

American Health Information Management Association (AHIMA)
Health Data Analyst
Job Task Analysis Study

Prepared by:
Pearson VUE
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Scope of Work

The American Health Information Management Association (AHIMA) invited subject matter experts to participate in a job task analysis (JTA) study to provide an updated perspective on the Certified Health Data Analyst (CHDA) credential. The job task analysis panelists are listed in Appendix F of this report. They represent a variety of employers, and each member holds the CHDA credential. Panelist diversity was desired by AHIMA in order to reflect the diversity of certificants.

The panelists met on April 27–28, 2016, at the Hyatt Regency Hotel near the AHIMA headquarters. The purpose of the meeting was to delineate the competency domains and tasks performed by Health Data Analysts (HDAs), which would become the basis of the test specifications for the certification examination. The knowledge and skills required to do the tasks were to be delineated to assist the exam item-writers in the later work of preparing the test questions. Finally, in order to validate the work of the HDAs, the panelists were also asked to provide suggestions for the field validation survey.

Job Task Analysis

Job Task Analysis Panel

The Commission on Certification for Health Informatics and Information Management (CCHIIM) Workgroup conducted a logical analysis of CHDA content and provided preliminary content domains to the job task analysis panel. The preliminary domains were:

- I. Data Management
- II. Data Analytics
- III. Data Reporting

The preliminary domains served as a starting point for the job task analysis panel. The panelists were free to fine-tune the domains as their discussions progressed.

Members of the JTA panel and representatives from AHIMA and Pearson VUE are listed in Appendix F.

Meeting Mechanics

During the two-day in-person meeting, the job task analysis panel was tasked with (a) developing a summary statement for the role of Health Data Analyst, (b) delineating major job responsibilities in the field (content domains), including the tasks performed in those domains, the knowledge and skills required to perform the tasks, and (c) to assist in planning the field validation survey. The meeting agenda is provided in Appendix A.

Summary Statement of HDAs

The JTA panel developed a summary statement for HDAs, using the scenario of explaining their profession as an elevator speech. The description is included below.

Health Data Analysts transform data into actionable information for providers, consumers, and payors. They provide descriptive and predictive information in the form of clinical, quality, operations, or business metrics. Health data analysts improve healthcare delivery by using data to answer questions and to ask new questions.

Competency Domains

The panel delineated five competency domains to form the basis of the test content outline for the CHDA examination. The domains are as follows:

- A. Business Needs Assessment
- B. Data Acquisition and Management
- C. Data Analysis
- D. Data Interpretation and Reporting
- E. Data Governance

The panel also delineated 28 tasks within the five competency domains, along with the knowledge and skills required to perform each task. The spreadsheet of the competency domains, tasks, knowledge, and skills is included in Appendix B. Working through a consensus exercise, the panel also assigned the percentage of test questions that each competency domain should represent. The work of the expert panel was transcribed to an electronic JTA validation survey for distribution to the field for validation.

JTA Validation Survey Summary

AHIMA's database of current CHDA certificants was used to invite participation in the JTA validation survey. There were 267 current certificants, and AHIMA included everyone. An email invitation that included the link (URL) for the survey was sent to the 267 professionals from the database. Responses were received from 120 individuals, which represented an outstanding response rate of 45%. There was some attrition throughout the survey pages; by the time participants reached the demographic items at the end of the survey, common response numbers were between 107–109 respondents.

Prior to the JTA workshop, a web meeting with the JTA panel was held on August 24, 2016, in order to review the survey responses and establish the test specifications (i.e., the content outline) for the certification examination. Seven panel members participated in the web meeting. The first order of business was to review the responses to the demographic items of the survey in order to decide whether the respondent group sufficiently represented the field; or if not, whether the findings should be interpreted in light of imbalances. The panel reviewed the responses for primary job level, highest education level completed, state where the majority of work is conducted, years of experience as an HDA, facility type of the primary work setting, department where the majority of work as an HDA is done, and whether the HDA work role includes supervising others. One panel member was surprised that half the respondents indicated they held a Masters degree, but overall the panel was satisfied that the respondent group represented the field well.

Validation Survey Responses

Survey Structure

Survey ratings for the 28 tasks were given on two 4-point scales. Each task was rated for frequency and importance.

Frequency scale

- Daily or weekly (4)
- Monthly or quarterly (3)
- Annually (2)
- Never (1)

Importance scale

- Very important (4)
- Important (3)
- Only somewhat important (2)
- Not at all important (1)

Knowledge and skills were rated only on the 4-point importance scale shown above.

