
SOCIETY OF ACTUARIES
Group and Health – Design & Pricing

Exam DP-GH

MORNING SESSION

Date: Thursday, November 3, 2011

Time: 8:30 a.m. – 11:45 a.m.

INSTRUCTIONS TO CANDIDATES

General Instructions

1. This examination has a total of 120 points. It consists of a morning session (worth 60 points) and an afternoon session (worth 60 points).
 - a) The morning session consists of 8 questions numbered 1 through 8.
 - b) The afternoon session consists of 7 questions numbered 9 through 15.

The points for each question are indicated at the beginning of the question. Questions 4 - 8 pertain to the Case Study, which is enclosed inside the front cover of this exam booklet.

2. Failure to stop writing after time is called will result in the disqualification of your answers or further disciplinary action.
3. While every attempt is made to avoid defective questions, sometimes they do occur. If you believe a question is defective, the supervisor or proctor cannot give you any guidance beyond the instructions on the exam booklet.

Written-Answer Instructions

1. Write your candidate number at the top of each sheet. Your name must not appear.
2. Write on only one side of a sheet. Start each question on a fresh sheet. On each sheet, write the number of the question that you are answering. Do not answer more than one question on a single sheet.
3. The answer should be confined to the question as set.
4. When you are asked to calculate, show all your work including any applicable formulas.
5. When you finish, insert all your written-answer sheets into the Essay Answer Envelope. Be sure to hand in all your answer sheets since they cannot be accepted later. Seal the envelope and write your candidate number in the space provided on the outside of the envelope. Check the appropriate box to indicate morning or afternoon session for Exam DP-GH.
6. Be sure your written-answer envelope is signed because if it is not, your examination will not be graded.

Tournez le cahier d'examen pour la version française.

CASE STUDY INSTRUCTIONS

The case study will be used as a basis for some examination questions. Be sure to answer the question asked by referring to the case study. For example, when asked for advantages of a particular plan design to a company referenced in the case study, your response should be limited to that company. Other advantages should not be listed, as they are extraneous to the question and will result in no additional credit. Further, if they conflict with the applicable advantages, no credit will be given.

****BEGINNING OF EXAMINATION****
MORNING SESSION

1. (5 points) You are the pricing actuary at Yanot Insurance Company, a US-based company. You have been approached by Listening Inc., a manufacturing company, to price a long-term disability (LTD) product. Listening's LTD plan is a mandatory non-contributory plan with a flat \$1,000 monthly benefit. You are given the following information:

Listening Demographic Information

Age Range of Enrolled Employees	Number of Enrolled Employees
20-39	110
40-49	50
50-59	10

Yanot currently has another group LTD customer in Listening's geographic area, whose experience you intend to use to calculate Listening's premium. This customer, Tome and Associates, is a professional services company with fully credible experience. You are given the following information:

Tome Demographic Information

Age Range of Enrolled Employees	Number of Enrolled Employees
20-39	200
40-49	1,750
50-59	940

Tome's current monthly benefit is \$1,700 with 80% employee participation. Tome's current annual claims incidence rate is 15 per 1,000 covered with an average monthly claim cost of \$800 per claimant.

1. Continued

To help in pricing Listening's plan, you are also given the following factors from a consultant's experience study used to adjust expected claim incidence rates:

Age-Related LTD Claim Incidence Rate Factors

Age Range of Employees	Rate Factor
20-39	1.00
40-49	1.05
50-59	1.08

Industry-Related LTD Claim Incidence Rate Factors

Industry	Rate Factor
Manufacturing	1.10
Agriculture	1.02
Professional Services	0.95
Education	1.00

Employee Participation-Related LTD Claim Incidence Rate Factors

Employee Participation Rate	Rate Factor
0%-74%	1.10
75%-99%	1.03
100%	1.00

Assume that claim continuance rates and interest rates are the same for both Listening and Tome.

Yanot's current load for administrative expenses and profit margins on LTD products is 17% of premium.

- (a) (1 point) Identify and describe the sources of data that may be used when pricing an LTD plan.
- (b) (1 point) Describe:
 - (i) Data structures that may be employed to house experience information
 - (ii) Factors that affect the choice of data structure to use in performing an actuarial analysis
- (c) (3 points) Calculate Listening's total monthly premium. Show your work.

