



Office of the Superintendent of  
Financial Institutions Canada

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30<sup>th</sup> International Congress of Actuaries  
30 March to 4 April 2014

ICA 2014 CIA  
WASHINGTON DC

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*Why actuaries are interested in  
demographic issues and why others  
should listen to them  
IAA Population Issues Working Group*

*Presentation to the 30<sup>th</sup> International Congress of  
Actuaries by Assia Billig*



OSFI  
BSIF

31 March 2014, Washington, USA

Canada 

# *Population issues working group (PIWG)*

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**The purpose of PIWG is to identify population issues of particular interest to actuaries and in respect of which the actuarial profession, at an international or national level, could make a useful contribution in the public interest.**

- Terms of references include:
  - To raise awareness of population issues in the wider actuarial community worldwide.
  - To promote the role of actuaries in demographic work.



# *PIWG Current Work Plan*

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- Prepare a paper on
  - Reasons why actuaries interested in demographic issues
  - Why other interested organisations should talk to actuaries
- Develop an website that provide actuarial communities with demographic references



# *World population is changing dramatically*

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- By 2020, there will be 1 billion aged 60 or older; by 2050, more than 2 billion.
- In 2010, over a quarter of the world population was younger than age 15; by 2050 it will be around one fifth.
- In 1950, less than 30 per cent of the world population lived in cities; today it is more than 50 per cent.
- In 2013, international migrants represented over 3 per cent of the global population.



*Source: Various United Nations Population Division publications*

# *Evolving population needs appropriate products*

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Demographic developments affect:

- Social security programs
- Insurance products (individual, property)
- Health insurance programs
- Pension plan designs
- Disability programs
- Savings products
- Long term care provision

...and result in actuaries working in non-traditional areas



# *Professional duty of an actuary is to examine available information*

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- Actuaries need to develop assumptions and models
- Actuaries follow
  - National mandatory standards
  - Non-mandatory guidelines e.g. ISAP 2
  - These may suggest ways of developing demographic and other assumptions
- Actuaries may be responsible for assumptions under legislation



# *Social security actuaries should be especially aware of demographic developments*

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- Social security programs cover wide segments of a country's population
- ISSA international survey - social security actuaries are responsible for assumptions in 70% of cases
- Finer characteristics of projected population may need to be recognized
  - How healthy people are at different ages and at different socio-economic levels
  - How immigration/emigration impact the fertility and longevity profiles of countries
  - How family structure is evolving
  - How demographic developments impact labour market



# *Health and morbidity trends impact the financing and sustainability of health care*

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- Actuaries are involved in assessing financial status of private and public health care systems
  - Office of the Actuary for Medicare and Medicaid (USA)
- Actuaries are positioning themselves as think tank resources for policymakers
  - ISSA TC ACT project on sustainability of health care financing
    - Discussions involving actuaries, economist, social security officials and policymakers
  - SOA and CIA sponsored report “Sustainability of the Canadian Health Care System and Impact of the 2014 Revision to the Canada Health Transfer”





# *Aging increases the demand for disability benefits*

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- Age groups affected by disability and causes of disability vary by regions of the world
- Analysis of disabilities by medical cause, age, gender is necessary
  - Actuaries have access to detailed databases as well as strong analytical abilities
- In Canada, analysis of recovery from disability by cause and age allowed government to refine rehabilitation programs.



# *The workforce in modern world is becoming increasingly mobile*

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- Permanent migration is important driver of population change
  - Volatile component which is often politically driven
  - Difficult to project
- In developing assumptions social security actuaries
  - use their judgement on how to balance recent experience and long-term trends
  - analyse age, gender, and family composition of immigrants, and their ability to find work



# *Social protection of temporary migrants*

- Social security actuaries: financing migrants protection
  - Does allowing migrants to pay social security contribution and eventually have access to benefits result to the net gain or loss for the system?
  - If migrants do not have access to host countries social security, what is the cost for country of origin when they return?
- Pension actuaries: retirement income plans for expatriates
  - International pension plans, extension of participation to local workforce
- Product development for those not covered by social security and pension arrangements



