CURATED PAST EXAM ITEMS
- Questions -

GH 301 – Health Analytics and Management

Important Information:

- These curated past exam items are intended to allow candidates to focus on past SOA fellowship assessments. These items are organized by topic and learning objective with relevant learning outcomes, source materials, and candidate commentary identified. We have included items that are relevant in the new course structure, and where feasible we have made updates to questions to make them relevant.
- Where an item applies to multiple learning objectives, it has been placed under each applicable learning objective.
- Candidate solutions other than those presented in this material, if appropriate for the context, could receive full marks. For interpretation items, solutions presented in these documents are not necessarily the only valid solutions.
- Learning Outcome Statements and supporting syllabus materials may have changed since each exam was administered. New assessment items are developed from the current Learning Outcome Statements and syllabus materials. The inclusion in these curated past exam questions of material that is no longer current does not bring such material into scope for current assessments.
- Thus, while we have made our best effort and conducted multiple reviews, alignment with the current system or choice of classification may not be perfect. Candidates with questions or ideas for improvement may reach out to education@soa.org. We expect to make updates annually.

Course GH 301

Curated Past Exam Question

Learning Objective 1: Provider Contracting and Reimbursement

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1. Fall 2020 DP-A #2

GH301-100-25 – Bundled Payment
GH301-101-25 – ACO Payment Models

(*7 points*) You are a consulting actuary who has been engaged by XYZ provider group to assist with evaluating an opportunity between XYZ and Insurance Company ABC to bundle hip replacement payments.

(a) (*1 point*) List reasons why providers may choose to participate in bundled payment contracts.

ANSWER:

ABC provided the following summary of its fee for service (FFS) claims experience for services related to hip replacement surgery within the defined time period for the episode, but which were not provided by XYZ:

Claim Category	Average Unit Price	Utilization per 1,000 Patients
Emergency Department	$1,500	225
Inpatient Acute Stay	$20,000	100
Skilled Nursing Facility	$16,000	200
Long-Term Care Facility	$85,000	10

XYZ's average price for a hip replacement surgery is $35,000.

(b) (*1 point*) Calculate a bundled payment rate for hip replacement surgery that would reduce ABC's average cost by 10%. Show your work.

ANSWER:

(c) (*1 point*) Calculate the percentage reduction in utilization of related services implied by the proposed bundled payment rate. State your assumptions. Show your work.

ANSWER:

XYZ rejected ABC's bundled payment proposal. In order to continue negotiations, ABC is offering a one-sided shared savings agreement with XYZ that would pay XYZ 50% of any savings compared to a benchmark. You are given:

- The benchmark is calculated as the three-year weighted average of XYZ's historical FFS claims
- The shared savings agreement will last three years and will start in 2021
- The calculated benchmark will not change during the three-year agreement
- There are no anticipated changes to utilization, unit cost, membership, or risk during the three-year agreement period

XYZ's historical total FFS claims and the associated benchmark weights are:

Year	Benchmark Weight	Annual Spending (000's)
2018	0.05	$1,000
2019	0.35	$1,050
2020	0.60	$1,025

(d) (*3 points*) Calculate the cumulative marginal revenue that will result from XYZ performing one additional hip replacement surgery in 2020 at a unit cost of $35,000. Show your work.

ANSWER:

(e) (*1 point*) Critique the proposed shared savings agreement.

ANSWER:

2. Fall 2020 DP-A #4

Provider Payment Arrangements
Duncan 22 (Risk) – Risk Adj: ACO's

(*7 points*)

(a) (*2 points*) Compare and contrast the impact of population utilization changes to provider profits under the following payment models:

(i) Fee-for-service

(ii) Global capitation

(iii) Bundled payments

ANSWER:

(b) (*2 points*) Compare and contrast the shared savings tracks available to accountable care organizations (ACOs) under the Medicare Access and CHIP Reauthorization Act (MACRA).

ANSWER:

Spectre Accountable Care Organization (SACO) is a provider group that joined together to provide high quality care for their patients.

SACO is participating in the Medicare Shared Savings Program (MSSP). You are analyzing the shared savings arrangements with CMS.

In the table below, you can see what our costs were over the last three years:

Base Year Data			
	2018	2019	2020
Base data	$955	$1,010	$1,110

You are asked to help reconcile conflicting views within SACO on the amount of the recent performance payment.

You are given:

- 2021 is the first Performance Year
- Each Base Year's CMS-HCC Risk Score is 1.25
- Performance Year 1 Risk Score is 1.15
- Office of the Actuary (OACT) National Expenditure Trend Factor is 1.0
- Quality Performance Sharing Rate is 50%
- Quality Score Adjustment is 80%
- Minimum Savings Rate is 3.0%
- Performance Year 1 Person-Years is 10,500
- Performance Year 1 per Capita Expenditures is $11,100
- Base years receive equal weight

(c) (*3 points*) Calculate the earned performance payment to SACO. Show your work.

ANSWER:

3. Fall 2020 DP-A #6

GH301-105-25 – Mgmt. of Provider Net.

(9 *points*) You are a Medicare Advantage (MA) pricing actuary for Seniors First Health Plan (SFHP), a wholly-owned subsidiary of Plan Your Health (PYH). SFHP contracts with two distinct organizations to provide primary care services to its enrollees: Physicians First and Dynamic Doctors. Physicians First is a wholly-owned subsidiary of PYH.

(a) (*1 point*) List reasons why a health plan would enter into a contract with physician groups.

ANSWER:

(b) (*1 points*) List provider types with which a health plan contracts.

ANSWER:

You are given:

- SFHP has three in-network only MA plans: A, B and C
- Plan B is a narrow network plan that only covers primary care via Physicians First
- SFHP is changing the primary care provider (PCP) visit copay structure to steer primary care visits to Physicians First
- All plans have a PCP copay of $15 in 2020
- The following copays are proposed for 2021:

Plan	Physicians First	Dynamic Doctors
A	$10	$15
B	$0	N/A
C	$15	$15

- Annual utilization trend is 1%
- There is no induced utilization

Plan	Projected 2021 Average Enrollment	2019 Utilization per 1,000 Members	Annual Unit Cost Trend	Utilization % at Physicians First	
				2019	2021
A	30,000	4,800	1%	45%	55%
B	20,000	5,500	1%	100%	100%
C	10,000	5,000	0%	50%	50%

(c) (*3 points*) Calculate the per member per month (PMPM) financial impact of the benefit change to SFHP from 2020 to 2021. Show your work.

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

Given its market dominance, Dynamic Doctors negotiates a 3% fee schedule rate increase (to 103% of Medicare) beginning January 1, 2021. The PYH executive team asks Physicians First to accept a rate reduction to maintain budget neutrality for SFHP. Physicians First agrees under the premise that the move is good for PYH and that the copay reductions will generate more services at Physicians First.

You are given:

- SFHP has historically paid its network physician groups 100% of the Medicare fee schedule rate
- No changes to the mix and severity of primary care related services are expected
- Members only utilize one of Physicians First or Dynamic Doctors
- The contracting changes are the only expected impacts to unit cost from 2019 to 2021
- 2019 net paid cost per visit:

Plan	Physicians First	Dynamic Doctors
A	$85	$90
B	$80	$85
C	$75	$82

(d) (*3 points*) Calculate the percentage fee schedule change required for Physicians First such that SFHP remains financially neutral. Show your work.

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

(e) (*1 point*) Recommend actions Physicians First could take to mitigate the impact of the contract change. Justify your response.

ANSWER:

4. Fall 2020 DP-A #8

Duncan 22 (Risk) – Risk Adj: ACO's
GH301-101-25 – ACO Payment Models

(*5 points*)

(a) (*1 point*) List the ways Accountable Care Organizations (ACOs) are expected to generate savings.

ANSWER:

(b) (*2 points*) Compare and contrast disease management programs and ACO savings programs.

ANSWER:

(c) (*1 point*) Describe the updates to the ACO gain share calculation from the final rules published in 2015 and 2016.

ANSWER:

(d) (*1 point*) Describe how the updated final rules address unintended consequences of the ACO gain share calculation in place prior to the update.

ANSWER:

5. Spring 2021 DP-A #2

Provider Payment Arrangements

(*9 points*)

(a) (*2 points*) Describe the utilization, technical, insurance, and performance risks for each of the following provider payment models:

(i) Fee-for-service

ANSWER:

(ii) Global capitation

ANSWER:

(iii) Case rates

ANSWER:

You are an actuary for GHI Insurance. You are given for 2020:

- GHI's provider network includes Hospital A and Hospital B
- GHI's enrollment is 5,000 members
- Hospital A receives a capitation payment of $2 PMPM for each of GHI's members
- Hospital B is paid 65% of billed charges
- Claims for Hospital B:

Claim	DRG	DRG Description	DRG Weight	Service	Days	Units	Billed Amount
1	795	Normal Newborn	0.157	Delivery Room	2	1	$5,000
1	795	Normal Newborn	0.157	Laboratory	2	3	$200
1	795	Normal Newborn	0.157	Pharmacy	2	60	$1,500
2	787	C Section	1.053	Delivery Room	4	1	$6,000
2	787	C Section	1.053	Pharmacy	4	300	$3,000
3	794	Neonate w/ complications	1.164	Cardiology	11	4	$1,000
3	794	Neonate w/ complications	1.164	Pharmacy	11	350	$7,000
3	794	Neonate w/ complications	1.164	X-Ray	11	8	$800
3	794	Neonate w/ complications	1.164	Delivery Room	11	1	$5,000

(b) (*2 points*) Calculate:

(i) Hospital A's 2020 reimbursement

(ii) Hospital B's 2020 reimbursement under the discount arrangement

(iii) Hospital B's reimbursement under a proposed case rate equal to $4,500 per birth

Show your work.

