89
50%	$408,806.66	$408,806.66	$490,567.99	$654,090.65	$735,851.99	$654,090.65	$735,851.99	$817,613.32	$694,971.32	$613,209.99	$531,448.66	$449,687.32
55%	$430,055.17	$430,055.17	$516,066.20	$688,088.27	$774,099.30	$688,088.27	$774,099.30	$860,110.33	$731,093.78	$645,082.75	$559,071.72	$473,060.68
60%	$452,134.75	$452,134.75	$542,561.70	$723,415.60	$813,842.56	$723,415.60	$813,842.56	$904,269.51	$768,629.08	$678,202.13	$587,775.18	$497,348.23
65%	$476,589.97	$476,589.97	$571,907.96	$762,543.94	$857,861.94	$762,543.94	$857,861.94	$953,179.93	$810,202.94	$714,884.95	$619,566.95	$524,248.96
70%	$504,321.64	$504,321.64	$605,185.97	$806,914.63	$907,778.96	$806,914.63	$907,778.96	$1,008,643.29	$857,346.79	$756,482.46	$655,618.14	$554,753.81
75%	$535,909.54	$535,909.54	$643,091.45	$857,455.27	$964,637.18	$857,455.27	$964,637.18	$1,071,819.09	$911,046.22	$803,864.32	$696,682.41	$589,500.50
80%	$573,490.22	$573,490.22	$688,188.26	$917,584.35	$1,032,282.39	$917,584.35	$1,032,282.39	$1,146,980.44	$974,933.37	$860,235.33	$745,537.28	$630,839.24
85%	$621,688.79	$621,688.79	$746,026.55	$994,702.06	$1,119,039.82	$994,702.06	$1,119,039.82	$1,243,377.58	$1,056,870.94	$932,533.18	$808,195.43	$683,857.67
90%	$687,232.74	$687,232.74	$824,679.29	$1,099,572.39	$1,237,018.93	$1,099,572.39	$1,237,018.93	$1,374,465.48	$1,168,295.66	$1,030,849.11	$893,402.56	$755,956.01
95%	$798,011.07	$798,011.07	$957,613.28	$1,276,817.71	$1,436,419.92	$1,276,817.71	$1,436,419.92	$1,596,022.14	$1,356,618.81	$1,197,016.60	$1,037,414.39	$877,812.17
100%	$2,760,014.65	$2,760,014.65	$3,312,017.58	$4,416,023.45	$4,968,026.38	$4,416,023.45	$4,968,026.38	$5,520,029.31	$4,692,024.91	$4,140,021.98	$3,588,019.05	$3,036,016.12

Estimated Annuity Value - Growing Life Annuity, No Survivor Benefits

Annuity Value:

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$6,554.02	$6,554.02	$7,864.82	$10,486.43	$11,797.24	$10,486.43	$11,797.24	$13,108.04	$11,141.83	$9,831.03	$8,520.23	$7,209.42
Mean	$16,521.34	$16,521.34	$19,825.61	$26,434.15	$29,738.41	$26,434.15	$29,738.41	$33,042.68	$28,086.28	$24,782.01	$21,477.74	$18,173.48
Median	$15,158.70	$15,158.70	$18,190.44	$24,253.92	$27,285.66	$24,253.92	$27,285.66	$30,317.40	$25,769.79	$22,738.05	$19,706.31	$16,674.57
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$6,961.34	$6,961.34	$8,353.61	$11,138.15	$12,530.41	$11,138.15	$12,530.41	$13,922.68	$11,834.28	$10,442.01	$9,049.74	$7,657.47
Variance	$48,460,266.24	$48,460,266.24	$69,782,783.38	$124,058,281.57	$157,011,262.61	$124,058,281.57	$157,011,262.61	$193,841,064.96	$140,050,169.43	$109,035,599.04	$81,897,849.94	$58,636,922.15
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214
Minimum	$2,831.34	$2,831.34	$3,397.61	$4,530.15	$5,096.42	$4,530.15	$5,096.42	$5,662.69	$4,813.28	$4,247.02	$3,680.75	$3,114.48
Maximum	$102,341.34	$102,341.34	$122,809.61	$163,746.15	$184,214.42	$163,746.15	$184,214.42	$204,682.69	$173,980.28	$153,512.02	$133,043.75	$112,575.48
Range Width	$99,510.00	$99,510.00	$119,412.00	$159,216.00	$179,118.00	$159,216.00	$179,118.00	$199,020.00	$169,167.00	$149,265.00	$129,363.00	$109,461.00
Mean Std. Error	$13.92	$13.92	$16.71	$22.28	$25.06	$22.28	$25.06	$27.85	$23.67	$20.88	$18.10	$15.31

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$2,831.34	$2,831.34	$3,397.61	$4,530.15	$5,096.42	$4,530.15	$5,096.42	$5,662.69	$4,813.28	$4,247.02	$3,680.75	$3,114.48
5%	$8,030.63	$8,030.63	$9,636.75	$12,849.00	$14,455.13	$12,849.00	$14,455.13	$16,061.25	$13,652.07	$12,045.94	$10,439.81	$8,833.69
10%	$9,203.29	$9,203.29	$11,043.95	$14,725.27	$16,565.93	$14,725.27	$16,565.93	$18,406.59	$15,645.60	$13,804.94	$11,964.28	$10,123.62
15%	$10,110.57	$10,110.57	$12,132.69	$16,176.92	$18,199.03	$16,176.92	$18,199.03	$20,221.14	$17,187.97	$15,165.86	$13,143.74	$11,121.63
20%	$10,909.52	$10,909.52	$13,091.42	$17,455.23	$19,637.13	$17,455.23	$19,637.13	$21,819.04	$18,546.18	$16,364.28	$14,182.37	$12,000.47
25%	$11,636.92	$11,636.92	$13,964.30	$18,619.07	$20,946.45	$18,619.07	$20,946.45	$23,273.84	$19,782.76	$17,455.38	$15,127.99	$12,800.61
30%	$12,339.20	$12,339.20	$14,807.04	$19,742.72	$22,210.56	$19,742.72	$22,210.56	$24,678.40	$20,976.64	$18,508.80	$16,040.96	$13,573.12
35%	$13,025.43	$13,025.43	$15,630.52	$20,840.69	$23,445.77	$20,840.69	$23,445.77	$26,050.86	$22,143.23	$19,538.15	$16,933.06	$14,327.97
40%	$13,709.94	$13,709.94	$16,451.93	$21,935.91	$24,677.89	$21,935.91	$24,677.89	$27,419.88	$23,306.90	$20,564.91	$17,822.92	$15,080.94
45%	$14,427.55	$14,427.55	$17,313.07	$23,084.09	$25,969.60	$23,084.09	$25,969.60	$28,855.11	$24,526.84	$21,641.33	$18,755.82	$15,870.31
50%	$15,158.55	$15,158.55	$18,190.26	$24,253.68	$27,285.39	$24,253.68	$27,285.39	$30,317.10	$25,769.54	$22,737.83	$19,706.12	$16,674.41
55%	$15,946.45	$15,946.45	$19,135.73	$25,514.31	$28,703.60	$25,514.31	$28,703.60	$31,892.89	$27,108.96	$23,919.67	$20,730.38	$17,541.09
60%	$16,765.16	$16,765.16	$20,118.19	$26,824.25	$30,177.28	$26,824.25	$30,177.28	$33,530.31	$28,500.77	$25,147.73	$21,794.70	$18,441.67
65%	$17,671.96	$17,671.96	$21,206.35	$28,275.13	$31,809.52	$28,275.13	$31,809.52	$35,343.91	$30,042.33	$26,507.93	$22,973.54	$19,439.15
70%	$18,700.25	$18,700.25	$22,440.30	$29,920.39	$33,660.44	$29,920.39	$33,660.44	$37,400.49	$31,790.42	$28,050.37	$24,310.32	$20,570.27
75%	$19,871.53	$19,871.53	$23,845.83	$31,794.44	$35,768.75	$31,794.44	$35,768.75	$39,743.05	$33,781.59	$29,807.29	$25,832.98	$21,858.68
80%	$21,265.02	$21,265.02	$25,518.02	$34,024.03	$38,277.03	$34,024.03	$38,277.03	$42,530.03	$36,150.53	$31,897.53	$27,644.52	$23,391.52
85%	$23,052.22	$23,052.22	$27,662.66	$36,883.55	$41,494.00	$36,883.55	$41,494.00	$46,104.44	$39,188.77	$34,578.33	$29,967.89	$25,357.44
90%	$25,482.59	$25,482.59	$30,579.11	$40,772.14	$45,868.66	$40,772.14	$45,868.66	$50,965.18	$43,320.40	$38,223.89	$33,127.37	$28,030.85
95%	$29,590.25	$29,590.25	$35,508.30	$47,344.40	$53,262.45	$47,344.40	$53,262.45	$59,180.50	$50,303.43	$44,385.38	$38,467.33	$32,549.28
100%	$102,341.34	$102,341.34	$122,809.61	$163,746.15	$184,214.42	$163,746.15	$184,214.42	$204,682.69	$173,980.28	$153,512.02	$133,043.75	$112,575.48

