APPENDIX Nb:

PRESENTATION ENTITLED
“ACTUARIAL RESEARCH CORPORATION’S
LONG TERM CARE INSURANCE MODEL”
Actuarial Research Corporation’s Long Term Care Insurance Model

September 22, 2010
Actuarial Basis For Premium Formula

► For each issue age, projections of benefits, expenses, and premium income are made until age 100 (presumed to be the end of life for all individuals in the cohort).

► The Premium for each issue age is set so that the present value of benefits and expenses is equal to the present value of premium income.
Caveats

► No one can foresee how this program will operate, therefore premiums cannot be guaranteed to be adequate.
  
  ▪ Unknowns include level of participation, level of antiselection, and the effectiveness of regulations and procedures to determine “actively at work,” qualifications for benefits, and the effect of providing advocacy services

► Opinions on the reasonableness of the assumptions used to calculate premiums can be made.

► Premiums are indeterminate under variable indexing provisions.
Assumptions

► There will be no subsidy across years of issue or age at issue, as is typical of social insurance.
► There is a subsidy for low-income individuals.
► Premiums are based on a set of assumptions:
  - Interest Rates
  - Mortality Rates
  - Lapse Rates
  - Expense Levels
  - Utilization Rates
Source for Assumptions

► Interest rates and mortality rates are taken from the 2010 OASDI Trustees Reports
► Lapse Rates are assumed to be zero.
► Premium load for expenses is assumed to be 3%.
► Utilization from survey data with several adjustments.
Utilization Assumptions:

Data Sources

► For nursing home prevalence rates, incidence rates, average length of stay, and continuance table: 1985 and 1999 National Nursing Home Surveys.

► For home care ages 65 and over prevalence rates, incidence rates, average length of episode, and continuance table: 1982-1999 National Long-Term Care Surveys as analyzed by Eric Stallard and Bob Yee.

► For home care ages under 65 prevalence rates from the 2009 National Health Interview Survey. Average length of episode is extrapolated from the over 65. Continuance table is from the over 65. Incidence rates are derived from the formula:

- \( PR = IR \times ALOS \), which is equivalent to \( IR = PR / ALOS \)
Utilization Assumptions: Adjustments

- Utilization data are tabulated by age, gender, and ADL level
- Utilization of the under 65 are also tabulated by income level (our model has not yet incorporated all of these data)
- We assume that 25% of those with one ADL less than the requirement will receive benefits
- We calculate the number of new beneficiaries in the first year of benefit payments (2017) by using prevalence rates rather than incidence rates
Utilization Assumptions: Selection and Antiselection

► Selection: Provisions that result in participants being healthier than average (average is based on survey data for the whole population)
  - The 3-year work requirement
  - HIS data shows that ADL level of those that work (even at the rate of $1) have significantly lower utilization than the total population

► Antiselection: Those in need of services are the most likely to participate in an unsubsidized / voluntary program.
Utilization Assumptions: Selection

Selection Factor: incidence rates in the last year of required work = 60% of ultimate
- Work is required for 3 out of the 5-year vesting period

Selection wears off over 10-year period
Utilization Assumptions: Antiselection

- Antiselection Factor (AF): A function of the participation rates and prevalence rates and assumed to reach ultimate value of 110% over 20-year period.
- Different factor at each age and sex
Utilization Assumptions: Antiselection - Examples

Example 1: participation & prevalence rates=1%
- $AF = 1/0.01 = 100$ (perfect antiselection)
- $AF = 100^{0.7} = 25.12$ (imperfect antiselection)
- $AF(5) = 11.49$ (interpolated value at duration 5)

Example 2: participation=2%, prevalence=1%
- $AF = 1/0.02 = 50$ (perfect antiselection)
- $AF = 50^{0.7} = 15.46$ (imperfect antiselection)
- $AF(5) = 8.82$ (interpolated value at duration 5)
Policy Options That Can Be Modeled

► Earnings requirement
  ▪ Years of work required (3)
  ▪ Level for participation (quarter of coverage = $1,090 in 2009)
  ▪ Level for subsidy (poverty line = $10,830 in 2009)

► Benefit trigger (ADL requirement)

► Dollars per day of benefit including indexing options

► Indexing of premium

► Waiver of premium while in claim status
  ▪ While in nursing home
  ▪ And / or while in home care

► Deductible period

► Lifetime maximum
Premium Sensitivity

► Final set of assumptions for calculating premiums have not yet been determined.

