

GH SPC Model Solutions

Fall 2021

1. Learning Objectives:

2. The candidate will understand how to evaluate health insurance organization risk and mitigation strategies.

Learning Outcomes:

- (2a) Evaluate an enterprise risk management (ERM) system.

Sources:

GHS-121-18: Enterprise Risk Management, Ratings Direct

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe how a Positive Assessment can be obtained for each of Standard and Poor's Subfactors of Enterprise Risk Management Analysis.

Commentary on Question:

Many candidates got partial credit on this part of the question. Most knew the five subfactors and how to describe them, but few recalled all of the criteria for each subfactor to be rated positive.

1. Risk Management Culture

- ERM is well entrenched in the organization with a formal ERM framework, an independent and well-staffed ERM department, and active Board participation.
- The insurer has a clear vision of enterprise risk profile and risks are managed both at a business unit and an enterprise level within risk tolerances.
- The insurer's risk appetite framework is clearly communicated and linked directly to risk limits.
- The insurer has a culture of risk communication and information sharing, internally and externally
- The insurer's incentive compensation supports ERM goals

1. Continued

2. Risk Controls

- The insurer has identified all material risks from all sources and frequently monitors its risk exposures with multiple metrics.
- The insurer has a comprehensive risk limit system and strict formal limit breach policies.
- The insurer uses multiple risk management strategies to effectively manage exposures within limits.
- We score risk controls of material risks predominantly as positive, and none negative.

3. Emerging Risk Management

- The insurer has well-established processes for identifying and monitoring emerging risks, analyzing their significance, and preparing for and/or potentially mitigating them

4. Risk Models

- The insurer's risk models capture all material risks and risk interrelations in aggregating exposures
- The insurer's models have undergone robust validation and vetting and are under strict model governance processes.
- Model limitations are understood and compensated within the organization.
- These models perform both stochastic and deterministic scenario analysis.
- The insurer uses model results extensively in the decision-making process (or "use test" in industry parlance).

5. Strategic Risk Management

- The insurer has a track record of consistently using a risk vs. reward decision-making framework to optimize risk-adjusted returns at an enterprise level.
- Risk considerations and risk adjusted return metrics, including economic capital model results, significantly influence the insurer's decisions around pricing, risk management strategies, capital allocation, strategic planning, reinsurance decisions, and strategic asset allocation.

(b) Describe

- (i) what constitutes a Strong Assessment, according to Standard and Poor's.
- (ii) how a company can be exposed to Credit Risk.
- (iii) an insurer's Interest Rate Risk Controls.
- (iv) the most significant Sources of Interest Rate Risk.

1. Continued

Commentary on Question:

For part i), full credit was awarded if candidates either described the characteristics of an organization that would receive a strong assessment or listed which subfactors must be rated as positive.

Most candidates received partial credit for parts ii), iii), and iv).

(i)

- To obtain a strong assessment, risk management culture, risk controls, and strategic risk management all need to be scored positive. At least one of emerging risk management and risk models will be scored neutral. No subfactor will be scored negative.

Organizations with a strong assessment will exhibit the following characteristics:

- The insurer has strong capabilities to consistently identify, measure, and manage risk exposures and losses within chosen risk tolerances.
- There is clear evidence of the insurer's practice of optimizing risk-adjusted returns. But such practice is not as well developed as that of a very strong ERM insurer or has a shorter track record of success.
- Risk and risk management are important considerations in the insurer's corporate decision-making.
- In our opinion, the insurer is somewhat more likely to experience unexpected losses that are outside of its risk tolerances than an insurer with a very strong ERM score.

(ii)

- Incurring economic losses caused by the default of another company on that company's obligations.
- Losses from the perceived or actual deterioration of another company's creditworthiness.
- Counterparty risk, which is the risk of counterparties failing to fulfill their obligations in full and in a timely manner.
- Some insurance liabilities have a very high correlation to credit risk.

(iii)

- Processes of identifying and measuring the exposures through its portfolios of assets and liabilities to losses resulting from movements in interest rate risk components.
- Managing and mitigating such risks to be consistent with the insurer's business goals and risk appetite.

