GH 101 Model Solutions
November 2025

1. Learning Objectives:

1. The candidate will understand how to describe plan provisions typically offered under short duration contracts (medical, dental, vision, prescription drug, group life).

Learning Outcomes:

(1d) Describe the product development process including risks and opportunities to be considered during the process.

Sources:

Skwire - Ch.3: Product Development; Background on Medicaid and ACA is included throughout the syllabus, particularly in LO1 material

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a) Describe risks and opportunities in the steps of the product development cycle by completing the table below.

Commentary on Question:

Question (a) yielded results indicative of average candidate performance. Stronger responses correctly aligned risk and opportunities with each of the six product development steps.

Step	Risks	Opportunities
Innovate	- Misalignment with company strategic goals - Overlooking market needs	- Identifying un-met market needs - Leveraging new technologies - Aligning with strategic growth areas
Design	- Non-compliance with regulations - Poor product structure - Inadequate risk mitigation.	- Creating innovative product features - Optimizing cost share mechanisms - Ensuring regulatory compliance
Build	- Incorrect enrollment projection - Pricing errors - Infrastructure challenges	- Accurate market research - Effective pricing strategies - Efficient infrastructure development
Sell	- Poor test market results - Ineffective marketing strategies	- Refining product based on test market feedback - Successful mass market launch

Assess	- Ineffective revisions - Unable to get appropriate customer feedback to the right teams	- Identifying areas for improvement - Enhancing features based on feedback
Revise	- Ineffective revisions - Failing to meet market standards	- Continuous product improvement - Adapting to market changes

(b) Explain the actuarial team's role in mitigating risk in the products development cycle.

Commentary on Question:
Candidates did not perform well on question (b). Stronger responses articulated roles in managing risk specific to the product development cycle.

Projections and feasibility studies: Help senior management determine if they should proceed with the product. Without accurate projections and feasibility studies, products, features or plan designs may not be successfully built and developed
Pricing and reserving operations: Keep the product both profitable and fairly priced for the consume. Without an appropriately priced product, you may not gain market share. With an underpriced product, the product is not sustainable.

(c) Describe considerations for marketing group medical product to:

- Plan Sponsors
- Consumers

Commentary on Question:
Candidate performed well on question (c). Credits were given to candidates who addressed background on plan sponsor and consumer along with their concerns for marketing.

i. **Plan Sponsor**: pays for much of the cost of the benefits. May be more concerned with overall cost of benefits, employee satisfaction/retentions, and administrative ease.
ii. **Consumer**: who might have a choice of products from 2 or more insurance companies. May be more concerned with their premium costs, breadth of provider network, and customer service.

(d) Contrast the design phase of the product development cycle for both ACA Individual and Medicaid products.

1. Continued

Commentary on Question:
Candidates performed poorly on question (d). Candidates broadly describing ACA Individual and Medicaid characteristics outside of the context of product development only received partial credits. Overall, Candidates provided more extensive responses to ACA Individual compared to Medicaid.

Candidates listing certain aspects of ACA Individual or Medicaid products without contrasting did not receive full credits. Well-rounded papers included the four aspects of the design phase from the product development cycles as well as reasonable contrast for Medicaid and ACA for each.

1) Product structure

Medicaid

- **Medical Management**: Emphasizes care coordination and management to improve health outcomes and control costs.
- **Benefits Mandated by State**: States have flexibility in determining additional benefits beyond federally mandated services, leading to variability in coverage.

ACA Individual

- **Breadth of Network Considerations**: Plans may offer different network sizes, such as narrow networks to control costs or broader networks for greater access.
- **HMO vs. PPO**: Health Maintenance Organizations (HMOs) require referrals for specialists and have limited networks, while Preferred Provider Organizations (PPOs) offer more flexibility in choosing providers.

Antiselection in Benefit Design: Plans must be designed to minimize adverse selection, ensuring a balanced risk pool.

Benefits Mandated by EHBs: Must cover Essential Health Benefits (EHBs) as defined by the ACA, but can also include additional non-EHBs to enhance attractiveness.

2) Variables in Design

Medicaid

- **Eligibility**: Based on income and specific criteria such as disability, pregnancy, or age. Eligibility criteria can vary by state.
- **Cost Sharing**: Minimal to no cost-sharing requirements for beneficiaries, ensuring affordability for low-income individuals.

ACA Individual

- **Guaranteed Issue**: Insurers must offer coverage to any applicant regardless of health status.
- **Cost Sharing**: Varies by plan tier (Bronze, Silver, Gold, Platinum), with higher cost-sharing for lower-tier plans and lower cost-sharing for higher-tier plans.

1. **Continued**

3) Contribution Requirements

Medicaid

- Auto Assignment or Consumer Choice with no price consideration: Beneficiaries are often auto-assigned to plans based on eligibility criteria, with limited to no consumer premium contributions.

