Request for Information:

Business Intelligence & Analytics Platform to support Healthier Washington Analytics, Interoperability, and Measurement (AIM) & the WA State Health Care Authority's Decision Support

RFI 16-015
Washington State Health Care Authority

April 4, 2016

Section 1: RFI Goals and Objectives

This Request for Information (RFI) is seeking information that will assist the Washington State Health Care Authority (HCA) in the prospective procurement and implementation of a *business intelligence and analytics platform* to support the Analytics, Interoperability, and Measurement (AIM) program, a key component of the "Healthier Washington (HW)" initiative. HCA also intends to use this BI/Analytics platform to support its own internal Decision Support (DS) needs, providing reporting capabilities on key clinical, financial and operational metrics, as well as data & analytical support for policy analysis and public data requests.

The goals of this RFI are:

- Inform – The Health Care Authority is currently planning to procure (components of) a business intelligence and analytics platform to support HW AIM and DS. With this RFI, HCA hopes to inform the vendor community on this prospective procurement, including:
    - the business context for these procurement(s);
    - the framework HCA will use when making decisions regarding the design and implementation of this BI/Analytics platform; and
    - the major business and technical complexities HCA's anticipates for these solutions.
- Learn – The Health Care Authority aims to use this RFI as a means to learn from the vendor community:
    - Current technologies, technical capabilities, design best practices and other factors that would inform the design and implementation of our BI/Analytics platform.
    - Specific vendor platform and application offerings that would meet our business needs. We are specifically interested in learning about the "packaging" of separate component offerings, and any dependencies or constraints relevant to these offerings, especially those that may exist between vendors.
    - Example platform architecture designs that meet the desired functionality, specifically designs that would show how a vendor(s) offerings would meet our example use cases.
    - Recommendations on staffing and expertise needs for implementation of technical capabilities, as well as long term support recommendations, as a major requirement of AIM is for long term sustainability after completion of the grant.
- Guide – The Health Care Authority hopes to use this RFI to promote speed to value in our effort to design, procure and implement a BI/Analytics platform capabilities in the following ways:
    - As a next step following this RFI, the Health Care Authority anticipates meeting with several prospective vendors to learn more about specific product offerings, technical capabilities, and design recommendations.
    - Responses to this RFI, specifically products and services available will inform the overall design of the BI/Analytics platform.
    - Inform the creation of one or more Requests for Proposal for specific components of our BI/analytics platform and the management and services needed to successfully implement and utilize the new technologies.

Section 2: Content of Responses

This section outlines the elements requested in response to this RFI. Subsequent sections provide additional background and detail on these requested response elements. The timeline in section 5 includes time for additional questions to address any information not covered in the subsequent sections.

1. Potential Solution Capabilities

HCA is seeking information on potential solutions that would provide the application, platform, and architecture/environment necessary for AIM to achieve the goals listed above. HCA is seeking responses that cover one or more of the following services/capabilities:

- *Data Management*: This includes data warehousing, data integration, and data quality capabilities.
- *Business Intelligence and Analytics Tools*: These tools will span the full range of analytics, from descriptive reporting on historical data to predictive and prescriptive analyses.
- *Visualization*: This refers to the various ways data and analytic information can be organized and graphically displayed.
- *Professional Implementation Services*: HCA may need to utilize external staffing for implementation to augment internal capabilities and to train and educate on new technologies.
- *Storage/Application Environment Platform*: This includes data hosting as well as virtualization and application hosting.

Please use above capabilities as a framework in your responses to the requirements in the next section. This common framework will greatly facilitate interpretation of the RFI results.

HCA has also included a Conceptual Architecture and Expected Data Flow as Appendix B to this RFI. As with the above capabilities, this information should be used as a guide in creating your response.

2. RFI Requirements

Please respond to the following items in your response. Clearly reference where each item below is addressed. Please use the capabilities defined above as a framework for bundling your goods and services in your responses. For each item listed below, in parentheses, HCA has provided a **suggested** page limit. While HCA is interested in learning as much as possible, it values your time and does not want you spending a lot of it preparing a large response. Therefore, these numbers are provided as **guidelines only**, and you are free to exceed these suggested limits.

- Item 1 (10 pages per section of Appendix C): Appendix C of this RFI is divided into sections with a set of items for each of these services/capabilities that should be addressed in a response. Please provide a brief response to the sufficiency of these requirements, and provide feedback on any changes that should be included in any subsequent procurement actions.
  Also, please indicate any assumptions forming a basis for the response or limitations to the proposed solution that may arise if those assumptions change. If these assumptions or limitations only apply to certain items included in Appendix C, please include them in the response for that particular item.
- Item 2 (5 pages per use case): Provide a brief, detailed description of how you would address three of the use cases outlined in Appendix A. If the full scope of the use case cannot be covered by your offerings, please state so in your response. Your input is valuable even if

focused more narrowly than the full use case. Please highlight any specializations required to meet the safety and privacy requirements outlined in Appendix D.

- Item 3 (5 pages): Provide the ideal implementation schedule for the product classes outlined above in "Potential Solution Capabilities." The state currently has existing, but incomplete capabilities, in all areas. Please highlight in your response the ideal order of implementation for new, expanded capabilities, and the dependencies of those implementations. For example, should data management capabilities be implemented prior to visualization, and what dependencies might affect that decision.
- Item 4 (2-3 pages): Please present recommendations for implementation roles and skills including FTE requirements equivalents, client expectations for successful implementations, and your best practices in knowledge transfer to internal staff.
- Item 5 (2-3 pages): Describe the breadth of users that benefit from your offerings. The state has a broad range of users, and the existing capabilities suggest that a single product will not adequately serve all users.
- Item 6 (5 pages): Briefly summarize the recommended training for all relevant types of users and administrators.
- Item 7: Please include in a cover letter to your response how you would prefer to make a presentation if invited to do so.