Survey Ratings

- None of the tasks received a mean frequency or importance rating of 1. The lowest mean rating for frequency was 1.9. The high mean ratings not only validate all 28 tasks of the JTA study, but also confirm the diligence of the expert panel that earnestly worked to define the tasks that are typical of the larger community of HDAs, rather than promoting their individual specific work or preferences.
- Frequency and importance were treated equally, as both categories used a 4-point scale. The mean ratings for frequency and importance per task were multiplied to obtain a criticality rating, with possible values from 16 (4 x 4) to 1 (1 x 1). The criticality ratings calculated for the 28 tasks, based on actual responses to the survey, ranged from 13.9 to 5.3. All criticality ratings are shown in Appendix C of this report.
- Sometimes certification agencies use numeric cutoffs to exclude low-rated tasks from the final test specifications, and this is especially important if there are tasks with mean criticality ratings of 1 (never performed/not at all important). In the HDA validation survey, the lowest rated task (Manage data dictionary) had a criticality rating of 5.3 (1.9 frequency x 2.8 importance).
- Ninety-six percent of survey respondents indicated that the 28 tasks covered their work as HDAs "completely" or "adequately," and only 4% of respondents indicated "inadequately."
- Fifty-two knowledge topics and 26 skills were rated for importance on the 4-point scale. In the development of the test content outline, knowledge and skills are secondary to tasks, but are useful for item writers. The knowledge ratings ranged from 3.7 to 2.4 (on a 4-point scale), and the skills ratings ranged from 3.9 to 2.2.
- Ninety-nine percent of survey respondents indicated that the knowledge and skills listed covered their work as HDAs "completely" or "adequately," and only 1% of respondents indicated "inadequately." The importance ratings for knowledge and skills are shown in Appendices D and E, respectively.

Results

Test Content Outline

The expert panel considered three different versions of test content outlines, all based on the JTA validation survey data. The five competency domains varied slightly in the number of tasks they comprised, ranging from seven to nine tasks. The three test specifications models that were discussed are listed as follows, and represented in Table 1.

- **Unweighted.** The mean criticality ratings per competency domain were used to designate the percentage of test questions assigned to each competency domain, referred to as the “unweighted” model (i.e., not weighted by the number of tasks). In this model, the percentage of test questions ranged from 13% for the Data Governance domain, to 23% for the Data Acquisition and Management domain.
- **Weighted.** The mean criticality ratings and the number of tasks per competency domain were used to designate the percentage of test questions assigned to each competency domain, referred to as the “weighted” model (i.e., weighted by the number of tasks). In this model, the percentages ranged from 12% for the Data Governance domain, to 29% for the Data Acquisition and Management domain.
- **Panel.** During the in-person meeting on April 28, the JTA panel assigned percentages to the competency domains through a consensus exercise, referred to as the “panel” model. Those percentages were presented in the validation survey, and for each of the five domains, respondents were asked to indicate whether they agree with the percentage, prefer a higher percentage, or prefer a lower percentage. The panel’s percentages for all five domains were validated by a majority of the survey respondents.

During the discussion of the three test specifications models, several participants mentioned that the unweighted test specifications model was attractive—no one gave support for the other two models. In the web meeting, the panel voted by voice for their recommended model. All members indicated support for the unweighted model, which distributes the questions as shown in the red column in Table 1.

Table 1. Models for Test Specifications Considered by the JTA Panel

No. of tasks	Unweighted	Weighted	Panel	Domain title
6	21%	23%	15%	A. Business Needs Assessment
7	23%	29%	25%	B. Data Acquisition and Management
5	21%	18%	30%	C. Data Analysis
5	22%	19%	20%	D. Data Interpretation and Reporting
5	13%	12%	10%	E. Data Governance
28	100%	100%	100%	(Total)

Summary

The process used by AHIMA to conduct the JTA study worked well, and the survey findings of the field validated the work of the expert panel. The CHDA certification is well-established at AHIMA, and the due diligence of updating the job task analysis every few years serves to ensure that the test reflects the work performed by HDAs in the field.