ACA Individual

- Marketing and Sales: Sold directly to individuals through marketplaces, navigators, or brokers. Plans are heavily subsidized for eligible individuals to make them affordable.

4) Regulatory Compliance

Medicaid

- Governed by Both Federal and State Regulations: Must meet federal requirements while allowing states flexibility to design and administer their programs, leading to variability in benefits and eligibility criteria.

Individual ACA

- Governed by Federal and State Regulations: Must comply with ACA mandates, including coverage of EHBs, minimum loss ratio standards, and state-specific regulations.

2. Learning Objectives:

2. The candidate will understand how to calculate and recommend a manual rate for each of the contracts described in Learning Objective 1.

Learning Outcomes:

(2a) Identify and evaluate sources of data needed for pricing, including the quality, appropriateness, and limitations of each data source.

(2c) Calculate and recommend assumptions.

Sources:

Group Insurance, Skwire, Daniel D., 8th Edition, 2021, Ch. 20: Pricing of Group Insurance

Commentary on Question:

This question assessed candidates' ability to allocate administrative expenses, evaluate risks across different case sizes, perform expense revenue calculations, and make actuarial judgements regarding pricing goals. Candidates showed strong calculation skills and sound risk analysis, but weaker responses often listed rather than explained expense considerations and provided incomplete justifications when assessing the Chief Actuary's objectives.

Solution:

(a) List and describe considerations for developing the administrative expense component of gross premium.

Commentary on Question:

Candidates generally struggled on this part of the question. In order to get full credit, candidates had to both list and describe considerations for developing administrative expense components. Candidates simply listing items only received partial credit.

1. How are expenses allocated to the product?
    - A corporate strategy of equitable overhead allocation is needed, or one product or business segment can inadvertently subsidize the expenses of another.
    - There are many allocation methods, but most of them are combinations of either activity-based allocation, functional expense allocation, or multiple allocation methods.
2. How are expenses allocated to the group?
    - The primary objective is often to achieve equity among group customers without unduly complicating the process.
    - Expenses are generally expressed on one or more of the following bases, differentiating between first-year and renewal year expenses: percent of premium, percent of claims, per policy, per employee, per member, or per claim administered.

2. Continued

3. What does the competition include as expenses in its pricing?
    - If the competition charges extra for special services or is subsidizing one block with the profits of another, an adjustment may be needed to accommodate the market.

(b) Describe risks that insurers should consider when determining risk and profit charges on each of the following types of groups:

- Small Groups
- Large Groups
- Self-Insured Accounts
- Jumbo Accounts

Commentary on Question:
Candidates generally did well providing considerations for small groups and jumbo accounts. In order to get credit for each of the types of groups, at least one specific example needed to be described. Stronger candidates were able to provide unique examples for each of the types of groups while weaker candidates compared and contrasted a single example across the four different groups.

Small Group
With small groups, coverages are often pooled. The insurer's risk is largely one of underestimating claims in the pricing of the pool. This underpricing can be due to either statistical fluctuations, such as shock or catastrophic claims, or mis-estimation. Small group rate and benefit regulations introduce additional risks that premiums could be insufficient. Also, rate regulation may restrict rate increases, so that premiums cannot be increased sufficiently to cover costs.

Large Group
For large groups, the risk is a combination of underestimating the claims of the large group and financial risk. If the insurer carries forward experience deficits for recovery in later years, there is less risk to the insurer than under a fully insured arrangement, but there is a risk of the customer terminating its contract while in a deficit position.

Self-Insured Accounts
For self-insured accounts, there is a risk that administrative fees will not be adequate to cover costs. There is also a risk that certain claims will be incorrectly processed, or that the customer, although self-insuring, might be unable to meet its financial obligations under the plan. If this occurs, the customer, its employees, or regulators may look to the administrator for financial support.

2. Continued

Jumbo Accounts
For insurers with jumbo accounts, there is a risk that the loss of a single very large customer may mean that the company will have inadequate revenue to cover all of its fixed expenses until additional business comes on the books or expenses are reduced.

(c) Calculate the change in expense revenue collected between the proposed 3.7% of net premium methodology and the current $2,000 fixed cost structure. Show your work.

Commentary on Question:
Overall, candidates did very well on this part of the question with most receiving full credit.

Current Expense Structure
Under the current expense structure, each contract receives a flat expense charge of $2,000, regardless of the amount of net premium collected. Thus, the current expense revenue is simply ($2,000 x 5 contracts) = $10,000.

Proposed Expense Structure
Under the new expense revenue, each contract is charged 3.7% percent of their net premium. One method to calculate the new expense revenue is to add all of the net premiums together and multiply by 3.7%. This yields a new expense revenue of ($50,000 + $30,000 + $45,000 + $60,000 + $75,000) * 3.7% = $9,620

Change in Expense Revenue
The change in expense revenue between the proposed and current expense structure is $9,620 - $10,000 = -$380

(d) Assess whether the change in expense revenue methodology will meet the Chief Actuary's pricing goals. Justify your response.

