

CAREER PATHWAY DATA ANALYST (422)

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1 422-DATA ANALYST

1.1 WORK ROLE OVERVIEW

The table below provides an overview of various role-specific elements related to 422-Data Analyst.

Table 1. 422-Data Analyst Work Role Overview

NICE Role Description	Examines data from multiple disparate sources with the goal of providing security and privacy insight. Designs and implements custom algorithms, workflow processes, and layouts for complex, enterprise-scale data sets used for modeling, data mining, and research purposes.
OPM Occupational Series	<p>Personnel performing the 422-Data Analyst work role are most commonly aligned to the following Occupational Series:</p> <ul style="list-style-type: none"> - 2210-Information Technology – 39% - 1515-Operations Research – 8% - 343-Management and Program Analysis – 7% - 1550- Computer Science – 6% - 301 – Miscellaneous Administration and Program – 4%
Work Role Pairings	<p>Personnel performing the 422-Data Analyst work role are most commonly paired with the following complimentary Work Roles (Top 5 shown):</p> <ul style="list-style-type: none"> - 411-Technical Support Specialist – 23% - 421-Database Administrator – 12% - 431-Knowledge Manager – 20% - 621-Software Developer – 6% - 641-Systems Requirements Planner – 5%
Functional Titles	<p>Personnel performing the 422-Data Analyst work role may unofficially or alternatively be called:</p> <ul style="list-style-type: none"> - Business Intelligence Analyst - Chief Data Officer / Security Officer - Data Architect - Data Engineer - Data Modeler - Data Protection Officer - Data Scientist - Data Security Analyst - Data Security Officer - Database Security Analyst - Information Dissemination Manager - Operations Research Analyst

<p>Distribution of GS-Levels</p>	<p>Personnel performing the 422-Data Analyst work role are most commonly found within the following grades on the General Schedule.</p> <ul style="list-style-type: none"> - <input type="checkbox"/> GS-4 – redacted** - <input type="checkbox"/> GS-5 – redacted** - <input type="checkbox"/> GS-6 – redacted** - <input type="checkbox"/> GS-7 – redacted** - <input type="checkbox"/> GS-8 – redacted** - <input checked="" type="checkbox"/> GS-9 – 5% - <input type="checkbox"/> GS-10 – redacted** - <input checked="" type="checkbox"/> GS-11 – 12% - <input checked="" type="checkbox"/> GS-12 – 20% - <input checked="" type="checkbox"/> GS-13 – 28% - <input checked="" type="checkbox"/> GS-14 – 10% - <input type="checkbox"/> GS-15 – redacted** <p>*20% of all personnel performing the 422-Data Analyst work role are in non-GS pay plans and are excluded from this section. **percentages less than 3% have been redacted</p>
<p>On Ramps</p>	<p>The following work roles are examples of possible roles an individual may perform prior to transitioning into the 422-Data Analyst work role:</p> <ul style="list-style-type: none"> - 411-Technical Support Specialist - 421-Database Administrator - 431-Knowledge Manager - 621-Software Developer - 632-Systems Developer
<p>Off Ramps</p>	<p>The following work roles are examples of common transitions an individual may pursue after having performed the 422-Data Analyst work role. This is not an exhaustive list, nor does it consider learning and development opportunities an individual may pursue to prepare themselves for performing alternate work roles:</p> <ul style="list-style-type: none"> - 421-Database Administrator - 431-Knowledge Manager - 621-Software Developer - 632-Systems Developer - 661-Research and Development Specialist - 461-Systems Security Analyst - 511-Cyber Defense Analyst

*Note: Leveraging the knowledge, skills, abilities, and tasks of the 422-Data Analyst work role, individuals may prepare themselves to transition into one or more of the following cross-functional work roles:

- *711- Cyber Instructional Curriculum Developer*
- *712-Cyber Instructor*
- *732-Privacy Officer / Privacy Compliance Manager*
- *751-Cyber Workforce Developer and Manager*
- *752-Cyber Policy and Strategy Planner*
- *802-IT Project Manager*
- *803-Product Support Manager*

1.2 CORE TASKS

The table below provides a list of tasks that represent the Core, or baseline, expectations for performance in the 422-Data Analyst work role, as well as additional tasks that those in this role may be expected to perform.

