# GH 301 – Health Analytics and Management

Nov 2025/Mar 2026/Jul 2026

**Important Course Information:**

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| Exam Registration | Candidates may register online or with an application. |
| Order Study Notes | Study notes are part of the required syllabus and are not available electronically but may be purchased through the online store. |
| Syllabus Resources | Resources listed in this syllabus may include study notes, online readings, textbooks, videos and module content. Candidates are responsible for all materials in their entirety, including sections such as Appendices, unless it is stated otherwise in the syllabus. |
| Topic Weight Ranges | These have been provided to indicate the relative emphasis on each topic. The ranges of weights shown are intended to apply broadly over multiple sittings; however, the weights of topics on any individual exam could fall outside the published range. Candidates should also recognize that some questions will cover multiple learning objectives. |
| Learning Outcomes | Each resource listed indicates the specific learning outcome(s) it aligns with under that particular topic. Resources are listed in the recommended order of study to best master the overall topic and learning objective.  For additional guidance, please see the course strategy guide. |
| Introductory Study Note | The Introductory Study Note has a complete listing of all study notes as well as errata and other important information. |
| Online Content Registration | This syllabus contains content in module or video format that can be accessed through the SOA online portal registration linked here. This includes only content and materials that can be made available online; please consult this syllabus for the full curriculum. |
| Case Study | A case study will not be provided for this examination. |
| Past Exams | Past Exams from Fall 2020-present are available on SOA website. |
| Updates | Candidates should be sure to check for updates on the course homepage periodically for additional corrections or notices to the current syllabus. |

| 1. Topic: Provider Contracting and Reimbursement (20% - 30%) | |
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| **Learning Objectives** | |
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| The candidate will understand how to evaluate the effectiveness of provider reimbursement methods from both a cost and quality viewpoint. | |

| **Learning Outcomes** | |
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| The Candidate will be able to: | |

a) Describe contracts between payers and providers

b) Calculate provider payments under various reimbursement methods

c) Evaluate standard contracting methods from a cost-effective and quality perspective

d) Evaluate accountable care organizations and their impact on quality, utilization, and cost

| **Resources** | **Learning Outcomes** |
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| Video: Challenges of Provider Reimbursement | *Background* |
| Video: Today's Provider Reimbursement Landscape | *Background* |
| GH301-105-25: Chapter 45 of *Group Insurance*, Skwire, Daniel, 8th Edition, 2021 | *1a* |
| Provider Payment Arrangements, Provider Risk, and Their Relationship with Cost of Healthcare, 2015 (excluding Appendices) | *1b, 1c, 1d* |
| Value-Based Care Framework, The Actuary, Apr 2020 | *1d* |
| The Cost of Value-Based Care, The Actuary, Apr 2020 | *1d* |
| GH301-100-25: Evaluating Bundled Payment Contracting | *1b, 1c* |
| *Healthcare Risk Adjustment and Predictive Modeling,* Duncan, Ian G., 2nd Edition, 2018<br>• Ch. 22: Accountable Care Organizations | *1d* |
| GH301-101-25: Avoiding Unintended Consequences in ACO Payment Model | *1d* |
| GH301-102-25: Episode-Based Physician Profiling: A Guide to the Perplexing | *1c* |
| GH301-103-25: Physician Cost Profiling – Reliability and Risk of Misclassification | *1a* |
| GH301-104-25: The Application of Tiering in Healthcare | *1a* |
| Surprises in the No Surprises Act: An Interview with Greg Fann, Health Watch, Sep 2024 | *1a, 1b* |
| Surprises in the No Surprises Act: An Interview with Greg Fann (Part 2), Health Watch, Nov 2024 | *1a, 1b* |

| 2. Topic: Disease Management (20% - 30%) |
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| **Learning Objectives** |
| The candidate will understand how to evaluate healthcare intervention programs. |
| **Learning Outcomes** |
| The Candidate will be able to: |

a) Describe, compare, and evaluate programs

b) Estimate savings, utilization rate changes, and return on investment

c) Apply the actuarially adjusted historical control methodology

d) Calculate chronic and non-chronic trends in a manner that reflects patient risk

| Resources | Learning Outcomes |
|---|---|
| *Managing and Evaluating Healthcare Intervention Programs*, Duncan, Ian G., 2nd Edition, 2014 | |
| • Ch. 3: Care Management Programs and Interventions | *2a* |
| • Ch. 8: Understanding the Economics of Care Management Programs | *2b* |
| • Ch. 9: Applying the Economic Model: The Example of Opportunity Analysis | *2b* |
| • Ch. 11: The Use of Propensity Scoring in Program Evaluation | *2b* |
| • Ch. 12: An Actuarial Method for Evaluating Care Management Outcomes (excluding Appendix 12.2-12.3) | *2c* |
| • Ch. 13: Understanding Patient Risk and Its Impact on Chronic and Non-Chronic Member Trends | *2d* |
| • Ch. 16: Testing Actuarial Methods for Evaluating Disease Management Savings Outcomes (excluding Appendices) | *2b* |
| GH301-106-25: End-of-Life Outcomes with or without Early Palliative Care: A Propensity Score Matched, Population-Base Cancer Cohort Study | *2b* |
| Valuation of Care Management Vendors, Health Watch, May 2020 | *2a* |

| **3. Topic: Healthcare Risk Adjustment[1] (15% - 25%)** | |
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| **Learning Objectives** | |
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| The candidate will understand how to apply risk adjustment in actuarial work. | |