Commentary on Question:
To get full credit, candidates needed to respond to both of the Chief Actuary's pricing goals and provide justification for both of their assessments. Candidates not receiving full credit generally ignored one of the goals or provided justifications that did not support their stance. For the Chief Actuary's second goal, candidates received full credit if they assessed that technological advancements would have higher upfront costs, but lead to savings in later years due to efficiency gains.

2. Continued

Encourage larger cases to enroll with Company XYZ
Changing from a fixed expense structure to a percent of premium structure will likely have the **opposite** impact than what the Chief Actuary is trying to achieve. Moving to a 3.7% of premium expense load will encourage the retention of smaller groups while potentially pushing larger groups away. Based on the book of business in Part C, Contract 2's (the smallest case) expense charge will *decrease* $890 while Contract 5 (the largest case) will *increase* $775. In general, larger cases would prefer a fixed expense cost because as the premium increases, the overall expense percentage decreases.

Take advantage of technological advancements to charge a lower overall expense
Technological advancements are expected to reduce Company XYZ's overall expenses. The revised expense structure will lower total costs by $380, enabling the company to reduce premiums across its portfolio and thereby **achieve** the Chief Actuary's objective.

3. Learning Objectives:

2. The candidate will understand how to calculate and recommend a manual rate for each of the contracts described in Learning Objective 1.

3. The candidate will understand how to apply principles of pricing, risk assessment, and funding to an underwriting situation.

4. The candidate will understand how to evaluate and recommend an employee benefit strategy.

Learning Outcomes:

(2c) Calculate and recommend assumptions.

(2e) Identify critical metrics to evaluate actual vs. expected results.

(3c) Recommend strategies for appropriately pricing, underwriting, and funding case-specific risks.

(4a) Describe the structure of employee benefit plans and products offered, and the rationale for offering these structures.

(4b) Recommend an employee benefit strategy in light of an employer's objectives

Sources:

Group Insurance Chapter 30

Commentary on Question:

Testing the candidates' comprehensions on consumer selection behaviors, the implications on health plan funding and the plan's P/L, and candidates' ability to offer an optimal solution.

Solution:

(a) Describe the factors that influence employee choice in benefit plans.

Commentary on Question:

Majority of candidates received full credit. Candidates were expected to provide up to 4 factors with explanations to receive full points.

1. Plan costs

Some employees choose a plan that is cost efficient for them, considering total out-of-pocket costs including employee cost sharing and employee contribution.

3. Continued

2. Employee and dependent demographics

   Age, gender, health status, family size, income, degree of risk aversion, and education

3. Eligibility for other health insurance coverage

   An employee may also be eligible for coverage from the employer of his or her working spouse, or coverage from a governmental program such as the Veteran's Affairs (VA), Medicaid or Medicare. The alternative coverage may have much different cost sharing, coverage of services, or premiums.

   An employee with other coverage might opt for a plan will less coverage and no or low employee premium.

4. Information available about options

   Employer and Insurer's communications increase employees' knowledge base about the potential cost of their health care services and cost sharing, particularly about the consumer driven health plan.

(b) Calculate the Year 1 actual-to-expected loss ratio. Show your work.

Commentary on Question:
Most Candidates received partial points. Common mistakes:

Actual Loss Ratio:
- *Using full premium instead of the Risk Premium of 90% loss ratio when calculating the insurers' costs*
- *Including the Benefits in calculation- this would drive a member to choose Plan A vs Plan B and is reflected in the count of employees*
  Actual-to-expected loss ratio
- *Providing 2 actual-to-expected loss ratios when question requested for the Year 1 actual-to-expected loss ratio*
- *Member weighting the loss ratios instead of premium weighting the loss ratios*

See Excel file.

(c) Illustrate the effect if equal rate changes are applied to Plan A and Plan B and XYZ's contribution remains at $400.

3. Continued

Commentary on Question:
Most Candidates received partial points. Candidates recognized the actual loss ratio differed from the expected loss ratio. These candidates were able to show that if an equal rate change was applied the member premium increase for Plan B was larger than the member premium for Plan A.

Candidates that failed to aggregate the actual-to-expected part (b) received full credit if they assumed any % rate change. Candidates that applied the rate increase to member premium only or showed the change in the premium instead of the change in member premium received partial credit.
See Excel file.

(d) Recommend alternative premium proposals or policy changes for Year 2 to minimize the risk of a rate spiral. Justify your response.

Commentary on Question:
Most Candidates received partial points. Candidates needed to provide at least 2 solutions with an explanation in the context of the problem.

See Excel file.

4. Learning Objectives:

4. The candidate will understand how to evaluate and recommend an employee benefit strategy.

Learning Outcomes:

(4a) Describe the structure of employee benefit plans and products offered, and the rationale for offering these structures.

