

GH ADV Model Solutions

Spring 2015

1. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

- (2a) Describe, compare and evaluate care management programs and interventions.
- (2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.
- (2h) Apply methodologies to reduce random fluctuation and maintain validity for disease management effectiveness studies.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan, Chapter, 13 (pages 264-265), Chapter 14 (pages 278-280)

Commentary on Question:

Candidate performance was generally better on Parts A and B than on Part C. Overall, it seemed as if candidates could have spent a little more time explaining their answer on Part C.

Solution:

- (a) Calculate the PMPM savings and the annual savings of the program. Show your work.

Commentary on Question:

Candidates generally did very well on this part. The most common mistake was not re-weighting the baseline average costs based on the year 1 distribution of members. A number of candidates also excluded some of the groups from the savings calculation as well.

Savings = (Baseline Cost * (1+trend) – Year 1 Cost)*Year 1 Membership
Savings for Terminating Group = (\$930 * 1.06 -\$750)*50,000 = \$11,790,000
Savings for Continuing Group = (\$707 * 1.06 -\$600)*185,000 = \$27,642,700
Savings for Newly Identified Group = (\$600 * 1.06 -\$500)*60,000 = \$8,160,000
Total Savings = \$11,790,000+\$27,642,700+\$8,160,000 = \$47,592,700
Total Savings PMPM = \$47,592,700 / 295,000,000 = \$161.33

1. Continued

- (b) Describe how truncation stabilizes trend measurement.

Commentary on Question:

Candidates were generally able to define truncation and briefly explain how it stabilized trend measurement.

Truncation stabilizes trend measurement by reducing variability in the measurement of trend. It accomplishes this by removing some of the variable impact of large claims by capping them at a certain threshold, generally \$100,000 or some lower amount. For example, if there is a \$50,000 truncation point and a \$75,000 claim, the claim would be capped at \$50,000 for purposes of the trend calculation.

- (c) Recommend a level for which to truncate claims in the above study. Justify your recommendation.

Commentary on Question:

Candidates did not have to provide the same answer as that below as long as they provided a recommendation with valid justification.

Very few candidates provided much, if any, justification for their recommendation. Those that did provide justification were generally very brief with just a reason listed from the text and didn't tie back to the question in any way (i.e., mentioned group size but didn't say how the group in the question compared). Quite a few candidates recommended a PMPM truncation point, which was not discussed in the literature.

Recommend truncating claims at \$50,000. This is a common industry standard recommended in the literature. A truncation point of \$100,000 is too high for all but the largest groups, which this group is not. A level set equal to the mean plus two standard deviations could also be investigated but for this group but I recommend a \$50,000 level for the reasons discussed above.

2. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.

Learning Outcomes:

- (1b) Evaluate standard contracting methods from a cost-effective perspective.
- (1c) Describe the credentialing and contracting process for providers.
- (1f) Describe quality measures and their impact on key stakeholders.

Sources:

Kongstvedt Chapters 4, 5, 9, 10

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) List reasons a provider group chooses to contract with a health plan.

Commentary on Question:

Candidates did very well on this question with many receiving full credit. Candidates that did not receive full credit typically did not provide sufficient reasons to earn full points, or failed to provide reasons a provider group contracts with a health plan (instead providing reasons a health plan contracts with a provider group).

Reasons a provider group chooses to contract with a health plan include the following:

- To obtain favorable pricing or reimbursements when in a strong negotiation position
- To ensure that it will not lose business to a competitor by being excluded from the network of a large provider
- To receive payments directly from the health plan, avoiding collecting payment from the patient
- To receive payment in a timely manner
- Have members of the health plan steered to the practice, and not lose business by having patients steered to network providers
- Have defined rights around disputing claims and payments

2. Continued

- (b) Describe the three relative value units (RVUs) used in the RBRVS, and describe how the payment for a service is calculated.

Commentary on Question:

Candidates generally did very well on this question. Most candidates were able to correctly describe the three RVUs and how payment is calculated. Some candidates omitted the multiplier, or did not recognize that the RVUs are summed together, not multiplied or averaged.

The three RVUs used in the RBRVS are:

- (1) The first RVU reflects the difficulty of the procedure, amount of time, required training, and the skill required to provide the service.
- (2) The second RVU reflects practice costs (e.g. materials, supplies, clinical setting, overhead costs).
- (3) The third RVU reflects the cost of the malpractice insurance required to perform the procedure.

The payment is calculated by summing the three RVUs and then applying a multiplier that represents the conversion factor or payment rate.

- (c) Describe the advantages and disadvantages to contracting with an IPA from the perspective of the health plan.

Commentary on Question:

Candidate performance varied widely on this question, with few candidates receiving full credit.

For the advantages, many candidates recognized that a single contract brings a large number of providers into the network, but fewer candidates mentioned that IPAs may be willing to take on financial risk. Many candidates mentioned that IPAs perform some network management, credentialing and medical management; however, that information was provided in the question. Candidates failed to state why this was advantageous, in that it would lower the administrative cost of the health plan.

For the disadvantages, many candidates recognized that IPAs have significant bargaining power during negotiations, and that the health plan would likely possess limited ability to remove individual physicians.

2. Continued

The advantages to a health plan contracting with an IPA are as follows:

- The contract brings a large number of physicians into the network at one time
- The IPA may be willing to accept more financial risk than solo physicians
- Since the IPA performs its own network management and credentialing, the health plan's administrative expenses will be reduced

The disadvantages to a health plan of contracting with an IPA are as follows:

- The IPA can possess significant bargaining power during negotiations, and may also be able to negotiate more favorable reimbursements than individual providers
- The health plan has very limited ability to remove individual physicians from the network

- (d) List four elements of the credentialing application that the IPA should review before offering the medical group membership.

Commentary on Question:

Candidates did very well on this question with many candidates receiving full credit. Only 4 of the items below (or alternate valid responses) were needed for full credit.

The IPA should review the following before offering the medical group membership:

- Demographics, licenses, identifiers
- Education, training, specialties
- Practice details (hours, coverage, services)
- Hospital privileges
- Professional liability insurance
- Work history and references
- Answers to disclosure questions (e.g., felonies, Medicare/Medicaid sanctions)

- (e) Describe the advantages and disadvantages of basing P4P incentives on the performance of the entire group versus individual providers from the perspective of the IPA.

Commentary on Question:

Candidates did not do well on this question. Most candidates failed to provide more than one relevant advantage or disadvantage. Some candidates did not recognize that advantages and disadvantages should be from the perspective of the IPA, as stated in the question.

2. Continued

The advantages of basing P4P incentives on the performance of the entire group are:

- The group will have a larger volume of data that will result in more credible measurements. The impact of outlier patients will be dampened by the larger patient base. The patient risk mix is also more stable at the group level than it is at the individual level.
- It entices providers to work as a group and help each other to improve their care delivery. The goal is not simply to punish under-performing physicians and reward high-performing physicians.

The disadvantages of basing P4P incentives on the performance of the entire group are:

- There is less incentive for individual providers to follow protocols, since they may still qualify for a bonus if the group performs well as a whole.
- The IPA may need to implement medical management to ensure that all physicians are working towards the IPA's goals. There may be a need to remove physicians that do not follow practice guidelines aimed at achieving performance measures.

- (f) Describe how provider profiles can assist the IPA in meeting the P4P goals.

Commentary on Question:

Candidates tended to either do very well or very poorly on this question. Some candidates missed the purpose of the question, describing what provider profiling is but failing to describe how it can be used to assist in meeting P4P goals.

Provider profiles can assist the IPA in meeting the P4P goals by the following:

- Profiling data can be used to identify areas that require improvement to meet P4P goals
- Profiling data allows for the comparison of individual physicians to the overall norm (e.g., benchmarking)
- Can be used to identify under-performing physicians and allow the IPA to take corrective actions
- Performance measures can be adjusted for individual providers based on severity and risk adjustment

3. Learning Objectives:

3. The candidate will understand how to formulate, calculate and evaluate carrier reserving techniques.

Learning Outcomes:

- (3a) Describe the types of claim reserves (e.g., due and unpaid, ICOS, IBNR, LAE, PVANYD).
- (3b) Explain the limitations and applications of the various valuation methods.
- (3c) Calculate appropriate claim reserves given data.
- (3d) Identify adjustments to IBNR (margins, trend, seasonality, claims processing changes, etc.).
- (3g) Demonstrate adequacy of the reserve.
- (3h) Apply applicable standards of practice related to reserving.

