International Standard of Actuarial Practice 2

Financial Analysis of Social Security Programs

Note: The hyperlinks in the ISAP are linked to the respective definitions in the Glossary. These links will work well if your default browser is Internet Explorer. The links may not work consistently for other browsers. Unless you know your default browser is Internet Explorer, we recommend opening the ISAP and Glossary in separate windows and cross-referencing them.

Approved by the IAA Council

[13 October 2013]
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Preface

[Drafting Notes: when an actuarial standard-setting organization adopts this standard it should:

1. Replace “ISAP” throughout the document with the local standard name, if applicable;
2. Modify the wording in paragraph 1.4 to point to the local standard(s) that are substantially consistent with ISAP 1, rather than referring to ISAP 1 directly, if appropriate;
3. Choose the appropriate phrase and date in paragraph 1.5;
4. Review this standard for, and resolve, any conflicts with the local law and code of professional conduct; and
5. Delete this preface (including these drafting notes) and the footnote associated with paragraph 1.5.]

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standard-setting bodies to consider. The International Actuarial Association (IAA) encourages relevant actuarial standard-setting bodies to consider taking one of the following courses of action, if it has been determined that this ISAP is relevant for actuaries in their jurisdiction:

• Adopting this ISAP as a standard with appropriate modification, where items covered in this ISAP are not currently contained in existing actuarial standards;
• Endorsing this ISAP as a standard as an alternative to existing standards;
• Modifying existing standards to obtain substantial consistency with this ISAP; or
• Confirming that existing standards are already substantially consistent with this ISAP.

Such an adopted standard (rather than this ISAP) applies to those actuaries who are subject to such body’s standards, except as otherwise directed by such body (for example with respect to cross-border work).

When this ISAP is translated, the adopting body should select three verbs that embody the concepts of “must”, “should”, and “may”, as described in paragraph 1.6 – Language of ISAP 1, even if such verbs are not the literal translation of “must”, “should”, and “may”.

This ISAP is not binding upon an actuary unless the actuary states that some or all of the work has been performed in compliance with this ISAP.

This ISAP was adopted by the IAA Council in [month year].
Introduction

This International Standard of Actuarial Practice (ISAP) applies to actuarial services performed in the context of social security programs (SSPs). It is intended to:

- Promote the development of consistent actuarial practice for SSPs throughout the world; and
- Narrow the range of practice considered acceptable under ISAP 1 – General Actuarial Practice.

Where this ISAP defines as acceptable a practice that would not be acceptable under ISAP 1, it is clearly identified.

Because of their significant expertise in preparing long-term financial projections, actuaries often play an important role in carrying out financial analyses of SSPs. Financial analyses are commonly referred to as valuations. Due to the reliance placed on actuarial projections in public policy decision-making, it is important that the short- and long-term demographic and economic analyses of these SSPs provide objectively-prepared projections of their future conditions.

In this area of practice, the International Actuarial Association (IAA) previously adopted IASP 1 – Guidelines of Actuarial Practice for Social Security Programs, which became effective on January 1, 2003. This was a level 4 standard (which has the effect of a current international actuarial note) and is superseded by the adopted version of this ISAP.

Few existing professional standards and guidelines specifically apply to SSPs. Most countries have no specific standards in this area. The IAA has decided to issue this ISAP to fill this gap. Its action is supported within the International Social Security Association (ISSA) and the International Labour Organization (ILO).
Section 1. General

1.1. **Purpose** – This ISAP provides guidance to actuaries performing financial analyses of SSPs, or reviewing, advising on, or opining on such analyses, to give intended users confidence that:

- Actuarial services are carried out professionally and with due care;
- The results are relevant to their needs, are presented clearly and understandably, and are complete; and
- The assumptions and methodology (including, but not limited to, models and modelling techniques) used are disclosed appropriately.

1.2. **Scope** – This ISAP applies to actuaries when performing or reviewing, advising on, or opining on financial analyses of SSPs.

1.3. **Compliance** – There are situations where an actuary may deviate from the guidance of this ISAP but still comply with the ISAP:

1.3.1. Law may impose obligations upon an actuary. Compliance with requirements of law that conflict with this ISAP is not a deviation from the ISAP.

1.3.2. The actuarial code of professional conduct applicable to the work may conflict with this ISAP. Compliance with requirements of the code that conflict with this ISAP is not a deviation from the ISAP.

1.3.3. The actuary may depart from the guidance in this ISAP while still complying with the ISAP if the actuary provides, in the report, an appropriate statement with respect to the nature, rationale, and effect of any such departure.