► Premiums are very sensitive to some assumptions:
  - Subsidy
  - Participation rates
  - Income requirements

► Premiums also can be sensitive to waiver of premium and indexing.
Premium Sensitivity to Low Income Subsidy

- Roughly 28 million workers above QOC ($1,090) and below poverty ($10,830) in 2009 dollars.
- Roughly 130 million above poverty.
- Premiums for unsubsidized group is affected more by the dependency ratio than by utilization.

<table>
<thead>
<tr>
<th>Low Income PR</th>
<th>High Income PR</th>
<th>Dependency Ratio (Total / Unsubsidized)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>1%</td>
<td>3.2</td>
</tr>
<tr>
<td>10%</td>
<td>6%</td>
<td>1.4</td>
</tr>
<tr>
<td>20%</td>
<td>1%</td>
<td>5.3</td>
</tr>
<tr>
<td>20%</td>
<td>6%</td>
<td>1.7</td>
</tr>
</tbody>
</table>
Premium Sensitivity to Participation Rates

► Participation rates affect the level of antiselection assumed in the model, and thus the level of the premiums.

► The level of the premiums affects the level of antiselection.
  ▪ Once premium levels go above private insurance alternatives, participation drops and antiselection increases.

► We use participation rates that vary by age and gender according to the patterns from the Federal and California LTC programs.
Premium Sensitivity to Income Requirements

► Model determines selection effect from NHIS data that shows ADL levels crossed with income levels.
► Model varies selection factor by level of earnings requirement and by years of work requirement.
► Selection effect stays in place until work requirement stops.
► Utilization rates decline as income requirement increases.
Premium Sensitivity to Waiver of Premium

- Waiver of premium is also affected by the dependency ratio (beneficiaries divided by premium payers).
- If beneficiaries do not pay premiums, then the burden on premium payers increases.
- This provision interacts with the level of antiselection to destabilize premiums.
- Example: ratio of beneficiaries to premium payers when beneficiaries are 10% and 50%:
  - $10\% / 90\% = 11\%$ vs $50\% / 50\% = 100\%$
- Note: Ceiling on premium with waiver of premium = infinity. Ceiling on premium with no waiver of premium = $1500 (=$50/day for 30 days).
Premium Sensitivity to Indexation of Premium

► If benefits are indexed to inflation and premiums are level, premiums are highly sensitive to the actual level of inflation

  ▪ Example: The difference between 2.8% inflation and 5.6% inflation could more than double premiums at younger ages and increase them by 50% at older ages.

► Indexing premiums at the same rate as benefits greatly reduces the sensitivity, but does not eliminate it.

  ▪ Example: The difference between 2.8% inflation and 5.6% inflation could increase premiums at younger ages by 25% and increase them at older ages by 15%.
### Summary of Premium Sensitivity to Selected Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Premium Sensitivity to an Increase in Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Income Subsidy</td>
<td>++++++</td>
</tr>
<tr>
<td>Participation Rates (much more sensitive at low participation rates)</td>
<td>- - -</td>
</tr>
<tr>
<td>Income Requirement (while reducing low income group and sheltered workshop workers)</td>
<td>- - - -</td>
</tr>
<tr>
<td>Income Requirement (while above low income group and sheltered workshop wage levels)</td>
<td>-</td>
</tr>
<tr>
<td>Waiver of Premium (while in nursing home)</td>
<td>+</td>
</tr>
<tr>
<td>Waiver of Premium (while in home care, but effect compounds with antiselection)</td>
<td>+++++</td>
</tr>
<tr>
<td>Indexing of Premium</td>
<td>- - - -</td>
</tr>
<tr>
<td>Lapse</td>
<td>- - -</td>
</tr>
</tbody>
</table>
A REPORT ON THE ACTUARIAL, MARKETING, AND LEGAL ANALYSES OF THE CLASS PROGRAM

