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State of West Virginia
Solicitation Response

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Signature on File	FEIN #	DATE
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All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Hospital In-Patient UB Data System and Emergency Department	4.00000	QTR	\$148,453.000000	\$593,812.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Hospital In-Patient UB Data System and Emergency Department

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
2	Outpatient Surgery	3.00000	QTR	\$27,528.000000	\$82,584.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Outpatient Surgery

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
3	Outpatient Observation stays	3.00000	QTR	\$24,707.000000	\$74,121.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Outpatient Observation stays

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
4	Outpatient Diagnostic and Therapeutic Hospital	3.00000	QTR	\$27,919.000000	\$83,757.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Outpatient Diagnostic and Therapeutic Hospital

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
5	Outpatient Physician Office visits	3.00000	QTR	\$28,773.000000	\$86,319.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Outpatient Physician Office visits

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
6	Other hospital outpatient services	3.00000	QTR	\$29,052.000000	\$87,156.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Other hospital outpatient services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
7	Hourly rate for all optional services	500.00000	HOUR	\$223.990000	\$111,995.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Hourly rate for all optional services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
8	Optional Renewal Year 1-Hospital In patient UB data system	4.00000	QTR	\$122,885.000000	\$491,540.00

Comm Code	Manufacturer	Specification	Model #
81112201			

Extended Description : Optional Renewal Year 1-Hospital In patient UB data system

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
9	Optional Renewal Year 1-Outpatient Surgery	4.00000	QTR	\$15,080.000000	\$60,320.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 1-Outpatient Surgery

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
10	Optional Renewal Year 1-Outpatient Observation stays	4.00000	QTR	\$21,153.000000	\$84,612.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 1-Outpatient Observation stays

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
11	Opt. Renewal Yr 1 Outpatient Diagnostic & Therapeutic Hospit	4.00000	QTR	\$16,831.000000	\$67,324.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 1-Outpatient Diagnostic and Therapeutic Hospital

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
12	Optional Renewal Year 1-Outpatient Physician Office visits	4.00000	QTR	\$17,121.000000	\$68,484.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 1-Outpatient Physician Office visits

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
13	Optional Renewal Year 1-Other hospital outpatient services	4.00000	QTR	\$17,121.000000	\$68,484.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 1-Other hospital outpatient services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
14	Optional Renewal Year 1-Hourly rate for all optional service	500.00000	HOUR	\$230.710000	\$115,355.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 1-Hourly rate for all optional service

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
15	Optional Renewal Year 2-Outpatient Surgery	4.00000	QTR	\$15,233.000000	\$60,932.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 2-Outpatient Surgery

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
16	Optional Renewal Year 2-Outpatient Observation stays	4.00000	QTR	\$17,934.000000	\$71,736.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 2-Outpatient Observation stays

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
17	Opt. Renewal Yr 2 Outpatient Diagnostic & Therapeutic Hospit	4.00000	QTR	\$18,180.000000	\$72,720.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 2-Outpatient Diagnostic and Therapeutic Hospital

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
18	Optional Renewal Year 2-Outpatient Physician Office visits	4.00000	QTR	\$17,969.000000	\$71,876.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 2-Outpatient Physician Office visits

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
19	Optional Renewal Year 2-Other hospital outpatient services	4.00000	QTR	\$18,034.000000	\$72,136.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 2-Other hospital outpatient services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
20	Optional Year 2-Hourly rate for all optional services	500.00000	HOUR	\$237.630000	\$118,815.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Year 2-Hourly rate for all optional services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
21	Optional Renewal Year 3-Outpatient Surgery	4.00000	QTR	\$15,690.000000	\$62,760.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Outpatient Surgery

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
22	Optional Renewal Year 3-Outpatient Observation stays	4.00000	QTR	\$18,681.000000	\$74,724.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Outpatient Observation stays

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
23	Opt. Renewal Yr 3 Outpatient Diagnostic & Therapeutic Hospit	4.00000	QTR	\$18,993.000000	\$75,972.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Outpatient Diagnostic and Therapeutic Hospital

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
24	Optional Renewal Year 3-Outpatient Physician Office visits	4.00000	QTR	\$18,164.000000	\$72,656.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Outpatient Physician Office visits

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
25	Optional Renewal Year 3-Other hospital outpatient services	4.00000	QTR	\$18,828.000000	\$75,312.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Other hospital outpatient services

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
26	Optional Renewal Year 3-Hourly rate for all optional service	4.00000	QTR	\$244.760000	\$979.04

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Hourly rate for all optional service

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
27	Optional Renewal Year 2-Hospital Data System	4.00000	QTR	\$125,906.000000	\$503,624.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 2-Hospital Data System

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
28	Optional Renewal Year 3-Hospital Data System	4.00000	QTR	\$132,453.000000	\$529,812.00

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description : Optional Renewal Year 3-Hospital Data System

Solicitation No.: CRFQ 0511 HHR2000000001

TECHNICAL PROPOSAL—ORIGINAL

Hospital Inpatient Data System (HIDS)

October 4, 2019



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1.0 Qualifications

1.1 Qualifications and Experience

For the last 28 years, the West Virginia Health Care Authority (HCA) has used the Hospital Inpatient Data System (HIDS) to collect hospital inpatient data from all non-federal hospitals in the state. These data have informed integral regulatory and policy decision-making, including policy related to constraining rising health care costs and guaranteeing reasonable access to necessary health services. For the past eight years, Social & Scientific Systems (SSS) has helped HCA fulfill its mission by leading HIDS data collection, processing, editing, analysis, and reporting.

The West Virginia Department of Health and Human Resources (DHHR) will now assume HCA's functions and responsibilities, and data will play an expanded role for the state. Data will be used to support compliance with public health reporting requirements; inform DHHR on regulatory and policy decisions; advise policy makers, providers, researchers, and consumers; provide DHHR with responses to special requests; and support its participation in other government agency initiatives (e.g., the Agency for Healthcare Research and Quality's [AHRQ] Healthcare Cost and Utilization Project [HCUP]).

With the transition of functions to DHHR, DHHR plans to upgrade or replace HIDS with one that maintains or improves data collection. Its purpose will be to house and integrate data from inpatient setting services as well as emergency department (ED) services, hospital-based outpatient surgeries, outpatient observation stays, outpatient diagnostic and therapeutic hospital services, physician office visits, and other outpatient services.

As HCA's HIDS partner for the past eight consecutive years, and supporting HCA on similar contracts for another eight years, SSS has an in-depth understanding of the state's evolving data collection needs. Such an understanding of the state's upcoming data analytic plans and direction positions SSS to effectively help DHHR meet and exceed its future goals. Being HCA's long-term partner, delivering reliable performance throughout the inpatient data submission and reporting cycle, we understand the data collected, their formats, and how to work with the hospitals to ensure seamless data collection, processing, and editing.

Over time we have worked with HCA to usher in major changes in data file formats, diagnosis and procedure codes, and data validation rules. As HCA's needs changed, we adapted our efforts to help maintain the quality of data and support services to the hospitals, HCA, and public requestors. SSS staff assumed additional work related to data and ad-hoc analysis requests, and provided increased hospital data submission support. As DHHR implements new processes and

Social & Scientific Systems brings a history of high-quality data collection, processing, and editing to the state of West Virginia.

- Combined 16 years of responsive, innovative, and cost-effective support.
- Trusted to assume tasks previously performed by HCA staff.
- Developed the HDSS web portal to support all aspects of data submission, validation, and reporting.
- Collected and adjudicated more than 2,200,000 inpatient hospital discharge records since 2011.
- Offered knowledgeable and timely Help Desk support to hospitals with established relationships (more than 6,500 emails and call inquiries).
- Supported targeted data analysis from knowledgeable staff with policy and epidemiology expertise.

requirements, and may face unanticipated challenges, we will remain flexible in providing varying levels of support to DHHR and will offer technical expertise related to ED data submission; a self-service reporting tool; and innovations for policy, clinical, and/or data specifications. It is important that this work continues to be cost-effective, prioritizes high-quality data collection and processing, and ensures data security and privacy.

With our in-depth technical knowledge and excellent, established relationships with West Virginia state staff, hospitals, and vendors that play key roles in the data collection process, we will successfully meet all project goals and complete the following tasks:

- Data collection, processing, and editing,
- Documentation and technical support,
- Analytic files,
- Data security and privacy,
- Project management, and
- Optional service.

To perform these tasks, we developed a solution that builds on our understanding of inpatient, ED, and other outpatient data requirements, and the value and accessibility of the data to multiple stakeholders. With the additional ED data requirements under this scope of work, compared to only managing inpatient data as we did in the current and prior contracts, we expect a significant increase in the volume of data to collect, validate, and report. Based on the latest research, in the U.S., in 2016 there were 35,700,000 hospital stays¹ but more than 145,000,000 ED visits.² From these statistics, we estimate West Virginia may have four times as many records for ED visits compared to the inpatient records. To plan for this anticipated volume increase, we will augment our staff resources from current project levels, enhance the IT infrastructure, and develop new technical assistance materials. **Ms. Courtney Ashton** (Project Manager [PM]) and **Mr. Jeffrey Schinckle** (Functional/Operational Lead and Trainer), work on the current HCA project and will continue in leadership roles for effective execution. The SSS project team will ensure that our solution builds upon on best practices and lessons learned.

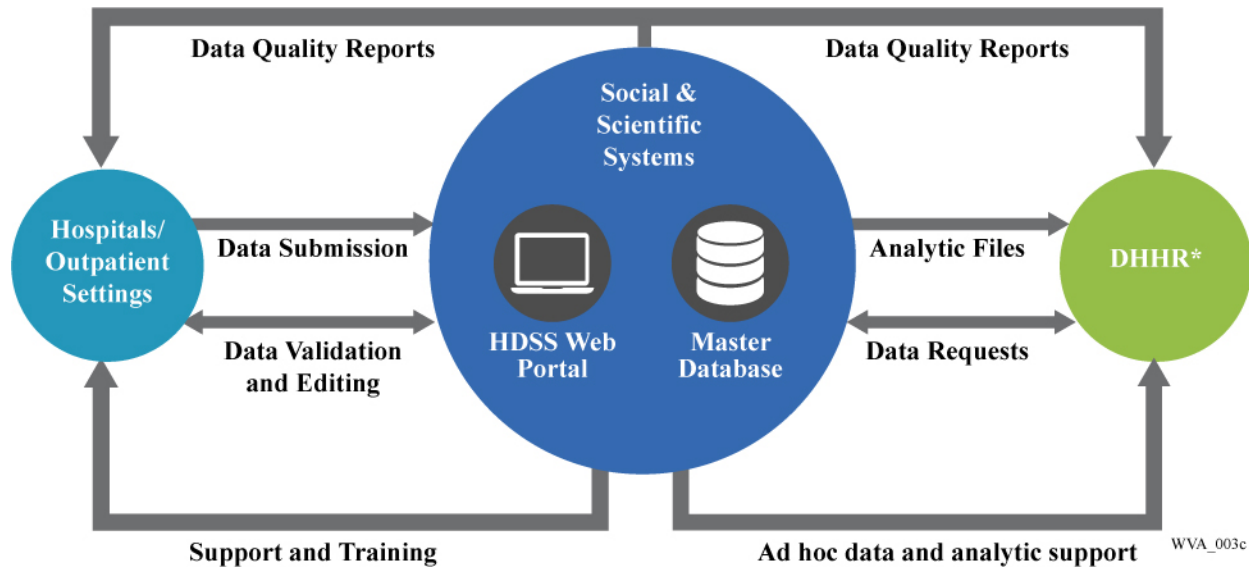
We plan to use the current Hospital Data Submission System (HDSS) Portal and Master Database as the foundation for this project's work. Their flexibility allows for smooth implementation of new data collection activities and features required for this scope of work. Because hospitals and their vendors are already familiar and comfortable using the current HDSS portal, we will easily customize this tool to meet the augmented functionality for ED and other outpatient services data collection. Using similar approaches from SSS' other database projects (e.g., the Maryland Health Care Commission [MHCC] and the AHRQ described in **Section 1.1**), and leveraging our experience around data management and time-tested, reliable, and easy-to-use tools, we will enhance the portal's reporting capabilities through self-service tools.

¹ Overview of U.S. Hospital Stays in 2016. <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb246-Geographic-Variation-Hospital-Stays.jsp>

² CDC National Center for Health Statistics, Emergency Department Visits <https://www.cdc.gov/nchs/fastats/emergency-department.htm>²²

Figure 1-1 presents an overview of our approach. Arrows represent major activities, and circles represent key project stakeholders (i.e., hospitals, SSS, and DHHR).

Figure 1-1. Overview of the data collection and reporting activities among stakeholders.



* Department of Health and Human Resources

Hospitals will use the HDSS portal for both inpatient and ED data submissions and uploads. This will trigger data validation and editing in HDSS through SSS's automated validation rules that provide feedback to the hospitals via the data submission dashboard. Hospitals will then edit their data in HDSS and revalidate it until it passes all required data quality benchmarks. To support hospitals in their submissions, SSS will continue to maintain documentation such as data element specifications, a companion guide to the 837I 5010 data format, and data collection policies and procedures as quick-reference tools in response to hospital inquiries. We will offer both formal training and individual Help Desk technical support.

After data are submitted and validated, they will automatically transfer to the Master Database where Data Quality Reports (DQRs) will be prepared. DQRs reflect a hospital's adjudicated data, processed via a statistical analysis system (SAS) program. The SAS program runs nightly during the workdays, automatically updating the Master Database, keeping the DQR reports up to date. SSS and DHHR will be able to review the DQRs at any time to check hospitals' submissions status. Also, SSS will provide a weekly hospital status report to the DHHR summarizing hospitals' data submission progress. SSS will provide DHHR with a weekly analytic file from the Master Database. By July 1, SSS will provide DHHR with a final annual analytic file containing the full set of data submissions for the previous calendar year. With our staffs' knowledge of HIDS data and broad health policy issues (e.g., payment reform, health disparities, urban/rural delivery setting utilization variations), we will also continue to support optional services tasks, including responding to data requests related to the finalized annual data, ad-hoc data, and analysis questions.

Augmented data submission requirements may likely pose challenges to hospital submitters. Based on SSS' knowledge of West Virginia's HIDS process, ED and outpatient data files, and the types of data submission challenges the hospitals faced before, SSS has identified potential

challenges and mitigation approaches. **Table 1-1** presents potential challenges and our approaches for resolution.

Table 1-1. Potential challenges and approaches for resolution.

Potential Challenge	Mitigation Approach
<ul style="list-style-type: none"> ▪ Data Format: Hospitals struggle to create correctly formatted data files for submission of ED data from their billing systems. 	<ul style="list-style-type: none"> ▪ Adopt the X12 837I 5010 format, the same format as the current inpatient file, for the ED data file. ▪ Survey hospitals about their readiness to submit ED data; identify and assist those who are facing challenges to submit their data. ▪ Use a test site for ED submission testing before regular submission begins; require hospitals to submit ED data to the test site and review data files to identify format issues.
<ul style="list-style-type: none"> ▪ Timeliness of Data Submissions: Hospitals struggle to submit the additional data on schedule due to potential burden on hospital staff. 	<ul style="list-style-type: none"> ▪ Minimize the learning curve for submission due to familiarity with the current data collection HDSS portal. ▪ Offer training, documentation, and individual support through the Help Desk to assist hospitals with test and production data submission.
<ul style="list-style-type: none"> ▪ Quality of New Data Submissions: New ED data may be of questionable quality. 	<ul style="list-style-type: none"> ▪ Provide training and documentation of data format and appropriate coding and classification systems, including several examples and scenarios. ▪ Use test site for ED submission testing before regular submission begins; require hospitals to submit ED data to the test site and review data uploaded for validation and quality issues. ▪ Add DQRs specifically aimed at issues identified before ED data collection begins.

As the project progresses, we will continually look for ways to improve communication, data availability and timeliness, hospital support, and policy analysis. SSS has implemented multiple innovations during our long partnership with HCA, and we will continue to do so based on the DHHR’s needs. **Table 1-2** highlights several of SSS’ current project enhancements and the benefits that these enhancements provided to HCA.

Table 1-2. Multiple innovations, proactive recommendations, and efficiencies to enhance processes, data quality and timeliness, and ad-hoc inquiry responsiveness on the current project.

Innovation/Enhancement	Benefit/Impact
<p>Created the Standard Reports for 2017 and re-created the formatting and appearance of the PDF output tables</p> <ul style="list-style-type: none"> ▪ Inherited work from HCA with limited transition instructions, codes, and documentation ▪ Created PDF outputs from scratch, based on SSS staff understanding of output and data use ▪ Automated the process for future Standard Report deliverables 	<ul style="list-style-type: none"> ▪ Ensured seamless development and timely completion of reports for public access on HCA website ▪ Mitigated the need to burden HCA staff with ongoing recreation discussions due to SSS staff technical expertise (assumed functions previously performed by HCA staff) ▪ Developed more efficient and easily repeatable report creation based on SSS’ automation techniques

Innovation/Enhancement	Benefit/Impact
<p>Streamlined HCUP file creation process by integrating the codebook and file creation efforts into the end of data year closeout process</p> <ul style="list-style-type: none"> Handled all aspects of the creation of the modified final data file to send to HCUP for review, including those previously done by HCA staff Compressed timeline to accelerate the creation of the codebook and final data file 	<ul style="list-style-type: none"> Delivered HCUP handbook on time for review in advance of final file. HCUP file provided for review earlier than the 2016 data year file Secured final approval of 2017 data year file- received one month earlier than the 2016 final file, allowing data request for 2017 data to begin earlier
<p>Responded to increasing number of ad-hoc data requests after task was transferred from HCA to SSS (and minimized burden on remaining staff)</p> <ul style="list-style-type: none"> Developed SAS template aligning with HCA’s data request form Devised request pipeline/tracking document, including a QA process to review request against output to ensure alignment and accuracy 	<ul style="list-style-type: none"> Allowed client to be highly responsive to time-sensitive issues, including other state agencies and legislative inquiries Allowed more efficient data request management to support client’s expected response time Demonstrated flexibility and responsiveness while managing existing workload
<p>Responded to data requests beyond routine data activities</p> <ul style="list-style-type: none"> Drug Data and Projects National Action Alliance for Suicide Prevention Data and Surveillance Uniform Reporting team: Opportunity to Confirm West Virginia Data ICD-10 coding 	<ul style="list-style-type: none"> Showed range of data analytic capabilities in addition to routine data activities Offered trusted staff expertise in a broad range of policy and epidemiologic areas to support targeted analysis Increased the value, utility, and visibility of West Virginia’s data for large-scale, national research
<p>Established protocols to expedite data availability</p> <ul style="list-style-type: none"> Applied end-of-year process to accommodate interim data analysis Ensured data are reliable via multiple quality checks (as well as validation with final data) 	<ul style="list-style-type: none"> Provided data to researchers faster (i.e., lag time between data collection and formal reporting) Offered ability to provide interim data in advance of final data files to allow preliminary study outcomes for researchers Afforded researcher confidence in data accuracy for their inclusion and use in research analysis
<p>Improved data import and data validation performance</p> <ul style="list-style-type: none"> Optimized data validation tables and indexes Set-up scheduled database table maintenance to continually improve performance 	<ul style="list-style-type: none"> Created faster data import and validation processes allowing users to submit data in more timely fashion regardless of site activity (i.e., heavy site usage) Reduced errors related to database timeouts during periods of high site use, reducing delays and additional SSS technical assistance in the submission process
<p>Established SOPs, training, and improved tools used to review data files for data format issues</p> <ul style="list-style-type: none"> Created documentation of the process for identifying issues with data files Identified and trained additional staff to assist with data format errors 	<ul style="list-style-type: none"> Standardized repeatable processes to data file errors, reducing the time needed to identify issues and communicate them to hospitals Provided more capacity and coverage to the project for these crucial support activities through training additional staff

As the rest of this proposal shares, the SSS team offers DHHR:

- Direct, relevant corporate experience that demonstrates our commitment and ability to effectively perform the solicitation requirements and support DHHR’s mission;
- The personnel experience to minimize risk and provide the best resources to accomplish project activities;
- A technical approach that reflects a clear understanding of the project goals; and
- A project management approach that will ensure successful delivery of the requirements.

1.1.1 Corporate Qualifications

SSS has been providing federal and state agency clients technical, scientific, and research support services in health-related areas for more than 40 years. Our staff provides services in five broad areas: health data management and analysis, health information technology, program evaluation and policy analysis, clinical research services, and epidemiology and public health studies.

By concentrating on serving federal and state health-related agencies, SSS constantly builds knowledge, methodologies, and systems on projects that subsequently benefit other projects. For example, we have refined the HCA system in West Virginia for nearly 16 years, based on HCA's needs and from what we learned from our systems in other states, such as Maryland. In Maryland, we process and analyze health care claims and encounter data submitted by health insurance companies, third-party administrators, and pharmacy benefits managers through a secure web portal. Our system's modular structure offers our clients maximum flexibility. Whereas many other systems on the market often use a "black box" approach, our system can be easily tailored to meet specific client requirements.

We are experts in designing efficient and creative software, debugging and testing programs, generating reliable results (frequently under time and budget constraints), and applying application-specific routines and procedures to verify output before delivery to our clients. We have also developed customized web-based statistical applications for many clients, such as a secure system for a state hospital association that provides online business management capabilities, quality-related indicators, and clinician performance reports to its hospital members.

We also offer an impressive depth of SAS, Stata, SQL, and other statistical programming capabilities. Using these applications for many health-related data sets, we understand their unique characteristics. With these data, we help researchers and policy makers study trends in health care expenditures; analyze Medicare, Medicaid, and other public health programs; and understand the epidemiology of complex diseases. With this range of expertise, we can continue to offer DHHR health policy and epidemiology expertise for ad-hoc policy requests as we have done in the past for HCA.

In addition to this expertise, SSS offers DHHR specific expertise in the following three areas as required by the solicitation.

Collecting Hospital Billing Data: SSS has been collecting hospital billing data in a current format such as the American National Standards Institute (ANSI) Accredited Standards Committee on several of our long-term projects. For 16 years, SSS has collected hospital billing data for HCA. SSS has provided project management, data collection, processing, and editing of inpatient hospital discharge electronic billing data from West Virginia hospitals. This work includes (1) data collection through HDSS; (2) DQRs and reconciliation on HDSS; (3) documentation and training; (4) technical support; and (5) analytic reporting, including adjudicated analytic files. For the MHCC, SSS collects commercial claims data (i.e., inpatient, outpatient, dental, medical, and institutional) from approximately 40 payors, Medicaid, and Medicare with membership information. The institutional file includes hospital claims data that are accepted in ASCII format.

Exchanging Clinical Data: With quality analysis part of all our data analytic work, SSS offers a range of experience in exchanging clinical data in HL7 (ANSI Accredited Standards

Committee) v2.x and v3.x and experience collecting, editing using data coded, ICD-10-CM. The following examples demonstrate our experience in this area:

- For the AHRQ Step-Up app challenge, SSS developed a user-centric, Electronic Data Collection system built on a Progressive Web Application framework called PatientPort. PatientPort was developed to allow patients to complete questionnaires from the NIH PROMIS toolkit as patient-reported outcomes to supplement clinical encounters. The tool design included incorporation of the Fast Healthcare Interoperability Resources data exchange standard, developed by the Health Level Seven International (HL7) to facilitate interoperability of health information.
- For the HCA HIDS project, we collect, process, and allow editing of diagnosis codes in the ICD-10-CM format and procedures using the ICD-10 Procedure Coding System (ICD-10-PCS) format. ICD-10-CM and ICD-10-PCS codes have been the only code sets accepted for diagnosis and procedure information starting with discharges after September 30, 2015. The HDSS portal and the SAS programming used to create the analytic files were updated to use ICD-10-CM and ICD-10-PCS from the respective ICD-9 versions. This included updating codes for processing, validation rules based on new code definitions, and reports for ICD-10-CM and ICD-10-PCS. We update both code sets annually, based on the yearly specifications from the Centers for Medicare & Medicaid Services (CMS). These updates include adding new codes, expiring existing codes, and including or excluding the designation of certain diagnosis codes as exempt from POA reporting. SSS also uses ICD-10-CM for collecting diagnosis information on the MHCC's Maryland Care Data Base (MCDB) web portal.
- SSS has worked with ICD-9-CM and ICD-10-CM diagnoses and procedure codes; Current Procedural Terminology (CPT)/Healthcare Common Procedure Coding System (HCPCS) procedure codes; and AHRQ clinical classification codes using ICD-9, ICD-10, and CPT codes. SSS used data from ED visits in a number of AHRQ studies that examined ED visits by the elderly, revisits to the ED and hospital for injurious falls, disease surveillance of national carbon monoxide-related ED visits and hospitalizations, the extent of strain on the health care system (inpatient and ED settings) during the H1N1 epidemic, and others.
- On SSS' Medicare Payment Advisory Commission (MedPAC) project, SSS identifies upcoming changes to data, including version changes. An example was SSS' preparation to accommodate ICD-10 coding changes for analyses during the transition from ICD-9 standards. Several of the databases contained diagnosis and/or procedure codes including Standard Analytic Files (SAFs), the Minimum Data Set skilled nursing facility data, and the OASIS data. A mix of ICD-9 and ICD-10 codes were in the claims files because the coding changes were based on service dates and not billing dates. Before creating any variables or extracting any data from claims based on diagnoses or procedure codes, staff examined the version variables (ICD-9 or ICD-10) corresponding to each E code, diagnosis code or procedure code, and then staff developed a mapping strategy for a seamless transition of analyses. The mappings between ICD-9 and ICD-10 were based on the General Equivalence Mappings, an authoritative source for cross-walking between the two code frameworks, as they were developed over a period of three years by CMS and the Centers for Disease Control and Prevention (CDC).

Operating a Secure Web-Based System: SSS has more than 10 years' experience hosting data collection, dissemination, and submission systems for federal, state, and private sector organizations. These systems have been designed and implemented to comply with several

security standards ranging from Federal Information Security Management Act (FISMA)/ National Institute of Standards and Technology (NIST) to U. S. Food and Drug Administration (FDA) regulations such as 21 Code of Federal Regulations (CFR) Part 11. SSS has been granted an Authority to Operate for 15+ environments that support web-based data submission systems. Several of these environments also perform high-performance data analytic back-end system and well as online data transactions/processing.

SSS is a leader in helping public health professionals turn information into management insight through internet database applications. We have developed several web-based data collection systems, including for HCA, which are flexible enough to accommodate the evolving requirements of our clients. Many of these data sites require a high level of security with restricted, role-based access and confidential data. We are adept at designing, developing, and maintaining these secure environments and sites.

The following project qualifications reflect SSS’ experience in effectively managing projects of a similar scope and complexity to the tasks outlined in the solicitation. SSS has successfully supported these clients for many years under multiple contracts.

