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Questions 2 – 8 pertain to the Case Study

2. (9 points) You have been asked to analyze the claim experience for Wonderful Life in Tables MM-6a and MM-6b of the case study.

(a) Describe the impact on trend of company-specific care management initiatives.

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<td>25%</td>
<td>75% 25%</td>
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<td>50%</td>
<td>50% 50%</td>
</tr>
<tr>
<td>3</td>
<td>75%</td>
<td>10% 90%</td>
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</tbody>
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You are also given the following additional information:

- 7 years of claims history for one individual

<table>
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<tr>
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<tbody>
<tr>
<td>1</td>
<td>-</td>
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<tr>
<td>2</td>
<td>500</td>
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<tr>
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<tr>
<td>5</td>
<td>1,000</td>
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<tr>
<td>6</td>
<td>1,000</td>
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<tr>
<td>7</td>
<td>-</td>
</tr>
</tbody>
</table>

- Expected Value of the Process Variance = 133,581
- Target Loss Ratio = 80%
- Ignore the impact of trend

(a) Calculate the expected gross premium for this product. Show your work.

(b) Calculate the credibility. Show your work.

(c) Calculate the credibility weighted total premium for this individual. Show your work.
12. (4 points) ABC Company is considering acquiring ITSA, a managed care organization that services a number of major cities. You are the head of the claims department in the Major Medical division and you’ve been asked to evaluate claims operations at ITSA, including systems used to process the claims.

(a) Describe measures of claims quality.
(b) Outline basic steps you would expect to find in the ITSA claims adjudication process.
(c) Describe specific internal data sources you should include as part of your claims review.
(d) Describe issues that should be considered in performing an audit.

13. (4 points) You have been asked by your client at BEST HMO to create a presentation that will enable her to convince management to establish new methods for physician compensation.

(a) Describe traditional and new, alternative forms of capitation and their suitability for specific types of physicians.
(b) Describe traditional and new, alternative forms of incentive plans.
14. (5 points) You are a consultant hired by TeethFerry.com, a company hoping to use the Internet to market dental plans. They have created a marketing communication to be sent to companies that do not currently have a benefits program.

From: TeethFerry.com  
Subject: Quality Dental Coverage with 3 Months at No Charge

Affordable Dental Coverage

- save up to 60% on all your dental needs
- choose from 15 of the finest nationwide and regional plans
- pay premiums, submit claims, get the latest information, all on your desktop!

(a) List the general types of delivery systems for dental plans and their major features.

(b) Outline plan provisions and claim practices that dental insurers can use to limit cost and anti-selection.

(c) Describe challenges that e-commerce companies must overcome to be successful.
15. (4 points) The Bedford Group is exploring alternatives to acute inpatient care. A study by Bedford’s Medical Director indicates the MCO might benefit from a program to encourage patients with conditions requiring less intensive treatment to be moved from acute care facilities to a Skilled Nursing Facility (SNF). The initiative would transfer acute care patients to the SNF at Hospital ID1 and is expected to result in the following changes:

<table>
<thead>
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<th>Hospital ID</th>
<th>Reduction in Medical Acute Days (%)</th>
<th>Reduction in Surgical Acute Days (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID1</td>
<td>1.0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>ID2</td>
<td>2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>ID3</td>
<td>1.5%</td>
<td>1.0%</td>
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(a) Assuming the above reductions are realized, and based on Table MC-2, calculate the expected change in medical, surgical and SNF days/1000 and the change in medical/surgical length of stay in 2002 for the MCO. Show your work.

(b) Describe behavioral health channeling mechanisms available to direct individuals to the appropriate type of care.
16. *(4 points)* You are a consulting actuary for Hospital ID1. The Bedford Group is proposing to capitate Hospital ID1 for inpatient hospital services incurred by its members. You have been asked by Hospital ID1 to develop capitation targets for negotiations with the Bedford Group.