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

GHI and Hospital B agree to adopt a DRG-based reimbursement structure for 2021.

- Hospital B will be paid an amount equal to the DRG base rate times the DRG weight.
- GHI and Hospital B are negotiating the DRG base rate.

(c) (*2 points*) Calculate the DRG base rate such that GHI is reimbursed a total of $20,000 for the above claims. Show your work.

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

Hospital B's final offer is a DRG base rate of $9,000. GHI projects healthcare cost trend to be 5% per year over the next five years.

(d) (*1 point*) List questions GHI should consider before finalizing the contract with Hospital B.

ANSWER:

(e) (*2 points*) Propose a counter-offer to Hospital B. Justify your response.

ANSWER:

6. Spring 2021 DP-A #4a-b

Provider Payment Arrangements

(*2 points*)

(a) (*1 point*) Describe the elements and risks involved in a typical pay-for-performance arrangement.

ANSWER:

(b) (*1 point*) Describe key features when evaluating pay-for-performance programs, including the Medicare Hospital Quality Incentive Demonstration (HQID).

ANSWER:

The remaining parts of this question are no longer on this syllabus

7. Spring 2021 DP-A #6

GH301-102-25 – Physician Profiling
GH301-103-25 – Cost Profiling-Reliability
GH301-104-25 – Tiering in Healthcare

(*12 points*)

(a) (*1 point*) Describe advantages and disadvantages of episode-based physician profiling.

ANSWER:

(b) (*1 point*) Compare the purposes of physician cost profiling and episode-based profiling.

ANSWER:

You are evaluating provider performance for HIJ Insurance. You are given allowed charges for 23 members over the course of one year. Each claim is for a distinct member.

	Physician A	Physician B	Physician C	All Other Physicians
Allowed Charge per Visit	$350	$340	$355	$286
	$300	$338	$400	$335
	$305	$280	$385	$372
	$373	$298	$374	$334
	$261	$322	$348	$382
		$316		$334
				$366

(c) (*2 points*) Calculate the physician cost profile for physicians A, B, and C. Show your work.

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

HIJ is implementing a tiered network for primary care physicians. You are given:

- Members currently pay 10% coinsurance for annual physical exams
- Physician cost profiles from your response to part (c)

(d) (*2 points*) Propose a 2-tiered cost sharing structure and assign each physician to a tier. State your assumptions. Justify your response.

ANSWER:

(e) (*1 point*) Explain how to develop a shift assumption:

(i) Before implementation of a Tiered Network Health Plan (TNHP).

ANSWER:

(ii) After implementation of a TNHP.

ANSWER:

(f) (*1 point*) Recommend a shift assumption. Justify your response.

ANSWER:

(g) (*2 points*) Calculate the impact of the TNHP on HIJ's costs using your proposed cost sharing structure, tier assignment, and shift assumptions. Show your work.

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

Physician C agrees to a 10% reduction in allowed charges following implementation of the TNHP.

(h) (*2 points*)

(i) Recalculate the cost profiles and TNHP impact. Show your work.

(ii) Explain how this impacts your proposed tiering and shift assumptions.

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

8. Fall 2021 DP-A #2b-c

Provider Payment Arrangements

(*4 points*) You are evaluating primary care physician (PCP) contract proposals for DEF Insurance.

Contract negotiations between DEF and PCP Group 1 stalled because Group 1 is reluctant to assume the risks embedded in capitation arrangements. Group 1 does not currently manage patient utilization.

(b) (*1 point*) Propose two payment arrangements for Group 1 that minimize DEF's utilization risk and may be acceptable to Group 1. Justify your response.

ANSWER:

Group 1 and DEF agree to a Pay for Performance (P4P) agreement for knee replacements. You are given:

- DEF pays for 1,000 knee replacements performed by Group 1 each year
- The target bonus for Group 1 is 2% of total knee replacement costs
- Group 1 receives the performance bonus for knee replacements if all of the following conditions are satisfied:

  1) Total episode costs decrease at least 2% between Year 0 and Year 1
  2) Total episode costs are at least 5% below the national average in Year 1
  3) The complication rate is below 7% in Year 1

Group 1's Total Knee Replacement Episode Costs							
Year 0				Year 1			
Place of Discharge	% Total Episodes	Cost	Complication Rate	Place of Discharge	% Total Episodes	Cost	Complication Rate
Home	10%	$23,000	15%	Home	15%	$24,000	15%
Rehab	48%	$35,000	8%	Rehab	47%	$34,500	6%
Facility	42%	$40,000	5%	Facility	38%	$40,000	4%

National Total Knee Replacement Episode Costs			
Year 1			
Place of Discharge	% Total Episodes	Cost	Complication Rate
Home	56%	$22,755	20%
Rehab	32%	$32,931	7%
Facility	12%	$40,226	3%

(c) (*3 points*) Evaluate the value, if any, of the Year 1 bonus payment due to Group 1. Show your work.

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

9. Fall 2021 DP-A #4

GH301-105-25 – Management of Provider Networks

(*7 points*) You are an actuary working in the provider contracting department for Royale Health & Life Insurance Company (Royale Health)

You are actively working with one of your biggest providers in the area, Lynd Hospital System, to renew your reimbursement arrangements with them.

(a) (*1 point*) Identify characteristics that impact a health plan's network access requirements.

ANSWER:

(b) (*2 points*) Describe considerations of the typical contract negotiation process.

ANSWER:

Royale Health asks you to evaluate a proposed contract with Paloma Memorial Hospital (Paloma).

You are given:

- Paloma is recognized for the high-quality of its neonatal intensive care unit (NICU) and maternity services
- The contract with Paloma will have the same terms as the contract with Lynd provided in the Royale Health information below
- Royale Health attributes 3,000 members to Lynd and 1,000 members to Paloma
- No utilization trend or mix changes between 2019 and 2020
- The following utilization metrics for 2019:

Service	Average Length of Stay (ALOS) – Lynd	Admissions – Lynd	ALOS – Paloma	Admissions – Paloma
NICU – Level I	10.2	360	9.3	80
NICU – Level II	7.0	240	6.4	70
NICU – Level III	5.0	180	6.3	50
NICU – Level IV	5.0	180	6.9	30
Maternity – Normal Delivery	2.1	600	2.7	220
Maternity – C Section	3.5	450	5.5	160

Royale Health information about the Lynd Hospital system contract:

Lynd Hospital System Contract – Effective 1/1/2020 to 12/31/2022
This contract is between Royale Health and Lynd Hospital. The effective dates of this contract are January 1, 2020 – December 31, 2022. Below are the details of the reimbursement arrangements between the two parties.

Acute Inpatient Per Diem Rates

Acute Inpatient Services	***Per Diem Rate Effective 1/1/2020***	***Per Diem Rate Effective 1/1/2021***	***Per Diem Rate Effective 1/1/2022***
Medical/Surgical/ Pediatrics	*$5,000*	*$5,250*	*$5,600*
ICU/CCU	*$6,000*	*$6,360*	*$6,650*
NICU – Level I	*$1,000*	*$1,100*	*$1,150*
NICU – Level II	*$3,000*	*$3,100*	*$3,200*
NICU – Level III	*$5,000*	*$5,000*	*$5,000*
NICU – Level IV	*$6,000*	*$6,150*	*$6,200*

Acute Inpatient Case Rates

		Case Rates			***Per Diem in excess of Covered Days***		
Acute Inpatient Services	*Covered Days*	*Effective 1/1/2020*	*Effective 1/1/2021*	*Effective 1/1/2022*	*Effective 1/1/2020*	*Effective 1/1/2021*	*Effective 1/1/2022*
Maternity – Normal Delivery	*3*	*$8,000*	*$8,100*	*$8,300*	*$2,600*	*$2,700*	*$2,800*
Maternity – C-Section	*5*	*$12,000*	*$12,200*	*$12,400*	*$2,400*	*$2,500*	*$2,500*
Coronary Surgery	*10*	*$60,000*	*$61,200*	*$62,350*	*$6,000*	*$6,100*	*$6,200*
Bariatric Surgery	*4*	*$24,000*	*$24,700*	*$25,700*	*$6,000*	*$6,100*	*$6,200*
Kidney Transplants	*Entire Stay*	*$100,000*	*$102,500*	*$107,000*	*N/A*	*N/A*	*N/A*

For Acute Inpatient Services that exceed the number of covered days as noted in the chart above, Royal Health shall pay Lynd Hospital at the applicable per diem rate for all days that exceed the covered days.

(c) (*3 points*) Calculate the reimbursement Royale Health would owe for services provided in 2020 by:

(i) Lynd.

(ii) Paloma.

Show your work.

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

(d) (*1 point*) Recommend modifications Royale Health should propose to the contract with Paloma. Justify your response.

ANSWER:

10. Fall 2021 DP-A #6

Duncan 22 (Risk) – Risk Adj: ACO's
GH301-103-25 – Cost Profiling-Reliability

(*11 points*)

(a) (*1 point*) List ways provider group-based accountable care organizations (ACOs) generate savings.

ANSWER:

(b) (*2 points*) Compare and contrast ACOs and health maintenance organizations (HMOs).

ANSWER:

(c) (*2 points*) Compare and contrast ACOs and typical disease management (DM) programs.

ANSWER:

(d) (*2 points*) Explain in the context of physician cost profiling:

(i) Validity.

ANSWER:

(ii) Reliability.