Responses may include (a) any preprinted materials that would provide the information HCA requests, and (b) answers to the items listed in Appendix C. If a particular item included in Appendix C requests information about a solution's graphical or visual capabilities, the response may also include screenshots to illustrate the description provided.

As indicated above, HCA values your time and does not want you to spend it preparing lengthy responses. After reviewing the responses, HCA may select you for a presentation to be given in the Olympia area, or via the web.

You should also be prepared to provide fully-functional evaluation versions of any proposed software upon request, as a follow up to this RFI.

3. Range of Potential Solutions

The breadth of products and services covered in this RFI will likely require goods and services from multiple vendors. Please feel free to coordinate with other vendors on a single response. Alternatively, please feel free to respond with a limited scope based on the nature of your goods and services and document the scope of your solution within the introduction of your response.

Responses to this RFI will not impact future responses to subsequent procurement solicitations. Responding to this RFI will not be requirement of future solicitations.

4. BI/Analytics Platform Procurement Guidelines

Each of the principles listed below will guide HCA during the information gathering, procurement, and implementation stages.

- *Leverage Existing Investments*: The HCA, and its partner agencies in Healthier Washington (DSHS and DOH) have already made investments in some components related to the BI/Analytics platform HCA hopes to procure. HCA seeks to minimize the need for redundant investment.
- *Interoperability*: Integration with other state capabilities through use of national HIT standards, such as those summarized here: www.healthit.gov/sites/default/files/2016-interoperability-standards-advisory-final-508.pdf

- *Modularity and Scalability*: HCA considers this BI/Analytics platform to be a long term investment in meeting the agency's data and analytics needs. As such, the solution will need to be adaptable and scalable to an ever growing data and analytic set of needs.

Section 3: Background

1. Healthier Washington Overview

The Healthier Washington initiative will transform health care in Washington State so that people experience better health during their lives, receive better care when they need it, and care is more affordable and accessible.

Healthier Washington recommends three core strategies:

- Improve how we pay for services - Presently, providers of health care services are paid every time they provide a service, even when the service doesn't work. Healthier Washington calls for rewarding providers when they achieve good outcomes. Information on effectiveness and cost will be collected and shared to help providers and consumers choose the best treatment options.
- Ensure health care focuses on the whole person - The current system creates barriers to simultaneously addressing physical health, mental health, chemical dependency, and basic living needs as early as possible. Healthier Washington calls for methods of integrating care and connecting with community services to achieve the best possible result for individuals. It also adjusts how we pay for services to make care for the whole person possible.
- Build healthier communities through a collaborative regional approach - virtually all health care is delivered at the local level. Driven by local partners, the state will support a regional approach that provides resources to communities. Working together, communities can bring about changes that will improve health for the people they serve.

As part of the Healthier Washington initiative, Washington State is making several targeted investments, funded by a CMS State Innovation Model grant (CMS-lGl-14-001), including the following:

(1) *Community empowerment and accountability*. Washington will drive local innovation through accountable communities of health (ACHs). Regionally organized ACHs will align the activity and investments of diverse sectors—providers, public health, housing, education, social service providers, health plans, county and local government, philanthropy, consumers, businesses and tribes—to drive integrated delivery of health and social services and improve population health.

(2) *Practice transformation support*. A practice transformation support hub will support providers across the state to effectively coordinate care, increase capacity, and benefit from value-based reimbursement strategies.

(3) *Payment redesign*. In partnership with purchasers, providers and payers, Washington will leverage its purchasing power to be the first mover in shifting 80% of the health care market from traditional fee-for-service to integrated, value-based payment models. Significant infrastructure and national expertise will guide efforts to test, improve and bring to scale shared savings and total cost of care models, including full integration of physical and behavioral health in Medicaid.

(4) *Analytics, interoperability and measurement (AIM)*. New analytical infrastructure for monitoring and reporting on health system performance will support broad deployment of common performance measures to guide health care purchasing. New information exchange capacity will be leveraged to support care delivery, clinical community linkages, and improved health outcomes.

2. AIM Overview

The Analytics, Interoperability and Measurement (AIM) program within Healthier Washington is tasked with providing an innovative solution portfolio that builds analytic and measurement capacity and develops a diverse tool set needed for the translation and visualization of data from multiple sectors into actionable information. The goal of the AIM program is to meet the data, analytic, interoperability and measurement decision support needs of the HW initiative, from service delivery to policy and program development, to healthcare reform investment strategies, as defined in the 2014 Washington State's SIM grant response.