(iv)

- Assets and/or liabilities are long term in nature.
- Product profitability is sensitive to asset performance.
- Assets and/or liabilities contain implicit or explicit options that cause the cash flows to change dynamically based on interest rate movements.

2. Learning Objectives:

3. The candidate will understand how to apply risk adjustment in actuarial work.

Learning Outcomes:

- (3b) Apply risk adjustment to underwriting, pricing, claims and are management situations.

- (3c) Apply applicable Actuarial Standards of Practice.

Sources:

Creating Stability in Unstable Times
ASOP 45

Commentary on Question:

Most candidates performed well on parts a) and d) while fewer candidates performed as well on parts b) and c).

Solution:

- (a) Describe state-level considerations for stabilizing the Affordable Care Act (ACA) marketplace.

Commentary on Question:

Candidates who recalled the Other State Stabilization Initiatives section of the Creating Stability in Unstable Times article, or provided similar considerations, received credit for this part of the question.

- Change in age factors or the subsidy structure to encourage younger individuals to enroll.
- Potentially altering the rating areas to encourage issuer participation in at-risk or potentially bare counties. States may also consider how other state-based, like reinsurance, might favor at-risk counties to encourage more issuer participation in these counties.
- Require Medicaid managed care organizations to participate in the individual market as a condition for Medicaid participation.
- A state-based option where a state would operate a plan in the market, either statewide or in counties with fewer participating issuers.
- A Medicaid buy-in could allow individuals to purchase Medicaid coverage.
- Programs or regulations that might impact the overall cost and quality of health care in the individual market long term in hopes of “bending the trend”. For example, requirements for value-based care.
- Long-term solutions to address overall health care costs and cost trends going forward. The reinsurance programs that states are implementing will help lower premiums in the short term, but it is unlikely it will truly bend the cost curve.

2. Continued

- It is continually difficult for issuers to rate appropriately since their mix of members can change significantly from year to year. Regulators need to be active in reviewing not only the rates, but understanding market dynamics to ensure that issuers are prepared and rates are sufficient for whatever changes may come.
- (b) Propose questions and additional data that are necessary to assess the stability of the state's marketplace. Justify your answer.

Commentary on Question:

*Only candidates who proposed questions / requested additional data **and** gave justification received full credit for this part of the question.*

- There are too many uninsured in the state, with not enough young and healthy enrollees, leading to instability in the market.
 - The relative profitability for PPO plans is notably worse, which may result in the removal of PPO plans from the state.
 - The relative profitability for Platinum is significantly worse, which may result in the removal of Platinum plans in the market. This may also impact gold plan profitability if all platinum members migrate to a gold plan.
 - Younger demographics appear to be less profitable after risk adjustment. A change in age factors may be necessary to improve profitability at younger ages but may deter enrollment at these ages due to higher premiums.
- (c)
- (i) Describe 1332 waivers (state innovation waivers) and examples of how some states have utilized them to date.
- (ii) Describe considerations for determining whether your state should apply for a 1332 waiver.

Commentary on Question:

Some candidates conflated the Individual Market's 1332 waiver for other types of waivers.

- (i)
- These started in 2017 from a change in the ACA.
 - Used to improve the stability of the individual market.
 - States can change portions of the ACA if the changes meet a certain set of requirements (guard rails).
 - Most waivers are to create state-based reinsurance programs.
 - Reinsurance programs can include claims-based or condition-based programs.
 - Funded from outside the individual market, including from federal.

2. Continued

- (ii)
 - The state can set up a reinsurance program to lessen some of the larger losses insurers may face on segments of their business.
 - Introducing state-based reinsurance programs can lower premiums.
 - State may not desire to stabilize its market.
 - The state may have difficulty funding the state-based reinsurance program.
 - The added complexity may not be worth the benefit of the waiver.

- (d) List considerations for assigning risk scores to individuals with limited data, according to ASOP 45.

Commentary on Question:

Candidates generally performed well on this part of the question. Some candidates listed the general sections of ASOP 45 instead of the specific considerations for individuals with limited data.