Paragraphs 2.6, 2.8, and 2.9 of ISAP 1, as modified by paragraph 2.6 of this ISAP, cover the situation where the actuary is directed to use certain assumptions or methodology. The actuary who complies with these paragraphs is not deviating from this ISAP.

1.4. **Relationship to ISAP 1** – Any actuary who asserts compliance with this ISAP (as a model standard) must also comply with ISAP 1, except where ISAP 1 is overridden by this ISAP. Whenever guidance in this ISAP overrides the guidance in ISAP 1 the caption [This paragraph replaces paragraph x.y [title of paragraph x.y] in ISAP 1] will be shown at the start of the paragraph. References in ISAP 1 to “this ISAP” should be interpreted as applying equally to this ISAP, where appropriate.

In particular (as laid out in paragraph 1.6.2 of ISAP 1) this document uses various expressions whose precise meaning is defined in the Glossary. These expressions are highlighted in the text with a dashed underscore and in blue, which is also a hyperlink to the definition (e.g., actuary).

1.5. **Effective Date** – This ISAP is effective for actuarial services performed/commenced/any actuarial services performed relevant to an event} on or after [Date].

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1 Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.
Section 2. Appropriate Practices

2.1. Consideration of all Relevant Features of the SSP and Law – The actuary should consider all relevant SSP features, the policies and the stated intentions of the sponsoring entity, and current law, if that information exists and is reasonably available to the actuary. The actuary should also take into account established practice (if relevant) when no law exists with regard to certain benefit provisions or financial measures (for example, the basis for future indexation of retirement benefits). For a newly established or substantially changed SSP, the actuary should take into account other relevant information, including relevant experience in comparable SSPs.

2.2. Data – The actuary should consider what data are required in order to perform, review, advise on, or opine on the financial analysis of the SSP. These data might include:

a. National or regional demographic statistics on variables such as fertility, mortality (life expectancy), morbidity, and migration (if such data are not available on a national or regional basis, the actuary might consider information from a wider geographical area that might apply, or it may be necessary to rely on relevant and reliable statistics of international organizations);
b. Demographic status and experience of the SSP, as applicable;
c. Economic experience, labour market conditions, and inflation;
d. Financial attributes of the SSP, such as contributions, investment earnings, and liquidity of assets;
e. Benefits of, or claims on, the SSP;
f. Number and experience of classes of contributors and beneficiaries of the SSP;
g. Covered salaries and past service credits; and
h. Censuses and population surveys covering, for example, family statistics.

2.3. Assumptions – If the actuary sets the assumptions, the actuary should use neutral assumptions in a financial analysis of an SSP. Neutral assumptions are such that the actuary expects that the resulting projection of the SSP experience is not a material underestimate or overestimate.

2.3.1. The actuary should consider performing an experience analysis to the extent that the available data permit, to analyze past experience and to set future assumptions.

2.3.2. The actuary should select assumptions that reflect the time horizon of the analysis (which might be 75 years or more). The actuary may select different assumptions for different time intervals in the projection (e.g., a common technique for this is to use recent experience as the basis for the model assumptions for the first “n” years of projection, with longer-term trends applied to the ultimate assumptions after the first n years (select and ultimate)).

2.3.3. The actuary should consider any automatic balancing mechanisms that exist in an SSP when selecting the model variables and assumptions for an SSP financial analysis. The actuary should consider to what extent the SSP is “immunized” from the volatility of some variables (e.g., life expectancy) by the automatic balancing mechanisms.
2.3.4. Credible experience data might not exist for a newly introduced SSP, or for new benefits to be provided by an existing SSP. To establish assumptions in such cases, the actuary may:

a. Investigate the risk characteristics of the potential covered population through surveys or enquiries until credible data are available;

b. Consider the relevant external experience, including:
   • Other SSPs (including the program being replaced, if any), or
   • Other countries;

c. Use reasonable proxies or default values as may be appropriate.

If credible experience data do not exist, the actuary should disclose in the report that the financial analysis has been based on incomplete data (and perhaps none relating to the SSP itself), and should consider recommending that financial analyses should be performed again as new information becomes available.

2.3.5. If the actuary uses assumptions that include margins, then the actuary should disclose in the report the basis and rationale for the margins and explain the relationship between the result using the assumptions that include margins and the result using neutral assumptions.

2.3.6. The actuary should consider including in the analysis projections based on other sets of assumptions such as those that would result in high projected costs and those that would result in low projected costs when such projections are helpful in analysing the uncertainty of the projections and communicating the financial status of an SSP.