Appendix A. Workshop Agenda

Job Task Analysis AGENDA

Wednesday, April 27, 2016

- 8:00 a.m. Catered breakfast
- 8:30 Welcome, introductions
- 9:00 Health Data Analyst "Elevator Speech"
- 9:20 Orientation from AHIMA and discussion
- 10:00 Break
- 10:15 Delineate major CHDA responsibilities
- Noon Catered lunch
- 1:00 p.m. Delineate tasks of first major CHDA responsibility
- 3:15 Break
- 3:30 Delineate tasks of other major CHDA responsibilities
- 5:00 Adjourn

Thursday, April 28, 2016

- 8:00 a.m. Catered breakfast
- 8:30 Review/refine work of Day 1
- 10:00 Break
- 10:15 Knowledge needed to perform tasks
- Noon Catered lunch
- 1:00 p.m. Weights, demographics and phrasing the survey question
- 3:00 Evaluations, adjourn

*Pearson VUE Facilitators: Lynn Webb, Christopher Allan
AHIMA Staff: Jo Santos, Tameka Tanner, and Ashley Bronersky*

Appendix B. Expert Panel Competency Domains, Tasks, Knowledge, and Skills

Domain/Task	Knowledge of/Skill in
A. BUSINESS NEEDS ASSESSMENT	
1 Determine the stakeholders	organization, responsibilities, ownership, problem owner, sponsor, business process owner, HC administration, organization
2 Facilitate problem identification with stakeholders	patience, HC operations, analytic skill, communication, consultation, conflict resolution, alignment to organizational strategy
3 Evaluate external measures or requirements	policy analysis, critical thinking, DRG, MDS, standard healthcare nomenclature (e.g., ICD), reimbursement methodologies, clinical terminology, quality measures, outcome measures
4 Translate words into metrics	performance improvement, measurement methods, statistics, industry terminology
5 Determine analytical methods	performance improvement, measurement methods, statistics
6 Create an analysis plan	project management, process design, flowcharting, report types (e.g., ad hoc, interactive analysis, on-demand)
B. DATA ACQUISITION AND MANAGEMENT	
1 Identify sources of data or information	Publicly available data (e.g., hospital compare, MEDPAR, HCUP, AHRQ, data.gov, Cost report data), internal data (e.g., data warehouse, EMR data, patient registry, disease registry), nomenclature (e.g., ICD, CPT, DRG, MDS, Loinc, Snomed, RVU, NDC), source/reference qualitative data (e.g., policy, specifications, benchmarks), E.H.R.
2 Develop data collection techniques	Data capture, defining discrete data points, database structure, survey design, clinical workflow, human-centered design, E.H.R.
3 Extract data or information	Transport (e.g., EDI, 834 format, HL7, XML), query syntax (e.g., sql, flat file sources, business objects), table joins, key relationships, filtering, data structure, E.H.R.
4 Explore data or information	Source data, query syntax (e.g., sql, flat file sources, business objects), table joins, key relationships, filtering
5 Cleanse acquired data	Source data, table joins, key relationships, filtering, purging data
6 Map data	Source data, query syntax (e.g., sql, flat file sources, business objects), table joins, key relationships, filtering, cross walks

Domain/Task	Knowledge of/Skill in
7 Validate data	Source data, query syntax (e.g., sql, flat file sources, business objects), table joins, key relationships, filtering, accuracy, reliability, completeness, database maintenance (e.g., refresh, version control)
C. DATA ANALYSIS	
1 Query data	query syntax (e.g., sql, flat file sources, business objects), aggregation, recursion, conditionals, table joins, key relationships, filters, Boolean logic
2 Determine statistical approach	Descriptive, inferential, predictive, prescriptive, hypothesis testing, regression, fitting models, overtraining/generalizability, correlation, variance, central tendency, data types (e.g., nominal, ratio), sampling/sample selection and size, power analysis, accuracy, reliability, completeness, risk adjustment
3 Apply statistical methodologies	Descriptive, inferential, predictive, prescriptive, statistical software (e.g., SAS, SPSS, Excel, R, Informatica), computational skills, mathematical logic, risk adjustment
4 Observe changes and variations in data	Variance, trending, skew/kurtosis
5 Visualize data for analysis	Plot types, box and whisker, scatter plots, contingency tables, line and bar charts, pie charts, bubble/cluster, process control charts, trend lines, run charts, judgment
D. DATA INTERPRETATION AND REPORTING	
1 Identify key findings	Critical thinking, communication, technical skills, organizational/subject matter, facilitation, business drivers, alignment to organizational strategy
2 Develop recommendations	Creativity, persuasion, judgement, PDSA cycle, subject matter, problem solving
3 Disclose assumptions and limitations	data content, storage and retrieval, industry and regulatory standards, organizational policies, discretion, bias awareness
4 Create visualizations for stakeholders	Information design, infographics (e.g. plain language display), information design (e.g., scorecards, dashboards, graphs), color selection
5 Communicate findings to stakeholders	Presentation, communication, public speaking (soft skills), writing skills, customer service, mode of presentation

