

# IN THE PUBLIC INTEREST

- 1 The Social Insurance Law of Peoples' Republic of China—Part II  
By Wenliang Wang
- 2 From The Editor  
By Bill Cutlip
- 10 Health Care System Reform 中国制造 (Made in China)  
By Davout Yean
- 14 IAA to Issue International Standards of Actuarial Practice (ISAPs)  
By Rob Brown
- 16 An Update on PPACA  
By Mark Litow
- 18 Acting in the Public Interest  
A Report from Gordon Latter on Session 19 Panel Discussion at the SOA Annual Meeting, October 2011  
By Gordon Latter
- 20 Does the United Kingdom's "Triple Lock Guarantee" Provide a Surplus between the Basic State Pension and Household Expenditure in 2056?  
By Emily Rands
- 25 Report on the PBSS Colloquium  
By Doug Andrews
- 29 This And That

## THE SOCIAL INSURANCE LAW OF PEOPLES' REPUBLIC OF CHINA—PART II

By Wenliang Wang

**Editor's Note:** *This is Part 2 of a summary of new, upcoming Social Insurance Law in China. Part 1 was presented in the July 2011 issue to heighten your awareness of what's happening in China so that you may be attuned to news articles as they emerge. Part 2 continues that story.*

### BACKGROUND OF CURRENT SOCIAL INSURANCE SCHEMES IN CHINA

The social pension plan in China began in the 1990s as a state policy to facilitate restructuring of the once-inefficient state-owned enterprises system in China as a consequence of open market economic reform in the 1980s, and as a method at that time to absorb a significant portion of layoffs and transfer the existing retirement burden from state-owned enterprises to a general social pooling without significant considerations from state-owned enterprises undergoing the restructure. While some industry-intensive regions, such as Shanghai and Beijing, began their pilot plan in the early 1990s, a nationwide uniform policy regarding social pension plans was established by the State Council in 1997, which required establishment of a hybrid type of pension plan with two standings: the social pooling and an individual account (IA). Both social pooling and IAs are in fact controlled and managed by governmental administration, and some of the funding was attributed to participants through the IA, which is credited with a bank deposit interest rate annually. But the funding into IAs is actually used in its entirety to pay current retirees' benefits, and led to the social pension plan being run as a pay-as-you-go (PAYGO) system in essence until 2005, when a new state policy focusing on reform of the social pension scheme came into existence. The State Council enacted a revised social pension scheme in 2005 to address the IA loophole issue by reducing



## IN THE PUBLIC INTEREST

ISSUE 5 | JANUARY 2012

### 2012 SECTION LEADERSHIP

#### OFFICERS

**Mark Litow**  
Chairperson

**Steve Schoonveld**  
Vice Chairperson

**Tia Sawhney**  
Treasurer

#### COUNCIL MEMBERS

Bob Shapiro  
Frederick Kilbourne  
Janet Carstens  
Ken Clark  
Selig Ehrlich  
Gordon Latter  
Sue Collins

#### BOARD PARTNER

Valerie Paganelli

### NEWSLETTER EDITOR

**Bill Cutlip**  
Editor

**Doug Andrews**  
Associate Editor

### SOA STAFF

**Sam Phillips**  
Staff Editor  
e: sphillips@soa.org

**Andrew Peterson**  
Staff Partner  
e: apeterson@soa.org

**Jill Leprich,**  
Section Specialist  
e: jleprich@soa.org

**Julissa Sweeney,**  
Graphic Designer  
e: jsweeney@soa.org

Facts and opinions contained herein are the sole responsibility of the persons expressing them and should not be attributed to the Society of Actuaries, its committees, the Social Insurance and Public Finance Section or the employers of the authors. We will promptly correct errors brought to our attention.

Copyright © 2012 Society of Actuaries. All rights reserved. Printed in the United States of America.

## LETTER FROM THE EDITOR

By Bill Cutlip

**W**elcome to another edition of the newsletter of the fastest-growing section in the Society. The subject matter evolves with daily changes in society keeping the membership on its toes.

This edition again brings thoughts, ideas and information from around the globe. There's a technical/financial look at the U.K.'s "triple lock guarantee" on public pension plans; an overview of China's newly enacted public social insurance along with Part 2 of an article that details some of the issues there; IAA plans to issue Standards of Actuarial Practice; a report on the PBSS Colloquium held in Edinburgh; and, summaries of the two SIPF sessions held at the annual SOA meeting in October.

The "This and That" feature in this edition offers noteworthy and newsworthy items to whet your appetite to get involved in volunteering for SIPF activities.

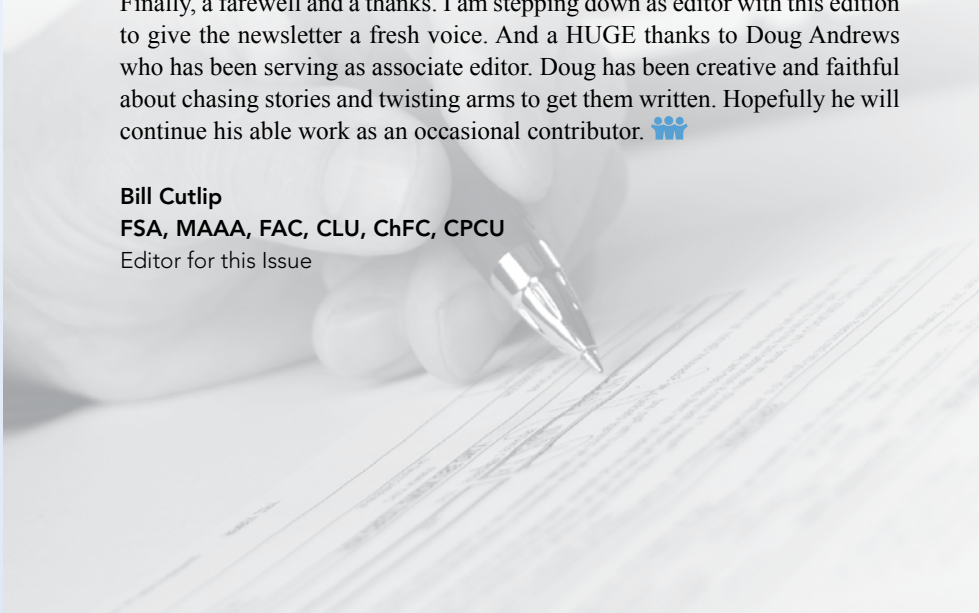
So much is happening in the world that impacts actuaries. Social insurance and public finance may not be specific areas of practice for you, but the results of government and social financial actions certainly affect your personal if not professional lives.

We also have opportunities to help friends, the public and legislators. Our skills in understanding and measuring risks can put new perspective on questions. We may not be able to supply all the answers, but at least we can raise questions for others to ask and perspectives that will cause people to ask questions.

Read the SIPF newsletters. They will help you keep abreast of issues and where to find answers.

Finally, a farewell and a thanks. I am stepping down as editor with this edition to give the newsletter a fresh voice. And a HUGE thanks to Doug Andrews who has been serving as associate editor. Doug has been creative and faithful about chasing stories and twisting arms to get them written. Hopefully he will continue his able work as an occasional contributor. 🧑🏻

**Bill Cutlip**  
**FSA, MAAA, FAC, CLU, ChFC, CPCU**  
Editor for this Issue



the attribution rate to IA thereafter, requiring no further use of IA funding to support current retirement benefit payments, and a phase-in filling plan on IA loopholes, but without any timetable imposed. So far, only 13 of all 31 provinces have chosen to enforce the 2005 scheme, whose difference from 1997 scheme has been tabulated as follows.

As a summary, the public pension scheme in China has the following characteristics.

**1. A predominating social pension program.**

The current public pension scheme is purposed to provide a floor of protection to retirees. Consequently, the expected replacement ratio under the 2005 scheme for most of the population is below 50 percent, and they will need further financial arrangement for their retirement. No formal incentive policy for individual retirement saving has been made so far. And employer-sponsored plans have been still in their infancy in terms of a small size, as a result of the absence of tax incentive policy, the already high matching contribution burden on employers in the mandatory plan, and high operational costs for medium and small employers. In response to this situation, the Ministry of Human Resources and Social Security (MOHRSS), the charging regulator of private pensions, publicized a set of

detailed rules to facilitate establishment of multiple employer-sponsored plans in February 2011.

**Table 1. Comparison Between 1997 Scheme and 2005 Scheme for New Participants**

	1997 Scheme	2005 Scheme
Contribution Attributed to IA	All 8% (of salary basis) contribution from individual participant;  3% from 22%* matching contribution by employer  Total: 11%.	All 8% contribution from each participant.  Total: 8%.
Monthly Benefit Calculation	Basic Benefit supported by social pooling, 20% of average salary of all workforces in last year.  Plus  IA end value/120.	Basic Benefit supported by social pooling, 1% for each year of contribution record or credited service. Entitlement of Basic Benefit begins after at least 15 years' credited service and/or contribution record. The calculation basis is an average between indexed contribution basis over entire work life and average salary of all workforces. <i>Plus</i> IA end value/an actuarial amortization value (expected to vary over time).
Participation	Voluntary for self-employment or flexible employment.	Mandatory for all types of employment.

\*Varying among different regions and over time.