Sources:

Health Reserves (Lloyd), Ch. 3, pages 18-24

Group Insurance, Ch. 42, pages 705-714

Group Insurance, Ch. 43, pages 719-722

Individual Health Insurance, Ch. 6, pages 178-192

Commentary on Question:

Overall straightforward question to test the types of reserves and evaluate the necessity of each reserve and appropriateness of various reserving techniques, and calculate claim reserve. Full credits were given for listing and explaining reserves and claim reserve methods for the disability products, and calculating the reserves with correct formula. Some candidates only explained the long-term reserves for part (a) and mistakenly used the accumulated value of past benefits to calculate the reserves of approved claims for part (c) i.

Solution:

- (a) Describe the types of claim reserves needed for disability insurance.

Commentary on Question:

Full points were given for listing all reserves with descriptions. Partial credits were given if the long-term claim reserves were listed. Stating an acronym or reordering the name of a reserve were not counted as descriptions.

3. Continued

Due and unpaid: Claim amounts/liabilities due to insureds but not yet paid

In course of settlement: Reserve for claims reported but is still under investigation and no \$ amt assigned

Incurred but not reported: Reserve for claims not yet received by the insurer

Loss adjustment expenses: Amount for the admin costs associated with the adjudication of the unpaid claims

PV of amounts not yet due: Reserve for future benefits that will be due if the insured remains disabled. Eg. "disability claims"

Resisted claims: Reserve for claims the insurer has denied but are being appealed

Outstanding accounting feeds: Reserve for claims that have been processed but payments not yet processed/issued

(b) Describe the methods used to calculate disability claim reserves for:

(i) Both STD and LTD

(ii) Only STD

(iii) Only LTD

Commentary on Question:

Full credits were given for listing 2 reserve methods with some description in the right product category. Partial credits were given for listing any appropriate methods with description. Credits were also given for assigning the method to the appropriate disability product.

(i) Both STD and LTD

Loss Ratio or claim cost

- Generally used for new lines of business with limited data
- Apply expected loss ratio to premium to estimate incurred claims

Average Size Claim Method

- Can apply an average severity to a count of known claims pending

Regression or Stochastic methods

- Data must be sufficient to use regression models

Lag method

3. Continued

- (ii) Only STD
Development, runout, or triangulation
- Use past claims history to develop month-to-month factors
 - Can apply sequentially, or combine to develop cumulative completion factors
 - Idea is to gross up claims incurred to-date by duration to estimate total liability and then subtract amounts already paid

Formula, Factor, or Projection method

- Use relationships to other related statistics to estimate reserve

- (iii) Only LTD
Tabular methods
- Look at specifics of claim (disability, age at disability, occupation, etc.) and assign a reserve based on specified reserving tables
 - Can apply sequentially, or combine to develop cumulative completion factors
 - Idea is to gross up claims incurred to-date by duration to estimate total liability and then subtract amounts already paid

(Seriatim) Case Reserves or Examiner's Method

- Apply judgment to estimate specific reserve for each claim
- Need to ensure accrual meets minimum requirements

(c) Calculate the reserve, assuming all claims:

- (i) Have been approved
- (ii) Have been denied by DPI and are currently being appealed by the claimants

Commentary on Question:

Full credits were given for calculating correct answer with work shown. Partial credits were given either for including equations but calculating incorrect answer or for attempting calculation with wrong equation. Some candidates mistakenly used the accumulated value of past benefits to calculate the reserves of approved claims for part (i)

3. Continued

- (i) Have been approved

Reserve = Sum (Monthly Benefit * Continuance * Discount)
Continuance and Discount combined into reserving factors

Member 1: Monthly Benefit * PV Future Amounts = $500 * 200 = 100,000$

Member 2: $200 * 150 = 30,000$

Member 3: $300 * 60 = 18,000$

Total = $100,000 + 30,000 + 18,000 = 148,000$

- (ii) Have been denied by DPI and are currently being appealed by the claimants

Reserve = Sum (Monthly Benefit * Accumulated Value of Past Amounts * Probably Claim Approved + Monthly Benefit * PV Future Benefits * Probability Claim Approved)

Member 1: $0.5 * (100,000 + 500 * 4) = 0.5 * 102,000 = 51,000$

Member 2: $0.3 * (30,000 + 200 * 6) = 0.3 * 31,200 = 9,360$

Member 3: $0.1 * (18,000 + 300 * 2) = 0.1 * 18,600 = 1,860$

Total = $51,000 + 9,360 + 1,860 = 62,220$

4. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

- (4a) Understand the risks and opportunities associated with a given coverage, eligibility requirement or funding mechanism.
- (4b) Evaluate the criteria for classifying risks.
- (4d) Recommends strategies for minimizing or properly pricing for risks.

Sources:

Group Insurance, chapter 27

Commentary on Question:

This question was designed to test the application of the Affordable Care Act's requirements upon the underwriting rating parameters that insurers use to rate small group employers. Most candidates did very well on this question. Responses lacking in elaboration (e.g. simply saying that a parameter was "allowed" or "not allowed") did not receive full credit.

Solution:

- (a) Compare and contrast the ACA's impact on each underwriting rating parameter.

Commentary on Question:

Successful candidates were able to list the various parameters that insurers use to underwrite and rate a group and then describe how those parameters were used prior to, and beginning in, 2014 when restrictions were placed on these parameters by the ACA. Some candidates were successful in listing the parameters but did not go on to compare and contrast the ACA's impact as the question asked. To receive full credit, a candidate needed to compare/contrast at least eight of the following parameters before and after ACA implementation.

Parameter	Pre-ACA	Post-ACA
Age	Carriers usually rated using quinquennial attained age rating bands, ranging 2:1 to 3:1, though range is actually 4:1 to 7:1	The ACA limits the range to a 3:1 ratio, forcing younger insureds to subsidize older insureds
Gender	The use of gender as a rating factor varied among carriers and state, with baby groups most likely to set rates by the gender mix of the group	The ACA requires unisex rating in all states beginning in year 2014

4. Continued

Geographic Area	Medical costs vary considerably by geographic area with area factors usually determined down to the 3-digit ZIP code	The ACA will continue to allow variation by area but geographic areas are set by the states
Group Size	Rates could vary to reflect the ability to spread risk and lower per insured costs as size increases. Many states limited expense adjustments to 20%	The ACA disallows group size rating beginning in 2014
Industry	Some industries tend to experience higher claim levels due to greater risk of accident, riskier lifestyles of employees; range generally limited to 15%	The ACA disallows industry rating starting in 2014
Managed Care and Negotiated Discounts	Most laws are silent regarding treatment of managed care effects and provider discounts as allowable benefits and case characteristics	The ACA will continue to allow, though normally treated as benefit factors instead of rating factors
Plan of Benefits	Rating factors must produce premiums for identical groups which differ only by the amounts attributable to plan design	This continues to be the case under the ACA and is allowable
Family Composition	Typically Two-Tier (Employee Only or Employee and Family), Three-Tier (Employee Only, Employee plus One, or Employee and Family), Four-Tier (Employee Only, Employee plus Spouse, Employee plus Children, or Employee and Family)	The ACA will limit what carriers can use for family compensation structures

4. Continued

Participation Levels	Rates could vary to reflect group participation levels to help mitigate the risk of accepting groups with low participation levels	The ACA disallows participation levels rating beginning in 2014
Tobacco Use	The ability to use an insured's tobacco use status as an allowable case characteristic varied from state to state	The ACA allows the use of a tobacco use rating factor up to 50%, but will not override state rules if state rules are more restrictive
Pre-existing Condition Limitations	Most small plans restricted benefits for pre-existing conditions when allowed by state law, with limits set by HIPAA	The ACA rules eliminate all pre-existing condition limitations
Individual Medical Assessment	Employees of a small group and their dependents were often individually medically underwritten	The ACA disallows medical underwriting, but provides a transitional risk corridor program to offset downside risk

- (b) Calculate the ACA-compliant annual premium for each participant. Assume no trend. Show your work.