State of West Virginia Health Care Authority (HCA)/HCA Uniform Billing Hospital Discharge Data, West Virginia Inpatient Data System			
Contracting Organization	State of West Virginia Health Care Authority		
Contract Type	Fixed Price	Contract Value	Current: \$1,952,049 Contract 1: \$1,093,140 Contract 2: \$885,555 Contract 3: \$1,783,137
Performance Period	Current: 10/01/16– 09/30/19 Contract 1: 12/1999–9/2003 Contract 2: 12/2003–11/2006 Contract 3: 9/1/2011–8/31/2016		
Description of Work:	SSS is the current vendor for the West Virginia HCA HIDS project. Since 2011, we have supported data collection, processing, and editing of inpatient hospital discharge electronic billing data from 63 West Virginia hospitals. Previously we supported HCA on similar contracts for eight years. We have extensive experience with HCA and the DHHR, and our hospital data collection focuses on reducing the reporting burden on hospitals while maintaining high standards of data quality. Our web portal, HDSS, allows hospitals to submit and edit hospital inpatient data that are processed and assessed through validation checks, data quality reporting, and record adjudication. We create and provide accurate and accessible guides and specifications to help hospitals complete the data submissions process accurately and efficiently. Our much-praised HDSS Help Desk provides friendly technical support to hospitals, their vendors, and HCA on individual and group levels. From the submitted data, we produce clean analytic files on a weekly basis and an annual final file for the data collection year.		
Relevance to SOW Requirements	<p>Data Collection, Processing, and Editing: SSS has 16 years’ experience collecting hospital inpatient data for West Virginia using the industry standard formats available at the time, beginning with the UB-92, and then transitioning to the X12 837I 4010, and finally to the current 837I 5010 format. For those 16 years, SSS has operated a secure web-based system for standards-based online data submission of inpatient hospital data.</p> <p>Documentation and Technical Support: Because some of the 63 hospitals that submit data in West Virginia are rural hospitals, with varying levels of knowledge</p>		

State of West Virginia Health Care Authority (HCA)/HCA Uniform Billing Hospital Discharge Data, West Virginia Inpatient Data System	
<p>Key Accomplishments/ Results of the Engagement <i>(Please also see Table 1-2 for additional innovations, proactive recommendations, and efficiencies.)</i></p>	<p>of input file formats, and with few resources to get the files into the proper format, SSS created and maintains a Help Desk to aid hospitals in getting their inpatient data into the system in a timely manner.</p> <p>SSS implemented a hospital training program to ensure ease of website use. SSS developed ongoing comprehensive documentation and tools to help the hospitals, their vendors, and HCA work with the system; these tools include online documentation, webinars, and the Help Desk.</p> <p>Analytic Files: SSS processes the inpatient data from hospital uniform billing data, incorporates HCA-suitable added-value variables, provides data quality and completeness through automatic system edit checks, and prepares management and DQRs. There were approximately 280,000 discharge records for 2018.</p> <p>Data Security and Privacy: SSS developed a secured, website interface data collection tool that allows the hospitals to import, edit, submit, and reconcile inpatient data. We have maintained this high level of data security and privacy following all federal and state laws, regulations, and HCA policies.</p> <p>Project Management: The SSS PM and Functional/Operational Lead hold bi-weekly project status calls with the client. They discuss client updates, project status, volume and types of inquiries Help Desk staff respond, and staffing and/or financial items, as necessary. Informal communication via e-mail and phone calls also occur as necessary. The PM manage all invoice, quality assurance, risk mitigation, and financial management.</p> <p>General</p> <ul style="list-style-type: none"> ▪ Implemented a Help Desk to assist hospitals so that they can import their inpatient data into the system in a timely manner. ▪ Provided technical support for 63 hospitals/medical facilities, with varying levels of knowledge of input file format. ▪ Provided user support for more than 6,500 e-mail and telephone inquiries ▪ Collected data for approximately 2,200,000 discharge records. <p>Operational Cost Savings</p> <ul style="list-style-type: none"> ▪ Automated error reporting. By incorporating automated error reporting, SSS staff found data errors and fixed the system or provided better input to the submitting hospital on what generated the errors. This helped minimize re-submissions, provide a better end-user experience, and increase data quality assurance as more submissions were completed. ▪ Built a 5010 version of HDSS-SSS built and internally tested an ICD-10 version of the dedicated 5010 website. This was the data-testing site, where hospitals could test their ICD-10 import files months before needing to import, edit and submit their data on production. ▪ Improved data import and data validation performance. This led to fewer system errors and less staff time need to triage and address issues. ▪ Prepared a companion guide for the 5010 format. SSS included new fields that the hospital advisory group and the client were interested in collecting. ▪ Downloaded the National Plan and Provider Enumeration System file and created a program to create a look-up table to link taxonomy codes to the NPIs. From there, SSS could link taxonomy codes to specialty codes. This specialty mapping could then be merged with the master file NPI fields, such as the NPI attending physician.

State of West Virginia Health Care Authority (HCA)/HCA Uniform Billing Hospital Discharge Data, West Virginia Inpatient Data System	
	<p>Quality</p> <ul style="list-style-type: none"> Improved data completeness, quality, efficiency, and usability, which allowed HCA to complete eight more years of inpatient data, 2011–2018. Developed a completion plan for HCA to calculate its rate review benchmarking rankings. Reduced the quantity of actions and number of pages required for users to submit data in HDSS, which made the system more user-friendly, quicker, and easier to navigate.

Maryland Health Care Commission Data Collection Support and Analytic Report Development			
Contracting Organization	Maryland Health Care Commission		
Contract Type	Fixed Price	Contract Value	\$8,975,088
Performance Period	5/1/2016–4/30/2021		
Description of Work	<p>MHCC is an independent regulatory agency whose mission is to plan for health system needs, promote informed decision-making, increase accountability, and improve access in a rapidly changing health care environment by providing timely and accurate information on availability, cost, and quality of health services to policy makers, purchasers, providers, and the public.</p> <p>Since 2004, SSS has worked with MHCC staff to develop, maintain, and transform the MCDB, comprising health care claims and encounter data. SSS manages the data collection, data quality reviews, and aggregation from 30+ carriers submitting multi-million claim records. SSS further develops reports, issue briefs, and presentations for MHCC on a broad range of topics, including state health spending, payments for professional services, and patterns of spending and utilization for the privately insured population. We also support legislative initiatives and ad hoc data analyses.</p>		
Relevance to SOW Requirements	<ul style="list-style-type: none"> The project collects commercial claims data (inpatient, outpatient, dental, medical, Rx) with membership information. The institutional file includes hospital claims data. The claims data collected through secure MCDB portal conforms to a file record layout format for data submission by all health insurance carriers, third-party administrators, and pharmacy benefit managers. The project leverages similar web-portal based data collection using claims data that submitters provide to MCDB. 		
Key Accomplishments/ Results of the Engagement	<ul style="list-style-type: none"> Implemented the WearTheCost website that helps achieve one of MHCC’s main goal to providing price transparency to Maryland residents. Transformed several SAS based stove-piped processes into SQL Server Integration services based automated Data Warehouse and Data Mart solutions resulting in reduction of data processing times. Reduced manual intervention by introducing automation through SQL Server Integration Services (SSIS)/SQL Server Reporting Services (SSRS). Improved data access by creating Data Marts. Provided a quick preview of the data by creating a Quarterly Data Mart for early analysis by MHCC executives. 		

AHRQ Data Management and Computer Programming Support			
Contracting Organization	Agency for Healthcare Research and Quality		
Contract Type	Cost plus fixed fee	Contract Value	Approx. \$6,294,071 per year; 6/2014–6/2019; \$1,007,093 6/2019–12/2019 Time and Materials/\$400,000 per year; 6/2014–6/2019
Performance Period	6/2014–12/2019		
Description of Work:	<p>AHRQ sponsors and conducts research that provides evidence-based information on health care outcomes, quality, cost, use, and access. SSS provides support to the Center for Financing, Access, and Cost Trends; the Center for Delivery, Organization, and Markets; the Center for Quality Improvement and Patient Safety; and other AHRQ centers. We provide general data processing and analytic support, which includes database management, analytic file development and documentation, data analysis and dissemination, web-based database applications development and website maintenance, special requests and data runs, and technical support.</p>		
Relevance to SOW Requirements	<p>For more than 35 years, SSS has provided AHRQ with similar programming support to West Virginia, including database development, database management, statistical programming services, and development and maintenance of web-based applications.</p> <p>SSS’ support has involved using specialized databases developed to support health services research—in particular, the HCUP databases. For more than 25 years, our programmers have used HCUP hospital discharge and outpatient data on many analytical tasks. For the last 10 years, we have also managed the HCUP Central Distributor (CD), the data distribution unit for HCUP’s restricted access, public release databases. SSS staff use SAS and other statistical software to support statistical analyses and work one-on-one with AHRQ and outside health care analysts to support research, presentation, and publication efforts. Data are confidential and require a secure environment with security procedures established and enforced for working with the data files.</p> <p>SSS designed, implemented, and continues to maintain two database retrieval systems for AHRQ: HCUPnet, and MEPSnet.</p> <p>HCUPnet is a publicly available online query tool that uses HCUP data to identify, track, and analyze hospital care statistics at the national, regional, and state levels. HCUPnet can produce national and state statistics on hospital stays, ED visits, and ambulatory surgeries using HCUP data. It can produce statistics for specific conditions or procedures of interest and can show outcomes and measures including length of stay (mean or median), hospital charges and costs, in-hospital deaths, discharge status. HCUPnet can compare the types of patients (by age, sex, primary payor, and income) and hospital type. HCUPnet can also show county and region-level information on hospital stays and produce statistics for conditions or procedures of interest, stays related to substance use disorders, and quality indicators. HCUPnet can also accommodate more sophisticated analysis, for example of quality indicators.</p>		

AHRQ Data Management and Computer Programming Support	
	<p>MEPSnet is a collection of analytical tools that operates on Medical Expenditure Panel Survey (MEPS) data. MEPSnet guides users step-by-step to obtain the statistics needed. All the data in MEPSnet/IC (Insurance Component) are based on the tables of national and state estimates derived from the MEPS IC List sample data. MEPSnet/HC (Household Component) provides easy access to nationally representative statistics of health care use, expenditures, sources of payment, and insurance coverage for the U.S. civilian non-institutionalized population.</p>
Key Accomplishments/ Results of the Engagement	<p>SSS provided web application development and maintenance services for the below six AHRQ websites and webtools. MEPS and HCUPnet sites were listed as “Health Data All-Stars” in 2013 by the Health Data Consortium, as two of the 50 most prominent health data resources available at the federal, state, and local levels.</p> <ul style="list-style-type: none"> ▪ MEPS website: a public repository for data, publications, and interactive tools. ▪ HCUPnet: an interactive online tool that provides access to aggregated data from the HCUP. ▪ The NHQRnet website: a public interactive tool that provides users intuitive access to information contained in the National Healthcare Quality and Disparities Reports, providing access to data points on more than 250 measures of quality and disparities covering a broad array of health care services and settings ▪ IQDnet: an internal website to continuously format and load the latest data received from various data sources. This tool supports the AHRQ team to access the latest analytic tables and related documentation in creating the National Healthcare Quality and Disparities annual report. ▪ State Snapshots: a legacy public website for accessing in depth state-level information related to health care quality, for report year 2010. ▪ The PSO Tracking System: a system for managing, reporting and tracking information of patient safety organizations.

MedPAC Computer Programming and Support Services			
Contracting Organization	Medicare Payment Advisory Commission		
Contract Type	Cost Plus Fixed Fee	Contract Value	Approx. \$8,844,161
Performance Period	10/01/2015–9/30/2020		
Description of Work:	<p>For more than 28 years, SSS has supported MedPAC on different aspects of the Medicare program. These analyses are used by MedPAC in its annual reports to Congress and in special reports requested by Congress on topics related to MedPAC’s responsibilities. To support MedPAC in fulfilling its comprehensive Congressional mandate, SSS provides programming and related technical services under two main areas:</p> <ul style="list-style-type: none"> ▪ Development and maintenance of a secured health care–related database containing facility, patient, provider, and physician files, and ▪ Subsequent support for analyses of the data. The project involves multiple long-term and quick-response tasks, which are undertaken concurrently, often under stringent time constraints. <p>As part of this project, SSS maintains a repository of health-related data containing more than 25 years of Medicare facility, patient, provider, and physician files in addition to private payor and reference data. SSS receives the</p>		

MedPAC Computer Programming and Support Services	
	<p>data into its Secure Data Center, converts the data to SAS format, and documents the data.</p> <p>To monitor and evaluate the Medicare payment system, SSS provides technical assistance to MedPAC and performs more than 100 quantitative analyses annually across 27 topics (e.g., ambulatory care, hospice, hospitals, risk adjustment, Medicare Part D, Medicare Advantage, skilled nursing facilities, quality, physicians, and end-stage renal disease).</p> <p>These analyses require expertise with a broad range of data files, including the National Claims History files, the Medicare Provider Analysis and Review files, the Medicare Current Beneficiary Survey files, the Cost Reports files, the Medicare Beneficiary Summary File, the Home Health Datalink files, and other administrative, assessment, and demographic data files.</p>
Relevance to SOW Requirements	<p>SSS conducted ED analyses using 100% Outpatient Claims, 100% Carrier (Physician/Supplier) Claims, and Private payor Claims files. The 100% claims files are also referred to as SAFs.</p> <p>SSS used 100% Outpatient SAFs to calculate the percent of outpatient department services that are provided with ED visits (same day or same claim). Staff identified ED visits using both HCPCS codes and revenue center codes.</p> <p>Staff identified Medicare ED visit claims in the 100% Carrier SAFs and determined volume by geography (state and Core Based Statistical Area [CBSA]), ED service type, and year. ED service type was created based on place of service (physician offices, walk-in clinics, urgent care centers, hospital outpatient departments, ERs, independent clinics, and other places). In addition, staff identified ED visits in inpatient and outpatient settings and analyzed some of their characteristics, specifically ED visits that involved mental health. This analysis was conducted nationally, and across six states and 10 market areas.</p>
Key Accomplishments/ Results of the Engagement	<ul style="list-style-type: none"> ▪ MedPAC is based on a cost-plus fixed fee contract type with a withhold of 10% of fee, which is released based on performance. SSS had earned this, in full, each year of the current contract. More than 90% of tasks are required to meet expectations overall to receive 100% back. ▪ Quality control checks are implemented throughout all phases of support for database development, programming, data analysis, and user documentation, in particular senior staff review programming and output to ensure deliverables are error-free and consistent with specifications.

Medical Expenditure Panel Survey			
Contracting Organization	AHRQ/Subcontractor to RTI		
Contract Type	Total cost-plus fixed fee	Contract Value	\$4,843,189
Performance Period	11/1/2017–6/30/2020 current contract period plus three additional option year periods / Original contract began in 2010		
Description of Work:	MEPS is a nationwide study conducted to learn more about the health care services people use, the charges for those services, and the sources that pay for them. The study is conducted annually by the U.S. Department of Health and Human Services through AHRQ and the CDC. SSS has been collecting the pharmacy data for the past 10 years, including prescription fill dates; National		

Medical Expenditure Panel Survey	
	<p>Drug Code (NDC) or drug name, strength, and dosage form; quantity and quantity unit, the amount the patient paid; and the third-party payor types and amounts they paid.</p> <p>There are also hospital, office-based doctors, and separately billing doctors provider components. These components are currently handled by RTI although SSS did a significant portion of that work from 2010 to 2014. SSS currently negotiates and collects the data for a small portion of health maintenance organization (HMO) hospital and office-based doctors. Data collected for these components includes data from hospital medical records and billing records, including diagnoses by IDC-10; services provided with CPT-4 or diagnosis-related group (DRG) codes; full established charge; how the provider was reimbursed; and the sources that paid the charges for the service and the amount paid. SSS tasks address the following:</p> <p>Data Collection:</p> <ul style="list-style-type: none"> ▪ Call providers and establish a point-of-contact (POC), ▪ Collect pharmacy records from the POC, ▪ Abstract data/highlight data elements of interest, and ▪ Conduct data retrieval as needed. <p>Data Collection Quality Control (QC):</p> <ul style="list-style-type: none"> ▪ Conduct 10% phone monitoring QC daily, ▪ Conduct daily re-abstraction QC on selected events, ▪ Conduct coaching sessions as needed, ▪ Report weekly to client (phone monitoring numbers and results, staff over a 2% error rate), and ▪ Address data edits by reconciling with hard copy records. <p>Coding:</p> <ul style="list-style-type: none"> ▪ Convert from text to numeric from the following: sources of payment information, prescribed drugs reported, and supplies. Use Prescription Drug NDC/Generic Product Identifier (GPI) Coding and Pharmacy Sources of Payment (RxSOP) Coding, and ▪ QC coding for conditions (ICD-10) (non-pharmacy).
Relevance to SOW Requirements	<ul style="list-style-type: none"> ▪ Billing data collection across many health care facilities nationwide including large corporate facilities, ▪ Standard industry data coding (NDC, GPI, ICD), ▪ 10 years of experience on this project, and ▪ Use of a complex secure web-based system.
Key Accomplishments/ Results of the Engagement	<ul style="list-style-type: none"> ▪ SSS increased response rates every year of the contract, and response rates have been higher than previous contract holders with significant corporate pharmacy increases of ~17%. ▪ We have achieved excellent client satisfaction, schedule adherence, requirements adherence, financial adherence, and risk management. ▪ Data has been accurately collected and reported on an ongoing basis. ▪ Staff have achieved successful refusal conversion. ▪ We have performed significant input and testing for secure case management system and data collection instrument.

1.1.2 Staffing Plan

Our proposed team of experienced, skilled, personnel draws on their combined strengths; existing work synergy; and familiarity of the DHHR, hospitals, and vendors. They offer an optimal blend of project management, programming and data analytics, training, and subject matter expertise to meet all the DHHR project requirements for the HIDS project.

Given the success on the current HCA project, and commitment to project continuity, all of the current HCA project staff will work on this project. We augment this team with additional staff to support new data collection activities, the increased volume of data, enhanced training associated with the new data requirements, and the self-service reporting tools. Our team understands the logistical and technical issues associated with data collection and database development efforts, and they are familiar

with all coding and reporting requirements. Having processed hospital inpatient data, and bringing familiarity with ED and outpatient setting data, our team knows what general problems to look for and what hospital-specific issues are likely to be encountered (as highlighted in **Table 1-1**).

Within 15 working days of contract award, SSS will provide DHHR a representative staffing plan that covers, at a minimum, a project manager, a functional/operational lead, a programmer, a trainer, and a data analyst. For any staff proposed to fill multiple roles, we will include an estimate of the percent of time that staff member will spend in each role. Resumes for all proposed staff, including their degrees and certificates applicable to this project, are contained in **Appendix A**.

SSS staff will perform all project functions, and no portion of the work will be subcontracted out. We understand that subcontracting will not be permitted unless the subcontractor is identified in this proposal. Over the life of the contract, if needed, SSS will substitute other staff for those named in this proposal providing the substitute meets the minimum requirements.

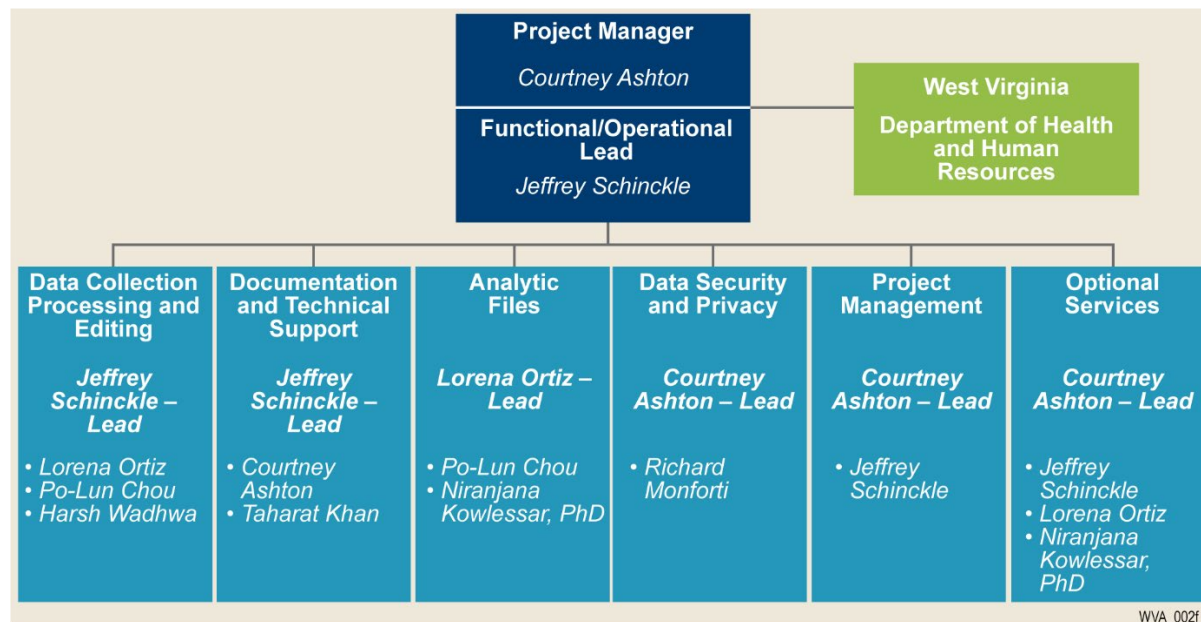
We have organized the HIDS team as shown in **Figure 1-2**. The team is organized based on their skills, expertise, and experience.

SSS offers staff continuity to the DHHR, hospitals, and vendors.

We are proposing a staffing plan that **retains all staff** from the current contract, on which we proved highly successful and responsive to HCA's needs. Seamless staff support includes:

- Ms. Courtney Ashton—Project Manager,
- Mr. Jeffrey Schinckle—Functional/Operational Lead and Trainer,
- Ms. Lorena Ortiz—Programmer, and
- Mr. Po-Lun Chou—Programmer.

Figure 1-2. A project organization that provides efficient, effective project controls and collaboration.



The SSS team structure provides a PM as the primary point-of-contact for the DHHR and delineates roles to ensure that all team members understand their project functions/responsibilities. The team structure enables us to continually monitor project performance via strong quality assurance practices and identify and mitigate emerging issues. Our approach was developed based on our understanding of the DHHR scope of work, our team’s current HCA work, and an understanding of the transition of functions to DHHR.

The management team comprises our proposed PM and Functional/Operational Lead. **Ms. Courtney Ashton, MBA**, is the proposed PM and has been managing the current HIDS contract for three years. She offers extensive project management and technical expertise with federal and state clients. Our proposed Functional/Operational Lead and Trainer, **Mr. Jeffrey Schinckle, MLIS**, who has worked on the project for the past eight years, will continue to serve as the primary point-of-contact for all hospitals and also oversee training. Mr. Jeffrey Schinckle is skilled in building database-driven web applications and programming for federal and state clients. This management team has a proven track record of successful data management and analytics that will effectively support the DHHR’s ability to perform its regulatory functions. Ms. Courtney Ashton and Mr. Jeffrey Schinckle understand the West Virginia health services delivery environment and the upcoming transition of functions from HCA to the DHHR. They will provide flexibility, a seamless and familiar voice, and an understanding of preferred working relationships with government staff as DHHR moves forward. They also offer the necessary skills to oversee the highest level of data processing services to DHHR with maximum efficiency.

Table 1-3 highlights Ms. Courtney Ashton’s and Mr. Jeffrey Schinckle’s education, skills, expertise, and project responsibilities.

Table 1-3. Qualifications of the management team.

Management Team	Project Responsibilities, Professional Experience, and Special Qualifications
<p>Courtney Ashton, MBA Project Manager Support: Documentation and Technical Support Lead: Data Security and Privacy Lead: Project Management Lead: Optional Services</p> <p>MBA, Medaille College</p>	<p>Project Responsibilities (Functions/Duties):</p> <ul style="list-style-type: none"> ▪ Assume overall responsibility for the project, including day-to-day program activities, task timeliness, and resource allocation; financial, staff, and quality. ▪ Responsible for long-term project success and ensures high-quality results. ▪ Work closely with all technical and operational staff to ensure that the technical solutions are implemented, and operational needs are identified and addressed. ▪ Manage and mitigates program risks. ▪ Serve as primary point-of-contact with DHHR. <p>Support: Documentation and Technical Support:</p> <ul style="list-style-type: none"> ▪ Document processes for DHHR staff; support training (including one on-site training) for DHHR, data submitters, and their representatives; communicate with hospitals about errors, as necessary; submit data; respond to requests for assistance in a timely manner, as necessary. ▪ Contribute to development of the live webinar on topics related to file formats, data submission, editing, and coding and billing standards. <p>Lead: Data Security and Privacy:</p> <ul style="list-style-type: none"> ▪ Evaluate procedures for performance and compliance, including monitoring system security, providing immediate feedback to submitters, and reviewing edits. <p>Lead: Project Management:</p> <ul style="list-style-type: none"> ▪ Communicate project status with DHHR on data submission activities, potential problems or barriers, and communication with data submitters. ▪ Ensure all inquiries and technical assistance requests are responded to in a timely manner. ▪ Oversee all workload, staffing resources, and financial and quality management to ensure successful execution of all tasks and deliverables; ensure flexible systems, programs, and processes. <p>Lead: Optional Services:</p> <ul style="list-style-type: none"> ▪ Prepare pricing. ▪ Oversee preparation of select data and adjudicated files. ▪ Respond to ad-hoc analytic requests and prepare patient-specific files and tracking. ▪ Ensure materials and tools are available for analysis and that new data submission enhancements and reports needed to perform project functions are available.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ More than 14 years’ experience managing data management and clinical research projects, including serving as the current PM for SSS’ West Virginia HIDS project. ▪ Serves as PM for the AHRQ HCUP CD project. ▪ Accountable for project budgets, staffing resources, deliverable adherence, quality, risk mitigation, and client satisfaction for numerous data management and health research projects for federal agency clients. ▪ Well versed in SQL, web-based utilities and applications, various clinical data management systems, ICD-10-CD applications, and data visualization software products. 	

Management Team	Project Responsibilities, Professional Experience, and Special Qualifications
<p>Jeffrey Schinckle, MLIS Functional/Operational Lead Lead: Data Collection, Processing, and Editing Lead: Documentation and Technical Support Support: Project Management Support: Optional Services</p> <p>MLIS, Master of Library and Information Science, University of Washington Management Staff</p>	<p>Project Responsibilities (Functions/Duties):</p> <p>Lead: Data Collection, Processing, and Editing:</p> <ul style="list-style-type: none"> ▪ Receive data from 60+ West Virginia hospitals. ▪ Oversee any approved changes in the interface design and front-end coding, including individual screen wire frames. ▪ Oversee metrics analysis; oversee functional, unit, and performance testing; oversee implementation testing, regression testing, and cross-browser testing. ▪ Read text files into SQL Server. ▪ Accept inpatient data files in ANSI 5010 format, uniform billing data elements in ICD-10 format. ▪ Oversee the maintenance of the online application database, including audit module, format/value checking module, edit checking module, and notification module. ▪ Oversee roles and affiliation-based functionality. ▪ Oversee maintenance of secure web-based system, including configuration management, change control, and version control. <p>Lead: Documentation and Technical Support:</p> <ul style="list-style-type: none"> ▪ Communicate with hospitals that have data file format issues, data validation errors, and data revisions based on DQR results. ▪ Document processes for DHHR staff; provide training and support (including one on-site training) for DHHR, data submitters, and their representatives; communicate with hospitals about errors; submit data; respond to requests for assistance in a timely manner. ▪ Ensure the DHHR’s immediate access to data; oversee ongoing maintenance of the data submission manual, user guide, and other documentation for the web-based application. ▪ Lead development of the live webinar on topics related to file formats, data submission, editing, and coding and billing standards. <p>Support: Project Management:</p> <ul style="list-style-type: none"> ▪ Participate in client calls and meetings, and communicate project status with DHHR. ▪ Service as primary point-of-contact with hospitals and ensure responses to all inquiries and technical assistance requests. ▪ With the PM, oversee all workload, staffing resources, and quality management to ensure successful execution of all tasks and deliverables; ensure flexible systems, programs, and processes. <p>Support: Optional Services:</p> <ul style="list-style-type: none"> ▪ Oversee preparation of select data and adjudicated files. ▪ Respond to ad-hoc analytic requests and prepare patient-specific files and tracking. ▪ Develop tools, products, report templates, software, and/or code for use by DHHR and/or external partners to conduct analysis of health care utilization, access, costs, and quality. ▪ Develop system enhancements and reports as needed.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers more than 14 years’ experience as a web programmer with extensive experience in building and maintaining database-driven web applications. ▪ Serves as the Functional/Operational Lead for SSS’ West Virginia HIDS project and has experience troubleshooting communications problems from submitters to the online system. 	