**Table 2. Expected Replacement Ratio for the Average Person in Different Classes of Population under Urban Employee Public Pension Plan**

Group	Basic Benefit	IA Benefit	Total
Lowest Income	40.00%	16.09%	56.09%
Lower Income	33.33%	13.41%	46.74%
Low Income	28.13%	13.41%	41.54%
Median Income	25.00%	13.41%	38.41%
High Income	20.83%	13.41%	34.24%
Higher Income	16.67%	13.41%	30.08%
Highest Income	10.00%	8.05%	18.05%
Civil Servants and Public Employees Within Middle Class	Not Applicable		88%**

\*Assuming 25 years' contribution payment record, 6.5% salary increase annually, 2% credited rate with IA.

\*\* A target replacement ratio for this class is established by governmental policy.

CONTINUED ON PAGE 4

**2. Segmentation.**

Until 2009, the majority of public pension schemes were a city-level or county-level plan, all of which were then unified into a provincial-level scheme respectively without a clear timetable of further unification into a nationwide plan. Additionally, different classes of the population have been covered by different plans, where both contribution requirement and benefit level vary significantly. As you can see as an example from Table 2, civil servants and public employees are covered under a separate public pension plan, which doesn't need a matching contribution from the government as the employer, but are provided a higher target replacement ratio. Until the introduction of the

Social Insurance Law in July 2011, employees working in urban areas but from rural areas are covered by a separate public pension plan in most regions, where the contribution and benefit are usually significantly lower than for their peers from urban areas. Certain efforts have been made to unify different plans to a degree of at least minimizing unintended consequences. Historically, different provinces adopted different scheme parameters and made transfers between different plans extremely difficult. The State Council has published a new set of detailed rules to allow and permit transfers between different plans under due causes in 2010.

**Table 3. Realized Coverage Ratio for Each Target Population Classes as of the End of 2009**

Classes	Urban Workforce Pension Scheme	Urban Workforce Medical	Urban Workforce Workers' Compensation	Residence Basic Medical	Residence Basic Pension
Urban Workforce	57.01%	38.80%	40.51%	Not Applicable	
Urban Workforce from Rural Area	13.56%	18.87%	24.31%	Not Applicable	
Urban Residence	Not Applicable			44.67%	Not Applicable
Rural Farmer	Not Applicable			94%**	21.27%

\* As of the end of 2009, no formal residence pension plan for urban areas was in existence.

\*\* An official number on the participating rate without sufficient details. An in-depth case study in a small-sized sample showed a significantly different picture.

**3. Undesirable coverage outcome.**

The realized coverage ratio for each target population varies significantly, and is generally far from complete coverage (as you can see from Table 3).

The coverage amount for each plan also varies significantly, and has been implying a significant lack of coordination in coverage and benefit amount; i.e., the national level benefit set for the urban residence pension plan is RMB 55 Yuan per month, which may be increased by the local government, but is still significantly lower than a minimum living standard will require. Significant variation between different public pension plans makes them further difficult to coordinate.

**4. Unfunded accumulated benefit.**

The 1997 plan was totally established from the ground without any funding for all accumulated benefits, and then the plan has been operated as PAYGO system in essence with a nominal IA for each participant. The estimate of unfunded accumulated benefit varies with assumptions. An official estimate made in 2000 is restricted to release; but, as a consequence, a new administration, the National Council for Social Security Fund, was established to manage a national wide assets pool supporting social insurance programs. (See table 4, pg.5)

**Table 4. Unfunded Accumulated Benefit Analysis as of the End of 2000 (in Billions RMB)**

All Existing Retirees	Basic Benefit with Regard to Service Years before 1993	Benefit with Regard to IA from Service Years before 1993	Used-up IA Funding Since 1993	Total	% to GDP
620	1068	534	94	2316	25.91%

\*Source: Wang Wenliang (2011).

**5. Nominal individual account.**

So far, only 13 provinces have undertaken the 2005 scheme to solidify the IA thereafter, with a total accumulative assets value in all IAs of RMB 203.9 billion. Other provinces lacked the governmental revenue resources to solidify the IAs. Despite the 2005 scheme, no province so far has a formal fiscal arrangement to cure the IA loopholes incurring prior to the 2005 scheme.

**6. Less efficiency of investment management.**

A nationwide administrator, the National Council for Social Security Fund, was established in 2001 to manage a nation-level pension fund from social pooling as appointed manager and to manage local-level pension funds from both social pooling and IA as an agent. By the end of 2010, its assets under management (AUM) size was RMB 865 billion, which resulted in a total equity of RMB 838 billion, including an amount of RMB 57 billion equity attributed to IAs. The annual nominal return rate for the overall portfolio has been in a range of 2 to 4.5 percent. The annual credit rate to IAs has been officially set at the same level of a bank deposit interest rate prevailing at the time of crediting. In addition, the funding accumulation in social pooling and IAs is solely controlled by the governmental body and has been undergoing a rigid investment assets universe. Serious concern about inadequate and inefficient investment return in light of the inevitable

high inflation rate over a long-term horizon has been arising and challenging the policymakers.

**7. Aging issues.**

The birth boom generation after the Revolution War in China (1949) has already produced a significant burden on public pension plans since 2000, when the female population from this generation began to step into the retiree population after they met the mandatory retirement age of 50. The male population from this generation began to join the retiree team in 2010, when they met the mandatory retirement age. Additionally, many early retirement privileges were generously granted to participants in the 1990s to facilitate layoff arrangements from restructuring inefficient stated-owned enterprises system. Consequently, the dependent ratio in China will increase significantly to reflect those historical events. The Birth Control policy, One Family One Child, adopted in the early 1980s, will further aggravate the dependent ratio starting in 2030 as expected.

The current dependent ratio has been tabulated as follows. (Table 5, pg. 6)

**COMMENTS**

**1. Separate treatment of the population and its implications in the long term will need to be well conceived.**

Separate treatment of the population by providing different plans to its target populations

**Table 5. Dependent Ratios Over Time in China**

Year	Age 60+ as a % of Total Population	Age 65+ as a % of Total Population	Realized Dependent Ratio for Urban Area Public Pension Plan	Realized Dependent Ratio for Rural Area Pension Plan	Overall Dependent Ratio for Entire Population **
2010	13.26%	8.87%	32.50%	38.62%	22.21%
2005	11.03%	7.69%	33.29%	Not Applicable	18.50%
2000*	10.27%	6.96%	33%		18.27%

\* Year 2000 is the first year that China can be categorized as an aging country according to the UN standard.

\*\* Age 60+/ active workforce.

will produce some significantly undesirable consequences that will need to be addressed appropriately in the future. The undesirable consequences include, among others:

- a. The target replacement ratios for civil servants, public employees and urban employees are significantly different as you can see from Table 2, where the median-income, high-income and higher-income classes are the most financially disadvantaged populations yet the majority of current middle income groups in our society. Those populations aren't rich enough and have limited alternative financial resources to secure their retirement. Consequently, if the current pension plan does achieve its policy objective, the downsizing of the middle-income group in future society and the widening of the financial gap between public employee retirees and enterprise employee retirees groups and between different income classes will be most likely to result and perhaps jeopardize society by causing instability.
- b. A lesser degree of coordination will generally lead to a higher cost implicit in future unification. It's more likely than not that any benefit gap between current different plans will push up costs when a low-level plan

will need to be integrated into a high-benefit-level plan.

- c. Competition from the urban employee plan to include those employees from rural areas will help stabilize the dependent ratio in such urban plans to a certain level yet aggravate the rural area pension plans by draining a young and productive population from the rural area. From Table 5, you can see that the urban plan has already reduced its dependent ratio slightly at the same time the rural area has a higher dependent ratio, which is in contrast to the intuition that the family size is usually larger and a family has more young members in a rural area.
- d. The gap between different plans, uncertainty of the plans' eventual fortune, and not fitting well into the real financial needs of the target population, all contributed to a "lack of incentive to participate" result, a lower participant rate realized as you can see from Table 3. (See pg. 4)
- e. Anti-selection is a major concern when the participant can choose among different plans or different places to participate.

Had not the foregoing been appropriately addressed, we could expect that the migration

population from rural areas to urban areas during the urbanization process, estimated as 260 million within the forthcoming 30 years, would be adversely impacted in their financial position or would produce an unaffordable cost on social security. Additionally, the financial conditions with regard to social security in rural areas would be deteriorating relative to urban areas in the future as a result. At the same time, we may experience a shrinking middle-income class in our society as well.

## **2. Funding issues with regard to historical liabilities require more actions beyond commitment in law.**

The new Social Insurance Law has ruled that the government shall be responsible for all contribution obligations with regard to credit service years earned by all participants prior to 1993 as employees in old state-owned enterprises. Nevertheless, this ever first clarification of policy is only as sound as to express the willingness to rear-fund the social insurance pooling. Without details of how to calculate contributions and how to allocate such burdens across different levels of the government ladder, contribution injection in rear by itself may not fully reflect the salary level difference, realized investment returns with regard to both social pooling and IA of those affected, change in mortality, target replacement ratio, and attribution rate over time. An actuarial equivalent value of accumulated benefit at time of rear-funding is more appropriate, but rear-funding in full is neither economically desirable nor fiscally feasible.

## **3. The role of the government on funding of the social insurance plan shall be reconsidered.**

The prevailing role of government on social insurance plans, including commitment to subsidy and budget balance on current gap, rear-funding historical liability, and management of funding on both social pooling and IAs, shall be reconsidered to address the emerging experience.