# *Fertility and family formation*

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- Fertility rate around the world varies from 1.2 to 7.6 children per women
- Changing face of families:
  - More single parent families
  - Changing role of women in society
  - Urbanization
  - High number of orphaned children due to HIV/AIDS
- New types of family programs
  - Conditional cash transfers (Brazilian Bolsa Família)
  - Children pensions (South African Child Support Grant)



# *Fertility and family programs*

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- Social security population projections need analyses of fertility by
  - Age of mother
  - Socio-economical characteristics
  - Geographical region
  - Residency
- Family programs
  - Eligibility for benefits
  - Québec Parental Insurance Plan (Canada): distribution of families by type: singles vs. couples and one earner vs. two earners



# *Aging of the population is caused by low fertility and/or increasing longevity*

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- How society spending should be apportioned between younger and older populations?
  - how intergenerational equity should be addressed?
- Will aging create labor shortages?
  - what impact it could have on social programs and how social security programs could help to alleviate it?
- How health systems and old-age retirement systems should adapt to changing realities?
- Potential for new products development, e.g. long-term care



# *Intergenerational equity: a condition for sustainable social security?*

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- How to define intergenerational equity and how to measure it?
- Recent TC ACT ISSA project proposed several actuarial measures of intergenerational equity for retirement income systems
  - Canada, Denmark, France, Japan, Saudi Arabia, Uruguay
- Project summarized existing and potential policy responses stemming from these actuarial measures



# *Can social security systems automatically adjust to changing economy and demography?*

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- Several countries have incorporated automatic balancing mechanism (ABMs) in the designs of their systems
- ABMs linked to longevity (e.g. UK, Sweden), or to other demographic measures (e.g. Germany, Japan)
- Actuarial role in developing such mechanism and assessing efficiency of existing ones.





# *Increase in retirement age*

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- Reasons behind increase in retirement age
  - increasing longevity
  - shrinking tax and contribution bases due to falling fertility
  - desire to keep people longer in work force in order to address labour shortage.
- CIA report on “Issues Related to Increasing the “Retirement Age”
  - Result of collaboration of actuaries from different areas of expertise
- Increase in retirement age can affect other programs (e.g. disability and unemployment)



# *Reasons why other organizations should talk to actuaries...*

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- Expertise: actuaries know how to combine statistical, mathematical, demographic, economic and financial information into models, analysis, and projections.
- Use of actuaries work: the results of actuarial work are often used to define major national policies by legislators.
- Risk management: Actuaries are expert in risk management and can provide useful input on ways of assessing and presenting information on risks related to demographic, economic and other areas
- Meeting needs: develop suitable products for meeting needs and providing risk management



## *...and few more reasons*

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- Ability to interpolate trends: In countries and regions when data are scarce actuaries can help to develop credible approximations
- Model already built: actuaries already use demographic models. Other organizations can rely on these models.
- Quality assurance: actuaries can review and validate models developed by others
- Professionalism: actuaries operate under various standards to ensure work is objective and transparent



# *Examples of engagement outside the profession*

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- Workshop to build up sub regional networks in Africa
  - to provide information on what actuaries can offer and their potential role,
  - to share experience and
  - to organize knowledge management and documentation.
- Social Security Subcommittee of the Actuarial Association of Europe
  - Position paper “Sustainability of pension systems- demographic challenges|
  - Discussions regarding assumptions for EU Ageing Report



# Conclusion

- Actuaries often brand themselves as risk management professionals



- Demographic risks in the modern world cannot be ignored

The actuarial profession possesses a profound understanding of demographic risks and actuaries should take steps to engage with those outside the profession to recognize this expertise and to use it.



# *Please join PIWG!*

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- Term of reference of PIWG:

To create a network of actuaries engaged in demographic work or with particular interest in population issues.

**Visit PIWG at:**

[http://www.actuaries.org/index.cfm?lang=EN&DSP=CTTEES\\_PIWG  
&ACT=INDEX](http://www.actuaries.org/index.cfm?lang=EN&DSP=CTTEES_PIWG&ACT=INDEX)





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# Why actuaries are interested in demographic issues and why others should listen to them

## *IAA Population Issues Working Group*

Thank you

31 March 2014



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