Commentary on Question:

This portion of the question tested the candidate's ability to apply the ACA requirements in a simplified underwriting scenario. Most candidates recognized that unisex ratings are required post-ACA, as well as the ability to rate up smokers 50% higher than non-smokers. Some candidates calculated the individual premiums by applying these factors, but failed to maintain the group's loss ratio at 80%. Other candidates mistakenly adjusted the claims according to the ACA-imposed rating limits, then applied the 80% loss ratio to develop premium.

4. Continued

	20 year old Male Non-Smoker	20 year old Female Non-Smoker	60 year old Male Non-Smoker	60 year old Female Smoker	Total
Claim Cost	\$500	\$800	\$2,300	\$4,000	\$7,600
Pre-ACA Premiums	\$625	\$975	\$3,000	\$4,900	\$9,500

Pre-ACA Loss Ratio = $\$7,600/\$9,500 = 80\%$

No Trend

The ACA requires unisex rating in all states,

so the 21 year old Male and 21 year old Female Non-Smokers will have the same rate

The ACA limits the range for rates based on age to be limited to 3:1,

so a 64 year old can have rates no greater than 3 times a 21 year old

The ACA allows the use of a tobacco rating factor up to 50%,

so a 64 year old smoker can have rates no greater than 1.5 times a 64 year old non-smoker

$x = 21$ year old rate, male or female

$$x + x + 3x + (3 \cdot 1.5)x = \$9,500$$

$$x = \$1,000$$

	20 year old Male Non-Smoker	20 year old Female Non-Smoker	60 year old Male Non-Smoker	60 year old Female Smoker	Total
Post-ACA Premiums	\$1,000	\$1,000	\$3,000	\$4,500	\$9,500

5. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

- (2a) Describe, compare and evaluate care management programs and interventions.
- (2b) Estimate savings, utilization rate changes and return on investment as it applies to program evaluation.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan Chapter 7

Commentary on Question:

This question tested candidates' knowledge of disease management programs. Candidates had to demonstrate their understanding of two specific care management programs, calculate the expected net return on investment of implementing a disease management program, and assess the plausibility of those results. Candidates generally performed well on the question, with the exceptions noted below.

Solution:

- (a) Compare and contrast demand management and disease management programs.

Commentary on Question:

Part (a) of this question tested the candidates' knowledge of demand and disease management, and how the two compare and contrast. Most candidates adequately explained each component, but many did not explain how the two related to each other.

Demand management programs are passive forms of intervention, often provided by clinical staff over the phone.

Disease management is a system of health care interventions and communications for populations with conditions in which patient self-care efforts are significant.

Similarities: They are both forms of member intervention in that they provide the member with information to help with a condition.

Differences:

- Demand management focuses on providing information regarding episodes or acute illnesses whereas disease management focuses on patients with chronic conditions with certain common characteristics that make them suitable for clinical intervention.
- Demand management is usually a one-time intervention, whereas disease management requires an extended series of interactions.

5. Continued

- (b) List reasons why a member group might be excluded from a disease management population. Provide examples.

Commentary on Question:

Candidates did very well on part (b). Most candidates were able to list several reasons with examples and earned a very high score in this section.

- The member class is not receptive to disease management.
- The member is already eligible for a program through another vendor.
- The member's claim pattern is subject to sharp discontinuity and can thus distort a trend calculation.
- The member's claims are significant relative to other claims in the class and are likely to dominate the group or introduce "noise" into the calculation.

- (c) For this disease management program:

- (i) Calculate the total dollar savings. Show your work.
- (ii) Calculate the net return on investment (ROI). Show your work.
- (iii) Recommend whether or not to continue with the program. Justify your answer.

Commentary on Question:

Most candidates were able to answer the majority of this question correctly, however very few candidates were able to answer the entire question correctly. Some candidates failed to recognize that HIV and transplant members needed to be excluded and the question was asking for net ROI, not gross ROI. A majority of the candidates recognized the HIV and transplant member need to be excluded but did not consistently apply this to their calculation.

- Chronic Baseline Claims PMPM
= $(14,000,000 - 900,000 - 1,250,000) / (45,000 - 900 - 1,800)$
= 280.14 PMPM
- Indexed Baseline Claims PMPM
= $17,000,000 / 140,000$
= 121.43 PMPM
- Chronic Intervention Claims PMPM
= $(15,000,000 - 1,000,000 - 1,500,000) / (50,000 - 1,000 - 2,000)$
= 265.96 PMPM
- Indexed Intervention Claims PMPM
= $20,000,000 / 150,000$
= 133.33 PMPM

5. Continued

- Trend in Indexed Population
= $133.33/121.43-1$
= 9.8%
- Trended Chronic Baseline Cost
= $280.14 \times (1.098)$
= 307.61 PMPM
- Reduction in Cost
= $307.61 - 265.96$
= 41.65 PMPM
- Savings Per Year
= $41.65 \times (45,000-900-1,800)$
= 1,761,765 per year
- Cost of the Program
= $50 \times (45,000-900-1,800)$
= 2,115,000 per year
- Net ROI
= $(1,761,765-2,115,000)/2,115,000$
= -0.167

It is recommended that the disease management program NOT be implemented due to the negative net ROI.

(d)

- (i) Describe plausibility factors.
- (ii) Evaluate whether the savings calculated is plausible for this intervention. Justify your answer.

Commentary on Question:

Candidates were split on their ability to answer this section. Some candidates demonstrated their understanding of plausibility and how it relates to this question, however many candidates did not understand plausibility factors. In the second part the candidates were asked to evaluate the savings. Candidates were expected to calculate the plausibility factor then comment on the relationship between the plausibility and savings calculated in part c.

Plausibility factors independently validate the measured financial results of a care management savings calculation by demonstrating that actual utilization is reduced by the intervention, consistent with the financial measurement. If the savings calculation results in positive savings but the utilization-based measures do not, the savings are not validated.

5. Continued

The formula is (disease-specific admissions/1000 (program year)) / (disease-specific admissions/1000 (baseline year)).

- Chronic Population Admissions Baseline
= 1,300-49-68
= 1,183 Admits per year
- Chronic Population Admissions Intervention
= 1,400-51-70
= 1,279 Admits per year
- Chronic Admissions Per Thousand Members Per Year Baseline
= $1,183 / (45,000 - 900 - 1,800) * 12,000$
= 335.60
- Chronic Admissions Per Thousand Members Per Year Intervention
= $1,279 / (50,000 - 1,000 - 2,000) * 12,000$
= 326.55
- Plausibility Factor
= $326.55 / 335.60$
= 0.97

It is plausible the program could have generated savings because the program has reduced the chronic admissions. However, because expenses exceeded savings, no savings were generated.

6. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

- (2a) Describe, compare and evaluate care management programs and interventions.
- (2c) Describe operational issues in the development of a study including acceptable methods for dealing with the issues.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan Chapter 11, pp 211 - 226

Commentary on Question:

Most examination candidates were able to respond to each of the part, (a) – (f). Most candidates also connected the first 4 parts, (a)-(d), to answer questions about the practical example, parts (e)-(f).

Solution:

- (a) Describe propensity scores and propensity score matching.

Commentary on Question:

Most candidates identified that a Propensity Score (PS) is a composite variable. Most missed that the Score allows for matching scores rather than individual characteristics. Many candidates also identified that the propensity score can be defined as a probability. Most candidates identified Propensity Score Matching (PSM) as assigning PS's to members of a population.