Table 2. 422-Data Analyst Core Tasks

Task ID	Task	Core or Additional
T0007	Analyze and define data requirements and specifications.	Core
T0342	Analyze data sources to provide actionable recommendations.	Core
T0347	Assess the validity of source data and subsequent findings.	Core
T0349	Collect metrics and trending data.	Core
T0068	Develop data standards, policies, and procedures.	Core
T0385	Provide actionable recommendations to critical stakeholders based on data analysis and findings.	Core
T0146	Manage the compilation, cataloging, caching, distribution, and retrieval of data.	Additional
T0195	Provide a managed flow of relevant information (via web-based portals or other means) based on mission requirements.	Additional
T0210	Provide recommendations on new database technologies and architectures.	Additional
T0008	Analyze and plan for anticipated changes in data capacity requirements.	Additional
T0351	Conduct hypothesis testing using statistical processes.	Additional
T0353	Confer with systems analysts, engineers, programmers, and others to design application.	Additional
T0361	Develop and facilitate data-gathering methods.	Additional
T0366	Develop strategic insights from large data sets.	Additional
T0381	Present technical information to technical and nontechnical audiences.	Additional
T0382	Present data in creative formats.	Additional
T0383	Program custom algorithms.	Additional
T0392	Utilize technical documentation or resources to implement a new mathematical, data science, or computer science method.	Additional
T0402	Effectively allocate storage capacity in the design of data management systems.	Additional
T0403	Read, interpret, write, modify, and execute simple scripts (e.g., Perl, VBScript) on Windows and UNIX systems (e.g., those that perform tasks such as: parsing large data files, automating manual tasks, and fetching/processing remote data).	Additional
T0404	Utilize different programming languages to write code, open files, read files, and write output to different files.	Additional
T0405	Utilize open source language such as R and apply quantitative techniques (e.g., descriptive and inferential statistics, sampling, experimental design, parametric and non-parametric tests of difference, ordinary least squares regression, general line).	Additional

Task ID	Task	Core or Additional
T0460	Develop and implement data mining and data warehousing programs.	Additional

1.3 CORE KNOWLEDGE, SKILLS, AND ABILITIES

The table below provides a ranking of KSAs that represent the Core, or baseline, expectations for performance in the 422-Data Analyst work role, as well as additional KSAs that those in this role may be expected to demonstrate.

Table 3. 422-Data Analyst Core Knowledge, Skills, and Abilities

KSA ID	Description	Competency	Importance to Work Role
K0004	Knowledge of cybersecurity and privacy principles.	Information Systems/Network Security	Foundational to All Work Roles
K0001	Knowledge of computer networking concepts and protocols, and network security methodologies.	Infrastructure Design	Foundational to All Work Roles
K0003	Knowledge of laws, regulations, policies, and ethics as they relate to cybersecurity and privacy.	Legal, Government, and Jurisprudence	Foundational to All Work Roles
K0002	Knowledge of risk management processes (e.g., methods for assessing and mitigating risk).	Risk Management	Foundational to All Work Roles
K0005	Knowledge of cyber threats and vulnerabilities.	Vulnerabilities Assessment	Foundational to All Work Roles
K0006	Knowledge of specific operational impacts of cybersecurity lapses.	Vulnerabilities Assessment	Foundational to All Work Roles
S0129	Skill in using outlier identification and removal techniques.	Computer Network Defense	Core
S0109	Skill in identifying hidden patterns or relationships.	Data Analysis	Core
S0125	Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots).	Data Analysis	Core
S0126	Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS).	Data Management	Core
S0013	Skill in conducting queries and developing algorithms to analyze data structures.	Database Management Systems	Core
S0037	Skill in generating queries and reports.	Database Management Systems	Core
K0016	Knowledge of computer programming principles	Computer Languages	Additional
K0051	Knowledge of low-level computer languages (e.g., assembly languages).	Computer Languages	Additional
K0068	Knowledge of programming language structures and logic.	Computer Languages	Additional
K0139	Knowledge of interpreted and compiled computer languages.	Computer Languages	Additional
K0140	Knowledge of secure coding techniques.	Computer Languages	Additional
K0236	Knowledge of how to utilize Hadoop, Java, Python, SQL, Hive, and Pig to explore data.	Computer Languages	Additional
S0060	Skill in writing code in a currently supported programming language (e.g., Java, C++).	Computer Languages	Additional