Total Retirement Income - Growing Life Annuity, No Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$38,670	$38,670	$30,445	$28,298	$24,841	$23,530	$24,841	$26,152	$24,186	$22,875	$21,564	$20,253
Mean	$48,637	$48,637	$42,405	$44,246	$42,782	$39,478	$42,782	$46,087	$41,130	$37,826	$34,522	$31,217
Median	$47,274	$47,274	$40,770	$42,066	$40,330	$37,298	$40,330	$43,361	$38,814	$35,782	$32,750	$29,719
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$6,961	$6,961	$8,354	$11,138	$12,530	$11,138	$12,530	$13,923	$11,834	$10,442	$9,050	$7,657
Variance	$48,460,266	$48,460,266	$69,782,783	$124,058,282	$157,011,263	$124,058,282	$157,011,263	$193,841,065	$140,050,169	$109,035,599	$81,897,850	$58,636,922
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1431	0.1431	0.1970	0.2517	0.2929	0.2821	0.2929	0.3021	0.2877	0.2761	0.2621	0.2453
Minimum	$34,947	$34,947	$25,977	$22,342	$18,140	$17,574	$18,140	$18,707	$17,857	$17,291	$16,725	$16,158
Maximum	$134,457	$134,457	$145,389	$181,558	$197,258	$176,790	$197,258	$217,727	$187,024	$166,556	$146,088	$125,619
Range Width	$99,510	$99,510	$119,412	$159,216	$179,118	$159,216	$179,118	$199,020	$169,167	$149,265	$129,363	$109,461
Mean Std. Error	$14	$14	$17	$22	$25	$22	$25	$28	$24	$21	$18	$15

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$34,947	$34,947	$25,977	$22,342	$18,140	$17,574	$18,140	$18,707	$17,857	$17,291	$16,725	$16,158
5%	$40,146	$40,146	$32,217	$30,661	$27,499	$25,893	$27,499	$29,105	$26,696	$25,090	$23,484	$21,878
10%	$41,319	$41,319	$33,624	$32,537	$29,610	$27,769	$29,610	$31,451	$28,690	$26,849	$25,008	$23,168
15%	$42,226	$42,226	$34,713	$33,989	$31,243	$29,221	$31,243	$33,265	$30,232	$28,210	$26,188	$24,166
20%	$43,025	$43,025	$35,671	$35,267	$32,681	$30,499	$32,681	$34,863	$31,590	$29,408	$27,226	$25,044
25%	$43,753	$43,753	$36,544	$36,431	$33,990	$31,663	$33,990	$36,318	$32,827	$30,499	$28,172	$25,845
30%	$44,455	$44,455	$37,387	$37,555	$35,255	$32,787	$35,255	$37,722	$34,021	$31,553	$29,085	$26,617
35%	$45,141	$45,141	$38,210	$38,653	$36,490	$33,885	$36,490	$39,095	$35,187	$32,582	$29,977	$27,372
40%	$45,826	$45,826	$39,032	$39,748	$37,722	$34,980	$37,722	$40,464	$36,351	$33,609	$30,867	$28,125
45%	$46,543	$46,543	$39,893	$40,896	$39,014	$36,128	$39,014	$41,899	$37,571	$34,685	$31,800	$28,914
50%	$47,274	$47,274	$40,770	$42,066	$40,329	$37,298	$40,329	$43,361	$38,814	$35,782	$32,750	$29,718
55%	$48,062	$48,062	$41,716	$43,326	$41,748	$38,558	$41,748	$44,937	$40,153	$36,964	$33,774	$30,585
60%	$48,881	$48,881	$42,698	$44,636	$43,221	$39,868	$43,221	$46,574	$41,545	$38,192	$34,839	$31,486
65%	$49,788	$49,788	$43,786	$46,087	$44,854	$41,319	$44,854	$48,388	$43,086	$39,552	$36,018	$32,483
70%	$50,816	$50,816	$45,020	$47,732	$46,704	$42,964	$46,704	$50,444	$44,834	$41,094	$37,354	$33,614
75%	$51,987	$51,987	$46,426	$49,606	$48,813	$44,838	$48,813	$52,787	$46,826	$42,851	$38,877	$34,903
80%	$53,381	$53,381	$48,098	$51,836	$51,321	$47,068	$51,321	$55,574	$49,195	$44,942	$40,689	$36,436
85%	$55,168	$55,168	$50,242	$54,695	$54,538	$49,928	$54,538	$59,148	$52,233	$47,622	$43,012	$38,401
90%	$57,598	$57,598	$53,159	$58,584	$58,913	$53,816	$58,913	$64,009	$56,364	$51,268	$46,171	$41,075
95%	$61,706	$61,706	$58,088	$65,156	$66,306	$60,388	$66,306	$72,225	$63,347	$57,429	$51,511	$45,593
100%	$134,457	$134,457	$145,389	$181,558	$197,258	$176,790	$197,258	$217,727	$187,024	$166,556	$146,088	$125,619

Percent of Final Year Salary - Growing Life Annuity, No Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	70.97%	70.97%	55.87%	51.93%	45.59%	43.18%	45.59%	47.99%	44.39%	41.98%	39.57%	37.17%
Mean	89.26%	89.26%	77.82%	81.20%	78.51%	72.45%	78.51%	84.58%	75.48%	69.42%	63.35%	57.29%
Median	86.76%	86.76%	74.82%	77.20%	74.01%	68.45%	74.01%	79.58%	71.23%	65.67%	60.10%	54.54%
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	12.78%	12.78%	15.33%	20.44%	23.00%	20.44%	23.00%	25.55%	21.72%	19.16%	16.61%	14.05%
Variance	1.63%	1.63%	2.35%	4.18%	5.29%	4.18%	5.29%	6.53%	4.72%	3.67%	2.76%	1.97%
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1431	0.1431	0.1970	0.2517	0.2929	0.2821	0.2929	0.3021	0.2877	0.2761	0.2621	0.2453
Minimum	64.13%	64.13%	47.67%	41.00%	33.29%	32.25%	33.29%	34.33%	32.77%	31.73%	30.69%	29.65%
Maximum	246.75%	246.75%	266.82%	333.19%	362.01%	324.44%	362.01%	399.57%	343.22%	305.66%	268.10%	230.54%
Range Width	182.62%	182.62%	219.14%	292.19%	328.71%	292.19%	328.71%	365.24%	310.45%	273.93%	237.41%	200.88%
Mean Std. Error	0.03%	0.03%	0.03%	0.04%	0.05%	0.04%	0.05%	0.05%	0.04%	0.04%	0.03%	0.03%

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	64.13%	64.13%	47.67%	41.00%	33.29%	32.25%	33.29%	34.33%	32.77%	31.73%	30.69%	29.65%
5%	73.68%	73.68%	59.12%	56.27%	50.47%	47.52%	50.47%	53.41%	48.99%	46.04%	43.10%	40.15%
10%	75.83%	75.83%	61.71%	59.71%	54.34%	50.96%	54.34%	57.72%	52.65%	49.27%	45.89%	42.52%
15%	77.49%	77.49%	63.70%	62.38%	57.34%	53.63%	57.34%	61.05%	55.48%	51.77%	48.06%	44.35%
20%	78.96%	78.96%	65.46%	64.72%	59.98%	55.97%	59.98%	63.98%	57.97%	53.97%	49.97%	45.96%
25%	80.29%	80.29%	67.07%	66.86%	62.38%	58.11%	62.38%	66.65%	60.24%	55.97%	51.70%	47.43%
30%	81.58%	81.58%	68.61%	68.92%	64.70%	60.17%	64.70%	69.23%	62.43%	57.91%	53.38%	48.85%
35%	82.84%	82.84%	70.12%	70.93%	66.97%	62.18%	66.97%	71.75%	64.58%	59.79%	55.01%	50.23%
40%	84.10%	84.10%	71.63%	72.94%	69.23%	64.19%	69.23%	74.26%	66.71%	61.68%	56.65%	51.61%
45%	85.42%	85.42%	73.21%	75.05%	71.60%	66.30%	71.60%	76.89%	68.95%	63.65%	58.36%	53.06%
50%	86.76%	86.76%	74.82%	77.20%	74.01%	68.45%	74.01%	79.58%	71.23%	65.67%	60.10%	54.54%
55%	88.20%	88.20%	76.56%	79.51%	76.61%	70.76%	76.61%	82.47%	73.69%	67.84%	61.98%	56.13%
60%	89.71%	89.71%	78.36%	81.92%	79.32%	73.17%	79.32%	85.47%	76.24%	70.09%	63.94%	57.78%
65%	91.37%	91.37%	80.36%	84.58%	82.31%	75.83%	82.31%	88.80%	79.07%	72.59%	66.10%	59.61%
70%	93.26%	93.26%	82.62%	87.60%	85.71%	78.85%	85.71%	92.58%	82.28%	75.42%	68.55%	61.69%
75%	95.41%	95.41%	85.20%	91.04%	89.58%	82.29%	89.58%	96.87%	85.93%	78.64%	71.35%	64.05%
80%	97.96%	97.96%	88.27%	95.13%	94.18%	86.38%	94.18%	101.99%	90.28%	82.48%	74.67%	66.87%
85%	101.24%	101.24%	92.20%	100.38%	100.09%	91.63%	100.09%	108.55%	95.86%	87.40%	78.93%	70.47%
90%	105.70%	105.70%	97.56%	107.51%	108.12%	98.76%	108.12%	117.47%	103.44%	94.09%	84.73%	75.38%
95%	113.24%	113.24%	106.60%	119.57%	121.68%	110.82%	121.68%	132.55%	116.25%	105.39%	94.53%	83.67%
100%	246.75%	246.75%	266.82%	333.19%	362.01%	324.44%	362.01%	399.57%	343.22%	305.66%	268.10%	230.54%

