

# Pricing, Reserving and Forecasting Module

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## SECTION 1: MODULE OVERVIEW

### Introduction

The focus of the Pricing, Reserving and Forecasting module is to build upon the Core and Advanced Group Health Exams in the Group and Health FSA Track. Through your studies for the exams, you have learned to identify, define, and solve independent problems on pricing, reserving and forecasting.\*

In this module we will integrate and expand on the basic concepts presented in the exams. You will be exposed to practical techniques involved in managing the financial control cycle of a health care company—from trend determination to pricing and reserving to analysis of historical results to forecasting future experience. You will:

1. Assess the materiality of the various factors addressed.
2. See the interrelationship of decisions made at each step with the resultant outcomes.
3. Forecast financial results at a case level, block of business level and aggregate company level.

Throughout the module, you will follow the activities of the Concentrated Risk Insurance Company (CRIC) that highlight the interconnected nature of the assumptions. CRIC is a fictional small insurance company marketing both HMO and PPO products for groups and individuals.

In addition, there will be a section illustrating application of these concepts to retiree medical line of business.

While the insurer and the associated exercises deal with comprehensive medical coverage, the techniques are equally applicable to other coverages—individual health, dental, Medicare supplement, hospital indemnity, and critical illness. The concepts and factors involving the control cycle of trend and pricing, reserving and forecasting also apply to group life, credit life and health, long-term disability and long-term care, although the techniques are different. For example:

- Pricing = utilization x cost = frequency x present value of benefits
- Manual rating
- Incurred But Not Reported (IBNR)
- Experience rating

*\* It is recommended, but not required, that candidates complete this module after studying for the Core and Advanced Group Health exams.*

### Module Objectives

After completing this module you will be able to apply concepts and methods related to:

- Apply concepts related to projecting medical cost
- Apply concepts related to pricing and rating large groups
- Apply concepts related to insurance company reserving
- Apply concepts related to financial forecasting and financial management of an insurance company
- Understand and apply techniques associated with valuation of retiree medical liabilities
- Apply concepts related to pricing, reserving, & forecasting long term group & health products

In each section you will be exposed to learning objectives more specific to each topic.

### Module Sections

The Pricing, Reserving and Forecasting Module consists of seven sections:

Section 1: Module Overview

Section 2: Projecting Medical Trend

Section 3: Pricing and Rating Large Groups

Section 4: Reserving

Section 5: Financial Forecasting

Section 6: Retiree Medical

Section 7: Long Duration Contracts

In addition, this module contains an End-of-Module Test and an End-of-Module Exercise.

## SECTION 2: MODULE OVERVIEW

### Introduction

How an actuary measures and sets trends is a key determinant of financial results and a crucial element in pricing an insurance product. In the health insurance industry, the term “trend” is generally considered in reference to the rate of growth in incurred claims cost per member per month (PMPM) but can also refer to growth in sales, expenses, premium or other factors. A company needs to be able to predict future claim costs in order to properly set premium rates, negotiate provider contracts, prioritize medical management initiatives and stabilize cash flows.

Medical trend is driven by multiple factors such as cost of services, utilization, benefit changes and even economic activity. In this section we will review major components of medical trend, illustrate approaches to identifying specific drivers of medical trend, and apply to the CRIC case study.

For the purpose of this section, we will use only annual trends — that is, year-over-year changes.

### Objectives

Actuaries are in the business of analyzing the risk of future contingent events. Some of that analysis involves projecting historical data into future periods for purposes of setting premium rates, negotiating provider contracts, prioritizing medical management initiatives and stabilizing cash flows. An appropriate trend projection is the key to these activities and will provide the basis for the subsequent sections in this module.

After completing Section 2, you should be able to:

- Calculate each of the components of trend retrospectively
- Understand and calculate factors influencing allowed and paid trend
- Assess factors retrospectively and project into future periods
- Calculate pricing, forecasting, and reserving trends from the projected components.

## SECTION 3: PRICING AND RATING LARGE GROUPS

### Introduction and Objectives

Fundamentals of Actuarial Practice (FAP) course covers general principles of pricing. The Group and Health Core exam covers detailed methodologies for pricing different group and health products. In Section 3, we will apply these techniques in our CRIC case study to price group health products.

Both case study and real-life actuarial problems can present conflicting forces that must be accommodated. For example, an actuary can price a policy using technically correct trends and expenses, but if the marketing department cannot sell the product at the prescribed price, it is not very valuable to the company. The pricing has to be high enough to produce a profit, but not so high as to drive away policyholders or to raise objections from regulators.