- The actuary should consider minimum criteria required for an individual to be included in the risk adjustment analysis.
- Where these minimum criteria are not met, the actuary should identify an appropriate measure of morbidity to be used.
- Approaches to handling these individuals include, but are not limited to,
 - Assigning an age/gender factor
 - Assigning an average risk score for the scored individuals
 - Excluding them from the analysis while also dampening the results

3. Learning Objectives:

1. The candidate will understand how to evaluate healthcare intervention programs.

Learning Outcomes:

- (1a) Describe, compare and evaluate programs.
- (1c) Apply the actuarially adjusted historical control methodology.

Sources:

Duncan, Chapter 3: Care Management Programs and Interventions

Duncan, Chapter 8: Understanding the Economics of Care Management Programs

Duncan, Chapter 12: An Actuarial Method for Evaluating Care Management Outcomes

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Define exposure in a disease management (DM) environment.

Commentary on Question:

Candidates received credit for including either of the definitions listed below. Candidates did not receive credit for listing items that related to exposure without attempting to define the term.

Exposure in a Disease Management environment can mean two things:

- 1) Whether the individual is “exposed to” or a member of a group selected for intervention or a program.
 - 2) For measurement calculations, it relates to the denominator in actuarial calculations. It refers to the entire group eligible for an intervention or included in a study. A member is considered an exposure regardless of whether they are actively engaged in the program.
- (b) Verify the accuracy of the following statements. Justify your answer.
 - (i) The actuarially-adjusted historical control methodology is a cohort study.
 - (ii) Excluding newly-identified members in an actuarially-adjusted historical control methodology is recommended.

Commentary on Question:

On part i) candidates often understood that the actuarially-adjusted historical control methodology is comparing two sets of populations that are not identical. Candidates often mistook this for an “open cohort” but then described that this group was not the same population. Partial credit was awarded in this case.

3. Continued

On part ii) many candidates did not recognize that removing new members from an actuarially-adjusted historical control methodology is recommended.

i) False – The actuarially-adjusted historical control methodology is not a cohort study because the methodology does not follow a population identified in the baseline period through to the end of the intervention period, but rather two populations in two periods, identified according to the same criteria.

ii) True – It is recommended to exclude newly-identified members to avoid regression to the mean in the newly-identified chronic population.

(c) You are provided with the following information from a DM vendor for a health plan:

- Assumed utilization trend for the period is 5%
- Cost for the DM program is \$3 per member per month
- Vendor asserts that the DM program achieves a pre-tax hurdle rate of 150%

	Baseline Period	Measurement Period
Average Total Member Population	100,000	125,000
Chronic Member Months	300,000	375,000
Chronic Population Inpatient Admissions	20,000	25,000
Average Cost Per Member Per Year	\$8,350	\$8,350

Critique the vendor’s assertion. Show your work.

Commentary on Question:

Many candidates performed well on this part of the question. Candidates that calculated the correct ROI received full credit for the calculation portion of this question. While \$8,350 was intended to be the cost per admission, credit was awarded for other assumed or calculated values. Some candidates did not take a stance on the vendor’s assertion and did not understand the difference between gross ROI and a hurdle rate.

$$\text{Baseline Admissions}/1000 \times \text{Utilization Trend} = 20,000 / ((300,000 / 1,000) / 12) = 800 * 1.05 = 840$$

$$\text{Actual Admissions}/1000 = 25,000 / ((375,000 / 1,000) / 12) = 800$$

$$\text{Difference of Trended Baseline Admissions}/1000 \text{ and Actual Admissions}/1000 = \text{Equals Reduced Admissions}/1000 = 840 - 800 = 40$$

3. Continued

Actual Member Years/1000 in Intervention Period = $375,000 / 12,000 = 31.25$

Product of Reduced Admissions/1000 and Actual Member Years/1000 in Intervention Period Equals Total Reduced Admissions = $40 * 31.25 = 1,250$

Multiplied by Trended Unit Cost per Admission Equals Total Savings due to Averted Admissions = $1,250 * \$8,350 = \$10,437,500$

Total Cost = $125,000 * \$3 * 12 = \$4,500,000$

Gross ROI = $\$10,437,500 / \$4,500,000 = 2.3$

The vendor's assertion is not correct. A hurdle rate of 150% implies a gross ROI of 2.5. The Gross ROI of 2.3 does not exceed the value of 2.5.