Management Team	Project Responsibilities, Professional Experience, and Special Qualifications
	<ul style="list-style-type: none"> ▪ Trains and supports end users of the West Virginia HDSS web portal for the past eight years. Duties include orienting new users to the HDSS portal and data submission cycle, through documentation, email, and phone support. ▪ Serves as developer; manages the user interface and .Net development; and brings expertise in the existing data collection, management, and analysis system utilized among West Virginia hospitals. ▪ Serves as the technical resource for all West Virginia hospitals and consistently meets all anticipated and ad-hoc needs for the all technical and operational staff and relevant stakeholders. ▪ Previously served as the lead programmer on the registration and data management websites for the Medical Product Safety Network (MedSun) project, conducted for the Food and Drug Administration. ▪ Expertise in ASP.Net (C# and VB.Net), VBScript, HTML/CSS, JavaScript, and Microsoft Visual Studio and has designed databases in both Microsoft SQL Server and MySQL.

The proposed management team— Ms. Courtney Ashton, PM, and Mr. Jeffrey Schinckle, Functional/Operational Lead and Trainer—will be supported by two staff who also work on the current HIDS project and several new team members who will support rapid project startup, assume new data collection activities, manage the increased volume of data, support ongoing system maintenance, and provide an appropriate level of communication and training.

Programmers: **Ms. Lorena Ortiz** will serve as a programmer and the Analytic Lead and brings 2.5 years’ experience working on the HCA HIDS project. **Mr. Po-Lun Chou** will serve as a programmer and brings eight years’ experience working on the HCA HIDS project. **Mr. Harsh Wadhwa** brings expertise and experience from working with other clients on similar work, including with the MHCC and the AHRQ project.

Data Analyst: **Mr. Harsh Wadhwa** will also serve as a Data Analyst and web developer, given his background in creating web-based ad-hoc reporting tools and database and application optimization.

Niranjana Kowlessar, PhD, will provide ad-hoc policy, analytic, and data set expertise throughout all facets of project operations; however, she will focus on targeted data and policy analysis as required in the analytic files and optional services tasks. She is familiar with the hospital inpatient, ED, and outpatient data sets. She has conducted analysis for both the MHCC using commercial claims as well as AHRQ using HCUP data.

Trainer: **Ms. Taharat Khan** brings experience providing training and technical assistance to hospitals under a Centers for Medicare & Medicaid Services Innovation model project and the MHCC. Ms. Khan will support Mr. Jeffrey Schinckle in documentation and technical support activities.

IT Security and Privacy: **Mr. Richard Monforti,** a Certified Information Systems Security Professional, will provide augmented corporate information technology security support and coordinate data security and privacy tasks.

Table 1-4 presents the education, skills, expertise, and project responsibilities of the other project staff.

Table 1-4. Roles and qualifications of additional HIDS project staff.

SSS Personnel	Project Responsibilities, Professional Experience, and Special Qualifications
<p>Lorena Ortiz, MS Support: Data Collection, Processing, and Editing Support: Optional Services Lead: Analytic Files (Programmer)</p> <p>MS, Statistics, California State University SAS Certified Base Programmer for SA 9, 2012</p>	<p>Project Responsibilities (Functions/Duties): Support: Data Collection, Processing, and Editing:</p> <ul style="list-style-type: none"> ▪ Assist HCA with reconciling master database, including generating quarterly data reconciliation reports. ▪ Oversee reports on data quality and completeness. ▪ Develop and produce other reports as needed. ▪ Acquire reference data files necessary to complete all tasks. ▪ Adjudicate the data and create weekly reports. <p>Lead: Analytic Files:</p> <ul style="list-style-type: none"> ▪ Oversee preparation of all analytic files and ensure data quality. <p>Support: Optional Services:</p> <ul style="list-style-type: none"> ▪ Support preparation of select data and adjudicated files. ▪ Respond to ad-hoc analytic requests and prepare patient-specific files and tracking. ▪ Support development of tools, products, report templates, software, and/or code for use by DHHR and/or external partners to conduct analysis of health care utilization, access, costs, and quality. ▪ Develop system enhancements and reports as needed.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers 12 years' experience as a programmer and research analyst, including as a programmer for SSS' West Virginia HIDS project. ▪ Brings experience as a programmer on SSS' MHCC project where she uses SAS and SQL to create custom reports to assess data quality; craft specifications for statistical reports; recommend new data checks for the secure web-based insurer data submission portal; and prepare analytic files. ▪ Support programming and analytic file development for SSS' MedPAC project, including working with hospital inpatient data and inpatient and hospital cost reports. 	
<p>Po-Lun Chou, MS Support: Data Collection, Processing, and Editing Support: Analytic Files (Programmer)</p> <p>MS, Applied and Engineering Statistics, George Mason University JAWS 13 Certification, Freedom Scientific 2011 and Certification, Blaise Basic Training</p>	<p>Project Responsibilities (Functions/Duties): Support: Data Collection, Processing, and Editing:</p> <ul style="list-style-type: none"> ▪ Maintain guidelines for data submissions and integrate all updates and revisions to ensure efficient system operation. ▪ Develop and produce other reports as needed. ▪ Maintain the master database. ▪ Acquire reference data files necessary to complete all tasks. ▪ Adjudicate the data and create weekly reports. <p>Support: Analytic Files:</p> <ul style="list-style-type: none"> ▪ Contribute to development of all analytic files and conduct quality assurance.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers 20 years' experience in SAS programming with a specialization in data management, report generation, quality control systems, and web-based systems and applications. ▪ Provides programming support and quality control for SSS' West Virginia HIDS project, including creating programs to fix raw data problems, modifying routine programs to update source data files, creating and modifying production programs to generate quarterly and final adjudication reports from the West Virginia hospital databases, and performing quality control checks to ensure database and report integrity. ▪ Supports programming needs for SSS' MHCC work, NIA, AHRQ, and the American Nurses Credentialing Center. ▪ For SSS' MHCC project, supports the production of the annual Maryland Medical Care and Pharmacy databases. 	

SSS Personnel	Project Responsibilities, Professional Experience, and Special Qualifications
<p>Harsh Wadhwa, MS Support: Data Collection, Processing, and Editing (Web and Database Developer and Data Analyst)</p> <p>MS, Computer Science, College of Staten Island (City University of New York) Database Administration for Microsoft SQL Database Design and Implementation for Microsoft SQL</p>	<p>Project Responsibilities (Functions/Duties): Support: Data Collection, Processing, and Editing:</p> <ul style="list-style-type: none"> ▪ Enhance and maintain the HDSS web portal and database. ▪ Provide ad-hoc reporting and customized reports for self-service reporting tool. ▪ Maintain and enhance existing DQRs using SQL SSRS and SQL. ▪ Optimize database performance leading to continual improvement of file import and validation speeds. ▪ Develop, troubleshoot, and maintain complex procedures, views, and database structures in the server used for various interfaces and reports. ▪ Develop database improvements to processes data for analytic use and support ad-hoc reports from database- and web-based applications. ▪ Troubleshoot issues related to performance for web-based applications supporting end users to query large datasets. ▪ Improve performance of database applications by detecting performance bottlenecks and developing timely solutions.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers 19 years’ experience in developing and managing web- and database-based applications. ▪ Brings experience in providing ad-hoc reporting and customized reports using SSRS and Microsoft Power BI. ▪ Supports web- and database-driven applications for reporting and analysis of medical billing data for the MHCC and AHRQ projects in a timely manner to government clients. ▪ Brings expertise in database systems, including Microsoft SQL Server Database and Oracle Database, analytics software including Microsoft Business Intelligence, SQL SSRS, and Tableau. ▪ Is proficient with programming languages and platforms, including .Net, ASP, ASP.Net, SQL, PL/SQL, SQL PLUS, C#, C, C++, Bash Scripting, MS DOS Scripting, Power Shell Scripting. 	
<p>Niranjana Kowlessar, PhD Support: Analytic Files Support: Optional Services (Data Analyst)</p> <p>PhD, Health Policy and Administration, University of Illinois, Chicago</p>	<p>Project Responsibilities (Functions/Duties): Support: Analytic Files:</p> <ul style="list-style-type: none"> ▪ Identify measures or indicators for new and modified summary reports. ▪ Recommend appropriate analysis techniques and cross-tabulations to meet DHHR’s reporting goals. <p>Support: Optional Services:</p> <ul style="list-style-type: none"> ▪ Respond to ad-hoc analytic requests and prepare patient-specific files and tracking. ▪ Support development of tools, products, report templates for use by DHHR and/or external partners to conduct analysis of health care utilization, access, costs, and quality.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers 10 years’ experience as a health researcher in research design, qualitative and quantitative data collection, and analysis of health and financial outcomes. ▪ Offers expertise of many state health delivery system and data sets, including for the States of Maryland and Indiana. ▪ Oversees programming staff and provides analytic guidance for reports for the MHCC. ▪ Manages development of health policy briefs and chart books on cost and utilization trends in the privately insured market for the MHCC. ▪ Oversaw analytic and other tasks for AHRQ related to the HCUP, including data receipt and processing of the HCUP databases. 	

SSS Personnel	Project Responsibilities, Professional Experience, and Special Qualifications
<p>Taharat Khan, MPH Support: Documentation and Technical Support (Trainer)</p> <p>MPH, Community and Behavioral Health, The University of Iowa College of Public Health</p>	<p>Project Responsibilities (Functions/Duties): Support: Documentation and Technical Support:</p> <ul style="list-style-type: none"> ▪ Provide training and support (including one-on-site training) for DHHR, data submitters, and their representatives; communicate with hospitals about errors; submits data; respond to requests for assistance in a timely manner. ▪ Support ensuring the DHHR’s immediate access to data and contribute to ongoing maintenance of the data submission manual, user guide, and other documentation for the web-based application. ▪ Contribute to the development of live webinars on topics related to file formats, data submission, editing, and coding and billing standards. ▪ Communicate with hospitals having errors or trouble submitting data, as requested.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers four years’ experience in health services research and qualitative and quantitative research on government projects. ▪ For CMS’ Frontier Community Health Integration Project train hospital leadership, quality staff, and nurse/clinical staff on uploading data to secure website and how to complete data tracking sheets; helps development of educational webinars on telehealth coding, billing, and reimbursements; and provides technical assistance to hospitals who are having trouble submitting data. ▪ Oversaw status of each submission and next steps for more than 40 health insurance payors’ submissions to the Maryland Medical Care Database, a secure database built for payor submissions; resolve technical errors and payor submission discrepancies through data analysis in SQL and SAS, and facilitate the retrieval of SAS and SQL logic from programmers to answer payors’ inquiries. 	
<p>Richard Monforti, MSIS Support: Data Security and Privacy (Director of Information Technology)</p> <p>MSIS, Information Systems, Strayer University CISSP-Certified Information Systems Security Professional MCSE Certification, Microsoft Certified Systems Engineer</p>	<p>Project Responsibilities (Functions/Duties): Support: Data Security and Privacy:</p> <ul style="list-style-type: none"> ▪ Comply with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) security physical and technical safeguards. ▪ Undertake valid risk assessment and establish effective risk management. ▪ Conduct security audits. ▪ Establish emergency, backup, and disaster plans. ▪ Secure appropriate authentication for all users of the data and provide for automatic notification of non-routine access. ▪ Review and revise data security and privacy policies and procedures. ▪ Ensure security of all electronic systems, data, and their use. ▪ Assist with ensuring the integrity, security, reliability, compatibility, and appropriate accessibility of databases and other electronic systems. ▪ As needed, review and revise data security and privacy policies and procedures.
<p>Professional Experience and Special Qualifications:</p> <ul style="list-style-type: none"> ▪ Offers more than 20 years’ experience as an information technology leader with a diverse range of expertise in managing personnel and information systems in regulated industries, as well as cyber security, personally identifiable information (PII)/protected health information (PHI) data management, and compliance in government health research. ▪ Currently serving as the SSS Director of Information Technology where he has successfully managed information security programs for federal agencies and all strategic IT planning, and IT security and FDA/FISMA/HIPPA compliance in highly complex and secured computing environments. 	

In addition to the staff proposed above, SSS has a large pool of experienced web and SAS programmers, many with direct relevant experience supporting other similar state and hospital discharge data work, who are available to support any potential project need. We also have health policy experts, and a Chief Medical Officer, who offer broad, state-level policy expertise and experience working with ED and outpatient setting data for multiple data analytic projects.

Several information technology experts are also available to assist with data security and privacy compliance as needed.

2.0 Mandatory Requirements

2.1 Mandatory Contract Services Requirements and Deliverables

On our prior and current contracts with HCA, SSS delivered a user-friendly, highly customized, robust system for the West Virginia hospital partners. We were innovative; we continually sought and incorporated feedback from the hospitals and HCA staff to upgrade the system.

In this section we describe our approach for meeting or exceeding the mandatory requirements required in the Solicitation. SSS will provide the DHHR with all the contracted items on an open-ended and continuing basis.

2.2 Data Collection, Processing, and Editing

2.2.1 Process Inpatient Uniform Billing (UB) Data

The following subsections provide an overview of the operational process and details of the data submission process.

HDSS web portal: SSS' HDSS portal is a secure website and database specifically designed to collect, process, maintain, and assure the data quality of inpatient hospital discharge data from all 63 non-federal

hospitals in West Virginia. It has been designed to collect the data types and fields in accordance with the West Virginia HDSS, Data Collection Policies and Procedures documentation. The data are uploaded in data files (often referred to as "batches") to the HDSS portal. The data files are created in a customized version of the UB-04, X12 ANSI 837I 5010 format, an industry standard format from ANSI. The portal will make the data import, correction, validation, and submission process as seamless to the user as possible, only requiring them to have minimal computer skills, internet access, and modern web browser.

The application leverages both a modern programming framework (the Microsoft .Net Framework) and relational database (Microsoft SQL Server), which allows for rapid development and added built in security. All submissions and transactions are securely transmitted over HyperText Transfer Protocol Secure (HTTPS), which uses secure transport of the network, and the application database stores an audit log of user interactions. In addition to uploading and importing files/batches, the system allows users to fix and key in values for records by fields, and also take actions for groups of records (such as delete). The system shows users what the original value was, but also which actual values are allowed and what the errors are (edit checks). It also allows for online corrections. Users can delete a single record, a group of records, or a portion of a record. The system does not require that the data batch be fixed all at once, as partial entries are stored and can be completed at a later date. Data are then securely stored in SQL Server, using field level encryption where necessary.

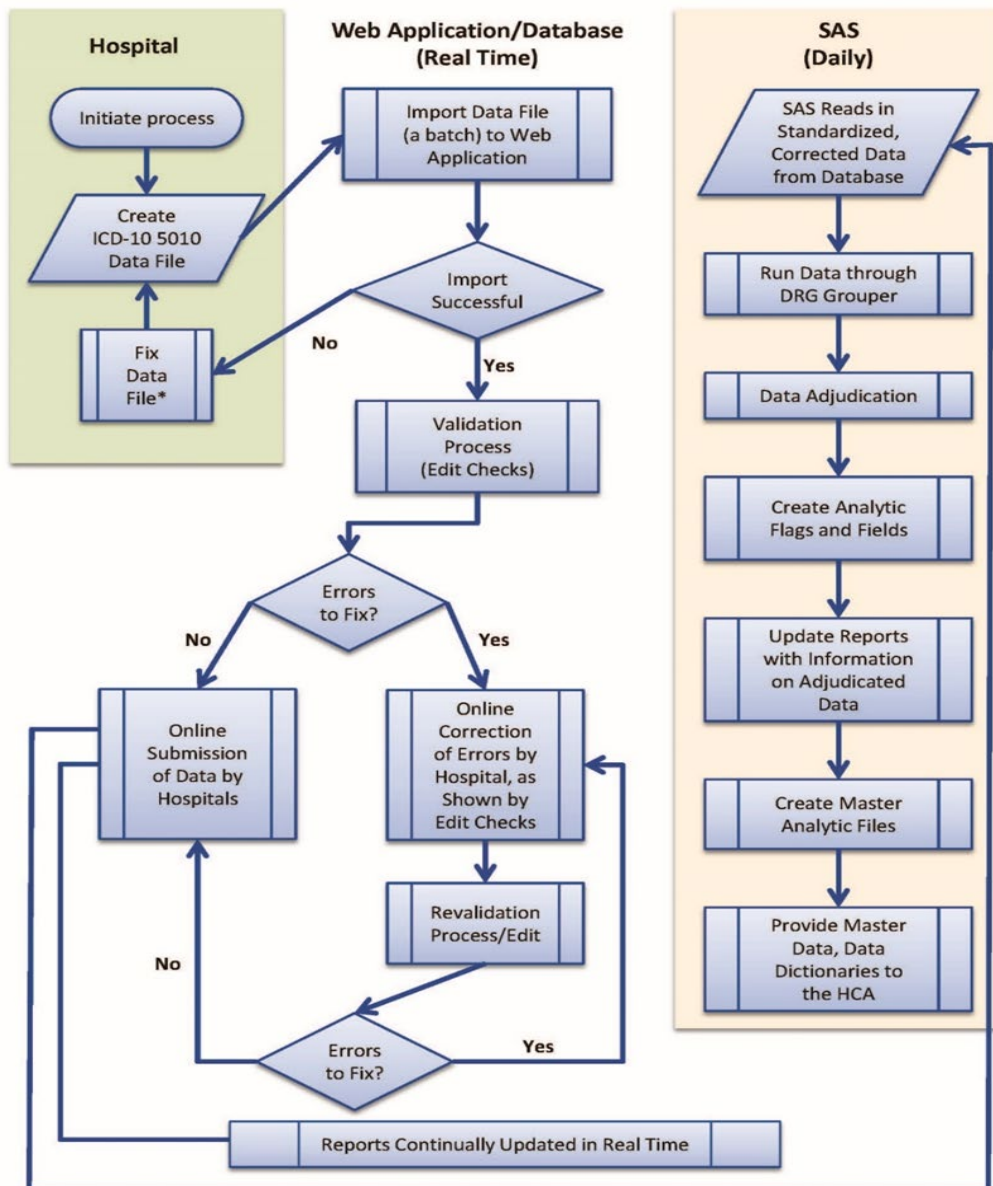
Hospitals and their vendors have overwhelmingly provided positive feedback on SSS HDSS enhancements.

In the HDSS portal, we have made the process of data collection, processing, and editing as seamless as possible. With SSS' technical support, each subsequent year hospitals had fewer data formatting and validation issues during submissions, and hospitals have not needed to edit their data or reconciliation forms as frequently.

The system validates the data based on the UB-04 837I 5010 ICD-10 format, and it notifies the hospital user if there are correctible errors (edit checks) and allows for immediate correction. If the entire set of data does not meet the minimum data quality requirements, the user will be instructed to correct, revalidate, and resubmit the batch. This entire process is audited for accountability and reporting purposes. Reports are updated in real-time showing the status of data that is valid, invalid, and submitted, while completeness reports appear in real-time on the HDSS home page, and on the reports tab.

The operational process is depicted in the Data Collection Reporting Process Diagram (Figure 2-1).

Figure 2-1. Data collection reporting process diagram.



* The SSS HDSS help desk will reach out to the user in the event of a file import failure, find the solution to fix the file, and work with the user to fix it

SAS Process and Master Analytic File: SSS will continue to pull in the standardized, cleaned, submitted batch data directly from the SQL Server database to SAS on a daily basis. Then, we will apply DRG grouping software to this data, adjudicate it, and create analytic flags and fields to create a master data set. We will update reports daily with information from adjudicated records.

On a weekly basis, we will provide the DHHR a copy of the current master data set in a delimited flat file that is suitable for easy import into the DHHR's Oracle database. Corresponding SAS programs will allow the DHHR to read in the same flat files to SAS, in an automated fashion. Along with completeness reports on the website, a hospital status report will be created each day, which informs the DHHR on hospital submission progress. At the end of the data collection year, typically June 30, SSS will create and deliver to the DHHR, in a secure way, the final yearly master analytic file, and downloads of all reports

2.2.2 Process Inpatient UB Data Additions and/or Modifications

SSS' secure web-based system has been used to collect hospital inpatient UB data elements, submitted in batches, from hospital users and their vendors, with a focus on both data quality and application usability. HDSS will continue to collect UB data elements from 63 non-federal hospitals in West Virginia, in accordance with the West Virginia HIDS Policies and Procedures and outlined in the Data Element Specifications Guide. This represents about 300,000 records annually.

SSS will continue to monitor state, federal, and industry standards and policies, and each year at a minimum (in consultation with DHHR), SSS will add and/or modify data elements. We will continually review the sources of data element standards, which include the National Uniform Billing Committee (NUBC) manual and policy changes and coding changes mandated by CMS, and will monitor any changes coming from the Washington Publishing Company's 5010 | 837-I Health Care Claim: Institutional Consolidated Implementation Guide. In addition, SSS will, at a minimum, look to make enhancements to the system where possible, for example, to improve data collection speed, to increase data collection quality, or to make processes more user-friendly.

2.2.2.1 Process in Accordance with Federal Regulations or Guidance

To allow consistent reporting of payor data, uniform source of payment is important. Lack of consistency in current reporting standards limits the ability to accurately compare source of payment data from different data sets and across different types of providers—analyses critical to understanding issues such as the effects of different financing methods and reimbursement levels on the provision of care or to assist with monitoring health care access across payor categories. The current payor coding system has five components: HCA notation, type of payor, payment program, payment modality, and HMO. It will allow DHHR to collect detailed payor information and thus will provide valuable opportunities for important analyses that would otherwise be difficult to conduct. One of the drawbacks of the current five-digit configuration, however, is room for human error. Since four of the five digits have multiple values (some of which consist of a long list), coding errors may occur when providers code each digit of the source of payment field.

SSS will review the current coding system to assess the quality of coding using other related fields. We will work with DHHR to find solutions to reduce coding errors while preserving the

amount of information collected. One possibility is to revise the payor coding to resemble a hierarchical structure such as the source of payment typology, a standard maintained by the Public Health Data Standards Consortium (PHDSC).

Such a hierarchical structure removes redundant information embedded in the current configuration—for example, instead of having to code two digits for Medicare (the second digit to identify “federal government” and the third digit to identify “Medicare”), in a hierarchical system, one digit is sufficient for Medicare since, by default, it is a federal government program.

Although the wealth of information collected through the detailed payor coding system may be necessary and useful for the state government, data of similar details may not be available elsewhere in the country. Another possibility is to derive a higher-level source of payment structure that is frequently used by national data sources (e.g., HCUP). A higher-level source of payment variable, often consisting of six categories including Medicare, Medicaid, private insurance, self-pay, no charge, and other, will allow the comparison of health statistics by source of payment between West Virginia and other states. Many HCUP states distinguish Medicare fee-for-service from Medicare Advantage plans. Distinguishing between the two allows more accurate comparisons, for example, of utilization and expenditures. It is straightforward to combine Medicare Advantage and Medicare fee-for-service into one field if needed. SSS is experienced in recoding and analyzing source of payment through the HCUP project for AHRQ and other projects funded by various state governments.

2.2.2.2 Accept Inpatient Data Files

The ANSI X12 837 is the standard required by HIPAA; SSS’ HDSS accepts inpatient data files in the current HCA UB-04 and ANSI ASC X12 837I 5010 formats. HDSS has used this format and the previous version (ANSI ASC X12 837I 4010) for almost eight years. SSS has a proven process for accepting the 837I 5010 format and is experienced in mitigating the challenges that come with it.

We will implement additions and/or modifications to the file format over the course of the new contract based on changes to state, federal, and/or industry requirements, as required and approved by DHHR. SSS is aware that version 5010 may be updated or superseded by a new update of the format. In our previous HCA contract, the HDSS system transitioned from the 4010 format to the 5010 format. We also helped steer HCA and the hospitals through the change from ICD-9 to ICD-10 diagnosis and procedure codes. By providing a test site and extra Help Desk assistance, we helped hospitals successfully navigate these transitions. In our experience, new health care requirements may call for new fields, new code values, new rules, and field deletions. The HDSS data collection system has the flexibility required by such changes, and SSS will assist DHHR and hospitals by providing technical support and allowing a sufficient period where hospitals can test their data submissions.

2.2.2.3 Assess and Confirm the Accuracy, Completeness, Quality, Appropriateness, and Reasonability of the Submitted Data

The creation and refinement of SSS’ HDSS system during the current and previous contracts have been very effective. Data validation rules have been refined and optimized, which encourages and enforces accuracy and completeness of data. We will continue to improve and adapt the system as needed throughout the upcoming contract, as we have seen this approach leads to continually increased value over time. **Table 2-1** depicts the many approaches we will

use to check and report collected data. The following subsections describe the edit checks and validation process in detail.

Table 2-1. Multiple system approaches to check and report on collected data.

Issue	Why Addressed	System Check(s)	Solution
837I 5010 batch file does not conform to specifications.	Accurate file format ensures system is reading data as intended.	HDSS importer checks for these critical errors.	System alerts user to batch failure; SSS HDSS Help Desk reaches out to user to have file fixed.
Field values do not conform to data element specifications or data fails edit check rules.	Invalid values decrease data quality. Questionable trends and other types of invalid data reduce quality.	HDSS edit (validation) checks, warnings and errors.	System reveals error issue and location, enforces replacement with allowed values.
Duplicates, both full and partial.	The “wrong” record may be kept in the database if the user is not alerted and allowed opportunity to correct.	Specific edit check warnings and errors <ul style="list-style-type: none"> ▪ E9: all fields identical within batch. ▪ E10: key fields identical within batch. ▪ W101: duplicates between batches. ▪ DQR 6: potential duplicates. ▪ DQR 9: duplicates on key fields. 	User made aware and forced to choose which record to keep.
Adjudication.	Check relationship between claims for same visit.	Series of algorithm checks applied after user submission.	Extensive set of rules applied in system that governs how it manages specific combinations of bill types, rolling up to one record per discharge.
Quarterly data reconciliation procedures.	Verify completeness and reasonableness of the volume of quarterly data collected.	DQRs on reconciliation, bill types, and over/under counting (DQRs 4, 5b, 7, 8).	User may correct batches and/or reconciliation form based on information gleaned from DQRs 4–9.