Propensity Scores:

- A composite variable that summarizes multiple population characteristics into a single variable value;
- Reduces a large number of variables to a single score
- Allows for matching of individuals based on the score rather than individual characteristics
- Propensity score can also be defined as the likelihood for a member to be participating in a program

Propensity Score Matching:

- Assigns and groups propensity scores to members of a population
- Focus on observable data such as age, sex, geography, benefit plan, or payer
- Matches individuals based on propensity score

6. Continued

- (b) Describe the general approach to using propensity score matching.

Commentary on Question:

Most candidates identified PSM with a logit function, but did not further define the purpose of the function as a "Binary" decision.

Many candidates failed to identify the importance of observations of program participants to better identify influences on the choice of a PS.

Some candidates did mention a review for "Bias", which is an essential part of testing model results.

- Create Propensity Score
- A logit function can be used to estimate the score
- Binary decision - either a score of 1 (in the group) or 0 (out of the group)
- Consider observable factors that may influence a program participant, such as education level, distance, occupation or medical condition.
- Match each participant based on propensity score.
- Testing the Results
- For bias - review of the observable variables, not unobservable variables.

- (c) Describe methods of data matching that might be used in a propensity score matching model, including the strengths of each method.

Commentary on Question:

Most candidates listed all four methods, with a one-line description. Few added the additional sub points from the text source.

Nearest Neighbor Matching:

- The first member of the comparison population with the "closest" propensity score is selected.
- Must be done randomly; otherwise, the order in which matching is done can affect the outcome

Caliper Matching:

- Match is made if the member and match's propensity scores are within a fixed distance.
- Fewer successful matches will occur than with Nearest Neighbor matching.

Mahalanobis Metric Matching:

- Measures the dissimilarity between two vectors.
- Fewer successful matches will occur than with Nearest Neighbor matching.

6. Continued

Stratification Matching:

- Observations are stratified and matched by stratum.
- "Coarsened" exact matching

- (d) Describe the similarities and differences between propensity scores and risk adjustment.

Commentary on Question:

Almost all of the candidates identified one similarity, "both use population characteristics."

Similarities:

- Both use characteristics of populations to adjust for populations to be on a similar basis.

Differences between Propensity Scores and Risk Adjustment

- Risk Adjustment scores calculated based on a member's age, sex, and diagnosis(es).
- Propensity score usually based on wider range of independent variables than risk score.
- Propensity Score matching is method of choice in health services research
- Risk score almost always takes into account more detailed diagnosis variables than propensity score.

- (e) Describe the purpose and components of a DSME/T program.

Commentary on Question:

Most candidates identified what the DSME/T is for. Few identified more than one supporting point.

- Purpose to facilitate knowledge and skills that are necessary for diabetes self-care
- Overall objectives are to improve clinical outcomes, health status, quality of life by:
 - self-care behaviors
 - active collaboration with the health care team
- Insurance/health plans provides access to the program for its members who have been identified as having diabetes or are at risk for diabetes

6. Continued

- (f)
- (i) Interpret the different conclusions based on the separate studies performed.
 - (ii) Recommend whether or not to continue with the program. Justify your answer.

Commentary on Question:

Many candidates failed to identify what the appropriate observations are to support conclusions about each of the studies.

Most of the candidates identified the correct recommendation, adding in a few points to support the recommendation. Most did support their recommendation based on the matched study results. Few added supporting arguments why the matched study results are more credible. A few candidates did not make a recommendation, which is disappointing to the graders. We do give credit for making any recommendation, correct or not. Adding supporting arguments results in higher grading points.

- (i) Unmatched Study
The Enrollment Intervention Group
 - Better Admits per 1000 – 2%
 - Better cost per Admit - 2%
 - Higher Diabetes Admit per 1000 – 5%
 - Could be results of more pro-active care for diabetic patients
 - Lower Costs per Diabetes Admit – 4% lower
 - Better results suggest positive return, but minor differences could fall within statistical error range.

- Matched Study
The Enrollment Intervention Group
 - Better Admits per 1000 – 8%
 - Better cost per Admit - 7%
 - Higher Diabetes Admit per 1000 – 7% higher
 - Lower Costs per Diabetes Admit – 14% lower
 - Better results in all categories, with greater variance than the unmatched study.

- (ii) Continue the program:
 - Matched study results show credible differences between the intervention group and the control group, results are favorable.
 - Matched study methodology generates a control group with comparable health risks – matched study results seem to be usable.

6. Continued

- Unmatched study includes all non-participants in the control group, including those with better health profiles or risks than the intervention group. Results in less credible comparisons.

7. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.
3. The candidate will understand how to formulate, calculate and evaluate carrier reserving techniques.

Learning Outcomes:

- (1a) Calculate provider payments under standard and leading edge reimbursement methods.
- (1d) Understand accountable care organizations and medical patient home models and their impact on quality, utilization and costs.
- (3f) Describe, calculate and evaluate different types of reserves and explain when each is required.

Sources:

A First Look at ACOs Risky Business: Quality Is Not Enough

Evaluating Bundled Payment Contracting

The Final Rule for the Medicare Shared Savings Program

Essentials of Managed Health Care, Ch. 4, page 78

Health Reserves (Lloyd), Ch. 5, pages 47-49

Premium Deficiency Reserves Discussion Paper, pages 4-16

Commentary on Question:

This question asked candidates to demonstrate an understanding of the objectives of an ACO, the key characteristics of shared savings arrangements, and to tie changes in the expected level of claims to the need to establish premium deficiency reserves.

Candidates who did well recognized that ACOs are groups of providers (not necessarily health plans), understood that shared savings represent adjustments to claims, and recognized that premium deficiency reserves should be calculated over the 12-month projection period specified by the question.

Candidates who struggled tended to confuse the ACO and the health plan (MWH), or didn't recognize that a PDR is a total dollar amount and should not be specified as a PMPM or monthly amount.

7. Continued

Solution:

- (a) Define Accountable Care Organization (ACO).

Commentary on Question:

Most candidates correctly identified that an ACO is a legal entity or distinct organization, and generally is established to coordinate care and share in the savings of more efficient care. Well-prepared candidates also discussed the role of the MSSP and the unique requirements for Medicare ACOs.

An ACO is a legal entity that can receive, distribute, and repay shared savings and losses. Under the MSSP, an ACO is composed of certified Medicare providers, and the providers help govern the ACO's decision-making. The ACO is responsible for coordinating the care for its patients, and often shares in savings generated by providing more efficient care.

- (b) Describe:
- (i) Three types of payment arrangements typically used with ACOs.
 - (ii) Advantages to MWH of introducing an ACO product.
 - (iii) Reasons healthcare providers would participate in an ACO product.

Commentary on Question:

This part asked candidates to show an understanding of the purpose and value of ACOs. Candidate performance was mixed, with some candidates demonstrating in-depth knowledge of these areas while others provided only cursory answers.

- (i) One-sided shared savings – ACO receives a portion of any claim savings, but does not share in losses
Two-sided risk sharing – ACO shares in any variance from the claims target
Global capitation – ACO arrangements are a step towards providers assuming more of the insurance risk, and could lead to ACOs either accepting global capitation (instead of payment per service), or adopting other forms of risk-based payment
- (ii) An ACO product could reduce MWH's costs, will help align the providers' incentives with MWH's, and will help direct members to lower-cost, high-quality providers.

7. Continued

- (iii) Providers would participate in the ACO to obtain a preferred network position/designation and to benefit financially from improvements in care efficiency. Providers who desire a well-coordinated, patient-centered approach to care may also participate since the ACO's objectives align well with their approach to medicine.
- (c) Calculate the payment MWH would make to or receive from the ACO providers under each scenario. Show your work.

Commentary on Question:

Most candidates did well on this part. The most common errors were confusing which party would benefit if claims were favorable/unfavorable to targets, and candidates applying the MSSP criteria instead of the savings parameters specified in the question.

1. Claims 200 – 170 = \$30 below target; MWH pays ACO 30% * \$30 = \$9 PMPM
 2. Claims 200 – 180 = \$20 below target; MWH pays ACO 50% * \$20 = \$10 PMPM
 3. Claims 240 – 200 = \$40 above target; ACO pays MWH 50% * \$40 = \$20 PMPM
- (d) Explain when a Premium Deficiency Reserve (PDR) is required.