Domain/Task	Knowledge of/Skill in
E. DATA GOVERNANCE	
1 Participate in the development of policies for access, ownership, integrity, or usage of data	HIPAA, compliance, application of regulatory standards (e.g., privacy, security, release of information), policy development, data governance standards, alignment to organizational strategy
2 Implement procedures for access, ownership, integrity, or usage of data	Workflow analysis, standard operating procedures, root cause analysis, problem solving
3 Manage data dictionary	Database (e.g. classification, types, categories, structure), Metadata, industry terminology, organization (ERD)
4 Ensure adherence to security and privacy policies	Quality assurance, risk management, compliance, attention to detail
5 Maintain audit logs or controls of analyses and data submission	Critical thinking, HIPAA, compliance, regulatory standards, identify risk, industry audit standards

Appendix C. Criticality Ratings for All Tasks

Domain Color Legend

Business Needs Assessment (BNA)

Data Acquisition and Management (DA&M)

Data Analysis (D Anal)

Data Interpretation and Reporting (DI&R)

Data Governance (DG)

Criticality	Domain	Task
13.86	DA&M	9. Extract data or information
13.13	DA&M	13. Validate data
13.12	DA&M	7. Identify sources of data or information
13.10	DA&M	10. Explore data or information
13.10	D Anal	14. Query data
12.12	DI&R	19. Identify key findings
11.63	BNA	2. Facilitate problem identification with stakeholders
11.61	D Anal	18. Visualize data for analysis
11.39	DI&R	23. Communicate findings to stakeholders
11.31	D Anal	17. Observe changes and variations in data
11.16	DA&M	11. Cleanse acquired data
10.64	BNA	4. Translate words into metrics
10.63	BNA	5. Determine analytical methods
10.49	DI&R	20. Develop recommendations
10.40	DI&R	21. Disclose assumptions and limitations
10.16	BNA	3. Evaluate external measures or requirements
10.01	BNA	1. Determine the stakeholders
10.00	DI&R	22. Create visualizations for stakeholders
9.67	BNA	6. Create an analysis plan
9.55	DA&M	8. Develop data collection techniques

Criticality	Domain	Task
9.11	DG	27. Ensure adherence to security and privacy policies
8.06	DA&M	12. Map data
8.00	D Anal	15. Determine statistical approach
7.94	D Anal	16. Apply statistical methodologies
6.25	DG	24. Participate in the development of policies for access, ownership, integrity, or usage of data
5.97	DG	25. Implement procedures for access, ownership, integrity, or usage of data
5.92	DG	28. Maintain audit logs or controls of data use and reporting
5.32	DG	26. Manage data dictionary

Appendix D. Importance Ratings for Knowledge

Mean Rating	Knowledge
3.66	8. Data content
3.59	7. Data capture
3.57	25. Internal data (e.g., data warehouse, EMR data, patient registry)
3.51	46. Source data
3.45	9. Data display
3.38	11. Data structure
3.36	42. Report types (e.g., ad hoc, interactive analysis, on-demand)
3.36	39. Quality measures
3.33	13. Database (e.g., classification, types, categories, structure)
3.33	4. Compliance
3.29	32. Outcome measures
3.28	1. Alignment to organizational strategy
3.28	16. EHR
3.27	26. Key relationships
3.26	40. Query syntax (e.g., SQL, flat file sources, business objects)
3.26	2. Clinical terminology
3.20	18. Healthcare nomenclature
3.20	19. HIPAA
3.20	30. Mode of presentation
3.16	12. Data types (e.g., nominal ratio)
3.15	21. Industry and regulatory standards
3.10	23. Industry terminology
3.08	17. External data
3.06	51. Table joins
3.04	27. Mathematical logic
3.01	45. Sampling/sample selection and size
2.99	10. Data governance standards
2.98	37. Project management
2.96	22. Industry audit standards
2.96	29. Metadata
2.94	3. Clinical workflow
2.94	6. Cross walks
2.94	41. Reimbursement methodologies
2.91	15. DRG
2.90	14. Database maintenance (e.g., refresh, version control)
2.90	48. Statistics (e.g., descriptive, inferential, predictive)
2.87	43. Revenue cycle
2.87	49. Storage and retrieval
2.86	38. Publicly available data (e.g., hospital compare, MEDPAR, data.gov)
2.86	47. Standard operating procedures