(4b) Recommend an employee benefit strategy in light of an employer's objectives.

Sources:

GH101-106-25: The Handbook of Employee Benefits, Rosenbloom (Chapter 24)

GH101-103-25: Health Plan Payroll Contribution Strategies and Development for Employers

GH101-104-25: Recommend an Employee Benefits Strategy

Commentary on Question:

The question tests candidate's knowledge on employee benefit strategy, focusing on evaluation, comparison, and recommendation.

Most candidates performed well in part (a) while some candidates struggled to fully explain the part (b), especially on (ii).

Alternative correct responses were given full points.

Solution:

(a) Describe the external environmental factors that the benefit director must monitor that could impact the current plan.

Commentary on Question:

To receive full mark on part (a), the candidate needs to explain, as opposed to just listing, at least four of the external environmental factors that impact the current design. Candidates generally did well on part (a) with most of them being able to include at least 2 factors.

Model Solution:

- General business and competitive conditions – This can include items such as new contract arrangements with insures, reinsurance contracts, or increase in competition, general economic environment, or business cycle
- Governmental policy – This can include items like new regulatory policy or new coverage requirements
- Workforce demographic shifts – This can include different factors like age and gender splits, geographic changes, or risk profile changes.

4. Continued

- New product development – This can include new payment models, new drugs, or plan designs.
- New organizational structures – This can include a change in the organization structure that could shift the risk profile of the insured
- Technological enhancement and innovation – This can include new technology that could impact cost of the procedures or treatments

(b)

(i) Identify why it is difficult to compare benefit programs between employers.

(ii) Describe methods to compare benefit programs between employers.

Commentary on Question:
To receive full mark on part (b) (i), the candidate is required to explain both the nature of benefit plans being uniform/homogeneous and the subjective reasons that lead to the difficulty of comparing (e.g. demographic, industry, risk profile differences, not publicly available benefit information etc). Most candidates did well explaining subjective factors that contribute but some candidates failed to point out homogeneous nature of benefit plans

To receive full mark on part (b) (ii), the candidate needed to elaborate on at least four methods in detail. Candidate responses are split into two groups; responses either explained at least three methods well receiving most points or only listed a single method.

Model Solution:
This endeavor is often difficult because the many plan provisions of benefit programs do not make for a homogeneous commodity that is directly comparable. Also, because an employer may have a geographically dispersed workforce and attract some employees from a local labor market and other employees from either a national or international labor pool, the relevant survey group can vary with type of employee. In addition, employers being in different industries and not publicly disclosed benefit information make it difficult to compare.

1. Compare the benefits payable to representative employees under different circumstances.
2. Compare actual costs to the employer for different benefit plans.
3. Measure plans on a basis that uses uniform actuarial methods and assumptions and focuses on the relative value of the different benefits provided.

4. Continued

4. Compare benefit plans feature by feature to isolate specific plan provisions that may be appealing to certain employee groups and offer a competitive advantage. Such a comparison may result in amending plan provisions or highlighting specific plan provisions in communication materials to attract and retain employees.
5. Compare the benefits factoring in total compensation

5. Learning Objectives:

2. The candidate will understand how to calculate and recommend a manual rate for each of the contracts described in Learning Objective 1.

Learning Outcomes:

(2a) Identify and evaluate sources of data needed for pricing, including the quality, appropriateness, and limitations of each data source.

(2c) Calculate and recommend assumptions.

(2f) Apply actuarial best practices in evaluating and projecting claim data.

Sources:

Group Insurance, Chapter 23, Estimating Pharmacy Claim Costs

Commentary on Question:

The intent of the question is to evaluate a candidate's understanding of pharmacy cost estimation. Calculation subparts b, c, & e tested the candidate's ability to perform technical calculations related to pharmacy estimates. Subparts a, d, & f tested the candidate's ability to provide qualitative answers on the subject. Overall candidates did well on this question. Some candidates lost credit due listing instead of describing/recommending/justifying on written parts. Candidates did well on the calculation components, although minor errors were relatively common.

Solution:

(a) Describe analytical pricing considerations in developing prescription drug plan premiums.

Commentary on Question:

Candidates generally did well on this part. Candidates were expected to describe considerations, simply listing them did not receive passing marks. Candidates providing at least two considerations could receive full marks, but more detailed descriptions were expected. A large range of candidate responses beyond what the textbook describes were accepted with full credit so long as a description of the consideration was provided.

- **Timing of Rebates -** Plans often use PBMs to negotiate rebates on their behalf. Rebates are initially paid from the manufacturer to the PBM and then from the PBM to the plan. Plans typically collect rebates from the PBM quarterly or semi-annually, which creates a lag between when rebates are earned and when the plan receives the rebate payment.