Commentary on Question:

Candidates generally did well on this part, with virtually all candidates recognizing the general purpose of PDRs.

A PDR is required when the present value of future premiums and current reserves is less than the present value of future claims and expenses. PDRs are generally projected over the remaining term of the policy (until rates can be reset), and are most commonly associated with products where rate increases are limited by regulations, or would cause anti-selection such that the resulting rates would still be inadequate.

- (e) Calculate the PDR MWH should establish. Show your work.

Commentary on Question:

Candidates did very well on this part, with the most common errors being a failure to recognize that the PDR needed to consider the anticipated members and duration of the current policy period.

7. Continued

$$\text{PDR} = \text{PV} (\text{Claims} + \text{Expenses}) - \text{PV} (\text{Premiums} + \text{Contract Reserve} + \text{Claims Reserve} + \text{Premium Reserve})$$

$$= 12 \text{ months} * 10,000 \text{ members} * [(180 + 30) - (200)] = 12 * 10,000 * 10 = \$1,200,000$$

- (f) Calculate the PDR that MWH would need to establish in each scenario. Show your work.

Commentary on Question:

Most candidates correctly identified the expected adjustments to claims associated with the shared savings/losses. Many candidates, though, adjusted the projected claims in the wrong direction. Some candidates chose to use the MSSP savings parameters instead of the parameters specified in the question. A few candidates correctly observed that it may not be appropriate to include projections of shared-loss receivables from the ACO.

1. Expected Claims = $\$170 + 50\% * (180 - 170) = \175
PDR = $12 * 10,000 * (175 + 30 - 200) = 12 * 10,000 * 5 = \$600,000$
2. Expected Claims = $\$200 - 25\% (200 - 180) = \195
PDR = $12 * 10,000 * (195 + 30 - 200) = 12 * 10,000 * 25 = \$3,000,000$
3. Expected Claims = $\$160 + 40\% (180 - 160) + \$10 = \$178$
PDR = $12 * 10,000 * (178 + 30 - 200) = 12 * 10,000 * 8 = \$960,000$

8. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

- (4c) Understand, evaluate and apply various risk adjustment mechanisms.

Sources:

Financial Reporting Implications Under the Affordable Care Act, Section 1 pages 3-4

Commentary on Question:

Candidates generally did well on this question. There were some common mistakes made in part (d), outlined below.

Solution:

- (a) Describe risk-adjustment for individual and small-group products per the ACA.

Commentary on Question:

Candidates generally were able to describe most of the points below. Some candidates included details of the risk adjustment calculation, which was not necessary.

- The risk-adjustment program is designed to allow a health insurance issuer to price and offer individual and small-group products without consideration of the underlying relative health status of the individuals purchasing these products.
 - Risk adjustment is a closed system at the following levels: state, market (i.e., individual versus small group unless the state has formally merged the two), and risk pool (e.g., metal plans versus catastrophic plans).
 - States have the right to operate their own risk-adjustment program, but if they choose not to, the federal government will manage the risk-adjustment program for those states.
 - The magnitude and direction of the risk-adjustment settlement is dependent on the relative measured risk of the issuer's enrollees compared to all enrollees in the market (and implicitly dependent on the completeness and accuracy of the captured diagnosis data).
- (b) Describe how the following ACA premium stabilization programs may lead to increased uncertainty and impair comparability to prior years in the 2014 financial statements for an insurer:
 - Risk-adjustment
 - Reinsurance

8. Continued

Commentary on Question:

Most candidates got all possible points on this part.

- Risk adjustment programs
 - Uncertainty as to the issuer's risk score.
 - Uncertainty as to other issuers' risk scores.
 - Uncertainty as to member exposure.
 - Granularity of the calculation.
 - Implications of data reviews.
 - Reinsurance programs
 - Accrual for reinsurance on unpaid claims
 - Magnitude of the reinsurance recovery accrual.
 - Potential valuation allowance on reinsurance recoverable.
 - Potential for denied reinsurance claims.
- (c) Describe current differences between the ACA individual and small-group risk-adjustment mechanism and the Medicare Advantage risk-adjustment mechanism.

Commentary on Question:

Candidates generally did well on this part. One common mistake was categorizing the MA risk adjustment as prospective, rather than retrospective.

- Medicare Advantage risk adjustment is based on a retrospective model, in which demographic and diagnosis information from the prior calendar year is used to develop risk scores for the current calendar year.
 - Medicare Advantage risk adjustment is performed as a single national program, instead of multiple programs based on state/market/risk pool combinations.
 - With many Medicare Advantage plans, the issuer expects to have a relatively high level of stability in membership from year to year; the primary reasons for membership changes are initial attainment of age 65 and death.
 - For the Medicare Advantage program, the vast majority of enrollees are administered by the federal government.
- (d) Calculate the transfer that BIC must make to the competitor as a percent of:
- BIC's premium
 - The competitor's premium

Show your work.

8. Continued

Commentary on Question:

Most candidates correctly calculated the aggregate risk score. However, many calculated the normalized relative risk score incorrectly, mainly by using the inverse of the appropriate numerator and denominator or by subtracting rather than dividing.

- Aggregate risk score for cell = $0.8 * 1.1 + 0.2 * 1.35 = 1.150$
 - Normalized relative risk score for BIC = $1.1 / 1.15 = 0.957$
 - Transfer from BIC to your competitor, as a percent of premium = $1.0 - 0.957 = 4.3\%$
 - Normalized relative risk score for your competitor = $1.35 / 1.150 = 1.174$
 - Transfer to your competitor to BIC, as a percent of premium = $1.174 - 1.0 = 17.4\%$
- (e) Assess the impact these results have on the financial statements for BIC and its competitor.

Commentary on Question:

Most candidates only mentioned that the financial statements would be impacted and restated the result in part (d). They did not fully assess the impact of the risk adjustment settlement.

- The magnitude and direction of the risk-adjustment settlement is dependent on the relative measured risk of the issuer's enrollees compared to all enrollees in the market (and implicitly dependent on the completeness and accuracy of the captured diagnosis data).
- The magnitude measured as a % of premium is less for BIC that has 80% market share than for your competitor with only 20% market share.
- Failure of either issuer to appropriately reflect risk adjustment in their financial statements could significantly change a user's view of financial performance.
- But for either issuer, the settlement could be material in relationship to the expected profit margin for the line of business.

9. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.

Learning Outcomes:

- (1d) Understand accountable care organizations and medical patient home models and their impact on quality, utilization and costs.

Sources:

Essentials of Managed Care, Chapter 12

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe how the Affordable Care Act (ACA) is influencing changes to managed behavioral health care.

Commentary on Question:

ACA influenced many changes in the behavioral health care landscape. Candidates typically only listed a couple of items. Some of the items candidates listed were not in the text, but were still awarded points since they are appropriate answers.

ACA has influenced many changes in behavioral health care including:

- Led to the expansion of Medicaid, which allowed many more individuals access to health care. In particular, many low income males suffer with substance abuse.
- Led to new delivery systems including ACOs and PCHM, which are responsible for integrating all forms of care including behavioral health and physical health management.
- Opportunity to implement integrated health homes, which would accommodate the seriously mentally ill (SMI) as their primary source of care.
- Created new opportunities and challenges for the industry with exchanges by giving access and affordable care to many individuals through subsidies.
- Establishment of CMS office for Innovation and Dual will force the creation of new models of care that will affect the industry.
- Required the Secretary of the Department of Health and Human Services to establish a National Strategy for Quality Improvement in Health Care. Set forth six priorities:
 - Making care safer by reducing harm caused in the delivery of care
 - Ensuring that each person and family are engaged as partners in their care
 - Promoting effective communication and coordination of care
 - Working with communities to promote wide use of best practices to enable healthy living

9. Continued

- Making quality care more affordable
 - Limited underwriting requirements including no pre-existing conditions; allowing many with behavioral issues to get coverage.
 - Mental Health is considered an essential health benefits, which limits the number of restrictions on coverages around mental health.
 - Individual mandate and expanding coverage to age 26 for children allowed / required many more individuals to seek coverage.
- (b) Explain the importance of diagnosing behavioral health conditions to improve overall patient health.