4. Learning Objectives:

3. The candidate will understand how to apply risk adjustment in actuarial work.

Learning Outcomes:

- (3b) Apply risk adjustment to underwriting, pricing, claims and are management situations.
- (3c) Apply applicable Actuarial Standards of Practice.

Sources:

GHS-120-17: HHS-Operated Risk Adjustment Methodology Meeting Discussion Paper, Chapter 4

Healthcare Risk Adjustment and Predictive Modeling, Duncan (2nd edition), Chapter 4

ASOP 41

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Explain why a diagnosis code on a claim record may be unreliable.

Commentary on Question:

Most candidates recognized upcoding as a reason why a diagnosis code on a claim may be unreliable. Fewer candidates recognized other reasons to receive full credit on this part of the question.

- Hospitals and doctors may include diagnoses in addition to the primary one being treated to obtain higher reimbursement.
 - A physician suspected a condition and indicate it on the claim but was conducting tests for confirmation, not actually treating the condition.
 - Laboratory claims often have less diagnostic precision and can include “rule-out” diagnoses: diagnosis codes for conditions that the patient is suspected as having.
 - Certain drugs, called multi use drugs, may be primarily used for one condition but are also effective for other conditions. Normally the primary condition would be indicated.
 - Certain drugs may be used for conditions they are not approved for (called “off-label” use) resulting in the wrong condition being indicated.
- (b) Explain benefits and concerns of adding prescription drug data to the HHS – HCC Risk Adjustment Model.

Commentary on Question:

Most candidates performed well on this part of the question and received partial or full credit.

4. Continued

Benefits

- Imputing Missing Diagnosis: Drug data may fill gaps where diagnoses may be missing due to under recording in the medical claims or encounter data.
- Severity Indicator for Specific Diagnosis: Can provide a more complete picture
 - of the severity of a particular illness within an HCC.
- Timely: Prescription drug data can be available more quickly than diagnoses from medical claims.
- More complete: Prescription drug data are often more complete (completes much faster and easier to access).
- Standardized: Prescription drug data are standardized and do not vary with provider coding practices.
- Mitigates the Financial Disincentive to Prescribe Expensive Medications
 - Including prescription drug data in the model will compensate plans that cover high cost medications.
 - Eliminates incentives for plans to restrict access to high cost drugs.
 - Encourage plans to include more drugs in their formularies.

Concerns

- Sensitivity of Risk Adjustment to Variations in Prescription Drugs
 - Utilization Incorporating drug utilization makes risk adjustment sensitive to variations in utilization patterns that are not due to health status (differences in prescribing patterns of providers, differing health plan benefits and cost sharing).
- Added Administrative Burden, Complexity, Cost
 - Clinical indications for drugs can change quickly resulting in frequent updates to the model. Plans would have to report prescription drug data as well as verify the data for audits.
- Availability of Outpatient Data Only may introduce bias
 - The omission of inpatient drugs may cause hospitalized patients to appear less severely ill.
- Multiple Indications for Drugs
 - The lack of a clear one-to-one association between most drug classes and diagnoses makes developing a hybrid risk adjustment model challenging."
- Gaming, Perverse Incentives, and Discretionary Prescribing
 - Gaming may occur if a drug is prescribed in order to trigger a higher payment.
 - Treatment decisions may be influenced or distorted by financial considerations.
 - Plans will see a lower return for managing drug utilization and may lessen their efforts to control drug costs.

4. Continued

- (c)
- (i) Define “reliance on other sources,” according to ASOP 41.
 - (ii) Describe disclosure requirements when relying on other sources of data and other information in the Actuarial Report, according to ASOP 41.

Commentary on Question:

It is important for the candidate to understand that the actuary is responsible for everything in the Actuarial Report, including all data and assumptions, unless disclosing reliance on others. Some candidates confused part ii) with the question in part d.

Part i)

- Reliance on other sources for data and other information means making use of those sources without assuming responsibility for them.

Part ii)

- An actuary is responsible for all of the actuarial communication unless the actuary states reliance on other sources.
- Define the extent of reliance, for example stating whether or not checks as to reasonableness have been applied.
- Consult ASOP No.23, Data Quality, for further guidance on reliance.

