General Insurance Ratemaking and Reserving Exam

Fall 2019

Important Exam Information:

Exam Registration	Candidates may register online or with an application.
Order Study Notes	There is no study note package for this examination.
Introductory Study Note	The Introductory Study Note has a complete listing of all readings as well as errata and other important information.
Case Study	There is no case study for this examination.
Past Exams	Past copies of this exam from 2013-present are available on the SOA website.
Updates	Candidates should be sure to check the Updates page on the exam home page periodically for additional corrections or notices.
Appendices	The Appendices to *Fundamentals of General Insurance Actuarial Analysis* are part of the course of reading for this examination. They are mentioned in specific topics in the syllabus, although they apply to multiple topics. As a result, they can be read with the various topics or separately.

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1. Topic: Introduction and Key Considerations

Learning Objectives

The candidate will understand the key considerations for and key concepts underlying general insurance actuarial work.

Learning Outcomes

The Candidate will be able to:

a) Identify sources of professionalism requirements and good practice

b) Demonstrate knowledge of good practice related to actuarial work

c) Use the actuarial control cycle to frame actuarial work

d) Understand the components of ultimate values

e) Explain how estimates of ultimate values are used

f) Demonstrate the importance of understanding key terminology and interrelationships

g) Identify different types of data used for actuarial work

h) Explain the responsibilities of the actuary related to data

i) Describe how and why data are segregated and aggregated

j) Describe qualitative information required for actuarial work

k) Understand the sources of data and information for actuarial work

l) Understand credibility as used for actuarial work

m) Explain the application of trend adjustments in actuarial work

n) Illustrate the types of trend that influence the future cost of claims, expenses, and premiums

o) Identify the actuary's responsibilities with regards to documentation for actuarial work

p) Describe the role of professional judgment in actuarial work

q) Understand the types of reinsurance and key reinsurance terms

r) Explain the principal functions of reinsurance

s) Analyze and describe the types of reinsurance

t) Understand important reinsurance contract provisions that potentially affect actuarial work

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland
    - Part 1: Introduction
    - Part 2: Key Concepts
    - 2019 Supplement (Chapter 4 and Appendix H)
- *Actuarial Standards of Practice, Actuarial Standards Board of the American Academy of Actuaries,*
    - No. 25, Credibility Procedures, 2013
    http://www.actuarialstandardsboard.org/standards-of-practice/

2. Topic: Preparing Claims and Exposure Data for Actuarial Work

Learning Objectives

The candidate will demonstrate the ability to prepare claims and exposure data for general insurance actuarial work.

Learning Outcomes

The Candidate will be able to:

a) Create development triangles of claims and counts from detailed claim transaction data

b) Describe the different types of exposures used for conducting actuarial work

c) Calculate written, earned, in-force and unearned premiums for portfolios of policies with various policy terms and earnings patterns

d) Adjust historical earned premiums to current rate levels

e) Understand types of changes influencing average premium levels

f) Describe adjustments needed to estimate ultimate premiums

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland

   o   Part 3: Preparing the Data

   o   2019 Supplement (Chapter 11)

3. Topic: Projecting Ultimate Claims

Learning Objectives

The candidate will know how to calculate and evaluate projected ultimate values.

Learning Outcomes

The Candidate will be able to:

a)   Identify considerations for selecting methods for estimating ultimate claims

b)   Identify and describe good practice related to projecting ultimate claims with regard to required data, large claims, reinsurance recoverables, and comparison of current to prior actuarial work

c)   Identify the types of development triangles that can be used for investigative testing

d)   Analyze development triangles for investigative testing

e)   Describe the key assumptions underlying the following projection methods: development method, frequency-severity methods, expected method, Bornhuetter Ferguson method, Benktander method, Cape Cod method, Generalized Cape Cod, and Berquist-Sherman adjustments to the development method

f)   Demonstrate knowledge of good practice related to projecting ultimate values

g)   Estimate ultimate values using the methods cited in (e)

h)   Explain the effect of changing conditions on the projection methods cited in (e)

i)   Assess the appropriateness of the projection methods cited in (e) in varying circumstances

j)   Evaluate and justify selections of ultimate values based on the methods cited in (e)

k)   Estimate ultimate claims by layer using common methods

l)   Understand the differences in development patterns and trends for various claim layers

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland

    o   Part 4: Basic Methods for Estimating Ultimate Claims

    o   Appendices A through F

    o   2019 Supplement (Chapters 14, 19, and 20, and Appendix I)

4. Topic: Financial Reporting

Learning Objectives

The candidate will understand financial reporting of claim liabilities and premium liabilities.