Commentary on Question:

Many of candidates only said it impacts overall health and cost and did not address the other reasons why it is important.

It is important to diagnose the behavioral health condition because it is required to determine the appropriate treatment option to help manage and treat the condition of the patient. However, often it is difficult to diagnosis the behavioral health conditions because there are no laboratory tests or physical tests that would be able to help diagnosis the condition.

Typically behavioral health may not be the only illness a patient suffers from. They could have other comorbidities that impact their physical health of the patient. If not properly addressed and treated, it can amplify the impact of chronic illness. This can have ramifications on the individual's morbidity, productivity, and overall well-being. Furthermore, incorrect treatment can foster non-compliance and relapse and would result in excessive cost of treatment and repeat utilization.

10. Learning Objectives:

3. The candidate will understand how to formulate, calculate and evaluate carrier reserving techniques.
4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

- (3c) Calculate appropriate claim reserves given data.
- (4a) Understand the risks and opportunities associated with a given coverage, eligibility requirement or funding mechanism.
- (4g) Apply applicable Actuarial Standards of Practice.

Sources:

Group Insurance, chapter 43 pages 717, 719-720, 725-728

ASOP 5 and ASOP 42

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe aspects of Long-Term Disability (LTD) benefit plan designs important to claim reserves.

Commentary on Question:

Most candidates were able to provide all or most of the items on this list. Most candidates provided descriptions for the items as required in the question. The papers where a candidate simply listed the items did not receive any credit. The expectation is that candidates have an explanation for each item, showing they actually understand the item.

Periodic Benefits

- Unlike most short-term health products LTD and LTC plans typically have a benefit equal to a specified monthly or daily amount

Long-Term Benefit Periods

- LTD and LTC plans have maximum benefit periods that are quite long relative to other health benefits
- The maximum benefit period for LTD is often "To Age 65"
- LTC plans often specify a lifetime dollar maximum benefit, which determines the maximum length of time for which benefits may be paid

10. Continued

Elimination Periods

- LTD and LTC plans offer a variety of elimination periods, often 90 days or more
- The elimination period is the period of time after someone experiences the insured event under the policy, but before benefits accrue

Optional Benefits

- Both LTD and LTC plans offer a variety of optional benefits that may affect the timing and amount of benefits
- Includes partial disability and cost of living adjustments

Integration of Benefits

- LTD plans often contain provisions that reduce the amount of benefits paid to reflect social insurance benefits received while disabled (such as Social Security or Worker's Comp)
- LTC plans typically integrate with Medicare long-term care benefits

Limitations and Exclusions

- Certain types of claims are excluded from coverage all together (such as self-inflicted injuries)
- Other types of claims may be subject to limited pay periods, which should be reflected in the reserving process (such as Mental and Nervous and Substance Abuse claims)

- (b) Calculate the LTD claim reserve at time 0. Show your work.

Commentary on Question:

Most candidates had a correct formula for this question. The most common error was not dividing the "power" in the interest rate by 12 months. A good number of candidates did not mid-point the payment and the probability of payment. Almost full credit was given to candidates that did not midpoint, as long as the rest of the formula was correct. Partial credit was also given for providing the correct formula.

$$\begin{aligned} V_n &= \sum_{t=n}^{BP-1} \text{Benefit}_{t+1} \cdot \frac{l_{t+0.5}}{l_n} \cdot (1+i)^{-(t-n+0.5)/12} \\ &= 2500 \times (650/1000) \times (1.04)^{-3.5/12} + 2500 \times (550/1000) \times (1.04)^{-4.5/12} + \\ &\quad 2500 \times (450/1000) \times (1.04)^{-5.5/12} + 2500 \times (350/1000) \times (1.04)^{-6.5/12} \\ &= 1606.52 + 1354.92 + 1104.96 + 856.61 \\ &= 4923.01 \end{aligned}$$

10. Continued

- (c) Describe assumptions when calculating LTD claim reserves.

Commentary on Question:

Most candidates provided the first 3 items on this question. Many candidates missed an opportunity for scoring more points by providing more items referenced in the solution. Full credit was given for getting at least 6 of the items on this question. As in part (a), no credit was given for simply listing the items since the question asks for a description.

Morbidity Assumptions

- Different tables are needed for LTD plans than for LTC plans
- LTD continuance tables typically vary by gender, elimination period, age at disability, claim duration, cause of disability, and definition of disability
- LTC tables may also vary by benefit period, with lower termination (of morbidity) rates for lifetime benefits

Interest Rates

- Interest rates for statutory reserves are specified by law
- Interest rates for tax reserves are specified by the IRS
- Interest rates for GAAP reserves are generally set by the companies expected investment return rate on assets backing reserves less some margin

Policy Provisions

- Claim reserves must make explicit allowances for many policy provisions
- Common policy provisions include:
 - i. Cost of Living Adjustments (COLA) - COLA benefits increase the amount of claim payments for inflation
 - ii. Partial and Residual Benefits - Pays a percentage of the monthly benefit if the claimant is able to work part-time during a period of disability (common on LTD policies)
 - iii. Survivor Benefits - Pays a death benefit equal to a few months of payments to a beneficiary if the claimant dies while receiving benefits
 - iv. Benefit Integration - Many LTD and LTC benefits are integrated with benefits for social insurance
 - v. Benefit Limitations - Many LTD policies have limited benefit periods for some specified conditions
 - vi. Waiver of Premium - Many LTD and LTC benefits contain provisions that waives premiums if the insured in on claim
 - vii. Non-Level Daily Benefits - Many LTC claimants do not receive a level benefit from day to day because they receive different levels of care

10. Continued

Claim Expenses

- In reserving for long-term health benefits, insurers must make provision for the expenses that are related to the management and payment of these claims
- Claim expense reserves are often a percentage of the tabular claim reserve

Diagnosis Based Tabular Reserves

- Claims arising from different causes may have different patterns of expected recoveries
- Although this approach has the advantage of better aligning claim reserves with each individual claim, lack of credibility and complexity of the calculation are challenges in reserving by diagnosis

LTC Case Reserves

- Some companies reserve based on each claimant's medical condition and plan of care, rather than on aggregate morbidity assumptions
- This approach is very labor intensive

Data Integrity

- Unlike aggregate reserves for short-term benefits, tabular reserves for long-term benefits are heavily dependent on the underlying seriatim claim data
- Small errors in a claim data file can have large impacts on tabular reserves for a particular claim
- Companies should conduct regular audits to ensure their claim data is being captured and interpreted properly

- (d) Describe the applicable ASOPs and how they apply to these liabilities.

Commentary on Question:

Most candidates were able to describe ASOP 5. Fewer candidates described ASOP 42. No credit was given for simply listing the ASOP numbers since the question asks for a description.

Many candidates wrote about a number of other ASOPs, which did not receive credit. The question asks specifically which ASOPs apply to long-term claim reserves.

ASOP 5 - Incurred Health and Disability Claims

- Deals with the estimation of incurred health and disability claims
- States that actuaries should consider:
 - i. Plan Provisions and Business Practices
 - ii. Economic Influences
 - iii. Organizational Claims Administration
 - iv. Risk Characteristics and Organizational Practices
 - v. Legislative Requirements
 - vi. Carve-outs

10. Continued

- vii. Special Considerations for Long-Term Products
- Describes procedures for analyzing incurred claims
- Describes methods used for estimating incurred claims

ASOP 42 - Determining Health and Disability Liabilities Other Than Liabilities for Incurred Claims

- Deals with the estimation of liabilities other than incurred claims such as:
 - i. Contract Reserves
 - ii. Premium Deficiency Reserves
 - iii. Provider Related Liabilities
 - iv. Claim Adjustment Expense Liabilities
 - v. Liabilities for Payments to State Pools
 - vi. Reserves for Unearned Premiums
 - vii. Liabilities for Dividends and Experience Refunds
- States that actuaries should generally consider:
 - i. Plan Provisions and Business Practices
 - ii. Risk Sharing Arrangements
 - iii. Economic Influences
 - iv. Risk Characteristics and Organizational Practices
 - v. Legislative Requirements
 - vi. Carve-outs
 - vii. Special Considerations for Long-Term Products
 - viii. Reinsurance Arrangements
 - ix. Expenses
 - x. Consistency of Bases

11. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

- (4d) Recommends strategies for minimizing or properly pricing for risks.