ANSWER:

You are given:

Physician	Episode Count ('000s)	Total Cost ('000s)	Reliability Score	Cost Classification
A	4.1	$4,510	0.44	Low Cost
B	1.6	$80	0.70	Not Low Cost
C	1.5	$3,150	0.80	Low Cost
D	0.6	$660	0.02	Not Low Cost
E	2.9	$29,000	0.32	Not Low Cost
F	2.1	$105	0.89	Low Cost
G	2.1	$4,410	0.50	Not Low Cost
H	1.4	$2,940	0.26	Not Low Cost
I	2.0	$4,200	0.30	Not Low Cost
J	1.7	$1,870	0.16	Not Low Cost
K	3.2	$3,520	0.80	Not Low Cost
L	3.3	$6,930	0.48	Not Low Cost
M	4.1	$4,510	0.06	Low Cost
N	1.9	$5,890	0.76	Not Low Cost
O	4.4	$44,000	0.12	Not Low Cost
P	1.8	$1,980	0.89	Low Cost
Q	0.8	$2,480	0.30	Not Low Cost
R	2.5	$5,250	0.79	Not Low Cost
S	4.3	$9,030	0.10	Not Low Cost
T	3.0	$6,300	0.97	Not Low Cost
U	0.8	$1,680	0.28	Not Low Cost
V	4.4	$13,640	0.52	Not Low Cost
W	1.3	$4,030	0.38	Not Low Cost
X	1.7	$5,270	0.45	Not Low Cost
Y	2.3	$23,000	0.02	Not Low Cost
Z	0.3	$330	0.70	Low Cost

(e) (*4 points*)

(i) Critique the physician cost classifications.

(ii) Recommend changes to the cost classifications.

Show your work. Justify your response.

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

11. Spring 2022 DP #5

Value-Based Care Framework
GH301-104-25 – Tiering in Healthcare

(*6 points*)

(a) (*1 point*) Describe how Value Based Care (VBC) addresses each component of the Triple Aim of Healthcare.

ANSWER:

(b) (*1 point*) Compare and contrast VBC and Tiered Network Health Plans (TNHP).

ANSWER:

Insurer ABC is evaluating new provider payment arrangements to pursue for their network of Primary Care Physicians (PCPs).

(c) (*2 points*) Recommend a VBC or TNHP in each of the following scenarios. Justify your response.

(i) Market with limited PCP competition

ANSWER:

(ii) New market for ABC with unknown costs

ANSWER:

(iii) Mature market where PCPs are efficient with costs

ANSWER:

ABC chooses to pursue a TNHP with two tiers. You are given:

- Shift is 25%
- PCP cost sharing is currently 20% coinsurance

	Total Allowed Claims	Members Assigned
Tier 1: Preferred Providers	$2,500,000	300
Tier 2: Non-Preferred Providers	$4,900,000	500

(d) (*2 points*) Calculate Tier 1 and 2 coinsurance amounts that generate 5% savings through the TNHP. State your assumptions. Show your work.

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

12. Spring 2022 DP #11

GH301-105-25 – Mgmt. of Provider Net.
Provider Payment Arrangements
Duncan 14 (Risk) – Risk Adj. - Medicare

(*13 points*)

(a) (*1 point*) List the elements required of a health plan to manage a provider network.

ANSWER:

(b) (*2 points*) Describe the goals for the provider network from the perspective of:

(i) Health plans

ANSWER:

(ii) Employers

ANSWER:

(iii) Consumers

ANSWER:

(iv) Providers

ANSWER:

You are a retiree group health benefits consulting actuary. You are developing an example to illustrate balance billing and network cost implications for your company's summer interns.

You are given for a health plan member's claim:

- The billed charge is $2,000.
- In-network providers are paid 70% of billed charges.
- Out-of-network providers are paid 90% of billed charges.
- Member cost sharing is:
  - 20% for in-network services
  - 40% for out-of-network services

(c) (*2 points*) Complete the following table for the member's claim:

	In-Network	Out-of-Network
Health Plan Liability		
Member Cost Sharing		
Provider Reimbursement		

Show your work.

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

An intern heard on the news that the COVID-19 pandemic was disruptive to provider networks and their administrators.

(d) (*1 point*) Identify these disruptions.

ANSWER:

You are assigned to the account of ABC Retiree Benefit Trust (ARBT), a self-insured union retiree medical benefits trust fund. ARBT contracts with Dynasty Health (DH) to provide network and administrative services under a Medicare Advantage (MA) employer group health plan. Starting in 2021, ARBT and DH entered into a gain sharing arrangement.

It is the beginning of 2022 and ARBT is initiating negotiations for 2023 terms. In preparation, ARBT desires to understand projected 2022 financials.

The contract has the following terms:

- Administrative Fee: $70 PMPM
- Gain sharing amount: 50% of gains, to a maximum of $15,000,000
- The arrangement is priced to be break-even
- All premium revenue comes in the form of a capitated per member per month (PMPM) payment from the Centers for Medicare and Medicaid Services (CMS). Thus, retirees pay no premium.
- The risk score is 1.0

You are given:

Calendar Year 2021 Experience	
Average Members	100,000
Total Revenue ($M)	$1,248
Total Claims ($M)	$1,158

Projected Trends (per Year)	
Revenue	4.0%
Claims	3.0%
Membership	5.0%

(e) (*3 points*) Calculate the projected 2022 gain sharing amount. Show your work.

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

(f) (*2 points*) Recommend actions that can be taken to improve gain sharing performance by:

(i) DH

(ii) ARBT

Justify your response.

ANSWER:

DH proposes a suite of care management programs to the ARBT which would:

- Increase the Administrative Fee by $5 PMPM over the entire year; and
- Decrease ARBT's projected claims trend by 1.0% per year

(g) (*2 points*) Assess whether or not ARBT should accept DH's offer. Show your work. Justify your response.

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

13. Fall 2022 DP #3

GH301-101-25 – ACO Payment Models
Duncan 22 (Risk) – Risk Adj: ACO's

(*7 points*) Broad Medical participates in an Accountable Care Organization (ACO) contract which resembles the Medicare Shared Savings Program (MSSP). The ACO contract began in 2016 for an initial period of three years and was renewed for an additional three years in 2019.

You are given:

Initial Contract (2016-2018)	Renewal Contract (2019-2021)
• One-sided model with 50% upside risk. • Benchmark is $100M, from past yearly spending for attributed beneficiaries of $100M. • Savings are adjusted by the quality score. • Minimum savings threshold is 2%.	• Two-sided model with 60% upside risk and 50% downside risk. • Benchmark is calculated from the previous three years with these weights: 10% (2016), 30% (2017), 60% (2018). • Savings are adjusted by the quality score. • Minimum savings threshold is 2%. • Minimum loss threshold is 2%.

- Spending for attributed beneficiaries:
  - $96M per year for 2016-2018
  - $94M per year for 2019-2020
  - $98M for 2021
- Quality score:
  - 90% for 2016-2018
  - 80% for 2019-2021
- The annual benchmark inflation factor for all years is 0%.
- No change in the case-mix of patients.

(a) (*3 points*) Calculate the shared savings or loss that Broad Medical receives or pays for each contract year. Show your work. State your assumptions.

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

Broad Medical suggests that providing an additional $1M in services during its first ACO contract would have been beneficial.

(b) (*2 points*) Calculate the cumulative marginal revenue for 2016 – 2021 if the additional services are provided during:

(i) 2016

(ii) 2017

(iii) 2018

Show your work. State your assumptions.

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

(c) (*2 points*) Describe two strategies for improving ACO incentives and the advantages and disadvantages of each strategy.

ANSWER:

14. Fall 2022 DP #7

GH301-102-25 – Physician Profiling
Provider Payment Arrangements

(*5 points*)

(a) (*1 point*) Describe how health plans use episode-based profiling to improve quality of care and cost efficiency.

ANSWER:

(b) (*1 point*) Describe considerations when implementing an episode-based profiling program for physicians.

ANSWER:

You are a consulting actuary supporting physician group LMN. LMN proposes the following bonus program for its physicians:

- The benchmark is equal to the average cost per episode for all physicians.
- The physician bonus will be calculated as:

Physician's per Episode Cost	Bonus
< Benchmark	5% of difference between the benchmark and physician's per episode cost
>= Benchmark	None

You are given:

Physician	Per Episode Cost	Number of Episodes
A	$500	40
B	$600	30
C	$800	50
D	$700	100
E	$550	100
F	$700	60
G	$800	70
H	$600	80
I	$800	60
J	$900	40

(c) (*2 points*) Calculate the total expected bonus payment to these physicians. Show your work.

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

(d) (*1 point*) Recommend changes to the bonus program that would further incentivize cost efficiencies. Justify your response.

ANSWER:

15. Fall 2022 DP #11

GH301-105-25 – Mgmt. of Provider Net.
GH301-100-25 – Bundled Payment
Provider Payment Arrangements

Question pertains to the Case Study.

(8 *points*)

(a) (*1 point*) List methods used by health plans to control physician medical costs.

ANSWER:

(b) (*1 point*) List and describe the key considerations in bundled payment contracting.

ANSWER:

Quantum reaches out to Skyfall during Year 5 to discuss Year 6 unit cost trend assumptions. Quantum provides Skyfall with Exhibit 10A.

Skyfall estimates the following procedure level trends:

	Year 6 Change in Allowed Cost per Service		
Procedure	Hospital A	Hospital B	Hospital C
Knee Replacement	2%	2%	4%
Hip Replacement	5%	5%	10%
Cesarean Section	7%	7%	10%
Colonoscopy	3%	3%	6%
Appendectomy	4%	4%	8%
Cardiac Stent	1%	1%	2%

(c) (*2 points*) Calculate Quantum's combined unit cost trend for Hospitals A, B, and C. Show your work.

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

Hospital A and Quantum agree to adopt the bundled payment rates presented in Exhibit 10C in Year 6.

(d) (*3 points*) Calculate the impact of the change on Quantum's unit cost trend. Show your work.

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

Hospital B expresses interest in adopting a bundled payment structure similar to Hospital A.

(e) (*1 point*) Assess the implications and options for Quantum to mitigate the effects of this change.