A. Objectives

AIM objectives are clustered around three high level domains:

- Business Intelligence/Shared Analytics Capacity and Capabilities, including:
  - Governance – Program, project, and data
  - Organization – Structure, processes, staffing and skills
  - Client (Demand) Management and Assistance
  - Partners and Vendors
  - BI/Analytics – Human capacity & process
  - Measurement, Metrics Coordination, and Performance Management
- Enterprise Information Management, including:
  - Data Sources
  - Data Quality
  - Data Stewards and Management
  - Privacy/Confidentiality
- Technology Infrastructure, including:
  - Source Systems and Owners
  - Extensible, Agile, Adaptable Infrastructure(s)
  - BI/Analytic Tools
  - Health Information Technology (HIT) Exchanges and Secure Messaging
  - Connectivity, Interfaces and Integration
  - Security

B. Scope of the AIM Program

The scope of AIM includes the design and implementation of the following capabilities and capacities for HW:

- *Measurement*: Define KPIs that are aligned with HW initiatives, and measure performance against these KPI's.
- *Data Information Governance*: Establish a comprehensive approach to governance of HW data and information, in compliance with legal, regulatory, contractual, and ethical requirements. Implement governance and quality controls through multi-entity policies and procedures.
- *Decision Support Tools*: Align KPIs and decision support needs for performance management and predictive capacity. Provide a number of business intelligence and analytic tools, including:
  - *Business intelligence and reporting tools* that allow for representation in multiple formats including dashboard and drill down capability with role based access for use by decision makers to front-line workers, as well as other visualization tools.

    - *Analytics capabilities* that allow HW stakeholders to explore data through visualization, programming, modeling, and other diagnostic, predictive and prescriptive analysis methods.
- *Data Lake*: Data architecture, spanning multiple data repositories, containing data from multiple sources, including those inside and outside of HCA.

Section 4: Administrative Terms and Conditions

1. RFI Coordinator

Please submit responses to the RFI Coordinator at the following address and/or email:

James W. Gayton
RFI Coordinator
P.O. Box 42702
Olympia, WA 98504-2702
HCAContracts@hca.wa.gov

2. RFI Schedule

Release RFI	Monday, April 4, 2016
Vendor Questions due by 4pm	Friday, April 15, 2016
Answers to Vendor Questions	Friday, April 22, 2016
Vendor Submissions Due by 4pm	Monday, May 2, 2016

3. Response Format

Please do not cut and paste responses into this RFI. Instead, provide a response as a separate document using the corresponding item number listed in Appendix C

Responses should be provided in an electronic format, such as Adobe Acrobat or Microsoft Word. This will assist in HCA's review process. You only need to provide a single copy of your response. Responses may be provided in more than one file and submitted in more than one email. HCA prefers that all responses be submitted via email to the RFI Coordinator, a physical copy of responses and materials will also be accepted. However, faxed responses will not.

Please note that HCA will not accept zipped or compressed files in connection with this RFI. HCA will not open any such file. If individual files to a response are too large, please send multiple emails instead of compressing files.

A. Cost of Response

You will not be reimbursed for costs associated with preparing or presenting any response to this RFI.

B. Response Property of HCA

All materials submitted in proposal to this RFI become the property of HCA. HCA has the right to use any of the ideas presented in any response to the RFI.

C. Public Records and Proprietary Information

Any information contained in the response that is proprietary or confidential must be clearly designated as such.

To the extent consistent with chapter 42.56 RCW, the Public Records Act, HCA shall maintain the confidentiality of your information marked confidential or proprietary. If a request is made to view your proprietary information, HCA will notify you of the request and of the date that the records will be released to the requester unless you obtain a court order enjoining that disclosure. If you fail to obtain the court order enjoining disclosure, HCA will release the requested information on the date specified in its notice to you.

HCA's sole responsibility shall be limited to maintaining the above data in a secure area and to notify you of any request(s) for disclosure for so long as HCA retains your information in HCA records. Failure to so label such materials, or failure to timely respond after notice of request for public records has been given, shall be deemed a waiver by you of any claim that such materials are exempt from disclosure.

Appendix A. Potential Use Cases

Below are potential use cases of how the AIM Business Intelligence/Analytics platform will be utilized by its many stakeholders. These examples are provided for reference only, to help inform the drafting of your response to the items in the "Response" section. They are grouped by expected business need:

- Healthier Washington
  - Healthier Washington Evaluation
  - Payment Models
  - Accountable Communities of Health
- HCA Decision Support

1. Healthier Washington Evaluation

Goals	**Consumers/End Users**
Measure and evaluate HW's improvements to Washington's Health - specifically, measure the improvements in Access, Health Outcomes, Cost, and Quality, of health care delivery: • Build healthier communities and promote healthier residents through prevention and early attention to disease • Integrate health and behavioral care and social supports for individuals who have both behavioral and physical health needs • Reward quality health care delivery over quantity, with State government leading by example as Washington's largest purchaser of health care	• University of Washington HW Evaluation Team • Group Health Research Institute (GHRI) – Center for Community Health and Evaluation (CCHE) • Department of Social & Health Services (DSHS) – Research, Data and Analytics Division (RDA) • HW Leadership • HCA, DOH and DSHS Leadership
BI/Analytics Needs	**Data & Information Needs**
• Baseline and Impact Results and Analysis of improvements (Access, Outcomes, Cost and Quality) achieved in the Statewide Common Core Set of Measures • Consumable decision support information to help make enhancements and modifications in program models, target geographies and populations, resource allocations, coordination efforts, etc.	• Comprehensive service, process, claims and cost data across Washington's Healthcare Systems (Globally; State-Specific Programs and Initiatives; SIMs Initiatives; etc.) • Integrated Patient and Population Health Outcomes Data • KPIs supported include those referenced here: www.hca.wa.gov/hw/pages/performance_measures.aspx

High Level Use Cases Summary

- Descriptive – Structured summary and exception reporting for leadership and the public using common measure set in support of HW transparency.
- Diagnostic – Drill-down analysis to enable decision making and possible program adjustments.
- Predictive– Data mining and predictive modeling covering a wide variety of HW initiatives and proposals that may result in major direction change and new initiatives.