Mean Rating	Knowledge
2.83	24. Information governance
2.81	36. Process design
2.72	44. Risk adjustment
2.71	28. Measurement methods (e.g., hypothesis testing, regression)
2.65	52. Transport (e.g., EDI, 834 format, HL7 , XML)
2.60	34. Plot types (e.g., box and whisker, scatter plots, contingency tables)
2.59	5. Conditionals
2.58	35. Process control charts
2.57	31. Model fitting
2.55	33. PDSA cycle
2.51	20. Human-centered design
2.38	50. Survey design

Appendix E. Importance Ratings for Skills

Mean Rating	Knowledge
3.66	8. Data content
3.59	7. Data capture
3.57	25. Internal data (e.g., data warehouse, EMR data, patient registry)
3.51	46. Source data
3.45	9. Data display
3.38	11. Data structure
3.36	42. Report types (e.g., ad hoc, interactive analysis, on-demand)
3.36	39. Quality measures
3.33	13. Database (e.g., classification, types, categories, structure)
3.33	4. Compliance
3.29	32. Outcome measures
3.28	1. Alignment to organizational strategy
3.28	16. EHR
3.27	26. Key relationships
3.26	40. Query syntax (e.g., SQL, flat file sources, business objects)
3.26	2. Clinical terminology
3.20	18. Healthcare nomenclature
3.20	19. HIPAA
3.20	30. Mode of presentation
3.16	12. Data types (e.g., nominal ratio)
3.15	21. Industry and regulatory standards
3.10	23. Industry terminology
3.08	17. External data
3.06	51. Table joins
3.04	27. Mathematical logic
3.01	45. Sampling/sample selection and size
2.99	10. Data governance standards
2.98	37. Project management
2.96	22. Industry audit standards
2.96	29. Metadata
2.94	3. Clinical workflow
2.94	6. Cross walks
2.94	41. Reimbursement methodologies
2.91	15. DRG
2.90	14. Database maintenance (e.g., refresh, version control)
2.90	48. Statistics (e.g., descriptive, inferential, predictive)
2.87	43. Revenue cycle
2.87	49. Storage and retrieval

Mean Rating	Knowledge
2.86	38. Publicly available data (e.g., hospital compare, MEDPAR, data.gov)
2.86	47. Standard operating procedures
2.83	24. Information governance
2.81	36. Process design
2.72	44. Risk adjustment
2.71	28. Measurement methods (e.g., hypothesis testing, regression)
2.65	52. Transport (e.g., EDI, 834 format, HL7 , XML)
2.60	34. Plot types (e.g., box and whisker, scatter plots, contingency tables)
2.59	5. Conditionals
2.58	35. Process control charts
2.57	31. Model fitting
2.55	33. PDSA cycle
2.51	20. Human-centered design
2.38	50. Survey design

Appendix F. Expert Panel for the CHDA JTA

JTA Panelists

Name	Credentials	State	Job Title	Employer
April Morris	RHIT, CHDA	CA	Sr. Manager/ Director, Management Information and Analysis of Medical Records	Community Memorial Hospital Kaiser Permanente Health Plan
Brookes Noem	MSHI, CHDA	SD	Decision Support Developer	DAKOTACARE
Chet Deshmukh	MBA, OTR/L, CPC, CHDA	NC	Founder and CEO	VSTACCESS, INC.
Chuck Czarnik	CHDA	TN	VP, HIT Strategy and Support	Brookdale Senior Living, Inc.
Gregory Yosmali	MHA, MPA, CHDA	KY	Director, Performance Measurement and Benchmarking	UC Health
Kacie Kleja	CHDA	TN	Director, Clinical Analytics	HOSPITAL CORPORATION OF AMERICA, CLINICAL ANALYTICS
Laura Shue	MPA, CHDA	MI	Director, Data Quality and Compliance, Health Information Management	University of Michigan Health System
Nathan Templeman	CHDA	VA	Consultant	Atlas Research, LLC
Elizabeth Redman	CHDA	CA	Decision Support Analyst	Sharp Metropolitan Medical Campus
Brian Falcon	MHA, CPHIMS, CHTS-PW, CHDA, RHIA	PA	PennChart HIM Application Analyst, Corporate Information Services	University of Pennsylvania Health System
Brice Hopkins	MBA, RHIA, CHDA	OR	Clinical Workflow Analyst	Oregon Health & Science University