ANSWER:

16. Spring 2022 SPC #3

Duncan 14 (Risk) – Risk Adj. - Medicare
Duncan 22 (Risk) – Risk Adj: ACO's

(*9 points*)

(a) (*2 points*)

(i) Discuss considerations actuaries should account for in projecting risk scores for Medicare Advantage bids, other than those prescribed by the Center for Medicare and Medicaid Services (CMS).

ANSWER:

(ii) Explain the consequences of projecting risk scores that are too high or too low.

ANSWER:

(b) (*3 points*)

(i) State the two models of accountable care organization (ACO) gainsharing as part of the Medicare Shared Savings Program (MSSP).

ANSWER:

(ii) Describe requirements an ACO must pass in order to be allowed to share savings with CMS.

ANSWER:

(iii) Explain how the provider group-based ACO is expected to generate savings through the MSSP.

ANSWER:

An ACO has three members, all of whom are of the same Medicare enrollment type. The following information is for one of the benchmark years.

Claims Type	ACO Participant	Member 1 Total Claims	Member 2 Total Claims	Member 3 Total Claims
Inpatient hospital	Yes	$58,000	-	-
Hospital bad debt charge	Yes	$100	-	-
Skilled nursing facility	Yes	$5,000	-	-
Physician A	Yes	$700	$200	-
Physician B	No	-	$800	-
Hospice	Yes	-	-	$6,000
Durable medical equipment	Yes	$1,300	-	-
Prescription drugs	-	$500	-	-
Months Enrolled in ACO		12	12	6

(c) (*4 points*)

(i) (*1 point*) Describe the separate Medicare enrollment types.

ANSWER:

(ii) (*3 points*) Calculate the ACO's average per capita expenditure for the benchmark year. Show your work.

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

17. Spring 2023 RM #2

GH301-105-25 – Mgmt. of Provider Net.

(*7 points*) You are an actuary supporting the administration of provider networks at ABC health insurance company.

(a) (*2 points*)

(i) List elements necessary for network management.

ANSWER:

(ii) Describe an example of how these elements could be at odds with each other.

ANSWER:

(b) (*2 points*) Describe necessary steps for ABC to develop a set of measures for provider network quality.

ANSWER:

You are evaluating the efficiency of in-network Hospital X, which is being considered for a bundled payment program by ABC.

You are given:

Services	Number of Services	Market Average Cost per Service	Provider Cost Per Service
Cardiac Stents	2	$20,000	$200,000
Knee Replacements	30	$40,000	$37,000
Hip Replacements	35	$45,000	$40,000
Colonoscopies	35	$2,500	$2,600
Appendectomies	5	$12,000	$15,000

(c) (*3 points*)

(i) Calculate the efficiency of Hospital X using the Portfolio Method. Show your work.

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

(ii) Assess potential concerns with the efficiency assessment.

ANSWER:

(iii) Recommend a bundled payment program for Hospital X that maximizes the efficiency of and the number of services included in the program. Justify your response. Show your work.

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

18. Spring 2023 RM #4

The Cost of Value-Based Care
Value-Based Care Framework
GH301-101-25 – ACO Payment Models

(*8 points*) LMN Health Insurance company is looking to diversify its reimbursement methodologies with existing providers. As part of the initiative, LMN is looking to move towards more Value-Based Care reimbursement models.

(a) (*1 point*) List marketplace data and metrics that actuaries may consider when modeling potential outcomes for providers moving to a Value-Based Care model.

ANSWER:

(b) (*2 points*) Describe four capabilities of the Value-Based Care Framework.

ANSWER:

LMN has been negotiating with OPQ Community Hospital to enter a three-year Accountable Care Organization (ACO) arrangement in 20X4. This arrangement will be a one-sided model with benchmarks set based on the rules established by the Medicare Shared Savings Program.

You are given the following information on LMN's fee-for-service (FFS) spend for services provided by OPQ:

Year	FFS Spend
20X1	$1,000,000
20X2	$1,200,000
20X3	$1,400,000

- FFS cost of a hip replacement is $15,000
- Estimated annual FFS spend per year for 20X4-20X6 is $1,200,000

(c) (*2 points*) Calculate the incremental revenue OPQ can receive over the three-year period from 20X4-20X6 by performing two additional hip replacements in 20X3. Show your work.

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

(d) (*2 points*) Propose three changes to LMN's ACO arrangement with OPQ that will prevent unintended incentives. Justify your response.

ANSWER:

(e) (*1 point*) Compare each of the following reimbursement models to an ACO shared savings reimbursement model in terms of degree of risk managed by the provider and the level of provider sophistication. Justify your response.

(i) Fee for Service

ANSWER:

(ii) Global Payment/Capitation

ANSWER:

19. Fall 2023 RM #4

Provider Payment Arrangements
GH301-104-25 – Tiering in Healthcare

(*10 points*) You are the actuary on the network contracting team for a health insurer.

(a) (*2 points*) Describe various provider payment models.

ANSWER:

You have been asked to address concerns regarding the cost volatility of certain procedures in the insurer's network of three hospitals. Your first focus is cardiac stent procedures.

You are given the following information for cardiac stent procedures:

	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E
Annual Admits	450	200	325	150	500
Average Length of Stay (Days)	3.5	2.4	4.1	2.7	4.0
Paid Cost per Day	$3,200	$3,600	$3,800	$4,100	$2,900
Member Coinsurance at Hospital	20%	20%	20%	20%	20%

(b) (*3 points*)

(i) Calculate a bundled payment for cardiac stent procedures. Show your work.

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

(ii) Recommend which hospital(s), if any, should be re-contracted for this procedure. Justify your response.

ANSWER:

Your leadership has proposed a bundled payment to all five hospitals. The CEO of Hospital C has threatened to terminate their contract with the insurer over this proposal.
You have been asked to evaluate the following actions to resolve the issue with Hospital C.

Action	Description
Implement Tiered Payment System	Tier Member Coinsurance at Hospital C
Implement Shared Savings Arrangement	Set a benchmark for cardiac stent procedures, and share 50% of the surplus or deficit with Hospital C
Terminate Hospital C	Hospital C becomes out-of-network where member coinsurance is increased. Allowed costs for Hospital C will increase 10%

(c) (*2 points*) Describe advantages and disadvantages of each action for addressing the issue.

ANSWER:

(d) (*3 points*) Calculate the member coinsurance or benchmark required for each action in part (c) to generate the same savings as the bundled payment proposal. Show your work.

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

20. Fall 2023 RM #8

GH301-103-25 – Cost Profiling-Reliability
GH301-102-25 – Physician Profiling

(*5 points*)

(a) (*1 point*) Explain the process for constructing physician cost-profiles.

You are given the following:

Physician #1 Episode A	**Units**	**Cost/Unit**
Office Visits	3	$100
Hemoglobin	2	$25
Daily Drugs	365	$1
Lipid Profile	1	$40
Physician #2 Episode B	**Units**	**Cost/Unit**
Office Visits	4	$90
Hemoglobin	2	$25
Daily Drugs	365	$1
Lipid Profile	2	$35

(b) (*1 point*) Calculate the summary cost-profiles for each physician. Show your work.

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

(c) (*2 points*) Describe differences between traditional physician profiling and episode-based profiling.

ANSWER:

(d) (*1 point*) Describe physician implications of episode-based profiling.

ANSWER:

21. Spring 2024 RM #4

Provider Payment Arrangements

(*6 points*)

(a) (*1 point*) Describe the following reimbursement arrangements from a provider risk perspective.

(i) Shared Savings

ANSWER:

(ii) Global Capitation

ANSWER:

(b) (*2 points*) Describe Shared Savings and Global Capitation from a provider perspective for the following risks by completing the table below:

	Shared Savings	**Global Capitation**
Utilization		
Technical		
Insurance		
Performance		

You are a consulting actuary assisting Alpha Health Network (Alpha), an integrated medical care delivery system. Alpha has a Shared Savings contract with Beta Insurance Company (Beta) for Beta's Medicare Advantage (MA) plans.

Alpha receives the following experience for calendar year 2023 for its MA members who have coverage through Beta.

- Average Monthly Members: 5,000
- Paid Claims: $961 PMPM
- Revenue: $1,172 PMPM
- 2023 contract terms include a 50% shared savings if the loss ratio is below 87%

(c) (*1 point*) Calculate the Shared Savings to Alpha for calendar year 2023. Show your work.

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

Beta has approached Alpha in early 2024 regarding a Global Capitation arrangement beginning immediately for 86.5% of revenue. You received the following message from Alpha's CEO.

"The board wants to accept this offer but has requested my input. They are excited that we "get to keep it all", but I am not so sure about this given the recent changes to the government risk adjustment model beginning this year and the payer industry's high claims trend. I need the loss ratio projection to be below 86% to agree to this."

(d) (*2 points*)

(i) Outline the risks of accepting this proposal.

ANSWER:

(ii) Describe actions that can be taken to mitigate them.

ANSWER:

22. Spring 2024 RM #7

GH301-104-25 – Tiering in Healthcare

(*8 points*)

(a) (*2 points*) Describe the following categories of providers in a PPO.

(i) Preferred Providers

ANSWER:

(ii) Non-Preferred Providers

ANSWER:

(iii) Out of Network Providers

ANSWER:

(b) (*2 points*) Describe regulatory guidance to ensure that quality is not diminished when a restrictive network is put into place.

ANSWER:

Company A is designing a Tiered Network Health Plan (TNHP) for its HMO plan option.

In the Excel spreadsheet, data has been collected from 2023 and fit to the new provider distribution.

(c) (*4 points*)

(i) (*3 points*) Calculate the savings for each of the four service categories. Show your work.

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

(ii) (*1 point*) Recommend whether the TNHP design should include tiering for each service category. Justify your response.