Estimated Annuity Value - Level Life Annuity, No Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$9,990.11	$9,990.11	$11,988.13	$15,984.17	$17,982.19	$15,984.17	$17,982.19	$19,980.22	$16,983.18	$14,985.16	$12,987.14	$10,989.12
Mean	$25,183.02	$25,183.02	$30,219.62	$40,292.82	$45,329.43	$40,292.82	$45,329.43	$50,366.03	$42,811.13	$37,774.52	$32,737.92	$27,701.32
Median	$23,105.98	$23,105.98	$27,727.17	$36,969.56	$41,590.76	$36,969.56	$41,590.76	$46,211.95	$39,280.16	$34,658.97	$30,037.77	$25,416.58
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$10,610.98	$10,610.98	$12,733.17	$16,977.56	$19,099.76	$16,977.56	$19,099.76	$21,221.95	$18,038.66	$15,916.46	$13,794.27	$11,672.07
Variance	$112,592,808.23	$112,592,808.23	$162,133,643.85	$288,237,589.07	$364,800,698.67	$288,237,589.07	$364,800,698.67	$450,371,232.93	$325,393,215.79	$253,333,818.52	$190,281,845.91	$136,237,297.96
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214
Minimum	$4,315.74	$4,315.74	$5,178.89	$6,905.18	$7,768.33	$6,905.18	$7,768.33	$8,631.48	$7,336.75	$6,473.61	$5,610.46	$4,747.31
Maximum	$155,996.03	$155,996.03	$187,195.23	$249,593.65	$280,792.85	$249,593.65	$280,792.85	$311,992.06	$265,193.25	$233,994.04	$202,794.84	$171,595.63
Range Width	$151,680.29	$151,680.29	$182,016.35	$242,688.46	$273,024.52	$242,688.46	$273,024.52	$303,360.58	$257,856.49	$227,520.44	$197,184.38	$166,848.32
Mean Std. Error	$21.22	$21.22	$25.47	$33.96	$38.20	$33.96	$38.20	$42.44	$36.08	$31.83	$27.59	$23.34

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$4,315.74	$4,315.74	$5,178.89	$6,905.18	$7,768.33	$6,905.18	$7,768.33	$8,631.48	$7,336.75	$6,473.61	$5,610.46	$4,747.31
5%	$12,240.86	$12,240.86	$14,689.03	$19,585.37	$22,033.54	$19,585.37	$22,033.54	$24,481.72	$20,809.46	$18,361.29	$15,913.12	$13,464.94
10%	$14,028.32	$14,028.32	$16,833.99	$22,445.32	$25,250.98	$22,445.32	$25,250.98	$28,056.64	$23,848.15	$21,042.48	$18,236.82	$15,431.15
15%	$15,411.26	$15,411.26	$18,493.51	$24,658.02	$27,740.27	$24,658.02	$27,740.27	$30,822.52	$26,199.14	$23,116.89	$20,034.64	$16,952.39
20%	$16,629.07	$16,629.07	$19,954.89	$26,606.52	$29,932.33	$26,606.52	$29,932.33	$33,258.15	$28,269.42	$24,943.61	$21,617.79	$18,291.98
25%	$17,737.83	$17,737.83	$21,285.39	$28,380.52	$31,928.09	$28,380.52	$31,928.09	$35,475.65	$30,154.30	$26,606.74	$23,059.17	$19,511.61
30%	$18,808.29	$18,808.29	$22,569.95	$30,093.27	$33,854.93	$30,093.27	$33,854.93	$37,616.59	$31,974.10	$28,212.44	$24,450.78	$20,689.12
35%	$19,854.30	$19,854.30	$23,825.16	$31,766.88	$35,737.73	$31,766.88	$35,737.73	$39,708.59	$33,752.30	$29,781.45	$25,810.59	$21,839.73
40%	$20,897.68	$20,897.68	$25,077.21	$33,436.28	$37,615.82	$33,436.28	$37,615.82	$41,795.35	$35,526.05	$31,346.52	$27,166.98	$22,987.45
45%	$21,991.52	$21,991.52	$26,389.82	$35,186.42	$39,584.73	$35,186.42	$39,584.73	$43,983.03	$37,385.58	$32,987.27	$28,588.97	$24,190.67
50%	$23,105.75	$23,105.75	$27,726.90	$36,969.20	$41,590.35	$36,969.20	$41,590.35	$46,211.50	$39,279.78	$34,658.63	$30,037.48	$25,416.33
55%	$24,306.72	$24,306.72	$29,168.06	$38,890.75	$43,752.09	$38,890.75	$43,752.09	$48,613.44	$41,321.42	$36,460.08	$31,598.73	$26,737.39
60%	$25,554.66	$25,554.66	$30,665.59	$40,887.45	$45,998.38	$40,887.45	$45,998.38	$51,109.31	$43,442.92	$38,331.98	$33,221.05	$28,110.12
65%	$26,936.86	$26,936.86	$32,324.24	$43,098.98	$48,486.36	$43,098.98	$48,486.36	$53,873.73	$45,792.67	$40,405.30	$35,017.92	$29,630.55
70%	$28,504.26	$28,504.26	$34,205.11	$45,606.81	$51,307.67	$45,606.81	$51,307.67	$57,008.52	$48,457.24	$42,756.39	$37,055.54	$31,354.69
75%	$30,289.61	$30,289.61	$36,347.53	$48,463.37	$54,521.29	$48,463.37	$54,521.29	$60,579.21	$51,492.33	$45,434.41	$39,376.49	$33,318.57
80%	$32,413.67	$32,413.67	$38,896.40	$51,861.87	$58,344.60	$51,861.87	$58,344.60	$64,827.33	$55,103.23	$48,620.50	$42,137.77	$35,655.03
85%	$35,137.85	$35,137.85	$42,165.42	$56,220.56	$63,248.13	$56,220.56	$63,248.13	$70,275.70	$59,734.35	$52,706.78	$45,679.21	$38,651.64
90%	$38,842.39	$38,842.39	$46,610.87	$62,147.83	$69,916.31	$62,147.83	$69,916.31	$77,684.79	$66,032.07	$58,263.59	$50,495.11	$42,726.63
95%	$45,103.59	$45,103.59	$54,124.30	$72,165.74	$81,186.45	$72,165.74	$81,186.45	$90,207.17	$76,676.10	$67,655.38	$58,634.66	$49,613.94
100%	$155,996.03	$155,996.03	$187,195.23	$249,593.65	$280,792.85	$249,593.65	$280,792.85	$311,992.06	$265,193.25	$233,994.04	$202,794.84	$171,595.63

Total Retirement Income - Level Life Annuity, No Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$42,106	$42,106	$34,568	$33,796	$31,026	$29,028	$31,026	$33,024	$30,027	$28,029	$26,031	$24,033
Mean	$57,299	$57,299	$52,799	$58,105	$58,373	$53,337	$58,373	$63,410	$55,855	$50,819	$45,782	$40,745
Median	$55,222	$55,222	$50,307	$54,781	$54,635	$50,014	$54,635	$59,256	$52,324	$47,703	$43,082	$38,461
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$10,611	$10,611	$12,733	$16,978	$19,100	$16,978	$19,100	$21,222	$18,039	$15,916	$13,794	$11,672
Variance	$112,592,808	$112,592,808	$162,133,644	$288,237,589	$364,800,699	$288,237,589	$364,800,699	$450,371,233	$325,393,216	$253,333,819	$190,281,846	$136,237,298
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1852	0.1852	0.2412	0.2922	0.3272	0.3183	0.3272	0.3347	0.3230	0.3132	0.3013	0.2865
Minimum	$36,431	$36,431	$27,759	$24,717	$20,812	$19,949	$20,812	$21,675	$20,381	$19,518	$18,654	$17,791
Maximum	$188,112	$188,112	$209,775	$267,406	$293,837	$262,638	$293,837	$325,036	$278,237	$247,038	$215,839	$184,640
Range Width	$151,680	$151,680	$182,016	$242,688	$273,025	$242,688	$273,025	$303,361	$257,856	$227,520	$197,184	$166,848
Mean Std. Error	$21	$21	$25	$34	$38	$34	$38	$42	$36	$32	$28	$23