5. Continued

- **Credibility -** Some plans may not have sufficient experience to use for projecting future claims. In these cases, the analyst may need to rely entirely or partially on a manual rate basis to develop the projected allowed amount. This is typically done by using a credibility factor to weight the plan's experience based projected allowed amount with the manual basis. The manual basis can be created by using a similar plan's experience or a combination of prescription drug claim data from multiple plans.
- **Integrated Plans -** Many plans today integrate the pharmacy and medical benefit designs. For example, a plan may include a single deductible or out-of-pocket maximum that applies to both medical and pharmacy benefits. This can create challenges in pricing the medical and pharmacy benefits separately. If the pharmacy and medical benefits are being priced separately for these plans, the analyst should make sure to use an appropriate approach for valuing the pharmacy portion of the integrated plan.
- **Fixed Cost Leveraging -** Fixed cost leveraging refers to the fact that the trend in plan liability will be greater than the trend in allowed costs whenever deductibles or copays are part of the plan design. Put another way, plan liability increases at a greater rate than allowed costs if the member pays the same fixed amount in cost sharing. For example, consider a plan with $1,000 in expected costs and a $200 deductible. The expected plan liability is $800 (= $1,000 - $200). If allowed costs increase by 10%, the new expected plan liability would be $900 (= $1,100 - $200). This represents a 12.5% increase in plan liability, which is higher than the 10% increase in allowed costs. The increase in plan liability would translate to a higher premium increase.

(b) Calculate the new allowed amount for the claim. Show your work.

Commentary on Question:
Candidates scored highest on this part of the question. There were multiple solutions that could receive full credit based off the vaccine fees used. Vaccine fees were still part of the new contract terms, candidates earned full credit when documenting the assumption that vaccine fees dropped to $0. Otherwise partial credit was given.

Original Ingredient Cost = Allowed – Disp Fee – Vaccine Fee
= 80 – 2 – 1
= 77
Discount Change Factor = (1-NewDiscount)/(1-OldDiscount)
= (1-.72)/(1-.70)
=.93333
New Ingredient Cost = Original Ingredient Cost * Discount Change Factor
= 77 * .93333
= 71.87

5. Continued

New Allowed = New Ingredient Cost + New Disp Fee + Vaccine Fee
**Assuming no change to vaccine fee*
= 71.87 + 1.5 + 1
= 74.37

(c) Calculate the effective copay. State your assumptions. Show your work.

Commentary on Question:
Most candidates understood what was being asked and scored well on this part. Full credit was given if candidates assumed a linear distribution of AWPs rather than taking the average AWP per script at face value. Some candidates failed to apply discount to the AWP or incorrectly applied discount to the AWP; however, if what the candidate calculated as the allowed amount was capped $15 nominal copay correctly, performing the correct method earned partial credit.

- Calculate Allowed (for each row) = AWP * (1-Discount) + Disp Fee
  = AWP * (1-80%) + 1.50
- Calculate Effective Copay (for each row) = Min(Nominal Copay, Allowed)
  = Min(15, Allowed)
- Effective Copay Total = SumProduct(Frequency, Effective Copay)

Frequency	Avg. AWP/Rx	Allowed	Mbr Pays
20%	8	3.10	3.10
20%	30	7.50	7.50
25%	80	17.50	15.00
15%	175	36.50	15.00
20%	600	121.50	15.00

Effective Copay =
(20% * 3.10)
+ (20% * 7.50)
+ (25% * 15)
+ (15% * 15)
+ (20% * 15)
= 11.12

5. Continued

(d) Explain the value of the effective copay in evaluating pharmacy claims.

Commentary on Question:
Candidates had the most trouble on this part of the question. The most common mistake candidates made was to simply define an effective copay or to provide weak explanations of its importance, which only earned partial credit. Passing scores required candidates to clearly address accuracy of plan liability estimation relative to nominal copays, or to indirectly address plan liability by touching on overestimating member cost share with a nominal copay.

When the allowed amount is lower than the nominal copay, the member will only pay the allowed amount. This leads to an effective copay below the nominal copay. Using the nominal copay instead of the effective copay would lead to overestimating the member liability and underestimating the plan liability.

(e) Calculate the net member and plan liability for the following member cost share scenarios:

(i) 20% member coinsurance

(ii) $16 member copay

Show your work.

Commentary on Question:
Candidates were not penalized if pharmacy rebates were calculated as a % of AWP. Separately, if candidates documented an assumption that plan savings be shared with members, they were not penalized for allowed amounts being calculated net of rebates (prior to member cost sharing and net plan liability calculations). In general, candidates performed better on (ii) since the net member liability is given in the problem.