2. Payment Model 1: Early Adopter

Goals	**Consumers/End Users**
Deploy integrated medical/behavioral health managed care to facilitate patient-led changes within the processes and structures of managed care organizations at two levels: • Identifying patients with behavioral health needs and actively engaging them in their own care management; • Health system-led changes to build more effective referral and/or integrated care and to increase behavioral health capacity.	• HW Leadership • HW and State Agency Transformation Teams • State Policy, Planning and Finance Staff • Federal Policy and Planning Staff • HW Evaluation Teams • Management Staff: Managed Care Organization's and Providers • State Staff Responsible for Overseeing MCO Investments
BI/Analytics Needs	**Data & Information Needs**
• Baseline and Impact Results and analysis of changes in Access, Outcomes, Cost and Quality of healthcare delivery trends where medical and behavioral health care delivery and services are fully integrated • Providing consumable decision support information to help make enhancements and modifications as may be necessary for full deployment	• Identification of Target Population and Location of Integrated Services – those in need and those being served • Integrated Physical and Behavioral Service and Cost Data (By Diagnosis - Medical, Mental Health and Substance Abuse) • Comparative Data - Baseline; Milestones; Completion; etc.

High Level Use Cases Summary

- Descriptive – Reporting test results to leadership and the Public.
- Diagnostic – Analysis of results, costs and related (unintended) consequences. Help identify where and how this can be extended to other regions
- Predictive– Model the potential long term impact of integration to prioritize and plan further expansion.

Detailed Example Use Case

- At 6 and 12 month points establish an analysis of the cost impact of Payment Redesign Test Model 1.
- An analyst accesses the AIM BA/SA Data Discovery tools looking at the integrated Physical and Behavioral Service and Cost Data from baseline to current state. By Diagnosis - Medical, Mental Health and Substance Abuse (for example) for the Target Population and Location of Integrated Services
- The Analyst uses the tools available to:
    - Break down the analysis by age, gender, diagnosis, district, etc.
    - Cross-referencing types of services received with performance indicators
    - Running multi-year trend analysis
    - Incorporating State demographic data
- The Analyst summarizes the results and creates a report for internal discussions on the results, root causes and possible actions.

3. Payment Model 2: Encounter-Based to Value-Based

Goals	**Consumers/End Users**
• Introduce a value-based alternative payment methodology in Medicaid for federally qualified health centers (FQHCs) and rural health clinics (RHCs) • Pursue new flexibility in delivery and financial incentives for participating critical access hospitals (CAHs) • Test how increased financial flexibility can support promising models that expand care delivery options and incentivize practice transformation	• HW Leadership • HW Leads and team members • State/Medicaid Policy, Planning, and Finance Staff • Federal Policy and Planning Staff • Management Staff: FQHC, RHC and CAH • Engaged stakeholders and piloting providers

BI/Analytics Needs	Data & Information Needs
• Baseline and Impact Results and Analysis using an integrated data platform to support improvements in clinical and process practices and coordination across the Multi-Payer System • Providing consumable decision support information during and following model development • Metric synthesis and reporting based on available claim information	• Utilization patterns in relation to service line • DRG and CPT grouping based on provider • Demographics and patterns relative to provider catchment areas • Identification of Target Population and Location for FQHCs, RHCs and CAHs that are affected by the model through one or more innovations, and those that are not • Process, services and cost data for participating entities and non-participating entities • Complications, re-admissions, hospital acquired-infections for target population and location • Health outcome data for selected patient populations
High Level Use Cases Summary • Descriptive – Reporting test results to leadership and the Public. • Diagnostic – Analysis of detailed model results • Predictive – Modeling for broader application and expansion	

4. Payment Model 3: Accountable Care Program for Multi-Purchaser

Goals	Consumers/End Users
• Two new accountable care programs (ACPs) will offer a new accountable delivery and payment model, providing superior patient service and experience and access to high-quality and timely service at a lower cost. • Each ACP will deliver integrated physical, mental health, and substance abuse services, and assume financial and clinical accountability for a defined population of PEBB members. • ACPs will be reimbursed based on their ability to deliver quality care and keep PEBB members healthy, not on whether they performed a specific test or service.	• State Leadership • HCA's PEBB Policy, Planning, and Finance Staff • Management Staff: ACP Program Initiative

BI/Analytics Needs	Data & Information Needs
• Baseline and Impact Results and Analysis of changes resulting from the ACP model in Access, Outcomes, Cost and Quality of healthcare delivery trends where medical and behavioral health care delivery and services are fully integrated for PEB population • Providing consumable decision support information to help make enhancements and modifications to the ACP model and approach as may be necessary for full deployment	• Comprehensive ACP service, delivery, claims and cost data • Integrated PEB Population health outcomes data • Benchmark assessment for quality measures of the two ACP providers (Puget Sound High Value Network LLC, UW Medicine Accountable Care Network)

High Level Use Cases Summary

- Comprehensive ACP service, delivery, claims and cost data
- Integrated PEB Population health outcomes data
- Benchmark assessment for quality measures of ACP providers (currently Puget Sound High Value Network LLC, UW Medicine Accountable Care Network)

Detailed Example Use Case

- To meet the Healthier Washington goal to move to "paying for value" use predictive analytics to establish pricing based on risk levels and evidence based practices for integration of behavioral health and medical healthcare.
- Predictive models are created to analyze the impact of risk-based contracts created for PEBB as part of Payment Redesign Test Model 3. Predictive models are created to:
    - Forecast the healthcare needs of targeted populations
    - Apply alternative payment designs
    - Produce comparisons of the results of alternative payment designs and healthcare needs in terms of outcomes and costs
    - Use comparative analyses in discussions and negotiations on the risk-based contracts under consideration.

