

GH Track Sample CBT Questions and Solutions

NOTE: The solutions presented here are not the full model solutions as published. There is no commentary and where there is more than one correct response, only one such response is presented.

GHDBA Sample CBT Question

1. (7 points)

(a) (3 points) Create a table that describes the various types of antiselection. For each type of antiselection, the table should include:

- Definition
- Example
- Ways in which it can be controlled

ANSWER:

You are given the following for DEF and its current plan:

Member Health Status	Number of Members	Annual Claim Cost per Member	Annual Premium per Member	Annual Deductible
Level 1	7,750	\$1,000	\$3,500	\$4,000
Level 2	2,000	\$10,000	\$3,500	\$4,000
Level 3	250	\$55,000	\$3,500	\$4,000

Company DEF is adding a second plan which has an \$8,000 deductible.

- Level 1 members are expected to move to the \$8,000 deductible plan
- The rest of the members are expected to stay with the \$4,000 deductible plan
- The expected savings of an average member moving to an \$8,000 deductible is 10% of premium
- Level 3 members are expected to return to Level 1 next year
- 250 of the Level 1 members will have a Level 3 health event next year
- Level 2 members will not experience a change in health status
- Members are faced with a 20% rate increase next year
- Claims cost trend is 0%

(b) (3 points) Calculate:

- (i) The amount of premium leakage per member
- (ii) The buy-down effect per member

Show your work.

The response for this part is to be provided in the Excel spreadsheet.

1. Continued

Your manager is challenging your results. She does not believe members can predict their costs in future periods.

- (c) (1 point) Describe the causes of premium leakage and buy-down effect.

ANSWER:

GHDPA Sample CBT Solution

1. (7 points)

(a) (3 points) Create a table that describes the various types of antiselection. For each type of antiselection, the table should include:

- Definition
- Example
- Ways in which it can be controlled

ANSWER:			
	Definition	Example	Ways to control
External	Antiselection that occurs when an insured seeks health coverage for the first time	An uninsured individual enrolls in health insurance in anticipation of diagnosis of a significant condition (e.g. cancer)	Individual underwriting, pre-existing condition limitations, minimum participation (for group coverage)
Internal	Antiselection that occurs within an in-force block of business	Healthier members buy-down coverage following a rate increase	Requiring additional underwriting for members looking to increase coverage; limiting differences across plan options
Durational	Antiselection driven by higher risk individuals being less likely to lapse, especially over multiple policy periods	Following a large rate increase, there is a large increase in lapses of healthy members, but almost no lapse of unhealthy members	Mandating coverage; introducing premium stabilization programs or high-risk pools

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Show your work.

The response for this part is to be provided in the Excel spreadsheet.

1. Continued

Your manager is challenging your results. She does not believe members can predict their costs in future periods.

- (c) (1 point) Describe the causes of premium leakage and buy-down effect.

ANSWER:

Premium leakage – Caused by healthier members being more likely to buy-down coverage and reducing overall premiums.

Buy-down effect – Caused by members being sensitive to overall price/affordability and switching to leaner/lower cost plans following renewal increases.

GHDPC Sample CBT Question

(12 points) You have been retained by Zorin Industries to review its benefits strategy. Zorin is considering introducing a private exchange for its portfolio companies.

- (a) (2 points) List the advantages and disadvantages of a private exchange for Zorin.

ANSWER:

- (b) (2 points) Describe the differences between funding models and carrier models in a private exchange.

ANSWER:

- (c) (2 points) Recommend a private exchange model for Zorin. Justify your response.

ANSWER:

Zorin has finalized its acquisition of A View to Kill Travel Agency (VTK). You are given:

- Exhibit 2

- (d) (2 points) Identify winners and losers from the perspective of VTK employees. Justify your response.

ANSWER:

Zorin is considering transitioning its health benefits for future acquisitions to a defined contribution approach with a \$400 subsidy per employee per month. You are given:

- Exhibit 1

- (e) (2 points) Calculate the impact to employees if contributions are changed to a defined contribution approach. Show your work.

ANSWER:

- (f) (2 points) Identify and describe areas of adverse selection Zorin will face when changing to a defined contribution approach.

ANSWER:

GHDPG Sample CBT Solution

(12 points) You have been retained by Zorin Industries to review its benefits strategy. Zorin is considering introducing a private exchange for its portfolio companies.

- (a) (2 points) List the advantages and disadvantages of a private exchange for Zorin.

ANSWER:

Advantages:

- Increased employee choice
- Cost-savings potential from increased competition
- Increased consumerism from members buying the appropriate coverage
- Improved cost transparency

Disadvantages:

- Additional expenses for exchange operator
- Less control over plan designs, clinical management, etc.
- Defined contributions should increase over time
- Member concerns/challenges – including loss of plan sponsor support, less generous benefits, fear of change, too many options

- (b) (2 points) Describe the differences between funding models and carrier models in a private exchange.

ANSWER:

Funding models – fully insured transfers risk to insurer(s); self insured keeps risk with plan sponsor and may allow additional customization

Carrier models – single carrier tends to have higher costs and few options for employees; multi-carrier leverages competition to provide more employee choice and value

- (c) (2 points) Recommend a private exchange model for Zorin. Justify your response.

ANSWER:

I recommend Zorin use a fully-insured, multi-carrier model. This best meets the following Zorin objectives:

- Lower cost (reduces costs due to best-in-market cost efficiencies)
- Avoid unnecessary risk (transfers financial risk to the insurers)
- Offering lots of employee options (employees can choose from multiple plans from multiple carriers – supporting various combinations of cost/benefit/network/utilization management)

Zorin has finalized its acquisition of A View to Kill Travel Agency (VTK). You are given:

- Exhibit 2

(d) (2 points) Identify winners and losers from the perspective of VTK employees. Justify your response.

ANSWER:
 Winners – singles using the CDH; most will experience lower total costs
 Losers – singles using the PPO since their costs will increase. Families also lose since their total costs increase for all plan options.

Zorin is considering transitioning its health benefits for future acquisitions to a defined contribution approach with a \$400 subsidy per employee per month. You are given:

- Exhibit 1

(e) (2 points) Calculate the impact to employees if contributions are changed to a defined contribution approach. Show your work.

ANSWER:					
Plan	Tier	PEPM Premium (from Exhibit 1)	Employee Cost (Premium - \$400)	Current Employee Share of Premium (20%)	Employee impact (New - Current)
CDHP	Employee	\$300	\$0	\$60	0-60 = \$60 savings
CDHP	EE+Spouse	600	200	120	80 increase
CDHP	EE+Children	400	0	80	80 savings
CDHP	EE+Family	1000	600	200	400 increase
PPO	Employee	400	0	80	80 savings
PPO	EE+Spouse	800	400	160	240 increase
PPO	EE+Children	600	200	120	80 increase
PPO	EE+Family	1500	1100	300	800 increase

(f) (2 points) Identify and describe areas of adverse selection Zorin will face when changing to a defined contribution approach.

ANSWER:

- Healthy members will switch to the CDHP, leaving unhealthy members in the PPO and prompting PPO premiums to increase over time

- Employees covering spouses may seek dependent coverage elsewhere – remaining dependents could be higher risk
- Employees with access to other coverage are likely to enroll in the employee-only coverage – which could impact overall plan costs/premiums
- If the defined contribution amounts do not increase enough over time, employees will experience higher costs especially for the richer plans. This will prompt healthier members to buy-down their coverage, leaving only the sickest members in the richest plan.

GHSPC Sample CBT Question

- 1.** (7 points) You are given the following information representing the utilization of a population in a disease management (DM) program.

Year	Units per 1000
Baseline	100
Intervention	97

- Unit cost for the baseline year is \$7,000.
 - Utilization trend from the baseline year to the intervention year is 3%.
 - Unit cost trend from the baseline year to the intervention year is 8%.
- (a) (2 points) Calculate the per member per month (PMPM) effect of the DM program. Show your work.

The response for this part is to be provided in the Excel spreadsheet.

You are given the following information on a different population.

Risk Cohort	Baseline Prevalence	Baseline Cost per member per year (PMPY)
Low Risk	80%	\$600
High Risk	20%	\$6,000

33% of the high-risk members remain as high-risk members in the next (intervention) year, while the rest of the high-risk members transition into the low-risk status.

85% of the low-risk members remain as low-risk members into the next (intervention) year, while the rest of the low-risk members transition into the high-risk status.

- (b) (2 points) Calculate the PMPY cost trend. Show your work.

The response for this part is to be provided in the Excel spreadsheet.

1. GHSPC Continued

You are given the following information:

Baseline Cost PMPM	\$100
Trend (unadjusted)	6%
Baseline Risk Score	1.01
Trend (adjusted for change in population risk)	4%

(c) (1 point) Calculate the risk score trend. Show your work.

The response for this part is to be provided in the Excel spreadsheet.

(d) (2 points) Critique the following statements. Justify your responses.

- (i) Reduction in units per 1,000 helps convince DM program purchasers of the efficiency of the program, and satisfies the needs of most clients who need savings.
- (ii) Equivalence requires stability in the underlying number of member between periods, and is a basic necessity for evaluating a disease management program.
- (iii) If there is a change not due to the DM intervention in the chronic population, one can use risk adjustment to separate the effect of the intervention from other chronic population changes.
- (iv) The trend used to adjust from the baseline year to the intervention year for a chronic population should be net of the effect any population changes.

ANSWER:

GHSPC Sample CBT Solution

1. (7 points) You are given the following information representing the utilization of a population in a disease management (DM) program.

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Intervention	97

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The response for this part is to be provided in the Excel spreadsheet.

- (d) (2 points) Critique the following statements. Justify your responses.

- (i) Reduction in units per 1,000 helps convince DM program purchasers of the efficiency of the program, and satisfies the needs of most clients who need savings.
- (ii) Equivalence requires stability in the underlying number of members between periods, and is a basic necessity for evaluating a disease management program.
- (iii) If there is a change not due to the DM intervention in the chronic population, one can use risk adjustment to separate the effect of the intervention from other chronic population changes.
- (iv) The trend used to adjust from the baseline year to the intervention year for a chronic population should be net of the effect any population changes.

ANSWER:

- (i) False – Reduction in units per 1,000 helps convince disease management program purchasers of the efficiency of the program, BUT it does not satisfy the needs of most clients who need savings.
- (ii) False – Equivalence is a basic necessity for evaluating a disease management program, BUT it does not require stability in the underlying number of members between periods.
- (iii) False – If there is a change not due to the DM intervention in the chronic population, it may be DIFFICULT, if not impossible, to use risk adjustment to separate the effect of the intervention from other chronic population changes.
- (iv) True – The trend used to adjust from the baseline year to the intervention year for a chronic population should INDEED be net of the effect of any population changes.

GHFVA Sample CBT Question

1. (8 points) Your insurance company is looking to sell a subsidiary.

(a) (2 points) Describe each of the components of an actuarial appraisal:

- Adjusted book value
- Value of in force business, and
- Value of future business capacity.

ANSWER:

(b) (1 point) Describe how an embedded value analysis can be used to support an actuarial appraisal.

ANSWER:

You are given the following information:

- The embedded value of the subsidiary is \$315 million.
- The projected actuarial value of new business for the subsidiary next year is \$15 million.
- The number of years for new business assumed for the actuarial appraisal analysis is five years.
- The projected growth rate of new business is 8%.
- The risk discount rate being used for the appraisal is 12%.

(c) (2 points) Calculate the actuarial appraisal of the subsidiary. Show your work.

The response for this part is to be provided in the Excel spreadsheet.

Your company is considering using a reinsurance mechanism to sell the subsidiary.

(d) (3 points)

- (1 point) List the primary reinsurance mechanisms available.
- (2 points) Describe advantages and disadvantages of the reinsurance mechanisms listed in part (i).

ANSWER:

GHFVA Sample CBT Solution

1. (8 points) Your insurance company is looking to sell a subsidiary.

(a) (2 points) Describe each of the components of an actuarial appraisal:

- Adjusted book value
- Value of in force business, and
- Value of future business capacity.

ANSWER:

Adjusted Book Value (ABV)

- Equal to the net worth of the business (statutory assets less statutory liabilities)
- Certain adjustments are typically reflected for the economic values of certain miscellaneous assets or liabilities that are not captured elsewhere in the valuation of the in force business. For example, the asset valuation reserve is typically included in the ABV.

Value of Inforce Business

- Present value of future profits from business that is currently on the books as of the valuation date.
- Typically an adjustment is made to reflect the opportunity cost of maintaining capital in the company to support the in force business in order to meet regulatory and management requirements

Value of Future Business Capacity

- Present value of future profits from business written after the valuation date.
- Reflects the opportunity cost of capital associated with the business
- Typically calculated for a certain number of years of new issues such as 5, 10 or 20.

(b) (1 point) Describe how an embedded value analysis can be used to support an actuarial appraisal.

ANSWER:

- Examine historical data
- Make assumptions on future growth
- modify IBV and VNB based on independent assumptions about future growth
- select a multiple of modified VNB to be added to modified EV

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- (i) (1 point) List the primary reinsurance mechanisms available.
(ii) (2 points) Describe advantages and disadvantages of the reinsurance mechanisms listed in part (i).

ANSWER:

(i)

Reinsurance Mechanisms:

- Assumption Reinsurance
- Indemnity Coinsurance
- Modified Coinsurance

(ii)

Assumption Reinsurance:

- Advantage: Business is removed from selling company books (cleanest approach for ceding company)
- Disadvantage: Policy holder notification is required and many states require policyholder consent
- Disadvantage: some tax disadvantages

Indemnity Coinsurance:

- Advantage: Can be accomplished quickly with minimal disruption to policyholders
- Advantage: Requires more limited regulatory approval
- Advantage: Trust accounts may limit the credit exposure to the buyer or seller
- Disadvantage: Selling company retains contractual obligation to policyholder – can be an issue if the assuming company goes under

Modified Coinsurance:

- Advantage: Assets backing the liability remain with the ceding company
- Disadvantage: Relatively uncommon