ANSWER:

23. Fall 2024 RM #3

GH301-101-25 – ACO Payment Models

(*7 points*) You are an actuary for an Accountable Care Organization (ACO) that participates in the Medicare Shared Savings Program (MSSP).

- The ACO is participating in a two-sided model with a 60% share on savings.
- 2022 is Year 2 of the ACO's first contract period in the MSSP.
- The ACO's 2022 baseline spending is projected to be $3,000,000.
- The ACO's quality score is 1.0.

An unanticipated surgery costing $60,000 needs to be scheduled at the ACO between December 15, 2022 and January 15, 2023.

(a) (*4 points*) Calculate the cumulative marginal revenue over the two MSSP contract period (2021 through 2026) under the following scenarios. Show your work.

(i) The surgery occurs in 2022

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

(ii) The surgery occurs in 2023

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

(b) (*2 points*) Propose weights to use in determining the benchmark such that the cumulative marginal revenue does not exceed net payments for the surgery.

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

(c) (*1 point*) Recommend other changes to the MSSP structure to ensure the ACO and Centers for Medicare and Medicaid Services (CMS) both realize savings. Justify your response.

ANSWER:

24. Fall 2024 RM #7

Duncan 22 (Risk) – Risk Adj: ACO's
Provider Payment Arrangements

The Excel spreadsheet has additional data and information applicable to this question.

(*11 points*)

(a) (*1 point*) Describe how a provider group-based accountable care organization (ACO) can generate savings.

ANSWER:

You are given the following information for four beneficiaries:

Beneficiary	**A**	**B**	**C**	**D**
Residence	Puerto Rico	Japan	New York	Guam
Medicare enrollment	15 days in both Part A and Part B	1 year in Medicare group (private) health plan	6 months in Part A only	1 month in both Part A and Part B
Total allowed charges for primary care services				
Entity 1: An ACO Entity	$375	$800	$200	$100
Entity 2: A Federally Qualified Health Center (FQHC) where a physician's National Provider Identifier (NPI) is listed on the ACO Participant List	$50	$0	$100	$400
Entity 3: A non-ACO Entity	$100	$0	$400	$75

(b) (*2 points*)

(i) Explain whether each beneficiary meets the assignment criteria established by the Medicare Shared Savings Program. Justify your response.

ANSWER:

(ii) Identify the entity to which the beneficiary is assigned, assuming each beneficiary meets the necessary criteria. Justify your response.

ANSWER:

In the Excel spreadsheet, you are given information for a different ACO, XYZ.

(c) (*3 points*)

(i) Calculate the historical benchmark per capita. Show your work.

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

(ii) Calculate the updated benchmark per capita. Show your work.

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

You are given the following information on the actual performance for XYZ in its first year:

- XYZ participates in a one-sided gainsharing model.
- Assume no reduction in shared savings for sequestration.

Assigned beneficiaries in performance year	30,000 person-years
Performance year expenditures	$650,000,000
Quality performance sharing rate	40%
Quality score	55% for its quality metrics
Shared savings cap limit	10%

Minimum Savings Rate (MSR) for gainsharing (one-sided model):

Number of Assigned Beneficiaries	**MSR Low**	**MSR High**
10,000 - 14,999	3.0%	2.7%
15,000 - 19,999	2.7%	2.5%
20,000 - 49,999	2.5%	2.2%
50,000 - 59,999	2.2%	2.0%
60,000+	2.0%	2.0%

(d) (*3 points*)

(i) Explain how XYZ meets the requirements to share savings with Centers for Medicare & Medicaid Services (CMS). Justify your response.

ANSWER:

(ii) Calculate the shared savings to XYZ. Show your work.

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

(e) (*2 points*) Contrast an ACO shared savings reimbursement model and a fee-for-service (FFS) model for the following risks:

(i) Technical

ANSWER:

(ii) Insurance

ANSWER:

Course GH 301

Curated Past Exam Questions

Learning Objective 2: Disease Management

Table of Contents

1. Fall 2020 SPC #1

Duncan 22 (Risk) – Risk Adj: ACO's
Duncan 3 (DM) – CM and Interventions

(*6 points*) You are an actuary supporting an Accountable Care Organization (ACO).

(a) (*1 point*) Describe features of a successful ACO care management program.

ANSWER:

(b) (*2 points*)

(i) Describe key elements of case management.

ANSWER:

(ii) List challenges case managers face in performing their work.

ANSWER:

(c) (*3 points*) Drug adherence can be measured in two ways.

(i) Write the formula for each measure.

ANSWER:

(ii) Compare and contrast the two measures.

ANSWER:

(iii) Explain ways to increase drug adherence.

ANSWER:

2. Fall 2020 SPC #2

Duncan 12 (DM) – Act. Control Method
Duncan 8 (DM) – Econ. of CM Prog's

(*7 points*)

(a) (*1 point*) Explain how *return* is understood by business decision makers in the return on investment (ROI) paradigm versus for employee health management (EHM).

ANSWER:

(b) (*2 points*) Describe recommended financial metrics to measure healthcare cost savings from EHM.

ANSWER:

You are given the following information on an EHM program designed to reduce hospitalizations among diabetic members:

	Baseline Year (Y)	Measurement Year (Y+1)
EHM Members	1,000	1,000
Hospitalizations per 1,000 EHM members	50	48
Cost per hospitalization	$12,000	$12,000
Percent of diabetic members with LDL testing	50%	85%
Percent of diabetic members with LDL less than 100	30%	60%

- Cost of EHM per member per month (PMPM): $1.75
- Annual utilization trend: 2%

(c) (*1 point*) Calculate the reduction in hospitalizations per 1,000 members required to achieve a desired hurdle rate of 100%. Show your work.

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

The CEO has requested a recommendation from you on whether to continue the EHM program.

(d) (*3 points*)

(i) Explain reasons for and against continuing the EHM program. Show your work.

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

(ii) Recommend whether or not to continue the EHM program. Justify your response.

ANSWER:

3. Spring 2021 SPC #1

Valuation of CM Vendors

(*7 points*) You have been asked to describe key attributes in valuing care management vendors.

(a) (*2 points*) Describe how care management vendors can impact medical costs.

ANSWER:

(b) (*1 point*) Describe how to measure the effect of a medical savings initiative.

ANSWER:

(c) (*4 points*) Describe the methods of various complexity to measure medical savings.

ANSWER:

4 Spring 2021 SPC #4a-b

Duncan 11 (DM) – Propensity Scoring

(*2 points*)

(a) (*1 point*) Describe advantages and disadvantages of propensity score matching.

ANSWER:

(b) (*1 point*) Compare and contrast propensity score and risk adjustment.

ANSWER:

5. Fall 2021 SPC #3

Duncan 12 (DM) – Act. Control Method
Duncan 8 (DM) – Econ. of CM Prog's

(*5 points*)

(a) (*1 point*) Define exposure in a disease management (DM) environment.

ANSWER:

(b) (*1 point*) Verify the accuracy of the following statements. Justify your answer.

(i) The actuarially-adjusted historical control methodology is a cohort study.

ANSWER:

(ii) Excluding newly-identified members in an actuarially-adjusted historical control methodology is recommended.

ANSWER:

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

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

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

(c) (*3 points*) Critique the vendor's assertion. Show your work.

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

6. Fall 2021 SPC #6

Valuation of CM Vendors
Duncan 8 (DM) – Econ. of CM Prog's

(*5 points*)

(a) (*1 point*) Describe methods used by care management vendors to impact medical costs.

ANSWER:

A care management vendor has proposed evaluating the cost savings from an Emergency Room (ER) utilization management program using a pre-post analysis.

(b) (*2 points*) Describe considerations for the evaluation of the vendor's cost savings approach.

ANSWER:

You are given the following information for Year 1 of the program:

- The pre-post analysis proposed by the vendor was accepted without adjustments
- All members were enrolled in the program on the first day of implementation
- All members maintained insurance eligibility for the duration of the first year

Enrolled Members in Program	2,000
ER Total Paid Spend Per Visit	$750
Total ER Visits In Year Before Intervention	4,000
Total ER Visits During Intervention	3,700
Utilization Trend Factor	2%
Annual Fee Per Enrolled Member	$100
IT Costs Associated with Program Implementation	$75,000

(c) (*2 points*) Calculate

(i) Gross return on investment (ROI) for the program. Show your work.

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

(ii) Savings per enrolled member per month. Show your work.

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

7. Spring 2022 SPC #1

Duncan 11 (DM) – Propensity Scoring

(*4 points*) You are given the following information on two commercial members from a diabetes self-management education or training (DSME/T) program:

$\alpha = 2$
$\beta_{age} = -0.06$
$\beta_{gender} = 0.3$
$\beta_{plan} = -0.2$

Member	Age	Gender	Benefit Plan
1	25	0 (male)	1 (HMO)
2	35	1 (female)	0 (PPO)

(a) (*2 points*) Calculate the propensity score for each member. Show your work.

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

(b) (*1 point*) Interpret each member's propensity score.

ANSWER:

(c) (*1 point*) Describe the limitations of applying the propensity score matching results from the DSME/T program to other populations.

ANSWER:

8. Spring 2022 SPC #4

Duncan 9 (DM) – Opportunity Analysis

(*6 points*)

(a) (*2 points*) Describe opportunity analysis.

ANSWER:

(b) (*3 points*) Evaluate the accuracy of the following statements. Justify your response.

(i) Traditional condition groupings, such as Hierarchical Condition Categories (HCCs), are a common grouping algorithm for segmenting membership when applying opportunity analysis.

ANSWER:

(ii) Although a randomized controlled trial provides very robust evidence of efficacy, it can be subject to some biases.

ANSWER:

(iii) Opportunity analysis recognizes and addresses the economics of program planning in a system which is resource constrained.

ANSWER:

(iv) Information on any and all care management programs currently in place should be included when performing an opportunity analysis.