KSA ID	Description	Competency	Importance to Work Role
S0094	Skill in reading Hexadecimal data.	Computer Languages	Additional
S0095	Skill in identifying common encoding techniques (e.g., Exclusive Disjunction [XOR], American Standard Code for Information Interchange [ASCII], Unicode, Base64, Uuencode, Uniform Resource Locator [URL] encode).	Computer Languages	Additional
S0130	Skill in writing scripts using R, Python, PIG, HIVE, SQL, etc.	Computer Languages	Additional
A0029	Ability to build complex data structures and high-level programming languages.	Computer Languages	Additional
S0017	Skill in creating and utilizing mathematical or statistical models.	Data Analysis	Additional
S0114	Skill in performing sensitivity analysis.	Data Analysis	Additional
S0118	Skill in developing machine understandable semantic ontologies.	Data Analysis	Additional
S0119	Skill in Regression Analysis (e.g., Hierarchical Stepwise, Generalized Linear Model, Ordinary Least Squares, Tree-Based Methods, Logistic).	Data Analysis	Additional
S0123	Skill in transformation analytics (e.g., aggregation, enrichment, processing).	Data Analysis	Additional
A0041	Ability to use data visualization tools (e.g., Flare, HighCharts, AmCharts, D3.js, Processing, Google Visualization API, Tableau, Raphael.js).	Data Analysis	Additional
K0020	Knowledge of data administration and data standardization policies.	Data Management	Additional
K0022	Knowledge of data mining and data warehousing principles.	Data Management	Additional
K0083	Knowledge of sources, characteristics, and uses of the organization's data assets.	Data Management	Additional
K0095	Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines).	Data Management	Additional
S0202	Skill in data mining techniques (e.g., searching file systems) and analysis.	Data Management	Additional
S0028	Skill in developing data dictionaries.	Data Management	Additional
S0106	Skill in data pre-processing (e.g., imputation, dimensionality reduction, normalization, transformation, extraction, filtering, smoothing).	Data Management	Additional
S0113	Skill in performing format conversions to create a standard representation of the data.	Data Management	Additional
S0127	Skill in using data mapping tools.	Data Management	Additional
S0369	Skill to identify sources, characteristics, and uses of the organization's data assets.	Data Management	Additional
A0066	Ability to accurately and completely source all data used in intelligence, assessment and/or planning products.	Data Management	Additional
K0193	Knowledge of advanced data remediation security features in databases.	Database Administration	Additional
K0420	Knowledge of database theory.	Database Administration	Additional
K0023	Knowledge of database management systems, query languages, table relationships, and views.	Database Management Systems	Additional
K0069	Knowledge of query languages such as SQL (structured query language).	Database Management Systems	Additional