In addition to information provided in Tables MC-2 and MC-7, you have made the following assumptions:

- administrative expenses: 8% of capitation
- risk charges: 6% of capitation
- the 2002 hospital experience is credible

(a) Using an actuarial cost model based on your current provider contract with Bedford Group, calculate the base pmpm cost. Show your work.

(b) List key assumptions that should be considered when determining the utilization, average cost and pmpm targets in an actuarial cost model.

(c) Describe additional considerations that Hospital ID1 should consider when evaluating a capitation proposal.
17. (12 points) You are an actuary for the Bedford Group. In a meeting with the VP of Provider Contracting, you are told that a large physician specialty group that provides 15% of all specialty services has left IPA1 and joined IPA2.

Assume that:

- Physician risk share arrangements for 2002 and 2003 do not change.
- For PCP’s in IPA1, the 2002 actual claim cost equals the target claim cost.

Using Tables MC-5, MC-7, and MC-8, and based on 2002 experience:

(a) Adjust the 2003 risk share arrangements for IPA1 and IPA2 to reflect the provider change. Show your work.

(b) Calculate the expected 2003 payments to IPA1 and IPA2 based on the specialty group shift to IPA2, including any risk share adjustments and ignoring trend. Show your work.

(c) Excluding any risk share arrangements, calculate the new percent of Medicare reimbursement to IPA2 to maintain pmpm costs for the Bedford Group at the 2002 level. Show your work.

(d) In case IPA2 does not accept a change to their Medicare reimbursement level, you would consider offering a specialty capitation arrangement. Discuss the advantages and disadvantages of a specialty capitation arrangement.
18. (6 points) You are the pricing actuary for the Bedford Group and have been asked by the Marketing Director to develop new pharmacy premiums. She is interested in having a more competitively priced product. Your CFO has indicated that your profit goal is 2.5% of premium.

Assume the HMO and POS plans have identical plan formularies with the following copays:

- Generic $10
- Formulary Brand $20
- Non-Formulary $40

Using 2003 budgeted experience from Table MC-4, information provided on Table MC-7, and assuming AWP = $80, then:

(a) Calculate the premium if Bedford:
   (i) retains all rebates.
   (ii) uses all rebates to reduce premiums.

(b) Describe the purposes of rebates, issues surrounding rebates, and actions which can be taken to increase rebates.
19. **(5 points)** You are a consulting actuary for an HMO that wishes to control utilization, yet maintain high quality of care.

(a) Describe traditional approaches to quality assessment.

(b) Review regulatory issues relating to quality assurance and their impact on HMOs.

(c) Describe managed care methods used to control medical utilization and the types of services impacted by each method.

(d) Review state regulations that may limit an HMOs ability to manage utilization and costs.

20. **(4 points)** You serve on a professional task force advising a State Senator on health insurance reform issues. New health reform legislation is being proposed which is intended to meet the following objectives:

- Promote a reduction in the working uninsured population
- Promote job mobility
- Facilitate the ability of individuals and small employers to compare insurance policies offered by different health carriers
- Reduce variation in, and volatility of premium rates charged to different groups

(a) Describe key recommendations regarding the above objectives to be included in reform legislation.

(b) The legislature is also reviewing risk adjustment mechanisms for Medicaid HMO plans. Compare and contrast methods of risk adjustment and recommend a method to be included in the legislation. Justify your recommendation.
21. (5 points) You are a consulting actuary retained by Capitalized Health Plan, a licensed HMO in a state that has passed the NAIC Risk-Based Capital For Health Organizations Model Act (RBC Model). The CFO is unfamiliar with risk-based capital and has asked you to make a presentation to educate him and his staff. In your research, you have extracted the following information from Capitalized HP’s 2002 Statutory Annual Statement:

Assets (Non-Affiliated)
- U.S. Government Bonds $ 4.6 million
- Class 1 Bonds $ 9.8 million
- Class 1 Preferred Stock $ 2.2 million
- Common Stock $ 2.0 million

Underwriting Revenue/Earned Premium
- Comprehensive Medical & Hospital $45.0 million
- Dental $16.3 million
- ASO Fees $ 5.0 million

Claim Payments under:
- capitation (paid directly to providers) $11.0 million
- professional fee schedule $22.7 million
- hospital case rates $10.2 million
- discounted charges $ 8.2 million

Underwritten business administrative expenses $ 2.1 million
(excludes premium taxes & commissions)

(a) Describe regulatory implications of RBC outcomes.
(b) Describe other uses of RBC measurements.
(c) Review the variables and formula for health RBC after covariance as used in the RBC Model.
(d) Recommend ways to reduce the amount of RBC that Capitalized HP must hold.