2.4. Consistency with the Financing Method – The actuary should use a methodology that is consistent with the financing method used for the SSP.

2.4.1. For pay-as-you-go or partially funded SSPs, the analysis should use an open group methodology, under which contributions and benefits of both current and future participants are considered.

2.4.2. For fully funded SSPs (that is, where accrued liabilities are intended to be funded over participants’ working years), the analysis should use a closed group methodology, under which only current participants are considered, with or without their assumed future benefit accruals.

However, if the actuary judges an alternative approach to be more appropriate, that approach should be used with justification communicated in the report. In such circumstances, the actuary may also consider reporting the results of the financial analysis under:

a. An open group methodology for pay-as-you-go or partially funded SSPs; and

b. A closed group methodology for fully funded SSPs.

If the law specifies a methodology for measuring the actuarial assets and obligations that does not follow either section 2.4.1 or 2.4.2, as applicable, the actuary should communicate that fact. The actuary should also comply with the guidance of paragraph 2.6 of this ISAP.
2.5. **Independent Expert Review** – A financial analysis is often subject to review by an independent expert.

2.5.1. This review might address:

a. Whether the assumptions used in the financial analysis are within a reasonable range both separately and in the aggregate;

b. Whether the results of the financial analysis are within a reasonable range; or

c. Other aspects of the financial analysis.

2.5.2. “Independent expert” means a suitably experienced reviewer who:

a. Has not been involved in preparing the work that is subject to review; and

b. Is not employed by the principal or its sponsoring agencies.

In this context a reviewer contracted by the principal to perform the review is not considered to be employed by the principal or its sponsoring agencies.

2.5.3. The actuary who prepared the financial analysis should cooperate with the reviewer by providing the reviewer with any requested material in the actuary’s possession if the terms of the actuary’s engagement so permit, and by being available to discuss data, methodology, assumptions, and other factors as necessary, with the reviewer.

2.6. **Assumptions and Methodology Mandated by Law** – [This paragraph replaces paragraph 2.9 “Assumptions and Methodology Mandated by Law” in ISAP 1]

When an assumption or methodology is mandated by law, the actuary should apply the guidance of paragraph 2.8 of ISAP 1 as if the assumption or methodology were prescribed by the principal or another party.
Section 3. Communication


3.1.1. The actuary should communicate the results of any financial analysis in a report that:

a. Includes enough information to enable sound decisions to be made;

b. Discloses who the principal is, what the purpose of the financial analysis is, and the instructions given to the actuary;

c. Indicates the nature and timing of future cash flows being quantified;

d. States the nature and significance of material risks faced by the SSP;

e. Explains the approach taken to the risk in the analysis;

f. Indicates the nature and extent of any material uncertainty in the information it contains; and

g. Indicates the sensitivity of the results to variations in key assumptions and methodology.

3.1.2. There are several measures the actuary might use to present the results, including:

a. Projected cash flows and ending positions;

b. Discounted cash flows; and

c. Required contribution rates for sustainability.

3.1.3. This section applies specifically to reports concerning the projected financial status of an SSP. The actuary should include at least the following information in an SSP financial analysis report. The appendix (which is educational and not part of the guidance of this ISAP) shows lists of possible content for most sections of a report.

a. Description of the relevant provisions of the SSP;

b. Key dates:

   - Valuation date;
   - Report date; and

   - Date up to which all relevant information had been taken into consideration, if it differs from the report date.

c. Methodology, data, and assumptions;

d. Results and findings;

e. Analysis of results; and

f. The actuarial opinion.

3.1.4. The actuary should include a formal statement in the report that the report has been prepared, and the actuary’s opinion given, in accordance with the applicable local standards of practice or this model ISAP.

3.2. Actuarial Opinion – The actuary should provide an opinion on the actuary’s assignment:
3.2.1. Unless paragraph 3.2.3 applies, the opinion should state the extent to which the following hold, or do not hold:

a. The data upon which the report is based are sufficient and reliable;

b. The assumptions used for the report are reasonable and appropriate both in the aggregate and individually; and

c. The methodology employed is appropriate and consistent with accepted actuarial practice.

3.2.2. Unless paragraph 3.2.3 applies, the opinion should include a statement with respect to the extent to which the SSP is financially sustainable over the period covered by the projections used for the financial analysis. Financial sustainability of a SSP relates to its continuous capacity to support the benefits offered by the SSP when considering the applicable financing rules and the future demographic and economic environment in which it will operate.

