American Academy of Actuaries
Long-Term Care (LTC)
Principle Based Reserves Work Group

Update

December 14, 2013

Al Schmitz, MAAA, FSA

Chairperson, LTC Principle Based Reserve Work Group

Agenda

- Objectives of the Work group
- History and work to date
- Recent results
- Next steps/timeline
- Questions

Objectives of Work Group

- Based on the initial request from the NAIC, the objective of the work group is to develop a prototype stochastic model to be used to help set the direction of principles-based reserving for LTC
  - The work group agreed to produce a report that would include considerations of stochastic modeling and suggested next steps
  - The model is intended to be illustrative and not inclusive of detailed modeling considerations or all policy features that may be offered by an insurer

History and Work to Date

I. Stochastic modeling – key variables: morbidity, lapse, mortality, interest

II. Modeling approach – morbidity, mortality, and lapse in Excel prototype using Hazard Rate Approach

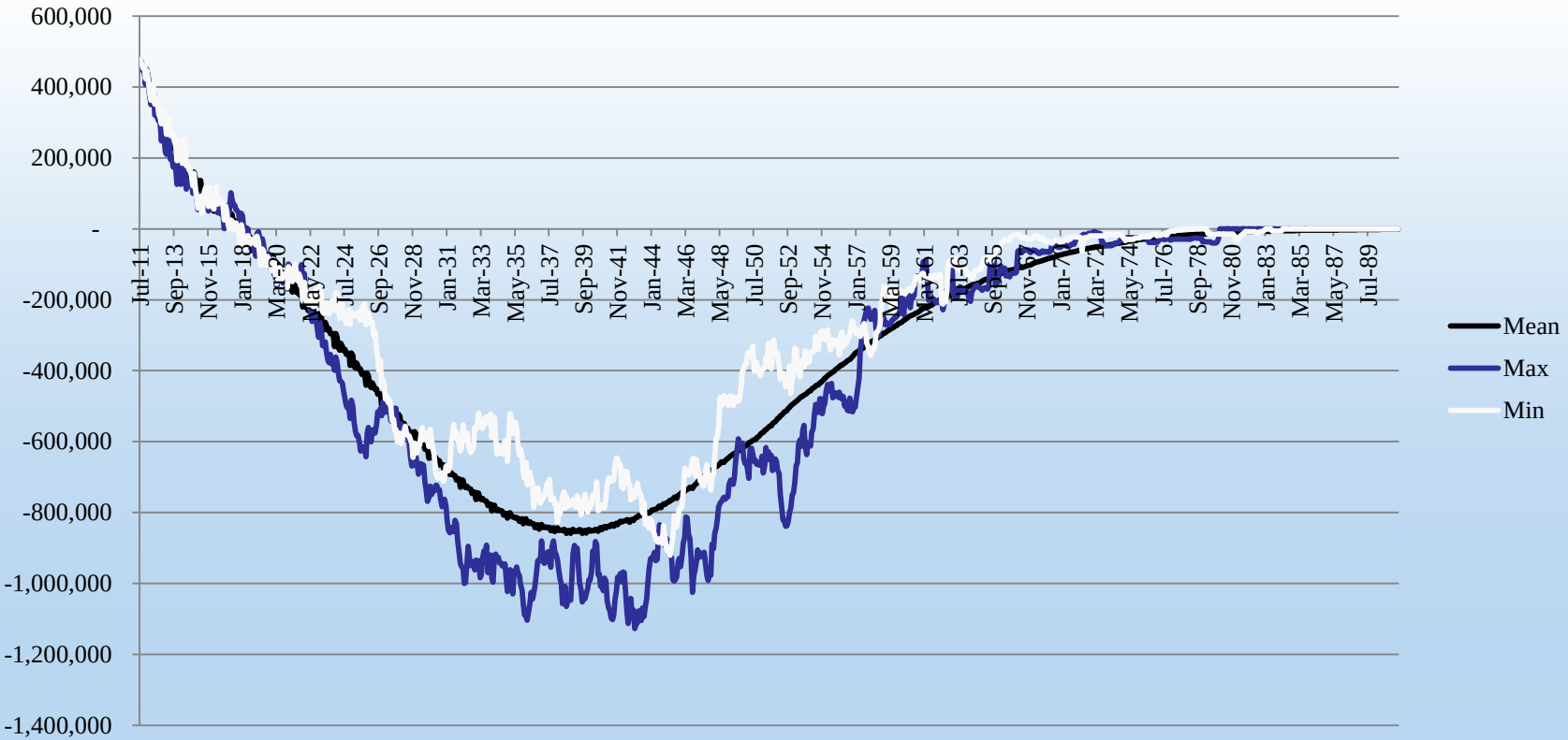
III. Modeling considerations – premium rate changes, interest rate impact, morbidity/mortality changes, margins

IV. Assumptions and data collection – sample assumptions developed by the work group, two inforce files provided by two companies