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$36,431	$36,431	$27,759	$24,717	$20,812	$19,949	$20,812	$21,675	$20,381	$19,518	$18,654	$17,791
5%	$44,356	$44,356	$37,269	$37,397	$35,078	$32,629	$35,078	$37,526	$33,853	$31,405	$28,957	$26,509
10%	$46,144	$46,144	$39,414	$40,257	$38,295	$35,489	$38,295	$41,101	$36,892	$34,086	$31,281	$28,475
15%	$47,527	$47,527	$41,073	$42,470	$40,784	$37,702	$40,784	$43,867	$39,243	$36,161	$33,079	$29,996
20%	$48,745	$48,745	$42,535	$44,418	$42,976	$39,651	$42,976	$46,302	$41,313	$37,988	$34,662	$31,336
25%	$49,853	$49,853	$43,865	$46,192	$44,972	$41,425	$44,972	$48,520	$43,198	$39,651	$36,103	$32,556
30%	$50,924	$50,924	$45,150	$47,905	$46,899	$43,137	$46,899	$50,661	$45,018	$41,256	$37,495	$33,733
35%	$51,970	$51,970	$46,405	$49,579	$48,782	$44,811	$48,782	$52,753	$46,796	$42,825	$38,855	$34,884
40%	$53,013	$53,013	$47,657	$51,248	$50,660	$46,480	$50,660	$54,839	$48,570	$44,391	$40,211	$36,031
45%	$54,107	$54,107	$48,970	$52,998	$52,629	$48,230	$52,629	$57,027	$50,430	$46,031	$41,633	$37,235
50%	$55,221	$55,221	$50,307	$54,781	$54,634	$50,013	$54,634	$59,256	$52,324	$47,703	$43,081	$38,460
55%	$56,422	$56,422	$51,748	$56,703	$56,796	$51,935	$56,796	$61,657	$54,365	$49,504	$44,643	$39,781
60%	$57,670	$57,670	$53,245	$58,699	$59,042	$53,931	$59,042	$64,153	$56,487	$51,376	$46,265	$41,154
65%	$59,053	$59,053	$54,904	$60,911	$61,530	$56,143	$61,530	$66,918	$58,837	$53,449	$48,062	$42,675
70%	$60,620	$60,620	$56,785	$63,419	$64,352	$58,651	$64,352	$70,053	$61,501	$55,800	$50,100	$44,399
75%	$62,405	$62,405	$58,927	$66,275	$67,565	$61,507	$67,565	$73,623	$64,536	$58,478	$52,420	$46,363
80%	$64,529	$64,529	$61,476	$69,674	$71,389	$64,906	$71,389	$77,871	$68,147	$61,665	$55,182	$48,699
85%	$67,253	$67,253	$64,745	$74,032	$76,292	$69,265	$76,292	$83,320	$72,778	$65,751	$58,723	$51,696
90%	$70,958	$70,958	$69,191	$79,960	$82,960	$75,192	$82,960	$90,729	$79,076	$71,308	$63,539	$55,771
95%	$77,219	$77,219	$76,704	$89,978	$94,230	$85,210	$94,230	$103,251	$89,720	$80,699	$71,679	$62,658
100%	$188,112	$188,112	$209,775	$267,406	$293,837	$262,638	$293,837	$325,036	$278,237	$247,038	$215,839	$184,640

Percent of Final Year Salary - Level Life Annuity, No Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	77.27%	77.27%	63.44%	62.02%	56.94%	53.27%	56.94%	60.61%	55.11%	51.44%	47.77%	44.11%
Mean	105.15%	105.15%	96.90%	106.63%	107.13%	97.88%	107.13%	116.37%	102.50%	93.26%	84.02%	74.78%
Median	101.34%	101.34%	92.32%	100.53%	100.26%	91.78%	100.26%	108.75%	96.02%	87.54%	79.06%	70.58%
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	19.47%	19.47%	23.37%	31.16%	35.05%	31.16%	35.05%	38.95%	33.10%	29.21%	25.32%	21.42%
Variance	3.79%	3.79%	5.46%	9.71%	12.29%	9.71%	12.29%	15.17%	10.96%	8.53%	6.41%	4.59%
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1852	0.1852	0.2412	0.2922	0.3272	0.3183	0.3272	0.3347	0.3230	0.3132	0.3013	0.2865
Minimum	66.86%	66.86%	50.94%	45.36%	38.19%	36.61%	38.19%	39.78%	37.40%	35.82%	34.23%	32.65%
Maximum	345.22%	345.22%	384.98%	490.74%	539.25%	481.99%	539.25%	596.50%	510.62%	453.36%	396.10%	338.85%
Range Width	278.36%	278.36%	334.03%	445.38%	501.05%	445.38%	501.05%	556.72%	473.21%	417.54%	361.87%	306.20%
Mean Std. Error	0.04%	0.04%	0.05%	0.06%	0.07%	0.06%	0.07%	0.08%	0.07%	0.06%	0.06%	0.04%

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	66.86%	66.86%	50.94%	45.36%	38.19%	36.61%	38.19%	39.78%	37.40%	35.82%	34.23%	32.65%
5%	81.40%	81.40%	68.40%	68.63%	64.37%	59.88%	64.37%	68.87%	62.13%	57.63%	53.14%	48.65%
10%	84.68%	84.68%	72.33%	73.88%	70.28%	65.13%	70.28%	75.43%	67.70%	62.56%	57.41%	52.26%
15%	87.22%	87.22%	75.38%	77.94%	74.85%	69.19%	74.85%	80.50%	72.02%	66.36%	60.71%	55.05%
20%	89.46%	89.46%	78.06%	81.52%	78.87%	72.77%	78.87%	84.97%	75.82%	69.71%	63.61%	57.51%
25%	91.49%	91.49%	80.50%	84.77%	82.53%	76.02%	82.53%	89.04%	79.28%	72.77%	66.26%	59.75%
30%	93.45%	93.45%	82.86%	87.91%	86.07%	79.16%	86.07%	92.97%	82.62%	75.71%	68.81%	61.91%
35%	95.37%	95.37%	85.16%	90.99%	89.52%	82.24%	89.52%	96.81%	85.88%	78.59%	71.31%	64.02%
40%	97.29%	97.29%	87.46%	94.05%	92.97%	85.30%	92.97%	100.64%	89.14%	81.46%	73.79%	66.12%
45%	99.30%	99.30%	89.87%	97.26%	96.58%	88.51%	96.58%	104.66%	92.55%	84.48%	76.40%	68.33%
50%	101.34%	101.34%	92.32%	100.53%	100.26%	91.78%	100.26%	108.74%	96.02%	87.54%	79.06%	70.58%
55%	103.55%	103.55%	94.97%	104.06%	104.23%	95.31%	104.23%	113.15%	99.77%	90.85%	81.93%	73.01%
60%	105.84%	105.84%	97.72%	107.72%	108.35%	98.97%	108.35%	117.73%	103.66%	94.28%	84.90%	75.53%
65%	108.37%	108.37%	100.76%	111.78%	112.92%	103.03%	112.92%	122.81%	107.98%	98.09%	88.20%	78.32%
70%	111.25%	111.25%	104.21%	116.39%	118.10%	107.64%	118.10%	128.56%	112.87%	102.40%	91.94%	81.48%
75%	114.53%	114.53%	108.14%	121.63%	123.99%	112.88%	123.99%	135.11%	118.44%	107.32%	96.20%	85.08%
80%	118.42%	118.42%	112.82%	127.86%	131.01%	119.11%	131.01%	142.91%	125.06%	113.17%	101.27%	89.37%
85%	123.42%	123.42%	118.82%	135.86%	140.01%	127.11%	140.01%	152.91%	133.56%	120.66%	107.77%	94.87%
90%	130.22%	130.22%	126.98%	146.74%	152.25%	137.99%	152.25%	166.50%	145.12%	130.86%	116.61%	102.35%
95%	141.71%	141.71%	140.77%	165.13%	172.93%	156.38%	172.93%	189.49%	164.65%	148.10%	131.54%	114.99%
100%	345.22%	345.22%	384.98%	490.74%	539.25%	481.99%	539.25%	596.50%	510.62%	453.36%	396.10%	338.85%