3.2.3. The actuary may answer questions about an existing financial analysis of an SSP. (For example, the actuary might be asked to estimate the effect of using a revised population projection while keeping all other assumptions the same.) In such case the opinion’s scope (especially what is not included) should be clearly articulated and pertinent to the question.
APPENDIX

Possible Report Content

Note: this appendix is provided for informational purposes, and is not part of the ISAP. It contains lists the task force drafting the ISAP assembled to show possible items covered by the various sections of the actuary’s report.

1. Description of the provisions of the SSP related to:
   a. Coverage;
   b. Nature of the SSP, e.g., defined benefit or defined contribution;
   c. Financing approach, e.g., pay-as-you-go, partially funded, or fully funded;
   d. Source of funding, e.g., worker or employer contributions, transfers from government revenues, including legislated or contractual contribution rates; and
   e. Benefit provisions, e.g., contingencies covered, formulae, amounts, restrictions, and eligibility conditions.

2. Methodology, data, and assumptions:
   a. Description of the methodology used;
   b. Key demographic assumptions such as mortality (longevity), morbidity, fertility, migration, and unemployment;
   c. Key historical demographic data, such as:
      i. Eligible and beneficiary population by relevant demographic characteristic groupings, and how these populations compare to the total population;
      ii. Dependency ratios;
      iii. Employment earnings by age groups and gender, and averages;
      iv. Contributory earnings and averages by age groups and gender;
      v. Labour force participation rates by age groups and gender; and
      vi. Covered payroll and workforce;
   d. Key economic data and assumptions such as rates of inflation, economic growth, and return on investments (if any);
   e. The extent, if any, of interdependency among assumptions;
   f. Summaries of the data used as a basis for the SSP financial analysis assumptions, and as a starting point for the projections; and
   g. Sources, quality, and relevance of the data used.

3. Results and findings:
   a. Projected demographic values at selected future points in time, such as:
      i. Eligible and beneficiary population by relevant demographic characteristic groupings, and how these populations compare to the total population;
      ii. Dependency ratios;
      iii. Employment earnings by age groups and gender, and averages;
      iv. Contributory earnings and averages by age groups and gender;
      v. Labour force participation rates by age groups and gender; and
      vi. Covered payroll and workforce.
b. Financial projections showing cash flows and balance sheet values for the recent past and for the future, such as:
   i. Contributions;
   ii. Investment earnings;
   iii. Other income;
   iv. Total income;
   v. Benefits or claims;
   vi. Administrative expenses;
   vii. Total expenditures;
   viii. Annual balance (income minus expenditure);
   ix. Actuarial deficit and funded ratio as of valuation date and other representative dates (for fully-funded pension schemes);
   x. Nature of assets and/or individual accounts;
   xi. Market value of financial or tangible assets;
   xii. Fund value, if any; and
   xiii. Value of notional assets (such as value of future contributions, if that is recognized as an asset).

The results may be expressed in relation to one or more relevant volume measures, such as the size of the jurisdiction’s economy.

c. Cost rates as appropriate:
   i. Pay-as-you-go cost rate;
   ii. General average premium or partially funded cost rate; or
   iii. Fully funded cost rate.

d. A presentation designed to provide an indication of the financial sustainability of the SSP, if appropriate.

4. Analysis of results:

a. Reconciliation with the prior report, along with explanations of significant changes in results.

b. Discussion of the pattern of financial projections (e.g., as a result of the ageing of the population, maturity of the SSP, and recent changes in SSP design or financing) and the implications thereof. The actuary may include a comparison of how benefits are projected to grow or decline as a result of different levels of inflation or economic growth and during which part of the projection period, as an indicator of potential stability or instability of the system in the longer term.

c. Sensitivity of results to variations in one or more assumptions.

d. Effect of automatic balancing mechanisms (if any) under each scenario used for the projections in the report, where “effect” covers both how the automatic balancing mechanism alters the key parameters of the SSP (such as the pension age, or determination of benefits) and how the alteration of the key parameters changes the amounts paid to beneficiaries.

e. Findings with respect to the short-, medium-, and long-term financial sustainability of the SSP with due regard to the funding rules under the law if such funding rules exist.
f. Indications of possible sources of future financial instability (e.g., depreciation of future benefits either because of non-indexation or because indexation may lag behind economic growth, or inadequacy of future contributions due to non-indexation of contribution limits).

g. Potential recommendations on possible measures to ensure the long-term financial sustainability of the SSP.

h. Impact of any options or guarantees embedded in the benefits of the SSP on the cash flows shown.

i. The suitability of the approach for calculation of any capitalised value of liabilities used for an SSP in light of the particular funding method and the time horizon used.