- a. Management of IAs by the government is only efficient if the government body provides a return guarantee and the government body can use the funding as a loan to them. The embedded value from an extremely lower guarantee rate over a long term is less valuable particularly when it won't provide adequate real value protection as demanded. The IA can be operated in a more efficient way if the private participant has some kind of control on the account and can be responsible for the outcome from his own decisions if it is not desirable for the government to provide a real value protection guarantee.
- b. Improvement on the current rear-funding plan, through a more clear and consistent approach, structure and timetable, along with a set of lock-in fiscal sources in advance, will benefit by avoiding conflicting fiscal and financial policy over time, achieving the public's greater confidence on future funding status, and providing smoother annual budgeting.
- c. The central government shall undertake an arrangement to help local governments to establish some necessary reserves to balance future increases in the size of subsidies due to the local government having a weaker revenue-generating capacity than the central government under current tax and fiscal regimes.

## **4. Improvement of transparency on operation, funding and the contribution decision-making process is needed.**

As a general proposal, we call for a more transparent operation of public pensions for civil servants and public employees (which are currently restricted from disclosure), for enterprise employees and residences, through fair, adequate and timely disclosure, a sound governance and efficient surveillance. The general public's interest can be better served through the active participation by due delegates from

CONTINUED ON PAGE 8



**Wenliang Wang, ASA,** is senior counselor for DeRyook and AJU International Law Firm. He can be contacted at [elink88@sina.com](mailto:elink88@sina.com)

the public into the management, operation and decision-making process of social security programs and social security funds within and beyond the legislature channel.

**5. Unsustainable factors and incentives exist in the current program.**

The urban employee basic medical plan will be unsustainable under current plan parameters despite the accumulative value of the medical plan's social pooling being still high now.

- a. The current plan provides a strong incentive to retiree beneficiaries to overuse the public medical plan, through no need to pay premiums after retirement, an annual IA filling, a low deduction level and/or co-share requirement, and a generous ceiling.
- b. The IA may provide some buffer in the loss corridor before entering a higher accumulative claim band, but the assets in the IA are ultimately the personal assets of the individual participant who may behave in a way contrasting to what is expected by the plan manager.
- c. Too much extensive coverage of medical services has been provided to all covered, and reduction of coverage will receive strong resistance.
- d. The per member per month (PMPM) rate has already been high as 2 percent from employees and a matching 12 percent from employers against salary basis in some regions; the room for further increase is very limited.
- e. The participating rate will continue to be low due to the difficulty in using the medical plan outside its primary operation region, which means the general accessibility of plan service is low, where no hope of a nationwide uniform medical plan will be in existence.
- f. The current pension plan transfer policy doesn't financially support a medical plan for that population in migration.

**6. Residence pension plans will have to be coordinated with the existing minimum living maintenance subsidiary plan using means-testing method.**

The residence pension plan for urban areas is expected to experience a shrinking participa-

tion due to fact that the urban family after the Revolution War is usually a two-worker family and the plan is targeted to cover those already aged rather than attracting young participants. The residence pension plan for rural areas is targeted to provide coverage on those already aged and to attract young farmer work to participate to support in funding, and it is also expected to experience a shrinking participating population due to urbanization. In consideration of the inadequate size of the residence plan in certain developed regions and inadequate participating population on its own in most regions in the future, the Social Insurance Law permits the two residence pension plans to run altogether if the provincial government chooses so. Nevertheless, those entitled under residence pension plans are usually covered by the other official insurance program—Minimum Living Maintenance Subsidiary Plan (MLMSP). The MLMSP requires a means-testing method, but provides a higher benefit (without any premium payment) than from residence pensions (with a premium payment requirement for participants, but not entitled retirees). The overlapping may produce the result of reducing MLMSP population or MLMSP amounts or both, and may lead to resistance or anti-selection feedback from entitled beneficiaries. The coordination will be a major concern in practice for residence pension plans and calls for a careful solution.

**7. Integration issues of the national social insurance pool and provincial-level social insurance pools need to be carefully addressed.**


The new Social Insurance Law permits that the public pension plan for rural residence and urban residence may be unified at the discretion of the provincial government, and all public pension plans shall be unified across the nation eventually but without any timetable given, and other public plans shall be unified into a provincial-level plan but without any timetable given. Integration can be achieved from either transfer, phase-in or out, or separate calculation and aggregate payment, or some combination. The inter-province transfer policy effective as of the end of last year for urban employees'



pension plan will favor the transferring province rather than transfer acceptance province, and will aggravate the government budget in certain areas within a real world of imbalance of regional development and revenue resources between provinces. Separate calculation and aggregate payment are a time-path-neutral and local-neutral method in nature and can be a more appropriate and cost-minimizing interim method in the process toward a nationwide uniform public pension scheme in the future. The same proposal can be made for integrating the residence pension plan with the current urban employee pension plan into a general pension plan. A phase-in implementing plan for those areas previously undertaking a lower benefit level employee pension plan for workers from rural areas will be more feasible in practice for them to eventually repeal this type of plan and put them on the same footing of urban employee pension plans for urban workers.

#### **8. Encourage participation by insurance market.**

The new Social Insurance Law has ruled that the government shall undertake to adopt tax incentive plans to support social insurance programs. We further urge a larger degree of participation by the insurance market through permitting of qualified private plans, coordination of public plans with private plans, and separation of risk pooling and taking between public plans and private plans. A good alternative with regard to worker compensation plans involves that the plan can be run primarily on a private-plan basis with benefits set forth by law and regulations, and the government can maintain a residual risk pool or sharing mechanism and operate an efficient regulatory system, as we can learn from other developed markets' experience. Such hybrid plans will benefit by making more competitive choices available, by establishment and expansion of related employer liability and professional liability markets, by more appropriate pricing, by more responsiveness to changing economic and social trends and risk characteristics, and by lower operational costs and feeding in more incentive for risk control.

While the new Social Insurance Law cannot be the sole basis to rely upon, it shall serve as a clear framework and a good beginning. If we address the identified issues and emerging experience appropriately, we will hopefully improve the incentive to participate from the majority of our society members, which is also the key to any successful social insurance program. 

The new Social Insurance Law has ruled that the government shall undertake to adopt tax incentive plans to support social insurance programs.

# HEALTH CARE SYSTEM REFORM

## 中国制造 (MADE IN CHINA)

By Davout Yeon



**Davout Yeon, FSA**, is an assistant president at Taikang Life Insurance Co Ltd in Beijing, China. He can be reached at [tofu.yeon@gmail.com](mailto:tofu.yeon@gmail.com).

**A**t almost the same time that the Obama administration pushed the U.S. health care reform, in another hemisphere, China (accounting for one fifth of the world population), was also engaged in a large-scale health care reform.

In April, 2009, the Chinese government launched the most comprehensive Health Care System Reform ever. The goal: to establish and improve the basic health care system covering most urban and rural residents, and to provide the people with safe, effective, convenient and affordable health care. There is no doubt that this “Made in China” health care reform will become the world’s most extensive health care system reform because it will inevitably affect many players in the game such as the local governments who currently administrate the program, the medical professionals who provide the care, the pharmaceutical manufacturers who provide the medicines, and the very large population who participate in the program, etc.

If we say that the U.S. health care reform is difficult and painful, then China’s health care reform is even more difficult and complex. To fully understand the reasons for this reform, we have to trace its history.

Mao founded the New China in 1949 and led the country under the planned economy for the following 30 years (1949–1978). The government was the only enterprise and established the first health care system. It used about 3 percent of GDP on health spending to provide the basic coverage for a very large population; the average life expectancy increased from 48 years to 67 years; infant mortality rate decreased from 180 per 1,000 to 40 per 1,000. The achievement was once recognized by the World Health Organization in the 1970s.

In this period, the government established the urban and rural medical service network with a large number of hospitals, clinics and health centers in cities and rural areas to improve the

accessibility. It also built a health and epidemic prevention system. Many highly infectious diseases were basically eliminated and a variety of endemic and parasitic diseases was effectively under control.

In terms of the health care coverage, there was a clear divide between urban residents and rural residents given two health care programs available. The “Urban Program” was clearly designed to meet the need of urban employees or retirees and their dependents. Government or enterprises paid for the health care expenses incurred by its participants where employees and retirees had zero co-payment and dependents had partial co-payment.

The “Rural Program” was under a mutual-assistance mechanism for rural population, i.e., voluntary mutual aid and collective masses by the farmers to raise funds for the co-payment. About 90 percent of the population was covered under this program.

The shortcomings of this period were very obvious. The government’s overall health spending was very low and leading to insufficient care, especially for farmers due to limited medical providers in the rural areas. It also hindered the development and advancement of the medical technology. Economic and social development was imbalanced, resulting in large differences in the quality of levels of health care and the development of the medical service network in urban and rural areas. The current funding scheme could not keep up with the pace of the rapid growth of medical costs. Lastly, the system lacked cost sharing and risk control. There was no doubt that this system could not effectively meet the public need.

The planned economy came to its end after Mao’s death. In 1979, Deng’s government promoted economic reform and opening up China to the world. China gradually made the transition from a planned economy to a market economy. In the next 30 years (1979–2008), many changes took place within the health care sys-

tem due to the external economic changes. On a positive front, the ownership of medical institutions (hospitals and clinics) was no longer solely under the government. Private-owned medical institutions emerged as well. The number and capacity of health care facilities and the number of medical professionals increased remarkably compared with the planned economy period. The quality of medical personnel and their diagnostic ability increased rapidly with the advanced medical technology and equipment. The internal operating efficiency and ability to carry out the complex treatments improved across the board.

Serious problems were encountered during 1979–1998. The urban program under the old health care system could not be sustained due to the rapid increase of the health care costs. It became a huge burden for both the government and the enterprises. The rural program quickly decomposed as a lot of farmers relocated to cities to seek out opportunities. The coverage rate hit a historical low in the late 1990s.