Estimated Annuity Value - Growing Life Annuity, with Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$5,005.66	$5,005.66	$6,006.79	$8,009.05	$9,010.19	$8,009.05	$9,010.19	$10,011.32	$8,509.62	$7,508.49	$6,507.36	$5,506.23
Mean	$12,618.24	$12,618.24	$15,141.89	$20,189.19	$22,712.83	$20,189.19	$22,712.83	$25,236.48	$21,451.01	$18,927.36	$16,403.71	$13,880.07
Median	$11,577.52	$11,577.52	$13,893.02	$18,524.03	$20,839.53	$18,524.03	$20,839.53	$23,155.03	$19,681.78	$17,366.28	$15,050.77	$12,735.27
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$5,316.75	$5,316.75	$6,380.10	$8,506.80	$9,570.15	$8,506.80	$9,570.15	$10,633.50	$9,038.48	$7,975.13	$6,911.78	$5,848.43
Variance	$28,267,854.22	$28,267,854.22	$40,705,710.07	$72,365,706.79	$91,587,847.66	$72,365,706.79	$91,587,847.66	$113,071,416.87	$81,694,098.69	$63,602,671.99	$47,772,673.63	$34,204,103.60
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214
Minimum	$2,162.45	$2,162.45	$2,594.94	$3,459.92	$3,892.41	$3,459.92	$3,892.41	$4,324.90	$3,676.17	$3,243.68	$2,811.19	$2,378.70
Maximum	$78,163.61	$78,163.61	$93,796.34	$125,061.78	$140,694.51	$125,061.78	$140,694.51	$156,327.23	$132,878.15	$117,245.42	$101,612.70	$85,979.98
Range Width	$76,001.16	$76,001.16	$91,201.40	$121,601.86	$136,802.10	$121,601.86	$136,802.10	$152,002.33	$129,201.98	$114,001.75	$98,801.51	$83,601.28
Mean Std. Error	$10.63	$10.63	$12.76	$17.01	$19.14	$17.01	$19.14	$21.27	$18.08	$15.95	$13.82	$11.70

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$2,162.45	$2,162.45	$2,594.94	$3,459.92	$3,892.41	$3,459.92	$3,892.41	$4,324.90	$3,676.17	$3,243.68	$2,811.19	$2,378.70
5%	$6,133.42	$6,133.42	$7,360.11	$9,813.48	$11,040.16	$9,813.48	$11,040.16	$12,266.85	$10,426.82	$9,200.14	$7,973.45	$6,746.77
10%	$7,029.05	$7,029.05	$8,434.86	$11,246.48	$12,652.30	$11,246.48	$12,652.30	$14,058.11	$11,949.39	$10,543.58	$9,137.77	$7,731.96
15%	$7,721.99	$7,721.99	$9,266.39	$12,355.18	$13,899.58	$12,355.18	$13,899.58	$15,443.98	$13,127.38	$11,582.99	$10,038.59	$8,494.19
20%	$8,332.19	$8,332.19	$9,998.63	$13,331.50	$14,997.94	$13,331.50	$14,997.94	$16,664.38	$14,164.72	$12,498.28	$10,831.85	$9,165.41
25%	$8,887.74	$8,887.74	$10,665.29	$14,220.39	$15,997.94	$14,220.39	$15,997.94	$17,775.49	$15,109.16	$13,331.61	$11,554.07	$9,776.52
30%	$9,424.11	$9,424.11	$11,308.94	$15,078.58	$16,963.40	$15,078.58	$16,963.40	$18,848.23	$16,020.99	$14,136.17	$12,251.35	$10,366.52
35%	$9,948.23	$9,948.23	$11,937.87	$15,917.16	$17,906.81	$15,917.16	$17,906.81	$19,896.45	$16,911.98	$14,922.34	$12,932.69	$10,943.05
40%	$10,471.02	$10,471.02	$12,565.23	$16,753.64	$18,847.84	$16,753.64	$18,847.84	$20,942.05	$17,800.74	$15,706.53	$13,612.33	$11,518.13
45%	$11,019.10	$11,019.10	$13,222.92	$17,630.56	$19,834.39	$17,630.56	$19,834.39	$22,038.21	$18,732.48	$16,528.65	$14,324.83	$12,121.01
50%	$11,577.40	$11,577.40	$13,892.89	$18,523.85	$20,839.33	$18,523.85	$20,839.33	$23,154.81	$19,681.59	$17,366.11	$15,050.63	$12,735.15
55%	$12,179.16	$12,179.16	$14,614.99	$19,486.66	$21,922.49	$19,486.66	$21,922.49	$24,358.32	$20,704.58	$18,268.74	$15,832.91	$13,397.08
60%	$12,804.46	$12,804.46	$15,365.35	$20,487.13	$23,048.02	$20,487.13	$23,048.02	$25,608.91	$21,767.58	$19,206.68	$16,645.79	$14,084.90
65%	$13,497.03	$13,497.03	$16,196.43	$21,595.24	$24,294.65	$21,595.24	$24,294.65	$26,994.06	$22,944.95	$20,245.54	$17,546.14	$14,846.73
70%	$14,282.39	$14,282.39	$17,138.87	$22,851.82	$25,708.30	$22,851.82	$25,708.30	$28,564.78	$24,280.06	$21,423.58	$18,567.11	$15,710.63
75%	$15,176.96	$15,176.96	$18,212.35	$24,283.13	$27,318.52	$24,283.13	$27,318.52	$30,353.92	$25,800.83	$22,765.44	$19,730.05	$16,694.65
80%	$16,241.24	$16,241.24	$19,489.49	$25,985.99	$29,234.24	$25,985.99	$29,234.24	$32,482.49	$27,610.11	$24,361.86	$21,113.62	$17,865.37
85%	$17,606.23	$17,606.23	$21,127.47	$28,169.96	$31,691.21	$28,169.96	$31,691.21	$35,212.45	$29,930.59	$26,409.34	$22,888.09	$19,366.85
90%	$19,462.43	$19,462.43	$23,354.92	$31,139.89	$35,032.38	$31,139.89	$35,032.38	$38,924.86	$33,086.13	$29,193.65	$25,301.16	$21,408.67
95%	$22,599.67	$22,599.67	$27,119.61	$36,159.48	$40,679.41	$36,159.48	$40,679.41	$45,199.35	$38,419.44	$33,899.51	$29,379.58	$24,859.64
100%	$78,163.61	$78,163.61	$93,796.34	$125,061.78	$140,694.51	$125,061.78	$140,694.51	$156,327.23	$132,878.15	$117,245.42	$101,612.70	$85,979.98

Total Retirement Income - Growing Life Annuity, with Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$37,121	$37,121	$28,587	$25,821	$22,054	$21,053	$22,054	$23,055	$21,554	$20,552	$19,551	$18,550
Mean	$44,734	$44,734	$37,722	$38,001	$35,757	$33,233	$35,757	$38,280	$34,495	$31,971	$29,448	$26,924
Median	$43,693	$43,693	$36,473	$36,336	$33,884	$31,568	$33,884	$36,199	$32,726	$30,410	$28,095	$25,779
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$5,317	$5,317	$6,380	$8,507	$9,570	$8,507	$9,570	$10,634	$9,038	$7,975	$6,912	$5,848
Variance	$28,267,854	$28,267,854	$40,705,710	$72,365,707	$91,587,848	$72,365,707	$91,587,848	$113,071,417	$81,694,099	$63,602,672	$47,772,674	$34,204,104
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1189	0.1189	0.1691	0.2239	0.2676	0.2560	0.2676	0.2778	0.2620	0.2494	0.2347	0.2172
Minimum	$34,278	$34,278	$25,175	$21,272	$16,936	$16,504	$16,936	$17,369	$16,720	$16,288	$15,855	$15,423
Maximum	$110,279	$110,279	$116,376	$142,874	$153,739	$138,106	$153,739	$169,371	$145,922	$130,289	$114,657	$99,024
Range Width	$76,001	$76,001	$91,201	$121,602	$136,802	$121,602	$136,802	$152,002	$129,202	$114,002	$98,802	$83,601
Mean Std. Error	$11	$11	$13	$17	$19	$17	$19	$21	$18	$16	$14	$12