| **Learning Outcomes** | |
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| The Candidate will be able to: | |

a) Apply risk adjustment to underwriting, pricing, claims, and care management situations (applications include Medicare, Medicaid, and ACA products)

b) Apply risk adjustment concepts to normalize population claims experience

c) Apply applicable best practices in risk adjustment

| **Resources** | **Learning Outcomes** |
|---|---|
| *Healthcare Risk Adjustment and Predictive Modeling*, Duncan, Ian G., 2nd Edition, 2018 <br><br> • Ch. 13: Medicaid Risk Adjustment | *3a, 3b* |
| Risk Adjustment in State Medicaid Programs, Health Watch, Jan 2008 | *3a, 3b* |
| *Healthcare Risk Adjustment and Predictive Modeling*, Duncan, Ian G., 2nd Edition, 2018 <br><br> • Ch. 14: Risk Adjustment in Medicare (excluding Appendix 14.1 & 14.2) <br> • Ch. 21: Risk Adjustment on the ACA Exchanges | <br><br>*3a, 3b*<br><br>*3a* |
| Creating Stability in Unstable Times – A Look at Risk Adjustment and Market Stabilization, The Actuary, Dec 2017 | *3a, 3b* |
| Changing with the Times: The Past and the Future of ACA Risk Adjustment, Health Watch, Jun 2020 | *3a* |
| GH301-107-25: HHS-Operated Risk Adjustment Technical Paper on Possible Model Changes, Oct 2021 (Ch. 1, 5 & Appendix A) | *3a* |
| Restoring the Indifference Ideal: If It's Not Adjusting for "Risk," It's Not "Risk Adjustment", Health Watch, Jun 2022 | *3a* |
| ASOP 23: Data Quality (excluding Appendices) | *3c* |
| ASOP 41: Actuarial Communications (excluding Appendices) | *3c* |
| ASOP 45: The Use of Health Status Based Risk Adjustment Methodologies (excluding Appendices) | *3c* |

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[1] Risk Adjustment in this course refers to adjusting revenue or capitation rates as applicable to the US health insurance market. This is distinct from the IFRS concept of risk adjustment.

| 4.  Topic: Medical Data (10% - 20%) | |
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| **Learning Objectives** | |
| The candidate will understand how to describe medical coding, sources of data, and data quality. | |
| **Learning Outcomes** | |
| The Candidate will be able to: <br><br> a) Identify various medical terms, diseases, and treatment options relevant to health actuarial work <br><br> b) Identify and explain the use of coding sets used in health practice (CPT, ICD-10, DRG, Revenue Codes) <br><br> c) Describe how coding sets change over time and evaluate the potential impact on actuarial analysis <br><br> d) Evaluate impacts of changes in coding structures on provider reimbursement <br><br> e) Describe and interpret clinical policy bulletins <br><br> f) Distinguish between public and private data <br><br> g) Evaluate types of study methods and identify the method used for a given study <br><br> h) Research a question using multiple data sources | |

| Resources | Learning Outcomes |
|---|---|
| eLearning Module: FSA: Terminology and Analytical Use of Data for Healthcare Actuaries | *4a-4h* |

| **5. Topic: Social Determinants of Health (5% - 15%)** |
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| **Learning Objectives** |
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| The candidate will understand how to explain the social determinants of health (SDOH) and their impact on health care costs and policy. |

| **Learning Outcomes** |
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| The Candidate will be able to:<br><br>a) Explain the social determinants of health and how they impact the cost of healthcare<br><br>b) Describe program design and economic techniques used to measure program performance<br><br>c) Describe the current use of SDOH in traditional actuarial practices<br><br>d) Evaluate applications of SDOH derived statistics in actuarial models |

| **Resources** | **Learning Outcomes** |
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| GH301-108-25: Social Determinants of Health in the Work of Health Actuaries | *5a-5d* |
| GH301-109-25: Health in Housing: Exploring the Intersection Between Housing & Health Care (excluding Appendices) | *5b* |
| GH301-110-25: UMass Risk Adjustment Project for MassHealth Payment and Care Delivery Reform: Describing the 2017 Payment Model, pp. 3-9 & Table 2 | *5d* |
| GH301-111-25: MassHealth Social Determinants of Health Risk Adjustment Model: Version 4.0, pp. 1-9 | *5d* |
| How Does Where You Live Impact Your Health?, SOA Research Institute, Mar 2022, Sections 3 & 5 | *5d* |
| Social, Physical and Cultural Determinants of Health: Their Incorporation into Actuarial Data and Workstreams, SOA Research Institute, Apr 2023, Sections 3-6 | *5b, 5c* |

| 6. Topic: Predictive Analytics (0% to 10%) |
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| **Learning Objectives** |
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| The candidate will understand how to apply the framework of predictive analytics to healthcare data and business applications. |

| **Learning Outcomes** |
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| The Candidate will be able to: <br><br> a) Describe common applications of predictive analytics in health care <br><br> b) Differentiate between types of risk score models <br><br> c) Describe common healthcare data sources for predictive modelling <br><br> d) Identify challenges specific to the use of healthcare claims in model development <br><br> e) Describe ethical considerations for actuaries in developing predictive models |

| **Resources** | **Learning Outcomes** |
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| eLearning Module: FSA: Predictive Modeling for Healthcare Actuaries | *6a-6e* |