For additional information, you may visit the DALTCP home page at http://aspe.hhs.gov/_/office_specific/daltcp.cfm or contact the office at HHS/ASPE/DALTCP, Room 424E, H.H. Humphrey Building, 200 Independence Avenue, SW, Washington, DC 20201. The e-mail address is: webmaster.DALTCP@hhs.gov.

Files Available for This Report

[HTML versions of Appendices will be added as they are formatted]

Main Report [48 PDF pages]

APPENDIX A: Key Provisions of Title VIII of the ACA, Which Establishes the CLASS Program [6 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appA.htm

APPENDIX B: HHS Letters to Congress About Intent to Create Independent CLASS Office [11 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appB.htm

APPENDIX C: Federal Register Announcement Establishing CLASS Office [2 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appC.htm

APPENDIX D: CLASS Office Organizational Chart [2 PDF pages]

APPENDIX E: CLASS Process Flow Chart [2 PDF pages]

APPENDIX F: Federal Register Announcement for CLASS Independence Advisory Council [3 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appF.htm

APPENDIX G: Personal Care Attendants Workforce Advisory Panel and List of Members [6 PDF pages]
Full Appendix
http://aspe.hhs.gov/daltcp/reports/2011/class/appG.htm

Ga: Federal Register Announcement for Personal Care Attendants Workforce Advisory Panel

Gb: Advisory Panel List of Members
APPENDIX H: Policy Papers Discussed by the LTC Work Group
[36 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appH.htm

APPENDIX I: CLASS Administration Systems Analysis and RFI
[10 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appI.htm

APPENDIX J: Additional Analyses for Early Policy Analysis
Full Appendix
[150 PDF pages]

Ja: A Profile of Declined Long-Term Care Insurance Applicants

Jb: CLASS Program Benefit Triggers and Cognitive Impairment

Jc: Strategic Analysis of HHS Entry into the Long-Term Care Insurance Market

Jd: Managing a Cash Benefit Design in Long-Term Care Insurance

APPENDIX K: Early Meetings with Stakeholders
[4 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appK.htm

APPENDIX L: In-Depth Description of ARC Model
[62 PDF pages]

APPENDIX M: In-Depth Description of Avalere Health Model
[23 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appM.htm

APPENDIX N: September 22, 2010 Technical Experts Meeting
Full Appendix
[61 PDF pages]
http://aspe.hhs.gov/daltcp/reports/2011/class/appN.htm

Na: Agenda, List of Participants, and Speaker Bios

Nb: Presentation Entitled “Actuarial Research Corporation’s Long Term Care Insurance Model”

Nc: Presentation Entitled “The Long-Term Care Policy Simulator Model”

Nd: Presentation Entitled “Comments on ‘The Long-Term Care Policy Simulator Model’”

[47 PDF pages]
APPENDIX P: June 22, 2011 Technical Experts Meeting

Full Appendix

Pa: Agenda and Discussion Issues and Questions

Pb: Presentation Entitled “Core Assumptions and Model Outputs”

Pc: Presentation Entitled “Actuarial Research Corporation’s Long Term Care Insurance Model”

Pd: Presentation Entitled “The Avalere Long-Term Care Policy Simulator Model”

Pe: Presentation Entitled “Alternative Approaches to CLASS Benefit Design: The CLASS Partnership”

APPENDIX Q: Table 2: Actuarial and Demographic Assumptions

APPENDIX R: Figure 1: Daily Benefit Amount for Increased Benefit