SSS’ approach to the annual review of data quality checks will involve reviewing sources of data element standards, including the NUBC manual. In addition, we will review CMS’ policy changes and coding changes and verify that checks are still relevant and conform to any updates.

2.2.3 Process ED Data

An increasing source of revenue for hospitals has been the ED—primarily as a source of hospital admissions. As a result, it is the focus of substantial policy attention due to concerns about overcrowding, potential inappropriate use, and high cost.

SSS will collect, process, maintain, and assure the quality of hospital ED data from all non-federal hospitals in West Virginia in the same manner as how the inpatient UB data are collected.

However, the criteria for extracting ED records may vary by hospital. As reported by AHRQ,³ special UB and revenue codes, internal record flags, a special value within the patient account number, and “type of service” code can all be potential variations in ED records. Note that in general, records for patients admitted as inpatients through the ED are considered inpatient records and not ED data.

SSS will develop recommendations for data collection, working closely with DHHR and data providers, and implement a process for efficiently and uniformly collecting data. We will assist DHHR in the development of West Virginia Emergency Department Data System Policies and Procedures and Emergency Department Data Element Specifications Guide similar in content and appearance to the policies, procedures, and guides used for inpatient data submission. We will pay attention to consistency of coding of admission source (e.g., another hospital, another health care facility). This will enable identification and tracking of patients who were treated and released, admitted to the same hospital, or transferred to another hospital or facility.

SSS has previous experience collecting, editing, processing, and reporting on ED data for the State of Connecticut. As part of this project, SSS built and oversaw a system that collected selected fields on the UB form from state hospitals and developed a deep understanding of additional fields needed in this area such as CPT/HCPCs codes, procedure codes, modifiers, and charges (which include hospital based charges only and not professional fees). We implemented checks for initial quality, cross-field quality, and applied Ambulatory Payment Classification grouper software to deliver value added grouper fields and reported annually on these data in a series of detailed and summary reports.

SSS will use the existing HDSS infrastructure that includes a fully secure test site to help both the hospitals upload data files to assess their readiness to submit ED data. The SSS Help Desk will assist with reviewing hospital ED data submissions and identifying issues before the submission of production data begins. This proven process, which was used for the 837I 4010 to 5010 transition will help DHHR collect data on schedule and minimize the difficulties for hospitals to submit the new data.

SSS has implemented webinar and database updates that increased efficiency and improved data quality.

- Increased the speed of the data import process by streamlining database functions, leading to shorter times between file upload and the data being ready for validation.
- Improved the performance of the data validation process, leading to fewer delays during heavy site usage that occur during submission deadlines.
- Improved the performance of edit claim screen (the most complex portion of the site).

2.2.3.1 Accept ED Data Files

SSS proposes to expand the existing HDSS portal to collect, process, maintain, and assure the quality of hospital ED data from all non-federal hospitals in West Virginia. We will specify that data files need to be in the ASC x12 837I 5010 format, an industry standard format from ANSI. This is the same format used for inpatient data submission on the HDSS portal. Using the same data format and leveraging the existing HDSS portal and data collection process will reduce the work needed for hospitals to submit ED data. SSS will develop documentation and guides for the

³ Moles, E., Andrews, R. M. May 2005. Emergency department data evaluation. HCUP Methods Series Report #2005-2. ONLINE. June 3, 2005. U.S. Agency for Healthcare Research and Quality. https://www.hcup-us.ahrq.gov/reports/methods/2005_02.pdf.

system including West Virginia Emergency Department Data System Policies and Procedures and Emergency Department Data Element Specifications Guide. These guides will be customized for the reporting requirements for ED data, but similar in content and appearance to the policies, procedures and guides referenced in **Section 2.2.1**. Our experience with developing these documents will help us tailor them to the hospital audience and identify the ways we can assist them with ED data submission. SSS will implement changes to the file format during the course of the contract as required and/or approved by DHHR.

2.2.4 Evaluate the Collection, Processing, and Editing Procedures

In addition to our current and previous contracts with the West Virginia HCA, SSS also supports the MHCC. We draw from that experience to continuously evaluate the process of data collection and recommend modifications in methods that will lead to increased efficiency and data quality improvements. In our current contract with HCA, SSS recommended and implemented website and database updates that increased efficiency and improved data quality.

Upon DHHR's approval of recommended updates, we will implement modifications according to schedules acceptable to DHHR. A few proposed methods to enhance the current data accumulation process are:

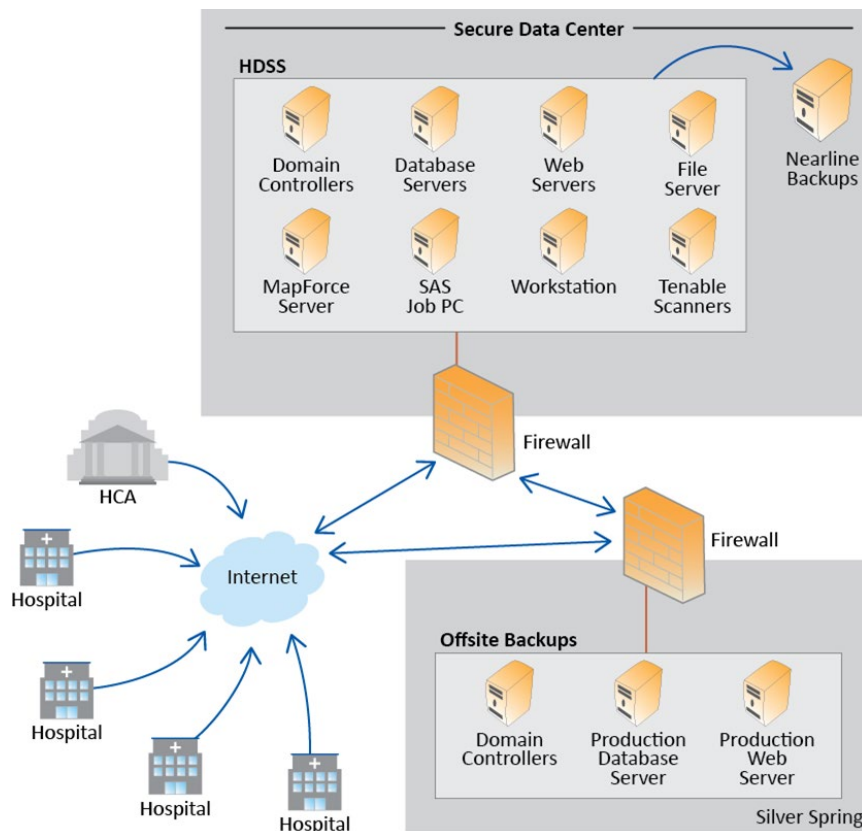
- Continued improvement of site loading and processing times.
- Increased effectiveness of the edits applied; evaluate current edit checks, propose new edits, or modify the current set of edit checks.
- Continually seek feedback and improvement ideas from user community to enhance client satisfaction resulting in greater adoption of the system.

2.2.5 Maintain a Secure Web-Based System

SSS will maintain the secure web-based HDSS by using standard best practices for software development lifecycle (SDLC) management. The system uses the Microsoft .Net Framework and Microsoft SQL Server for data capture, editing, and audit tracking. The system uses a federal information processing standards (FIPS)-compliant implementation of the industry standard strong algorithms to perform the encryption of PII/PHI fields and a secure network configuration to protect them. All submissions and transactions will be securely transmitted over SSL. The system is designed with an intuitive interface that includes secure log-in procedures (only for the identified user) and functions, such as submitting inpatient records, transferring relevant files, viewing reports, standard documentation, and customized help. **Figure 2-2** shows an overview of the system; the HDSS block (at the top) includes the servers used for the four main HCA application components:

- The HDSS Web Application is the front-facing site for HCA users, where users can upload and correct data, view reports, retrieve files, and view documentation.
- The HDSS Processing Server reads the data files uploaded by users, performs validation checks on the data, and inserts the data into the HDSS Web Application Database.
- The HDSS Web Application Database houses the encrypted data, reports, analytic files, and the audit log for the front-end system.
- The SAS Analytics module processes data, links records, adjudicates data, and creates reports.

Figure 2-2. A customized secure web-based system for online submission and editing of hospital inpatient and ED UB data.



All data submitters can access the DHHR application via the internet using HTTPS; the production version of the system, housed within the SSS Secure Data Center (SDC) located within a tier-4, co-location facility. SSS staff working on the DHHR system will connect from corporate headquarters via a secure and encrypted connection shown on the block labeled “Silver Spring.” This site is also the DHHR Disaster Recovery site.

HDSS maintenance will include proper system configuration management and change control. Additionally, the SSS project team will use an online tool that manages version control, change requests, issue and bug tracking, and requirements. Ms. Courtney Ashton, SSS’ PM, supported by the project team, will oversee these processes and procedures to ensure that the implementation of updates and revisions to the system are tracked and prioritized to the stakeholders’ requirements.

For implementation system updates, Ms. Courtney Ashton and Mr. Jeffrey Schinckle will work with the programmers to ensure that effective quality assurance mechanisms are in place. This will ensure that all proposed changes to HDSS are adequately reviewed for viability and compatibility with the operation of the current version of the system. All system changes will be recorded in the documentation log of changes. If any errors are identified in HDSS or resulting files, SSS will correct them. SSS will immediately notify DHHR of the errors and keep DHHR apprised of all ramifications and final corrections.

2.2.6 Maintain a Master Database

SSS developed and currently maintains the master database. At the first step, all data collected goes through the application database, where the data are checked. As discussed in **Section 2.2.5**, and shown above in **Figure 2-2**, this secure web-based application tracks and stores changes using a real-time mechanism for any edits that can be corrected at the time of submission. The application database stores records that are audited while our auditing system stores information on errors that were not immediately corrected via the interface. This system will track and identify all submitted records, records with errors, and warnings that would be presented to the hospitals for correction to improve data quality. It also flags all the information about errors that have not been corrected. Finalized data will be passed to the master database after submission additions, changes, and deletions have taken place.

2.2.7 Implement Methods to Link All Records

SSS is aware that multiple records can be submitted for a single stay, and we understand that the encounters will need to be adjudicated to produce clean data suitable for analysis. After error checking, records that were not rejected will move into the master database. From there, SSS will use SAS to link encounter data based on the DHHR adjudication rules (generally accepted industry standards), involving record characteristics such as patient control number, bill type, and discharge date.

SSS will identify—using the bill type code—replacement bills, all late charges, and interim charges for each claim. If needed, we will remind hospitals to include separate records for each individual in their submissions. For example, in cases of mothers/babies, it is important for hospitals not to combine the data but to submit separate records for the mother and the baby. In cases where provider ID, patient number, discharge date, and bill type are identical on more than one record, SSS will bring those groups of records to the attention of hospital representatives for de-duplication (as described in **Section 2.2.8**, detailed in DQR 6 and 9). As a result of proper identification, linking, and de-duplication, we will then adjudicate the data to create and/or identify a single complete inpatient encounter record. Each of these analytic encounters will be identified at the hospital Medicare provider number and patient control number levels.

2.2.8 Make Reports Available

SSS has developed and currently provides 10 DQRs. We will continue to maintain and enhance these reports. They promote the assessment of the quality and completeness of data submitted to the master database. The reports are updated in real-time for submitted data, and daily for reconciliation and adjudicated data. Each report is downloadable in common formats such as PDF, Excel, XML, TIFF, Word, CSV, and MHTML. **Table 2-2** illustrates each data quality report and its use.

Table 2-2. Content and value of DQRs.

Data Quality Reports
DQR1-Batch Summary Report: Error/warning type and count per batch and the total charges involved. For correcting issues so the same errors do not continue to happen.
DQR2-Submitted Records by Month of Discharge: Displays the number of records adjudicated each month.
DQR3-Patient Listing: View of all records in the database, including batches that have been deleted, that are invalid (currently being edited by a hospital), submitted, and adjudicated.

Data Quality Reports

DQR4-Payor Reconciliation Report: Important report that compares reported reconciliation counts to adjudicated data counts by month, hospital unit, and payors, and calculates percentage difference between reconciliation report counts and the adjudicated counts.

DQR5a-Bill Type Report: Identifies missing interim records that prevent adjudication (overall picture).

DQR5b-Non-Adjudicated Patient Level Bill Type Report: Patient detail on those missing interim records (patient listing with bill types that shows whether a record was adjudicated or not).

DQR5c-Adjudicated Bill Type Matrix Report: Adjudicated bill type matrix report to use in identifying missing interim records.

DQR6-Potential Duplicates Report: Shows records that have possibly been submitted for the same patient under another patient control number.

DQR7-Overcounted Discharges Report: Detailed display of records that aren't adjudicating together but are being counted.

DQR8-Undercounted Discharges Report: Detailed records that are not being counted because they cannot be adjudicated. These records have the wrong bill types, wrong coverage dates, or wrong admit date.

DQR9-Records with W101 Duplicate Warning: Shows records from different batches with the same provider, patient number, bill type, and coverage end date.

DQR10-Missing SSN Report: Shows when the SSN field is being populated in your batches (this field is not otherwise visible to the user or to HCA).

Examples of additional reports are listed below. These reports can aid in monitoring improvements in data quality over time and assist hospitals and SSS in identifying data gaps that must be resolved to develop a comprehensive discharge database. We have experienced under the current and previous contracts a few hospitals that had data issues that required extensive correction before submission.

- Report showing changes in the number of errors across time by hospital and a report on error frequency by hospital. This report will point out chronic problems for specific hospitals and list the most common errors in each hospital's submissions. This report will be enhanced with information/data on the volume of submitted records and errors, by bill type and unit.
- Trend analysis report as an additional check on completeness, which could compare a hospital's monthly and quarterly changes in discharges compared to the previous year.
- Submissions management reports to assess completeness of accepted data for each subgroup of records. Subgroups would be defined by hospital unit, payor code, and service type and will be updated in real-time.
- Report summarizing payor type and payment program per hospital to identify inconsistencies based on rules of which payors and payment types correspond correctly.
- Statistical summary report on the frequency distributions, cross-frequency distributions, and other statistics for service type, length of stay, charges, medical diagnostic categories (MDCs), DRGs, discharge status, and other fields selected by DHHR.
- Report detailing the discharges presented by payor, bill type, patient age, and/or another variable. The information gathered in these reports will enable DHHR and SSS to understand the overall content and legitimacy of the collected data.
- Trend analysis reports comparing data to a previous time period. Examples of such reports could include a report that compares the top 10 principal diagnosis codes, by volume, during two separate periods. In general, shifts in the volume of hospital discharge diagnosis codes

are expected to occur slowly over time. Significant changes across reporting periods may signal problems in the quality of data submission.

- Report summarizing frequency of “Unknown” and “Other” responses for the patient race data collected by unit, month, and quarter. The report would help identify missing data for the patient race and help hospitals identify incomplete data, improving data quality.

2.2.9 Provide a Web-Based, User Self-Service Reporting Tool

SSS proposes leveraging a Business Intelligence (BI) tool to meet the need for a web-based, self-service reporting tool that can produce reports and data visualizations including tables, figures, and maps. A website powered by a BI platform will provide the DHHR staff and hospital users a method to visualize data and query it in an intuitive and interactive manner.

As with any reporting tool initiative, the process starts with the identifying the metrics that are required for each of the dashboards. The solutions will be designed to accommodate both up to 200 submitters and the DHHR staff. Our SSS team, who have years of experience with the data collected by HDSS, will work with DHHR staff to identify the key metrics and data sources for the dashboards. The type of dashboard and the nature of the metrics will determine the types of maps, graphs, and/or charts selected for visualization on the dashboard. Drill-down and drill-through features may also be identified to provide detailed or alternative view of the data.

Having supported similar BI efforts, our approach to successful adoption of self-service data reporting tools relies on:

- An expert understanding of the underlying datasets and summary metrics of interest.
- Easily accessible datasets in the form of robust data marts and queries for repetitive end user consumption.
- A flexible BI toolset that meets multiple self-service needs for both the DHHR staff and the hospital users.

Our focus will be on meeting broad end user requirements for ad-hoc querying and custom reporting that can easily be configured to create various reporting outputs. Our proposed data analyst, Mr. Harsh Wadhwa, has skills and experience with many BI platforms and can develop complex reports to meet the needs of DHHR, including submitter community reports that are based on our recent experience for U.S. federal government agencies like CMS and USAID.

2.2.9.1 Provide a Self-Service Reporting Tool—Restrict Submitter Access

SSS will develop the self-service reporting tool with the same role and hospital affiliation-based privileges as are already built into the HDSS portal’s security model. We will be able to fully integrate the selected BI platform with this role-based security while adhering to the security requirements of the contract. This would result in the hospital users only seeing the data submitted by hospitals they are affiliated with.

2.2.9.2 Provide a Self-Service Reporting Tool—Allow User Storage

Our approach to the design of the self-service reporting tool will not limit the number of queries and standard reports that a user can store. Users will be able to create and save the queries and reports that can be retrieved in the future without restriction.

2.2.10 Provide Resources and Tools for Quarterly Reconciliation

Hospital users will be able to create reconciliation reports according to a DHHR-established schedule. Each participating hospital will be able to prepare its report online in the system, based on the hospital-specific data from uniform financial reports and other internal resources. These reports contain information on the record counts for each hospital by CMS certification number (unit) and payor. The payor groups for this report are based on the first two digits of the collected payor code field, and include Medicare, Medicaid, PEIA, Other Government, and Non-Government.

To assess and verify the completeness and reasonableness of the volume of quarterly data collected and adjudicated, SSS will assist DHHR in examining and identifying discrepancies in the contents of the reconciliation reports.

Described above, DQR4 will show adjudicated counts in the master database compared to record counts recorded on the reconciliation form, by unit, month, and payor. Percent difference will be displayed, and non-matching counts stand out in red text. Reconciliation form counts also appear next to adjudicated counts for comparison on the HDSS home page.

As we have done over the last eight years, SSS will work diligently with DHHR and hospitals to interpret issues and reconcile data.

2.2.11 Propose a System with Additional Optional System Modules

Although HDSS was originally built to accept inpatient data, it is designed to accommodate additional types of data while using the user interfaces, reporting, and data submission workflows that are proven effective with inpatient data. As modifications and integrations are required, our web programmers—who are experts at integrating the latest web-based technologies—can accommodate those needs. We have considerable experience in designing and developing web-based database applications that are used for data collection and information dissemination functions. As DHHR’s needs evolve, the system will be able to expand to accept data related to outpatient surgery, outpatient observation stays, outpatient diagnostic and therapeutic hospital services, and outpatient physician office visits or other types of hospital outpatient services.

2.3 Documentation and Technical Support

With submitters required to process new data, both for the ED and potentially outpatient settings, we envision a higher level of technical support in the early phase of the project, with ongoing routine support thereafter. This section presents our approach for providing this support to the hospitals and ensuring we deliver the same high level of interaction that the hospitals have come to expect.

2.3.1 Develop and Provide Documentation, Training, and Technical Support

Over the last eight years, SSS has created and maintained various detailed and informative documents to benefit data submitters and reduce their data submission burden. These documents will continue to be available for viewing online on SSS’ HDSS, where they will also be downloadable in common formats. SSS will continue to maintain and update these materials as

needed or requested, and they will be on the system prior to the implementation date of any changes. **Table 2-3** highlights some of these materials.

Table 2-3. Overview of HDSS materials.

Materials	Data Collection	Reporting	Editing
User Guide: covers maneuvering around the site and how to successfully import, edit, and submit data from start to finish.	✓	✓	✓
Companion Guide: includes rules and detailed specifications data collection input file. Companion to the Washington Publishing Company's Implementation Guide (Health Care Claim Institutional (837) x12 Consolidated Guide).	✓		
Data Collection Policies and Procedures Guide: overview document covers rules, processes, and guidelines for data specifications, quality, adjudication, reconciliation, compliance, use and release, assistance, and reporting changes.	✓	✓	✓
Data Element Specifications: specification guide covering data collection field description and values and associated editing information.	✓		✓
Listing of Warnings and Errors: detailed edit check rules and processes document.			✓
Reconciliation Process: reporting rules, processes, and guidelines		✓	
Payor Code List with Descriptions: detailed guide on HCA's payor code values.	✓		
DQR Tips: guide with additional reporting advice.		✓	

2.3.1.1 Develop Materials Similar in Content

In partnership with HCA, SSS developed and updated the current documentation for the inpatient data submission system. We will combine our understanding of the inpatient data documentation with our expertise in ED data to create ED-specific guides and procedures. These guides will be distributed in the same formats as the current documentation, making them compatible for incorporation into various formats and locations (i.e., HCA, DHHR, or other websites). Through the current and previous contracts, we have modified the site documentation for clarity and accuracy. We will continue to make request revisions annually by beginning of the new data collection year on July 1, or as necessary. We understand DHHR will request revisions 30 days prior to that date.

2.3.1.2 Provide Documentation Detailing Operational Processes of the Web-Based System

Within 30 working days, SSS will provide DHHR documentation that details the operational processes of the web-based data submission system. We will share SSS' HDSS manual of operations (in Word and Adobe PDF) with DHHR so its staff are well-versed in the operational details of HDSS, allow them to evaluate effectiveness, and understand and communicate information about the system and process to data submitters. The manual points to several key components such as file format and file layout (i.e., Data Element Specifications Guide, Companion Guide), list of edits performed (Listing of Warnings and Errors), and data collection procedures (i.e., User Guide, Data Collection Policies and

Procedures Guide) that SSS established. SSS will provide training and technical support to DHHR, data submitters, and/or their representatives on topics related to file formats, data submission, editing, and coding and billing standards. These documents will also be updated routinely as we incorporate other outpatient data sources.

2.3.1.3 Provide Training and Technical Support

Over the past eight years, SSS responded to approximately 6,500 inquiries from hospitals and built relationships and trust that fostered cooperation toward timely and accurate data collection. SSS understands that data quality starts with effective training and technical support for DHHR, hospitals, and their vendors. In response to requests by the DHHR, data submitters, and/or their representatives, SSS will design and provide necessary training. We will also provide hospital-specific daily technical assistance as needed on file formats, data submissions, editing, and coding and billing standards.

SSS assumes close communication with hospitals by phone and email. We are aware that sometimes there are new users who need to be trained on how to use the web application. We are well-versed in training and excel in our strong and tailored support to clients. Training may be conducted onsite, by teleconference, or by webinar. Over the past eight years, we visited HCA's site to provide live training to large groups of hospital users, gave daily support via our toll-free Help Desk number, and provided one-on-one support thorough calls and email.

Under the new contract, training will cover ED data submission and validation process, highlighting the new documentation and guides for this process. We will also tailor training and documentation for the new self-service online reporting tools for both hospital and the DHHR users.

SSS has maintained an exceptionally high level of hospital satisfaction over the project duration.

Through thank you emails and verbal appreciation, SSS knows that hospitals have appreciated our technical support efforts. This lends to a positive effect on data quality.

SSS will continue our attentive working relationships with all submitting West Virginia hospitals and their vendors, accepting both technical and non-technical inquiries.

In addition, DHHR will have direct access to key project staff as needed. We will respond to all inquiries received from DHHR in a timely manner by answering questions, making changes in the online system, and providing additional materials to DHHR and hospitals.

Deliver On-Site, Hands-on Training: SSS has developed standard operating procedures and workflows for orienting new users to the data submission process, introducing changes to the HDSS portal, and supporting the unique reporting requirements for each submitting hospital. Within 15 working days of the contract award, SSS will provide DHHR staff with at least one on-site, hands-on training and provide user documentation and access to online resources such as help files and training videos that can be linked to on the HCA or other DHHR websites.

We will discuss with DHHR which formats would be most useful for distribution, and we will prepare all training materials and documentation in those formats.

Conduct a Live Webinar: SSS's experience has helped identify problem areas for hospitals in their data submission process and has highlighted ways for users to avoid pitfalls in

submitting their data accurately and on schedule. Within 15 working days of the contract, we will formalize our understanding of the nuances of the submission process and the requirements outlined in the documentations to present at least one cohesive overview in the form of a live webinar for 70 data submitters. This, and possibly other webinars, may cover topics related to file formats, data submission, editing, and coding and billing standards. After the live presentation, the webinar recording will be made available as a video that can be distributed by DHHR. We will also provide links that can be placed on the HCA or DHHR website. We will also provide links to any other submitter specific documentation that is referenced in the training. We will also have a pre-recorded webinar available.

Be Available to Help Desk Staff: All training materials, including videos and other multimedia presentations will be made available to both DHHR and SSS staff to use for this project. SSS' Help Desk will continue to update and refine training materials to reflect HDSS system changes and feedback.

2.4 Analytic Files

SSS will continue its timely and accurate creation and delivery of analytic files. These important files are produced as the end-product of the data submission cycle and are the “data of record”/“final data” product that comes from the hospital submissions. They represent the most accurate, curated version of the hospital data. The following subsections present how we will ensure preparation of these critical files.

2.4.1 Create and Provide Weekly Adjudicated Analytic Files

SSS will continue to deliver the weekly adjudicated analytic files containing submitted fields; appropriate groupers and adjustment factors; and other demographic, cost, clinical, and quality fields to the secure transfer folder where DHHR staff can retrieve it.

2.4.1.1 Provide DHHR, Data File(s) Containing All of the Records and Data Elements Submitted by Hospitals

SSS will continue to create and routinely provide DHHR with data files containing all hospital records and data elements. We will also provide adjudicated records flagged for analysis and for the fields added during processing that enrich inpatient hospital data. The CMS Medicare Severity Diagnosis Related Grouper and Medicare Code Editor add the MDC and DRG with return code and CMS weight. We chose this grouper, which has been used in our current HCA contract, based on cost and technical considerations. Severity of illness and risk of mortality are other added-value files that will enhance the DHHR analysis. These could be obtained by running the data through another grouper, such as the All Patient Refined (APR) DRG grouper. SSS understands how to use numerous different groupers, and how each function, and the resulting output. We will discuss with DHHR alternatives that may be accommodated with the proposed level of resources and analytic needs.

The APC grouper will be used for ED data. SSS has experience with the APC grouper on MedPAC and MHCC projects. We also use Prometheus grouper for episodes of care for MHCC. The Prometheus grouper is used to compute cost and quality of care information that can be reported on at an episode level.

2.4.1.2 Deliver Files in a Secure Electronic Format

SSS will continue to deliver separate value delimited format file(s) with a header record(s) to enable and import into Oracle, and DHHR's then current version of SAS (or other, then current software). The file(s) will be made available through a secure file transfer protocol (SFTP) download system. SSS will provide an SFTP facility, and, as an added measure, will encrypt the files via secure compression software such as SecureZip.

2.4.1.3 Maintain and Provide Documentation, Reference Files, and Data Dictionaries

SSS will continue to maintain and provide to DHHR documentation and reference files that will include a data dictionary with record layout and summary statistics for all variables. The contents of the file will include variable names and clear data labels. SSS will maintain and provide a report on data element frequency, file layouts, load programs, code value definitions, and labels. Any custom programming code will be well documented, making it easy to follow and easily transported for use by system users. SSS will maintain and provide descriptions of the methodologies related to the creation of the calculated fields added to the file(s).