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$34,278	$34,278	$25,175	$21,272	$16,936	$16,504	$16,936	$17,369	$16,720	$16,288	$15,855	$15,423
5%	$38,249	$38,249	$29,940	$27,625	$24,084	$22,857	$24,084	$25,311	$23,471	$22,244	$21,017	$19,791
10%	$39,145	$39,145	$31,015	$29,058	$25,696	$24,290	$25,696	$27,102	$24,993	$23,588	$22,182	$20,776
15%	$39,838	$39,838	$31,846	$30,167	$26,944	$25,399	$26,944	$28,488	$26,171	$24,627	$23,083	$21,538
20%	$40,448	$40,448	$32,578	$31,143	$28,042	$26,376	$28,042	$29,708	$27,209	$25,542	$23,876	$22,209
25%	$41,003	$41,003	$33,245	$32,032	$29,042	$27,264	$29,042	$30,819	$28,153	$26,376	$24,598	$22,821
30%	$41,540	$41,540	$33,889	$32,890	$30,007	$28,123	$30,007	$31,892	$29,065	$27,180	$25,295	$23,411
35%	$42,064	$42,064	$34,518	$33,729	$30,951	$28,961	$30,951	$32,940	$29,956	$27,966	$25,977	$23,987
40%	$42,587	$42,587	$35,145	$34,566	$31,892	$29,798	$31,892	$33,986	$30,845	$28,751	$26,656	$24,562
45%	$43,135	$43,135	$35,803	$35,442	$32,878	$30,675	$32,878	$35,082	$31,776	$29,573	$27,369	$25,165
50%	$43,693	$43,693	$36,473	$36,336	$33,883	$31,568	$33,883	$36,199	$32,726	$30,410	$28,095	$25,779
55%	$44,295	$44,295	$37,195	$37,299	$34,966	$32,531	$34,966	$37,402	$33,749	$31,313	$28,877	$26,441
60%	$44,920	$44,920	$37,945	$38,299	$36,092	$33,531	$36,092	$38,653	$34,812	$32,251	$29,690	$27,129
65%	$45,613	$45,613	$38,776	$39,407	$37,339	$34,639	$37,339	$40,038	$35,989	$33,290	$30,590	$27,891
70%	$46,398	$46,398	$39,719	$40,664	$38,752	$35,896	$38,752	$41,609	$37,324	$34,468	$31,611	$28,755
75%	$47,293	$47,293	$40,792	$42,095	$40,363	$37,327	$40,363	$43,398	$38,845	$35,809	$32,774	$29,739
80%	$48,357	$48,357	$42,069	$43,798	$42,278	$39,030	$42,278	$45,526	$40,654	$37,406	$34,158	$30,909
85%	$49,722	$49,722	$43,707	$45,982	$44,735	$41,214	$44,735	$48,256	$42,975	$39,453	$35,932	$32,411
90%	$51,578	$51,578	$45,935	$48,952	$48,076	$44,184	$48,076	$51,969	$46,130	$42,238	$38,345	$34,453
95%	$54,715	$54,715	$49,699	$53,971	$53,723	$49,203	$53,723	$58,243	$51,463	$46,944	$42,424	$37,904
100%	$110,279	$110,279	$116,376	$142,874	$153,739	$138,106	$153,739	$169,371	$145,922	$130,289	$114,657	$99,024

Percent of Final Year Salary - Growing Life Annuity, with Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	68.12%	68.12%	52.46%	47.39%	40.47%	38.64%	40.47%	42.31%	39.55%	37.72%	35.88%	34.04%
Mean	82.09%	82.09%	69.23%	69.74%	65.62%	60.99%	65.62%	70.25%	63.30%	58.67%	54.04%	49.41%
Median	80.19%	80.19%	66.93%	66.68%	62.18%	57.93%	62.18%	66.43%	60.06%	55.81%	51.56%	47.31%
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	9.76%	9.76%	11.71%	15.61%	17.56%	15.61%	17.56%	19.51%	16.59%	14.64%	12.68%	10.73%
Variance	0.95%	0.95%	1.37%	2.44%	3.08%	2.44%	3.08%	3.81%	2.75%	2.14%	1.61%	1.15%
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1189	0.1189	0.1691	0.2239	0.2676	0.2560	0.2676	0.2778	0.2620	0.2494	0.2347	0.2172
Minimum	62.91%	62.91%	46.20%	39.04%	31.08%	30.29%	31.08%	31.88%	30.68%	29.89%	29.10%	28.30%
Maximum	202.38%	202.38%	213.57%	262.20%	282.14%	253.45%	282.14%	310.83%	267.79%	239.11%	210.42%	181.73%
Range Width	139.48%	139.48%	167.37%	223.16%	251.06%	223.16%	251.06%	278.95%	237.11%	209.21%	181.32%	153.42%
Mean Std. Error	0.02%	0.02%	0.02%	0.03%	0.04%	0.03%	0.04%	0.04%	0.03%	0.03%	0.03%	0.02%

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	62.91%	62.91%	46.20%	39.04%	31.08%	30.29%	31.08%	31.88%	30.68%	29.89%	29.10%	28.30%
5%	70.19%	70.19%	54.95%	50.70%	44.20%	41.95%	44.20%	46.45%	43.07%	40.82%	38.57%	36.32%
10%	71.84%	71.84%	56.92%	53.33%	47.16%	44.58%	47.16%	49.74%	45.87%	43.29%	40.71%	38.13%
15%	73.11%	73.11%	58.44%	55.36%	49.45%	46.61%	49.45%	52.28%	48.03%	45.20%	42.36%	39.53%
20%	74.23%	74.23%	59.79%	57.15%	51.46%	48.40%	51.46%	54.52%	49.93%	46.87%	43.82%	40.76%
25%	75.25%	75.25%	61.01%	58.79%	53.30%	50.04%	53.30%	56.56%	51.67%	48.40%	45.14%	41.88%
30%	76.23%	76.23%	62.19%	60.36%	55.07%	51.61%	55.07%	58.53%	53.34%	49.88%	46.42%	42.96%
35%	77.20%	77.20%	63.35%	61.90%	56.80%	53.15%	56.80%	60.45%	54.97%	51.32%	47.67%	44.02%
40%	78.15%	78.15%	64.50%	63.43%	58.53%	54.68%	58.53%	62.37%	56.61%	52.76%	48.92%	45.08%
45%	79.16%	79.16%	65.70%	65.04%	60.34%	56.29%	60.34%	64.38%	58.32%	54.27%	50.23%	46.18%
50%	80.18%	80.18%	66.93%	66.68%	62.18%	57.93%	62.18%	66.43%	60.06%	55.81%	51.56%	47.31%
55%	81.29%	81.29%	68.26%	68.45%	64.17%	59.70%	64.17%	68.64%	61.93%	57.46%	52.99%	48.52%
60%	82.44%	82.44%	69.64%	70.29%	66.24%	61.54%	66.24%	70.94%	63.89%	59.19%	54.49%	49.79%
65%	83.71%	83.71%	71.16%	72.32%	68.52%	63.57%	68.52%	73.48%	66.05%	61.09%	56.14%	51.18%
70%	85.15%	85.15%	72.89%	74.63%	71.12%	65.88%	71.12%	76.36%	68.50%	63.25%	58.01%	52.77%
75%	86.79%	86.79%	74.86%	77.25%	74.07%	68.50%	74.07%	79.64%	71.29%	65.72%	60.15%	54.58%
80%	88.74%	88.74%	77.20%	80.38%	77.59%	71.63%	77.59%	83.55%	74.61%	68.65%	62.69%	56.72%
85%	91.25%	91.25%	80.21%	84.39%	82.10%	75.64%	82.10%	88.56%	78.87%	72.40%	65.94%	59.48%
90%	94.66%	94.66%	84.30%	89.84%	88.23%	81.09%	88.23%	95.37%	84.66%	77.51%	70.37%	63.23%
95%	100.41%	100.41%	91.21%	99.05%	98.59%	90.30%	98.59%	106.89%	94.44%	86.15%	77.86%	69.56%
100%	202.38%	202.38%	213.57%	262.20%	282.14%	253.45%	282.14%	310.83%	267.79%	239.11%	210.42%	181.73%

Estimated Annuity Value - Level Annuity, with Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$8,187.22	$8,187.22	$9,824.67	$13,099.56	$14,737.00	$13,099.56	$14,737.00	$16,374.45	$13,918.28	$12,280.83	$10,643.39	$9,005.94
Mean	$20,638.31	$20,638.31	$24,765.97	$33,021.30	$37,148.96	$33,021.30	$37,148.96	$41,276.62	$35,085.13	$30,957.46	$26,829.80	$22,702.14
Median	$18,936.11	$18,936.11	$22,723.33	$30,297.77	$34,085.00	$30,297.77	$34,085.00	$37,872.22	$32,191.39	$28,404.16	$24,616.94	$20,829.72
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$8,696.04	$8,696.04	$10,435.25	$13,913.67	$15,652.88	$13,913.67	$15,652.88	$17,392.09	$14,783.27	$13,044.07	$11,304.86	$9,565.65
Variance	$75,621,179.38	$75,621,179.38	$108,894,498.31	$193,590,219.22	$245,012,621.20	$193,590,219.22	$245,012,621.20	$302,484,717.53	$218,545,208.41	$170,147,653.61	$127,799,793.16	$91,501,627.05
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214	0.4214
Minimum	$3,536.89	$3,536.89	$4,244.27	$5,659.02	$6,366.40	$5,659.02	$6,366.40	$7,073.78	$6,012.71	$5,305.33	$4,597.96	$3,890.58
Maximum	$127,843.88	$127,843.88	$153,412.65	$204,550.21	$230,118.98	$204,550.21	$230,118.98	$255,687.76	$217,334.59	$191,765.82	$166,197.04	$140,628.27
Range Width	$124,306.99	$124,306.99	$149,168.39	$198,891.18	$223,752.58	$198,891.18	$223,752.58	$248,613.98	$211,321.88	$186,460.48	$161,599.09	$136,737.69
Mean Std. Error	$17.39	$17.39	$20.87	$27.83	$31.31	$27.83	$31.31	$34.78	$29.57	$26.09	$22.61	$19.13