2. (9 points) You have a new client - Congratulations! At the beginning of 2010, your client added an option (B) to its benefit plan with the goals of:

1. Incorporating a value-based benefit design in its employee prescription drug insurance benefit program; and
2. Limiting cost increases to 5%.

You are given the following information for 2010:

- Initial pricing was unadjusted for adverse selection and assumed a prescription drug distribution of 60% generic and 40% brand prescriptions for each option.
- Plan Design and Experience:

Option	Employee Cost Sharing	Member Enrollment	Number of Prescriptions
A (legacy)	30%	65	216 generic 184 brand
B (new)	\$0 generic copay \$35 brand copay	35	384 generic 216 brand

- The allowed cost per prescription was \$25 for generic drugs and \$100 for brand name drugs

You are given the following pricing assumptions:

- 10% annual allowed unit cost trend
- No change in group size.

- (a) (2 points) Describe criteria that constitute a value-based insurance design and evaluate the 2010 benefit plan according to each criterion.
- (b) (3 points) Calculate the actual impact of adverse selection in 2010 on each of the plan options and for the group in total. Show your work.
- (c) (2 points) Calculate the expected effect of leveraging for each option in 2011 and recommend methods for mitigating its impact. Show your work.
- (d) (2 points) Recommend design and pricing actions your client could take to better meet its goals. Justify your recommendations.

3. (6 points) You are the pricing actuary for Grizzly Insurance Incorporated. In preparation for the 2011 renewal, you are given the following experience information for a block of long-term care (LTC) policies first issued in 2006:

- Incurred Claims:

	Year of Payment				
Year of Incurral	2006	2007	2008	2009	2010
2006	\$9,000	\$6,000	\$1,000	\$0	\$0
2007	\$0	\$20,000	\$10,000	\$5,000	\$1,500
2008	\$0	\$0	\$18,000	\$9,000	\$0

- There are no open claims for the incurral period from 2006 to 2008.
- Paid Premiums:
 - 2006: \$24,000
 - 2007: \$39,000
 - 2008: \$35,000
- Premium rates did not change throughout the experience period.

You are also given the following pricing assumptions:

- Interest rate: 4.50%
 - Target loss ratio: 80%
- (a) (1 point) Describe benefits available under LTC policies.
- (b) (2 points) Describe LTC pricing considerations related to morbidity and expenses.
- (c) (3 points) Explain whether you would support a rate decrease for 2011 using an incurral year loss ratio analysis. Show your work and justify your recommendation.

Questions 4 – 8 pertain to the Case Study.
Each question should be answered independently.

- 4.** (9 points) The sales agent for small group business, Roger Cly, has reviewed Great Expectations Insurance Company's (GEIC's) renewal methods. He believes that GEIC is overcharging all groups because the credibility-weighted PMPM for Joe's Garage (as described in Exhibits 2.-4.b.) does not match the group's required revenue per covered person.
- (a) (1 point) Describe reasons for experience rating from the perspective of:
- (i) The policyholder
 - (ii) The insurer
- (b) (2 points)
- (i) Calculate the required revenue per covered person for Joe's Garage. Show your work.
 - (ii) Explain why the required revenue per covered person does not match the credibility-weighted PMPM.
- (c) (2 points) Evaluate Mr. Cly's assertion that GEIC is overcharging the entire block.
- (d) (2 points) Mr. Cly wants to offer two-tier rates. Calculate two-tier rates based on the same rating factors used to determine the four-tier rates. Show your work.
- (e) (2 points) The owner of Joe's Garage (Joseph Dropsy) is concerned that his rates are going to increase significantly under rating limitations enacted by health care reform. Assess the validity of these concerns.

Questions 4 – 8 pertain to the Case Study.
Each question should be answered independently.

- 5.** (8 points) Great Expectations Insurance Company (GEIC) is considering entering the individual market, and Mr. Scrooge is concerned about the associated challenges.