The Chinese government began to gradually reshape the health care system in 1998. The first program, Urban Employees’ Basic Medical Insurance (UEBMI), was established in 1998 for urban employees who work for state-, private-, or foreign-owned institutions or social organizations. There was a fundamental shift in the program funding from government to employer and employee’s contributions.

The second program called New Rural Cooperative Medical Scheme (NRCMS) was established for rural residents, who comprised 70 percent of the population in China at that time.

The third program, Urban Residents’ Basic Medical Insurance (URBMI), covers dependents of the enrollees of UEBMI—students, migrant workers and urban residents who don’t have jobs.

Though the coverage rate was much better under these new programs, they were not problem-free either. Government health spending had dropped and personal medical costs were rapidly rising. From 1979–2008, the govern-

ment health expenditure fell from 32 percent to 25 percent, once as low as 15 percent during the period. Personal health spending increased from 20 percent to 40 percent.

Health care resources such as advanced medical technology and skilled professionals were heavily concentrated in the big cities, which in turn attracted the influx of patients to the big cities for better care. The health care network in rural areas had shrunk and was left far behind the urban areas. The outbreak of SARS also exposed the vulnerability of the public health system. The drug production, distribution and price formation mechanism was greatly imbalanced and lacked fair competition. During this transition period, medical professionals who used to be on the government payroll during the planned economy, were only partially paid by the government fund or subsidy. At the same time, the government allowed the hospitals to keep the drug price margin as additional revenue. Thus the hospitals were heavily dependent on the revenue of the drug price margin to

The planned economy came to its end after Mao’s death. In 1979, Deng’s government promoted economic reform and opening up China to the world. China gradually made the transition from a planned economy to a market economy.

Program	UEBMI	URBMI	NRCMS
Inception	1998	2007	2003
Eligibility	Employees	Residents w/o job	Farmers
Funding	Employer-6% payroll Employee-2% payroll	Resident-contribution Gov yearly Subsidy (at least \$30 pmpy)	Farmer-contribution Gov Subsidy (at least \$30 pmpy)
Administration	Local Gov agencies	Local Gov agencies	Local Gov agencies
Account	·Individual Account ·Public Account	Public Account	Public Account
Co-insurance	Co-payment Deductible Maximum amount: 6 times of local annual average salary	Co-payment Deductible Maximum amount: 6 times of local annual average salary	Co-payment Deductible Maximum amount: 6 times of average disposable an- nual income of local farmers
Coverage	OP and IP variation slightly different	Limited OP (certain chronic diseases), IP	Very limited OP, IP
Mandatory	Yes	No	No

support the operation, purchase equipment and partially compensate medical professionals. The practice of overly prescribing expensive drugs (due to high revenue gain) made health care unaffordable and led to negative social and economic consequences.

It is obvious that a comprehensive health care system reform must solve the above problems. In April, 2009, the Chinese government formally promulgated the “guidance” for the health care system reform. Four priority programs will be implemented and it aims at improvement of the medical security system, medicine supply system, health care services network and public health services by 2020.

The five major tasks are described with clearly detailed specifications for the next three years (2009–2011).

### **1. ACCELERATING THE ESTABLISHMENT OF THE BASIC MEDICAL SECURITY SYSTEM**

The first task is to expand the coverage of the basic medical security, it means that all three existing programs (URBMI, URBMI, and NRCMS) will cover most of urban and rural residents for three years, each with coverage rates over 90%. The goal for URBMI and UEBMI together is to cover 440 million people in the urban areas and for NRCMS is to cover 830 million for the rural areas. In order to enhance the level of basic health care, the government has increased the subsidies for URBMI and NRCMS. It also encourages the individuals through participation in various forms of commercial supplement insurance to meet their needs beyond the basic care under the government programs.

This is a positive move, but there is a concern that the great risk of adverse selection is likely because the participation under NRCMS and URBMI is not yet mandatory; the permission of later entry can result in more unhealthy people in the pool.

The efficiency and effective management of all the programs remain in question. Currently

there are around 2000 local government agencies that administrate UEBMI and URBMI, and a large number of local agencies that administrate NRCMS. Obviously these agencies are less efficient due to the lack of insurance and medical knowledge, and IT technology compared with the insurance companies. It is suggested to explore qualified commercial insurers to provide health care management.

### **2. ESTABLISHING THE NATIONAL ESSENTIAL MEDICINE SYSTEM**

The second task is to establish the management mechanism for essential medicines. It published the national drug list and recommended the retail prices for over 300 different kinds of medicines in 2009. Essential medicines used in government-run health care institutions shall be purchased through unified market with equal participation and fair competition. Since 2009, the grass-root medical facilities can only purchase and use the essential medicines due to this change. The goal is to make the medical care more cost effective.

The resistance to enforcement of the above reform is strong, because the hospitals heavily prescribe the expensive medicine to maximize the revenue to maintain the operation. Suddenly, they have to use the cost effective medicine. The revenue drops dramatically due to small drug margin of essential medicine. The survival of the hospitals will depend on how much subsidy they can get from the government for the income lost.

### **3. PERFECTING THE THREE-TIER RURAL HEALTH CARE AND URBAN COMMUNITY NETWORK**

The third task is to improve the three-tier rural health care service network, and give full play to county-level hospital’s leading role. The central government will give full support to build 2,000 county-level hospitals, 2,400 urban community health centers and 11,000 community health stations for the purpose of strengthening health care institutions at a grassroots level in the next three years. Efforts will be made to train millions of general practitioners and to

implement a staff recruitment system. There are needs to improve the counterpart support from urban to rural within the hospital system and establish the evaluation and incentive system with service quality and quantity as the core.

This will allow patients to get primary care instead of heading directly to the large hospitals. The challenge is how to keep the talented medical professionals in the network. How can the current recruitment system, training programs and compensation attract them to take the jobs at the grassroots facilities?

#### 4. PROMOTING THE GRADUAL EQUALIZATION OF BASIC PUBLIC HEALTH SERVICES

The task here is to continue major public health programs such as prevention and control of major diseases; for instance hypertension, diabetes, mental disorder, HIV/AIDS and tuberculosis; national immunization program; health education; individual's health records and its management nationwide; regular health checks for senior citizens over 65 and for children under three; regular prenatal examinations and post-natal visits for pregnant women. Efforts will be made to enhance the capacity of forecasting and responding to major diseases as well as public health emergencies.

The adequacy of government investment to carry out all the tasks above for the projects needed is still in question.


#### 5. PUSH FORWARD PILOT PROJECTS FOR PUBLIC HOSPITAL REFORM

Lastly, government will push forward pilot projects for public hospital reform. At present, the public hospital is the main body of health care providers in China. The external economic changes improved the efficiency of inside operations, but the public hospitals are still partially in the shadow of the planned economy. There are many conflicts between the supervision of the government and management by hospitals in the current structure. We have not found the

right model yet, but the pilot projects will allow us to explore the ideal model for public hospitals.

No matter how the pilot projects are carried out, all public hospitals shall stick to principles of maintaining the commonwealth nature, providing social benefits and adopting a patient-oriented approach.

#### COMMENTS

The total medical cost in recent five years has increased at a rate over 15 percent on average. The government has provided \$174.5 billion for this health care reform which is about 33 percent more than the initially planned \$130.7 billion. China, as a rapidly developing country, is facing significant social and economic needs. The government has experienced a substantial investment in 2009–2011, the ability to continue to maintain the investment in the health care system remains unclear. The reform will face enormous challenges in many aspects which may relate to the constraint of the financial budgets. 

# IAA TO ISSUE INTERNATIONAL STANDARDS OF ACTUARIAL PRACTICE (ISAPS)

By Rob Brown



For those of you at all close to the International Actuarial Association (IAA), this headline hardly seems worth the ink needed to print it. The IAA has been issuing Standards of Practice since 2003 (called International Actuarial Standards of Practice or IASPs). They have issued 12 in total.<sup>1</sup>

Strictly speaking, these statements are not quite true. The IAA did not, in fact, issue standards. Rather, they issued IASPs that were referred to as Guidelines or Educational Notes. They did not have the force of a standard. This was made clear in the wording provided at the beginning of each of the IASPs. Full member associations (FMAs) of the IAA were invited to endorse or adopt (in whole or in part) these Guidelines so that the Guidelines could take on the force of a standard within the FMA where the Guideline was endorsed or adopted.

This adoption of “Guidelines” versus “Standards” was consistent with the Principle of Subsidiarity that is an important operating principle of the IAA. This principle holds that, to the extent that a local FMA is doing good

work (e.g., has good Standards of Practice), the IAA should not interfere in any manner. For example, having two Standards of Practice in one jurisdiction (one from the IAA and a different one from the FMA) should be avoided.

Finally, the older Guidelines avoided normative wording in that the word “should” was not used to the extent possible. Rather “expectations” of good practice were presented with no value statement attached.

## *The IAA’s New Approach*

The IAA has started work on International Standards of Practice (ISAPs). These ISAPs will be Model Standards to again reflect the Principle of Subsidiarity. Local FMAs can adopt the ISAPs (in whole or in part) or ignore them.

The ISAPs will have no force except within FMAs who adopt them. FMAs are free to draft their own standards (although the hope would be that such standards would be at least “as good as” the IAA Model). However, unlike the previous “Guidelines,” the ISAPs will be normative; the word “should” will appear.

The International Actuarial Standards Subcommittee (IASSC) has adopted the following statement of purpose:

International Standards of Actuarial Practice are established to promote high quality actuarial practice globally.

High quality actuarial practice:

- Helps serve the public interest by benefiting users of actuarial work, regulators, and participants and beneficiaries of financial security programs; and
- Benefits both actuarial associations and individual actuaries by enhancing the credibility of the actuarial profession.