KSA ID	Description	Competency	Importance to Work Role
K0197	Knowledge of database access application programming interfaces (e.g., Java Database Connectivity [JDBC]).	Database Management Systems	Additional
K0025	Knowledge of digital rights management.	Encryption	Additional
S0089	Skill in one-way hash functions (e.g., Secure Hash Algorithm [SHA], Message Digest Algorithm [MD5]).	Encryption	Additional
K0031	Knowledge of enterprise messaging systems and associated software.	Enterprise Architecture	Additional
K0056	Knowledge of network access, identity, and access management (e.g., public key infrastructure, Oauth, OpenID, SAML, SPML).	Identity Management	Additional
K0065	Knowledge of policy-based and risk adaptive access controls.	Identity Management	Additional
K0015	Knowledge of computer algorithms.	Mathematical Reasoning	Additional
K0052	Knowledge of mathematics (e.g. logarithms, trigonometry, linear algebra, calculus, statistics, and operational analysis).	Mathematical Reasoning	Additional
K0238	Knowledge of machine learning theory and principles.	Mathematical Reasoning	Additional
K0325	Knowledge of Information Theory (e.g., source coding, channel coding, algorithm complexity theory, and data compression).	Mathematical Reasoning	Additional
S0029	Skill in developing data models.	Modeling and Simulation	Additional
S0103	Skill in assessing the predictive power and subsequent generalizability of a model.	Modeling and Simulation	Additional
S0160	Skill in the use of design modeling (e.g., unified modeling language).	Modeling and Simulation	Additional
K0060	Knowledge of operating systems.	Operating Systems	Additional
K0129	Knowledge of command-line tools (e.g., mkdir, mv, ls, passwd, grep).	Operating Systems	Additional
A0035	Ability to dissect a problem and examine the interrelationships between data that may appear unrelated.	Problem Solving	Additional
A0036	Ability to identify basic common coding flaws at a high level.	Software Testing and Evaluation	Additional
K0229	Knowledge of applications that can log errors, exceptions, and application faults and logging.	System Administration	Additional
S0088	Skill in using binary analysis tools (e.g., Hexedit, command code xxd, hexdump).	Threat Analysis	Additional

1.4 CORE COMPETENCIES

The table below is a compilation of competencies aligned to the 422-Data Analyst work role, and their associated importance. Listed competencies are collections of three or more similar Knowledge, Skills, or Abilities aligned to the Work Role. *These competencies originate from the [NICE Framework Competency Pivot Tool](#).*

Table 4. 422-Data Analyst Core Competencies

Technical Competency	Comp ID	Definition	Work Role Related KSAs	Importance
Data Analysis	C012	KSAs that relate to collecting, synthesizing, and/or analyzing qualitative and quantitative data and information from a variety of sources to reach a decision, make a recommendation, and/or compile reports, briefings, executive summaries, and other correspondence	<ul style="list-style-type: none"> - Skill in creating and utilizing mathematical or statistical models. - Skill in identifying hidden patterns or relationships. - Skill in performing sensitivity analysis. - Skill in developing machine understandable semantic ontologies. - Skill in Regression Analysis (e.g., Hierarchical Stepwise, Generalized Linear Model, Ordinary Least Squares, Tree-Based Methods, Logistic). - Skill in transformation analytics (e.g., aggregation, enrichment, processing). - Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots). - Ability to use data visualization tools (e.g., Flare, HighCharts, AmCharts, D3.js, Processing, Google Visualization API, Tableau, Raphael.js). 	Core
Data Management	C013	KSAs that relate to the development and execution of data management plans, programs, practices, processes, architectures, and tools that manage, control, protect, deliver, archive, dispose of, and enhance the value of data and information assets.	<ul style="list-style-type: none"> - Knowledge of data administration and data standardization policies. - Knowledge of data mining and data warehousing principles. - Knowledge of sources, characteristics, and uses of the organization's data assets. - Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines). - Skill in data mining techniques (e.g., searching file systems) and analysis. - Skill in developing data dictionaries. - Skill in data pre-processing (e.g., imputation, dimensionality reduction, normalization, transformation, extraction, filtering, smoothing). - Skill in performing format conversions to create a standard representation of the data. - Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS). - Skill in using data mapping tools. 	Core