Learning Outcomes

The Candidate will be able to:

a) Describe the key assumptions underlying ratio and count-based methods for estimating unpaid unallocated loss adjustment expenses

b) Estimate unpaid unallocated loss adjustment expenses using ratio and count-based methods

c) Evaluate and justify selections of unpaid unallocated loss adjustment expenses based on ratio and count-based methods

d) Demonstrate knowledge of good practice related to actuarial work supporting financial reporting

e) Describe the components of claim liabilities in the context of financial reporting

f) Calculate claim liabilities

g) Describe the components of premium liabilities in the context of financial reporting

h) Evaluate premium liabilities

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland
    - Part 5: Financial Reporting and the Establishment of Reserves
    - Appendices A through F

5. Topic: Trending

Learning Objectives
The candidate will understand trending procedures as applied to ultimate claims, exposures and premiums.

Learning Outcomes

The Candidate will be able to:

    a)   Identify and describe the influences of portfolio changes on claim frequency and severity

    b)   Identify the time periods associated with trending procedures

    c)   Analyze and evaluate trend for claims (including frequency, severity, and pure premium) and exposures (including inflation-sensitive exposures and premiums)

    d)   Choose trend rates for claims (frequency, severity, and pure premium) and exposures

    e)   Calculate trend factors for claims and exposures

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland
    - o   Part 6: Trending Procedures
    - o   Appendices A through F

6. Topic: Ratemaking

Learning Objectives

The candidate will understand how to apply the fundamental ratemaking techniques of general insurance.

Learning Outcomes

The Candidate will be able to:

a) Describe the objectives of general insurance rate regulation

b) Identify the different types of rate regulatory approaches for general insurance

c) Describe the purpose of base rates and rating factors and explain how they are used to determine an insured's premium

d) Quantify different types of expenses required for ratemaking including expense trending procedures

e) Incorporate underwriting profit and contingency margins in ratemaking

f) Explain the requirements for loadings for catastrophes and large claims in ratemaking

g) Calculate loadings for catastrophes and large claims

h) Apply loadings for catastrophes and large claims in ratemaking

i) Describe the claim ratio and pure premium methods of ratemaking

j) Calculate indicated rates and indicated rate changes using the claim ratio and pure premium methods

k) Demonstrate the use of credibility in ratemaking

l) Calculate risk classification changes

m) Describe key considerations in the analysis of deductible factors and increased limits factors

n) Calculate deductible factors and increased limits factors

o) Explain coinsurance and coinsurance penalties

p) Analyze coinsurance formulas to calculate the amount retained by the insured and paid by the insurer given various scenarios of coinsurance requirements, amounts insured, and covered losses

q) Distinguish occurrence-based and claims-made based coverage

r) Calculate rates for claims-made coverage as well as claims-made maturity and tail factors

s) Explain the premise of experience rating

t) Describe the types of experience rating used with general insurance

u) Determine experience rating modification factors and experience rating adjustments

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland
  - Part 7: Ratemaking
  - Appendices A through F

7. Topic: Monitoring Results

Learning Objectives

The candidate will understand the need for monitoring results.

Learning Outcomes

The Candidate will be able to:

a) Describe the role of monitoring in ultimate values and pricing

b) Analyze actual claims experience relative to expectations

c) Develop plans for future actuarial work based on the results of monitoring

d) Demonstrate the use of the actuarial control cycle in the context of monitoring

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland
    - o Part 8: Monitoring Results
    - o Appendices A through F

8. Topic: Analyze and evaluate real-life scenarios

Learning Objectives

The candidate will be able to define an approach for actuarial analyses supporting financial reporting and ratemaking analyses under various real-life scenarios. The candidates will be able to define funding requirements for self-insurers.

Learning Outcomes

The Candidate will be able to:

a)   Identify data and information requirements

b)   Conduct investigative testing

c)   Choose projection methods to estimate ultimate values

d)   Estimate ultimate values

e)   Justify selections of ultimate values

f)   Develop reserves for financial reporting

g)   Conduct self-insurer funding analyses for prospective periods including increased limits and deductible analyses

h)   Design a self-insurer cost allocation system based on fundamentals of experience rating

Resources

- *Fundamentals of General Insurance Actuarial Analysis*, J. Friedland
    - Appendices A through F
    - 2019 Supplement Appendix I

9. Topic: Catastrophe Modeling

Learning Objectives

The candidate will understand the nature and application of catastrophe models used to manage risks from natural disasters.

Learning Outcomes

The Candidate will be able to:

    a)   Describe the structure and modules of catastrophe models

    b)   Apply catastrophe modeling results in ratemaking, loss mitigation, risk selection, and reinsurance

    c)   Describe the advantages and limitations of catastrophe models

    d)   Understand and apply common risk metrics associated with catastrophe modeling results

    e)   Understand the role of governance in catastrophe models

Resources

- "Uses of Catastrophe Model Output," American Academy of Actuaries, July 2018.

    https://www.actuary.org/sites/default/files/files/publications/Catastrophe_Modeling_Monograph_07.25.2018.pdf