Allowed = Ingredient Cost + Disp Fee + Vaccine Fee
= 77 + 1.5 + 1
= 79.5
Rebate = Allowed * Rebate%
= 79.5 * 5%
= 3.975

i)
Member Cost Share = Allowed * Coinsurance
= 79.5 * 20 %
= 15.90

5. Continued

Plan Liability = Allowed – Member Cost Share – Rebate
= 79.5 – 15.90 – 3.975
= 59.63

ii)

Member Cost Share = Copay
= 16
Plan Liability = Allowed – Member Cost Share – Rebate
= 79.5 – 16 – 3.975
= 59.53

(f) Recommend a formulary management program that can impact a plan's expected cost and utilization. Justify your response.

Commentary on Question:
Some candidates listed and defined all formulary management programs, but the best prepared candidates chose one to recommend with justification, or explained several options but ultimately recommended one with reasons for their selection outperforming the other opposing programs. Several candidates responded with a suggestion to manage with a tiered formulary, which is not strictly a type of program and therefore did not earn passing credit.

- **Prior Authorization:** Prior authorization requires approval from the PBM prior to filling a prescription for a specific drug. This is the most restrictive formulary management method.
- **Step Therapy:** Step therapy requires a patient to try a different drug or a series of drugs before providing coverage for the drug in question. For example, patients newly diagnosed with hyperlipidemia may be required to try first-line drug therapies, such as a statin, prior to beginning treatment with newer, more costly, and often riskier medications, such as PCSK9 inhibitors.
- **Quantity Limit**: Quantity limits restrict the number of days supply or the number of units per day dispensed for a given prescription. This might be done as a safety measure, to avoid waste, or as a cost savings measure. For example, some pain medications have a limit on the number of pills per day that can be dispensed to avoid overuse.

6. Learning Objectives:

3. The candidate will understand how to apply principles of pricing, risk assessment, and funding to an underwriting situation.

Learning Outcomes:

(3a) Understand the risks and opportunities associated with a given contract, eligibility requirement, or funding mechanism.

(3c) Recommend strategies for appropriately pricing, underwriting, and funding case-specific risks.

(3d) Describe and apply approaches to claim credibility and pooling.

(3e) Apply Total Risk Analysis (TRA) strategies to case-specific pricing.

Sources:

Group Insurance Chapters 26 and 29 and GH101-101-25 Illustrative Examples on Experience Rating

Commentary on Question:

This question tested candidates' comprehension of risks and rewards associated with prospective vs retrospective experience rating, risk mitigation measures, and profit sharing alternatives. In addition, candidates were asked to show an understanding of the calculations involved in applying risk mitigation measures and profit sharing alternatives.

Solution:

(a) Compare and contrast prospective and retrospective experience rating.

Commentary on Question:

To receive full credit, candidates needed to correctly identify two comparisons and two contrasts between the two rating methods.

Compare

Both methods use a group's own claim experience.

Both consider claims trend, plan design changes, demographic changes in estimating claims and factor in the insurer's retention fees.

Contrast

A prospectively experience rated group is rated on its own experience but does not share in the plan results. A retrospectively rated groups is rated on its own experience but shares in its own result.

6. Continued

There is a financial arrangement attached to a retrospectively rated group policy where a premium stabilization reserve (or claim fluctuation reserve or contingency reserve) could be set up to hold the group's surplus and used to stabilize future premium rates. No such thing for prospectively rated groups.

(b) Calculate Green's total profits (losses) from 20X1 to 20X3 under the current prospective experience rating and Sales & Marketing's proposal. Show your work.

Commentary on Question:
Most candidates were able to calculate the profit under the current prospective rating, but many struggled with calculating the profit under S&M's proposal. For those who calculated the refund at the group level, a common error was not taking the difference between the 96% target LR and actual LR below 96% as the refund and calculating the refund as the full profit.

See Excel file.

(c) Critique Sales & Marketing's proposal.

Commentary on Question:
Most candidates were able to articulate at least one of the points below. For full credit graders were looking for 4 specific critiques, including reference to the results in part (b). Other valid critiques included that the S&M proposal would incentivize groups to lower their LR's and improve retention or attract new groups, and that the S&M proposal would increase admin costs due to extra complexity. Many candidates commented that the target loss ratio was too high, which was not relevant to the question.

1/ S&M's proposal creates an imbalance risk and reward.
2/ Green will bear all and unlimited downside risk.
3/ Green's upside is limited to 4%.
4/ Green's realized profit is between 3.8% to 4.0% under the current prospective rating method, consistent with Green's profit objective.
5/ Green's realized profit would have been between 1.6% to 2.1% under S&M's proposal, materially falling short of Green's profit objective.

(d) Calculate the effects of the risk mitigation measures and profit sharing alternatives based on Green's experience. Show your work.

6. Continued

Commentary on Question:
Candidates struggled with this part of the question. Many received partial credit for incorporating one or two of the mitigation measures. Few attempted to calculate the effects of all three. Most attempted the revised profit with stop loss provision, but many did not calculate the claims above the attachment point or did not account for the pooling charge. For the increased risk charge, many did this in aggregate and/or applied the additional 1% incorrectly, including some candidates who simply scaled up the premium by 1% and recalculated the LR. Most candidates did not attempt to calculate a premium stabilization fund.