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$3,536.89	$3,536.89	$4,244.27	$5,659.02	$6,366.40	$5,659.02	$6,366.40	$7,073.78	$6,012.71	$5,305.33	$4,597.96	$3,890.58
5%	$10,031.79	$10,031.79	$12,038.14	$16,050.86	$18,057.22	$16,050.86	$18,057.22	$20,063.57	$17,054.04	$15,047.68	$13,041.32	$11,034.96
10%	$11,496.67	$11,496.67	$13,796.01	$18,394.67	$20,694.01	$18,394.67	$20,694.01	$22,993.34	$19,544.34	$17,245.01	$14,945.67	$12,646.34
15%	$12,630.03	$12,630.03	$15,156.04	$20,208.06	$22,734.06	$20,208.06	$22,734.06	$25,260.07	$21,471.06	$18,945.05	$16,419.05	$13,893.04
20%	$13,628.07	$13,628.07	$16,353.69	$21,804.92	$24,530.53	$21,804.92	$24,530.53	$27,256.15	$23,167.72	$20,442.11	$17,716.49	$14,990.88
25%	$14,536.73	$14,536.73	$17,444.08	$23,258.77	$26,166.12	$23,258.77	$26,166.12	$29,073.46	$24,712.44	$21,805.10	$18,897.75	$15,990.41
30%	$15,414.01	$15,414.01	$18,496.82	$24,662.42	$27,745.23	$24,662.42	$27,745.23	$30,828.03	$26,203.83	$23,121.02	$20,038.22	$16,955.42
35%	$16,271.25	$16,271.25	$19,525.50	$26,034.00	$29,288.25	$26,034.00	$29,288.25	$32,542.50	$27,661.12	$24,406.87	$21,152.62	$17,898.37
40%	$17,126.33	$17,126.33	$20,551.60	$27,402.13	$30,827.40	$27,402.13	$30,827.40	$34,252.67	$29,114.77	$25,689.50	$22,264.23	$18,838.97
45%	$18,022.77	$18,022.77	$21,627.32	$28,836.43	$32,440.99	$28,836.43	$32,440.99	$36,045.54	$30,638.71	$27,034.16	$23,429.60	$19,825.05
50%	$18,935.92	$18,935.92	$22,723.11	$30,297.48	$34,084.66	$30,297.48	$34,084.66	$37,871.85	$32,191.07	$28,403.89	$24,616.70	$20,829.52
55%	$19,920.16	$19,920.16	$23,904.19	$31,872.25	$35,856.28	$31,872.25	$35,856.28	$39,840.31	$33,864.26	$29,880.23	$25,896.20	$21,912.17
60%	$20,942.88	$20,942.88	$25,131.46	$33,508.61	$37,697.19	$33,508.61	$37,697.19	$41,885.76	$35,602.90	$31,414.32	$27,225.75	$23,037.17
65%	$22,075.65	$22,075.65	$26,490.78	$35,321.04	$39,736.16	$35,321.04	$39,736.16	$44,151.29	$37,528.60	$33,113.47	$28,698.34	$24,283.21
70%	$23,360.18	$23,360.18	$28,032.21	$37,376.29	$42,048.32	$37,376.29	$42,048.32	$46,720.36	$39,712.30	$35,040.27	$30,368.23	$25,696.20
75%	$24,823.33	$24,823.33	$29,788.00	$39,717.33	$44,681.99	$39,717.33	$44,681.99	$49,646.66	$42,199.66	$37,235.00	$32,270.33	$27,305.66
80%	$26,564.07	$26,564.07	$31,876.88	$42,502.51	$47,815.32	$42,502.51	$47,815.32	$53,128.13	$45,158.91	$39,846.10	$34,533.29	$29,220.47
85%	$28,796.62	$28,796.62	$34,555.95	$46,074.60	$51,833.92	$46,074.60	$51,833.92	$57,593.25	$48,954.26	$43,194.94	$37,435.61	$31,676.29
90%	$31,832.62	$31,832.62	$38,199.14	$50,932.19	$57,298.72	$50,932.19	$57,298.72	$63,665.24	$54,115.45	$47,748.93	$41,382.41	$35,015.88
95%	$36,963.87	$36,963.87	$44,356.65	$59,142.20	$66,534.97	$59,142.20	$66,534.97	$73,927.75	$62,838.58	$55,445.81	$48,053.03	$40,660.26
100%	$127,843.88	$127,843.88	$153,412.65	$204,550.21	$230,118.98	$204,550.21	$230,118.98	$255,687.76	$217,334.59	$191,765.82	$166,197.04	$140,628.27

Total Retirement Income - Growing Life Annuity, with Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	$40,303	$40,303	$32,404	$30,911	$27,781	$26,144	$27,781	$29,418	$26,962	$25,325	$23,687	$22,050
Mean	$52,754	$52,754	$47,346	$50,833	$50,193	$46,065	$50,193	$54,321	$48,129	$44,001	$39,874	$35,746
Median	$51,052	$51,052	$45,303	$48,110	$47,129	$43,342	$47,129	$50,916	$45,235	$41,448	$37,661	$33,874
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	$8,696	$8,696	$10,435	$13,914	$15,653	$13,914	$15,653	$17,392	$14,783	$13,044	$11,305	$9,566
Variance	$75,621,179	$75,621,179	$108,894,498	$193,590,219	$245,012,621	$193,590,219	$245,012,621	$302,484,718	$218,545,208	$170,147,654	$127,799,793	$91,501,627
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1648	0.1648	0.2204	0.2737	0.3119	0.3020	0.3119	0.3202	0.3072	0.2964	0.2835	0.2676
Minimum	$35,653	$35,653	$26,824	$23,471	$19,410	$18,703	$19,410	$20,118	$19,057	$18,349	$17,642	$16,935
Maximum	$159,960	$159,960	$175,992	$222,362	$243,163	$217,594	$243,163	$268,732	$230,379	$204,810	$179,241	$153,672
Range Width	$124,307	$124,307	$149,168	$198,891	$223,753	$198,891	$223,753	$248,614	$211,322	$186,460	$161,599	$136,738
Mean Std. Error	$17	$17	$21	$28	$31	$28	$31	$35	$30	$26	$23	$19

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	$35,653	$35,653	$26,824	$23,471	$19,410	$18,703	$19,410	$20,118	$19,057	$18,349	$17,642	$16,935
5%	$42,147	$42,147	$34,618	$33,863	$31,101	$29,095	$31,101	$33,108	$30,098	$28,092	$26,085	$24,079
10%	$43,612	$43,612	$36,376	$36,207	$33,738	$31,439	$33,738	$36,037	$32,588	$30,289	$27,990	$25,690
15%	$44,746	$44,746	$37,736	$38,020	$35,778	$33,252	$35,778	$38,304	$34,515	$31,989	$29,463	$26,937
20%	$45,744	$45,744	$38,934	$39,617	$37,575	$34,849	$37,575	$40,300	$36,212	$33,486	$30,760	$28,035
25%	$46,652	$46,652	$40,024	$41,071	$39,210	$36,303	$39,210	$42,117	$37,756	$34,849	$31,942	$29,034
30%	$47,530	$47,530	$41,077	$42,474	$40,789	$37,706	$40,789	$43,872	$39,248	$36,165	$33,082	$29,999
35%	$48,387	$48,387	$42,105	$43,846	$42,332	$39,078	$42,332	$45,586	$40,705	$37,451	$34,197	$30,942
40%	$49,242	$49,242	$43,131	$45,214	$43,871	$40,446	$43,871	$47,297	$42,159	$38,734	$35,308	$31,883
45%	$50,138	$50,138	$44,207	$46,648	$45,485	$41,880	$45,485	$49,090	$43,683	$40,078	$36,474	$32,869
50%	$51,052	$51,052	$45,303	$48,109	$47,129	$43,341	$47,129	$50,916	$45,235	$41,448	$37,661	$33,874
55%	$52,036	$52,036	$46,484	$49,684	$48,900	$44,916	$48,900	$52,884	$46,908	$42,924	$38,940	$34,956
60%	$53,059	$53,059	$47,711	$51,321	$50,741	$46,553	$50,741	$54,930	$48,647	$44,458	$40,270	$36,081
65%	$54,191	$54,191	$49,071	$53,133	$52,780	$48,365	$52,780	$57,195	$50,573	$46,157	$41,742	$37,327
70%	$55,476	$55,476	$50,612	$55,188	$55,092	$50,420	$55,092	$59,764	$52,756	$48,084	$43,412	$38,740
75%	$56,939	$56,939	$52,368	$57,529	$57,726	$52,761	$57,726	$62,691	$55,244	$50,279	$45,314	$40,350
80%	$58,680	$58,680	$54,457	$60,314	$60,859	$55,547	$60,859	$66,172	$58,203	$52,890	$47,577	$42,264
85%	$60,912	$60,912	$57,136	$63,887	$64,878	$59,119	$64,878	$70,637	$61,998	$56,239	$50,480	$44,720
90%	$63,948	$63,948	$60,779	$68,744	$70,343	$63,976	$70,343	$76,709	$67,159	$60,793	$54,426	$48,060
95%	$69,080	$69,080	$66,936	$76,954	$79,579	$72,186	$79,579	$86,972	$75,883	$68,490	$61,097	$53,704
100%	$159,960	$159,960	$175,992	$222,362	$243,163	$217,594	$243,163	$268,732	$230,379	$204,810	$179,241	$153,672