2.4.1.4 Create and Provide New Summary Reports

SSS has a strong analytic team with extensive experience developing timely, accurate, and user-friendly summary reports from a broad range of data sources and analytic approaches. We regularly customize reports to address the informational and research needs of a wide range of stakeholders such as policy makers, providers, consumers, analysts, and the public, as well as prepare reports focusing on state, regions, local, hospital, or delivery system levels, or even by patient characteristics-helpful for health disparity analysis-and can do so for this project.

SSS will provide DHHR with new reports from the analytic files on a routine basis. At a high level, these reports will summarize key utilization, access, cost, and quality indicators such as patient days, case-mix, market share and service area, and common DRG/diagnoses/procedures by patient demographic characteristics, geographic region, and/or hospital.

SSS will work with DHHR staff to identify a series of reports to develop during the first project year. In the first contract year we will develop two new reports and three report modifications. In subsequent years, we will plan for three modifications to current reports and develop two new reports annually. In selecting the specific reports to be produced, we will work with DHHR staff to review policy priorities and assess information needs of key stakeholder groups.

Analytic file data that can be represented in reports can vary, but examples of indicators, associated analysis levels, and cross-tabulations that could be represented in reports are shown in **Table 2-4** and are summarized below by indicator type:

- **Access and Utilization Indicators:** Total discharges, overall and by DRG or procedure; average length of stay, overall and by DRG or procedure; state variation in inpatient and ED utilization; costs/resource use; case-mix index; charges and costs, total and by DRG.
- **Quality:** Prevention quality indicators or potentially avoidable hospitalizations; hospital patient safety indicators; readmission rates, overall and by DRG; and inpatient mortality rates for selected procedures or DRGs.
- **Market:** Area day rate; area discharge rate; hospital share days; hospital discharge days.

Table 2-4. Reports for monitoring utilization and access, quality of care, and market trends.

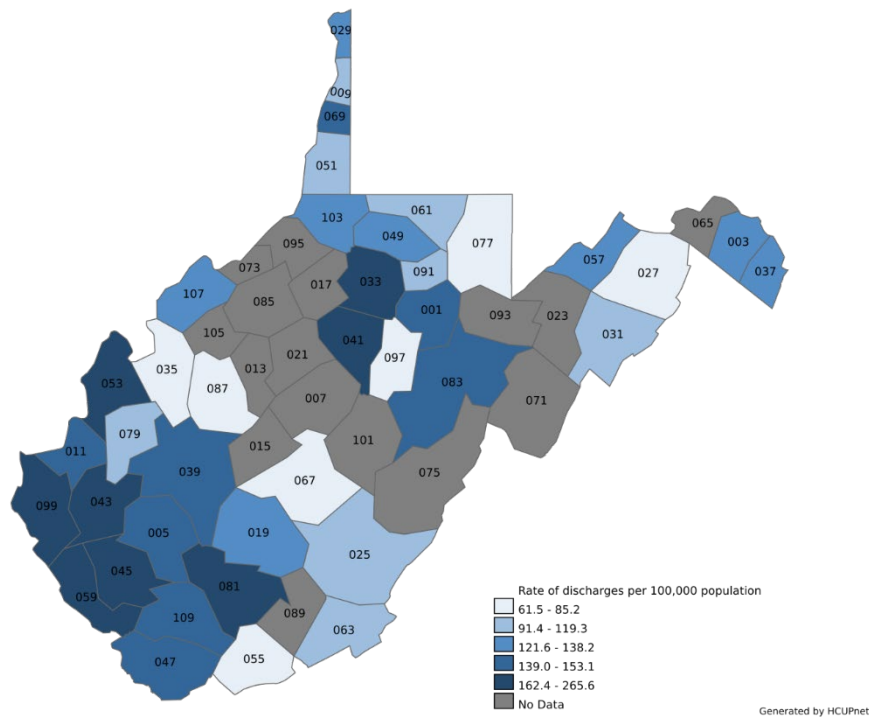
Example of Indicators or Measures	Analytical Levels	Example of Cross-Tabulations
Access and Utilization		
<p>DRGs</p> <ul style="list-style-type: none"> ▪ Total number of discharges ▪ Top ranking DRGs by volume and expenditures ▪ Average and median LOS ▪ Total charges and costs ▪ Case-mix index 	<ul style="list-style-type: none"> ▪ State ▪ Region ▪ Market area ▪ Hospital 	<ul style="list-style-type: none"> ▪ Patient Characteristics <ul style="list-style-type: none"> – Insurance – Age – Residence (e.g., rural, urban) ▪ Hospital characteristics <ul style="list-style-type: none"> – Size – Teaching status – Ownership
<p>Procedures</p> <ul style="list-style-type: none"> ▪ Total number of discharges ▪ Top ranking procedures by volume and expenditures ▪ Discharges by leading DRGs and procedures ▪ Case-mix index ▪ Average and median LOS ▪ Total charges and costs 	<ul style="list-style-type: none"> ▪ State ▪ Region ▪ Market area ▪ Hospital 	<ul style="list-style-type: none"> ▪ Patient Characteristics <ul style="list-style-type: none"> – Insurance – Age – Residence (e.g., rural, urban) ▪ Hospital characteristics <ul style="list-style-type: none"> – Size – Teaching status ▪ Ownership
Market		
<ul style="list-style-type: none"> ▪ Area day rate: number of hospital days per 1,000 population in area (e.g., county, HSA) ▪ Area discharge rate: number of discharges per 1,000 population in area ▪ Hospital share days: percent of discharge days among residents in area, from a given hospital ▪ Hospital share discharges: percentage of discharges among residents in area, from a given hospital ▪ Market competition (Herfindahl index) 	<ul style="list-style-type: none"> ▪ Region ▪ Market ▪ Hospital 	<ul style="list-style-type: none"> ▪ Hospital characteristics <ul style="list-style-type: none"> – Size – Teaching status – Ownership
Quality		
<ul style="list-style-type: none"> ▪ Prevention quality indicators or admission rates for ambulatory sensitive conditions <ul style="list-style-type: none"> – Diabetes, short-term complications – Adult asthma – Bacterial pneumonia ▪ Mortality Rates for Discharge Diagnoses <ul style="list-style-type: none"> – Acute myocardial infarction – Hip fracture – Pneumonia ▪ Mortality rates for surgical procedures <ul style="list-style-type: none"> – Abdominal aortic aneurysm repair – Coronary artery bypass graft – Hip replacement ▪ Patient Safety indicators <ul style="list-style-type: none"> – Decubitus ulcer 	<ul style="list-style-type: none"> ▪ State ▪ Region* ▪ Hospital* <p>*As sample size permits</p>	<ul style="list-style-type: none"> ▪ Patient characteristics* <ul style="list-style-type: none"> – Race/ethnicity** – Age – Gender ▪ Hospital characteristics* <ul style="list-style-type: none"> – Size – Teaching status – Ownership <p>*As sample size permits **As available</p>

Example of Indicators or Measures	Analytical Levels	Example of Cross-Tabulations
<ul style="list-style-type: none"> - Birth trauma - Post-operative sepsis ▪ Readmission rates 		

As preferred by DHHR, SSS will create custom or standard reports in formats including but not limited to Adobe PDF, ASCII Flat Text, ASCII delimited, and MS Office (Access or Excel). The reports can be generated with SAS Base software using features such as SAS output Delivery System technology and SAS/ACCESS PC File Formats. The programs for generating the reports will use adjudicated data, and additional data screens and enhancements will be applied with the approval of DHHR. SSS will deliver the reports via any medium specified on a data request. The reports will be suitable for DHHR to place them on the agency’s website if desired. If needed, DHHR can run the reports, and SSS will provide all the programs and technical support to maintain them.

SSS also has custom mapping capabilities that create data visualizations that help move beyond the numbers and give greater meaning to geographic indicators. **Figure 2-3**, a map SSS created, displays hospitalization rates for diabetes-related complications in West Virginia counties. Maps such as these can bring DHHR data to life and reveal new insights.

Figure 2-3. Example of data visualization to convey analytic findings. (Community hospital stays, West Virginia 2013; PQI 3—diabetes long-term complications admission rate [per 100,000 populations])



SSS has extensive experience working with a broad range of utilization, cost, and quality indicator to generate data tables and conducting analyses. For example:

- For SSS’ AHRQ National Healthcare Quality Report (NHQR) and National Healthcare Disparities Report (NHDR) initiative, SSS generates more than 1,000 tables with data on

approximately 300 access, utilization, and quality measures annually. These data are compiled from more than 40 federal, state, and private health care agencies and organizations. These measures describe the performance of the U.S. health care system. Several types of analyses that SSS performs with NHQR/NHDR data may also be used in analyses and reporting of West Virginia data. For example, when multi-year data are available, SSS could examine data over time to determine whether statistically significant trends can be identified, for example trends in cancer death rates or whether health care disparities are improving, getting worse, or remaining the same over time.

- SSS has a long-standing relationship supporting MHCC, not only in developing and maintaining its all payor, claims-based, ambulatory care database but also in using the data files to analyze and develop reports on a range of topics, including payments for professional services by geography and payor market share.

2.5 Data Security and Privacy

SSS has 10+ years' experience implementing and supporting highly secured computing environments for federal and state governments. We have a proven record of hosting information systems and data for West Virginia for the last eight years on the HIDS project. For the project, SSS has successfully provided secure and compliant information systems and data hosting for West Virginia, abiding by all federal and state laws, regulations, and HCA policies.

2.5.1 Implement HIPAA Security Administrative Safeguards (45 CFR §164.302)

For this project we will implement administrative, physical, and technical safeguards to ensure the confidentiality, integrity, and availability of all system data DHHR creates, receives, maintains, or transmits in accordance with federal and state laws and regulations.

2.5.1.1 Comply with All HIPAA Security Administrative Safeguards

The following subsections will describe how SSS will comply with all HIPAA Security Administrative safeguards within 30 working days of the contract. SSS will also ensure compliance with the procedures related to SSS' Information Security and Privacy Policies.

2.5.1.1.1 Undertake a Risk Assessment Program

SSS has an established and valid risk assessment program that governs all secured information systems. This includes an Information System Security Policy that drives the risk assessment program and corresponding Standard Operation Procedures that define the processes used by SSS to ensure that risk is properly identified, documented, and remediated.

The SSS risk assessment process is founded on *NIST Special Publication 800-30: Risk Management Guide for Information Technology Systems* and *NIST Special Publication 800-53 Rev4: Security and Privacy Controls for Federal Information Systems and Organizations*. SSS will develop a Security Assessment Plan to outline risk assessment activities. We will identify any weaknesses and document them in a Plan of Action and Milestone (POAM) and a Security Assessment Report that will provide a detailed report of the assessment.

2.5.1.1.2 Implement Procedures to Regularly Review Records of Information Systems Activity

SSS has standard operating procedures to record, analyze, and report auditable events including, but not limited to, account logon/logoff activities, account management, and policy changes. SSS bases our auditable events on guidance from the U.S. Government Configuration Baseline (USGCB), Center for Internet Security, NIST, and HIPAA standards. SSS information systems produce audit records that contain sufficient information to, at a minimum, establish what type of event occurred, when and where the event occurred, and where possible, the source of the event, the outcome (success or failure) of the event, and the identity of any user or subject associated with the event. Event data are collected in application logs, database logs, and system/security event logs and shipped to a centralized syslog server. SSS also uses intrusion detection/prevention systems to monitor for and prevent any network intrusions and attacks. Logs from these devices are monitored and analyzed 24/7 in real-time by a third-party managed security service. All unusual activity is immediately reported to SSS for investigation and remediation, as part of SSS' Information Security escalation process. SSS will perform this within 30 working days of contract award.

2.5.1.1.3 Conduct Security Audits

SSS understands that at the request of DHHR or West Virginia Office of Technology an analysis of security controls may be conducted. This will serve to evaluate the appropriateness and effectiveness of policies and procedures for privacy protection, confidentiality, and security of the HDSS system. An independent assessment conducted by qualified security personnel will be executed to ensure security controls are in place and operating as expected and to NIST standards. Some of the audits that have been conducted in the past include:

- Reviewing HDSS networking and computer facilities to assess the physical safeguards.
- Testing of the technical controls.
- Testing of the implementation status of the administrative safeguards.

The following includes, but is not limited to, the documents developed as part of this independent assessment:

- The SSS Information Security and Privacy Policies.
- Standard operating procedures that support the implementation of the Information Security and Privacy Policies.
- A copy of a diagram showing the authorization boundary for HDSS.
- A copy of the incident response plan to ensure all stakeholders are synchronized with reference to responding to incidents during the security assessments.
- A copy of the most recent HDSS self-assessment security assessment report.
- A security assessment plan that details the controls that will be assessed, the personnel that will be involved in the assessment, and the timeline for the assessment.
- The rules of engagement that discusses that IP addresses will be scanned, from what IP address, the scan window, and personnel to contact information for the auditor and SSS. This document must be signed by all parties that will be involved in the assessment.
- Baseline configuration documents for systems within HDSS authorization boundary.
- A credentialed vulnerability scan for all systems within HDSS authorization boundary.
- The current plan of action and milestones for HDSS.
- Audit and access controls logs for the period being assessed.

- Other supporting artifacts that validate the implementation of the information security safeguards.

These information security artifacts are always encrypted during transmission with an algorithm that is FIPS 140-2 compliant. They help the independent assessor better evaluate the appropriateness and effectiveness of the policies and procedures for the protection of privacy, confidentiality, and security of HDSS data. At the end of the audit and assessment of the results, the independent assessor provides SSS with a report that:

- Discusses the results of the security audit that highlights the effectiveness/ineffectiveness of the data security policies and procedures.
- Lists staff and the security awareness and role-based trainings completed.
- Identifies methods for local area network access and remote access.
- Lists artifacts received and assessed during the audit.
- Highlights any data transmission and loss control security risks not addressed in the report.
- Presents recommendations for remediating significant data security risks identified during the audit.
- Offers procedures that may be used to evaluate the effectiveness of the remediation steps taken to resolve identified data security risks.

2.5.1.1.4 Maintain Security Policies and Procedures

All vendor staff are required by pass-through clauses in their contracts to comply with the terms of this DHHR contract and associated Information Security and Privacy Policies and procedures as defined by DHHR. All vendor staff are required to complete the security awareness training at the start of the contract and annually thereafter. They are also required to review, sign, and abide by data use agreements that SSS project employees execute. Vendor staff who have access to the HIDS data via an SSS provided connection are required to review and sign the SSS Rules of Behavior (RoB) that governs their actions on the network. The SSS human resource team facilitates all background investigations for SSS and vendor staff that will work on the DHHR contract.

SSS understands that DHHR may require SSS provide evidence of adequate background checks, including a nationwide record search, for staff who work with state information. We will submit significant and substantive changes to DHHR within a reasonable time for DHHR consideration. SSS acknowledges that DHHR may have to forward any proposed changes to its federal regulators for review and authorization within at least 45 days in advance of implementation to production environments.

Users who do not comply with the RoB may be subjected to penalties that can be imposed under SSS' progressive disciplinary action policy. Unlawful use of SSS resources may be referred to the appropriate authorities for prosecution.

2.5.1.1.5 Establish Emergency/Backup/Disaster Plans and Contingencies for the System

Within 30 days of contract award, SSS will provide DHHR with emergency/back-up/disaster plans and contingency plans (CP). The plan will be developed in accordance with NIST 8, Contingency Planning Guide for Federal Information Systems. The CP will be updated at least annually. In development of the CP, SSS ensures that the alternate site is geographically separated from the threat profile of the primary site. Key personnel identified as having

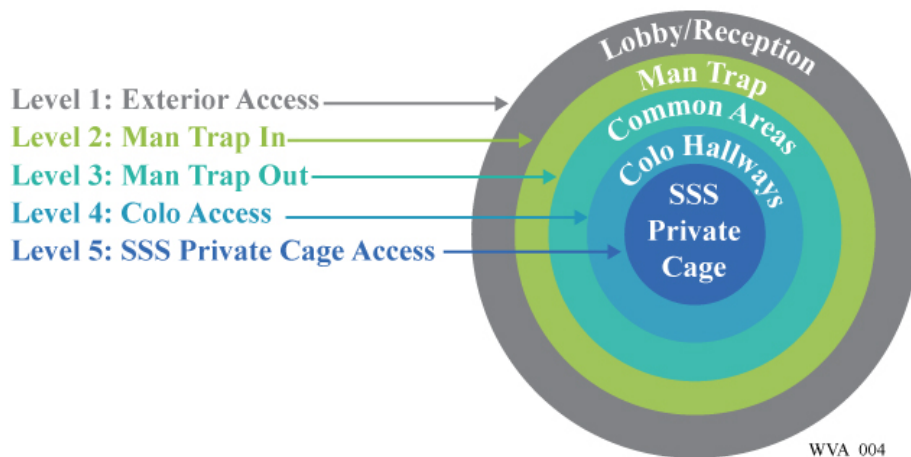
significant roles and responsibilities within the CP will undergo annual CP training. The CP also undergoes annual tests including a notification drill, a tabletop test, backup/restore test and functionality testing.

2.5.2 HIPAA Security Physical Safeguards

SSS handles and maintains many sources of data, including federal and state claims records, and is thus intimately familiar with confidentiality and security requirements mandated under HIPAA. A number of regulatory requirements must be complied with and addressed, including FISMA, HIPAA/Health Information Technology for Economic and Clinical Health Act (HITECH) for securing personal health information and general best practices for the protection of sensitive corporate data. SSS established and maintains a SDC, separate from its corporate facilities, housed within an Equinix secure tier-four SSAE 18 certified co-location facility with industry leading security and reliability. Physical access to the SSS SDC is limited to five SSS-employed network administrators. It is secured using a multi-layered approach through the combination of physical and virtual security controls, including 24/7 security guards, biometric hand scanners with PIN access codes, logging and access control lists, private cage and rack access codes, and locks, cameras, and man traps.

Figure 2-4 shows the layers of security. The security controls implemented are consistent with the recommendations from NIST and are compliant with a FISMA moderate-security categorization.

Figure 2-4. Layered physical security.



2.5.3 Comply with All HIPAA Security Technical Safeguards

SSS uses all relevant and required technical and logical safeguards following NIST *Special Publication 800* and HIPAA security standards. Because the SSS SDC is a multi-tenancy data center, several controls have been implemented to ensure complete separation between clients. Tenant systems and data are separated physically and virtually via dedicated Microsoft Windows Active Directory forests with group memberships and rights assignments. Tenant systems and data are also separate from other tenants and commodity SSS systems by segregated network segments, firewall policies, dedicated virtual hosts, and dedicated and segregated enclave storage

on FIPS 140-2 self-encrypted hard drives. Other safeguards include enterprise patching software, group policy, intrusion detection and prevention systems and firewalls, and real-time systems log monitoring by a third-party managed security service. Servers are hardened using USGCB and the Center for Internet Security standards. Compliance is monitored using Tenable Nessus.

2.5.3.1 Ensure Secure and Appropriate Authentication

All personnel working on the HCA project are and will continue to be screened according to SSS' policy for permanent and temporary employees. Only authorized users will be able to access the data via Active Directory user accounts. These are unprivileged accounts assigned to individual end users to access systems and data and are not shared among multiple personnel. An automated script runs nightly to disable accounts that have been inactive for 60 days. An inactive account is defined as one that has not logged on to the system. As a further safeguard, SSS requires programmers and analysts to access the data via Citrix Netscalers using a FIPS 140-2-compliant encryption module. Access is then secured using two-factor authentication using RSA SecurID. Tokens are hand delivered to the user or PM, or shipped using a trusted third-party that tracks and documents delivery of the token and collects the signature of the recipient. The recipient is then contacted by the SSS Service Desk to complete the process by creating a PIN number.

2.5.3.2 Support Role-Based Access to Data

Only PMs and system/data owners can request that user accounts be created. All requests for accounts and system/data access are submitted to the SSS Service Desk. A ticketing system tracks and retains all account requests, reviews, and approvals/rejections. PMs or system/data owners vet the person for whom they are requesting access to ensure they have the appropriate clearance, required permissions, and need-to-know. SSS' IT Services group applies the "least privilege" concept to all SSS environments to ensure that users only have the minimum required access needed to properly perform their job functions. Using the "least privilege" concept is one step toward ensuring the confidentiality and integrity of the information systems and data contained within from intentional or accidental modification. PMs and system/data owners also submit Service Desk tickets to request that an account be disabled or access to a system/data is removed. Active Directory and Unix accounts are monitored via event log and syslog with data being shipped to a third-party managed security service for monitoring.

2.5.3.3 Employ an Audit Mechanism for Tracking Access to System Data

SSS' audit and accountability controls are documented and formalized in existing corporate security documentation. Information includes designated roles, security posture, management commitment, and supporting policy language. Specifically, the baseline security controls for the computing systems, including audit information, are in accordance with established corporate policy.

Based on security control requirements and risk assessments, a broad range of auditable events have been identified and put into security program standard documents. For example, the following are audited:

- All user access attempts to the system.
- Modification of sensitive system information.
- Additions of new users.
- Deletions of users.

- Changes to user privileges.
- Changes to system security settings.

The information not only lists the audit control, but also provides information on why the control has been selected, and in some cases when the control should be enabled (e.g., for incident response).

The list of auditable events will be updated, if required, after internal risk assessments are conducted and any deficiencies are discovered. Otherwise, audit controls for the system will be reviewed annually. Privileged execution is part of the list of auditable events being consistently recorded. The DHHR system will also have audit tracking built in to HDSS.

2.5.3.4 Provide for Automatic Notification of Non-Routine or Unscheduled Access

SSS uses several security tools to protect data and systems from vulnerabilities and unauthorized access. SSS uses Symantec's managed security service to provide 24/7 security monitoring and real-time security analytics, allowing for faster detection and faster response. Any detection of attacks, threats, unauthorized scans, or other anomalies are immediately reported to the SSS Service Desk or on-call support personnel, in accordance with SSS' escalation process. SSS Incident Response policies and procedures mandate that, if a breach occurs, it must be reported and investigated. Upon notification of a breach or security incident, SSS will work with the appropriate personnel at HCA to resolve the matter. We will submit a PHI or PII report and/or the lost or stolen assets report within three workdays of incident discovery. The report will contain information about the incident, or as much as is known, regarding the date and time the incident occurred or was discovered, what information was lost or exposed, what steps have been taken to recover the information, and any other relevant information.

2.5.3.5 Employ Systemic Mechanisms

SSS uses Symantec EndPoint Protection to protect workstations against threats from viruses and spyware; and to provide firewall functionality, intrusion prevention, and application and device control. Vulnerabilities and statuses are reported back to a centralized management console and logs are shipped to a log collector, which is monitored and analyzed 24/7 in real-time by Symantec's managed security service. All threat detections are immediately report to information technology services (ITS) staff for investigation and remediation. SSS also uses a pair of Juniper firewalls for intrusion protection, application security, and role-based firewall controls. A pair of Palo Alto firewalls are also leveraged at the SDC with inbound and outbound internet traffic from the data center and all branch offices routed through for monitoring and protection. These firewalls detect malware and ransomware and block threats by using up-to-date vulnerability signatures, blacklisted sites, IP addresses, and known vulnerabilities and exploits. Blocks are performed at the application layer, which detects attacks on ports that are traditionally left open such as HTTP and HTTPS. All traffic is monitored and analyzed 24/7 in real-time by the SSS Security Operations Center (SOC) managed security service. All threat detections and unusual activity are immediately reported to ITS staff for investigation and remediation. SSS also employs Tenable Security Center using the Nessus application to schedule monthly or on-demand vulnerability scans. These scans look for known operating system vulnerabilities, active devices, communication paths, open ports, and associated services and applications, while also verifying that current operating system and application patches are in place and baseline hardening settings are in effect.

2.5.4 Ensure That Data Maintained on Behalf of the System Are Not Used, Released, or Sold

At project start, we will ensure that all SSS staff working on the HIDS project have reviewed and signed the SSS Security Guidelines for Restricted Data and a project-specific Data Confidentiality Agreement. These guidelines will provide for the proper handling of restricted confidential data, such as data maintained on behalf of the HIDS project. We will continually stress the importance that all system data can only be used in a manner and for the purposes specified in the Data Confidentiality Agreement, regardless of whether the data has been de-identified or included within a limited data set. Further, confidentiality and appropriate use of client and SSS data are governed by the SSS RoB, which are mandatory for all permanent and temporary employees. SSS staff must agree to and sign the RoB before access to information systems is granted. As such, all employees agree to abide by SSS confidentiality policies, which mandate that sensitive information is not shared by unauthorized personnel. Per corporate data use agreement, authorized users sign an acknowledgement form showing that they have read, understood, and agree with the SSS Acceptable Use Policy and the SSS RoB.

2.5.5 Implement Appropriate Notification Procedures

Although there have been no security breaches on our current contract, SSS is very familiar with DHHR's immediate incident reporting requirements for the unauthorized disclosure of PII. SSS will abide by the notification procedures for PII breaches using the incident reporting procedures. SSS will report all incident reports at the Office of Technology website, which will simultaneously notify the State Privacy Office and Office of Technology. The reporting information requirements include the date the incident occurred (or was identified), the type of PII exposed (with actual PII redacted from the reports), how the PII was compromised, the available information on the unauthorized parties, steps SSS has taken to recover the information, and any other relevant information to the incident report. SSS notification procedures are streamlined with the DHHR notification procedures for the discovery or suspicion of a breach of security for HDSS data.

2.5.6 Review and Revise Policies and Procedures to Ensure Data Security

The SSS information security (IS) reviews and revises policies and procedures every three years or when there is a significant change in the information system or the organizational threat profile. This ensures that the data security and privacy policies and procedures remain current with federal and state laws as well as DHHR's standards and policies. SSS maintains a document review page in the templates for all policies and procedures that must be updated each time the applicable documents are reviewed. This also provides for an identification of who reviewed the documents and what changes if any were made to the document.

2.5.7 Certify That It Is Not Currently Under Investigation by Any State or Federal Authority for a Breach of Data Security

SSS is not currently under investigation by any state or federal authority for a breach of data security.

2.5.8 Disclose Whether It Has Been Involved in Any Breach of Data Security

SSS has not been involved in any breach of data security that involves sensitive, protected, or confidential information. There has not been any need to assess the causes of the breach, mitigate actions to respond to the breach, or notify consumers. Irrespective, of the lack of data breaches, IS works with developers and the project teams to complete incident reporting training and exercises to ensure all project stakeholders are familiar with the internal SSS incident reporting requirements and procedures.

2.5.9 Disclose Details of Any Previous Investigations by Any State or Federal Authority Related to Privacy or Security of Patient Information

There are no previous investigations for any state or federal authority related to privacy or security of patient information. The requirement is not applicable to SSS.

2.5.10 Certify That Both the Vendor and Its Employees Have Never Been Convicted

SSS has never been convicted of, charged with, or been under investigation for, violation of any criminal law, or violation of any civil law governing health care fraud, abuse, or waste.