Technical Competency	Comp ID	Definition	Work Role Related KSAs	Importance
			<ul style="list-style-type: none"> - Skill to identify sources, characteristics, and uses of the organization's data assets. - Ability to accurately and completely source all data used in intelligence, assessment and/or planning products. 	
Database Management Systems	C016	KSAs that relate to the use of database management systems and software to control the organization, storage, retrieval, security, and integrity of data.	<ul style="list-style-type: none"> - Knowledge of database management systems, query languages, table relationships, and views. - Knowledge of query languages such as SQL (structured query language). - Knowledge of database access application programming interfaces (e.g., Java Database Connectivity [JDBC]). - Skill in conducting queries and developing algorithms to analyze data structures. - Skill in generating queries and reports. 	Core
Computer Languages	C006	KSAs that relate to computer languages and their applications to enable a system to perform specific functions.	<ul style="list-style-type: none"> - Knowledge of computer programming principles - Knowledge of low-level computer languages (e.g., assembly languages). - Knowledge of programming language structures and logic. - Knowledge of interpreted and compiled computer languages. - Knowledge of secure coding techniques. - Knowledge of how to utilize Hadoop, Java, Python, SQL, Hive, and Pig to explore data. - Skill in writing code in a currently supported programming language (e.g., Java, C++). - Skill in reading Hexadecimal data. - Skill in identifying common encoding techniques (e.g., Exclusive Disjunction [XOR], American Standard Code for Information Interchange [ASCII], Unicode, Base64, Uuencode, Uniform Resource Locator [URL] encode). - Skill in writing scripts using R, Python, PIG, HIVE, SQL, etc. - Ability to build complex data structures and high-level programming languages. 	Additional
Mathematical Reasoning	C031	KSAs that relate to devising strategies to solve a wide variety of math problems and determine if an assertion is correct.	<ul style="list-style-type: none"> - Knowledge of computer algorithms. - Knowledge of mathematics (e.g. logarithms, trigonometry, linear algebra, calculus, statistics, and operational analysis). - Knowledge of machine learning theory and principles. - Knowledge of Information Theory (e.g., source coding, channel coding, algorithm complexity theory, and data compression). 	Additional

Technical Competency	Comp ID	Definition	Work Role Related KSAs	Importance
Modeling and Simulation	C032	KSAs that relate to mathematical modeling and simulation tools and techniques to plan and conduct test and evaluation programs, characterize systems support decisions involving requirements, evaluate design alternatives, or support operational preparation.	<ul style="list-style-type: none"> - Skill in developing data models. - Skill in assessing the predictive power and subsequent generalizability of a model. - Skill in the use of design modeling (e.g., unified modeling language). 	Additional

1.5 SUGGESTED QUALIFICATIONS / CAPABILITY INDICATORS

Table 5. 422-Data Analyst Suggested Qualifications / Capability Indicators

For indicators of capability for the 422-Data Analyst work role, please see [Draft NISTR 8193 - National Initiative for Cybersecurity Education \(NICE\) Framework Work Role Capability Indicators](#).

Section to be populated with updated DoD-8140 Qualification Matrix for 422-Data Analyst.

2 APPENDIX: 422-DATA ANALYST TASK ANALYSIS AND KSA MAPPING

2.1 KEY TO READING THE TASK ANALYSIS AND KSA MAPPING

Table 6. Key to Reading the Task Analysis and KSA Mapping

Proficiency	Task Statement	Importance
As Written	Task as written within the NICE Cybersecurity Workforce Framework (NICE Framework).	Overall Importance to Work Role
Entry	<i>Example behavioral indicator / task permutation for performing this task at an Entry skills proficiency level.</i>	
Intermediate	<i>Example behavioral indicator / task permutation for performing this task at an Intermediate skills proficiency level.</i>	
Advanced	<i>Example behavioral indicator / task permutation for performing this task at an Advanced skills proficiency level.</i>	

Table 7. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
ID of K, S, or A	Knowledge, Skill or Ability needed to perform the task as written within the NICE Framework	Competency mapped to the individual K, S, or A.