Characteristics of high quality actuarial practice include:

- Consistency—providing users of the actu-

arial work product with confidence that practice is consistent over time and across clients subject to similar requirements;

- Usefulness—adding substantial value to financial analysis; and,
- Clarity—clearly articulated and understandable.


The first ISAP has been drafted. ISAP 1 contains general topics that all actuaries (no matter what specialization) should follow.

Topics include comment on data quality, clarity and content of communications and reports, appropriateness of assumptions and methodology, reliance on other professionals, etc. All other ISAPs will avoid repeating the matters covered by ISAP 1. ISAP 1 is now available<sup>2</sup> as an Exposure Draft; the comment deadline period closed Dec. 1, 2011.

Consideration is being given to producing a number of practice-specific ISAPs.

For example, they will cover matters relevant to IFRS 4, IAS 19 and Social Security Actuaries and Technicians (SSA&T).

It is intended that the ISAP for SSA&T will replace IASP 1, which has existed as a Practice Note since 2005. It will take account of developments since then and will avoid any overlap with the new ISAP 1. It is likely to be called ISAP 2.

The responsibility for the drafting of ISAPs rests with the IASSC and its task forces. 



**Rob Brown, FSA, FCIA, ACAS, HonFIA, Ph.D.**, is retired after 39 years at the University of Waterloo, Ontario. He can be contacted at [rlbrown1949@gmail.com](mailto:rlbrown1949@gmail.com).

#### ENDNOTES

<sup>1</sup> [http://www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=PRACTICE\\_NOTES](http://www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=PRACTICE_NOTES).

<sup>2</sup> [http://www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=STANDARDS\\_EXPOSURE](http://www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=STANDARDS_EXPOSURE).

NOVEMBER 1:

# Attestation is OPEN!

**Attestation is now open.** You must attest compliance with the SOA CPD Requirement or be considered non-compliant. Three simple steps to attest:



**STEP 1:** Log on to the SOA membership directory and click the SOA CPD Requirements button on the main page.

**STEP 2:** Indicate if you have met the SOA CPD Requirement.

**STEP 3:** Identify which compliance path was used.

That's it! Attest today at [SOA.org/attestation](http://SOA.org/attestation).

# AN UPDATE ON PPACA

By Mark Litow



**Mark Litow, FSA, MAAA**, is consulting actuary for Milliman in Brookfield, Wis. He can be reached at [mark.litow@milliman.com](mailto:mark.litow@milliman.com).


**T**he Social Insurance & Public Finance (SIPF) Section sponsored a session at the Society of Actuaries (SOA) Annual Meeting in Chicago on the impacts of the federal health legislation called the Patient Protection and Affordable Care Act (PPACA) on Oct. 19, 2011. Panelists included Shubham Singhal of McKinsey, Stacey Muller of Milliman, and Mark Litow, chairman of the SIPF. The more salient comments of the panelists are summarized below.

Singhal discussed the impact the law would have on providers and payors based on an analysis McKinsey did of the estimated impacts of the reform. For more information, see the McKinsey report on this subject, which is public.

Muller discussed the current state of regulations being implemented or drafted relating to the law. Her focus was on minimum loss ratios, development of exchange regulations, and the essential or minimum benefit provisions. Regulations for minimum loss ratios are anticipated to have the greatest impact on the individual market as the 80 percent minimum loss ratio is higher than most companies target in today's market, whereas the small and

large group markets will see much smaller, if any, impact. Regulations and development of exchanges are in process and taking different paths in many states; some states prefer a state-controlled exchange within federal requirements of the law, and others appear more likely to adopt the federal fallback position. Regulations for essential benefit provisions are also in development at this time, and Muller discussed issues relating to preventative and other benefits within the law and what might happen in this area. She noted many regulations called for in the law are still in development and are the subject of serious lobbying and debate.

Litow discussed the impacts of PPACA to date on premiums/costs and access to treatment, as well as his estimates of future impacts given what has happened so far. Based on evidence available to date, estimates were that premiums for private coverage have increased by small amounts due to the law so far, with additional impacts expected. Overall, the law is expected to increase costs by 10 to 15 percent in aggregate, with much higher average increases in the individual market, slightly higher average increases in small group, and smaller average increases in the large group market. But he noted estimates may vary dramatically by state within a market. No material cost impacts to date were noted for government coverage, but significant increases were expected in future federal and state costs due to 10 to 20 million people entering Medicaid as well as other provisions in the law. Further, he anticipated substantial reductions in future access to treatment for many population groups, particularly Medicaid, Medicare and uninsured, due to increased demand for services combined with increasing cost pressures.

Each of the presentations is available on the SOA website for this meeting. Questions on the presentations should be directed to the panelist responsible for the material. 





# ReFocus2012

SEE THE FUTURE FIRST

March 4-7, 2012, Four Seasons  
Las Vegas, NV

*A Global Gathering for Senior Life Insurance and Reinsurance Executives*

## *An Industry at a Critical Crossroads*

[www.ReFocusConference.com](http://www.ReFocusConference.com)



**ACLI**  
Financial Security...for Life.

# ACTING IN THE PUBLIC INTEREST

By Gordon Letter

A Report from Gordon Letter on Session 19 Panel Discussion at the SOA Annual Meeting, October 2011

Sponsoring Section: Social Insurance & Public Finance

Primary Competency: Professional Values

Moderator: Gordon Letter

Presenters: Joshua Rauh

James E. Spiotto

Jay Jaffe

This session explored the age-old tension that all professions face: What does it mean to act in the public's best interest? That is, when actuaries follow the applicable laws, rules and/or regulations as well as comply with actuarial standards, is this sufficient to be considered "acting in the public interest"? This is a question of great importance that applies to all actuaries regardless of their area of practice.

The moderator, Gordon Letter, started off in setting the stage by trying to bridge the gap between this lofty goal (of acting in the public's best interest) and what one does on their day-to-day job function for their client. He showed how one way to bridge this gap is by understanding the principal-agent tension that exists. Agency theory describes the tension that can exist when agent interests aren't aligned with those of the principal. A principal in this context generally refers to shareholders or those with a financial interest, which can include taxpayers in the case of public entities. This contrasts with our professional code of conduct that defines principal narrowly as "a client or employer of the actuary." This inherent tension of the role of the actuary and the principal was the key focus of the session.

First speaker: Joshua Rauh, associate professor of Finance at the Kellogg School of Management at Northwestern University. Rauh spoke first on the challenges facing public plan actuaries. He called on public plan

actuaries to provide the necessary information in order that the public and government can make sound decisions. He also spoke on the conflicts of interest that occur within the profession.

Second speaker: James E. Spiotto, partner of the law firm of Chapman and Cutler LLP. Spiotto spoke on the topic of unfunded pension liabilities and other post-employment benefits (OPEB), municipal defaults, bankruptcy and disclosure issues. He has recommended forming a Public Pension Authority to provide guidance and oversight so the public has transparent information on the status and viability of the above-named programs. He too called on actuaries to take a bigger role in these matters.

Third speaker: Jay M. Jaffe, president of Actuarial Enterprises. Jaffe spoke on the topic of "Death by Legal Rejection." In brief, Jaffe challenged actuaries to do more than just follow published actuarial guidelines and to use their expertise to contribute to solutions. The alternative to becoming professionally irrelevant and avoiding "death by legal rejection" is to adopt a standard of practice that requires one to act in the public interest.

A number of questions were asked (by the audience and the moderator), including:

- Is simply serving an employer or a client all that's required of an actuary, or do we have additional obligations to those parties who have an interest, financial or otherwise, in the actuary's work (i.e., end-principals/users)?
- How have other professions (e.g., medicine and education) and other nations dealt with this issue?
- When actuaries follow the applicable laws, rules and/or regulations as well as comply with actuarial standards, is this sufficient

to be considered “acting in the public interest”?

- As service providers, are actuaries responsible to both those agents who hire us and to the principals whom our clients are supposed to be serving? Or should we be indifferent as to how our work will ultimately be used?
- Should there be standards or case studies to guide actuaries?
- How has the actuarial profession performed in areas where the end-principals/users (e.g., taxpayers) are unaware and the implications are more significant (e.g., public pensions, social security, health care, etc.)?

The session was very well received; a number of audience members mentioned that this was one of the best sessions they had ever attended at an SOA meeting. 🧑🏻‍🤝‍🧑🏻

**Gordon Latter, FSA,** is managing director (Risk-Based Investing) with RBC Global Asset Management (US) Inc., in Minneapolis, Minn. He can be contacted at [gordon.latter@rbc.com](mailto:gordon.latter@rbc.com).

## WE ARE ALL STRONGER TOGETHER

You're just one click away from paying your SOA and professional interest section membership dues online.

Sections are the grassroots communities that help build your personal brand. And now you'll get even more.

Join a section or renew a section membership and receive \$25 off one section-sponsored webcast.

Sign up and renew today at <http://dues.soa.org>.



# DOES THE UNITED KINGDOM'S "TRIPLE LOCK GUARANTEE" PROVIDE A SURPLUS BETWEEN THE BASIC STATE PENSION AND HOUSEHOLD EXPENDITURE IN 2056?

By Emily Rands

This article predicts the gap between the full U.K. Basic State Pension (BSP) and household expenditure in 2056 for a range of different dynamic inflation (Consumer Price Index, or CPI) predictions. In this article, the best and worst case scenario and the average surplus and deficit are detailed and analyzed in order to determine whether the BSP is sufficient to cover the expenditures for a state pension dependent single person and married couple. The key results of this research, which provides new insights regarding the BSP and expenditures, are:

1. Expenditures exceeded the BSP when a linear model of earnings with no relationship to inflation was used.
2. BSP exceeded expenditures when earnings were assumed to vary in response to inflation.
3. On average, the BSP exceeded expenditures.