5. Payment Model 4: Greater Washington Multi-Payer

Goals	**Consumers/End Users**
• Leverage a "market champion" to convene payer and provider partners with a common interest in VBPs, and to provide expertise and technical assistance to facilitate the integration of aggregate claims and clinical data into provider workflows. • Integrate data across multiple payers and delivery systems to enable providers with a unified view of their patient population. • Increase the adoption of Value-Based Payments (VBPs) among participating providers and payers by increasing providers' access to patient data across multiple payers and provider systems and align quality measures used to assess provider performance throughout the healthcare system. • Aggregate clinical data from electronic medical records and payer-based claims data from an integrated data platform to support care coordination and population health management.	• HW Leadership • State Policy, Planning and Finance Staff • Federal Policy and Planning Staff • Decision makers, policy analysts and process designers in the Lead organization • Decision makers at many levels across the payers and providers in the Greater Washington Multi-Payer System • Payers and providers that participate in the model
BI/Analytics Needs	**Data & Information Needs**
• Baseline and Impact Results and Analysis using an integrated data platform to support further adoption of VBPs, improvements in clinical and process practices, and care coordination across multiple payers and providers • Providing consumable decision support information for providers to leverage evidence based practices for improving access, outcomes, cost and quality of provider services	• Comprehensive Multi-payer Claims Database • Integrated Patient Population Database – Claims and Clinical
High Level Use Cases Summary	
• Descriptive – Reporting test results to leadership and the Public. • Diagnostic – Analysis of detailed test results • Predictive – Modeling for broader application of value based options	

6. Accountable Communities of Health (ACHs)

Goals	**Consumers/End Users**
• Create nine regional Accountable Communities of Health (ACHs), which are diverse multi-sector partnerships that: • Bring together diverse public and private community partners to work on shared regional health goals. • Identify opportunities for the ACH and community partners to understand and bridge health and quality of life issues. • Coordinate systems so that services address all aspects of health at both the community and individual level. • Partner with the state to inform the development of other Healthier Washington investments, recognizing ACHs are the connection to communities and the local conduit to achieve systems change.	• HW Leadership • ACH Stakeholders (Multi-Level) • HW and State Agency Transformation Teams Impacting or Impacted by ACH • State Policy, Planning and Funding Staff • Federal Policy and Planning Staff • HW Evaluation Teams
BI/Analytics Needs	**Data & Information Needs**
• Baseline and Impact Results and Analysis across ACHs and tailored to each ACH to support improvements in collaborative approaches to operations across the community (e.g. combining resources, adopting demonstrated best practice standards etc.) • Providing consumable decision support information to help make enhancements and modifications in program models, target populations, evidence based practices, coordination efforts, etc.	• Process, services, outcomes and cost data for participating ACH communities • Establishment of Comparable Cohorts across regions and ACHs • Social determinants data
High Level Use Cases Summary	

• Descriptive
  ○ Structured summary and exception reporting for ACH participants on the working and results of their ACH.
  ○ Comparative reporting for ACH participants across the population of ACHs
• Diagnostic – Analysis into which areas of collaboration provide most useful and important improvements
• Predictive – Expansion or Replication Opportunities	

Detailed Example Use Case

- ACH participating providers and ACH coordinating analysts use AIM BI/Analytics tools standard and exception reporting to improve ACH collaboration and performance. Participating providers and coordinating analysts - access the AIM BI/SA to review performance dashboards over the last year. They are able to view the dashboards for each month or view a summary of performance for the last 12 months.
- The dashboards depict demographics as well as baseline and performance indicators designed to measure the impact of collaboration within the ACH and compare across ACHs.
- A coordinating analyst notices that the ACH is suffering a negative decrease in a social determinant such as walkability (leading indicator). The analyst uses a variety of different parameters and queries such as:
    - Breaking down the above report by district, age, gender, etc.
    - Running multi-year trend analysis vs. related outcome data for this and other ACHs
- The analyst distributes the reports electronically to the ACH leadership team in advance of external reporting – with enough time to study the reports, request customized analytics and have internal discussions on the results.

7. HCA Decision Support

Goals	**Consumers/End Users**
• Better understanding of variances in provider outcomes and activities relative to other providers and client types • Improve delivery options and target outreach to improve client access to services • More effective and efficient operations within HCA. • Timely and efficient responses to analysis requests from within HCA, other state agencies, and the public. • Automate existing manual reporting activities • Meta data management for previous analyses to facilitate transfer of analyses to new staff and other organizations	• HCA leadership, management and staff
BI/Analytics Needs	**Data & Information Needs**
• Baseline, trend analyses and ad hoc analyses • Management dashboards for pre-defined key performance indicators. • Forecast to actual data feeds based on operational metrics of providers • Root cause analyses for significant variances in provider activities and client outcomes	• Encounter and claim data from ProviderOne and other HCA data sources • HCA operational data such as payroll and budgets from AFRS and internal, ad hoc data sources • Existing data feeds from other state agencies such as DSHS and DOH