For large group plans, there is generally little or no regulation of rates although covered benefits must be filed so that regulators can ensure that state-mandated benefits, for example, are covered and that benefits are not discriminatory.

### Objectives

This section focuses on the application of principles related to pricing and rating large groups. In addition, we will touch on some concepts not addressed on the Group and Health Core exam syllabus in detail.

After completing Section 3, you should be able to:

- Apply concepts related to pricing and rating large groups
- Calculate manual rates for a block of business
- Calculate the value of copays, deductibles and other alternative plan designs
- Experience rate a large group
- Integrate concepts of experience rating and plan design in a multi-plan environment
- Calculate employer contribution levels given premium rates and employer benefit goals
- Understand expense analysis and apply methods of expense allocation

## SECTION 4: RESERVING

### Introduction

This section will provide you with an understanding of the key concepts and techniques related to valuation of liabilities arising from the sale of group and health products. Through real world scenarios, Section 4 demonstrates establishing incurred but not reported (IBNR) under typical business circumstances with respect to claims operations, system conversion and provider operations and submission. It will also demonstrate when premium deficiency reserves and provider reserves are needed. The section is divided into three main subsections.

- Calculation of Medical IBNRs
- Other Types of Reserves and Liabilities
- Calculation of Premium Deficiency Reserves

### Objectives

Like trend analysis and pricing, calculating reserves should be a core component of every practicing health actuary's skills. In this section, you will learn some basic methods for calculating a variety of reserves. You will also be exposed to key resources to use on an ongoing basis.

After completing Section 4, you should be able to:

- Apply concepts related to insurance company reserving
- Calculate medical IBNRs using multiple methods
- Explain sensitivities of various IBNR methods to changes in claim inventory & other changes
- Calculate Prior period adjustment for reserves
- Calculate non-IBNR liabilities and understand impact on reserving process
- Calculate premium deficiency reserves for a given scenario

## SECTION 5: FINANCIAL FORECASTING

### Introduction

In the context of the CRIC case study, we have now set trends for 2018, priced 2018 business and set reserves at the end of 2017. In this section, we will first analyze 2017 actuals against forecast. Second, we will forecast the financial results for the subsequent calendar year. Since CRIC is not delivering earnings at the level of expectations, we will perform some simulation of optional scenarios. Finally, we will explore the provider revenue calculation in light of different recontracting possibilities.

### Objectives

After completing Section 5, you should be able to:

- Apply concepts related to financial forecasting and financial management of an insurance company
- Explain impact of various trend components and mix changes on financial results
- Generate an annual financial forecast
- Explain book of business risk and apply to a given scenario
- Recommend a specific forecast scenario and justify conclusions
- Compute and analyze total provider revenue via all reimbursement methodologies

## SECTION 6: RETIREE MEDICAL

### Introduction

In this section you will learn the techniques associated with the valuation of retiree medical and life liabilities. After completing this part of the module, you will understand and be able to apply these techniques to evaluate new products as they are created.

During your study of this section, you will work through a new case study — The ABC Company. Note that the ABC Company and the accompanying assumptions are completely independent of CRIC and the assumptions used for CRIC analysis.

### Objectives

After completing Section 6, you should be able to:

- Understand and apply techniques associated with valuation of retiree medical liabilities
- Describe ASC 715-60 (formerly FAS 106) liability valuation and calculation of annual benefit expense
- Understand the sources of information on MMA & PartD
- Explain assumptions and data used in the valuation

## SECTION 7: LONG DURATION CONTRACTS

### Introduction

Group health is not limited to medical products with their relatively short period of time from the sale of the plan to the payment of the last claim. Other products such as long term disability, long term care and various supplement health products such as cancer are long term in nature, meaning plan benefits may not begin for several years after policy purchase. These products can be sold in either an employer setting or on an individual basis. These long-term or long-tail products often have claims that extend beyond the valuation date.

This section of the Module will guide you through pricing nuances of long-tail health products as well as introduce reserving methods that capture the long time horizon over which these products may remain in force.

### Objectives

After completing Section 7, you should be able to:

- Apply concepts related to pricing, reserving, and forecasting long term group and health products
- Understand impacts from pricing assumptions and calculate assumption values (including from experience analysis)
- Understand how reserve assumptions differ from pricing
- Calculate reserve factors
- Calculate change in financial projections due to change in assumptions

END-OF-MODULE TEST

END-OF-MODULE EXERCISE