**END OF EXAMINATION**

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<td>90%</td>
</tr>
</tbody>
</table>

You are also given the following additional information:

- 7 years of claims history for one individual

<table>
<thead>
<tr>
<th>Year</th>
<th>Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>500</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>1,000</td>
</tr>
<tr>
<td>6</td>
<td>1,000</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
</tr>
</tbody>
</table>

- Expected Value of the Process Variance = 133,581
- Target Loss Ratio = 80%
- Ignore the impact of trend

(a) Calculate the expected gross premium for this product. Show your work.

(b) Calculate the credibility. Show your work.

(c) Calculate the credibility weighted total premium for this individual. Show your work.
12. *(4 points)* ABC Company is considering acquiring ITSA, a managed care organization that services a number of major cities. You are the head of the claims department in the Major Medical division and you’ve been asked to evaluate claims operations at ITSA, including systems used to process the claims.

(a) Describe measures of claims quality.

(b) Outline basic steps you would expect to find in the ITSA claims adjudication process.

(c) Describe specific internal data sources you should include as part of your claims review.

(d) Describe issues that should be considered in performing an audit.

13. *(4 points)* You have been asked by your client at BEST HMO to create a presentation that will enable her to convince management to establish new methods for physician compensation.

(a) Describe traditional and new, alternative forms of capitation and their suitability for specific types of physicians.

(b) Describe traditional and new, alternative forms of incentive plans.
14. (5 points) You are a consultant hired by TeethFerry.com, a company hoping to use the Internet to market dental plans. They have created a marketing communication to be sent to companies that do not currently have a benefits program.

From: TeethFerry.com
Subject: Quality Dental Coverage with 3 Months at No Charge

Affordable Dental Coverage

- save up to 60% on all your dental needs
- choose from 15 of the finest nationwide and regional plans
- pay premiums, submit claims, get the latest information, all on your desktop!

(a) List the general types of delivery systems for dental plans and their major features.

(b) Outline plan provisions and claim practices that dental insurers can use to limit cost and anti-selection.

(c) Describe challenges that e-commerce companies must overcome to be successful.

15. (4 points) You are the health actuary for XYZ Life Insurance Company. XYZ has been marketing Individual Long Term Care insurance (ILTCI) for several years, but the product has not performed well.

A large national employer has approached XYZ, expressing a desire to offer its employees a Group Long Term Care insurance (GLTCI) product which XYZ does not currently offer.

XYZ’s executive management has expressed concern about developing a GLTCI product given the company’s poor experience with their ILTCI product. You have been asked to:

(a) Explain difficulties experienced by the industry in pricing and reserving early versions of long term care products.

(b) Describe differences in plan design and pricing considerations between GLTCI and ILTCI.
16. *(5 points)* You are the Chief Actuary of Wonderful Life, which offers Individual Disability Insurance (IDI) on a Noncancellable and Guaranteed Renewable basis. Wonderful Life has not dramatically changed the IDI product since the 80’s. Your President is concerned about the volatility of the product and recent IDI experience in particular. He has asked you to provide recommendations to improve the performance of the IDI block.

In addition to the information provided in Tables GLD-3b, GLD-6b, and GLD-8b, the following assumptions are provided:

- Benefit period is 3 years
- All qualified benefits are paid at end of year
- The interest rate is 5.0%, and it is the same rate used in developing original manual rates
- Annualized termination rates can be used
- The IDI block experience is fully credible
- All policies were rated based on manual rates developed from the above table assumptions.