See Excel file.

7. Learning Objectives:

2. The candidate will understand how to calculate and recommend a manual rate for each of the contracts described in Learning Objective 1.

3. The candidate will understand how to apply principles of pricing, risk assessment, and funding to an underwriting situation.

Learning Outcomes:

(2a) Identify and evaluate sources of data needed for pricing, including the quality, appropriateness, and limitations of each data source.

(2d) Calculate and recommend a manual rate (includes developing a base rate and applying a rating manual).

(3a) Understand the risks and opportunities associated with a given contract, eligibility requirement, or funding mechanism.

(3c) Recommend strategies for appropriately pricing, underwriting, and funding case-specific risks.

(3e) Apply Total Risk Analysis (TRA) strategies to case-specific pricing.

Sources:

Group Insurance Chapter 21 (pages 350-354)

Calculated Risk (pages 33 - 41), The Role of the Actuary in Self-funding

Commentary on Question:

Commentary listed underneath question component.

Solution:

(a)

(i) Define Starting Value Risk.

(ii) Define Assumption Risk.

Commentary on Question:

Candidates generally performed well on this part of the question – answers that are comparable to the model solution received full credit. Answers that do not include the key points noted in the model solution received partial credit.

(i) Starting value risk is the risk that comes from your starting value being a sample drawn from a population; it will have some variance

7. Continued

(ii) Assumption risk is the risk associated with setting the plan parameters. Plan parameters include trend, enrollment, utilization, service mix, etc. that cannot be modeled with certainty.

(b)

(i) Describe Random Variation Risk.

(ii) Sketch two graphs by completing the tables below that illustrate the Random Variation Risk.

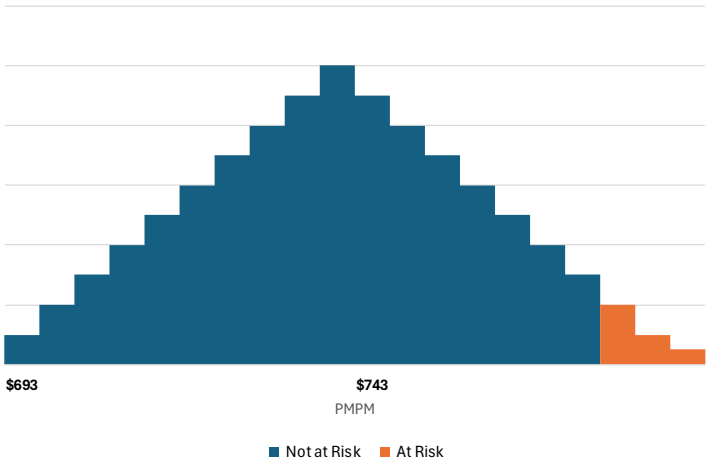
Commentary on Question:
Candidates performed well on the first part of this question. Only a few candidates received full credit for the second part of the question – as many candidates did not show more at risk if the mean is higher than expected in the second chart. The charts below are just an illustration of an answer that was awarded full credit.

(i) Random variation risk is the risk associated with random variation within your data, or the chance your starting point PMPM is significantly different from the true mean of the population.

(ii)

Expected Mean as Predicted

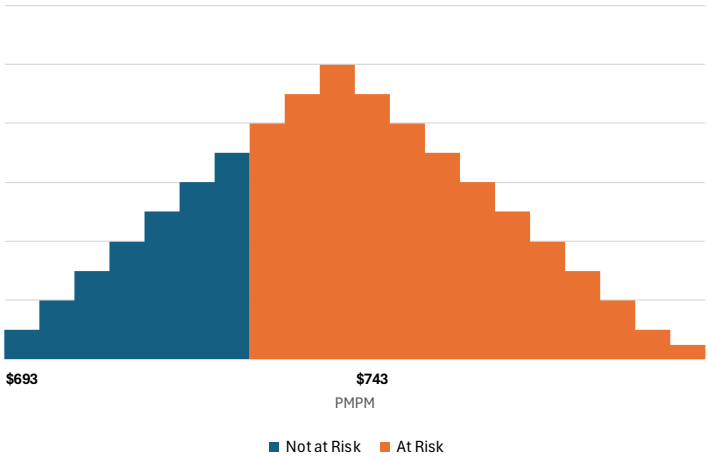
	PMPM	Not at Risk	At Risk
$	693	10	-
$	698	20	-
$	703	30	-
$	708	40	-
$	713	50	
$	718	60	-
$	723	70	-
$	728	80	-
$	733	90	-
$	738	100	-
$	743	90	-
$	748	80	-
$	753	70	-
$	758	60	-
$	763	50	-
$	768	40	-
$	773	30	-
$	778	-	20
$	783	-	10
$	788	-	5



7. Continued

Expected Mean Higher than Predicted

	PMPM	Not at Risk	At Risk
$	693	10	
$	698	20	
$	703	30	
$	708	40	
$	713	50	
$	718	60	
$	723	70	
$	728		80
$	733		90
$	738		100
$	743		90
$	748		80
$	753		70
$	758		60
$	763		50
$	768		40
$	773		30
$	778		20
$	783		10
$	788		5



(c) Calculate the following risk measures, using the table below:

(i) Expected excess or shortfall PMPM.