You are given the following assumptions:

- GEIC's actual PPO small group experience (Exhibit 1a.) is to be used as a proxy for experience in the individual market.
 - All members are currently on a \$100 deductible plan.
 - Projected market monthly premium rate for an individual male age 45 for a \$100 deductible plan is \$250.
- (a) (1 point) List elements other than benefit design that should be considered when designing an individual health insurance product.
- (b) (2 points) Describe internal antiselection issues specific to the individual marketplace.
- (c) (2 points) Calculate the monthly premium rate for an individual male age 45 in Area 2 for the \$100 deductible plan. Show your work.
- (d) (3 points) Recommend whether GEIC should enter the individual market:
- (i) Based only on the calculated premium rate.
 - (ii) Considering challenges in the current individual market and future health care reform requirements.

Justify your recommendations.

*Questions 4 – 8 pertain to the Case Study.
Each question should be answered independently.*

- 6.** (7 points) Charles Dickens has approached you about creating a pilot wellness program for Great Expectations Insurance Company (GEIC) to promote health by reducing costs relating to medical care, absenteeism, and disability. He asked you to research the creation of the pilot, recognizing the information in Memo 1.

You are given the following additional information regarding the proposal:

- Average monthly cost per employee
 - Medical care = \$500
 - Absenteeism = \$200
 - Disability = \$100
 - Program cost (per employee per month) is \$15
 - Omit the “vigorously healthy” category in the analysis
- (a) (2 points) Describe considerations when researching issues associated with:
- (i) Organizational motives and goals
 - (ii) Management and employee support
 - (iii) Organizational capabilities
- (b) (1 point) Describe steps for conducting a cost benefit analysis.
- (c) (3 points) Construct a cost benefit analysis, and recommend whether GEIC should proceed with the pilot wellness program. Show your work and justify your recommendation.
- (d) (1 point) Identify reasons why absenteeism is insufficient for measuring the impact of wellness programs on productivity.

Questions 4 – 8 pertain to the Case Study.
Each question should be answered independently.

- 7.** (11 points) You are working with Dr. Manette and other officers at Great Expectations Insurance Company (GEIC) to determine the 2012 monthly premium for the national HMO plan (see Emails 5 and 6).

Due to the competitive landscape, the member premium increase target is no more than \$10 PMPM given the desired benefit changes. GEIC is also concerned about high cost and utilization trends for prescription drugs and is considering using a pharmacy benefit manager (PBM).

- (a) (2 points) Describe alternative pharmacy benefit plans and cost management practices that GEIC could implement.
- (b) (2 points) Describe primary and expanded utilization management programs that GEIC could implement to decrease hospital inpatient and outpatient utilization.
- (c) (2 points) Calculate GEIC's 2010 allowed claims cost. Show your work.
- (d) (2 points) Calculate the premium (PMPM) that GEIC should charge in 2012. Show your work.
- (e) (3 points) Calculate the hospital inpatient utilization needed to meet the targeted premium increase for 2012, given all other assumptions remain fixed. Assess the reasonability of the calculated inpatient utilization. Show your work.

Questions 4 – 8 pertain to the Case Study.
Each question should be answered independently.

- 8.** (5 points) Dombey and Sons (Dombey) has contacted you (Email 17) to evaluate their current PBM arrangement and to explore potential savings opportunities with Great Expectations Insurance Company’s (GEIC’s) PBM.

You are given the following:

- For guarantee purposes, AWP is adjusted to the pre-September 26, 2009 level for Tale Scripts Rx.
- Tier II discount guarantee applies to all Tier II drugs and to all Tier I drugs in the initial six-month exclusivity period for Two Cities Rx.
- For guarantee purposes, the most recent published AWP value is used for Two Cities Rx.
- Dombey projected utilization:

	Tier I-A	Tier I-B	Tier II
Script Count	550	4,950	3,000
AWP / Script (Effective Nov 1, 2011)	\$110	\$99	\$267

A – Tier I drugs in initial six-month exclusivity period
 B – All other Tier I drugs

- Due to litigation, effective September 26, 2009, 75% of Tier II scripts had published AWP adjusted from 125% of WAC to 120% of WAC.
 - Omit Tier III from this analysis.
- (a) (3 points) Determine the PBM with the lowest expected cost. Show your work.
- (b) (2 points)
- (i) List benefits of contracting with a PBM.
 - (ii) List arrangements to be included in a PBM contract.
 - (iii) List questions to ask in evaluating a PBM.

****END OF EXAMINATION****
MORNING SESSION

USE THIS PAGE FOR YOUR SCRATCH WORK

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