ANSWER:

(v) A single intervention to target members with a mental health condition is a successful application of the opportunity analysis approach.

ANSWER:

(vi) Segmentation of a population by cost and frequency is a useful application of the opportunity analysis approach.

ANSWER:

(c) (*1 point*) List the steps for implementing a care management program using the opportunity analysis approach.

ANSWER:

9. Fall 2022 SPC #1a

Duncan 3 (DM) – CM and Interventions

(*2 points*)

(a) (2 points) Describe care management methods used to control health care utilization.

ANSWER:

10. Fall 2022 SPC #3

Duncan 12 (DM) – Act. Control Method
Duncan 13 (DM) – Risk & Trend

(*7 points*)

(a) (*1 point*) Explain features of the actuarially-adjusted historical control methodology for evaluating care management outcomes.

ANSWER:

A health plan operates a care management program that has the goal of reducing the total cost of care for its members with diabetes or COPD. The accompanying Excel file contains data on the program. You are also given the following information about the program:

- The program has been in place for one full calendar year
- Program cost is $50 per engaged member per month
- Expected gross return on investment (ROI) is 2:1
- Members with diabetes or COPD have been enrolled in the program since Year 1 and for the entirety of the time they have been a member of the health plan.

(b) (*6 points*)

(i) (*5 points*) Calculate the per member per month (PMPM) gross savings and ROI for the first year of the program. Show your work.

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

(ii) (*1 point*) Recommend whether the program should be continued. Justify your response.

ANSWER:

11. Spring 2023 RM #5

Duncan 16 (DM) – Testing Act. Methods

(*8 points*) You are an actuary with Company ABC. You are asked to evaluate a disease management (DM) program designed to reduce the total claims spend of members with hypertension. All members with hypertension are in the DM program.

(a) (*1 point*) Describe the impact on a savings calculation of identifying patients with hypertension using only medical claims versus using both medical and pharmaceutical claims.

ANSWER:

You are provided with the following:

- Data on ABC's members provided in the accompanying Excel file.
- All members are enrolled with Company ABC for the entire 12 months of each year.
- The DM program costs $200,000 to administer each year.

(b) (*4 points*) Calculate the total percentage reduction in aggregate claims spend from the DM program for each of the intervention years under the following scenarios:

(i) Base-Case, that is, attributing each member based upon their condition status in each year. Show your work.

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

(ii) Retrospective Chronic Identification. Show your work.

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

(c) (*3 points*)

(i) Critique the scenarios from part b.

ANSWER:

(ii) Recommend whether Company ABC should continue offering the DM program. Justify your response.

ANSWER:

12. Spring 2023 RM #7

Duncan 9 (DM) – Opportunity Analysis
Duncan 11 (DM) – Propensity Scoring

(*8 points*) You are an actuary supporting a care management program.

(a) (*2 points*)

(i) Define Opportunity Analysis.

ANSWER:

(ii) Describe the purpose of Opportunity Analysis.

ANSWER:

(iii) List the basic components required to perform Opportunity Analysis.

ANSWER:

(iv) Define the key components in designing a care management program.

ANSWER:

You are given the following population stratification for your company's care management program:

Condition Category	Population %	Cost %
Episodic, Mental Health, Chronic	12%	42%
Episodic and Mental Health	4%	7%
Episodic and Chronic	15%	27%
Episodic only	9%	7%
Mental Health and Chronic	5%	5%
Mental Health only	14%	6%
Chronic Only	5%	2%
Emerging Conditions	12%	3%
None	24%	1%
Total	100%	100%

(b) (*2 points*) Interpret findings from this data.

ANSWER:

You are given the following logistic regression equation:

$$\ln[\, p / (1 - p)\,] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$
$$\alpha = 2,\ \beta_1 = -0.01,\ \beta_2 = 0.1,\ \beta_3 = -0.001$$

You are also provided the following information:

Control Member	Age	Education	Credit Score
1	30	0	600
2	55	1	820

Treatment Member	Age	Education	Credit Score
1	40	1	780
2	60	0	680

(c) (*2 points*) Calculate the propensity score for each treatment and control group member. Show your work.

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

Assume the Caliper Matching method has a "fixed distance" criterion of 0.037.

(d) (*2 points*)

(i) Calculate the difference in age between treatment and control members, prior to and after matching, using the Caliper Matching method. Show your work.

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

(ii) Calculate the difference in credit score between treatment and control members, prior to and after matching, using the Caliper Matching method. Show your work.

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

13. Fall 2023 RM #1

Duncan 9 (DM) – Opportunity Analysis
Valuation of CM Vendors

(*6 points*)

(a) (*3 points*)

(i) Describe the Opportunity Analysis process.

ANSWER:

(ii) Explain the purpose and considerations for each of the following steps in the Opportunity Analysis process when designing a care management program:

- Analytics
- Evidence
- Economics

ANSWER:

The human resources director for your company is concerned about the amount of work involved in performing opportunity analysis and asks why we should not allow physicians or other clinicians to develop a care coordination program instead.

(b) (*1 point*) Assess the merits of Opportunity Analysis in response to the director's concern.

ANSWER:

You are considering an external vendor's care management program and comparing their population data with your company's covered population data.

(c) (*2 points*) Describe adjustments to consider for material differences between the two populations.

ANSWER:

14. Fall 2023 RM #2

Duncan 12 (DM) – Act. Control Method
Duncan 13 (DM) – Risk & Trend

(*8 points*) You are evaluating a disease management program offered by your employer.

(a) (*1 point*) Describe how to initially classify targeted members for the disease management program.

ANSWER:

(b) (*1 point*) Describe reasons for excluding members from the measured population.

ANSWER:

(c) (*2 points*)

(i) Describe an often-implicit assumption on which the actuarially adjusted historical control methodology relies.

ANSWER:

(ii) Describe challenges of an actuarially-based disease management savings calculation.

ANSWER:

(iii) Describe how actuaries can address these challenges.

ANSWER:

You have led a transition state analysis on high-risk, medium-risk, and low-risk chronic members in Periods 1, 2, and 3. The analysis leads to the following observations in Period 1:

Risk Members	Cost Per Member Per Year (PMPY)	Risk-Mix
High	$50,000	5%
Medium	$5,000	55%
Low	$500	40%

For Period 2, you observe that the risk-mix of high-risk members increased 100 basis points, while the low-risk members' risk-mix did not change. For Period 3, the risk-mix of low-risk members increased 200 basis points, while the high-risk members' risk-mix did not change.

You are also given the following:

- There are no other categories of risk members
- The cost PMPY remains the same from Period 1 to Period 2
- From Period 2 to Period 3, the high-risk members cost PMPY decreased 10% while the low-risk members cost PMPY increased 10%

(d) (*2 points*) Calculate the trend from Periods 1 to 2 and from Periods 2 to 3. Show your work.

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

You are given the following on a different member cohort:

	Units per 1000	Unit Cost
Baseline	100	$8,000
Trend	1.05	1.10
Actual	99	$8,800

(e) (*2 points*)

(i) Verify if Per Member Per Month (PMPM) savings for the member cohort is equivalent on a utilization unit basis and cost basis. Show your work.

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

(ii) Explain the importance of the results in (i).

ANSWER:

15. Spring 2024 RM #2

Duncan 12 (DM) – Act. Control Method
Duncan 8 (DM) – Econ. of CM Prog's

(*7 points*)

(a) (2 points)

(i) Explain why it is difficult to demonstrate the link between quality and cost improvement for a disease management (DM) program.

ANSWER:

(ii) Describe ways to mitigate these difficulties.

ANSWER:

(b) (*1 point*) Contrast average savings and marginal savings.

ANSWER:

You are given the following information on a DM program.

	Baseline Period	Change from Baseline	Measurement Period
Average Total Population	150,000	3.1%	
Chronic Prevalence	33.33%	0.0%	
Chronic Population Inpatient Admissions	30,000	-4.0%	
Cost/Admission	$7,500	5.6%	
Utilization (admission) trend (as measured in a reference population)		5.4%	
Direct Costs			$30,000,000
Indirect Costs			$10,000,000
Management Costs			$2,000,000
Overhead and other Allocated Costs			$8,000,000

(c) (*3 points*) Calculate the net return on investment (ROI) for the program. Show your work.

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

(d) (*1 point*) Explain how ROI can be a misleading metric.

ANSWER:

16. Spring 2024 RM #6

Duncan 3 (DM) – CM and Interventions
Duncan 11 (DM) – Propensity Scoring

The Excel spreadsheet has additional data and information applicable to this question.

(*10 points*) You are an actuary who has been asked to evaluate a care management program for your company.

(a) (*2 points*) Describe types of care management programs.

ANSWER:

In the Excel spreadsheet, you are provided data for members eligible for a palliative care management program. The goal of the program is to reduce total inpatient (IP) admissions and emergency department (ED) visits by at least 10% each.

(b) (*7 points*) Evaluate whether the program achieved its goal using the following approaches. Show your work.

- With matching
- Without matching

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

(c) (*1 point*) Recommend an approach from part (b). Justify your response.

ANSWER:

17. Fall 2024 RM #2

Duncan 3 (DM) – CM and Interventions
Duncan 8 (DM) – Econ. of CM Prog's

(*5 points*)

(a) (*1 point*) Describe common features of medical management interventions aimed at patients and providers.

ANSWER:

(b) (*2 points*)

(i) Explain challenges with demonstrating the link between quality and cost improvement.

ANSWER:

(ii) Describe factors to resolve these challenges.

ANSWER:

(c) (*2 points*) Contrast:

(i) care management and utilization management.

ANSWER:

(ii) pre-authorization and concurrent review.

ANSWER:

18. Fall 2024 RM #6

Duncan 11 (DM) – Propensity Scoring

(*7 points*)

(a) (*2 points*) Verify the accuracy of the following statements. Justify your response.