(ii) Chance of exceeding the budget.

(iii) Chance of exceeding the budget by $12M or more.

Show your work.

Commentary on Question:
Most candidates received partial credit for this question due to one or more calculation errors. Common errors observed in the calculation: not including the 5% PAD in the budget, not properly applying the formula for the normal distribution, and not taking into consideration the 4% standard deviation.

7. Continued

Description	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Combined
Scenario Description	2+ Std Devs Below Mean	1 to 2 Std Devs Below Mean	+/- 1 Std Dev From Mean	1 to 2 Std Devs Above Mean	2+ Std Devs Above Mean	
Probability Distribution	2.3%	13.6%	68.3%	13.6%	2.3%	100.0%
PMPM	$658.50	$693.96	$738.45	$782.65	$815.11	$738.33
(i) Expected Excess/(Shortfall)	$116.87	$81.41	$36.93	($7.27)	($39.74)	$37.04
(ii) Probability of Exceeding Budget	0.0%	0.2%	10.6%	59.2%	88.9%	17.3%
(iii) Probability of Exceeding Budget by More Than $12 Million	0.0%	0.0%	1.8%	28.6%	67.4%	6.6%

(i) Budget is $738.45 x 1.05 = $775.37

Scenario 1: $773.37 - $658.50 = $116.87
Scenario 2: $773.37 - $693.96 = $81.41
Scenario 3: $773.37 - $738.45 = $36.93
Scenario 4: $773.37 - $782.65 = ($7.27)
Scenario 5: $773.37 - $815.11 = ($39.74)
Combined = sumproduct of the excess / (shortfall) calculated above by the probability distribution.

(ii) The probability is derived by the following formula:

Scenario 1: 1 – NORMDIST(775.37,658.50,658.50*0.04,TRUE)
Scenario 2: 1 – NORMDIST(775.37,693.96, 693.96*0.04,TRUE)
Scenario 3: 1 – NORMDIST(775.37,738.45, 738.45*0.04,TRUE)
Scenario 4: 1 – NORMDIST(775.37,782.65, 782.65*0.04,TRUE)
Scenario 5: 1 – NORMDIST(775.37,815.11, 815.11*0.04,TRUE)
Combined = sumproduct of probability above by the probability distribution.

(iii) The probability is derived by the following formula:

Scenario 1: 1 – NORMDIST(800.37,658.50,658.50*0.04,TRUE)
Scenario 2: 1 – NORMDIST(800.37,693.96, 693.96*0.04,TRUE)
Scenario 3: 1 – NORMDIST(800.37,738.45, 738.45*0.04,TRUE)
Scenario 4: 1 – NORMDIST(800.37,782.65, 782.65*0.04,TRUE)
Scenario 5: 1 – NORMDIST(800.37,815.11, 815.11*0.04,TRUE)
Combined = sumproduct of probability above by the probability distribution.

$775.37 + $12,000,000/40/12 = $800.37

7. Continued

(d)

(i) Assess the adequacy of the current PAD assumption of 5%.

(ii) Recommend actions ABC could take to reduce the chances of exceeding their budget.

Commentary on Question:

(i) Most candidates were able to assess the calculated probability of exceeding the budget to arrive at the conclusion that the current PAD assumption of 5% is adequate. Candidates that commented on the adequacy of current PAD assumption of 5% and stating that it depends on the risk tolerance of ABC also received full credit. Candidates that did not take into consideration the calculated probability of exceeding the budget received partial or no credit.

(ii) Many candidates recommended increasing the budget and/or offered only one action to reduce the chance of exceeding the budget. These candidates received partial credit. Candidates that recommended at least two actions, not limited to the list shown in the model solution, received full credit.

(i) The probability of exceeding the budget with a 5% load for Provision for Adverse Deviation (PAD) is calculated at 17.3%. The probability of exceeding the budget; therefore, the current PAD assumption of 5% is inadequate.

(ii) Actions that ABC could take to reduce the chances of exceeding their budget include the following:

1. Implement plan design changes to shift cost
2. Purchase specific or aggregate stop loss to minimize the volatility associated with high-cost claimants
3. Negotiate with third party administrator to lower administrative costs or secure a trend guarantee.
4. Implement care management / utilization programs
5. Invest in programs to improve the health of the covered population