2.5.11 Certify That It Does Not Employ Any Individuals Who Have Been Excluded or Debarred

SSS does not employ any individuals who have been excluded or debarred by the federal or any state government from participating in any federal or state program or contract.

2.6 Project Management

SSS will continue to provide project management, consulting, analysis, and reporting services to ensure successful project implementation as we have on the current HIDS project. SSS' proposed staff are organized to efficiently perform the required tasks and organized to ensure continuity over the length of the contract and optimize collaboration and flexibility to respond to DHHR's and hospitals' varying needs. As the organizational structure shows in **Figure 1-2**, Ms. Courtney Ashton, PM, and Mr. Jeffrey Schinckle, Functional/Organizational Lead and Trainer, will continue to guide project direction and resources. They have established working synergies with the other proposed staff, from either working with them on the current HIDS project or on other SSS projects. The roles, responsibilities, and relevant experience of all staff are described in **Section 1.1.2**. Ms. Courtney Ashton will review and ensure functional responsibilities are understood by each staff member on a routine basis. The below subsections highlight how SSS will successfully manage the project.

Ability to Manage All Aspects of Project Implementation and Execution: Applying successful approaches, the proposed project leaderships' expertise, and best practices and tools used in our current HCA project gives staff the ability to drive performance, ensure quality, and enable coordination and communication for project delivery. **Table 2-5** outlines our approach to manage and monitor the HIDS project.

Table 2-5. SSS’ approach to manage the HIDS project.

Aspect/Responsibility	Management Tools
<p>Technical Performance</p> <p>Project Manager</p> <ul style="list-style-type: none"> ▪ Serves as primary point-of-contact with the DHHR PM ▪ Applies quality assurance monitoring, cost management, and risk mitigation ▪ Works with Functional/Operational Lead to manage resource allocation, deliverable adherence, and Help Desk operations ▪ Works with Functional/Operational Lead to develop and monitor annual work plans ▪ Ensures performance against deliverable schedules and workflows based on ad-hoc requests ▪ Identifies additional corporate and IT resources to support task order <p>Functional/Operational Lead</p> <ul style="list-style-type: none"> ▪ Serves as primary point-of-contact with the hospitals ▪ Manages day-to-day activities, including resource allocation, deliverable adherence, and Help Desk request tracking and responses ▪ Manages all aspects of maintenance and enhancement of the HDSS web portal and database 	<ul style="list-style-type: none"> ▪ MS Project Plan to track milestones and activities; annual work plan ▪ Issues/risks and action item ▪ Technical assistance requests tracking ▪ Bi-weekly call agendas and summaries
<p>Time and Delivery Constraints</p> <p>Project Manager</p> <ul style="list-style-type: none"> ▪ Drives service and product deliverable timeliness ▪ Works closely with Functional/Operational Lead to ensure scope adherence, completeness, and timeliness <p>Functional/Operational Lead</p> <ul style="list-style-type: none"> ▪ Monitors project through Microsoft Project work plan schedule, staffing plan, cost tracking, and internal status checkers ▪ Ensures two-day turnaround of all DHHR and hospital requests ▪ Ensures timely weekly and quarterly data file preparation and uploading 	<ul style="list-style-type: none"> ▪ MS Project Plan ▪ Project calendar that includes milestones ▪ Action item tracker
<p>Quality of Work</p> <p>Project Manager</p> <ul style="list-style-type: none"> ▪ Verifies contract and deliverable compliance while ensuring quality monitoring and adherence to acceptable levels of performance <p>Functional/Operational Lead</p> <ul style="list-style-type: none"> ▪ Coordinates project activities to ensure milestones are met within quality standards ▪ Ensures weekly and quarterly data files are accurate and compliant with data requirements 	<ul style="list-style-type: none"> ▪ Annual work plans ▪ Peer review/quality review signoff
<p>Cost Control</p> <p>Project Director/Project Manager</p> <ul style="list-style-type: none"> ▪ Works with SSS financial analyst to develop and routinely monitor detailed budgets and spending, and monthly and annual projections ▪ Loads plan into FAR-compliant financial management system (Deltek CostPoint) ▪ Works with corporate resources to produce monthly cost and invoicing data for submission to WV via Deltek 	<ul style="list-style-type: none"> ▪ Deltek Enterprise Suite ▪ ETC/EAC Projections

Ability to Identify, Address, Resolve, and Communicate Problems, including Conflicts of Interest: SSS uses a Corrective and Preventive Action (CAPA) process that, along with our risk management process, empowers and encourages personnel to share responsibility for proactive problem or risk identification and resolution, and supports management oversight. Our processes foster early and proactive identification of risks, development of solutions, and communication with DHHR as necessary. Our clear and frequent lines of communication and defined CAPA

process allow us to identify risks and issues early and mitigate the impact of any issues and deliver according to project goals. It is SSS’ practice to maintain awareness of conflict of interest (COI). Our PM and Functional/Operational Lead will identify, resolve, and escalate COI problems in coordination with the SSS contracts staff.

Procedures for the Protection of Proprietary and Confidential Data and Analysis: SSS policies and procedures are aligned with the FISMA guidelines and compliance requirements, and where applicable, the Federal Risk and Authorization Management Program (FedRAMP). SSS understands the importance of protecting client data confidentiality, integrity, and availability with a FIPS 199 security categorization of moderate because it contains PII or PHI and adheres to the privacy, confidentiality, and disclosure requirements in Section 1160 of the Act and in Title 42 of the Code of Federal Regulations (CFR) Part 480. Please see **Section 2.5** for more on our Data Security and Privacy policies.

Annual Work Plan: During the project initiation and planning stage, SSS will develop and refine an annual work plan. We have found in the past that creating and monitoring the work plan has been helpful for both SSS project management and HCA expectations of work performance. The Base Year, and subsequent Option Year work plans, will include project task overviews, deliverables and milestone timelines, staffing effort, and data security and privacy activities. The annual work plans will provide a comprehensive guide to SSS’ approach to conducting all major activities in the project, including assumptions. We use Microsoft Project software to develop and implement an electronic work plan to include resources, schedule, deliverables, and detailed work plans for the activities during the contract Base and Option Years.

For each project year, SSS will develop a draft work plan and submit it to DHHR for review and feedback. We will provide DHHR with the work plan for the first contract year based on a mutually agreeable timeframe. Within 90 working days prior to the beginning of each contract year, we will submit a final annual work plan to DHHR, which will describe and provide a timeline for all key activities to be performed in the following year. Please also see **Section 2.9**, Milestones, Deliverables, and Service Level Agreements.

2.6.1 Communicate Project Status

SSS understands that regular communication with DHHR and a “no surprises” communication philosophy best ensures project success. We will have both formal communication via bi-weekly calls and informal communication via e-mails and ad-hoc calls. **Table 2-6** illustrates our communication plan for this project.

Table 2-6. A communications plan that optimizes client engagement and ongoing communication.

Project Status Communication	Owner/Distribution List	Frequency	Method of Communication
Project Status (workload status, data submission activities, potential problems or barriers, communication and open items with data submitters)	Ms. Courtney Ashton, DHHR Project Manager	Bi-weekly or more frequently as needed	E-mail for agenda and call summary, bi-weekly calls

Project Status Communication	Owner/Distribution List	Frequency	Method of Communication
Base and Option Year Kick-off Calls	Ms. Courtney Ashton, DHHR Project Manager	Annually	Call
Data Submission Activities	Ms. Courtney Ashton, DHHR Project Manager	At least weekly	Hospital status report, uploaded to secure data site, attachment to email, regular agenda topic on teleconferences
Potential Problems/Barriers to Project Implementation	Ms. Courtney Ashton or Mr. Schinckle/DHHR Project Manager	At least weekly	Telephone, web conference, or email
Contacts/Communications with Hospital Data Submitters	Mr. Jeffrey Schinckle/Individual Hospital Data Submitter and DHHR Project Manager	Daily	E-mails channeled via DHHR and direct to SSS via HIDS Help Desk (live help by direct phone line, email)

2.6.2 Provide Consultation and Recommendations to DHHR

Working with DHHR, SSS will make recommendations for data analysis, reporting, and dissemination activities aimed at assessing the utilization, access, cost, and quality of health care. SSS proposes to develop several new analytical fields, among these quality indicators and measures of health system performance. To expand the scope of quality indicators or measures that are available to the state and key stakeholders, SSS may generate indicators suggestive of performance in patient safety (e.g., health care acquired infections), ambulatory care (e.g., admissions for chronic and acute ambulatory sensitive conditions), hospital performance (mortality rates for selected medical conditions and surgical procedures), or perhaps ED (e.g., average time spent in the ED before being seen by a medical professional, percent of patients leaving the ED without being seen).

To accompany data tables or generated data, SSS typically provides focused narrative, which is intended to describe data and to fill in gaps in publicly available information. DHHR currently provides reports—largely in the form of data tables—on the agency’s website. In addition to expanding the reports or the data tables available, DHHR may be interested in conducting cross-tabulations that offer insight into health care for population subgroups or selected categories of providers. For example, assuming the presence of data on race/ethnicity, it may be possible to examine disparities in access, utilization, and quality for racial and ethnic subgroups. Information on hospital characteristics, such as ownership, may offer insight into the utilization and performance of safety net providers. Several of the fields and cross-tabulations proposed to DHHR are expected to be available for the nation as a whole, from resources such as Hospital Compare or the National Healthcare Quality and Disparities reports. As such, DHHR would have a means to evaluate the state’s health care experience relative to an outside benchmark.

SSS research staff have a broad range of experience in reporting and dissemination activities related to health policy and data analysis. We regularly work with federal, state, and private entities to identify issues that are relevant to key stakeholder groups and to develop data analyses, issue briefs, or lengthier reports that contain information that is most salient to these stakeholders and or Congress. For example,

- For the State of Maryland, we examined the relationship between spending for persons with diabetes and the use of hospital and non-hospital-based services; factors that contribute to differences in compensation across medical specialties; and therapeutic drug classes that experienced the greatest growth in spending.
- For our MedPAC project, among the many analyses across a range of delivery settings and financial payment models, for example, we used 100% Outpatient SAFs to calculate the percent of outpatient department services that are provided with ED visits (same day or same claim), and identified ED visits using both HCPCS codes and revenue center codes.
- SSS staff routinely prepare AHRQ statistical briefs using data from the HCUP Nationwide Inpatient Sample or State Inpatient Database. Many topics explored in HCUP statistical briefs could be replicated for West Virginia and compared to figures nationally or from other states. As examples, SSS staff have provided statistical briefs on the following topics:
 - Adult hospitalizations with infections due to medical care.
 - ED visits associated with motor vehicle accidents.
 - Several condition-specific reports, including reports focused on hospitalizations associated with gastroesophageal reflux disease, methicillin-resistance staphylococcus aureus, and HIV.

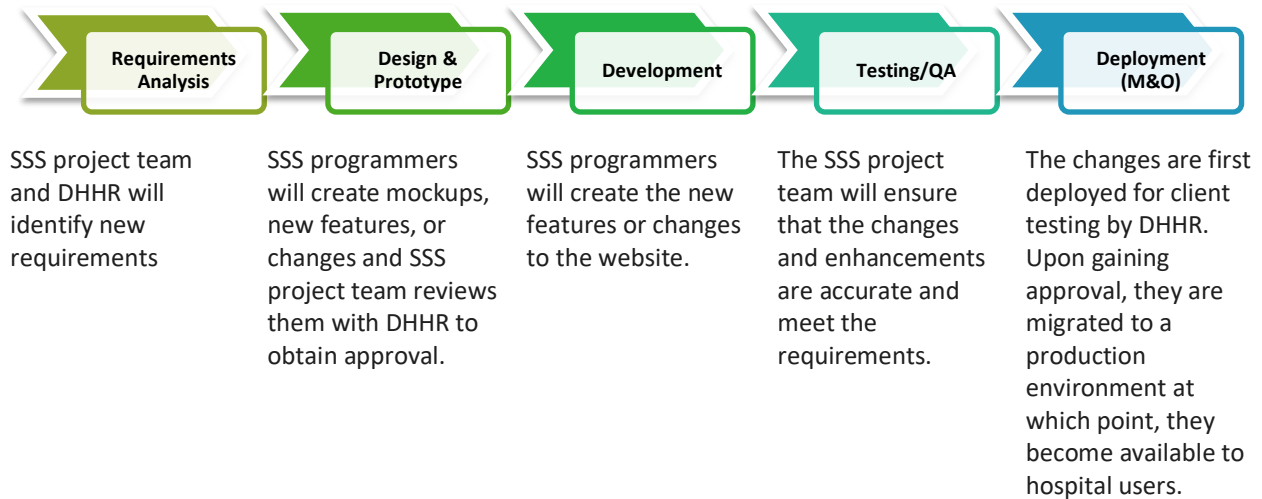
Although the DHRR may determine that dissemination should largely occur via the DHHR website, multiple formats (e.g., issue briefs, reports, tables) may be recommended. The decision as to the most appropriate format for dissemination will depend largely on the targeted audience, which may include the lay public, state policy makers, provider organizations, researchers, and analysts. In all cases, SSS will produce high-quality and information-rich products that present information gained from analyses in a user-friendly manner. The target audience will have bearing on the extent to which technical descriptions of the data are presented and the depth in which methods and data will be discussed.

2.6.3 Create Systems, Programs, and Processes

Within 30 working days SSS shall create systems, programs, and processes that are flexible to integrate updates and revisions in a timely manner, as required or requested by DHHR, without creating undue burden on resources. SSS' experienced programmers have the expertise to write code that allows for easy and timely integration of updates and revisions to programs. One way we achieve these high-quality results is through following the Capability Maturity Model Integration (CMMI) model. CMMI is a proven set of global best practices that drives business performance through building and benchmarking key capabilities.

Our development processes are fully aligned with overall IT SDLC. We use a tailored Agile Methodology-based SDLC process set that provides the most value in a flexible and collaborative manner to achieve the HIDS project objectives. **Figure 2-5** depicts the development process.

Figure 2-5. A five-step process ensuring an efficient and quality-driven development process.



Over the current and previous contracts, SSS has been modifying programs to account for changes such as the file format switch from 837I 4010 to 837I 5010, and from ICD-9 to ICD-10. The system and programs were flexible enough to integrate these changes and make updates in a timely manner. This flexibility of the systems and programs will allow a seamless integration of the additional Emergency Department data in the upcoming contract.

To support the CMMI model, the SSS project team will use project management tools that will allow the systems and processes to be updated without undue burden. For example, to manage the requirements and development of the new ED data submission, SSS will use an online tool, Team Foundation Server, which manages version control, change requests, issue and bug tracking, and requirements. Proper system configuration management, and change control using the Change Control Board and overall best practices will be used. These tools and practices, plus before and after unit testing, will ensure reliability of the system after making changes.

2.6.4 Respond to DHHR Inquiries and Requests

Prompt communication with DHHR about technical assistance is necessary to circumvent potential problems with the system, to ensure hospitals’ continued support of the database, and to provide necessary analysis for which DHHR may be asked. SSS will respond to DHHR’s inquiries or requests for technical assistance within two business days, based on the urgency and importance of the issues as determined by DHHR. Based on our current contract experience, DHHR staff receive time-sensitive analysis and programmatic requests from multiple audiences. To ensure DHHR’s responsiveness to their requestors, SSS will continue to assess DHHR’s request and communicate an initial response the same day of receipt. On the current contract, SSS has been extremely responsive to HCA’s requests and responded with a full response within a day. We also received many hospital requests, via HCA, for which staff have also responded in a very timely fashion.

Technical assistance for the new work will continue with the same level of dedication, including assistance with problem identification, suggested technical solutions, the data reconciliation process, and follow-up consultation on technical problems associated with the HIDS. Mr. Jeffrey Schinckle, SSS’ Functional/Operational Lead, will be designated as the contact person for all

technical assistance requests. The SSS team will create a technical assistance tracking log to document all requests received, date of receipt, SSS owner, status, and close-out date.

SSS will also respond to DHHR project revisions or updates within two business days, based on the urgency and importance of the issues as determined by DHHR. Ms. Courtney Ashton, PM, will provide DHHR with project revisions, such as for the annual plans, call notes, or other management documents as she has on the current HCA contract.

2.6.5 Acquire Hardware, Software, and Reference Data Files

SSS uses versatile enterprise server and storage solutions that are scalable as demand requires. As more data are acquired and generated, the underlying infrastructure can be seamlessly expanded by adding disks and enclosures. SSS also runs a highly virtualized environment, which results in more efficient resource usage and better resource management. It is also highly scalable, allowing for additional resources (servers, workstations, applications, etc.) to be built quickly.

SSS' HIDS hardware and associated system software (e.g., SAS, SQL Server, .Net, etc.) are fully described in **Section 2.2**.

Additional software that will be integrated is the National Technical Information Service (NTIS) DRG grouper for the MS DRGs. The DRG grouper from NTIS also includes the information needed to make lookup tables that will be needed for DRGs, MDCs, weights, and diagnoses and procedure codes.

We will also use the following reference files for the HCA project:

- ZIP code file, which is free from SAS Institute and will be used to make a ZIP file lookup table. This will be retrieved and installed four times a year, because it is updated quarterly.
- Other lookup tables, as needed, such as for revenue code.
- NPI file from the National Plan and Provider Enumeration System to assess the quality of the NPI field and to add needed data variables.

SSS will acquire or provide any necessary hardware, software, and reference data files to complete all tasks to perform the project specifications and to meet all applicable timeframes set forth in this RFP. SSS understands that data obtained for the purpose of the performance of this contract will not be used for any other purpose outside of the DHHR contract.

2.6.6 Cover All Costs

SSS will cover all costs associated with providing technical assistance, training, and status reports to DHHR and data submitters, including teleconferencing, webinars, and/or travel to a minimum of two onsite meetings each year. During SSS' multiple years of support to HCA, we demonstrated our willingness to attend onsite meetings at HCA and to hold web conferences (for large and small audiences) to implement services, training, and related implementation planning. We will continue to provide this support under the new contract.

- **Trainings and Webinars:** As noted in **Section 2.3**, within 15 working days of contract award, SSS will provide DHHR with one on-site training and provide at least one live webinar for data submitters and their representatives.

- **In-person Meetings:** As determined by DHHR, Ms. Courtney Ashton and/or Mr. Jeffrey Schinckle will attend at least two meetings at DHHR, at One Davis Square, Suite 100 East, Charleston, WV 25301 or at any other location identified by DHHR. Such meetings might include start-up conferences, project planning meetings, deliverable review meetings.

2.7 Optional Services

SSS has provided pricing for the optional services listed in Solicitation Sections 4.7.1.1 through 4.7.1.8 in its business proposal, and depicts them separately from the Mandatory services. SSS understands that the decision to use these services at any time during the contract is entirely at the discretion of DHHR. SSS will provide a statement of work to DHHR for any optional services desired. We will include a detailed breakdown of the hours to complete the request in the statement of work and will represent a not-to-exceed estimate. We will include an hourly rate for the services in Solicitation Sections 4.7.1.1 through 4.7.1.8. If the statement of work is accepted, SSS understands it will be authorized through the Delivery Order process and no work would be billed in the absence of a valid Delivery Order. Upon completion of the work, SSS will bill for hours actually worked up to the maximum number of hours included in the statement of work.

2.7.1 Develop and Deliver AHRQ's HCUP as an Annual Adjudicated File

SSS has proven experience creating the HCUP file for DHHR. Beginning with the 2017 data year, SSS handled all aspects of the creation of AHRQ's HCUP data file. The HCUP file is derived from the yearly analytic file and contains a set of specifically requested variables. The Medical Record Number (MRN) is encrypted for security purposes and a separate data file is created, which serves as a key to the original MRN values. In addition, SSS provided HCA with a proxy codebook prior to the delivery of the final HCUP file.

We understand that creation of the HCUP file is dependent on the timely completion of the yearly analytic file provided to HCA on June 30, which marks the end of the yearly data collection cycle. SSS will create the HCUP file in the timeline and format specified by DHHR as requested.

2.7.2 Prepare and Provide Annual Standard Aggregated Public Use Files

Beginning with the 2017 data year, SSS assumed functions pertaining to the PT files and Standard Reports. With limited transition instructions, codes, and documentation, SSS created entire PDF outputs from scratch, based on SSS's staff understandings of the Standard Report and PT Files output and data use. SSS used this experience and to automate the process for future deliverables. We will use the specifications document created from this experience to continue to create the Standard Reports and Public Use Data Files in a timely and efficient manner as requested. These reports will be disseminated by DHHR to data requestors.

2.7.3 Fulfill Customer Requests for Subsets of Adjudicated Inpatient Data

SSS will continue to fulfill various data requests, following the same successful process currently used with HCA. SSS staff and DHHR will collaborate to review data requests for clarity and feasibility before finalizing the requirements of the request. Once approved by DHHR, we will run the analysis and return the output in commonly requested formats such as Excel, SAS, PDF,

and TXT files. We will do so throughout the contract term and transmit them according to the security measures in the solicitation, in a manner and timeline approved by DHHR. SSS is accustomed to turning around requests quickly and accurately. In the current contract, SSS has assumed a greater role in supporting and fulfilling data requests submitted through HCA's Request for Hospital Inpatient Uniform Billing Data process.

SSS staff, led by Ms. Lorena Ortiz, have responded to an increasing number of data requests related to subsets of adjudicated inpatient data to bridge the gap in HCA resources. These yearly totals reflect a higher number of requests than prior to SSS assuming this function.

SSS staff have provided timely and accurate responses to a greater number of ad-hoc requests each year of the current contract.

- 2017: 5 requests
- 2018: 15 requests
- 2019: 19 requests

Some of the increase in requests can be attributed to the utility, accuracy, and timeliness of the adjudicated inpatient data that are collected, validated, and process through HDSS and the analytic file creation process. To meet the growing demand efficiently, we developed a SAS template (including reusable codes) aligning with HCA's data request form. SSS collaborated with HCA to create and maintain a request pipeline/tracking document. SSS also incorporated a quality assurance process to review each request against output to ensure alignment and accuracy.

The result of this partnership with HCA on data request has been that it allows more efficient data request management to support the client's expected response time. Throughout the data request activities, SSS has demonstrated flexibility and responsiveness while managing existing project workload.

2.7.4 Fulfill Ad-Hoc Analysis Requests

SSS worked closely with HCA to meet its needs on various analytic requests and special research questions. SSS' in-depth knowledge of the data collection process and data elements included in the yearly analytic file allows for a wide range of data analytic capabilities, in addition to the routine data activities. DHHR will be able to rely on SSS for dependable and timely expertise in numerous areas of health care policy and analysis. When DHHR shares an ad-hoc request, SSS staff can identify subject matter experts and engage them to assist. Over the past two years, SSS assisted HCA on the following topics:

- SSS responded to a request from Mike Morris on behalf of DHHR Secretary Bill Crouch, to provide information regarding data files that contain information about opioids, specifically about nonfatal overdose, co-occurring conditions, and opioid use hospitalizations involving suicidal ideation.
- SSS assisted HCA with filling out a survey from Bethany Hughes, with the National Action Alliance for Suicide Prevention Data and Surveillance Uniform Reporting team.
- SSS provided Sharon Hill, a client of HCA, with the information needed to convert ICD-9 codes to ICD-10 codes.

SSS's commitment to assisting DHHR beyond the typical data requests increases the value, utility, and visibility of West Virginia's data for large-scale, national research.

2.7.5 Analyze the Risk of Re-identification of Patients

SSS proposes to complete three steps in the area of disclosure limitation and confidentiality protection. The first step is to develop and provide to DHHR an analysis of the risk of re-identification of patients in the database based on the information contained there in combination with other readily accessible data sources. The second step is to recommend appropriate statistical disclosure limitation methods to increase patient confidentiality. The third step is to develop a limited data set, based on these recommendations, for release to requestors.

Re-identification occurs when someone with access to the database can use information in the data file to link a particular person in society to a patient discharge record; they can say that they know who the record pertains to. If name, specific age information, and geographic information are included in the released file, then it would not be hard to use publicly available search information to identify individuals. Even if a name is not released, combinations of other variables, such as geographic location down to ZIP codes, exact birth date, and sex, might be enough to identify some individuals. In an analysis of this type, it is critical to think about what someone with access to the data might know. For example, if one knows that a friend or relative is in the hospital, and their birth date and demographic variables are known, then it might not be difficult to find their record in the file. Then the person would learn principle diagnosis, payor, and other information from the file about that specific person. As another example, if one knows that an acquaintance in the neighborhood was taken to a hospital via ambulance and did not return for 10 days, then one might be able to use geographic information, a rough idea of age, sex, marital status, and race/ethnicity, and the approximate length of stay to guess the identity of the individual in the file. Thus, there is not one re-identification scenario to consider, but many. Re-identification risks are specific to the set of variables included in the released data.

- In step one, SSS will consider the variables in the HCA data file and whether they individually pose a risk for release. We will also consider whether combinations of variables pose a risk for release. Variables will be compared to standards used by the U.S. Census Bureau for release of public data files and by the National Center for Health Statistics (NCHS) in its publication of data. For example, the U.S. Census Bureau requires there to be at least three records contributing to every cell of a cross-classification table. If there is one record contributing to a cell, it is unique in the data file and potentially linkable. If that same person shows up as a unique count in several cross-classifications, then essentially a micro-data record can be recreated for that person, leading to even greater disclosure. If there are two records contributing to a cell and one of those people would possibly have access to the data file, then again there is effectively a unique record. Whether release of information in the HCA database violates standards such as the “rule of three” will be reported.
- In step two, SSS will compare and contrast statistical disclosure limitation methods to increase patient confidentiality. Some variables, such as exact birth date, likely will be designated as simply not releasable. Some, such as sex, assuming cross-classifications do not produce sparse tables result in small cell size, might be acceptable for release as they are. Others might be releasable if they are recoded, top-coded, aggregated, or otherwise masked. Methods such as sampling, record swapping, and noise addition will be considered. Options for synthetic data generation will be described. Development of some advanced disclosure limitation methods for regular and full-scale use will require more work and study than anticipated in this submission. This effort will, however, lay the groundwork for future extensive studies of methods of disclosure limitation. A second dimension that of course

should be considered is data utility: are the released data that have been protected for disclosure risk still useful for the analyst? As an initial measurement of utility, comparisons of marginal and joint distributions of variables before and after disclosure protection will be provided. Further, some prototypical analyses will be run on the original and on the altered data to give some idea of the impact of disclosure protection.

- In step three, SSS will develop a limited data set, based on these recommendations, for release to requestors. The data set will include documentation on the variables and any relevant limitations due to the disclosure limitation procedures involved.

2.7.6 Develop, Validate, and Implement Methods to Track Patients

Tracking patients and linking patient records is necessary to follow patients from one hospital or site of care to another, and to determine whether a re-admission to the same or another hospital occurred. The issue of re-admissions has received increasing attention as a symptom of lack of care coordination that increases costs and leads to poor health outcomes. Beginning in FY 2013, PPS hospitals have not been reimbursed by Medicare for re-admissions within 30-days for three specific conditions.

SSS developed and validated methods for tracking patients and encounters within hospitals, and we used this method for more than four years for Connecticut's Office of Health Care Access (2010–2014). We will use the medical record number to identify a patient within the same hospital. This field will also be used in conjunction with the patient control number to track all admissions and re-admission. Because the methods are already in place, we will validate them for use with the West Virginia hospitals, and following validation, will implement these methods.