Sources:

Modeling Anti-Selective Lapse and Optimal Pricing in Individual and Small Group Health Insurance, HealthWatch, February 2010. Starts on page 28.

Commentary on Question:

In general very few candidates received full credit on all parts of the question. However, numerous candidates received partial credit. It was clear that not many candidates fully understood excess risk. More credit was given to candidates who could clearly show their work.

Solution:

- (a)
 - (i) Describe anti-selective lapse.
 - (ii) Explain why anti-selective lapses occur.

Commentary on Question:

Candidates performed very well on this piece.

- (i) Anti-selective lapse is the tendency that healthy lives lapse at a higher rate than impaired lives, resulting in an adverse change in the health mix of insureds.
 - (ii) Anti-selective lapses usually occur due to an increase in the rate of the plan or members seeking out lower priced plans in the market.
- (b) List three exceptions.

Commentary on Question:

Numerous candidates focused solely on the strategic pricing aspects of this question and failed to mention rate restrictions or inability to accurately forecast trends.

- Deviation of renewal rate due to rate restriction
- The insurer's inability to accurately forecast medical cost trends
- Strategic pricing in which the price is set below or above the cost, for market share or profit

11. Continued

- (c) Calculate the probability of price induced lapse. Show your work.

Commentary on Question:

A large number of candidates either did not know the formulas or did not show their work. Some candidates were able to determine that the probability of lapse was 100% without performing all calculations. In this case they received some partial credit.

$$P^*=P/A$$

$$L=S(P^*/M)$$

$$L=S((P/A)/M)$$

L=Probability of price induced lapse

P*=Adjusted price

P=Premium

M=Market Price

A=Premium adjustment factor

S is a step-wise function

$$S(z)=0 \text{ when } z < 1$$

$$S(z)=1 \text{ when } z > 1$$

$$S(z)=1/2 \text{ when } z=1$$

$$P^*=1000/((1+.05)^*(1+.03))=924.64$$

$$M= (.1*800)+(.2*750)+(.3*700)+(.4*650)=700$$

$$S(P^*/M)=924.64/700=1.32$$

$$L=1$$

The probability of lapse is 100%.

- (d) Define excess risk.

Commentary on Question:

Numerous candidates incorrectly assumed excess risk referred to the extra risk of an impaired life over a standard life.

Excess risk is the portion of the market price that is not in the actual price, due to rate restrictions.

- (e) Calculate the excess risk of Insured #2 over Insured #1. Show your work.

Commentary on Question:

Several candidates inverted the formula for excess risk or were unaware of the formula itself. Also numerous candidates used the \$1000 premium instead of the adjusted price of \$924.64.

11. Continued

$$\begin{aligned}\text{Excess risk} &= V = ((M_1/M_0)/(P_1^*/P_0^*)) \\ &= ((1500/700)/(1200/924.64)) \\ &= 1.65\end{aligned}$$

M_1 =Market value impaired life

M_0 =Market value standard life

P_1^* =Adjusted price of impaired life

P_0^* =Adjusted price of standard life

12. Learning Objectives:

1. The candidate will understand how to evaluate the effectiveness of traditional and leading edge provider reimbursement methods from both a cost and quality view point.

Learning Outcomes:

- (1d) Understand accountable care organizations and medical patient home models and their impact on quality, utilization and costs.

Sources:

Kongstvedt pp. 124-125; MSSP Final Rule

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Calculate the percentage reduction in inpatient readmissions required for the ACO to receive \$1 million in shared savings payments. Show your work.

Commentary on Question:

Since the question was somewhat ambiguous about what the “current” year is, credit was given if amounts were trended forward or not. If trend was applied, the savings required were assumed to be higher than the \$1,666,667 amount – the savings would also include the difference between the expected claims with 3% trend and the baseline claims with 2% trend. Credit was also provided if the cost per readmission was increased with trend. Credit was also provided if the candidate incorporated the minimum 2% shared savings threshold found in the text in answering this question. Below is the most common answer, without trend application and without incorporation of the 2% minimum threshold.

Total expected claims for the program is \$96,000,000
 $\$800 \text{ PMPM} \times 10,000 \text{ members} \times 12 \text{ months}$

In order to get 1,000,000 in savings after the 60% sharing, we need costs to come in \$1,666,667 below the expected claims amount, or \$94,333,333

This savings will be achieved by a reduction in readmissions through the program. Since each readmission costs \$12,000, we need to reduce readmissions by 139.

$\$1,666,667 / \$12,000$

The current program expects 700 readmissions per year
 $350 / 100 \times 10,000 \text{ members} \times 20\% \text{ readmission rate}$

This translates to a 19.86% reduction in readmissions
 $(700 - 139) / 700$

12. Continued

- (b) Recommend whether or not the ACO should pursue the vendor's program. Justify your answer.

Commentary on Question:

Half of the credit was provided if the candidate used the results from part (a) to calculate an ROI, compared it to the 2.0 requirement and provided a recommendation on that basis. Partial credit was provided to candidates who stated that for each reduced admission, the savings would be \$12,000 (or \$10,000) and the cost would be \$2,000 (that is, where candidates forgot to reduce the savings by the portion shared to CMS).

Very few candidates received the other half of credit by commenting on the downside risk of the two-sided model, or commenting on the favorable deal with the vendor, where the question provides that the vendor is compensated for achieved reduced admissions.

In order to pursue the program, the ROI should be greater than or equal to 2.0.

Therefore, Savings / Cost should be > 2.0

In the scenario from part a, Savings to the program would be 1,000,000 after the 60% sharing.

The cost of the program is 2,000 per reduced admit, or 278,000
 $\$2,000 \times 139$

The ROI is 3.6
 $1,000,000 / 278,000$

From a broader perspective, we need to understand all of the possible scenarios, and what the upside and downside risks would be. There is no guarantee that the program would follow the scenario from part a.

However, the vendor is only getting paid if the readmissions are reduced, so they have a lot of incentive for the program to succeed.

13. Learning Objectives:

2. The candidate will understand how to evaluate and apply techniques for claims utilization and disease management.

Learning Outcomes:

- (2a) Describe, compare and evaluate care management programs and interventions.
- (2d) Perform a literature review about program evaluation.

Sources:

Managing and Evaluating Healthcare Intervention Programs, Duncan Chapter 7

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Describe organizations you could consult for ideas of measuring quality improvement.

Commentary on Question:

Candidates performed well on this part of the question. To receive full credit candidates needed to not only list the organizations but also needed to provide a description of what the each organization does.

- a. National Quality Forum – NQF
 - i. Lead responsibility in US for endorsing health care quality measures
 - ii. Includes consumer organizations, public and private purchasers, physicians, nurses, hospitals, etc.
- b. Agency for Healthcare Research and Quality AHRQ
 - i. Sub entity of HHS
 - ii. Developed quality indicators which use hospital administrative data to highlight potential quality concerns including
 1. Inpatient quality indicators
 2. Prevention quality indicators
 3. Patient safety indicators
 4. Pediatric quality indicators
- c. Joint commission
 - i. Primary accrediting body for hospitals, nursing homes and other care facilities
 - ii. Develops standardized performance measures for hospitals
- d. CMS
 - i. Works collaboratively with health care providers to develop measure of quality in various settings and to reduce the burden of their collection
- e. Other common answers include
 - i. National Committee for Quality Assurance - NCQA
 - ii. Hospital Quality Alliance – HQA
 - iii. American Medical Association

13. Continued

- (b) Define the Agency for Healthcare Research and Quality (AHRQ) “Structure, Process, Outcomes” method to measure program quality and provide examples that could be used for this program.