- (d) Describe the responsibility of the actuary in disclosing assumptions and methods in the Actuarial Report, according to ASOP 41.

Commentary on Question:

Many candidates received partial or full credit for this part of the question. Some candidates listed all the requirements for the Actuarial Report instead of those specific only to disclosures on assumptions and methods.

- Identify the party responsible for each material assumption and method
- If no party is identified as responsible, the actuary who issued the communication is assumed to have taken responsibility for that assumption or method.
- Where any material assumption or method was prescribed by applicable law (statutes, regulations, and other legally binding authority), disclose:"
 - The applicable law under which the report was prepared.
 - The assumptions or methods that are prescribed by the applicable law.
 - That the report was prepared in accordance with the applicable law.
 - If the actuarial report is in a prescribed form that does not accommodate these disclosures, the actuary should make these disclosures in a separate communication.

4. Continued

- If any material assumption was not proscribed by law (statutes, regulations, and other legally binding authority) where the actuary states reliance on other sources the actuary should disclose:
 - the assumption or method that was set by another party.
 - the party who set the assumption or method.
 - the reason that this party has set the assumption or method.
- If the actuary feels the assumption or method significantly conflicts with what the actuary feels is reasonable based on his/her actuarial judgement, this must be disclosed.
- If the actuary was unable to judge the reasonableness of the assumption or method without substantial amount of additional work beyond the scope of the assignment, this must be disclosed.
- If the actuary was not qualified to judge the reasonableness of the assumption.

5. Learning Objectives:

2. The candidate will understand how to evaluate health insurance organization risk and mitigation strategies.

Learning Outcomes:

- (2d) Understand how an Own Risk Solvency Assessment (ORSA) complements and differs from traditional risk assessment.
- (2e) Apply applicable Actuarial Standards of Practice.

Sources:

Understanding ORSA Before Implementing It, Risk Management, Aug 2012
ASOP 55 (excluding Appendices)

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Verify the accuracy of the following statements. Justify your answer.
 - (i) An effective ORSA will be more about a quantitative result than the process.
 - (ii) ORSA is meant to be a highly prescribed regulatory compliance exercise.
 - (iii) The U.S. ORSA is a byproduct of the International Core Principles (ICPs).
 - (iv) Within the ORSA, a company is expected to only self-assess its current capital adequacy in light of its short-term business plan.

Commentary on Question:

Most candidates performed well on this part of the question. Candidates did not receive credit for simply stating true or false. The candidate needed to provide justification for each response in order to receive full credit.

- i. FALSE – There is no “ORSA score” at the culmination of the ORSA exercise. Instead, ORSA effectiveness should be gauged by the extent to which it is integrated into decision making and planning, both at the strategic and the day-to-day level.
- ii. FALSE – Each insurer’s ORSA process will be unique, and currently this provides insurers relative latitude in the design of the internal ORSA process
- iii. TRUE – The U.S. ORSA must meet the minimum requirements set out in ICP 16 – Enterprise Risk Management for Solvency Purposes
- iv. FALSE – The company is expected to assess current and future capital adequacy in light of its two to five-year business plan

5. Continued

- (b) Describe what an actuary should consider, according to ASOP 55, when each of the following is included in a capital adequacy assessment:
- (i) Management actions
 - (ii) Scenario and stress tests

Commentary on Question:

Many candidates struggled to describe the ASOP 55 considerations for when management actions and scenario & stress tests are included in a capital adequacy assessment.

(i.) Management actions

- Effectiveness and applicability of prior management actions
 - The magnitude of the impact of the prior action compared with the impact needed in the projection
 - The differences in risk environment, including differences in the insurer's business and operations, and the legal and regulatory environment;
 - Differences in the insurer's enterprise risk management program and risk profile
 - Differences in the insurer's financial strength
- Feedback from board members or management;
- Legal, regulatory, and execution timing requirements
- Experience, if available, of other insurers and non-insurance entities who took similar actions
- Expected reactions of regulators and other stakeholders

(ii.) Scenario and stress tests

- When scenario tests and stress tests are included in a capital adequacy assessment, the actuary should follow applicable guidance for scenario testing and stress testing in ASOP No. 46, *Risk Evaluation in Enterprise Risk Management*, and ASOP No. 47, *Risk Treatment in Enterprise Risk Management*. In addition, the actuary should consider the following:
- Types of Tests
 - Deterministic – Tests to challenge the insurer in specific ways based on its unique exposures. For example, emerging risks may be considered using deterministic stress tests
 - Stochastic - Tests chosen from one or more sets of stochastically generated scenarios
 - Combination—Tests where multiple events happen simultaneously or Sequentially
 - Reverse—Reverse-engineered tests that create an adverse capital event.