Linking patient records across different sites of care is a relatively straightforward process when a unique patient identifier, such as an SSN, is available, as it is generally in the data (although in an encrypted format). However, SSN is allowed to have missing values in the data. In these cases, other data fields can be used to construct a "synthetic" patient identifier that may be used to link patient discharge records within and across different providers. Among those states submitting data to HCUP, more than 20 have encrypted unique patient identifiers that allow such linkage.

The principle behind the development of a synthetic identifier is that multiple fragments of individual information, such as date of birth, gender, first or last name (encrypted in the data), may be combined to determine, within some degree of probability, whether records taken at different times or at different facilities represent the same individual. The more unique the data elements used to create the synthetic patient identifier, and the greater the number of data elements that match, the greater the probability that records with the same identifier reference the same individual.

DHHR requires hospitals to report a medical record number for all patients; the medical record number may be used to track multiple admissions to the same provider and determine whether a re-admission to the same hospital as the index admission occurred.

A multi-stage deterministic matching algorithm, which uses a combination of patient characteristics, as defined in discharge or claims records, may be developed to create an additional field that may be used to link records within the same or across different providers. Data fields that may be useful in constructing synthetic personal identifiers include first and last

name, address, ZIP code, date of birth, and residence. SSS proposes to use an approach similar to that in use by the New York Statewide Planning and Research Cooperative System. In basic terms, the synthetic patient identifier is constructed by combining the first and last two characters of the patient first name, the first and last two characters of the patient's last name, and the last four digits of the patient's SSN. A significant amount of data editing may be required to ensure that records link on the identifier; "rules" designed to facilitate the linkage process will be identified. For example, characters must all be uppercase and, when unavailable, zeroes are used in place of the last four digits of the SSN. SSS will work collaboratively with DHHR, should DHHR be interested in exploring other approaches.

A certain degree of error, caused by either mismatched or unmatched records, should be expected in any matching algorithm. Matched records will be subject to validation; date of birth and gender will be used to verify person identifiers. Other data elements, such as address or ZIP code of residence, are available for verification purposes; however, these are unreliable as they are subject to change over time. As noted by Steiner et al. (2010), using a similar deterministic approach to construct patient identifiers for the HCUP Revisit Files, across 12 states, 90% of person identifiers were verified. Only 58% of identifiers were verified for children younger than one year of age.

Once identifiers have been constructed and records linked, readmission rates will be estimated using a timeframe (e.g., 30-day readmission) selected in consultation with HCA. Data may be estimated by state, region, hospital, and selected patient characteristics (e.g., diagnosis). We will also estimate and track patient transfers. SSS is currently using such encryption keys to track patient claims across payors under our MHCC project. SSS will use methodology that can be replicated by DHHR.

We will pay attention to uniformity of coding of admission source (e.g., another hospital, another health care facility). This will enable identification and tracking of patients who were treated and released, admitted to the same hospital, or transferred to another hospital or facility.

SSS analysts will create a summarized report of the approach used to link records and estimate readmission rates. Included in this report will be results from the verification process and findings on readmission rates. Once patients are linked, we will create a summarized report of our methodology and report on the findings.

2.7.7 Provide Tools to Conduct Analysis of Health Care Utilization, Access, Costs, and Quality

SSS's capabilities for conducting analysis of health care utilization, access, costs, and quality are detailed in **Section 2.4.1.4**. At DHHR's request, SSS can provide tools, products, report templates, software, and/or code for these analysis activities for use by DHHR and/or external partners. SSS has a strong team of SAS programming staff who are accustomed to writing well-documented code that can easily be understood and transferred from one person or organization to another, such as DHHR and/or external partners. SAS is widely recognized software that is a generally accepted tool for analyzing health care utilization, access, cost, and quality. SSS can also use SAS to create report templates, such as Excel report templates.

2.7.8 Develop New Data Submission System Enhancements, DQRs, or Analytic Reports

At SSS, we follow a guiding principle to continually assess and improve processes and methods for our clients. Our staff enjoy working closely with clients to meet the full range of needs. SSS has successfully developed and implemented several data submission enhancements over the last eight years of the current and previous contracts with HCA. As described in **Section 2.6.3**, we follow a customized Agile Methodology-based SDLC process for development activities. Following this model will allow us to continue to develop the site in an efficient and timely fashion, with the focus on reducing the burden on the user, ease of use in the site, with data quality always in mind.

As requested, SSS will develop new DQRs in a timely manner. We also have extensive expertise designing and producing useful analytic reports with a quick-turnaround time. For example, we have worked collaboratively with MHCC staff developing an array of analytic reports and briefs to suit the needs of stakeholders such as providers, payors, and consumers. We also collaborate with AHRQ research staff to produce statistical briefs and other analyses using HCUP inpatient, ED, and ambulatory surgery data. SSS will develop and implement any system enhancements, as requested. SSS would allow for integration with the existing inpatient data collection system.

2.8 Data Ownership and Use

SSS agrees with the following DHHR clauses related to data ownership and use:

- All data and any software, programming code (including code to implement editing and adjudication procedures and to create non-proprietary analytic fields), file formats, or other deliverables developed to fulfill contract requirements will be the sole property of DHHR.
- All data related to the execution of the contract will be collected on behalf of, and will remain, the property of DHHR. Any other uses by SSS are subject to data use agreements that will be granted consistent with DHHR's existing data use policies.
- SSS will provide privacy and security safeguards to protect all data from any use or disclosure for any purpose other than that described within this solicitation or expressly authorized by the HCA PM through written signed consent.

2.9 Milestones, Deliverables, and Service Level Agreements

SSS will adhere to the following DHHR stated milestones, deliverables, and service level agreements:

2.9.1 Maintain a Secure Website and Collect Data Back to September 30, 2019

As detailed in **Section 2.2**, SSS will maintain the secure web-based system for online submission and editing of hospital inpatient data by using standard best practices for SDLC management. The system uses Microsoft ASP.Net and SQL Server for data capture, editing, and audit tracking. All data submitters will access the HCA application via the internet using the HTTPS protocol. SSS protects all externally facing websites with SSL certificates, locking down site visitors' sensitive data against fraud and identity theft by providing encryption and validation. All SSS SSL certificates are configured with 256-bit encryption. SSS will have the website available to data submitters and DHHR staff within 15 working days of contract award.

SSS agrees to collect data from all data from submitters, regardless of the date of contract award and go-live dates, back to the expiration of the current contract on September 30, 2019. The HDSS web portal can accommodate this without modification, so it does not present any burden or risk to ensure the completeness of data collection for the 2019 data year.

2.9.2 Operate a Live Help Desk

SSS will continue to provide our Help Desk support by telephone to data submitters and/or their representatives for at least eight hours per day during daytime business hours, five days per week (Monday–Friday), excluding the State of West Virginia federal holidays. To ensure that DHHR staff and the hospitals have access to SSS project staff, we will provide technical assistance from 8:30–4:30 p.m. Eastern Time. Help Desk support will also be made available by email. For this contract, SSS will be adding online chat as an additional option to engage users who have questions and support the data submission process. Help Desk support will commence on the first day the secure website is available.

During the term of the current HCA contract, SSS maintained close working relationships with all the West Virginia hospitals and their vendors, which led to dramatically improved data timeliness, completeness, and quality, and to time and labor savings at HCA. Hospitals rely on this level of help and technical support. We will continue this effort under the new contract.

2.9.3 Conduct Analysis

Within 10 working days of request, SSS will conduct analyses to investigate and determine potential data quality issues, as requested by DHHR. The techniques and procedures we will use include detailed examination and interpretation of DQRs and additional diagnostic steps using SAS and SQL Server. Depending on the type of issue identified, SSS staff may create ad-hoc reports and queries to assist in the inquiry. SSS will work with DHHR to create strategies to prevent recurrence of issues, including additional training, documentation, DQRs or data validation checks.

2.9.3.1 Correct Identified Data Submission Errors

Within 20 working days of request or approval, SSS will correct identified data submission errors that are determined, cannot or should not be corrected by the data submitter, as requested and/or approved by HCA. Occasionally, there may be errors or inconsistencies in the submitted data that may not be feasible for a hospital to address. If SSS or DHHR identifies this type of error, and DHHR requests or approves for SSS to correct the data, we will accomplish this within 20 business days. SSS will provide feedback on data correction or resolution to both DHHR and the hospital.

2.9.3.2 Correct Identified Errors

Within 10 working days of a request, SSS will correct any identified errors in the system or the resulting files that are attributable to SSS. The nature of the error will determine how the staff will address the issue. DHHR will be immediately informed of any errors. Ms. Courtney Ashton, PM, will communicate any ramifications and the status of the updates to DHHR.

2.9.3.3 Certify the Disaster Recovery Plan

Within 60 days of contract award, SSS will certify that the Disaster Recovery Plan, as approved by DHHR, has been tested and proven effective. We will test the detailed plan by creating a disaster scenario that has a probability of occurring. DHHR staff will be invited to observe the test and participate in a debriefing to review performance and suggest improvements.

The Disaster Recovery Plan will be consistent with the procedures for disaster recovery outlined in SSS' Disaster Prevention and Recovery Plan, which include a combination cold site and warm site scenario for system backups, and a distributed computing model to provide employees access for business continuity. In coordination with DHHR staff, the plan will detail the priorities for recovery, and the acceptable downtime for each function of the project. It will detail the steps to be taken during the backup and protection phases and the precise steps required to restore and recover from a disaster. This will include the provision for a temporary restoration of data and services and a long-term restoration in the event of a protracted event.

2.9.3.4 Deliver a Final Complete Data File

As we have always done for the data collection under our current and previous contracts with HCA, by July 1 each year, SSS will deliver a final complete data file for the previous calendar year. All identified data quality issues will be resolved in this deliverable. The files will be submitted in SAS, and in a delimited format that is suitable for easy import into DHHR's Oracle, SQL, or another database preferred by DHHR.

2.9.3.5 Prepare an Annual Report

SSS has been submitting clear and concise annual reports to HCA each year under our current contract. SSS will continue to draft an annual report by the end of each contract year and submit it to DHHR for review and feedback. Each year's annual report will describe that year's project activities, project successes and barriers; revisions or updates to HDSS in the prior year; and any recommendations for future project and system enhancements. The final annual report will be delivered to DHHR within 30 working days of the end of the contract year.

2.9.3.6 Prepare Final and Approved Annual Detailed Work Plan

At least 90 days prior to each contract year, SSS will submit to DHHR a final and approved annual detailed work plan of key activities and projects to be completed during the year. It will also include an implementation timeline for key project activities and identify responsible team members. We will make any changes to the document based on DHHR's feedback.

2.9.3.7 Cooperate with Termination Requirements

Should the contract be terminated, SSS will cooperate with DHHR and any subsequent vendor. We will deliver any and all data, documentation, and associated work products to DHHR or its designee within 30 days of receipt of notice of contract termination.

In those cases where SSS does not win a re-compete, we will be very cooperative in providing all project work products, and staff will be available for conference calls to discuss project processes and activities. As a professional and ethical company, SSS believes strongly in supporting our clients, especially in a transition situation.

2.9.3.8 Destroy Data

In accordance with NIST *Special Publication 800-88*, or the most current version of that publication, SSS will effectively sanitize or destroy all data in the system with written authorization from DHHR, either due to the end of the contract or for other reasons. Data destruction will not begin without the written authorization from DHHR, and will be completed within 30 days of the receipt of authorization. Depending on the type of data and where it resides, the sanitization will be performed using either Secure Delete (a command line utility that implements the Department of Defense clearing and sanitizing standard DOD 5220.22-M) with seven passes or using a secure FIPS-compliant deletion or destruction method at the storage level.

Any copies of data for backup and restoration purposes will also be appropriately sanitized or destroyed.

2.9.3.9 Notify DHHR of Data Breaches

SSS is aware of DHHR's immediate incident reporting requirements for the unauthorized disclosure of PII. SSS accepts to abide by the notification procedures for PII information breach using required incident reporting procedures. SSS will report all incident reports to the following points-of-contact.

- DHHR Project Manager by phone: 304-558-7000
- West Virginia Office of Technology Service Desk by phone: 304-558-9966
- DHHR Security Team via email: DHHRIncident@wv.gov

The reporting information requirements include the date the incident occurred (or was identified), the type of PII exposed (with actual PII redacted from the reports), how the PII was compromised, the available information on the unauthorized parties, steps SSS has taken to recover the information, and any other relevant information to the incident report. SSS notification procedures are streamlined with DHHR notification procedures for the discovery or suspicion of a breach of security for the HDSS data.

SSS will notify DHHR upon its discovery of a breach of security of system data, where the use or disclosure is not provided for by this project or contract, and/or if the system data were, or were reasonably believed to have been, acquired by an unauthorized person.

If there is a suspected security incident, intrusion, or unauthorized use or disclosure of PHI in violation of this Solicitation or contract, or potential loss of system data affecting this Solicitation or contract, then SSS will notify DHHR within 24 hours by the same three methods above. SSS will immediately investigate such security incident, breach, or unauthorized use or disclosure of system data. Within 72 hours of the discovery, SSS will notify DHHR PM of (1) what data elements were involved and the extent of the data involved in the breach; (2) a description of the unauthorized persons known or reasonably believed to have improperly used or disclosed system data; (3) a description of where the system data are believed to have been improperly transmitted, sent, or used; (4) a description of the probable causes of the improper use or disclosure; and (5) whether any federal or state laws requiring individual notifications of breaches are triggered. SSS will work with DHHR to determine additional specific actions that will be required for mitigation of the breach, which may include notification to the individual or other authorities. SSS will bear all associated costs. This may include, but not be limited to costs associated with notifying affected individuals.

2.10 Invoices and Payments

SSS will submit quarterly invoices at the close of each calendar quarter for the inpatient and ED data systems and for any optional system modules ordered by authorized by DHHR in that calendar quarter.

We understand that for any optional services ordered on a Delivery Order by DHHR, SSS may submit monthly invoices one month in arrears. Invoices will be for actual hours worked not to exceed the maximum number of hours authorized on the Delivery Order.

SSS understands that invoices for the inpatient and ED data systems and for any optional system modules ordered and authorized by DHHR will be reviewed by DHHR and paid in full if it is determined that all of the services, milestones, deliverables, and service level agreements for quarter have been met. If DHHR determines that there are significant unmet milestones, deliverables, or service levels for the quarter DHHR will notify SSS and may withhold payment of up to 15% of the invoice amount for each unmet item. SSS may submit new invoices for withheld payments upon completion of the work.

Appendix A — Resumes

Courtney N. Ashton

Project Manager

Social & Scientific Systems, Inc.

Ms. Ashton has 14 years' combined experience in project management, data management, and clinical research. As the project manager (PM) on the West Virginia Hospital Inpatient Data System (HIDS) project, she is accountable for overall client satisfaction, project tasks and deliverables, resource allocation, financial management, and quality and risk management. She has developed long-term relationships with the Health Care Authority (HCA), the Department of Health and Human Resources, and hospital staff. As the PM for SSS' contract with Healthcare Cost and Utilization Project Central Distributor (HCUP CD) she is responsible for working with the Agency for Healthcare Research and Quality (AHRQ), HCUP state partners, and HCUP users regarding HCUP state and nationwide database distribution and sales. She manages operations including overseeing the dissemination of HCUP data to researchers within private and public institutions, allocating resources, overseeing technical resources, and managing and supporting the HCUP Central Distributor Ordering Website (HCUP-CDOW), which allows operations to maintain and manage orders, HCUP users, and required HCUP documentation.

Education and Certifications

- Master of Business and Administration, Business, Medaille College, 2008
- Bachelor of Science, Medical Technology, University of Maryland at Baltimore, 2002

Experience

Project Operations Manager, Social & Scientific Systems, Inc., 2014–Present

Provide client and user system, data, and documentation management, and process development in support of the West Virginia Hospital Inpatient Data System project. Responsibilities include the following:

- Serve as primary point-of-contact with the West Virginia HCA lead.
- Assume overall responsibility for the project, including day-to-day program activities; task and deliverable timeline adherence; resource allocation; and financial, quality, and risk management.
- Communicate project status with HCA lead on project activities, data submission activities, potential problems or barriers, successes, and financial status.
- Ensure all HCA and hospital submitters' inquiries and Help Desk requests are responded to in a timely fashion.
- Lead all routine and ad-hoc communications with the HCA lead.
- Responsible for long-term project success and ensures high level of client satisfaction.
- Work closely with all technical and operational staff to ensure that the technical solutions are implemented, and operational needs are identified and addressed.
- Work with Information Systems and IT Security staff to maintain system compliance and data security and privacy.

Provide client and user relations management, data and documentation management, and process development in support of HCUP CD project. Responsibilities include the following:

- Serve as the primary point of contact and company representative with the client (prime contractor) and AHRQ.

- Communicate and negotiate effectively with client(s) on status/changes to ongoing scope of work, schedules, and budget; inform client of contract issues and problems and suggest solutions in timely and responsive manner.
- Develop and monitor contract work plan schedules, milestones, cost estimates, and budgets; identify areas of risk and incorporate risk mitigation plan.
- Manage and maintain web-based customer and order tracking system.
- Manage and maintain HCUP-CDOW, an e-commerce site designed to automate the CD's data dissemination process; reimburse HCUP Partners monthly for sales of their HCUP data.
- Prepare and send monthly activity reports to AHRQ and HCUP partners (state data organizations), which include HCUP data distribution, sales, and data inquiry activity.
- Conduct monthly reviews of systems for data quality, accuracy, and completeness.
- Manage and track HCUP general and data inquiries regarding the availability, contents, structure, permissible uses of, purchasing procedures for HCUP databases, and about loading data into SAS, SPSS, and Stata.
- Develop and implement training programs for CD staff on operating and maintaining the website to provide first-level customer support.

Project Manager, KAI Research Inc., 2011–2014

Managed clinical research, data management, and health-research projects for organizations and served as primary project contact with sponsors or clients. Accomplishments include the following:

- Managed clinical research, data management, and health-research projects for organizations.
- Served as primary project contact with sponsors or clients to ensure communication is maintained and contractual requirements are consistent and met.
- Oversaw site regulatory and monitoring while facilitating communications with cross-functional teams, including reviewing clinical site monitoring visit follow-up letters and reports.
- Acted as the liaison for cross-functional teams on a daily basis, providing project status updates and reports per project schedules and as needed.
- Organized and led meetings with both internal and external project teams.
- Developed and maintained study documents including protocols, Data Management Plans, Manual of Operational Procedures, source documentation, literature reviews, and standard operating procedures.
- Oversaw and directed clinical data management activities on assigned projects including case report forms (CRFs) development, data collection, and processing, electronic data capture systems database set-up, and data quality control checks.
- Led database preparation and maintenance, including development of edit scripts and test scripts to verify that software meets project specifications.
- Prepared and maintained data management study files for inclusion in the Trial Master File or Controlled Document Binder to ensure study files are maintained in an audit ready state for review by client or regulatory auditors.
- Reviewed proposals and scope of work tasks.
- Maintained and tracked project cost, budgets, and staff allocations.
- Mentored and trained staff and team members on protocol, processes, and systems.
- Managed a team of Research Assistants and Associates.
- Prepared monthly and quarterly reports, summaries, and tables.

Clinical Data Manager Associate, KAI Research Inc., 2010–2011

Managed data management and health-research projects for organizations and served as data management lead for team. Accomplishments include the following:

- Responsible for all data management tasks, including data collection, tracking, quality assurance and checking; and reconciling data discrepancies and information using Excel, Access, and SQL programs.
- Interacted with subject matter experts during data identification processes and interpreted the clinical recommendations.
- Acted as a liaison between multi-disciplinary teams including clients, principal investigators, clinicians, sites, and executives, including facilitating teleconferences, meetings and materials, and status updates and reports.
- Responsible for managing NINDS Common Data Elements public website development life cycle and ensuring requirements and specifications for new and existing data.
- Responsible for ensuring data collection methods and website deployments were documented accurately and communicated to the programming and project team.
- Worked collaboratively with programming team to meet client requirements, while providing user support and triaged issues with the website and utilities.
- Provided project deliverables based on pre-defined criteria as per timelines.
- Trained project staff in development and testing of website requirements and specifications.
- Conducted literature searches and provided summary reports and tables for principal investigators and executive management.
- Developed data documentation for common data elements, including data entry instructions and guidelines, data dictionaries, coding manuals, and SOPs.
- Provided summary reports, tables, and graphs to project team and management.
- Designed and maintained CRFs and electronic case report forms (eCRFs).
- Generated standard edit checks, data listings, and reports.
- Provided support to internal and external team for NINDS CDEs in various disease specific areas, including traumatic brain injury, stroke, spinal cord injury, and headache.

Research Coordinator Data Manager, Frontier Science Research and Technology Foundation, 2003–2009

Managed clinical research protocols for AIDS Clinical Trials Group (ACTG) and International Maternal Pediatric Adolescent AIDS Clinical Trials (IMPAACT), and served as the laboratory data management lead for team. Accomplishments include the following:

- Responsible for all data management tasks such collection, tracking, quality assurance and checking; and reconciling data discrepancies and information using Excel, Access, and SQL programs.
- Developed and managed protocol and data management reports.
- Contributed to all phases of protocol and CRFs design with protocol team.
- Acted as a subject matter liaison between the investigators, coordinators, statisticians, research sites/laboratories, and executives.
- Communicated protocol and project's status via status reports, meetings, and conference calls to measure success and accountability, and to provide regular performance feedback.
- Collaborated with foreign and domestic cross-functional teams and executives to create applications, data monitoring and quality assurance plans, and procedures for the collection, cleaning and management of data and specimen inventory.

- Evaluated quantitative and qualitative sample collection, inventory, and assay result data, including reviewing reports using Excel, Access, and SQL programs.
- Identified and summarized patterns from expected versus projected outcomes in monthly/quarterly reports, tables, and summaries.
- Worked collaboratively with programming team to meet client requirements in developing and testing of web-based utilities and Laboratory Data Management System (LDMS), while providing user support and triaged system issues.
- Trained internal and external team on development and testing, and use of web-based utility and LDMS.
- Successfully managed data for more than 30 clinical trial protocols concurrently.
- Addressed inquiries regarding sample collection, shipping, storage, analysis, inventory, and assay and laboratory results.
- Networked with clients at quarterly conferences and provided information including protocol data (reports/tables), data management workflow, projects, and procedures status/updates.
- Managed Clinical Research Protocols/Studies that included ACTG, IMPAACT, formerly the Pediatric AIDS Clinical Trials Group (PACTG) and Pediatric HIV/AIDS Cohort Study (PHACS).

Systems and Languages

- Microsoft Office Suite (PowerPoint, Word, Excel, Access, Outlook)
- Adobe Acrobat and Connect
- SQL
- VersionOne Life Cycle software
- Electronic Data Capture (EDC) System
- OpenClinica
- LDMS
- Clinical Data Management System (CDMS)
- Clinical Trial Management System (CTMS)
- Interactive Voice Recognition System (IVRS)
- Kentico Web system
- Web-based utilities and applications
- Generic Data Loading Program

Jeffrey Schinckle**Functional/Operational Lead and Trainer**

Social & Scientific Systems, Inc.

Mr. Schinckle has been the Functional/Operational Lead on the West Virginia Hospital Inpatient Data System (HIDS) Project for the past eight years. He serves as a programmer and primary point-of-contact for technical support to 63 hospitals, and also provides project management assistance. He has developed relationships with hospital staff and their vendors, as well as gained in-depth insights on HCA's and Department of Health and Human Resources' (DHHR) data and analytic needs. As the lead programmer for the project, he enhances and maintains the Health Data Submission System (HDSS) web portal. His duties also include training and supporting users through the full cycle of data submission, validation, and reconciliation. He is a web and database programmer with more than 19 years' experience in designing, building and supporting database-driven web applications. He is an expert in ASP.Net (C#), JavaScript, HTML/CSS, and Microsoft Visual Studio and has designed and maintained databases in both Microsoft SQL Server and MySQL.

Education and Certifications

- Master of Library and Information Science, University of Washington, 2005
- B.A., History, Carleton College, 1997

Experience

Senior Programmer Analyst, Social & Scientific Systems, Inc., 2005–Present

Designs, builds, and tests database-driven web applications using ASP.Net, JavaScript, SQL, HTML, and CSS. Performed the following web application development tasks following Agile Development Methodologies for several SSS clients:

West Virginia Health Care Authority (HCA), 2011–Present

- Serves as the Functional/Operational Lead for the West Virginia HIDS project. Through the HDSS web portal, authenticated hospital users to upload patient data files that are imported and transformed to securely store the data for processing, validation, and reporting.
- Built, maintains, and enhances the HDSS web portal and database using ASP.Net, JavaScript, and SQL.
- Leads support activities for hospital users from the HDSS Help Desk, including troubleshooting data file format errors, assisting with data validation questions, working with hospitals on data quality issues in the reconciliation process using the DQRs.
- Partnered with WVHCA staff since 2011 to assist hospitals through several data formats changes (UB-04 flat file to 837I 4010, then to 837I 5010) and changes in the diagnosis and procedure collection codes. Created and updated documentation for hospital users.
- Provided training and support to new users and hospitals through documentation, conference calls, and meetings with individual hospitals.
- Created customized data quality reports (DQRs) to ensure data reliability and accuracy with SQL Server Reporting Services (SSRS).

Maryland Health Care Commission (MHCC), 2018–Present

- Serves programmer for the Medical Care Data Base (MCDB) portal using ASP.Net, JavaScript and SQL. The MCDB collects, processes, and analyzes health care claims and encounter data.
- Troubleshoots data submission and validation issues, assists with system upgrades.

National Children's Study (NCS), 2014–2016

Served as a programmer for the Vanguard Instrument Central (VIC). The VIC served as a place to create, edit, and track the regulatory progress of survey instruments for the National Children's study.

Created a single page application using ASP.Net and JavaScript to allow users to collaboratively design and review survey instruments.

Administration for Community Living (AGID), 2014–2015

Served as programmer using ASP.Net, JavaScript, and SQL to enhance and maintain the AGID website. Updated and optimized database retrieval for State Program Reports and state profiles maps.

Upgraded map interface to use the HighMaps JavaScript library. Enhanced site UI to modernize look and site functions.

U. S. Food and Drug Administration (FDA), 2006–2011

- Served as the lead programmer for web application for the registration and data management for the FDA MedSun project conferences and education programs.
- Developed an ASP.Net application template using ASP.Net and SQL Server for creating multiple instances of registration sites that can be easily customized for each use. Wrote documentation to guide the creation of new versions of the application. Trained co-workers to customize application using training materials based on the documentation.

U.S. Agency for International Development (USAID), 2005–2007

- Served as a programmer for a database and web application using ASP and SQL to capture funding of microbicide projects.
- Created prototypes for the multiple cycles of this process, and a final version of the prototype that was used as the design requirements for the development of the database.

Lead Web Developer, Vehicle Donation Processing Center, 2003–2005

- Worked collaboratively in a team to design, test, build, and maintain charity car donation websites using PHP, HTML, CSS and MySQL.
- Designed a MySQL database used to generate site content and track vehicle donations.