2.2 422-DATA ANALYST TASK ANALYSIS AND KSA MAPPING

Table 8. T0007 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Analyze and define data requirements and specifications.	Core
Entry	<i>Extract and assist with the analysis and documentation data requirements and specifications.</i>	
Intermediate	<i>Extract, analyze, define, and document data requirements and specifications.</i>	
Advanced	<i>Lead, review, and approve data requirements and specifications.</i>	

Table 9. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
S0125	Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots).	Data Analysis
K0022	Knowledge of data mining and data warehousing principles.	Data Management
K0083	Knowledge of sources, characteristics, and uses of the organization's data assets.	Data Management
K0095	Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines).	Data Management
S0028	Skill in developing data dictionaries.	Data Management
S0126	Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS).	Data Management
S0369	Skill to identify sources, characteristics, and uses of the organization's data assets.	Data Management
K0023	Knowledge of database management systems, query languages, table relationships, and views.	Database Management Systems
S0013	Skill in conducting queries and developing algorithms to analyze data structures.	Database Management Systems
S0037	Skill in generating queries and reports.	Database Management Systems

Table 10. T0342 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Analyze data sources to provide actionable recommendations.	Core
Entry	Assist with the documentation and analysis of data sources to provide actionable recommendations.	
Intermediate	Analyze and document data sources to provide actionable recommendations based off of various resources.	
Advanced	Lead analysis and documentation of complex data sources and / or approve and report actionable recommendations.	

Table 11. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
K0068	Knowledge of programming language structures and logic.	Computer Languages
S0130	Skill in writing scripts using R, Python, PIG, HIVE, SQL, etc.	Computer Languages
S0129	Skill in using outlier identification and removal techniques.	Computer Network Defense
S0017	Skill in creating and utilizing mathematical or statistical models.	Data Analysis
S0109	Skill in identifying hidden patterns or relationships.	Data Analysis
S0119	Skill in Regression Analysis (e.g., Hierarchical Stepwise, Generalized Linear Model, Ordinary Least Squares, Tree-Based Methods, Logistic).	Data Analysis
S0123	Skill in transformation analytics (e.g., aggregation, enrichment, processing).	Data Analysis
S0125	Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots).	Data Analysis
A0041	Ability to use data visualization tools (e.g., Flare, HighCharts, AmCharts, D3.js, Processing, Google Visualization API, Tableau, Raphael.js).	Data Analysis
S0113	Skill in performing format conversions to create a standard representation of the data.	Data Management
S0126	Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS).	Data Management
S0369	Skill to identify sources, characteristics, and uses of the organization's data assets.	Data Management
S0013	Skill in conducting queries and developing algorithms to analyze data structures.	Database Management Systems
S0037	Skill in generating queries and reports.	Database Management Systems

Table 12. T0347 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Assess the validity of source data and subsequent findings.	Core
Entry	Assess routine data source, assist with assessing of non-routine data source and subsequent findings.	
Intermediate	Establish the parameters and thresholds that define routine data and assess the validity of source data and subsequent findings.	
Advanced	Define the standards by which a data source is validated, provide oversight, and ensure quality of source data assessment and subsequent findings.	