5. Continued

- Level of Adversity
 - Periods of normal volatility, plausible adverse conditions, and tail events
- Sensitivity Testing
 - Sensitivity testing can be used to determine the applicability of the results of the scenario tests and stress tests under changing conditions, including the passage of time
 - Testing the materiality or impact of different assumptions

6. Learning Objectives:

1. The candidate will understand how to evaluate healthcare intervention programs.

Learning Outcomes:

- (1a) Describe, compare and evaluate programs.
- (1b) Estimate savings, utilization rate changes and return on investment.

Sources:

Valuation of Care Management Vendors, Health Watch, May 2020.

Duncan, Chapter 3: Care Management Programs and Interventions

Duncan, Chapter 8: Understanding the Economics of Care Management Programs

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe methods used by care management vendors to impact medical costs.

Commentary on Question:

Most candidates performed well on this part of the question. Candidates needed to describe methods, rather than just list them, to receive full credit.

1. Utilization management. The vendor manages a specific set of medical procedures, often delineated by listed procedure codes. Management may impact utilization based on medical necessity, appropriateness of the procedure for a specific diagnosis, medically redundant combinations of procedures or other scenarios.
2. Site of care. A vendor may shift specified types of care to less expensive venues.
3. Diagnosis or patient type. Some vendor arrangements identify and manage patients receiving a certain type of care as determined by diagnosis, such as end-stage-renal disease, pain management, medical/behavioral health comorbidity and so on.
4. Severity/downcoding. Some types of medical treatment are coded by severity levels, with higher payment made for greater severity. A vendor might identify and reverse inappropriate upcoding or “code creep,” leading to a utilization shift from severe/expensive procedures to those that are less so.

6. Continued

- (b) Describe considerations for the evaluation of the vendor's cost savings approach.

Commentary on Question:

Most candidates recognized that something regarding the cohort and trend were considerations. Candidates needed to include additional considerations to receive full credit. Candidates also needed to describe considerations, rather than just list them, to receive full credit.

1. Include a comparable cohort and evaluate the change in the nonparticipating group with the change in the participating group. This comparison can be further enhanced by ensuring the two groups have equivalent levels of risk.
Note: An alternate answer was that the relative risk between the pre and post population needs to be evaluated for comparability.
2. Include a means for trend. Determine a utilization trend using historic baseline data or other means and ensure it is adequately part of the contract.
3. Credibility adjustment. If there will not be enough members enrolled in the program, ensure that the result will be credible enough to derive value. If there are not enough members in the program, exclude a value calculation.
4. Timing. Either count for a full year or apply a seasonality adjustment if the evaluation will be less than a full year.
5. Defined time to allow for claims runout. Set a cutoff date for all claims to be processed in order to be included in the comparison.
6. Overlap with other initiatives. If there are members in other initiatives, consider excluding from evaluation.

- (c) Calculate

- (i) Gross return on investment (ROI) for the program. Show your work.
- (ii) Savings per enrolled member per month. Show your work.

Commentary on Question:

Most candidates performed well on this part of the question and were able to correctly calculate the gross ROI and savings per enrolled member per month to receive full credit.

Step	Description	Calculation	Result
A	ER Utilization Savings	$4,000 * (1.02) - 3,700$	380 visits
B	Total Program Savings	$\$750 * A$	\$285,000
C	Total Program Costs	$\$100 * 2,000 + \$75,000$	\$275,000
D	Gross ROI	B / C	1.04
E	Gross Savings PMPM	$B / (2,000 * 12)$	\$11.88
F	Net Savings PMPM	$(B - C) / (2,000 * 12)$	\$0.42