(a) Outline general actions which might be taken to improve profit and/or reduce volatility, in light of historical changes in the IDI industry.

(b) Recent performance indicators show actual-to-expected incidence rate is 120% across all age bands, and actual-to-expected termination is 110% in annualized claim termination rates. Calculate the manual rate for a male age 42 becoming disabled at age 42. Show your work.
17. (8 points) You are the consulting actuary for Company XYZ, which implemented a flexible benefits plan two years ago. Expenses and taxes are 15% of claim costs and are paid by Company XYZ.

You are provided the following data for the most recent plan year:

<table>
<thead>
<tr>
<th>Option</th>
<th>Dependent Status</th>
<th>Participation</th>
<th>Price</th>
<th>Average Claims Cost</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No Dependents</td>
<td>175</td>
<td>$290</td>
<td>$175</td>
<td>$400</td>
</tr>
<tr>
<td>A</td>
<td>With Dependents</td>
<td>75</td>
<td>$575</td>
<td>$350</td>
<td>$700</td>
</tr>
<tr>
<td>B</td>
<td>No Dependents</td>
<td>150</td>
<td>$465</td>
<td>$420</td>
<td>$400</td>
</tr>
<tr>
<td>B</td>
<td>With Dependents</td>
<td>200</td>
<td>$1,045</td>
<td>$945</td>
<td>$700</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>600</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Calculate the employer and employee cost for each combination of option and dependent status, and in total for the medical benefits. Show your work.

(b) Company XYZ is considering a change to its credit structure for the upcoming year so that all employees receive the same credit amount. Assume a trend rate of 10% for claim costs, employee costs, and employee prices. Calculate the resulting credits for next year for the family credit and the average credit approaches. Show your work.

(c) Determine winners and losers under each option and dependent status for the family credit and average credit approaches. Show your work.

(d) Outline considerations you would present to Company XYZ to help them make a decision regarding which credit structure to implement.

18. (6 points) You are the product development actuary for Yancanuck Insurance, a multinational insurer operating in the US and Canada. You have been asked to write a report on LTC in the US and Canada. The report should address the topics of underwriting, plan design, taxes, benefit triggers, and market receptivity.

Compare and contrast Group and Individual products in the two countries addressing the above topics.
19. *(6 points)* ABC Life Company sells a supplemental cancer product through mass mailings targeted at professional association groups. The majority of the products pay a fixed daily amount, subject to an annual limit.

You have been asked to revamp the product offerings to meet management profit targets of 10%. Profits are defined as return on total capital requirements including the use and release of free statutory surplus. The previous generations of cancer products were priced at an 8% profit target.

Actual financial results and pricing parameters, presented below, have produced different profit patterns compared to the test launch.

You are concerned about performance against several assumptions:

(i) morbidity and persistency
(ii) fixed versus variable expenses
(iii) overall profitability

Evaluate performance with regard to these assumptions and identify factors which may have contributed to these financial results.

**Results of Direct Marketing Launch**

<table>
<thead>
<tr>
<th></th>
<th>Test</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profit Target</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>PV gross premiums</td>
<td>$115,494</td>
<td>$711,552</td>
</tr>
<tr>
<td>PV incurred claims</td>
<td>$68,948</td>
<td>$430,517</td>
</tr>
<tr>
<td>PV ongoing admin expenses</td>
<td>$24,122</td>
<td>$197,731</td>
</tr>
<tr>
<td>PV commissions</td>
<td>$3,416</td>
<td>$37,517</td>
</tr>
<tr>
<td>Initial marketing expenses</td>
<td>$7,458</td>
<td>$86,569</td>
</tr>
<tr>
<td>PV profit stream of free earnings released</td>
<td>$4,173</td>
<td>($74,147)</td>
</tr>
</tbody>
</table>