High Level Use Cases Summary

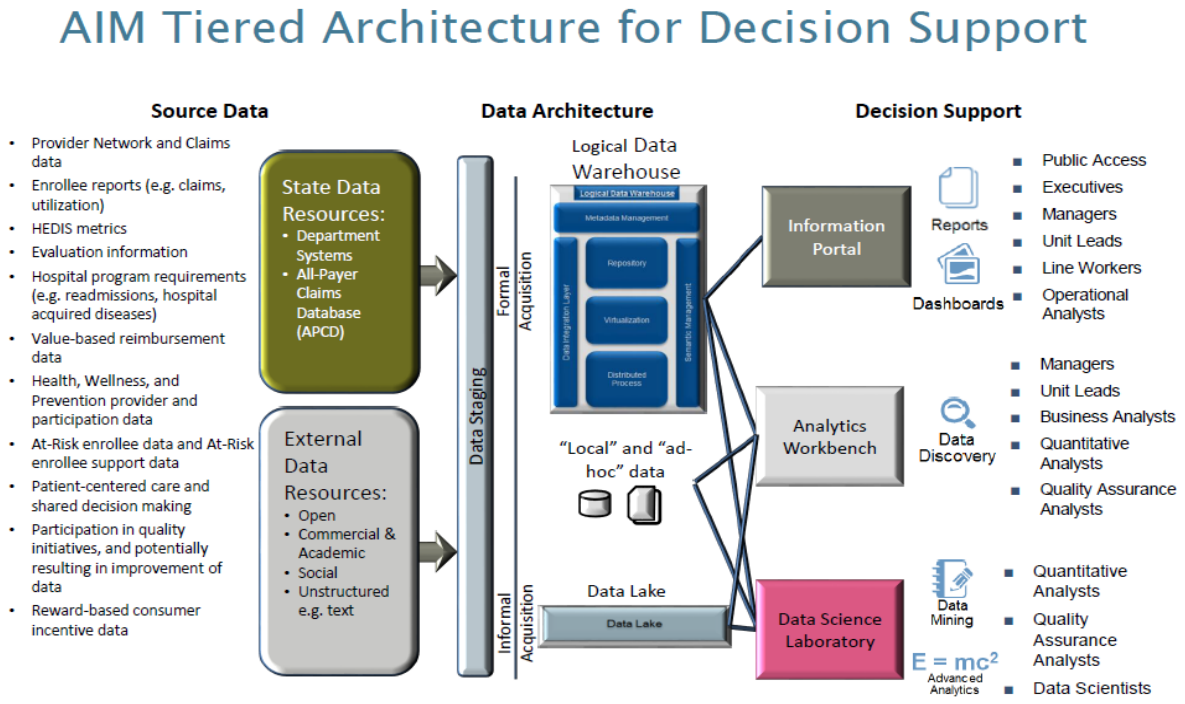
- Descriptive – Quantify the number of Apple Health clients impacted by a particular drug.
- Diagnostic – Triggered alerts based on unexpected spikes in call center volume
- Predictive – Model possible impacts on provider and client outcomes based on possible policy changes.

Detailed Example Use Case

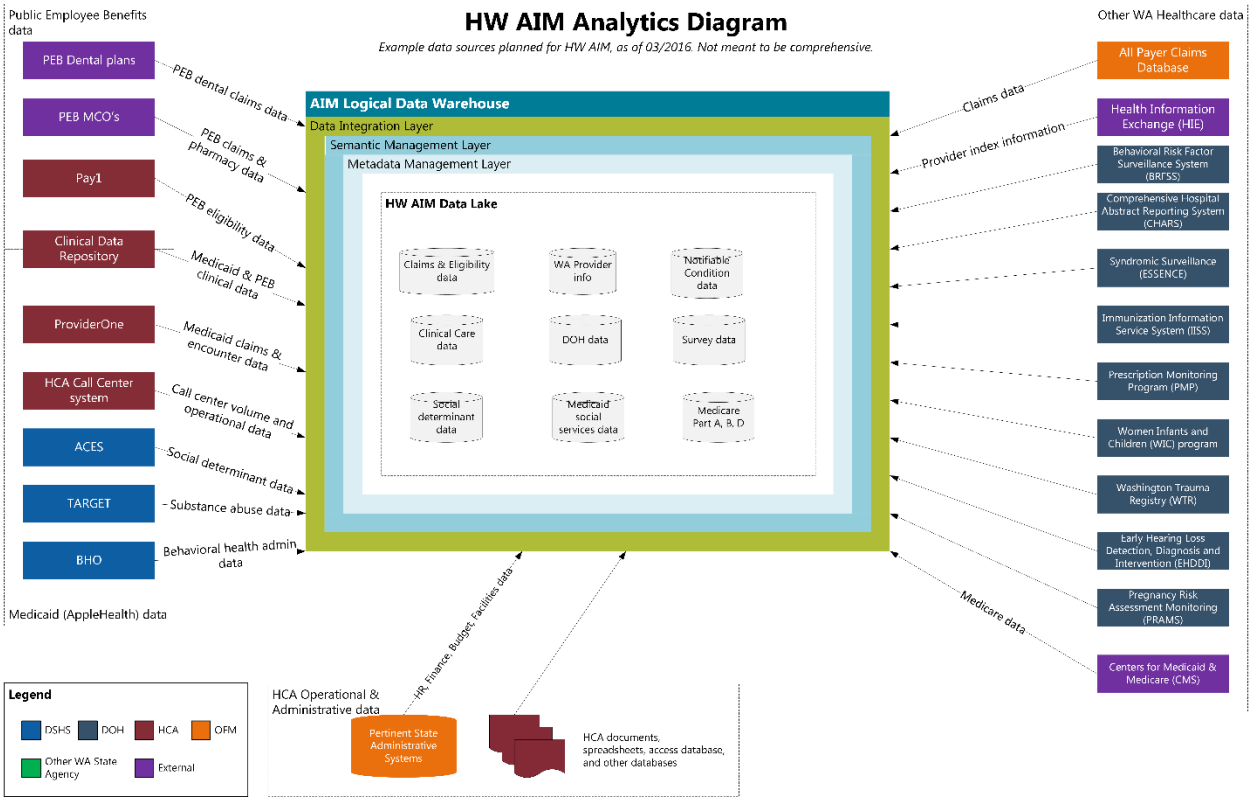
- The health of Medicaid patients is impacted by health care services as well as many other contributing factors such as lack of housing, distance to nearest health care facilities, and food availability.
- Analysts will need to join existing claim, encounter and clinical data will other public and private data sources such as census data, DOH, Corrections, Employment, and housing data.
- Multiple analyses will need to be done covering descriptive reporting of the current state, correlations that will forecast future state, and modeling different future states based in impacts of changes to operational practice, deeper integration of services, and changes in statewide policy.
- Distribution of results to relevant stakeholders and collaborators of both the analytical results as well as the underlying input and output data.is not