This research has been undertaken as the state pension system has been criticized by many as inadequate, for example in reports such as "Living Longer and Prospering?" by S. Harper, K. Howse and S. Baxter at the Oxford Institute of Ageing, and so it is interesting to determine whether the BSP when I retire under the U.K. government's new "triple lock guarantee" will be sufficient to cover expenditures.

It is believed that many young people, like myself, are facing, as stated by Lord John McFall, a "long retirement spent in poverty," due to the increased life expectancy and falling fertility in the United Kingdom which is documented by the United Kingdom's Office for National Statistics (ONS). The United Kingdom's state pension system has, historically, had a low replacement rate for gross and net (which are gross earnings with adjustment for tax and social security payments) earnings compared to the Organisation for Economic Co-Operation and Development's (OECD's) average (as detailed in the OECD's "Pensions at a Glance" documents).

As stated previously, this article models the BSP that I will receive in 2056, which is when I am due to retire at the age of 68 under the United Kingdom's current state pension system (as at April 2011). The BSP is a flat rate pension that is updated at the end of each tax year (April) and is dependent on the number



of years of National Insurance (NI, which is a form of social security) contributions the claimant has (currently I will require 30 years of NI contributions in order to receive the full BSP at retirement). The modeling of BSP uses the U.K. government’s “triple lock guarantee,” which guarantees the BSP will be compounded forward by the highest of inflation (which is currently measured by the CPI), earnings (which is measured by the ONS by Average Weekly Earnings (AWE)) and 2.5 percent from April 2011 onwards, as detailed on the U.K. government’s website [www.direct.gov.uk](http://www.direct.gov.uk).

**Table 1—Average Weekly Household Expenditure in 2009**

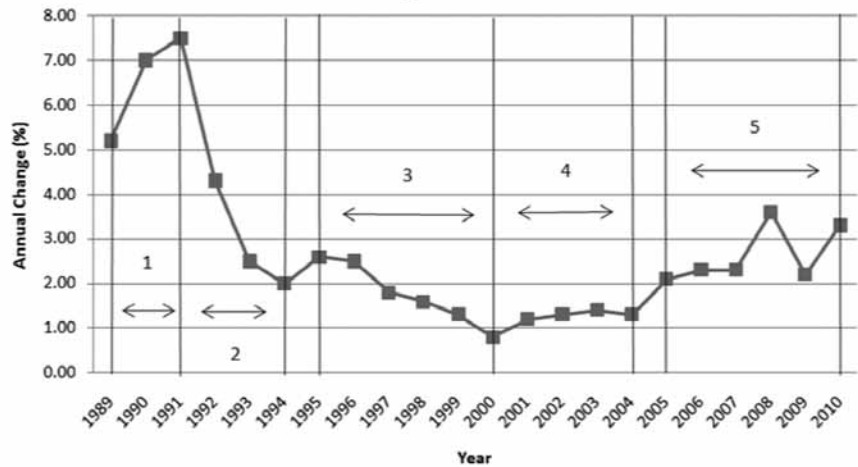
Type of Retired Household	Average Weekly Household Expenditure (£)
One-Person Household	148.90
Two-Person Household	261.90

Source: G. Horsfield (editor), *Family Spending, A report on the 2009 Living Costs and Food Survey*, ONS.

The household expenditures, as given by the ONS, are shown in Table 1. All expenditures are for households dependent on the state pension. The Microsoft® Excel® 2007 “Trendline” function, which uses least squares modeling, was used to model inflation, earnings and the relationship between inflation and earnings. When the relationship between earnings and inflation was modeled, it was assumed that earnings changed with response to inflation.

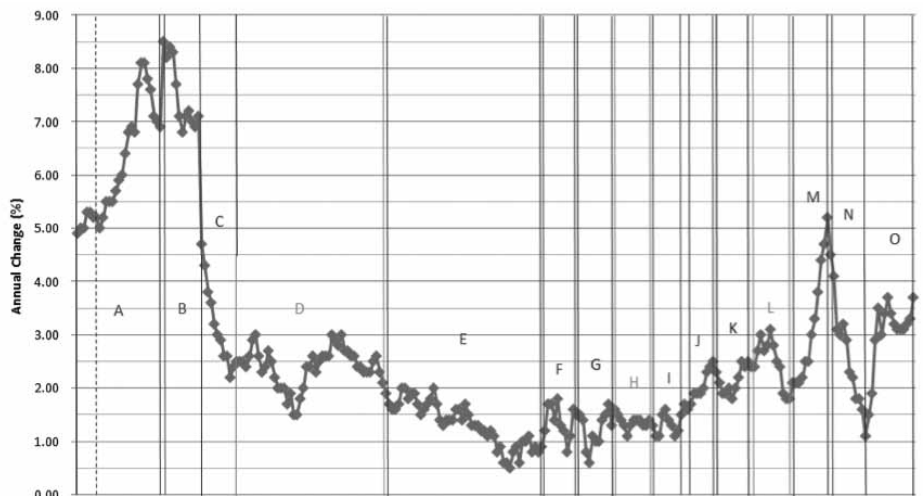
A dynamic inflation prediction was used, rather than a flat rate inflation prediction, which is used in most reports due to the government’s “triple lock guarantee.” This was done because choosing a flat rate of inflation below 2.5 percent would mean it would be dominated by the guarantee of a 2.5 percent increase in BSP. To model inflation, monthly and yearly CPI data from January 1989 to December 2010 from the ONS was split into periods, as shown in Figures 1 and 2, as a single model did not give sensible predictions of future CPI.

**Figure 1**



Source: <http://www.statistics.gov.uk/statbase/tsdtimezone.asp>

**Figure 2**



Source: <http://www.statistics.gov.uk/statbase/tsdtimezone.asp>

Least squares models were fitted to the five periods shown in Figure 1 for yearly data and 15 periods shown in Figure 2 for monthly data. Inflation models were based on the first peak (periods 1 and 2 in Figure 1 and periods A, B and C in Figure 2) and the final peak (period 5 in Figure 1 and periods M, N and O in Figure 2); there were four inflation models for the yearly data and another four inflation models for the monthly data. The regression with the best fit, or the highest  $R^2$  value, was used for each period. Inflation could be modeled in a variety of ways. For example, it could be assumed that inflation follows a stochastic process; however, due to the long period of time that was modeled, the likelihood of error is high no matter what modeling technique is used.

Some BSP models used capped inflation predictions, which meant that earnings were also capped due to the relationship assumed between earnings and inflation. Earnings models with negative earnings, earnings of over £2,000 per week and jumps of over 25 percent (for uncapped inflation predictions) or 20 percent (for capped inflation predictions) were removed. A linear model of earnings with no relationship to inflation was also used with each of the eight inflation predictions discussed above to create a BSP prediction.

Under the "triple lock guarantee," the BSP for a single person dependent on the state pension in 2056 is the product of £102.15, which is the BSP for a single person as of April 2011, and 1 plus the maximum of the percentage increase (in decimal form) in inflation (CPI), earnings (AWE) and 2.5 percent for each year from 2012 to 2056. Similarly, the BSP for a married couple in 2056 will be the product of £163.35, which is the BSP for a married couple as of April 2011, and 1 plus the maximum of the three percentage increases detailed above for each year from 2012 to 2056. (BSP as at April 2011 given on <http://www.scottishlife.co.uk/scotlife/web/site/Adviser/TechnicalCentralArea/Rates&FactorsArea/BasicStatePension/>

*BasicStatePension.asp*). The "triple lock guarantee" thus ensures that each year there is a minimum increase of 2.5 percent in the BSP, even if inflation and earnings increases are low. It also ensures that those receiving the BSP benefit from high average increases in earnings and that their purchasing power is not affected when inflation is high.

BSP predictions were given in 2011 prices by

$$BSP_{2011} = \frac{BSP_{2056}}{\prod_{i=2012}^{2056} (1 + CPI_i)}, \quad (1)$$

where  $BSP_{2056}$  is the BSP prediction for 2056 and  $CPI_i$  denotes the predicted percentage value (in decimal form) of CPI for year  $i$ , where  $i$  is from 2012 to 2056. The expenditures listed in Table 1 were given in 2011 prices by

$$Expenditure_{2011} = 1.033 \times Expenditure_{2009}, \quad (2)$$

as the CPI figure for 2010 is 3.3 percent and expenditures were for Jan. 1 through Dec. 31, 2009. Inflation from January through March 2011 was ignored because when this modeling was performed in February 2011 only January inflation figures were available, which does not have a significant effect on the results. The gap between BSP and expenditures is therefore

$$BSP_{2011} - Expenditure_{2011}. \quad (3)$$

Table 2 details the best case scenario (the largest positive gap) and worst case scenario (the smallest positive gap or largest negative gap) for the gap between the BSP prediction and expenditures in 2011 prices. It also gives the average surplus (positive gap) or deficit (negative gap) between BSP and expenditures. Surpluses suggest the BSP is sufficient to cover expenditures, and deficits suggest the BSP is not sufficient to cover expenditures.