(see next page)
19. Continued

**Pricing Parameters**

<table>
<thead>
<tr>
<th></th>
<th>Test</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total mailings</td>
<td>4,000</td>
<td>50,000</td>
</tr>
<tr>
<td>Cost per mailing</td>
<td>$0.75</td>
<td>$1.00</td>
</tr>
<tr>
<td>Response rate (from mailings)</td>
<td>2.25%</td>
<td>1.75%</td>
</tr>
<tr>
<td>Not-taken rate (from those who responded)</td>
<td>10.00%</td>
<td>15.00%</td>
</tr>
</tbody>
</table>

Administration expenses

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% premium</td>
<td>6.0%</td>
<td>7.5%</td>
</tr>
<tr>
<td>per policy per quarter</td>
<td>$13.00</td>
<td>$16.50</td>
</tr>
<tr>
<td>Overhead as % premium</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Risk discount rates tested: 10% per year

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Quarterly Premium</td>
<td>$85.20</td>
<td>$79.00</td>
</tr>
<tr>
<td>Average age (years)</td>
<td>39.6</td>
<td>36.8</td>
</tr>
</tbody>
</table>

Commissions, % of premium

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>First year</td>
<td>35%</td>
<td>45%</td>
</tr>
<tr>
<td>Renewal</td>
<td>5%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Lapse rates by policy year

<table>
<thead>
<tr>
<th>Policy Year</th>
<th>Test</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.35</td>
<td>0.45</td>
</tr>
<tr>
<td>2</td>
<td>0.20</td>
<td>0.25</td>
</tr>
<tr>
<td>3</td>
<td>0.10</td>
<td>0.20</td>
</tr>
<tr>
<td>4</td>
<td>0.08</td>
<td>0.10</td>
</tr>
<tr>
<td>5+</td>
<td>0.03</td>
<td>0.05</td>
</tr>
</tbody>
</table>
20.  (5 points) You are an underwriter for a stop loss carrier. You have received a request for a quote for a 12/15 plan with a $50,000 specific deductible, 125% aggregate attachment point and 95% minimum attachment point.

You have been provided the following data:

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Losses PEPM</td>
<td>$380.00</td>
<td>$400.00</td>
</tr>
<tr>
<td>Expected Certificate Months</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td>Actual Certificate Months</td>
<td>5,900</td>
<td>5,600</td>
</tr>
<tr>
<td>Total Losses</td>
<td>$2,800,000</td>
<td>$3,500,000</td>
</tr>
</tbody>
</table>

Total Covered Losses Exceeding Specific Stop Loss

<table>
<thead>
<tr>
<th>Incurred Dates</th>
<th>2001</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Person 1</td>
<td>1/1/2001-1/20/2001</td>
<td>$60,000</td>
</tr>
<tr>
<td>b) Person 2</td>
<td>9/1/2001-10/15/2001</td>
<td>$80,000</td>
</tr>
<tr>
<td>c) Person 3</td>
<td>12/1/2002-open</td>
<td>$0</td>
</tr>
<tr>
<td>d) Person 4</td>
<td>12/1/2001-12/31/2001; 1/1/2002-2/15/2002</td>
<td>$150,000</td>
</tr>
</tbody>
</table>

(a) Calculate stop loss claims for 2001 and 2002 for the requested plan. Show your work.

(b) Calculate stop loss claims for 2001 and 2002 using a $100,000 aggregating specific stop loss deductible and no aggregate stop loss. Show your work.

(c) Explain the rationale for use of aggregating specific stop loss deductibles.

(d) Evaluate the impact of each of the large claims above in developing a quote for 2003.
21. (6 points) You are a consultant representing RGS Industries, a large employer that is implementing a Group Long-Term Disability (GLTD) benefit for its employees. RGS Industries currently self-insures its medical benefits. The firm’s management is considering the possibility of self-insuring the GLTD benefit.

(a) (2 points) Explain benefit provisions used to control costs in a GLTD plan.

(b) (1 point) List pros and cons of self-insuring the plan.

(c) (2 points) Describe the types of reinsurance that are available for a GLTD plan and considerations in using reinsurance for a self-funded plan.

(d) (1 point) Review FAS 112 implications when implementing a GLTD plan.

**END OF EXAMINATION**

AFTERNOON SESSION