Appendix B: AIM BI/Analytics Platform - Conceptual Architecture and Expected Data Flow

1. Conceptual Architecture



2. Expected Analytics Data Flow Diagram



3. Examples of Possible Source Data for Data Architecture

The platform design will include measurement dimensions from many primary sources. The measurement dimensions will include, but not be limited to, the following:

- Eligibility categories aligned to budget forecast concepts
- Managed care enrollment affiliation
- Provider taxonomies
- Beneficiary/Provider relationship attribution
- Beneficiary demographics
- Beneficiary residential location
- Health service classifications including detailed modalities within the following service areas: medical services, mental health services, substance use disorder services, long-term care services
- (Medicaid specific) Medicare data integration for persons dually eligible for Medicaid and Medicare
- Health service pricing including assessment of reliability of pricing data on MCO encounters and shadow pricing where required

These measurement dimensions will be sourced from a wide array of primary sources including, but not limited to, the following:

Organization	Database Name	Acronym	Key Information
DOH	Behavioral Risk Factor Surveillance System	BRFSS	Survey data for adult behavioral health factors
DOH	Comprehensive Hospital Abstract Reporting System	CHARS	De-identified hospital discharge
DOH	Early Hearing Loss Detection, Diagnosis, and Intervention Program	EHDDI	Screening results for children hearing loss
DOH	Syndromic Surveillance	ESSENCE	Patient information
DOH	Immunization Information Service System	IIS	Immunization records adults and children
DOH	Prescription Monitoring Service	PMP	Prescription drug information
DOH	Pregnancy Risk Assessment Monitoring	PRAMS (survey)	Annual survey of new mothers
DOH	Women Infants and Children	WIC	WIC participation, services provided, and costs
DOH	Washington Trauma Registry	WTR	Demographics, injuries, care and outcomes of trauma
DOH	Child Death Review		Detailed meta data unexpected deaths for children under 18
DSHS	Automated Client Eligibility System	ACES	Eligibility status
DSHS	BHO Data Consolidation Project	BHO Database	Non-ProviderOne admin data
DSHS	Consumer Information System	CIS	Mental Health
DSHS	Treatment and Assessment Report Generation Tool	TARGET	Substance Use Disorder
Federal	Center for Medicaid and Medicare	CMS	Medicare data
HCA	Link4Health	CDR	Medicaid and PEBB Clinical data
HCA	ProviderOne	P1	Medicaid Claims, Encounters
HCA	Pay1	Pay1	PEBB Eligibility data

Organization	Database Name	Acronym	Key Information
HCA	PEBB Dental Plans		Dental claim information
HCA	PEBB MCO's		PEBB Claims and pharmacy data
OFM	All Payers Claim Database	APCD	All claims, encounters
Private	Health Information Exchange		Provider Index Information

Appendix C. Desired Capabilities & Functionality

The following table provides information on capabilities and functionality that the State is currently interested in obtaining. In your response to item #1, please address how the State might design and implement a solution that provides this functionality. You may also provide additional clarity or recommendations.

1. Data Management

Number	Description
1.1	Describe how the data integration engine of the solution is able to meet the following core functionalities: • Ability to connect to and extract data from a wide range of structured and unstructured data sources. • Perform basic (e.g., data type conversions, string manipulations and calculations) to complex (e.g., sophisticated parsing operations on free-form text and rich media) data migrations, conversions, and transformations. • Support for different modes of interaction with data sources and data structure, including bulk/batch and granular trickle-feed acquisition and delivery, identify and extract modified data, and event-based acquisition (time-based or data-value-based
1.2	Describe the ability of the solution to provide data to consuming applications, processes, and databases in the following modes: • Physical bulk/batch data movement between data repositories (ETL or ELT). • Federated/virtualized views formulated in-memory • Message-oriented movement via encapsulation • Replication of data between homogeneous or heterogeneous DBMSs and schemas • Support for the delivery of data across the range of latency requirements
1.3	Describe the metadata and modeling capabilities of the solution, including automated discovery and acquisition of metadata, data model creation and maintenance, mapping, and reporting.
1.4	Describe the facilities for enabling adequate ongoing support, management, monitoring, and control of the data integration processes implemented via the solution.
1.5	Describe the design and development environment capabilities of the solution, including facilities for enabling the specification and construction of data integration processes.
1.6	Describe the solution's data governance support capabilities via interoperation with data quality, profiling and mining capabilities, and mechanisms to work with related capabilities related data quality over time. Please include interoperability with other data tools that provide such capabilities.
1.7	Describe the architecture and integration capabilities of the solution, including the degree of commonality, consistency and interoperability between the various