V. Stochastic and deterministic results

Initial Results

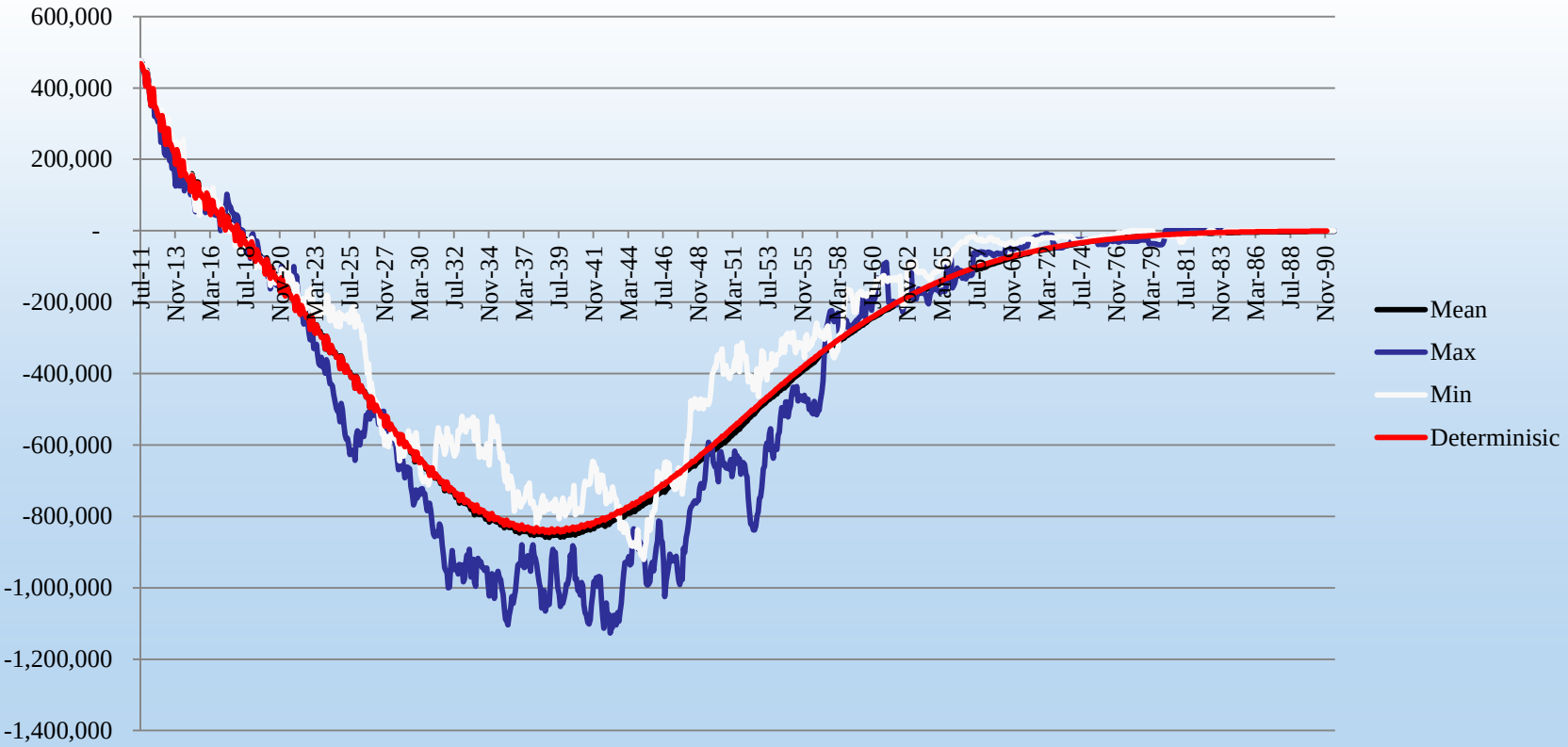
Cash Flow Dispersion – Inforce Block of LTC Insurance



Sample block of 6,000 policies-Graph developed by members of the work group. For illustrative purposes only

Initial Results

Comparison to Deterministic – Inforce Block of LTC Insurance



Sample block of 6,000 policies-Graph Developed by members of the work group. For illustrative purposes only

Initial Results

Distribution characteristics of present value of cash flow at 4 percent

- Mean 87 m
- Maximum 106 m
- Minimum 72 m
- Std Dev 5.261 m
- Skewness 0.138209
- Kurtosis 0.168010

Initial Results

- **Sample block of 6,000 LTC insurance policies, conditional tail expectation (CTE) calculations**

CTE 0 (GPV)	87m	100.0%
CTE 10	88m	101.2%
CTE 20	89m	102.1%
CTE 30	90m	102.9%
CTE 40	90m	103.8%
CTE 50	91m	104.8%
CTE 60	92m	105.8%
CTE 70	93m	107.1%
CTE 80	95m	108.6%
CTE 90	97m	110.8%
CTE 95	98m	112.8%
CTE 99	103m	117.8%

Note: CTE 90, for example, is equal to the average of the worst 10 percent of scenarios, each scenario cash flows discounted at 4 percent

Target Timeline

- Test sensitivity on smaller block of policies (6,000 policies), several morbidity and termination rate runs
  - Complete by end of April 2014
- Run larger block of policies (20,000) through model and analyze results
  - Complete by end of February 2014
- Summarize results in written report
  - June/July 2014

Questions

Staff Contact Information

Tim Mahony

Health Policy Analyst (State)

American Academy of Actuaries

1850 M St., NW (Suite 300)

Washington, DC 20036

202-223-8196

mahony@actuary.org