Percent of Final Year Salary - Level Annuity, with Survivor Benefits

Statistics	1	2	3	4	5	6	7	8	9	10	11	12
Trials	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
Base Case	73.96%	73.96%	59.47%	56.73%	50.98%	47.98%	50.98%	53.99%	49.48%	46.48%	43.47%	40.47%
Mean	96.81%	96.81%	86.89%	93.29%	92.11%	84.54%	92.11%	99.69%	88.33%	80.75%	73.18%	65.60%
Median	93.69%	93.69%	83.14%	88.29%	86.49%	79.54%	86.49%	93.44%	83.02%	76.07%	69.11%	62.16%
Mode	---	---	---	---	---	---	---	---	---	---	---	---
Standard Deviation	15.96%	15.96%	19.15%	25.53%	28.73%	25.53%	28.73%	31.92%	27.13%	23.94%	20.75%	17.55%
Variance	2.55%	2.55%	3.67%	6.52%	8.25%	6.52%	8.25%	10.19%	7.36%	5.73%	4.30%	3.08%
Skewness	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Kurtosis	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29	7.29
Coeff. of Variability	0.1648	0.1648	0.2204	0.2737	0.3119	0.3020	0.3119	0.3202	0.3072	0.2964	0.2835	0.2676
Minimum	65.43%	65.43%	49.23%	43.07%	35.62%	34.32%	35.62%	36.92%	34.97%	33.67%	32.38%	31.08%
Maximum	293.56%	293.56%	322.98%	408.08%	446.25%	399.33%	446.25%	493.17%	422.79%	375.86%	328.94%	282.02%
Range Width	228.13%	228.13%	273.75%	365.00%	410.63%	365.00%	410.63%	456.25%	387.81%	342.19%	296.56%	250.94%
Mean Std. Error	0.03%	0.03%	0.04%	0.05%	0.06%	0.05%	0.06%	0.06%	0.05%	0.05%	0.04%	0.04%

Percentiles	1	2	3	4	5	6	7	8	9	10	11	12
0%	65.43%	65.43%	49.23%	43.07%	35.62%	34.32%	35.62%	36.92%	34.97%	33.67%	32.38%	31.08%
5%	77.35%	77.35%	63.53%	62.14%	57.08%	53.39%	57.08%	60.76%	55.24%	51.55%	47.87%	44.19%
10%	80.04%	80.04%	66.76%	66.45%	61.92%	57.70%	61.92%	66.14%	59.81%	55.59%	51.37%	47.15%
15%	82.12%	82.12%	69.25%	69.77%	65.66%	61.02%	65.66%	70.30%	63.34%	58.71%	54.07%	49.43%
20%	83.95%	83.95%	71.45%	72.70%	68.96%	63.95%	68.96%	73.96%	66.46%	61.45%	56.45%	51.45%
25%	85.62%	85.62%	73.45%	75.37%	71.96%	66.62%	71.96%	77.29%	69.29%	63.95%	58.62%	53.28%
30%	87.23%	87.23%	75.38%	77.95%	74.86%	69.20%	74.86%	80.51%	72.03%	66.37%	60.71%	55.05%
35%	88.80%	88.80%	77.27%	80.47%	77.69%	71.72%	77.69%	83.66%	74.70%	68.73%	62.76%	56.79%
40%	90.37%	90.37%	79.15%	82.98%	80.51%	74.23%	80.51%	86.80%	77.37%	71.08%	64.80%	58.51%
45%	92.01%	92.01%	81.13%	85.61%	83.47%	76.86%	83.47%	90.09%	80.17%	73.55%	66.94%	60.32%
50%	93.69%	93.69%	83.14%	88.29%	86.49%	79.54%	86.49%	93.44%	83.01%	76.06%	69.11%	62.16%
55%	95.50%	95.50%	85.31%	91.18%	89.74%	82.43%	89.74%	97.05%	86.09%	78.77%	71.46%	64.15%
60%	97.37%	97.37%	87.56%	94.18%	93.12%	85.43%	93.12%	100.81%	89.28%	81.59%	73.90%	66.22%
65%	99.45%	99.45%	90.05%	97.51%	96.86%	88.76%	96.86%	104.96%	92.81%	84.71%	76.60%	68.50%
70%	101.81%	101.81%	92.88%	101.28%	101.10%	92.53%	101.10%	109.68%	96.82%	88.24%	79.67%	71.10%
75%	104.49%	104.49%	96.10%	105.58%	105.94%	96.83%	105.94%	115.05%	101.38%	92.27%	83.16%	74.05%
80%	107.69%	107.69%	99.94%	110.69%	111.69%	101.94%	111.69%	121.44%	106.81%	97.06%	87.31%	77.56%
85%	111.79%	111.79%	104.85%	117.24%	119.06%	108.49%	119.06%	129.63%	113.78%	103.21%	92.64%	82.07%
90%	117.36%	117.36%	111.54%	126.16%	129.09%	117.41%	129.09%	140.78%	123.25%	111.57%	99.88%	88.20%
95%	126.77%	126.77%	122.84%	141.23%	146.04%	132.48%	146.04%	159.61%	139.26%	125.69%	112.12%	98.56%
100%	293.56%	293.56%	322.98%	408.08%	446.25%	399.33%	446.25%	493.17%	422.79%	375.86%	328.94%	282.02%

Individual Employee Estimates of Retirement Income Results (Risk Free Investments)

Growing Annuity Single Employee

	1	2	3	4	5	6	7	8	9	10	11	12
Total Value end of Year 35	$247,049	$247,049	$296,459	$395,279	$444,689	$395,279	$444,689	$494,099	$419,984	$370,574	$321,164	$271,754
Total Annuity value @ year 35	$ 9,161	$ 9,161	$ 10,993	$ 14,657	$ 16,489	$ 14,657	$ 16,489	$ 18,321	$ 15,573	$ 13,741	$ 11,909	$ 10,077
With Risk Free Investments:	$ 41,276	$ 41,276	$ 33,573	$ 32,469	$ 29,533	$ 27,701	$ 29,533	$ 31,365	$ 28,617	$ 26,785	$ 24,953	$ 23,121
Risk Free Investments:	75.75%	75.75%	61.61%	59.59%	54.20%	50.84%	54.20%	57.56%	52.52%	49.16%	45.79%	42.43%

Level Annuity Single Employee

	1	2	3	4	5	6	7	8	9	10	11	12
Total Value end of Year 35	$247,049	$247,049	$296,459	$395,279	$444,689	$395,279	$444,689	$494,099	$419,984	$370,574	$321,164	$271,754
Total Annuity value @ year 35	$ 13,963	$ 13,963	$ 16,756	$ 22,341	$ 25,134	$ 22,341	$ 25,134	$ 27,926	$ 23,737	$ 20,945	$ 18,152	$ 15,360
With Risk Free Investments:	$ 46,079	$ 46,079	$ 39,336	$ 40,153	$ 38,178	$ 35,385	$ 38,178	$ 40,970	$ 36,781	$ 33,989	$ 31,196	$ 28,404
Risk Free Investments:	84.56%	84.56%	72.19%	73.69%	70.06%	64.94%	70.06%	75.19%	67.50%	62.38%	57.25%	52.13%

Growing Annuity - Spousal Benefits

	1	2	3	4	5	6	7	8	9	10	11	12
Total Value end of Year 35	$247,049	$247,049	$296,459	$395,279	$444,689	$395,279	$444,689	$494,099	$419,984	$370,574	$321,164	$271,754
Total Annuity value @ year 35	$ 6,996	$ 6,996	$ 8,396	$ 11,194	$ 12,594	$ 11,194	$ 12,594	$ 13,993	$ 11,894	$ 10,495	$ 9,095	$ 7,696
With Risk Free Investments:	$ 39,112	$ 39,112	$ 30,976	$ 29,006	$ 25,638	$ 24,238	$ 25,638	$ 27,037	$ 24,938	$ 23,539	$ 22,139	$ 20,740
Risk Free Investments:	71.78%	71.78%	56.85%	53.23%	47.05%	44.48%	47.05%	49.62%	45.77%	43.20%	40.63%	38.06%

Level Annuity - Spousal Benefits

	1	2	3	4	5	6	7	8	9	10	11	12
Total Value end of Year 35	$247,049	$247,049	$296,459	$395,279	$444,689	$395,279	$444,689	$494,099	$419,984	$370,574	$321,164	$271,754
Total Annuity value @ year 35	$ 11,443	$ 11,443	$ 13,732	$ 18,309	$ 20,598	$ 18,309	$ 20,598	$ 22,887	$ 19,454	$ 17,165	$ 14,876	$ 12,588
With Risk Free Investments:	$ 43,559	$ 43,559	$ 36,312	$ 36,121	$ 33,642	$ 31,353	$ 33,642	$ 35,931	$ 32,498	$ 30,209	$ 27,920	$ 25,632
Risk Free Investments:	79.94%	79.94%	66.64%	66.29%	61.74%	57.54%	61.74%	65.94%	59.64%	55.44%	51.24%	47.04%