(i) Propensity score matching (PSM) is a technique for estimating what would happen to a population if a program was implemented.

ANSWER:

(ii) PSM reduces a large number of variables into a few key scores that allow for more effective matching.

ANSWER:

(iii) PSM should consider the variables themselves when matching and not just rely on PSM scoring alone.

ANSWER:

(iv) PSM has many advantages including matching on both observed and unobserved variables.

ANSWER:

(b) (*2 points*)

(i) Describe methods used for PSM.

ANSWER:

(ii) List important considerations for matching.

ANSWER:

You are given the following results examining the effects of member cost sharing on the utilization of Diabetes Self-Management Education/Training (DSME/T). It is hypothesized that patients with lower cost sharing are more likely to utilize DSME/T services, adhere to diabetes medication regimes, and experience reduced diabetes-related hospital admissions and costs.

Total Population	**From Unmatched Study**				**From Propensity Matched Study**			
Variable Descriptions	Low Cost-sharing	High Cost-sharing	Grand Total	P-Value	Low Cost-Sharing	High Cost-sharing	Grand Total	P-Value
Admit/1000	170	161	166	0.1095	159	163	161	0.4665
Cost per admit	$11,962.00	$12,714.00	$12,329.00	0.0003	$11,921.00	$12,930.00	$12,431.00	<.0001
Diabetes Admit/1,000	113	111	112	0.6267	105	113	109	0.0574
Cost per diabetes admit	$10,472.00	$12,081.00	$11,270.00	<.0001	$10,513.00	$12,233.00	$11,402.00	<.0001
Education/1000	51	40	46	<.0001	49	43	46	0.0549
Compliance, antidiabetics	52%	49%	51%	<.0001	52%	51%	51%	0.0458
Claims Paid PMPM								
Total	$849	$727	$788	<.0001	$815	$746	$781	<.0001
Inpatient	$169.00	$171.00	$170.00	0.8501	$158.00	$175.00	$167.00	0.0392
Professional	$239.00	$190.00	$213.00	<.0001	$227.00	$194.00	$211.00	<.0001
Outpatient	$200.00	$177.00	$189.00	<.0001	$192.00	$183.00	$187.00	<.0001
Outpatient pharmacy	$244.00	$189.00	$217.00	<.0001	$237.00	$194.00	$216.00	<.0001
Member cost sharing total	$70.00	$114.00	$92.00	<.0001	$70.00	$112.00	$91.00	<.0001
Member cost-sharing Medical	$25.00	$60.00	$43.00	<.0001	$26.00	$59.00	$42.00	<.0001
Member Cost-Sharing RX	$44.00	$54.00	$49.00	<.0001	$44.00	$53.00	$49.00	<.0001

(c) (*2 points*) Compare and contrast results from the matched and unmatched studies, with respect to the hypotheses.

ANSWER:

(d) (*1 point*) Describe considerations for testing the results of a PSM model.

ANSWER:

19. Fall 2024 RM #8

Duncan 3 (DM) – CM and Interventions
Valuation of CM Vendors

(*5 points*)

(a) (*2 points*) Describe care management programs that could be implemented by a health plan.

ANSWER:

(b) (*2 points*) Describe variables that should be considered when measuring the medical cost savings of a care management program on different populations.

ANSWER:

A pharmacy-driven care management program has been implemented. A Medicare member has had the following prescriptions filled for a drug during the year:

- Day 1: 30-day supply
- Day 31: 60-day supply
- Day 91: 30-day supply
- Day 151: 90-day supply

(c) (*1 point*)

(i) Calculate the Medication Possession Ratio (MPR) and the Proportion of days covered (PDC) for this member. Show your work.

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

(ii) Evaluate whether the Medicare STAR measure of 80% adherence has been met. Show your work. Justify your response.

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

20. Fall 2024 RM #9

Creating Stability in Unstable Times
ASOP #45 – The Use of Risk Adj.

(*5 points*)

(a) (*3 points*) Explain the impact of the following changes to the CMS risk adjustment program between 2017 and 2019, on profitability and stability of the Individual Health Insurance market.

- Durational impact
- Administrative load
- Pharmacy data
- Risk adjustment weights
- Claims pooling

ANSWER:

(b) (*2 points*) Describe considerations for the consistency of input data used in the application of risk adjustment methodologies, according to ASOP 45.

ANSWER:

Course GH 301

Curated Past Exam Questions

Learning Objective 3: Healthcare Risk Adjustment

Table of Contents

1. Fall 2022 FV #6

Risk Adj. in State Medicaid Programs

(*6 points*) You are an actuary advising Sunny State Medicaid of the risk adjustment options available when implementing their Medicaid Managed Care program.

(a) (*1 point*) Define the following important time periods used in risk adjustment.

(i) Experience period

ANSWER:

(ii) Rate period

ANSWER:

(b) (*1 point*) Describe major considerations when deciding whether risk adjustment should apply to a beneficiary rate category.

ANSWER:

Sunny State is considering using either prospective or concurrent risk adjustment for its Medicaid program.

(c) (*2 points)* Explain the advantages of both risk adjustment methods to Sunny State.

ANSWER:

(d) (*2 points)* Compare and contrast the application of individual and aggregate risk adjustment factors in the calculation of a health plan's capitation rate.

ANSWER:

2. Fall 2020 SPC #5

Duncan 21 (Risk) – Risk Adj. ACA Exchanges

(*6 points*)

(a) (*2 points*) Describe issues with the Massachusetts risk adjustment and National risk adjustment processes.

ANSWER:

You are an actuary for Blue Note Insurance. There is only one other insurer in the state's small group ACA market, Yellow Bird Insurance.

You are given the following information:

	State	Blue Note	Yellow Bird
Actuarial value (AV)	0.7	0.7	0.7
Allowable Rating Factor (ARF)	1.952	1.952	1.952
Member Months	24,000	9,600	14,400
Risk x Induced Demand x Geographic	1.0368	0.936	1.104

Average Premium PMPM	$500	$440	$540
Total Premium	$12,000,000	A	B
Target Loss Ratio for Pricing	N/A	85%	85%
Claims	$10,200,000	$3,590,400	$6,609,600
ACA risk adjustment transfer amount	C	D	E
Net Income		F	G
Net Income as % of Premium		H	I

(b) (*4 points*) Calculate the values for A through I in the table above. Show your work.

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

3. Fall 2020 SPC #6c-d

Duncan 13 (Risk) – Medicaid Risk Adj.

(*4 points*)

(c) (*1 point*) Explain why the Arizona Medicaid risk adjustment methodology for Temporary Assistance for Needy Families (TANF) is applicable to newborns but not applicable to other cohorts.

ANSWER:

(d) (*3 points*) The following information is given for a Managed Care Organization (MCO) in the Arizona Medicaid program for the contract year ending 2017:

Cohort	Cohort Weight	Condition Episode Risk Group (ERG) Factor	Age/ Sex Factor
Long Cohort	0.8	0.36	0.4
Short Cohort	0.2	N/A	0.36

- Weighted Condition Factor for all MCOs in Arizona is 0.3652.

(i) Describe how enrollment is determined for the Long Cohort.

ANSWER:

(ii) Calculate the Relative Risk Score for the MCO. Show your work.

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

(iii) Explain how the risk adjustment factor is applied to the base capitation rates to develop the adjusted capitation rates.

ANSWER:

4. Spring 2021 SPC #3a

Creating Stability in Unstable Times

(*2 points*)

(a) (*2 points*) Describe the elements of the Affordable Care Act (ACA) designed to ensure a balanced risk pool.

ANSWER:

5. Spring 2021 SPC #5a

ASOP #45 – The Use of Risk Adj.

(*3 points*)

(a) (*3 points*) According to ASOP 45,

(i) Describe how the input data used in the application of risk adjustment models needs to be reasonably consistent.

ANSWER:

(ii) Explain what the actuary should do if reasonable consistency cannot be achieved or if information concerning the quality and type of input data is not sufficient.

ANSWER:

(iii) Explain what the actuary should consider when evaluating consistency of input data.

ANSWER:

6. Fall 2021 SPC #2

Creating Stability in Unstable Times
ASOP #45 – The Use of Risk Adj.

(*7 points*)

(a) (*2 points*) Describe state-level considerations for stabilizing the Affordable Care Act (ACA) marketplace.

ANSWER:

You are an actuary working for a state insurance department and are given the following information:

- Estimated uninsured population in the state is 500,000
- Average age of the population in the state is 45
- On-exchange and off-exchange HMO and PPO plans are offered in the state

(b) (*2 points*) Propose questions and additional data that are necessary to assess the stability of the state's marketplace. Justify your answer.

ANSWER:

(c) (*2 points*)

(i) Describe 1332 waivers (state innovation waivers) and examples of how some states have utilized them to date.

ANSWER:

(ii) Describe considerations for determining whether your state should apply for a 1332 waiver.

ANSWER:

(d) (*1 point*) List considerations for assigning risk scores to individuals with limited data, according to ASOP 45.

ANSWER:

7. Spring 2022 SPC #5

Changing w. the Times – ACA Risk Adj
Duncan 13 (Risk) – Medicaid Risk Adj.

(*6 points*)

(a) (*2 points*) Identify notable changes in ACA Risk Adjustment over the life of the program.

ANSWER:

You are an actuary for ABC Insurance Company, a Medicaid MCO in a single state. The state Medicaid agency has determined that it is going to retrospectively apply risk adjustment factors to the capitation payments from 10/01/2020 forward.