Commentary on Question:

The majority of candidates either didn't provide examples for each step of the method, or provided examples that were not specific to this program. To get full credit the process had to be defined and specific examples, relevant to pregnancies, expectant mothers, etc. needed to be provided.

Definition – Three categories defined by AHRQ to measure quality

- i. Structure – the resources and organizational arrangements are in place to deliver care
 1. Examples:
 - a. Number and experience of nurses available per patient
 - b. Percentage of physicians who are board certified
 - c. Actual presence of quality improvement programs
 - ii. Process – Appropriate physician and other provider activities are carried out to deliver care
 2. Examples:
 - a. Percentage of females enrolled in the program
 - b. Percentage of patients with a NICU visit
 - iii. Outcomes – The results of physician and other provider activities
 3. Examples:
 - a. Decrease in cost of pregnancy admission
 - b. ROI
 - c. ALOS decrease

(c) Evaluate whether or not the program was successful based on the following statistics. Justify your answer. Show your work.

 - (i) Participation
 - (ii) Return on investment (ROI)
 - (iii) Neonatal hospital admission rate
 - (iv) Average cost per admission

13. Continued

Commentary on Question:

Few candidates accurately calculated all four statistics. The most commonly missed statistic was ROI, as candidates would vary from the equation described in the syllabus reading. While the goal of the question was to have each individual statistic compared to its respective benchmark (to determine success), if candidates compared all four statistics together, and provided good reasoning, credit was given.

- (i) Participation
 - Participation Rate = Members Participating/Total Members
 - = $12,500/120,000 = 10.42\%$
 - Benchmark = 10%
 - Successful since $10.42\% > 10\%$

- (ii) ROI
 - Savings = Costs avoided in program year = Admits * Prior year Admit costs – Admits * current year admit costs
 - $120,000,000 - 110,000,000 = 10,000,000$
 - ROI = Savings/Costs = $10,000,000/8,000,000 = 1.25$
 - Benchmark = 1.0
 - $1.25 > 1$ so successful

- (iii) NICU Rate
 - Current NICU Admission Rate = $110/20,000 = .55\%$
 - Benchmark = 0.5%
 - Not successful since $.55\% > .5\%$

- (iv) Average Cost per Admission
 - $110,000,000/20,000 = \$5,500$
 - Benchmark = \$4,500
 - Not successful since $\$5,500 > \$4,500$

14. Learning Objectives:

4. The candidate will understand how to apply principles of pricing, benefit design and funding to an underwriting situation.

Learning Outcomes:

(4c) Understand, evaluate and apply various risk adjustment mechanisms.

(4d) Recommends strategies for minimizing or properly pricing for risks.

Sources:

Group Insurance, Bluhm, 6th Edition, CH 28.

Commentary on Question:

This question was trying to address some issues that an actuary is likely to encounter in practice with flexible plans. The question was also trying to test knowledge that an actuary should know about monitoring experience of such plans.

Solution:

- (a) List the advantages and disadvantages of a multiple-choice environment over a single-choice environment.

Commentary on Question:

In order to get the maximum points allowed on this question, candidates must have listed the advantages and disadvantages of the model solution.

Most candidates did well in that part of the question.

Candidates that did not score well in that question are those that did not list the advantages and disadvantages of the model solution.

Advantages:

- Introducing a new option.
- Taking advantage of favorable selection.
- Encouraging consumerism.
- Implementing a defined contribution concept.
- Choice for a sake of choice.

Disadvantages:

- Individuals use the opportunity to choose as a way to minimize their out-of-pocket costs, at the expense of the insurer or employer (this is the cost of selection).
- There is less economy of scale and less negotiating leverage with healthcare providers due to fragmentation of a group.
- Communication is generally more complex, and administrative expenses are greater.

14. Continued

- (b) List ways ABC could offer choice to its employees.

Commentary on Question:

In order to get the maximum points allowed on this question, candidates must have listed all items of the model solution.

The very vast majority of candidates have got all grading points for that part of the question.

Candidates that did not score well in that question are those that did not list the items of the modal solution.

- Choice between medical coverage and no coverage
- Choice based on member cost-sharing
- Choice based on provider networks or medical management
- Choice among insurers
- Optional riders added to core coverage
- Choice by each family member
- Choice between consumer-directed plans and traditional plans

- (c) Calculate the composite relative health status. Show your work.

Commentary on Question:

In order to get the maximum points allowed in this question, the candidates must have got the correct calculations.

Many candidates did score well in that part of the question.

Candidates that did not score well in that question are those that did not calculate correctly the composite relative health status.

Plan	Total Monthly Premiums	Total Cost	Relative Health Status
Low	$500 \times \$500 = \$250,000$	$\$250,000 \times 50\% = \$125,000$	50%
Mid	$300 \times \$600 = \$180,000$	$\$180,000 \times 100\% = \$180,000$	100%
High	$200 \times \$750 = \$150,000$	$\$150,000 \times 225\% = \$337,500$	225%
Total	\$580,000	\$642,500	$\$642,500 \div \$580,000 = 110.8\%$

- (d) Calculate the year 2 relative health status for each plan and in total. Show your work.

Commentary on Question:

In order to get the maximum points allowed in this question, the candidates must have got the correct calculations.

Many candidates did score well in that part of the question.

Candidates that did not score well in that question are those that did not calculate correctly the year 2 relative health status for each plan as well as in total.

14. Continued

Plan	Total Monthly Premiums	Total Cost	Relative Health Status
Low	$600 \times \$500 = \$300,000$	$(500 \times \$500 \times 50\%) + (100 \times \$500 \times 100\%) = \$175,000$	$\$175,000 \div \$300,000 = 58.3\%$
Mid	$300 \times \$600 = \$180,000$	$(200 \times \$600 \times 100\%) + (100 \times \$600 \times 225\%) = \$255,000$	$\$255,000 \div \$180,000 = 141.7\%$
High	$100 \times \$750 = \$75,000$	$100 \times \$750 \times 225\% = \$168,750$	$\$168,750 \div \$75,000 = 225.0\%$
Total	\$555,000	\$598,750	$\$598,750 \div \$555,000 = 107.9\%$

- (e) Describe techniques an underwriter can use to manage selection and its financial impact in a multiple-choice environment.

Commentary on Question:

In order to get the maximum points allowed on this question, candidates must have listed the major items of the model solution.

Many candidates did well in that part of the question.

Candidates that did not score well in that question are those that did not list the major items of the modal solution.

- Additional premium margins.
 - Employee contributions or plan design limits.
 - Choose one insurer who offers multiple choices.
 - Choose multiple insurers offering multiple choices.
 - An insurer imposes an additional minimum requirement and reserves the right to withdraw the premium quote (or requote) if the additional participation is not obtained.
 - All insurer agree to a redistribution of income among the insurers based on the health status of the employees who actually select each insurer option.
 - An insurer who expects a favorable risk mix may be willing to waive some participation rules to take advantage of a situation
- (f) Recommend a program for ABC to monitor experience based on their employees' choice. Justify your answer.

Commentary on Question:

In order to get points in this question, the candidate must have recommended a program to monitor experience and justify its rationale.

Some candidates did score well in that part of the question.

Candidates that did score well are those that did recommend one program to monitor experience and explain its rationale.

14. Continued

- Monitor actual-to-expected selection patterns and health status in each option, segmented by anticipated selection variables. This will allow ABC to understand what is causing any difference in actual costs and will allow ABC to use this to adjust premiums.
- Compare loss ratios by option. This will help ABC to understand if employee choice of a certain option might cause a higher cost difference than expected.
- Compare how health status in each option changes over time. This will help ABC to react before an antiselection spiral starts. ABC will then be able to make changes to contributions based on this information.
- Monitoring of competitors, marketplace pricing and underwriting practices to the extent reliable public information is available. This will allow ABC to compare its plan to plans offered by its competitors as well as employee costs of each option. This will also allow ABC to assess what is common to offer to employees in its industry.