**Table 2—Table of Results for the Gap Between BSP and Household Expenditures in 2056 (in 2011 Prices)**

Demographic	Best Case Scenario	Worst Case Scenario	Average Surplus or Deficit Per Week
<i>Including Linear Prediction of Earnings with No Relationship to Inflation</i>			
Single Person	Surplus: £ 230.68	<b>Deficit</b> : -£ 26.82	Surplus: £ 73.18
Married Couple	Surplus: £ 471.17	<b>Deficit</b> : -£ 67.47	Surplus: £ 96.97
<i>Excluding Linear Prediction of Earnings with No Relationship to Inflation</i>			
Single Person	Surplus: £ 230.68	<b>Surplus: £ 30.68</b>	Surplus: £ 113.24
Married Couple	Surplus: £ 471.17	<b>Surplus: £24.48</b>	Surplus: £ 162.24
<i>2% Cap on Inflation and Excluding Linear Prediction of Earnings with No Relationship to Inflation</i>			
Single Person	Surplus: £ 37.19	<b>Deficit</b> : -£ 11.00	Surplus: £ 7.09
Married Couple	Surplus: £ 34.89	Deficit: -£ 42.16	<b>Deficit</b> : -£ 13.23
<i>2.5% Cap on Inflation and Excluding Linear Prediction of Earnings with No Relationship to Inflation</i>			
Single Person	Surplus: £ 83.96	<b>Surplus: £ 3.11</b>	Surplus: £ 33.82
Married Couple	Surplus: £ 109.69	Deficit: -£ 19.60	Surplus: £ 29.51

Source: Author's calculations

When a linear prediction of earnings with no relationship to inflation is used, the worst case scenario is a deficit between BSP and expenditures for both a single person and a married couple, as highlighted in the first section of Table 2. Lord John McFall believes young people are facing a “long retirement in poverty,” which represents the general view that the state pension will not cover expenditures, which may contribute to poverty if pensioners do not have sufficient savings. Poverty in retirement is, however, a very wide and complex topic and so this result does not conclusively support Lord McFall’s statement.

When a relationship between earnings and inflation is modeled, which is more reflective of the real world, the worst case scenario is a surplus, as highlighted in the second section of Table 2. This surprising result goes against the general belief discussed previously and is an extension of the idea presented by P. Johnson, D. Yeandle and A. Boulding in “Making Automatic Enrolment Work: A Review for the Department for Work and

Pensions,” that “somebody earning £10,000 a year over a working life would, net of tax, receive almost as much in benefits at retirement as they received in work.” This high replacement rate of BSP for earnings implies that it may be beneficial for those on low incomes, who rely on the state pension, not to save into a personal pension plan. This worst case scenario remains as a surplus until a 2 percent cap was placed on the inflation prediction.

On average all cases, except married couples with a 2 percent inflation cap, were in surplus, which again goes against the general consensus. Jumps of up to 25 percent in earnings were allowed in uncapped inflation models which, when compounded forward under the “triple lock guarantee,” created a large surplus of BSP over expenditures, as seen in Table 2. It is possible, therefore, that these large surpluses may have affected the average surplus or deficit calculation. However, these jumps were mainly eliminated for 2.5 percent and 2 percent caps, and these predictions were still in surplus on

CONTINUED ON PAGE 24



**Emily Rands, BSc.,** is a doctoral student in Mathematics at the University of Southampton. She may be contacted at [esr1g08@soton.ac.uk](mailto:esr1g08@soton.ac.uk).

average, suggesting that BSP is adequate to cover household expenditures.

In conclusion, this report provides an interesting insight into the gap between the BSP and household expenditures in 2056 using a dynamic inflation prediction within the U.K. government's "triple lock guarantee." As detailed in Table 2 and discussed above, a linear model of earnings with no relationship to inflation gives a deficit between BSP and expenditures in the worst case scenario, which supports the general belief that the BSP will not be sufficient to cover expenditures in retirement. However, when a relationship between earnings and inflation is modeled, the BSP has a surplus over

expenditures in the worst case scenario until a 2 percent cap is placed on inflation. This result goes against the general belief and suggests that it may be beneficial for those dependent on the state pension not to save into a personal pension plan. Finally, on average, except for one case, the BSP is in surplus over expenditures, which also goes against the general belief. Hence, this modeling suggests that when the more realistic assumption that inflation and earnings are related is made, there is a surplus between the full U.K. BSP and household expenditure when I am due to retire at 68 in 2056. So in this article the BSP is projected to be adequate to cover expenditures for those households reliant on the United Kingdom's state pension. 🧑🏻🧑🏻🧑🏻

## CALLING ALL ACTUARIES!

Are you comfortable being in the limelight?

Do you have a **thought-provoking perspective** to share?

The SOA's communications staff is **seeking subject matter experts** to raise the profession's visibility in print and electronic media on a **number of different topics**, including:

**Tell us about your expertise** in one or more of the areas listed above and we'll add you to our growing roster of subject matter experts.

Examples of potential opportunities range from shaping future story ideas to conducting broadcast, radio or phone interviews with the media, and authoring relevant content for the SOA blog, as appropriate.

**Interested?** Contact Kim McKeown, public relations program manager, at 847.706.3528 or [kmckeown@soa.org](mailto:kmckeown@soa.org). Or, visit [soa.org/PRvolunteers](http://soa.org/PRvolunteers).

Be ready to share a brief bio or résumé.



**Actuaries**  
Risk is Opportunity.®



# REPORT ON THE PBSS COLLOQUIUM

By Doug Andrews

The Pension Benefits and Social Security Section of the International Actuarial Association (IAA) held a colloquium in Edinburgh, Scotland from Sept. 25–27, 2011. The theme of the meeting was international challenges in providing a safe and sustainable retirement. It featured a combination of five plenary sessions, 25 concurrent workshops, social events and the annual meeting of the section. Some sessions were wide-ranging, dealing with matters such as professionalism, pension accounting and longevity modeling, while others focused on pension reform in specific countries. The next colloquium will be held jointly with the Health Section and the Consulting Actuaries Section in Hong Kong from May 6–9, 2012.



The following short reports were sent to this editor by the speakers and give an indication of the range of topics covered. The IAA website will contain the program and copies of papers and presentations made.

In Plenary 1, Lawrence Churchill of Nest Corporation reflected on the current position of the United Kingdom in the global league tables measured by income adequacy, and fiscal sustainability. He explained the U.K. government's approach to auto-enrolling employees into qualifying pension schemes (subject to eligibility rules). He went on to discuss how we might define and then achieve an adequate level of retirement income and how more certainty and security could be created within a defined-contribution (DC) environment.

In concurrent session A4, Karl Gustav Scherman described the effects of the Swedish pension reform that occurred in the 1990s. The public pension system was thoroughly reformed in a broad agreement between political parties representing some 80 percent of the seats in parliament. In the new Swedish public pension system, there is a minimum guarantee that everyone, resident in Sweden, is entitled to and

an earnings-related part. The earnings-related part consists of two sub-schemes: an individual account scheme and a completely redesigned pay-as-you-go (PAYG) scheme. The costs of the minimum guarantee are financed by general revenue, while the earnings-related pension is financed by a contribution of, in total, 18.5 percent of covered earnings. A core idea behind the new earnings-related scheme is that the contribution rate should be unchanged for the indefinite future. A range of features is implemented in the PAYG sub-scheme in order to obtain this result. The effect on benefits of the types of rules introduced into the Swedish public pensions is profound. The consequence of these rules is that there is no way to change the pension system in the face of changes in external conditions with a view to attain a new balance between social goals and financial constraints. Instead all adjustments are made on the benefit side, either in the accumulation phase or for pensions in payment or both. As a matter of fact, what was said to be a weakness of conventional PAYG schemes, i.e., that all financial problems were met by raising the rate of contribution, has now gone into reverse: All financial problems are met by reducing benefits. *The result of unforeseen (unforeseeable)*

CONTINUED ON PAGE 26

*developments since the enactment of the new system has become political unrest. Changes have already been made in certain aspects and the whole scheme is currently under review.*

Also in concurrent session A4, Doug Andrews described a flaw in the method of calculation of assets used for the determination of the automatic balancing mechanism for the Swedish notional DC system. The effect of this flaw favors pensioners to the detriment of contributors and future contributors. He identified differences between state and private pension plans and discussed the possibility of applying automatic balancing mechanisms within private occupational pension plans.

In concurrent session B1, Matthias Börger from the Institute for Finance and Actuarial Sciences Ulm, Germany, addressed the topic of modeling the risk of changes in the long-term mortality trend. This risk is particularly relevant when considering longevity risk over limited time horizons, e.g., one year under Solvency II or several years for internal risk management. Here, the main part of the risk is not contained in the mortality evolution within the time horizon under consideration but in changes in the liabilities for the time beyond due to a change in the long-term trend assumption. Börger showed how this risk can be accounted for in stochastic mortality simulations by annually updating the mortality trend based on simulated most recent mortality experience. Moreover, he described how coherent mortality scenarios can be generated for several populations, e.g., males and females in the same country, and how epidemiological and demographic expert opinion can be included in the model fitting and be used to complement model outcomes.

In concurrent session B2, Ian Farr, JP, FFA, presented his paper titled, “Modern Pension Scheme Design.” He put forward proposals that would encourage medium to large employers in the private sector in the United Kingdom to provide pension plans where the risks are

shared between the plan members and the sponsoring employer. Public sector pensions in the United Kingdom were in the process of reform, and his proposals would allow for a read across from public to private sector pension provision and avoid the insanity of all private sector pension provision in the United Kingdom being on a money purchase basis, which would disadvantage those on modest incomes due to the uncertainty of their level of prospective pension. He proposed removing the mandatory indexation of pensions in payment for future defined-benefit (DB) accruals, or slight changes to the law to allow conditional indexation (where increases are conditional on the funding position of the pension plan). Another proposal was to allow the retrospective change of normal pension age (NPA) but only for those with 15 years or more years to go to the current NPA and subject to proof of increasing longevity from new independently calculated indices. He envisaged an expansion of plans where pension was based on re-valued average career earnings and member contributions increased with age to allow the employer contribution to be the same percentage of earnings for employees of all ages; and pensions payable to a dependent on the member’s death after retirement being funded by exchanging the member’s pension, so that single and married employees were provided with the same overall value of retirement benefits. He foresaw that the containment of employer costs in such plans could involve the capping of pensionable earnings for benefits and contributions. The rewards for the nation would be immense both for the economy and the good of society.