You are given the following:

Temporary Assistance for Needy Families (TANF)	Cohort Weight	Condition (ERG) Factor	Age/Sex Factor	Imputed ERG Factor
ABC Insurance Company Long Cohort	0.8200	0.3910	0.4000	n/a
ABC Insurance Company Short Cohort	0.1800	n/a	0.3500	**?**
All MCOs Long Cohort	0.8069	0.4029	0.4029	n/a
All MCOs Short Cohort	0.1931	n/a	0.4022	0.4022

ABC Insurance Company	TANF	SSI with Medicare	SSI without Medicare	Non-Medicaid
10-01-20 Capitation Rate Per Member Per Month (PMPM)	$100	$150	$700	$150
Bid Risk Contingency PMPM	$2	$3	$14	$10
Bid Admin PMPM	$8	$12	$56	$40
Premium Tax PMPM	$2	$3	$14	$10
Risk Adjustment Factor	**?**	1.0134	1.0009	0.9974

- The long cohort consists of members with at least 6 months of eligibility during the experience period.
- The short cohort consists of members with less than 6 months of eligibility during the experience period.
- Members with less than six months of enrollment during the experience period are given a risk factor equal to 50% of their age/sex factor plus 50% of an adjusted plan factor, i.e. imputed ERG factor.
- The unadjusted capitation rate is 1.0.
- "Phase-in" weights the condition-based score and the unadjusted capitation rate 80%/20% for the year.
- Total average risk score for All MCOs is 0.4028.
- Budget neutrality adjustment is 1.0.

(b) (*4 points*) Calculate the risk adjusted capitation rates for ABC Insurance Company. Show your work.

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

8. Fall 2022 SPC #2c

Duncan 14 (Risk) – Risk Adj. - Medicare

(*3 points*)

(c) (*3 points*) The projection of a Medicare Advantage plan's risk scores from the base period to the bid contract year includes several factors.

(i) Describe each factor.

ANSWER:

(ii) Identify the source of each factor.

ANSWER:

9. Fall 2022 SPC #5

Changing w. the Times – ACA Risk Adj
Duncan 14 (Risk) – Risk Adj. - Medicare

(*7 points*) As documented in the article *Changing with the Times: The past and future of ACA Risk Adjustment*, to understand the broad impacts of the HHS-HCC model changes, risk scores were tracked over time by holding everything constant for a fixed sample population except for the HHS-HCC model changes each year from 2015 to 2020.

(a) (*4 points*)

(i) Describe the prominent patterns in risk score changes that were observed and the significance of each pattern to issuers.

ANSWER:

(ii) Describe the potential areas of improvement to the HHS-HCC risk adjustment model.

ANSWER:

You are given the following:

Member	Age and Gender	Status	Months in Base Period	Diagnoses
A	71 Male	Community, non-dual, aged	12	Diabetes without complications and multiple sclerosis
B	73 Male	Community, non-dual, aged	12	Two diabetes diagnoses (without complications and neuropathy) and multiple sclerosis
C	65 Female	Non-Medicaid, not originally disabled	6	None

Age/Gender Risk Factors

Gender	Age Group	New to Medicare	Community Members
Male	65 – 69	0.6	0.4
Male	70 – 74	0.7	0.5
Female	65 – 69	0.7	0.6
Female	70 – 74	0.8	0.7

Disease-Related Risk Factors

Disease	HCC Factors
Diabetes without complications	0.1
Diabetes with acute complications	0.4
Multiple sclerosis	0.7

- Annual risk score trend is 1.1%
- Annual population change factor is 0.5%
- Adjustment for the CMS Fee for Service Normalization factor is 1/1.03
- CMS Coding Adjustment from base year to bid year is 0.98

An analyst has calculated an average plan risk score of 1.1 for the base period. The analyst has also calculated the Part C contract year risk score as shown below for the Medicare Advantage bid.

Part C contract year risk score = 1.0634 = 1.1 * 1.011 * 1.005 * 1/1.03 * 0.98

(b) (*3 points*) Critique the analyst's calculations. Show your work. Justify your response.

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

10. Spring 2023 RM #1

Duncan 14 (Risk) – Risk Adj. - Medicare
Duncan 13 (Risk) – Medicaid Risk Adj.

(*5 points*) The new Chief Actuary of Company ABC is familiar with Symmetry's Episode Risk Groups (ERG) model, but not as familiar with Medicare Advantage Prescription Drug (MAPD) risk scores.

(a) (*2 points*) Describe components of the MAPD risk score.

ANSWER:

(b) (*3 points*) Compare and contrast the calculation of MAPD and ERG risk scores.

ANSWER:

11. Spring 2023 RM #6

Duncan 21 (Risk) – Risk Adj. ACA Exchanges
ASOP #23 – Data Quality

(*10 points*) Medicare Payment Advisory Commission (MedPAC) published a study, "Issues for Risk Adjustment in Medicare Advantage."

(a) (*3 points*) Identify and describe issues from the study regarding the use of Medicare Hierarchical Condition Categories (HCCs) for risk adjustment.

ANSWER:

You are given the following information on two health plans, which roll up to the state plan, prior to any network contract effects:

	State	Plan A	Plan B
Actuarial Value (AV)	0.700	0.700	0.700
Plan Liability Risk Score (PLRS)	1.000	0.918	1.082
Allowable Rating Factor (ARF)	1.952	1.952	1.952
Induced Demand Factor (IDF)	1.020	1.020	1.020
Geographic Cost Factor (GCF)	1.000	1.000	1.000
Network Contract Effect		1.000	1.000
Premium (priced at 100% loss ratio)	$500	$500	$500
Members	2,000	1,000	1,000

(b) (*2 points*) Define and describe issues with each of the following biases:

(i) Bias against zero-condition members

ANSWER:

(ii) Bias against limited network and other lower cost plans

ANSWER:

(c) (*2 points*) Calculate the net income as a percent of premium for each plan assuming the network contract effects of Plan A and B are 0.900 and 1.100, respectively. Show your work.

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

(d) (*3 points*)

(i) Describe the scope and applicability of ASOP 23, Data Quality.

ANSWER:

(ii) Explain elements that should be included in any actuarial communication regarding work specifically subject to ASOP 23.

ANSWER:

12. Fall 2023 RM #7

Risk Adj. in State Medicaid Programs
Duncan 13 (Risk) – Medicaid Risk Adj.

(*6 points*) You are an actuary for XYZ Insurance Company, a Medicaid Managed Care Organization (MCO) in a single state.

(a) (*2 points*) Describe steps for implementing risk adjustment into a Medicaid Managed Care Program.

ANSWER:

You are given the following:

Temporary Assistance for Needy Families (TANF)	XYZ Insurance Company			All MCOs		
	Cohort Weight	Condition (ERG) Factor	Age/Gender Factor	Cohort Weight	Condition (ERG) Factor	Age/Gender Factor
Short Cohort	0.1400	n/a	0.3702	0.1628	n/a	0.3829
Long Cohort	0.8600	0.3680	0.3810	0.8372	0.3791	0.3791

XYZ Insurance Company	TANF	Supplemental Security Income (SSI) with Medicare	Non-Medicaid
07-01-2021 Capitation Rate Per Member Per Month (PMPM)	$111	$167	$167
Bid Risk Contingency PMPM	$3	$4	$11
Bid Admin PMPM	$9	$13	$44
Premium Tax PMPM	$3	$4	$11
Risk Adjustment Factor	**?**	1.0281	1.0032

- Risk adjustment factors will be retrospectively applied to the capitation payments from 7/1/2021 forward.
- "Phase-in" weights the condition-based score and the unadjusted capitation rate 80% and 20%, respectively.
- Budget neutrality adjustment is 1.1

(b) (*1 point*) Calculate the total average risk score for XYZ Insurance Company. Show your work.

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

(c) (*3 points*) Calculate the risk adjusted capitation rates for XYZ Insurance Company. Show your work.

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

13. Spring 2024 RM #5a-b

ASOP #41 – Act. Communications
Creating Stability in Unstable Times

(*7 points*)

(a) (*4 points*)

(i) Describe the following aspects of the Affordable Care Act:

- Individual Mandate
- Subsidies
- Risk Corridors
- Reinsurance

ANSWER:

(ii) Critique the effectiveness of each aspect in creating a stable and sustainable market.

ANSWER:

(b) (*3 points*) Describe disclosure requirements of ASOP 41 for the use of assumptions and methods

(i) prescribed by law.

ANSWER:

(ii) relied on from another party.

ANSWER:

14. Fall 2024 RM #5

Restoring the Indifference Ideal

(*10 points*)

(a) (*1 point*) Describe the intention, aim, and design of risk adjustment as it pertains to the ACA marketplace.

ANSWER:

(b) (*2 points*)

(i) Describe the "indifference ideal."

ANSWER:

(ii) Describe how the "indifference ideal" is supported by ACA risk adjustment.

ANSWER:

You are given the following information for two adult populations in State X:

Enrollment		
Demographics	Insurer A	Insurer B
Young Adult	10,000	5,000
Older Adult	10,000	10,000

- Adequate monthly premiums are $100 for Young Adults and $600 for Older Adults.
- No enrollment changes.

(c) (*4 points*) Calculate the allowed premiums and equitable risk transfer payments and receipts for Insurer A and Insurer B under each of the following scenarios. Show your work.

(i) Without age rating.

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

(ii) With age rating and premiums three times higher for Older Adults than Young Adults.

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

(d) (*1 point*) Describe reasons why ACA metal level premium relationships are disparate across the country.

ANSWER:

(e) (*2 points*) List differences between the ideal ACA environment and the alternative environment.

ANSWER:

15. Fall 2021 SPC #4c-d

ASOP #41 – Act. Communications

(*4 points*)

(c) (*1 point*)

(i) Define "reliance on other sources," according to ASOP 41.

ANSWER:

(ii) Describe disclosure requirements when relying on other sources of data and other information in the Actuarial Report, according to ASOP 41.

ANSWER:

(d) (*3 points*) Describe the responsibility of the actuary in disclosing assumptions and methods in the Actuarial Report, according to ASOP 41.

ANSWER: