IBM Knowledge Accelerator for Healthcare

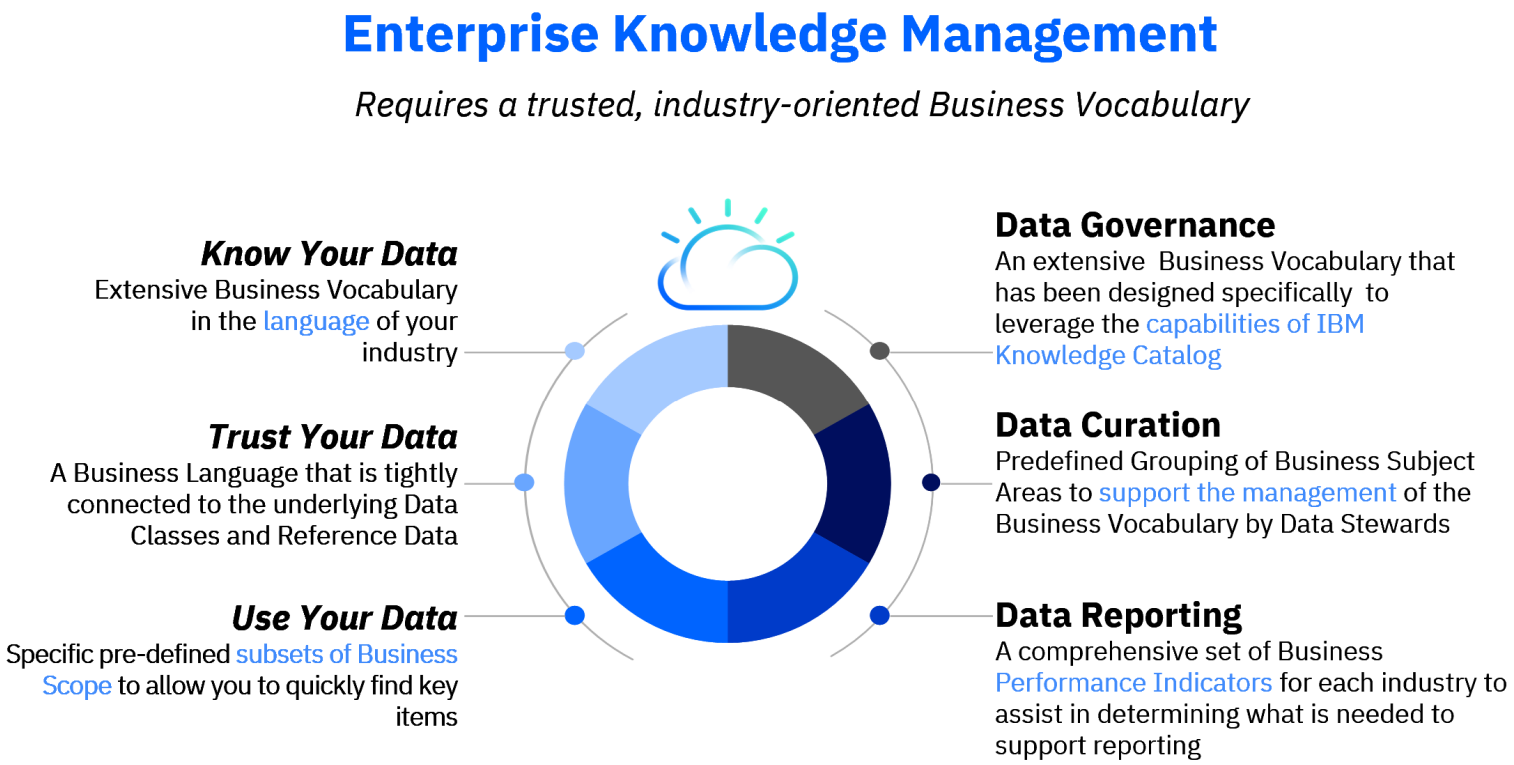
Accelerate the implementation of data governance, enterprise vocabularies, and compliance with regulatory and industry standards to create comprehensive industry content for catalog-generated management.

IBM

Table of contents

Business Context

Enterprise knowledge management requires a trusted, industry-oriented business vocabulary that captures the business meaning and context for the industry concepts, practices, and assets related to business operations.

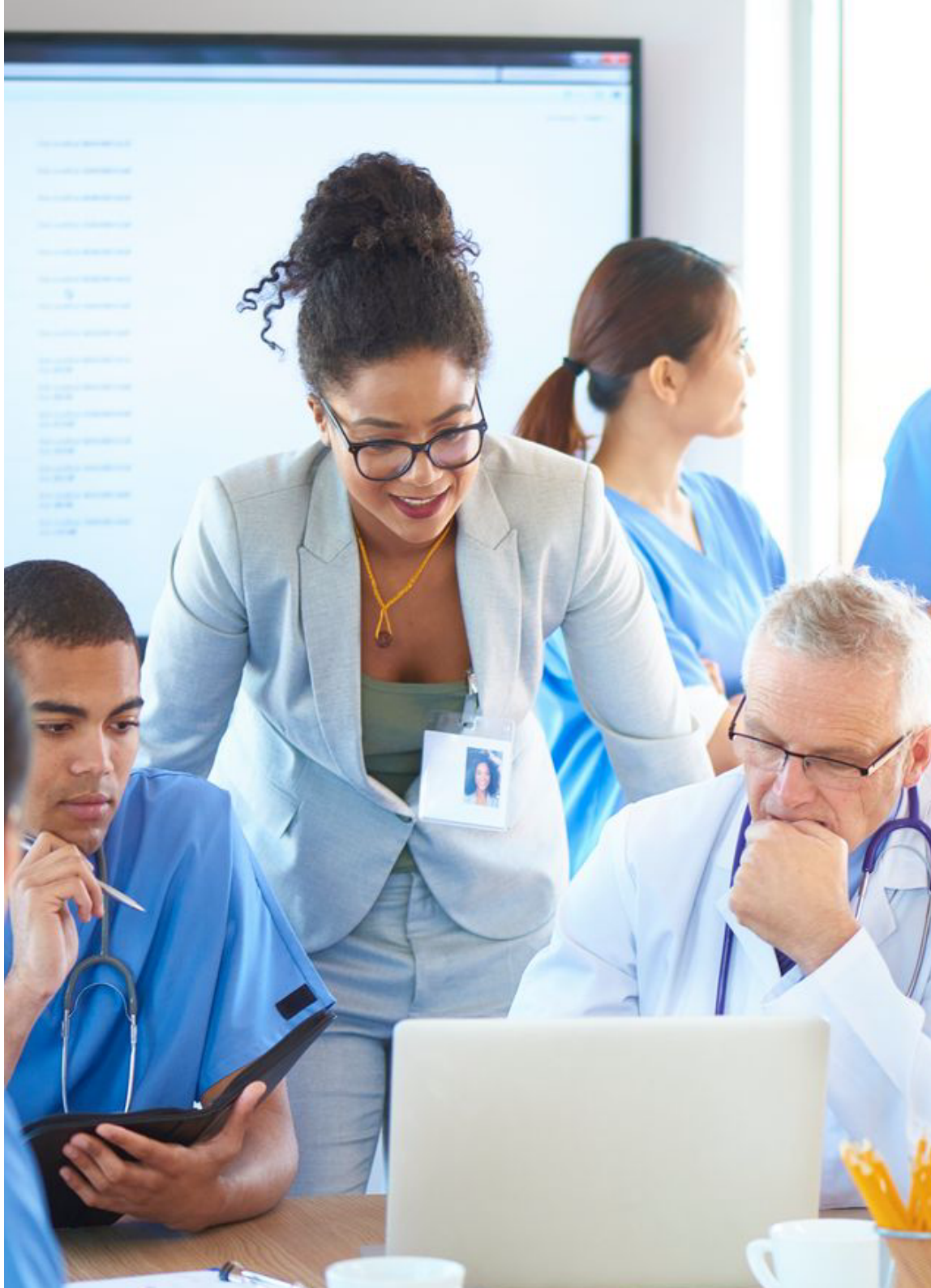


However, building a business vocabulary is more than creating a word list without definitions or business context. It takes time to create a usable business vocabulary, lots of time. It also requires a depth of industry experience and a breadth of operational business knowledge that usually is beyond a single person's capability. Thus, building a business vocabulary takes time and takes a team.

Best Practice Governance, Compliance, and Enterprise Search

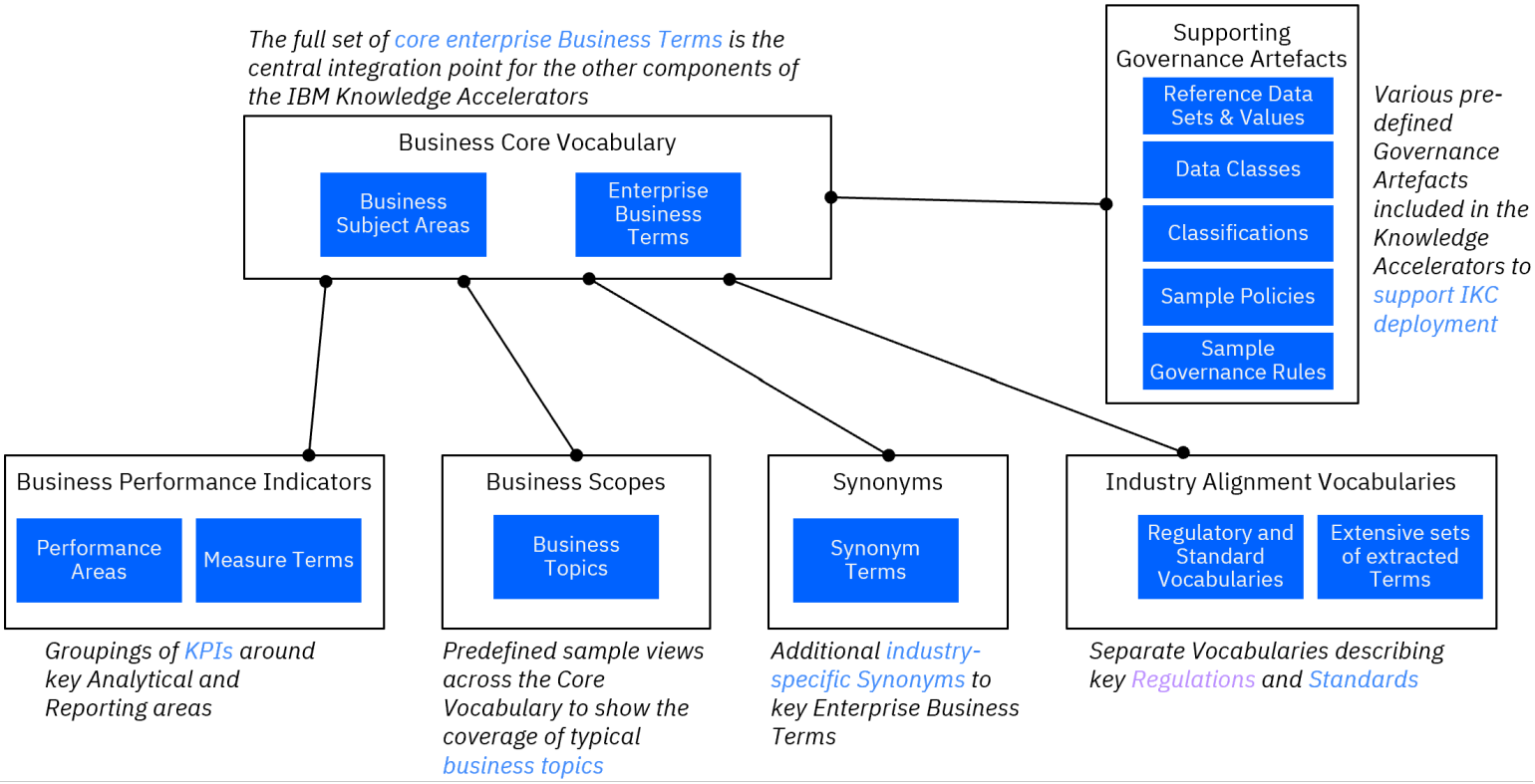
An enterprise business vocabulary provides great value for organizations because it centralizes the governance of enterprise information and assets. Activities such as compliance risk management are supported by a business vocabulary that connects regulatory concepts to the enterprise data footprint and the data policies and rules that surround it. Additionally, a well-governed enterprise business vocabulary enables enterprise search capability to provide a true “everything to everyone” view of the business.

In addition, an enterprise business vocabulary is an important basis for the overall semantic layer of a Data Fabric ecosystem.



IBM Knowledge Accelerator for Healthcare

IBM® Knowledge Accelerator for Healthcare (IBM KAHC) is an industry-specific vocabulary for healthcare payer and provider organizations that is imported in to IBM Knowledge Catalog. The comprehensive, multilayer business vocabulary includes thousands of inter-related terms that are grouped by intuitive subcategories. The terms in these subcategories (Business Core Vocabulary, Business Performance Indicators, Business Scopes, Synonyms, and Industry Alignment Vocabularies) are used by different business users to establish, understand, navigate, and use an enterprise vocabulary.



Find out more about the IBM Knowledge Accelerators at: https://www.ibm.com/products/knowledge-accelerators

IBM KAHC subcategories

The IBM Knowledge Accelerator for Healthcare is represented as a category of business terms within IBM Knowledge Catalog. The components within IBM KAHC are represented by the following subcategories:

- Business Core Vocabulary

  Defining industry concepts in plain business language, the Business Core Vocabulary contains business terms that have properties and can be related to each other. Business terms can include a term hierarchy and are organized by logical business categories. Clearly defined business terms help standardization and communication within an organization and are a foundation for governance of enterprise information assets.

- Business Performance Indicators

  Business Performance Indicators is a vocabulary of healthcare Key Performance Indicators (KPIs) or business measures. These business measures are grouped by (related to) performance analysis terms. These measure terms are also related to terms in the Business Core Vocabulary and allow business users to fully articulate the requirements for analysis. Business Performance indicators can be used for defining and meeting reporting requirements for the organization.

- Business Scopes

Business Scopes provide groupings of related Business Core Vocabulary terms that address a specific business use case. These are typically at a finer grain than the business core vocabulary categories and will help business users to focus on the terms required to support a particular business need. A number of business scopes are available for separate download and import.

- Synonyms

Synonym terms represent a word or phrase with the same meaning within the Healthcare industry. They extend the vocabulary with variations of terminology used by Clients, and are mapped to Business Core Vocabulary terms.

- Industry Alignment Vocabularies

Industry Alignment Vocabularies include terms that align key elements from industry regulations and standards to the terms within the Business Core Vocabulary for assisting with regulatory coverage and compliance for the healthcare organization. The alignment vocabularies supported include FHIR, HIPAA, GDPR, CCPA, and more.

Business Core Vocabulary

IBM Knowledge Accelerator for Healthcare includes a comprehensive vocabulary of business terms that are specifically focused on the Healthcare industry. These are organized into a set of business subcategories to enable users to quickly identify the terms relevant to their area of interest:

Accounting	Clinical Trial	Human Resources	Patient Administration	Referral and Authorization
Action Plan	Common	Infrastructure	Patient Medication	Schedule and Appointment
Agreement	Communication and Documentation	Item	Patient Registry	Specimen
Allergy	Consent	Legal Action	Patient Tag	Study
Assessment and Score	Diagnosis	Location	Personal Health Record	Supply Chain
Blood Product	Encounter	Marketing Activity	Pharmacy Intervention	Surgery
Business Rule Event	Event	Measure Definition	Point of Care Device	Survey
Care Management	Financial Transaction	Money Item	Population	Unfavorable Event
Claim	Genomics	Order	Procedure	Unified Standard Codes
Clinical Order	Group and Hierarchy	Party and Role	Provisioning	

Business Performance Indicators

IBM KAHC contains a Business Performance Indicators category that includes thousands of *measure* terms grouped by 240+ business *performance analysis* terms. These *performance analysis* terms are further organized under these *business performance indicator sub-categories*.

Brand & Product Marketing

Campaign

Claims

Clinical Analysis

Consumerism

Disbursements

Disease Specific Measures

Financial Performance

HHS Risk Equalization

Maternity Care

Member Retention

Member Service

Mental Health

Operational Performance

Personal Health Record utilization

Pharmacy Benefits Management

Product Management

Regulatory Reporting

ACO

AHRQ Quality Indicators

NHS Analysis

OASIS Analysis

Profitability

Provider Performance & Quality

Retail Sales

Service Line Indicators

Underwriting

Utilization Management

For example, the *business performance indicator sub-category* called Operational Performance contains the following *performance analysis* terms.

- Provider Revenue Cycle Analysis
- Location Utilization Analysis
- Medical Equipment Utilization Analysis
- Readmission Prediction Analysis
- Inpatient Operational Performance Analysis
- Labor Utilization Analysis
- Inventory Cost Analysis
- Labor Productivity Analysis
- Patient Experience Survey Analysis
- Referral Analysis
- Staff Absence Analysis
- Staff Turnover Analysis
- Surgical utilization Analysis
- Treatment Target Analysis
- Waiting List Analysis

Each of the above *performance analysis* terms will contain several *measure* terms that describe key performance indicators for healthcare business reporting.

For a complete list of Business Performance Indicator sub-categories and a description of each Performance Analysis term, please refer to Appendix A.

Business Scopes available for import

The IBM Knowledge Accelerator for Healthcare has a number of business scopes available for separate download and import. These can be imported individually to address one or more business use cases. Multiple scopes can be imported with common terms being shared across the scopes. Users can also import the full KAHC vocabulary to supplement any scope vocabulary content already imported. The following business scopes are available for separate download and import:

Clinical Order – Imaging
A Business Scope that groups terms that are related to the placing of a clinical order by a healthcare practitioner for a diagnostic image or set of images for a patient and the clinical findings that result from this order.

Health Plan Product - Features and Benefits
A Business Scope that groups terms that are related to the components of a health plan product and its features and benefits as well as the certification of that product in given locations by a regulatory authority.

Patient Administration – ADT
A Business Scope that groups terms that are related to the management of an in-patient scenario where a patient is admitted to a hospital setting for care and subsequently discharged or transferred.

Patient Practitioner
A Business Scope that groups terms that are related to information required to fully describe a patient as a person, a healthcare practitioner and the relationships between patients and practitioners.

Personal Health Record - Continuity Of Care
A Business Scope that groups terms that are related to an individual's medical history that would be recorded in various care settings or when enrolling in a health plan and might be exchanged between authorized providers and payers.

Submitted Healthcare Claim
A Business Scope that groups terms that are related to a claim as it would be submitted by a healthcare provider or received by a payer organization.

Data Privacy
A Business Scope that groups terms to accelerate the discovery and governance of personal information.

Industry Alignment Vocabularies

IBM KAHC includes Industry Alignment Vocabularies which are provided to guide mapping from industry standards to the IBM KAHC Business Core Vocabulary content. The Industry Alignment Vocabularies are defined using subcategories and terms below the Industry Alignment Vocabularies umbrella category.

Industry Alignment Vocabularies delivered with IBM KAHC:

- BRIDG 4.0
- FHIR v4.0.1
- OMOP
- GDPR (General Data Protection Regulation)
- CCPA (California Consumer Privacy Act)

The following Industry Alignment Vocabularies are available to qualifying IBM KAHC for Cloud Pak for Data clients upon request:

- Continuity of Care Document (CCD)
- Continuity of Care Document (CCD) - Behavioral Health
- HIPAA 5010
- HL7 v2.7

Visit Accessing IBM KAHC Industry Alignment Vocabularies for more information on requesting this content.

These IAVs are not available to clients using IBM Knowledge Accelerators for Healthcare for Cloud Pak for Data as a Service.

IBM Knowledge Accelerators subcategories

The “Knowledge Accelerators” category contains related artifacts such as Data Classes, Reference Data, Policies, and Rules organized in subcategories

Data Classes

IBM KAHC extends the set of data classes provided in IBM Knowledge Catalog with a number of data classes describing commonly used healthcare identifiers as well as data classes based on FHIR reference data sets.

The existing IBM Knowledge Catalog data classes and the new data classes that are provided by the Knowledge Accelerators are all combined in a new category hierarchy based on topics such as Demographics, Finance, and Location. This subcategorization allows them to be selectively included in different metadata enrichments to improve matching accuracy. As the data classes are pre-mapped to terms in the Business Core Vocabulary, metadata enrichment also automatically assigns the business term when it matches data in an asset to a data class.

Data classes that are relevant to personal data also have a classification of either Personal Information (PI) or Sensitive Personal Information (SPI) depending on the sensitivity of the data it describes. This classification helps in the identification of personal data in data assets and supports the application of data protection rules to control data access.

Reference Data

IBM KAHC includes over 1100 FHIR reference data sets covering account, claim, care plan, encounter, diagnostics, insurance plan and many more. Reference data sets are mapped to the core business vocabulary. In IBM Knowledge Catalog, reference data sets can be used to generate data classes, which are used to profile the data in the data catalog. Try the guided demo of IBM Knowledge Catalog to explore the capabilities.

Policies

IBM KAHC provides a sample selection of governance policies in the areas of Data Privacy and AI Governance. The policies are further broken down into policy subcategories, which contain individual policies that illustrate how the organization can define its own policies in these areas. The Organization might also use this category structure to create policies in other areas such as Sustainability, or Diversity. Policies are descriptive rather than enforceable in IBM Knowledge Catalog.

Rules

IBM KAHC provides a sample selection of governance rules in the areas of Data Privacy and AI Governance. These rules express how the organization intends to implement their policies. Governance Rules can be related to one or more governance policies. They can also be related to business terms where such terms are clearly applicable to the rule. Like policies, Governance Rules are not enforceable. This sample that is provided illustrates how the organization can define its own expanded set of rules.

Data Privacy and Protection

IBM Knowledge Accelerator for Healthcare contains business terms with classifications to guide the identification of personal information and sensitive personal information. By using the metadata enrichment tool in IBM Knowledge Catalog, the business terms can be assigned to imported data assets to identify the assets that contain personal data.

IBM KAHC includes a **Data Privacy Scope** that contains a set of Business Core Vocabulary terms to accelerate the discovery and governance of personal information and the activities that are related to processing such information.

The Business Terms in the Data Privacy scope are categorized to align with key data privacy topics:

- Personal Data
    - Affiliations
    - Basic Personal Information
    - Beliefs, Views & Opinions
    - Biometrics and Neurodata
    - Criminal & Offence Activity
    - Demographics
    - Education & Skills
    - Finance
    - Health
    - ID - Government
    - ID - Others
    - Online Activities
    - Online Behavior
    - Opinion
    - Personal Communication
    - Personal Human Resources
    - Personal Location
    - Schedules
    - Telephony & Video
- Personal Data

The scope is not intended to be a definitive standard for data privacy and protection requirements as the classifications of Personal Information (PI) and Sensitive Personal Information (SPI) vary in different legal jurisdictions. However, the business terms in the scope include suggested PI and SPI classifications.

The Data Privacy Scope complements specific regulations such as GDPR or CCPA and includes Business Core Vocabulary terms that are related to these regulations in the following categories.

- Regulatory Alignment
    - CCPA Related Terms
    - GDPR Related Terms

The Data Privacy Scope helps accelerate the building of the organization’s data privacy taxonomy and the creation of an inventory of data assets that contain personal information. This scope is available for separate download and import.

Data Privacy Regulations

IBM Knowledge Accelerator for Healthcare contains key concept terms from two leading data privacy regulations. These regulatory terms are related to the business terms within the Business Core Vocabulary, which helps data users identify enterprise information that is relevant to these regulations. This coverage can help the organization understand what components need to be considered including consumer rights, personal data types, processing activities, processing purposes, and roles.

GDPR

IBM KAHC supports the General Data Protection Regulation (GDPR) and provides an industry-specific vocabulary that can help the organization discover and govern privacy data. IBM KAHC also provides KPI templates for regulatory reporting. It can help organizations ensure that their enterprise data architecture is able to provide the necessary data artifacts to report on data protection issues. It can also help to determine and define which type of personal data the organization uses.

CCPA

IBM KAHC also supports the California Consumer Privacy Act (CCPA). Building on the foundations put in place with GDPR, IBM KAHC identifies key terms within the CCPA regulation, which are then mapped to the Business Core Vocabulary terms.

AI Governance

IBM KAHC includes a set of policies relating to governance of the use of Artificial Intelligence by the organization. The AI governance policies are organized into a set of subcategories that describe the main process flow of an AI project.

- **AI Scoping and Planning Policies** relating to the scoping and planning of AI projects including assignment of responsibilities, establishing the use case, and identifying potential ethical issues and risks.
- **AI Data Collecting and Organizing Policies** relating to the collection and organization of data for use in AI projects. It is critical that such data is appropriate to the use case and does not introduce bias into the model.
- **AI Building and Training Policies** relating to the building and training of AI models by the organization. This includes mitigating risks and bias, and the systematic recording of assessment results.
- **AI Validating and Deploying Policies** relating to the validation of machine learning models against their original context as well as the predetermined performance thresholds prior to deployment.
- **AI Monitoring and Managing Policies** relating to the ongoing monitoring and management of deployed machine learning models used by the organization.

This sample policy set is provided for illustrative purposes only. It shows how the organization can define its own expanded set of policies in this and other areas.

Industry Led Governance

While a business vocabulary is often defined as a way to provide a business view to connect with more technical artifacts, or as the starting point for defining the business scope to be used to guide the identification of a subset of logical model elements, the business vocabulary has significant value in its own right.

A properly defined business vocabulary that reflects the needs and terminology of the various users can be used to:

- Act as a common language across the different business users across the organization
- Provide a reference point when aligning new or acquired businesses into the overall organization
- Provide the Data Steward with a comprehensive and scalable template with which to grow their business vocabulary, addressing both the needs of the central IT as well as the needs of the individual groups of Self-Service users
- Provide a basis for the identification of gaps and overlaps between different projects or activities that the enterprise may be engaged in
- Leverage the AI/ML capabilities of IBM Knowledge Catalog. Where relevant, the business terms in the IBM Knowledge Accelerators are integrated with the Data Classes provided out of the box with IBM Knowledge Catalog and the Knowledge Accelerators. This ensures a higher coverage and accuracy of the Auto assignment of Data Assets to Terms, thus improving the integration of the Knowledge Accelerators with the governed assets
- Broaden the current coverage of the AI-driven Data Discovery process. The IBM Knowledge Accelerators include sample Reference Data Sets and Reference Data values that, when customized as required, can be used as a basis for the creation of additional Data Classes. This results in a broader range of data classes available to underpin the Data Discovery process

IBM KAHC contains comprehensive enterprise vocabulary structure designs.

Data Lake, Lakehouse and watsonx.data

The data lake and the more recent lakehouse have emerged as the possible mechanism to enable organizations to define, manage and govern the use of various big data technologies. This represents an evolution of big data towards mainstream use in an enterprise and the associated focus on management of such assets.

Many of the same traditional imperatives for the use of IBM KAHC also exist when organizations deploy a lakehouse

- The need to establish a common cross enterprise set of assets for use by the business, with such assets fully integrated with the overarching layer of business terms
- The use of healthcare-oriented and business-friendly terminology to ensure a suitable basis for self-service access by the business users of the lakehouse
- The use of classifications and tags on terms to assist business and technical users when searching and navigating the vocabulary
- The need for consistent and scalable structures of the vocabulary to ensure common understanding of the lakehouse assets by the business and technical users
- The need to enforce a common governance layer around the lakehouse

IBM KAHC contains a number of components which are ideally suited to supporting deployment to a lakehouse architecture. IBM Knowledge Catalog enables organizations to govern and protect their data assets in a watsonx.data lakehouse.

Learn More

IBM Knowledge Accelerator Metamodel

IBM Knowledge Accelerators are designed based on a common metamodel specification described in the components section of the IBM Documentation.

IBM Knowledge Accelerators for Cloud Pak for Data Components
https://www.ibm.com/docs/SSQNUZ_5.2.x/ka/components/compnts.html

IBM Knowledge Accelerators for Cloud Pak for Data as a Service Components
https://dataplatform.cloud.ibm.com/docs/content/ka/components/compnts.html

IBM Documentation

IBM Knowledge Accelerator for Healthcare documentation is available on the following sites:

IBM KAHC for Cloud Pak for Data
https://www.ibm.com/docs/SSQNUZ_5.2.x/ka/ka-cpd.html

IBM KAHC for Cloud Pak for Data as a Service
https://dataplatform.cloud.ibm.com/docs/content/ka/ka-cpd.html

Appendix A – Performance Indicator Categories, Performance Analysis Terms and Descriptions

This section describes the business content in the Business Performance Indicators Category

Brand and Product Marketing

To analyze the image of the healthcare organization's brands and products in the marketplace, among employers, members, potential members, providers and competitors. Having a comprehensive view of all brand and product marketing enables the plan to more effectively sell to target market segments.

Household Value Analysis - The household value analysis records aggregate measures related to the number of policies held by each household in the membership, number of people in the household, number of adults, number of children.

Market Analysis - The analysis of market trends such as changes in the estimated value of the market and the size of the organization's share of the market.

Marketing KPI for Growth Analysis – Analysis of the key performance indicators for the marketing processes, to grow revenue.

Marketing Optimization and Expense Analysis - Analysis of the marketing processes to manage expenditure, improve profit margin, optimize capital efficiency and manage enterprise risk.
Member Behavior Analysis - Analysis of contracts held by the policyholder as well as movements made by the policyholder in each contract.

Campaign

To analyze and compare the effectiveness of customer promotions, product promotions, marketing drives and advertising strategy. By keeping track of campaign cost, results and effect on product sales and services revenue, the healthcare organization can determine the overall campaign effectiveness.

Campaign Cost Analysis - The campaign cost analysis records measures related to the execution of campaigns including the variable costs of outbound and inbound contacts.

Campaign Profitability Analysis - The campaign profitability analysis records measures related to the revenues generated by a campaign as well as the costs associated with it.

Campaign Sales Analysis - Measures campaign success from the perspective of the volume and values of policies and premiums sold. This includes new members gained, existing members cross-sold to, members who purchased new products but canceled prior policies, members contacted who did not buy new products, and the premiums earned from each category. This analysis is applicable to group or individual member types.

Consumer Campaign Outcome Analysis - The analysis of consumer campaigns in terms of the outcomes achieved against the planned outcomes or targets. Campaigns may have quantitative or financial goals and this analysis compares these goals with the results achieved.

Claims

To analyze the adjudication and processing of claims in order to understand the numbers, amounts and types of claims received and paid and the impact of plan design and provider arrangements on claims. By understanding trends and variations in claims by sponsor, geography, processing unit, and other aspects, the health plan can better predict expected claim payments and identify potential process, technology and organizational improvements such as training for claims examiners, provider administrative staff, or product design modifications to better manage costs. The analysis also includes coordination of benefits and claim recovery to ensure that primary, secondary or tertiary liability is correctly assigned, and that the Health Plan is paying only what it is liable for.

Claim Adjudication Analysis - The analysis of claims adjudication in relation to health plan expenditure and trends of health expenditure by type of treatment and health care provider. Includes analysis of post adjudication adjustments to identify improvements in adjudication and general claim handling protocols, and thereby improving operational efficiency and member/provider satisfaction.

Claim Recovery Analysis - The analysis of the activities a health plan carries out in order to recover claim payment amounts from reinsurers, co-insurers, providers, members and other third parties. This includes analysis of the amounts deemed recoverable, actually recovered and written off.

Claims Processing Analysis - The analysis of claims handling activities so as to optimize provider networks, operational efficiency and member/ provider satisfaction. Includes analysis of resource utilization and productivity. Compound Drug Claim Analysis - An analysis of Compound drug claims to determine the number of claims and the amount paid for compounded drugs during the period of analysis.

Coordination of Benefits Analysis - The analysis of coordination of benefits (COB) activities and the resultant impact on the health plan organization’s claim costs.

Clinical Analytics

Collection of pre-defined measures with definitions and dimensionality. They provide a logical basis for Business Intelligence solutions in the areas of business rules, disease management, clinical care and patient safety.

Business Rule Event Analysis - Pharmacists and infection preventionists have the ability to create clinical rules and receive notifications when patients meet the conditions of these rules. This report allows the user to obtain information regarding the incidence of rules generated events and alerts.

Chronic Disease Management Analysis - The analysis of the management of members with any type of chronic medical condition allowing the healthcare provider to assess the success of the

disease management program through the health status of affected members. Includes analysis of factors that affects risk, reflects successful management, or represents treatment or follow-up for a patient.

Clinical Care Variability Analysis - Supports analysis of care plans, pathways, and care teams. Could be used to answer questions such as; By Primary Care Physician, what percentage of care plans have met their goals? By Condition, how often are patient receiving education as part of their care?

Clinical Outcomes Analysis - The analysis of the care of patients and the result of such care in terms of their recovery or otherwise. This analysis will typically monitor patient progress over episodes of care rather than individual encounters. The focus of the analysis is on the actual clinical outcomes compared to the expected or forecast outcomes. A large variation in actual v expected outcomes may indicate that unrealistic outcome forecasts are being made and recorded. A significant negative variation may indicate poor quality of care.

Healthcare Program Selection and Member Target Analysis - The analysis to identify health management programs, such as specific disease management programs, that the healthcare organization may wish to establish and to identify those patients or members who might benefit most from participation in such programs. The healthcare organization will want to consider the disease-specific morbidity and risk as well as the costs and potential benefits to be achieved in deciding which programs to offer.

Patient Safety Analysis - Pharmacists and infection preventionists review historical lab data in order to monitor organism and resistance trends within the facility. This data from these reports can be used to determine metrics for stewardship and targeted prevention activities, provide information for internal administrative reporting, and monitor organism trends in the patient population.

Pharmacy Utilization Analysis - Pharmacists review drug utilization by specific order and/or administration to determine which patients or units within their facility have received specific medications. They may also monitor overall drug utilization using the DDD/ DOT report to determine utilization trends and to decrease specific drug utilization such as high cost medications or antibiotics with an associated resistance trend. Pharmacy interventions are clinical recommendations used by pharmacists to track their interactions with other healthcare professionals regarding drug therapy.

Surgery Analysis - The analysis of the treatment of patients involving surgery, typically carried out in the operating room. Key metrics include counts and duration of case and procedures as well as calculated averages to provide perspective.

Consumerism

A group of analytical requirements focused on the needs of individuals who may wish to have health insurance cover but may not be able to acquire it through an employer scheme. The focus area includes analytical requirements based on available census and other survey data.

American Community Survey Analysis - Analysis of information received from the American Community Survey in the form of de-

identified responses to survey questions. This allows the organization to understand the size of the insured and uninsured populations including selected indicators of basic health and concerns.

BRFSS Analysis - Analysis of information received from the Behavioral Risk Factor Surveillance System (BRFSS) in the form of de-identified responses to survey questions. This allows the organization to understand the size of the insured and uninsured populations and declared state of physical and mental health. The analysis includes indicators of selected chronic conditions and tests for those conditions as well as some other basic healthcare indicators relating to diet and smoking status.

Consumer Health Expenditure Analysis - The analysis of healthcare expenditure by consumers, typically health plan members, including contributions to insurance premiums and other health related costs. This identifies the total health related spend which can be significantly greater than a simple view of premiums paid.

Healthcare Engagement Analysis - The analysis of the ways that consumers, typically health plan members, access healthcare delivery and the associated costs as well as the identified improvements or dis-improvements in their general health. The focus of the analysis is to identify if more expenditure, for example, on primary care can reduce the overall cost of care while improving outcomes. The pattern of expenditure and outcomes is likely to vary depending on consumer demographics. Obviously, this type of analysis is best done over an extended time period.

Medical Expenditure Panel Survey Analysis - Analysis of information received from the Medical Expenditure Panel Survey in the form of de-identified responses to survey questions. This allows the organization to understand the size of the insured and uninsured populations and their attitudes to medical insurance and associated costs. The analysis includes indicators of selected chronic conditions and other basic healthcare matters.

Payor Profitability Analysis - The analysis of healthcare expenditure by health plan organizations and the associated member premium income. The analysis focuses on the types of procedures and services offered by healthcare providers and the profit margins generated by lines of business and members in different market segments. These insights can be used to identify opportunities for new product offerings that might attract members and support profit margins.

Plan Diversification and Competition Analysis - The analysis of the health plans that consumers are enrolled in and how they compare to similar offerings from competitors. This analysis is typically aimed at the healthcare payer who can analyze their own membership and the movement or churn in membership agreements. By comparing their own plans membership with costs associated with competitors' plans the healthcare insurer can identify opportunities and threats in the marketplace as they develop. Another trend that can be monitored is the change in the proportion of members in different health plan products and product types.

Preventive Health Participation Analysis - The analysis of the participation by consumers, typically health plan members, in wellness programs and screening programs. There is a particular

focus on those who “should” be participating due to gender, age, medical condition, or family history. Disease detection and prevention programs also need to take into account the effect of race or ethnicity on the prevalence of particular diseases in the population.

Procedure Affordability Analysis - The analysis of the amounts charged for the performance of healthcare procedures relative to a number of available comparative charges. This analysis assesses the actual amounts charged for procedures compared to the declared list price for such procedures and the equivalent charge applicable under the relative value unit (RVU) based charging system. The analysis also compares charges with what is available within a reasonable geographic proximity to establish if charges would be viewed in the marketplace as fair value, low, or expensive. This analysis allows provider organizations to establish if their charges are perceived as fair or if, for example, they may need to adjust them to avoid a perception of being excessively expensive and therefore exposing the provider to a loss of market share. Similarly, payor organizations can use this analysis to identify providers offering good or bad value to the payor and its members.

Provider Profitability Analysis - The analysis of billing for services by providers with a focus on the types of services that generate varying ranges of profit margin and the relationship between the profitability of these services and the people or organizations that pay for them. These insights can be used to identify where the same procedures can return more or less profit depending on how they are being paid for and by whom.

Disbursements

To analyze payments made to providers, members or other intermediaries in respect of medical service delivery. The analysis includes timeliness, accuracy and method of payment for capitation and incentive payments made to healthcare providers as well as payments directly resulting from claims adjudication.

Payee Contact Analysis - The analysis of communications, such as Remittance Advices or Explanations of Benefits, that accompany payments made to healthcare providers and members.

Payments Transaction Processing Analysis - To analyze all payments made by the health plan to providers, members, intermediaries and other parties consequent to the delivery of healthcare insurance.

Provider Payments Analysis - The analysis of capitation and claim payments by the Health Plan Organization to healthcare providers.

Disease Specific Measures

Collection of pre-defined measures with definitions and dimensionality. They provide a logical basis for Business Intelligence solutions in the areas of care and management of chronic conditions with specific characteristics and metrics.

Cancer Screening and Care Analysis - This Analytical Requirement addresses the screening of patients deemed to be at risk of developing various forms of cancer and the treatment of those patients with cancer diagnoses. The analysis is generic and

applicable to many cancers. Further analysis would be required to consider the specific conditions and treatments appropriate to a particular form of cancer.

Chronic Obstructive Pulmonary Disease COPD Analysis - The Analytical Requirement includes measures related to the diagnosis and treatment of people with Chronic Obstructive Pulmonary Disease (COPD).

Quality of Care - Heart and Vascular Disease Analysis - The Analytical Requirement includes Inpatient and Outpatient Quality of Care measures developed by Centers for Medicare & Medicaid Services (CMS).

Renal Care Analysis - The Analytical Requirement includes measures related to the diagnosis and treatment of patients with end stage renal disease (ESRD).

Renal Transplant Analysis - The Analytical Requirement includes measures related to the diagnosis and treatment of patients with end stage renal disease where they have been referred for renal transplant or have received a renal transplant.

Stroke Disease Assessment and Care Analysis - This Analytical Requirement addresses the assessment of patients suspected of having suffered a stroke or deemed at risk of suffering a stroke. The analysis will allow the provider or practitioner to view the incidence of strokes of various types and the impact they have on the affected population as well as the treatments given and the response of patients.

Financial Performance

Collection of pre-defined measures with definitions and dimensionality. They provide a logical basis for Business Intelligence solutions in the areas of financial accounting.

Balance Sheet Analysis - To analyze the organization's Balance Sheets which report the total assets, total liabilities, and total shareholders' equity at a specific time.

Cash Flow Analysis - To analyze an organization's Cash Flow which is the amount of cash an organization generates and uses during a period, calculated by adding non-cash charges (such as depreciation) to the net income after taxes.
Claims Financial Analysis - Providers need to monitor and understand the costs and revenue associated with services. This can be done by aggregating the amounts on claim lines. Example questions that could be answered include: What is the average purchase price for certain Durable Medical Equipment? How many units of a DME were put into service? What are the Billed vs. Approved Charges by Department? What are the total Non-Covered Charges by DRG?

Financial Summary Analysis - To support the organization in the generation and analysis of the Security and Exchange Commissions (SEC) 10Q and 10K reports.

Income Statement Analysis - To analyze an organization's Income Statement which is a financial report that by summarizing revenues and expenses and showing the net profit or loss in a specified accounting period it depicts an organization's financial performance

due to operations as well as other activities rendering gains or losses. Also known as the profit and loss statement.

Supply Chain Spend Analysis - Provides analysis of the healthcare organization's or its affiliate organizations' spending patterns for non-pharmacy items. The measures provide insight into potential savings for utilizing on-contract vs. off-contract spending, purchase of functional equivalents, and so on. Many healthcare organizations are members of group purchasing alliances allowing them to achieve lower unit costs based on the combined purchase volumes of the group. Under such arrangements the group will negotiate purchase contracts with vendors and the members can avail of these contract prices but are not always obliged to do so and in some cases a member may be able to agree a lower price with a vendor.

Capitation Financial Performance Analysis - The analysis of capitation agreements and their associated income and costs for the provider or practitioner. This analysis focuses on the services provided under the capitation agreement, the costs, and the normally billable amounts for such services in relation to the income achieved under the agreement.

HHS Risk Equalization

The Affordable Care Act establishes State-based reinsurance and risk adjustment programs, and a Federal risk corridors program. The overall goal of these programs is to provide certainty and protect against adverse selection in the market while stabilizing premiums in the individual and small group markets as market reforms and Exchange begin in 2014.

HHS Reinsurance Analysis - The transitional reinsurance program is a premium stabilization program designed to provide issuers with greater payment stability. The program reduces the uncertainty in rate setting for Qualified Health Plans (QHP) by limiting the extent of issuers financial losses and gains. It will provide increased payments to health insurance issuers that attract higher-risk populations, such as those with chronic conditions, and reduce the incentives for issuers to avoid higher-risk enrollees.

HHS Risk Adjustment Analysis - The risk adjustment program is intended to provide increased payments to healthcare plan organizations that attract higher-risk populations and reduce the incentives for issuers to avoid higher-risk enrollees. Funds are transferred from organizations with lower-risk enrollees to organizations with higher-risk enrollees. The risk adjustment methodology includes a risk adjustment model, a determination of plan average actuarial risk, and a calculation of payments and charges. A model is used to predict health care costs based on the relative actuarial risk of enrollees in risk adjustment Qualified Healthcare Plans (QHP).
The model will calculate an average risk score for each QHP based upon the relative risk scores of the plan's enrollees, and apply a payment transfer formula in order to determine risk adjustment payments and charges between plans within a risk pool within a market within a State. HHS Risk Corridor Analysis - The temporary risk corridor program is designed to protect against uncertainty in rate setting for Qualified Health Plans (QHP) by limiting the extent of issuers financial losses and gains. This program compares the

total allowable medical costs for a QHP (excluding non-medical or administrative costs) to those projected or targeted by the QHP. If a QHP's target is within three percentage points of 100 percent, the plan keeps all gains (or losses) for itself.
For the next five percentage points, gains (or losses) are shared 50/50 between the QHP and the government. Beyond that (either below 92 percent or above 108 percent), the QHP keeps 20 percent of gains (or losses), ceding the remaining 80 percent to the government.

MACRA MIPS

Communication and Care Coordination - A collection of business solution templates that support the Communication and Care Coordination measures described in the Merit-based Incentive Payment System (MIPS).

Community and Population Health - A collection of business solution templates that support the Community ans Population Health measures described in the Merit-based Incentive Payment System (MIPS).

Effective Clinical Care - A collection of business solution templates that support the Effective Clinical Care measures described in the Merit-based Incentive Payment System (MIPS).

Efficiency and Cost Reduction - A collection of business solution templates that support the Efficiency and Cost Reduction measures described in the Merit-based Incentive Payment System (MIPS).

Patient Safety - A collection of business solution templates that support the Patient Safety measures described in the Merit-based Incentive Payment System (MIPS).

Person and Caregiver-centered Experience and Outcomes - A collection of business solution templates that support the Person and Caregiver-Centered Experience and Outcomes measures described in the Merit-based Incentive Payment System (MIPS).

Maternity Care

To analyze the provision of healthcare during and after pregnancy. It provides a logical basis for Business Intelligence solutions in the areas of prenatal screening, prenatal care, maternal labor, baby delivery, new-born care, maternity admission, discharges and transfers.

Baby Delivery Analysis - A set of measures based on NHS Maternity Services Data Set. This group of measures focuses on maternal labor and baby delivery.

Maternity Admissions Analysis - A set of measures based on NHS Maternity Services Data Set. This groups of measures focuses the admission, discharge and transfer of patients in maternity care.

New-born Care Analysis - A set of measures based on NHS Maternity Services Data Set. This group of measures focuses on new-born screening and assessments.
Prenatal Care Analysis - A set of measures based on NHS Maternity Services Data Set. This group of measures focuses on

prenatal care delivery and diagnosis made during the prenatal period.

Prenatal Screening Analysis – A set of measures based on NHS Maternity Services Data Set. This group of measures focuses on prenatal screening.

Member Retention

To analyze the propensity of the member or sponsor to remain with the health plan. While recognizing that the customer may have several plans to choose from in a highly competitive environment and by understanding why certain members remain and why others leave, the health plan will be able to enhance benefit offerings and services to improve membership retention.
Group Retention Analysis - Analysis of trends in group persistency (group policy renewal and lapse rates) by group characteristics, product, and line of business.

Member Retention Analysis - Analysis of the product/product line makeup and loyalty of the member population by member characteristics.

Member Satisfaction Analysis - The analysis of the satisfaction of members, with regard to their membership experience with the health plan organization as determined through member surveys, during the period of analysis.

Parent Satisfaction Analysis - The analysis of the satisfaction of parents, with regard to their child's membership experience with the Health Plan Organization.

Policy Event Analysis - Analysis of events affecting the policy, as a function of policyholder profile, contact method and type of policy.

Member Service

To analyze service delivered by the health plan to members across various service channels, in order to determine member satisfaction, competitor comparison, and costs and effectiveness of different member service channels.

Member Feedback on Intermediaries Analysis - Analysis of information received from Members about the performance of intermediaries, whether positive or negative.

Member Service KPI for Growth Analysis - Analysis of the key performance indicators of the organization's member service activities, to grow revenue.

Member Service Optimization and Expense Analysis - Analysis of the organization's member service activities to monitor expenditure, optimize capital efficiency and manage enterprise risk.

Mental Health

Collection of pre-defined measures with definitions and dimensions related to the provision of care in behavioral and mental health. They provide a logical basis for Business Intelligence solutions in the areas of mental health care delivery, compliance with treatment programs, substance abuse, and interaction with the criminal justice system.

Criminal Justice Analysis - Addresses the issue of patients who have had one or more interactions with the criminal justice system. This is mainly, but not exclusively applicable to mental health scenarios where, for example, patients may be referred to care on the basis of a court order. The analysis focuses on the types of interactions patients had with the legal system, and how these events impacted the patients' further interactions with healthcare providers and practitioners.

Mental Health Comorbidity Analysis - Addresses the incidence of comorbidities among mental health patients. Comorbidities may be other mental health conditions or general health conditions. The focus is on chronic conditions that have been diagnosed and that the patient has had or is likely to have for an extended period of time. The analysis will allow the provider or practitioner to view patients with a primary mental health diagnosis and identify those patients that have at least one other significant health condition. The incidence of admissions or interventions among these groups is also addressed.

Mental Health Medication Compliance Analysis - Addresses the behavior of mental health patients and their carers regarding the correct management of their medication. The analysis will allow the provider or practitioner to view patients with a high dependency on medications and how well they adhere to the recommended dosage of their prescribed drugs.

Mental Health Program Participation Analysis - Addresses the behavior of mental health patients in relation to programs in which they have enrolled, been enrolled by others or been recommended to enroll in. The analysis will allow the provider or practitioner to assess patients' willingness to participate in programs intended to manage or improve their condition and their ability to adhere to the terms of the program.

Military Personnel Post Traumatic Stress Disorder Analysis – Addresses the incidence of post-traumatic stress disorder in military personnel. The set of measures address the major causes of post-traumatic stress disorder. It also provides measures to analyze post deployment diagnosis and late diagnosis.

NHS Mental Health Admissions Analysis - A set of measures based on NHS Mental Health Data Set. This group of measures focuses on the delivery of care, and in particular hospital care, to people in contact with care services for mental health issues.
NHS Mental Health Care Analysis - A set of measures based on NHS Mental Health Data Set. This group of measures focuses on people in contact with care services for mental health issues.

Post Traumatic Stress Disorder Analysis – Addresses the incidence of post-traumatic stress disorder in children and adults. The set of measures address the major causes of post-traumatic stress disorder.

SAMHSA Clinical Reported Measures – A set of measures relating to provision of care and monitoring of that care provision. These measures are a Behavioral Health Clinic reported sub-set of the Substance Abuse and Mental Health Services Administration (SAMHSA) Quality Measures.

SAMHSA State Reported Measures – A set of measures relating to provision of behavioral health care and monitoring of that care

provision. These measures are a state reported sub-set of the Substance Abuse and Mental Health Services Administration (SAMHSA) Quality Measures.

Substance Abuse Analysis – Addresses the issue of patients with a problem relating to the use or abuse of substances including narcotics, alcohol, and prescription drugs such as pain killers and antidepressants. The analysis focuses on the types of substances involved, the type of use, the duration of use and any legal, social, or health interactions that have been caused by the patients' substance abuse.

Operational Performance

Collection of pre-defined measures with definitions and dimensionality. They provide a logical basis for Business Intelligence solutions in the areas of resource utilization, cost management and productivity across the provider organization.

Inpatient Operational Performance Analysis - Providers need to monitor and understand the operational efficiency of inpatient care facilities. This includes key metrics such as the number of admissions and the type of these admissions as well as length of stay and the overall utilization of beds in the facility. A high utilization rate suggests a efficiently managed inpatient facility but, if very high, it may also indicate a potential problem whereby the facility has no free capacity to deal with unplanned admissions such as those that may come though the emergency department. The analysis includes a measure relating to outpatient surgeries that may appear out of place but it is a useful metric for the hospital management team when considering if some of the surgical inpatient workload could be more efficiently performed using outpatient surgical care.

Inventory Cost Analysis - The analysis of inventory items over a period of time. Inventory items can range from high volume, relatively low cost items such as surgical gloves and regular drugs like paracetamol to low volume high value items such as implantable devices or new high tech drugs. The style of this analysis is more suited to the high volume inventory items but can have application across all types of inventory. The analysis reports on elements such as cost, wastage, shrinkage stock on hand and projected cover.

Labor Productivity Analysis - Labor Productivity metrics are primary comprised of a number of hours worked or expense combined with a volume of activity such as procedures performed. These can be used to assess how efficiently labor resources are being used. The analysis can be broken down over different types and grades of staff using the Job and Practitioner dimensions.

Labor Utilization Analysis - Labor Utilization metrics are typically comprised of hours worked and expense incurred for various jobs and payroll categories. They can be used to understand labor allocation and budgeting.

Location Utilization Analysis - Scheduling of Locations resource captures information related to the utilization of these resources. A location could include an operating room, bed, room and so on.

Medical Equipment Utilization Analysis - Scheduling of medical equipment resource captures information related to the utilization of these medical equipment resources. A resource could include equipment such as an MRI machine, CT, Xray, Lab equipment, surgery equipment and so on.

Patient Experience Survey Analysis - Patient Experience Survey Analysis contains aggregations of survey responses. Typically, the surveys are quality based to poll perceptions and experiences of patients with provider or payer services.

Physician Productivity Analysis - The analysis of the overall performance of the physicians in terms of care provided to patients and the time taken to provide such care. A wide variety of dimensions allow the healthcare organization to easily correlate many different factors to better understand the impact of factors such as case complexity and patient condition on performance measures. These insights can then be used to develop appropriate training or to suggest changes in facilities and supporting services.

Provider Revenue Cycle Analysis - The analysis of the overall performance of providers and physicians in terms of managing their billings and receiving payments. A range of measure and dimensions track the timing of providing healthcare services and subsequently billing for such services and being paid for them. These insights can be used to identify where delays are occurring and to remedy such delays by introducing new practices or improving supporting services.

Readmission Prediction Analysis - Readmission following hospitalization is a costly and often preventable event. It has been estimated that readmissions within 30 days of discharge cost Medicare more than $17 billion dollars annually. A 2006 Commonwealth Fund report estimated that if national readmission rates were lowered to the levels achieved by the top-performing regions, Medicare would save $1.9 billion annually. This template captures common readmission metrics and dimensionality which could be based on standard or customized rules for exclusions.

Referral Analysis - The Referral Analysis fact table tracks inbound and outbound, as well as intra-system, referrals by reason code. It also calculates revenue leakage due to outbound referrals correlated to that reason code.

Revenue Forecast Analysis - The analysis of the performance of providers and physicians in predicting the amounts likely to be

billed for their services. In order to manage finance and cash flows provider organizations may estimate the potential revenues at the time services are being planned or scheduled rather than waiting until after the patient treatments are rendered. If reasonably accurate, these forecasts can help the organization to predict cash flow requirements and investment opportunities more efficiently.

Staff Absence Analysis - An analysis of working time lost to the organization through employees being unable to attend the workplace for unplanned reasons such as illness, accidents, transportation faults, bereavement, and so on.

Staff Turnover Analysis - An analysis of staff currently or recently employed by the organization, their tenure, stability, and turnover. Some measures are expressed in terms of simple headcount while others are expressed as full time equivalents (FTEs).

Surgical Utilization Analysis - The analysis of operating rooms and surgical teams regarding planned and actual patient throughput. Operating rooms are valuable and finite resources and providers must get the maximum return on their use. Surgical cases can vary in complexity so a simple case count is not sufficient to measure productivity. Providers can attribute a complexity rating in the form of points to better assess relative performance.

Treatment Target Analysis - The analysis of patient treatments delivered against predetermined targets where they exist. This allows the organization to measure the performance of providers and practitioners in the provision of healthcare in line with service level agreements. Treatment targets may be set for procedures such as hip or knee replacements where the procedure will improve the quality of life for the patient or plan member and reduce ongoing costs.

Waiting List Analysis - Waiting List Analysis tracks the experience of patient referred for treatment particularly regarding the amount of time they wait before their treatment commences. This can identify situations where there are capacity constraints preventing patients receiving care in a timely manner. Long wait times can be detrimental to patient outcomes and can also be considered as limiting revenue for the provider organization.

Personal Health Record Utilization

To analyze the utilization of personal health records (PHRs) by members, healthcare providers and health plan organizations. This includes the transfer of PHRs between plans.

Member Personal Health Record Usage Analysis - Analysis of electronic personal health record (PHR) usage by members of health plans.

PHR Transfer Analysis - Analysis of electronic personal health record (PHR) transfers between Health Plan Organizations.

Provider PHR Usage Analysis - Analysis of electronic personal health record (PHR) usage by healthcare providers.

Pharmacy Benefits Management

To analyze the utilization and management of pharmacy benefits to understand the effectiveness of pharmacy benefits design,

formularies and programs in controlling these costs and to project future prescription benefits costs. Analyzing these data enables health plans to improve the design of the pharmacy benefits and formularies, and to evaluate the performance of their pharmacy benefits management vendors and partners.

Adverse Drug Events Analysis - The analysis of adverse drug events (ADEs) to determine the types, causes and the situations in which they occur, the incidence of adverse events by drug, prescriber and pharmacy. For drug-to-drug interactions, analysis includes the other drug involved, its prescriber and dispensing pharmacy.

Compound Drug Prescription Analysis – The analysis of Compound Drug prescriptions to determine the amount and number of compounds prepared and dispensed.

Formulary Analysis - Allows the health plan to analyze the effectiveness its drug formulary in meeting the needs of members in at a reasonable cost. The health plan would use this, for example, to determine if the formulary has too many or too few drugs in various categories, or whether the tiers are appropriate.
Medication Error Analysis - The analysis of medication errors to determine the types, causes and the situations in which they occur, the incidence of adverse events by drug, prescriber and pharmacy.

Outpatient Pharmacy Benefits Analysis – The analysis of outpatient utilization of drug products, including costs and savings achieved by generic substitution, formulary usage, and mail order.

Pharmacist Service Analysis - The analysis of pharmacist services to understand the frequency, cost and results, and to determine the situations in which they occur by diagnosis, drug, prescriber, pharmacy and patient characteristics.

Pharmacy Claims Analysis - The analysis of pharmacy claims submitted by members in terms of overall drug use, formulary compliance, and generic prescribing. This focuses on the drugs prescribed and dispensed to members of the health plan, whether they are branded or generic versions, the supply method, whether retail pharmacy or mail order, and whether the drugs were on or off formulary as well as associated costs for drugs and services. These insights can then be used to identify prescribers who might be encouraged to increase their use of generics and to identify members who could reduce their medication costs and the cost to the health plan by purchasing from pharmacies that are in network or through mail order options.

Prescriber Analysis - The analysis of provider prescribing patterns in terms of overall drug use, formulary compliance, and generic prescribing. This allows the health plan to compare patterns across specialties and geography, and to identify prescribers who are outliers given their specialty and patient mix. These insights can then be used for provider feedback and education and as input to provider performance analysis.

Product Management

To analyze and compare product features to determine optimal product design in terms of competitive positioning, sales, medical loss, operations, and member or provider satisfaction. With deep

product awareness at your fingertips, you can respond promptly to changes in the market place by modifying product design and life cycle.

Business Profitability Analysis - Business profitability analysis focuses on high level profit, cost and revenue by product, line of business, and other factors.

New Business Volume Analysis - Analysis of profitability of Health Benefit Plan, Coverage and Health Savings Account business by performing trend sales analysis.
Product Development KPI for Growth Analysis - Analysis of the key performance indicators for the product development processes, to grow revenue.

Product Development Optimization and Expense Analysis - Analysis of the product development processes to monitor expenditure, optimize capital efficiency and manage enterprise risk.

Product Line Analysis - The analysis of the profitability of health plan products, based on the gross profit obtained by comparing the premium and claim amounts along with the membership stratification across product line and member characteristics.

Profitability

To evaluate the various contributions to profit of the health plan organization based upon net attributable income and expense, allowing for risk, reserve and outstanding claim considerations. Keeping information about your products and services regarding the costs incurred and the revenues generated will enable detailed analysis on the amount of profitability and the reason for the profitability for the health plan organization.

Business Activity Performance Analysis - Analysis of the effectiveness and efficiency that the health plan organization achieves in performing its business activities.

Health Plan Operational Cost Analysis - The analysis of the costs incurred by the Health Plan Organization during business operations.

Provider Performance and Quality

To determine the success of the Health Plan in meeting industry and customer quality criteria regarding medical service delivery. Analysis includes the conformance of contracted providers to evidence-based protocols, care guidelines, and drug formularies May be used to support Pay for Performance ‘P4P’ programs.

Hospital Pneumonia Care Quality Analysis - The analysis of the quality of care given in the hospital to pneumonia patients.

Institutional Provider Quality Analysis – The analysis of the overall performance of the health plan’s institutional providers, including outcomes, care and administrative quality, communications, and innovation in patient care and consumer-driven initiatives. A wide variety of dimensions allows the health plan to easily correlate many different factors to better understand the impact of these factors on performance measures. These insights can then be used to tune the networks, and to develop appropriate provider and provider staff training. Provider

performance analysis is also relevant to marketing and sales, which depend on the quality of the plan's providers.

Prenatal Care Quality Analysis - The analysis of the quality of prenatal care given expectant mothers by Health Plan Organization providers, during a specific period of analysis.

Professional Practitioner Quality Analysis - The analysis of the overall performance of the health plan's physicians and physician groups, including outcomes, care and administrative quality, innovation in patient care, communication, and consumer-driven initiatives. A wide variety of dimensions allow the health plan to easily correlate many different factors to better understand the impact of these factors on performance measures. These insights can then be used to tune the networks, or to develop appropriate provider and provider staff training. Provider performance analysis can also be used for marketing and sales, which depend on the quality of the plan's providers.

Program Vendor Analysis - The analysis of the activities of health management program vendors and the costs related to programs.

Regulatory Reporting

Collection of pre-defined measures with definitions and dimensionality. They provide a logical basis for Business Intelligence solutions in relation to national or international guidelines and measure sets.

Acute Claim Measures - The analysis of mortality rates and readmission rates in the context of specific medical conditions such as acute myocardial infarction (AMI), heart failure, and pneumonia as well as the utilization of related key diagnostic services and therapeutic treatments.

Core Measures - Measures for Inpatient Hospital Data and Outpatient Hospital Data required by CMS (Center for Medicare and Services) and TJC (The Joint Commission)

Hospital Acquired Condition Measures – The Centers for Medicare & Medicaid Services (CMS) adopted eight hospital-acquired condition (HAC) measures for the Hospital Inpatient Quality Reporting Program (Reporting Program), formerly known as the Reporting Hospital Quality Data for Annual Payment Update (RHQDAPU) program, as part of the 2011 Inpatient Prospective Payment System (IPPS) Final Rule. The eight measures are a subset of the ten HAC categories for which CMS implemented payment provisions beginning October 1, 2008.

Meaningful Use Analysis - An analytical requirement addressing the need for providers to demonstrate that they are using Electronic Health Records (EHRs) in a meaningful way. The Centers for Medicare and Medicaid Services issued a notice of proposed rule-making that outlines provisions governing the Medicare and Medicaid EHR incentive programs, including a proposed definition for the central concept of "meaningful use" of EHR technology.

NHSN Device Associated Infections – A set of measures based on NHSN's defined dataset for device associated infections. The dataset focuses on multiple devices such as: Central Lines, Ventilators and Catheters.

NHSN Dialysis Events - A set of measures based on NHSN's defined dataset for dialysis related events. The dataset focuses on multiple events types such as: IV antimicrobial start; positive blood culture and pus, redness, or increased swelling at the vascular access site.

NHSN Hemovigilance - A set of measures based on NHSN's defined dataset for hemovigilance. The dataset focuses on multiple areas such as: Adverse events, Adverse reactions, Blood product related incidents and near misses.

Ongoing Professional Practice Evaluation - Ongoing professional practice evaluation allows the organization to identify professional practice trends that impact on quality of care and patient safety. Such identified issues may require intervention by the organization's medical or administrative staff.

Regulatory Reporting - ACO

ACOs create incentives for health care providers to work together to treat an individual patient across care settings – including doctor's offices, hospitals, and long-term care facilities. The Medicare Shared Savings Program (Shared Savings Program) will reward ACOs that lower their growth in health care costs while meeting performance standards on quality of care and putting patients first. Participation in an ACO is purely voluntary.

ACO - At Risk Population - ACO Narrative Measure Specifications for the At-Risk Population Domain. Including; Diabetes, Hypertension, Ischemic Vascular Disease, Heart Failure and Coronary Artery Disease.

ACO - Care Coordination / Patient Safety - ACO Narrative Measure Specifications for the Care Coordination/ Patient Safety Domain.

ACO – Patient / Caregiver Experience - CMS has finalized the use the Clinician and Group Consumer Assessment of Health Care Providers and Systems (CG CAHPS) to assess patient and caregiver experience of care. CMS plans to use the adult 12 month base survey and certain of the supplemental modules for the adult survey.

ACO - Preventive Health - ACO Narrative Measure Specifications for the Preventive Care Domain.

Regulatory Reporting - AHRQ Quality Indicators

A collection of the Analytical Requirements that support Quality Indicators published by the Agency for Healthcare Research and Quality.

AHRQ - Inpatient Quality Indicators - The Inpatient Quality Indicators (IQIs) are a set of measures that provide a perspective on hospital quality of care using hospital administrative data. These indicators reflect quality of care inside hospitals and include inpatient mortality for certain procedures and medical conditions; utilization of procedures for which there are questions of overuse, underuse, and misuse; and volume of procedures for which there is some evidence that a higher volume of procedures is associated with lower mortality.

The IQIs can be used to help hospitals identify potential problem areas that might need further study; provide the opportunity to

assess quality of care inside the hospital using administrative data found in the typical discharge record; include mortality indicators for conditions or procedures for which mortality can vary from hospital to hospital; include utilization indicators for procedures for which utilization varies across hospitals or geographic areas; and, include volume indicators for procedures for which outcomes may be related to the volume of those procedures performed.

AHRQ - Patient Safety Indicators - The Patient Safety Indicators (PSIs) are a set of indicators providing information on potential in hospital complications and adverse events following surgeries, procedures, and childbirth. The PSIs were developed after a comprehensive literature review, analysis of ICD-9-CM codes, review by a clinician panel, implementation of risk adjustment, and empirical analyses.

The PSIs can be used to help hospitals identify potential adverse events that might need further study; provide the opportunity to assess the incidence of adverse events and in hospital complications using administrative data found in the typical discharge record; include indicators for complications occurring in hospital that may represent patient safety events; and, indicators also have area level analogs designed to detect patient safety events on a regional level.

AHRQ - Pediatric Quality Indicators - The Pediatric Quality Indicators (PDIs) are a set of measures that can be used with hospital inpatient discharge data to provide a perspective on the quality of pediatric healthcare.

Specifically, PDIs screen for problems that pediatric patients experience as a result of exposure to the healthcare system and that may be amenable to prevention by changes at the system or provider level.

Development of quality indicators for the pediatric population involves many of the same challenges associated with the development of quality indicators for the adult population. These challenges include the need to carefully define indicators using administrative data, establish validity and reliability, detect bias and design appropriate risk adjustment, and overcome challenges of implementation and use. However, the special population of children invokes additional, special challenges. Four factors—differential epidemiology of child healthcare relative to adult healthcare, dependency, demographics, and development—can pervade all aspects of children's healthcare; simply applying adult indicators to younger age ranges is insufficient. This PDIs focus on potentially preventable complications and iatrogenic events for pediatric patients treated in hospitals, and on preventable hospitalizations among pediatric patients.
The PDIs apply to the special characteristics of the pediatric population; screen for problems that pediatric patients experience as a result of exposure to the healthcare system and that may be amenable to prevention by changes at the provider level or area level; and, help to evaluate preventive care for children in an outpatient setting, and most children are rarely hospitalized.

AHRQ - Prevention Quality Indicators - The Prevention Quality Indicators (PQIs) are a set of measures that can be used with hospital inpatient discharge data to identify quality of care for "ambulatory care sensitive conditions." These are conditions for

which good outpatient care can potentially prevent the need for hospitalization or for which early intervention can prevent complications or more severe disease. The PQIs are population based and adjusted for covariates.
The PQIs can be used as a “screening tool” to help flag potential health care quality problem areas that need further investigation; provide a quick check on primary care access or outpatient services in a community by using patient data found in a typical hospital discharge abstract; and, help public health agencies, State data organizations, health care systems, and others interested in improving health care quality in their communities.

Regulatory Reporting - Data Protection

Data Breach Analysis - An analysis that focuses on data breaches and measures related to handling of these breaches.
Data Protection Impact Assessment Analysis - An analysis of the procedures undertaken by the organization to identify and quantify risks related to protection of data controlled by the organization.

Data Protection Readiness Analysis - An analysis of the organization’s state of readiness in relation to relevant data protection regulations such as the General Data Protection Regulation (GDPR) or the California Consumer Privacy Act (CCPA).

Data Subject Access Request Analysis - An analysis of requests made by data subjects and broken down by type with associated response times and outcomes.

Data Subject Consent Analysis - An analysis of the status of consents and other agreements regarding use of data and associated restrictions for personal data that is controlled by the organization.

Personal Data Processing Activity Analysis - An analysis of data processing requests and their status and associated costs.

Regulatory Reporting - OASIS Analysis

Study of the outcomes from the Outcome and Assessment Information Set delivered to a defined respondent population.

OASIS - Cardiac Status Analysis - The Cardiac Status Analysis fact contains aggregations of survey responses from the OASIS Cardiac Status survey. Number of respondents and statistics on the survey submission are also tracked.

OASIS - Care Management Observation Analysis - Counts of clinical observations of patients Activities for Daily Living and Instrumental Activities for Daily Living care management.
OASIS - Daily Living Activities Analysis - The Daily Living fact contains aggregations of survey responses from the OASIS C Daily Living survey, which tracks how well patients can care for themselves day to day. Number of respondents and statistics on the survey submission are also tracked.

OASIS - Discharge Observation Activities Analysis - The Discharge Observation Activities Analysis fact contains aggregations of survey responses from the OASIS Discharge Observations survey, which tracks in what condition patients are discharged from medical facilities. Number of respondents and statistics on the survey submission are also tracked.

OASIS - Elimination Status Observation Activities Analysis - The Elimination Status Observation fact contains aggregations of survey responses from the OASIS Elimination Status survey which tracks patients' ability to pas bodily waste. Number of respondents and statistics on the survey submission are also tracked.
OASIS - Emergent Care Analysis - The Emergent Care Analysis fact tracks the number and reason for OASIS respondents to seek care in emergency facilities. Number of respondents and statistics on the survey submission are also tracked.

OASIS - Hospitalization Analysis
Counts the specific condition(s) necessitating hospitalization. Examples:
- Improper medication administration, medication side effects, toxicity, anaphylaxis
- Respiratory infection (e.g., pneumonia, bronchitis)
- Heart failure (e.g., fluid overload)
- Myocardial infarction or chest pain
- Stroke (CVA) or TIA
- Hypo/Hyperglycemia, diabetes out of control
- GI bleeding, obstruction, constipation, impaction
- Dehydration, malnutrition
- Urinary tract infection
- Wound infection or deterioration
- Deep vein thrombosis, pulmonary embolus

OASIS - Integumentary Status Observation Analysis - Measures of clinical observations of the patients' integumentary, or skin system, status.

OASIS - Medication Observation Analysis - Counts of clinical observations of patient medications.

OASIS - Neuro Status Observation Analysis - Observation of a population of patients' neuro status.

OASIS - Respiratory Status Observation Analysis - The summary of clinical observations of patients' respiratory status.

OASIS - Sensory Status Observation Analysis - Summary of clinical observations of the patients' sensory status.

Value Based Payments

A collection of measures that support the Part C and D Star Ratings as published by the Centers for Medicare and Medicaid Services (CMS).

VBP - Drug Plan Customer Service - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part D - Drug Plan Customer Service. Drug plan customer service: Includes how well the plan handles member appeals.

VBP - Drug Safety and Accuracy of Drug Pricing - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part D - Drug Safety And Accuracy Of Drug Pricing Drug safety and accuracy of drug pricing: Includes how accurate the plan's pricing information is and how often members with certain medical conditions are prescribed drugs in a way that is safer and clinically recommended for their condition.

VBP - Health Plan Customer Service - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part C -Health Plan Customer Service. Health plan customer service: Includes how well the plan handles member appeals.

VBP - Managing Chronic (Long Term) Conditions - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part C -Managing Chronic (Long Term) Conditions. Managing chronic (long-term) conditions: Includes how often members with different conditions got certain tests and treatments that help them manage their condition.

VBP - Member Complaints and Changes in the Drug Plans Performance - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part D - Member Complaints and Changes In The Drug Plan's Performance. Member complaints and changes in the drug plan's performance: Includes how often Medicare found problems with the plan and how often members had problems with the plan. Includes how much the plan's performance has improved (if at all) over time.

VBP - Member Complaints and Changes in the Health Plans Performance - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part C - Member Complaints And Changes In The Health Plan's Performance. Member complaints and changes in the health plan's performance: Includes how often Medicare found problems with the plan and how often members had problems with the plan. Includes how much the plan's performance has improved (if at all) over time.

VBP - Member Experience with the Health Plan - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part C -Member Experience With Health Plan. Member experience with the health plan: Includes ratings of member satisfaction with the plan.

VBP - Member Experience with the Drug Plan - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part D - Member Experience With The Drug Plan. Member experience with plan's drug services: Includes ratings of member satisfaction with the plan.

VBP - Staying Healthy Screenings Tests and Vaccines - A set of measures based on the Centers for Medicare and Medicaid (CMS) Part C -Staying Healthy Screenings Tests And Vaccines. Staying healthy: screenings, tests, and vaccines. Includes whether members got various screening tests, vaccines, and other check-ups that help them stay healthy.

Retail Sales

To analyze sales of Individual Healthcare Policies (non-Employer Healthcare Policies) as well as the sale of policies to eligible employees within sponsors (employers), to determine the effectiveness of sales campaigns. This also includes the ability to profile the buyers versus the non-buyers to identify potential adverse selection.

Cross-sell Analysis - Cross-selling analysis is used to identify optimal cross-sell marketing strategies by comparing estimated

potential revenue that would be generated by selling different or additional health plan products or coverages to existing members.

Sales and Distribution KPI for Growth Analysis - Analysis of the key performance indicators for the sales and distribution processes to increase revenue and market share.

Sales and Distribution Optimization and Expense Analysis - Analysis of the sales and distribution processes to monitor expenditure and to optimize efficiency and effectiveness.

Sales Performance Analysis - The sales performance of the healthcare insurance is analyzed by comparing the planned or forecasted sales volumes and premiums to their corresponding actual numbers and amounts. Includes reference analysis of forecasted performance of the market as a whole.

Service Line Analytics

Collection of pre-defined measures with definitions and dimensionality. They provide a logical basis for Business Intelligence solutions in the areas service line specific analysis and overall cost analysis across service lines.

Emergency Department Performance Analysis - Analysis of the performance and utilization of an emergency department of a healthcare organization. An emergency department (ED), also known as emergency room (ER), accident & emergency (A&E), or casualty department, is a medical treatment facility specialized in acute care of patients who present without prior appointment, either by their own means or by an emergency medical service (EMS).

Inpatient Service Performance Analysis - Analysis of the performance and utilization of inpatient services of a healthcare organization including length of stay, bed utilization and patient discharge processing.

Laboratory Performance Analysis - Analysis of the performance and utilization of clinical laboratory services for a healthcare organization. The laboratory services are used to carry out tests on clinical specimen to obtain information about patient health. The lab results assist in the decision- making process of diagnosis, treatment and prevention of the disease.

Operating Room Performance Analysis - Analysis of the performance and utilization of an Operating Room (OR) for a healthcare organization. The measures included in this analytical requirement track time intervals between various surgical phases carried out within the OR, OR turn around times supporting utilization analysis for OR.

Pharmacy Compliance Analysis - Analysis of the performance and utilization of a pharmacy department in a Healthcare Organization. A pharmacy is a medical treatment facility specialized in the preparation and dispensing of medications prescribed by physicians for patient care.

Radiology Department Performance Analysis - Analysis of the performance and utilization of the radiology department of a Healthcare Organization. Radiology involves the use of imaging for diagnosis and treatment of a disease visualized within the human

body. Radiologists use various imaging technologies such as X-ray radiography, ultrasound, computed tomography (CT), positron emission tomography (PET) and magnetic resonance imaging (MRI) to diagnose or treat diseases.

Service Line Cost Analysis - Analysis of cost accounting across various service lines of a healthcare organization such as LAB, OR, Radiology, ED and so on.

Underwriting

To analyze products, features, return on investment and risk factors that impact underwriting decisions for a product or group.

Employee Health Risk Assessment Analysis - Analysis of factors that influence the health or the risk to health of members of a plan. Captures member baseline stats (weight, age, gender and lifestyle choices, eating and workout habits) to assess risk of disease for premium calculation as well as for preventative care and early intervention offers. Known as Employee Health Risk Assessment as it is generally used in assessing risk in Employer Health Plans but can be used to assess such risks for any group of members.

Underwriting Efficiency Analysis - The analysis of the key performance indicators for underwriting activities and their impact on health plan organization revenue growth.

Underwriting Resource Utilization Analysis - The analysis of health plan resource utilization related to underwriting processes and activities.

Utilization Management

To analyze the medical utilization of members in order to identify potential areas for utilization management programs, the effectiveness of existing utilization management programs and to understand trends in member medical costs. This enables the health plan to project medical costs more accurately and to enhance reporting to group sponsors and providers.

Ambulatory Care Utilization Analysis - The analysis of the utilization of ambulatory care services, during the period of analysis. This helps to monitor the increasing trend to relocate previously delivered inpatient services in outpatient settings.

NHS - Diagnostic Imaging Analysis - A set of measures based on the UK's National Health Service (NHS) Diagnostic Imaging dataset.

Referrals and Authorizations Claims Analysis - Analysis of referrals and authorizations, considering reasons as well as member and provider characteristics. This analysis enables the health plan to identify opportunities for modifying its referral and authorization rules to improve efficiency and effectiveness.

Service Utilization Claim Detail Analysis - Analysis of utilization detail allows drill downs on specific aspects of utilization and medical costs. As a result of such analysis, the health plan may undertake member and/or provider education, initiate public health or health management programs, or take other actions to control utilization and costs.

Appendix B – KAHC Business Scopes

This section lists all the content in the Business Scopes category in KAHC.

Absence
Account
Action Plan Context
Admission Discharge and Transfer Overview
Agreement Context
Agreement Request
Benefit Eligibility Enquiry
Blood Product Order
Business Rule Event Context
Capitation Agreement Overview
Care Management Context
Care Management Encounter
Claim Adjudication And Repricing
Claim Adjustment
Claim Appeal
Claim Communication
Claim Fraud
Claim Processing And Recovery
Claim Remittance And Payment
Clinical Order Context
Clinical Order – Imaging *
Clinical Outcomes Overview
Communication
Consent Context
Consumer Marketing
Consumer Social Media
Consumer Subscription Service
Contact Information Context
Continuity Of Care
Coordination Of Benefits
Coverage Eligibility
Data Privacy *
Data Processing Category
Data Processing Event
Data Processing Consent Overview
Data Processor Contract
Diagnosis and Procedure Codes
Diagnosis Overview
Dialysis
Dietary Order
Disease Registry
Document Management
DRG and APG
Drug Codes
Drug Course Of Treatment Overview
Employment Contract
Encounter Context
Encounter Precertification
Episode Of Care
Expense
Explanation Of Benefits Overview
Explanation Of Payment
Fee Schedule
Financial Transactions
Formulary
Generic Drug Codes
Genomics Context
Genomics - VCF
Geospatial
Group And Hierarchy
Group And Provider Agreements
Grouper
Healthcare Event
Healthcare Service
Health Plan Product
Health Plan Product – Features And Benefits *
Health Plan Product Specification Overview
HR Performance Assessment
Imaging
Immigration And Work Permit
Immunization
Impact Assessment
Incentive Programs
Infrastructure Context
Insurance Policy And Coverage

*Available for separate import

Inventory Account
Inventory Transaction
Item Context
Job Assignment
Jobs Position
Labor
Laboratory Test
Legal Action Context
Location Context
Location Deprivation Index Overview
LOINC And SNOMED Codes
Marketing Activity Context
Maternity Care
Medical Treatment Review
Medication Codes
Mental Health Care Management
National Drug Code (NDC)
Orderable Item
Order Context
Order Set
Organization Context
Party Context
Patient Administration – ADT *
Patient Administration Context
Patient Allergy
Patient Context
Patient Financial Transaction
Patient Health Observation
Patient Longitudinal Record
Patient Medication Context
Patient Practitioner *
Patient Registry Context
Patient Registry Entry
Patient Registry Entry - Diagnosis
Patient Registry Entry - Procedure
Patient Registry Entry – Surgery Overview
Patient Tag Context
Patient Waiting Lists
Payment Agreement
Personal Data Breach
Personal Health Record Activity
Personal Health Record – Continuity Of Care *
Person Context
Pharmacy Intervention Context
Pharmacy Order Overview
Plan Member Overview
Point Of Care Device Overview
Point Of Care Location
Population Context
Practitioner Context
Preference Card
Premium Payments
Pricing Comparison
Procedure Context
Provisioning Context
Purchase Contract
Purchase Order Delivery Invoice
Real Time Location
Referral and Authorization
Renal Care
Request And Complaints
Requisition Order
Resource
Revenue Cycle Management
Risk Assessment
Role Based Data Security
Schedule and Appointment
Social Media
Specimen Context
Study Context
Submitted Claim
Submitted Claim Line Overview
Submitted Healthcare Claim *
Supplied Demographic Information
Supplier Financial Transaction
Supply Chain Context
Surgery Context
Surgery List
Survey Context
Tenant Context
Tenant Profile
Training Program
Transplant Procedure
Unfavorable Event Context
Validity Check Context
Welfare And Social Program Overview

*Available for separate import

IBM Corporation
New Orchard Road, Armonk, NY 10504
Produced in the United States of America
June 2025

Y3VWB8BB