Table 13. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
S0017	Skill in creating and utilizing mathematical or statistical models.	Data Analysis
S0109	Skill in identifying hidden patterns or relationships.	Data Analysis
S0123	Skill in transformation analytics (e.g., aggregation, enrichment, processing).	Data Analysis
S0125	Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots).	Data Analysis
K0083	Knowledge of sources, characteristics, and uses of the organization's data assets.	Data Management
S0113	Skill in performing format conversions to create a standard representation of the data.	Data Management
S0126	Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS).	Data Management
S0369	Skill to identify sources, characteristics, and uses of the organization's data assets.	Data Management
A0066	Ability to accurately and completely source all data used in intelligence, assessment and/or planning products.	Data Management

Table 14. T0349 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Collect metrics and trending data.	Core
Entry	<i>Assist with the collection of metrics and trending data.</i>	
Intermediate	<i>Collect and document metrics and trending data.</i>	
Advanced	<i>Define the standards of metrics, while overseeing the collection, documentation, and reporting of metrics and trending data.</i>	

Table 15. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
S0017	Skill in creating and utilizing mathematical or statistical models.	Data Analysis
S0109	Skill in identifying hidden patterns or relationships.	Data Analysis
S0123	Skill in transformation analytics (e.g., aggregation, enrichment, processing).	Data Analysis
S0125	Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots).	Data Analysis
A0041	Ability to use data visualization tools (e.g., Flare, HighCharts, AmCharts, D3.js, Processing, Google Visualization API, Tableau, Raphael.js).	Data Analysis
S0126	Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS).	Data Management
S0369	Skill to identify sources, characteristics, and uses of the organization's data assets.	Data Management
S0013	Skill in conducting queries and developing algorithms to analyze data structures.	Database Management Systems
S0037	Skill in generating queries and reports.	Database Management Systems

Table 16. T0068 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Develop data standards, policies, and procedures.	Core
Entry	<i>Research and gather data standards, policies, and procedures, providing recommendations as applicable.</i>	
Intermediate	<i>Develop impact, cost benefit analysis, and gap reports in support of recommended data standards, policies, and procedures, providing recommendations as applicable.</i>	
Advanced	<i>Oversee the approval and development of data standards, policies, and procedures, ensuring alignment to the organization's mission.</i>	

Table 17. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
K0020	Knowledge of data administration and data standardization policies.	Data Management
K0022	Knowledge of data mining and data warehousing principles.	Data Management
K0083	Knowledge of sources, characteristics, and uses of the organization's data assets.	Data Management
K0095	Knowledge of the capabilities and functionality associated with various technologies for organizing and managing information (e.g., databases, bookmarking engines).	Data Management
S0028	Skill in developing data dictionaries.	Data Management
S0369	Skill to identify sources, characteristics, and uses of the organization's data assets.	Data Management
K0420	Knowledge of database theory.	Database Administration

Table 18. T0385 Task Analysis

Proficiency	Task Statement	Importance
As Written within Framework	Provide actionable recommendations to critical stakeholders based on data analysis and findings.	Core
Entry	<i>Assist with developing communications on actionable recommendations to critical stakeholders based on data analysis and findings.</i>	
Intermediate	<i>Package and effectively communicate actionable recommendations to critical stakeholders based on data analysis and findings.</i>	
Advanced	<i>Lead the development and delivery of communications of actionable recommendations to critical stakeholders based on data analysis and findings.</i>	

Table 19. Primary Knowledge, Skills, and Abilities Required to Perform the above Task

KSA ID	Description	Competency
S0125	Skill in using basic descriptive statistics and techniques (e.g., normality, model distribution, scatter plots).	Data Analysis
A0041	Ability to use data visualization tools (e.g., Flare, HighCharts, AmCharts, D3.js, Processing, Google Visualization API, Tableau, Raphael.js).	Data Analysis
K0083	Knowledge of sources, characteristics, and uses of the organization's data assets.	Data Management
S0126	Skill in using data analysis tools (e.g., Excel, STATA SAS, SPSS).	Data Management
A0066	Ability to accurately and completely source all data used in intelligence, assessment and/or planning products.	Data Management
S0037	Skill in generating queries and reports.	Database Management Systems
A0035	Ability to dissect a problem and examine the interrelationships between data that may appear unrelated.	Problem Solving