In concurrent session B5, Jan Hagberg presented a paper discussing pouring pension savings into the international financial black hole. An outline of his argument follows. It is most amazing that the true economic nature of a pension system covering the whole population seldom is touched on. Pensions basically represent consumption, here and now. This fact

combined with the main economic equation on an aggregate societal level:

$$\text{GDP} = \text{consumption} + \text{real investments} + (\text{export} - \text{import})$$

shows that pensions are about redistribution, about wealth transfer, i.e., a strong argument for PAYG systems, contrary to the trend we have seen around us for more than 20 years—with demands on more funding. The main issue for obtaining good pensions is, as can be seen from this equation, a sufficient production (and as a consequence, full employment and real investments—note “real”!). The austerity budget, including pension reductions as a response to the demands from the financial markets, where pension funds play a major role, is then a paradox. Deregulated financial markets, governed by a narrow efficiency concept, are pouring their investments into the financial black hole instead of making investments that support a labor market creating jobs and in the end good pensions.

Also in concurrent session B5, Carmen Boado-Penas presented a paper written with Carlos Vidal-Melia regarding inheritance gains in notional defined contribution (NDC) accounts. The paper is to analyze whether a survivorship dividend (inheritance gains) should be included as an extra return in the notional rate of NDC account systems. The survivorship dividend, at a specific age, measures the portion of the accredited account balances of participants resulting from the distribution, on a birth cohort basis, of the account balances of participants who do not survive to retirement. An actuarial model is developed that takes account of the survivorship dividend, which is used to estimate the effect that this has on the financial equilibrium of the NDC system. With data from Sweden, Poland, Latvia and Italy, estimates are made of the effect on the retirement pension of a representative individual, after the inclusion of the survivorship dividend. The main conclusions reached are, first, that the survivorship

dividend has a strong financial-actuarial basis which suggests that the aggregate contribution rate to apply is the same as the one accredited to the individual contributor. Secondly, in the countries that have not distributed the survivorship dividend, this becomes a hidden way of accumulating financial reserves in order to compensate for the increase in longevity.

Jean-Claude Menard, in his capacity as a member of the Technical Commission for Statistical, Actuarial and Financial Studies of the International Social Security Association, provided the following reports on three concurrent sessions.

#### **SESSION B4: ACTUARIAL GUIDELINES FOR SOCIAL SECURITY ACTUARIES**

The actuarial guidelines are not only important to standardize the way actuaries do their work; but they are also very important to better serve the public. To make adequate and timely decisions on any social security schemes, political reviews should be aligned with frequent actuarial reporting.

#### **SESSION D4: GETTING THE BALANCE OF STATE AND PRIVATE PROVISION RIGHT**

No matter if it is a fully funded or a PAYG plan, no matter if it is a DB or a DC solution, no matter if it is a national public scheme or a private pension plan, the fact is that increased longevity will continue to put pressure on the financing of pension plans.

#### **SESSION E2: PENSION REFORM IN CANADA**

According to international organizations, the Canadian retirement income system based on a mix of public and private pensions is an effective way to provide for retirement income needs.

What is generally agreed upon when it comes to pension reform is that retirement income


CONTINUED ON PAGE 28



**Doug Andrews, Ph.D., FSA, FCIA, CFA**, is an actuary and Senior Lecturer at the University of Southampton. He may be contacted at [dwa007@hotmail.com](mailto:dwa007@hotmail.com).

security is a shared responsibility between the government, society, employers and individuals. What is difficult, though, to determine is what the different levels of responsibility are or should be, how they interact or should interact with each other, and based on that, the optimal means of improving retirement income adequacy, all while simultaneously trying to meet two overall objectives: 1) to provide at least an adequate standard of living in retirement, and 2) to ensure that the system is and remains financially sustainable to taxpayers and contributors.

In Plenary 5, John Woodall provided the perspective of the International Labour Organization (ILO) with respect to pension reform. The ILO has a mandate with regard to social security which goes back some 90 years. Its work in relation to pensions may be seen, firstly, in the context of an approach to social security generally, which is contingency-based, with nine “traditional” branches. More fundamentally, the structure should be one which guarantees the right of individual workers to social security coverage, best accomplished through mechanisms which rely on solidarity. The “Bismarckian” model, now over 100 years in existence, does so, through the vehicle of social insurance, as clearly elucidated by Professor Wilkie. The model of pension provision developed in the Beveridge Report has been influential post-WWII in many parts of the world, and shares its broad perspective with the Declaration of Philadelphia adopted by the International Labour Conference of 1944, whose concern with social justice is seen in the assertion that “poverty anywhere is a threat to prosperity everywhere.” The ILO has, since then—in terms of its practical advice as much as its normative prescriptions through international Labour Standards—promoted the provision of pensions through nationally mandated schemes which are of the DB type. In recent years, the way in which economic and financial fluctuations expose employer con-

tributors to the risk of increased contribution demands, has, amongst other factors, led to a marked trend towards schemes organized on DC principles, through individual retirement accounts (IRAs), starting with the well-known example of Chile. Such schemes do not reflect the principle of solidarity in the same way as DB, and this trend is uncomfortable for the ILO, although many countries have developed mixed, “multi-pillar” systems. A few countries have begun to try out the scheme design known as “notional defined-contribution” or “non-financial defined contribution” (NDC), which has the general appearance of DC but with relatively strong guarantees attached to the accumulation in members’ IRAs (de-linked from actual investment conditions), which under reasonable conditions can replicate for the members benefits equal to those under DB. The picture is certainly not lessening in complexity, and the need to integrate the function of the social security pensions actuary, long recognized as one of assuring financial governance, into the wider areas of advice needed by scheme managers and trustees, is becoming more obvious—reflecting, perhaps, the words of the great Frank Redington: “An actuary who is only an actuary is not an actuary.” 

# THIS AND THAT

Noteworthy and Newsworthy items of interest to SIPF Members:

1. The SIPF council had a planning session just before the SOA Annual Meeting in October. The focus was on how to increase information for section members and how to highlight public financing. As a result, task forces are exploring how to tie to other areas of interest such as pensions.
2. The council is looking for volunteer help. There are several specialty jobs, some short term, where you can get involved. They include an SIPF focus in task force areas such as health reform, social security, and casualty and communication—such as with the newsletter. This is a good way to learn more about SIPF and do some volunteer work without being overburdened. Write or call Mark Litow, council chair, at [mark.litow@milliman.com](mailto:mark.litow@milliman.com).
3. SIPF sponsored two sessions at the 2011 SOA Annual Meeting in Chicago. Check out the summary of those in this issue and details on the SOA website.
4. Also keep a heads-up for future SIPF Webinars. There was one in May on the unique challenges actuaries face when working in the public domain that had an A-Team panel. Recordings of the webcast can be ordered from the SOA's website.
5. Upcoming International Actuarial Association Colloquia  
Sponsored by the Pension Benefits Social Security Section

May 6-9, 2012

Hong Kong, China

See [www.actuaries.org/calendar/](http://www.actuaries.org/calendar/) for more details.

# Magically Double Your Money!

**Make a first-time gift to  
The Actuarial Foundation  
and—like magic—watch  
it double!**

All new donors who contribute \$50 or more to the Foundation will have their gift matched—dollar for dollar—through the Foundation's Matching Gift Challenge.



**Make your first-time gift today and double your donation!**  
[www.ActuarialFoundation.org/donate/index.shtml](http://www.ActuarialFoundation.org/donate/index.shtml)



**THE ACTUARIAL  
FOUNDATION®**

Preparing for tomorrow's possibilities® through education

JUNE 13-15, 2012

NEW ORLEANS MARRIOTT

NEW ORLEANS, LA

**H** SOA  
2012  
HEALTH MEETING



**Mark your calendar** and plan to attend the 2012 Health Meeting. We're heading to the Big Easy—and planning more topical sessions to provide you with the latest updates on important health issues. Expect top-notch speakers and numerous of networking events—and the opportunity to earn lots of CPD credit. There'll be plenty to see and do in New Orleans while you're there: Chill out in a blues or jazz club; check out the city's well-known architecture; take a riverboat tour or carriage ride; or—head to the outskirts to see sprawling plantations and the incredible wildlife.

*Here's what last year's attendees had to say:*

**"Thought provoking and extremely worthwhile."    "Gained great industry insight!"**

**"Excellent content and thoughtful delivery."    "Ample opportunities to earn professionalism credit."**

**"Sessions were great! Loved the smaller groups and wide range of topics!"**

<http://HealthSpringMeeting.soa.org>.

SOCIETY OF ACTUARIES

Social Insurance &  
Public Finance Section

# IN THE PUBLIC INTEREST

475 N. Martingale Road, Suite 600  
Schaumburg, Illinois 60173  
p: 847.706.3500 f: 847.706.3599  
w: [www.soa.org](http://www.soa.org)

Non Profit Org  
U.S. Postage  
PAID  
Carol Stream, IL  
Permit No 475