	components of any data integration toolset.
1.8	As acceptance of data service concepts continues to grow, data integration tools must exhibit service-oriented characteristics and provide support for SOA deployments. Describe the service enablement capabilities of the solution.
1.9	Describe the data quality assurance capabilities of the solution, including: • Data profiling and data quality measurement - The analysis of data to capture statistics (metadata) that provide insight into the quality of data and help to identify data quality issues • Parsing and standardization - The decomposition of text fields into component parts and the formatting of values into consistent layouts, based on industry standards, local standards (for example, postal authority standards for address data), user-defined business rules, and knowledge bases of values and patterns • Generalized "cleansing" of data - The modification of data values to meet domain restrictions, integrity constraints or other business rules that define when the quality of data is sufficient for an organization • Matching, Linking and Merging - The identifying, linking or merging of related entries within or across sets of data • Monitoring - The deployment of controls to ensure that data continues to conform to business rules that define data quality for an organization • Issue resolution and workflow - The identification, quarantining, escalation and resolution of data quality issues through processes and interfaces that enable collaboration with key roles, such as data steward • Enrichment - The enhancement of the value of internally held data by appending related attributes from external sources (for example, consumer demographic attributes and geographic descriptors • Scalability & Performance
1.10	Describe the data management and support capabilities of the solution, including master data management, data structures, and access controls.
1.11	Describe any other data management capabilities relevant to the stated goals of the AIM program that are not addressed in the items listed above.

2. Business Intelligence/Analytics and Visualization

Number	Description
2.1	Provide a description of the business intelligence and analytics tools and capabilities of the solution. In particular, HCA is interested in hearing about whether and how the solution can perform the following: • "Drag and drop," user-driven data combination of different sources and the creation of temporary tables that can then be used for analytics and complex research, including attributes such as user-defined measures, sets, groups and hierarchies. • Internal platform integration resulting in a common look and feel, install and query engine, shared metadata, and promotability across all platform components.

	• Ease of platform administration, including administering users, scaling the platform, optimizing performance, and ensuring high availability and disaster recovery.
	• Metadata management tools for enabling users to leverage the same systems-of-record semantic model and metadata.
	• Ease of use for users to access data in the data repository to answer specific questions, build dashboards, and undertake complex research
	• A set of programmatic and visual tools and development workbench for building reports, dashboards, queries and analysis.
	• Tools available for the exploration of data via the manipulation of chart images, with the color, brightness, size, shape and motion of visual objects representing aspects of the dataset being analyzed.
	• Provide a set of programmatic and visual tools enabling:
	  ○ Non-programmers to access the data using visualization tools to explore areas of interest
	  ○ Visualization capabilities allowing the creation of presentation quality graphics and images. This would include tools available for the manipulation of chart images.
	  ○ Simple integration with Excel, SAS, and other common tools widely used in state government and in stakeholder groups

2.2	Ability for users to develop and deliver content to mobile devices in a publishing and/or interactive mode that takes advantage of native capabilities of mobile devices, such as touchscreen, camera, location awareness, and natural-language query.
2.3	Ability of users to share and discuss information, analysis, analytic content, and decisions via discussion threads, chat, annotations, and storytelling.
2.4	Capabilities for creating and modifying analytic content, visualizations and applications, and embedding them into a business process and/or an application or portal.

3. Environment

Number	Description
3.1	Describe the required physical and logical configuration for optimal performance of the solution, including data hosting as well as virtualization and application hosting. While HCA assumes that the solutions and applications needed to meet the goals of the HW AIM and HCA Decision Support will be a cloud based, it is open to other options.
3.2	Describe any functionality differences that might occur when interoperating with other products. Specifically, mention any impacts on functionality if other vendor's products are included in the environment.

4. Other

Number	Description
4.1	Describe the solution's ability to support the evolving requirements of assessing health

	care outcomes and value of delivered health services. Please cite specific case studies where applicable.
4.2	Summarize your products' interoperability with federated data models. Specifically address your products current and future support of industry standards such as HL7, HIPAA, etc.
4.3	Summarize best practices learned from supporting health care key performance indicators (KPIs) such as those outlined in support of Medicare (https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/sharedsavingsprogram/Quality_Measures_Standards.html).
4.4	Recommend best practices learned from the support of a broad range of analytical customers. This could range from traditional management dashboards to cutting edge analytic capabilities.
4.5	Provide pricing models as well as your standard contractual terms and conditions for purchasing your products or services. Specifically, identify circumstances under which pricing discounts can be obtained, such as volume discounts, the purchase of bundled products, or areas of preferential pricing when multiple products are purchased.
4.6	Summarize your experience in best practices for assisting clients at a similar stage of implementation as HCA, in the design of a platform solution, integration of various platform components, implementation of infrastructure, and training of support staff across the full spectrum of end users skills and abilities.

Appendix D: Security & Privacy Requirements

Any solution the State procures and implements for AIM, will need to comply with applicable state, federal, and industry regulations such as the following:

- HIPAA Privacy, Security and Breach Notification Rules
- WA State OCIO Security Standard, OCIO 141.10
- 42 CFR Part 2
- RCW 70.02
- HCA Privacy and Security Policies, such as HCA 1-02 and HCA 6-16 (can be provided at vendor request)
- NIST 800-53 Rev 4
- Industry certifications, such as FedRAMP