Independent Contractor, 2001–2005

- Designed, built, and tested three online scientific journals as part of the Plant Management Network using HTML, CSS, ASP, ColdFusion, and a SQL database.
- Worked independently to create internet forms for submission, administration, and searching a SQL database of plant science websites through a web interface.

Computer Systems and Languages

- Database Applications: MS SQL Server, My SQL, Basic Oracle, Basic PostgreSQL
- Programming Languages and Frameworks: ASP.Net, ASP.Net Core, C#, VB.Net, JavaScript (Backbone, HighMaps, React, Knockout, jQuery), CSS, HTML, MSSQL Language, SQL SSRS, Basic PHP, Basic Java, Basic Python, Basic Tableau
- Software Applications: Visual Studio.Net, SQL Server Management Studio, Sublime Text, Adobe Photoshop, MS Access, MS Excel, MS PowerPoint, MS Word, Visio
- Version Control: Microsoft TFS, Git
- Web Servers: MS IIS, Apache and website development and maintenance, CMMI

Lorena Ortiz**Programmer****Social & Scientific Systems, Inc.**

Lorena Ortiz has more than 13 years' experience as a research data analyst and programmer. Ms. Ortiz currently serves as a programmer analyst on two projects in the field of health care policy research, including the West Virginia Hospital Inpatient Data Systems (HIDS) project. The focus of these projects is on using statistical analysis system (SAS) to assess and improve upon the quality of claims and enrollment data, preparing data for use by the research community and creating analytic files and generate statistics to support health care cost and utilization analyses. Ms. Ortiz has managed the development of data collection procedures and instruments, conducted data analysis, and written analysis of data output and tables. She has substantial experience using statistical software packages, including SAS, SPSS, STATA, and R.

Education and Certifications

- MS, Statistics, California State University, 2007
- BS, Statistics, California State University, 2003
- BA, Political Science, University of California, Santa Barbara, 2000
- SAS Certified Base Programmer for SAS 9, 2012

Experience**Senior Programmer Analyst II, Social & Scientific Systems, Inc., 2017–Present**

Specific project experience includes the following:

West Virginia Health Care Authority (HCA), June 2017–Present

SSS provides services including data collection, processing, and editing of inpatient hospital discharge billing data from West Virginia hospitals. Ms. Ortiz works on various tasks including:

- Performs daily maintenance and tracking of hospital submissions.
- Provides the client with two weekly deliverables that provide a snapshot of the data.
- Creates the adjudicated analytic files containing submitted fields, appropriate groupers and adjustment factors, and other demographic, cost, clinical, and quality fields.
- Maintains the SAS programs that create the adjudicated files. This includes quarterly and yearly updates to the inputs into the programs, and all updates relayed to us by the HCA.
- Responds to data requests from HCA from outside clients and delivers in a timely manner.
- Responds to requests from HCA for ad hoc reports and analyses throughout the year.

Maryland Health Care Commission (MHCC): Data Management and Analytic Support for the Maryland Medical Care Data Base (MCDB)

- Uses SAS and Microsoft SQL Server to create custom reports of data trends and characteristics to assess quality of data (e.g., consistency between data elements, correct use of encrypted identifiers across time, reasonableness of trends, adherence to sample definitions).
- Crafts specifications for statistical reports generated by the system; harnesses in-house and accumulating knowledge of data submission issues to recommend new data checks in the portal; assists in prioritizing and scheduling the development of new reports and of modifications, bug fixes, and improvements to the system.
- Documents for each payor their requirement variances, market information, and information regarding claims platforms to calibrate and focus reviews of submissions by other staff.
- Verifies the accuracy of statistics shown the portal.

On an as-needed basis for various contracts:

- Creates, modifies, and refines SAS programs to execute analyses of health care payment policy, health care quality, and access to health care.
- Reviews specifications provided by external clients for clarity, completeness, and sound utilization of data sources.
- Prepares analytic data files for release to the research community according to specifications provided by clients; makes recommendations to data stewards regarding coding systems for individual variables and data clean-up algorithms to maximize usability of files by the customer; generates information for inclusion in documentation and codebooks.
- Validates and verifies results of data processing and statistical analyses.

Medicare Payment Advisory Commission (MedPAC), June 2017–Present

Ms. Ortiz works on various tasks requested by MedPAC. Data files that are used in tasks are either provided by MedPAC, available via CMS, or created by S-3. SAS programming tasks and analyses include:

- Updates Medicare readmission measures to include the planned readmission algorithm expansion of conditions covered under the program. (*Data Files: Standard Analytic Files (SAF), Denominator Files*)
- Creates analysis to identify the number of hospitals that have opened and closed in recent years, including the number of unique providers submitting IP claims on the annual MedPAR file. (*Data Files: Provider of Services (POS), Inpatient Prospective Payment System (IPPS) Final Rule Impact File, CMS Hospital Cost Reports, Critical Access Hospital, MedPAR Inpatient Files, Urban Influence Code County Crosswalk files, Core Based Statistical Area (CBSA) County Crosswalk files*)
- Creates a computation of episode costs for claims, running regression models to compute risk scores, and computing agency level average risk scores. (*Data Files: Home Health Standard Analytic Files (HH SAF), OASIS survey data*)
- Models the impact of two options for increasing payments for primary care and psychiatric services. (*Data Files: 100% physician/supplier procedure summary*)
- Creates analysis of Inpatient Rehabilitation Facility (IRF) standardized costs per case. (*Data Files: Standard Analytic Files [SAF]*)
- Performs calculation of the share of total allowed charges received by practitioners that were for primary care services, by specialty. (*Data Files: 100% physician/supplier procedure summary, physician fee schedule*)
- Creates analytic file linking inpatient psychiatric claims with Part D claims and the beneficiary summary file. This file was used to analyze whether IPF users fill prescriptions for psychiatric medicines within 30 days after discharge from the IPF. (*Data Files: Part D Drug Event, Beneficiary Summary, SAF*)
- Creates a summary of how payment penalties affect hospitals by hospital characteristics. (*Data Files: CMS Hospital Cost Reports, Hospital Margins, Hospital Acquired Condition (HAC) penalty, Inpatient Prospective Payment System (IPPS) Final Rule*)
- Creates a computation of weighted quality measures for measures of function (walking and transferring) and hospitalization and ER use. (*Data Files: POS, claims file*)

Research Associate, IMPAQ International, LLC, 2011–2017

Specific project experience includes the following:

Analytic and Technical Assistance Support for Exchange Operations: Centers for Medicare and Medicaid Service, 2014–2017

Provided support to the Center for Consumer Information and Insurance Oversight (CCIIO) in their primary operational activities, including the certification and recertification of Qualified Health Plans (QHPs). Provided data analysis across various tasks under the CCIIO contract.

- Served as Lead Data Analyst to conduct Quality Assurance (QA) of Landscape files and provided support and guidance to the team. The main objective of this activity was to provide (on a monthly basis) automated QA checks on all Landscape data using SAS. In addition, Ms. Ortiz dealt with client interactions and provided client with a monthly summary memo.
- Served as Lead Data Analyst on the Formulary Outlier Review (FOR) process. The main objective of this activity was to conduct a quality assessment of the primary review results and review issuer's Supporting Documentation and Justification forms related to the FOR using SAS.

Reading Apprenticeship: Across the Disciplines: U.S. Department of Education, 2016–2017

The study assesses implementation and impact on teacher practices and student reading outcomes in 50 middle schools in multiple states.

- Served as project manager (PM) responsible for LOE predictions, project timelines, client interactions, client invoicing, hiring of consultants, team meetings, and junior staff.
- Served as Lead Data Analyst responsible for collection, processing, and analysis of student and teacher level data for the impact analyses, including surveys.

Programmer Analyst, Berkeley Policy Associates, 2006–2011

Specific project experience includes the following:

Evaluation of the Quality Teaching for English Language Learners: U.S. Department of Education, 2006–2011

This school-level random assignment study evaluated the effectiveness of a three-year professional development program conducted by WestEd for middle school teachers in Southern California. This study successfully met the What Works Clearinghouse (WWC) standards without reservations.

- Served as Lead Quantitative Analyst, with responsibilities that included assisting in the development of the study plan and survey instruments; coordinating and conducting site visits; collection and processing of student level administrative data; impact analysis; and report writing.

Evaluation of the International Organization for Migration's (IOM) counter-trafficking interventions/activities: Funded by the Norwegian Government both at country and international level, 2009–2010

The purpose of this study was to analyze existing administrative databases aimed at tracking the movement of human trafficking across key countries. In addition, trafficking victims were asked to complete in person surveys detailing the extent of their experiences.

- Analyzed both administrative and survey data and worked with a team of experts to identify key findings that would contribute to the elimination of trafficking practices in key countries.

Professional Affiliations

- American Statistical Association
- American Educational Research Association
- CLP CORO Fellow 2006
- Former Board Member, Bay Area Parent Leadership Action Network
- Former Board Member, Berkeley Policy Associates

Computer Systems and Languages

- SAS (Certified Base Programmer for SAS 9); SPSS; STATA; R.
- Microsoft Office

Relevant Publications

Acknowledgement in:

Report to the Congress: Medicare and the Health Care Delivery System, MedPAC, June 2018.

V. Chan & L. Ortiz. (2016). *Building macros for quick survey scoring*. Paper 11521-2016.

<https://support.sas.com/resources/papers/proceedings16/11521-2016.pdf>.

Po-Lun Chou**Programmer**

Social & Scientific Systems, Inc.

Mr. Chou has more than 17 years' experience in statistical analysis system (SAS) programming. At SSS, he specializes in data management, report generation, quality control systems, and web-based systems and applications for various clients, including the West Virginia Health Care Authority (HCA), Medicare Payment Advisory Commission (MedPAC), the Maryland Health Care Commission (MHCC), the National Institute on Aging (NIA), the American Nurses Credentialing Center (ANCC), and the National Children Study (NCS), and CGI.

Education and Certifications

- MS, Applied and Engineering Statistics, George Mason University, 1997
- BS, Statistics, National Cheng-Kung University, 1992
- Certification, JAWS 13, Freedom Scientific, 2011
- Certification, Blaise Basic Training, Blaise Services at Westat, 2002

Experience

Programmer Analyst, Social & Scientific Systems, Inc., 2002–Present

For the MedPAC project, Mr. Chou provides programming support and descriptive statistical reporting using Medicare data under the direction of the project manager. Also works on the tasks per clients' requests.

For the West Virginia Hospital Inpatient Data System (HIDS) project, he provides programming and quality control activities, including:

- Helps to modify programs to resolve issues when needed.
- Provides quality control support on each task received to ensure database and report integrity. Also helps to perform quality control checks on annual adjudication database and report.
- Becomes the backup person when needed.

For the MHCC project, he provides programming, quality control, and documentation support activities, including:

- Provides descriptive statistical reporting based on the Maryland annual databases; the results are part of the information that are used to evaluate the health care policy.
- Provides analytical programming support for the annual MHCC Practitioner Pricing Trends Report and State Health Expenditure Accounts report.
- Supports the production of the annual Maryland Private Payor Medical Care Professional, Provider, Pharmacy, Institutional, Dental, and Medicare databases.
- Develops quality control systems as required to ensure data integrity. Tasks include data downloading, data verification, program modification, database development, descriptive statistical reporting, data backup and archiving, and database documentation.

For the NCS project, modifies existed programs or creates new programs to read in different data and generate statistical reports. Also helps to modify programs to resolve problems or errors if there're any.

Additional projects and responsibilities include the following:

- Provides programming support and quality control for ANCC project. Tasks include program creation, data verification, statistical analysis, and database creation. Provides analysis results, which are used to adjust the data collection method. Translates existing SPSS codes into SAS codes.

- Provides programming support for several NIA projects. Tasks involve creating and modifying programs, ensuring quality control for data sets based on computer-assisted diagnostic interviews, preparing error reports, updating final data sets based on client comments, and writing memoranda for each data set.
- Provided programming support and quality control for CGI project, including working with colleagues to set up the procedures and writing programs to read records from different data sources, compare the records, and then return the results to Oracle database.

ADP/Integrated Medical Solutions, 1998–2001

Used SAS programs to perform all phases of data collection, data analysis, data comparison, report generation, and data conversion. Implemented data validity checks to ensure data quality. Wrote specifications for data key entry or table layout. Resolved data problems with the data providers. Prepared data processing documents for a Workers' Compensation Fee database. Used Oracle scripts for ICE software by loading data into an Oracle database. Performed functional testing for IMPACT software.

PharMark Corporation, 1997–1998

Used SAS programs to collect Medicaid data, solve data problems, analyze results, and explore the relationships between variables for a New York State long-term care project and the National Health and Nutrition Examination Survey III and hypertension project.

Systems and Languages

- Operating Systems: Unix
- Programming Languages: SAS, HTML, MatLab, SQL Language
- Software Applications: Macromedia Dreamweaver, MS Access, MS FrontPage, Watchfire, JAWS

Relevant Publications

Practitioner Utilization: Trends Among Privately Insured Patients, 2005–2006. Maryland Health Care Commission, May 2008.

Practitioner Utilization: Trends Among Privately Insured Patients, 2004–2005, Maryland Health Care Commission, May 2007.

Practitioner Utilization: Trends Among Privately Insured Patients, 2003–2004. Maryland Health Care Commission, Apr. 2006.

State Health Care Expenditures: Experience from 2004. Maryland Health Care Commission, Jan. 2006.

Practitioner Utilization: Trends among Privately Insured Patients, 2002–2003. Maryland Health Care Commission, Mar. 2005.

State Health Care Expenditures: Experience from 2003. Maryland Health Care Commission, Jan. 2005.

Practitioner Utilization: Trends for Patients in Traditional Medicare, 2001–2002. Maryland Health Care Commission, Mar. 2004.

State Health Care Expenditures: Experience from 2002. Maryland Health Care Commission, Jan. 2004.

Practitioner Utilization: Trends for Patients in Traditional Medicare, 2000–2001. Maryland Health Care Commission, Mar. 2003.

State Health Care Expenditures: Experience from 2001. Maryland Health Care Commission, Jan. 2003.

Practitioner Utilization: Trends Among Privately Insured Patients, 1999–2000. Maryland Health Care Commission, Mar. 2002.

Harsh Wadhwa**Web and Database Developer and Data Analyst**

Social & Scientific Systems, Inc.

Mr. Wadhwa has more than 19 years' experience in developing and managing web-based and database applications, data migration, and one years' experience working with medical data for Maryland Health Care Commission (MHCC) and Agency for Healthcare Research and Quality (AHRQ's) Healthcare Cost and Utilization Project (HCUP). His major accomplishments include process improvement, reporting, database/application optimization, database migration, SQL tuning, performance tuning, software development, agile development and database administration.

Education and Certifications

- MS, Computer Science, College of Staten Island (City University of New York), 1999
- BS, Computer Science, Delhi University (India), 1996
- Database Administration for Microsoft SQL Server, 2003
- Database Design and Implementation for Microsoft SQL Server, 2003

Experience

Position, Social & Scientific Systems, Inc., 2019–Present

Support web- and database-driven applications for reporting and analysis of medical billing data for MHCC and AHRQ projects in a timely manner to government clients.

- Develop, troubleshoot, and maintain complex procedures, views, database structures in SQL Server used for various interfaces and reports.
- Develop and troubleshoot complex ETL processes for integrating data from input files to various tiers including DataMart, Data Warehouse, and OLTP.
- Develop database improvements to processes data for analytics use and supporting ad-hoc reports from database and web-based applications.
- Troubleshoot issues related to performance for web-based applications supporting end users to query large datasets.
- Improve performance of database applications by detecting performance bottlenecks and developing solutions in a timely manner.
- Document current process flows.
- Perform data uploads and processing for AHRQ HCUPnet data that health care statistics and information for hospital inpatient, emergency department, and ambulatory settings, and population-based health care data on counties.
- Support data loads to Data Warehouse and Data Mart for MHCC data.
- Provide ad-hoc reporting and customized reports for MHCC medical billing data.
- Prepare and provide quarterly and yearly data reports.
- Generate Analysis data using Microsoft Business Intelligence that provided Key Performance Indicator to the Project's executive steering committee.
- Customize reports using SQL SSRS for reviewing data submission set summaries.

Sr. SQL Developer, Client: Consumer Product Safety Commission (CPSC), 2017–2018

Designed, developed, and supported large-scale databases for web-based applications and data repository.

- Provided support for U.S. Consumer Product Safety Commission (CPSC) internal and external systems (Risk Management System (RMS), Dynamic Case Management (DCM),

Data Repository (DR) and saferproducts.gov website) to manage product complaints, recalls, and related cases data.

- Responsible for developing, monitoring, and administration of ETLs (Data Extraction, Transformation, and Loading) and Master Data Services (MDS) in SQL Server Integration Services (SSIS) to support centralized DR for data from multiple data sources.
- Provided Database Administration for development and production Microsoft SQL Server.
- Supported development teams with database-related tasks including implementation of database objects, automated database backups/restoration, maintained database jobs, wrote or updated complex stored procedures, supported ETL updates and support Service Broker.
- Administered and restructured SQL Server Service Broker objects and stored procedures code for data transfer between internal CPSC databases.
- Worked on resolving performance issues by detecting performance bottlenecks and to implement/test solutions.

Database Engineer, Logis-Tech, Inc., 2000–2016

- Provided lead developer support for both internal and external client projects with the database administration, implemented and maintained database-based applications, and provided support for custom in-house and commercial off-the-shelf (COTS) applications/software.
- Responsible for specifications, development, and execution of tasks necessary to ensure database development, maintenance, and documentation projects were completed on time within budget, and with metrics indicating a high degree of deployment success.
- Developed maintenance and recovery plans, custom coded user required functions, reports and web interfaces for applications.

Internal Projects

Management Automated Reporting System (MARS), August 2000–May 2016

- Acted as lead developer to design and enhance web- and database-based applications for internal users and to provide guidance to users on how to best meet customer requirements
- Supported in-house thin and thick applications development consisting of custom database.
- Performed database administration and development in PostgreSQL 9.2 and 9.4, and MS SQL Server 7, 2000, 2005, 2008, 2008 R2, 2012, and 2014.
- Performed migration from Microsoft SQL Server to PostgreSQL.
- Wrote ETLs and performed manual data updates.
- Implemented database objects (including tables, triggers, views and functions).
- Administered PostgreSQL database for development and production environments.
- Implemented database objects including tables, triggers, views, stored procedures, and functions to support business processes.
- Provided customized reporting solution in SQL SSRS for managing regional and customer-based data.
- Supported data migration from/to versions of SQL Server, database software installation, and upgrade, ensure health of databases, documentation and reports.
- Worked with internal clients to manage software changes. Supported other developers by designing database objects, processes implementation, documentation, testing, quality assurance, and ensuring up time.

- Managed data storage of data from 300+ different customer sites (locations) from controlled dehumidification storage spaces. Generated automated alerts to detect equipment related issues to allow for technicians to review and resolve in a timely manner.
- Implemented custom reports for internal users and customers within U.S. and overseas locations.
- Supported web-based application suite to provide access to data using the Role Based Access Control (RBAC) and Attribute Based Access Control (ABAC).
- Created automated processes that were re-written over time to support changes to business rules and to support newer control systems that gather data at customer sites.
- Performed integration data modeling and coding to implement new features in MARS to work with MP/2 Maintenance Software and PICS application.
- Worked with MS Excel and MS Word to generate customized monthly reports. Reporting Services reports for management to regional and customer-based reports.

MP/2 Maintenance Software, August 2000–May 2016

- COTS product for managing equipment, inventory, purchasing, work orders, technicians, and technician tasks.
- Configured and extended package to allow web access that supported worldwide field service group with their workflow and for managers to track equipment repair contract periods.
- Administered database and application; migrated between different versions of MS SQL Server; and provided end user support.

Guardian (data download software) Applications, August 2000–May 2016

- Performed data modeling and data cleansing to store data from locations worldwide to a centralized PostgreSQL database and then onto MARS application database.
- Performed all database development related tasks and administration of the PostgreSQL database.

Photographic Information and Cataloging System (PICS), August 2000–May 2016

- Developed to store photo files in a centralized location and relating them to keywords and project/customer location in MARS software. It made photo files easily searchable with their assigned keywords and project/location.
- Performed data modeling and wrote MS SQL Server code for two generations.

External Projects

USMC IUID (Item Unique Identification) Compliance, Mar. 2011–Sept. 2014

- Provided data metrics for IUID compliance indicators for Contracts, Plans, and Depot Statement of Work (SOW). It provided ongoing stats for Commands to Unit level for usage of IUID to customer on monthly basis.
- Individually managed all tasks for project including Extract, Transform, and Load (ETL) data, implementation of complex logic and algorithms in MS SQL Server Stored Procedures, implementation of SQL Server Integration Services (SSIS) data import packages, performed data modeling to support data storage, and provided user friendly reports in MS Excel and storage of historical data for audit and comparison purposes.

USMC IUID (Item Unique Identification) Temporary Data System (TDS), May 2011–Sept. 2014

- Provided support for TDS databases and applications that supports the IUID marking for legacy equipment. TDS software included TDS databases in Oracle 11g Enterprise Edition,

TDS Mobile scanner software with MS SQL Server 2.0 Compact Edition (CE) database, TDS Desktop windows-based application, and TDS website connected to Oracle 11g Enterprise database.

- Worked as team member with Oracle 11g Enterprise database software setup in Red Hat Linux OS environment. Performed server administration and maintenance for production and development environments. Performed Oracle Database Administration tasks including Oracle software installation, database setup and import, user management, monitoring, troubleshooting database related issues while working with other team members and Oracle support, setting up database jobs, managing database backups, managing data import and export, managing indexes, managing database file sizes, moving/restoring databases/data dumps and configuring connections between Oracle databases.
- Performed Database Engineering tasks including data modeling for new development and updates to existing development, ongoing troubleshooting of data, data cleansing, monitoring of data growth, query optimization, data modeling, implementing and updating database objects (stored procedures, triggers, views, etc.), designing reports and data uploads/extract/modifications.
- Assisted with managing and implementing TDS software changes throughout the user requirements management process which included analyzing process changes, analyzing changes to business rules, analyzing software changes, implementing changes as a team member, working as team member to perform changes at database level in PL SQL or front-end GUI where applicable, writing test cases, working as team member to perform testing and quality assurance, coordinating changes with end users and ensuring other related tasks such as documentation updates are completed in a timely manner.
- Performed major rewrite of the TDS website working as a team member to enhance existing features and implementing new features to support ongoing changes in the business rules in the Oracle database and in MS .Net technologies.
- Assisted with TDS monthly report data gathering and analyses to provide customer with stats on IUID marking compliance, data issue summary and other benchmarks. Implemented Oracle database objects to compile report data and updated objects per changes to business rules.
- Supported TDS applications and databases migration effort from private network to government run servers in a .mil environment. Provided documentation of current state of TDS software, participated in scrum meetings and traveled to customer location for providing knowledge of TDS environment and its functionalities.

Database Administrator, ORBCOMM, Inc., 2000–2000

- Administrated database servers used for tracking mobile trailers via satellite.
- Provided user support for adding new features to the applications.
- Administered VANTAGE database.
- Provided data analysis to aid in the further examination of failed equipment.
- Created complex in-depth reports for management and end users with Crystal Reports.
- Supported ongoing development to enhance the current capabilities of the existing system.
- Established database backup routines to ensure smooth, timely disaster recovery.
- Provided applications enhancements for clients to interact with the database to generate reports.

Database Administrator, DowJones, Inc, 1999–2000

- Administrated Microsoft SQL database servers and Symbology database.

- Worked on database system used for tracking ticker symbols and other information for stocks, mutual funds, and bonds.
- Performed data modeling and design of the new database and enhancements. Implemented and designed data migration processes for moving Symbology database from Oracle to Microsoft SQL Server 7 platform. Then performed migration and added additional features.
- Provided team support with SQL for reports and data manipulation procedures.
- Established FTP site for data distribution for internal Dow Jones departments.
- Established and tested database backup routines to ensure recovery.
- Implemented replication mechanisms between SQL Servers to allow for an always ready standby server using Snapshot, Transactional, and Merge Replication.

Computer Systems and Languages

Database Systems:

- Oracle Database; Microsoft SQL Server Database

Analytics software:

- Microsoft Business Intelligence; SQL SSRS; Tableau

OS:

- MS Windows; RedHat Linux.

Programming Languages:

- Visual Basic; Visual Basic.Net; ASP; ASP.Net; SQL; PL/SQL; SQL PLUS; C#, C, C++; Bash Scripting; MS DOS Scripting; Power Shell Scripting

Niranjana Kowlessar**Data Analyst****Social & Scientific Systems, Inc.**

Dr. Kowlessar is a health services researcher with a decade's experience successfully leading and managing the provision of analytic and technical support to clients including the Centers for Medicare & Medicaid Services (CMS), Agency for Healthcare Research and Quality (AHRQ), and the Maryland Health Care Commission (MHCC). She is skilled in both quantitative and qualitative research methods, and in the use of large claims and administrative databases to address policy issues. Dr. Kowlessar's expertise includes health care delivery transformation and access to care for vulnerable populations.

Education and Certifications

- PhD, Health Policy and Administration, University of Illinois, Chicago, 2009
- MA, Economics, University of Illinois, Chicago, 2003
- BA, Economics (cum laude), Knox College, 1999

Relevant Professional Experience**Senior Research Scientist, Social & Scientific Systems, Inc., 2012–Present****Centers for Medicare and Medicaid Services (CMS)**

- Serves as project director overseeing a mixed-methods evaluation of a Section 1115 Medicaid expansion demonstration; leads and executes the development and administration of surveys to Medicaid beneficiaries; manages all related subcontractors, budgets, and deliverables.
- Served as project director overseeing the provision of analytic and programming support to CMS staff for the analysis of potentially misvalued services under the Medicare Physician Fee Schedule; served as task lead for the maintenance of the Direct Practice Expense Inputs (DPEI) database for CMS containing key data resources including values for clinical labor, supplies, and equipment that served as inputs for estimating relative values of Medicare services and associated Medicare payment levels for public release.
- Key contributor to a mixed-methods evaluation of the Center for Medicare & Medicaid Innovation (CMMI) Accountable Care Organizations (ACO) initiative, under subcontract to L&M Policy Research. Contributed to the development of evaluation plans and data collection tools including surveys and interview guides.

Maryland Health Care Commission: Senior Analyst, Data Management and Analytic Support for the Maryland Medical Care Data Base, 2012–2019

- Manages development of health policy briefs and chartbooks on cost and utilization trends in the privately insured market, including an analysis of impact on providers, patients, and insurers of a Maryland legislative requirement for assignment of benefits based on private payor claims database.
- Oversees programming staff and provides analytic guidance for reports.

Agency for Healthcare Research and Quality (AHRQ): Task Manager and Senior Analyst, Healthcare Data Analytics and Statistical Products, 2012–2019

- Oversaw analytic and other tasks for AHRQ related to the Healthcare Cost and Utilization Project (HCUP), including data receipt and processing of the HCUP databases.
- Authored/co-authored several statistical briefs based on analyses of HCUP data.

- Task Manager for American Recovery & Reinvestment funded task providing technical assistance to AHRQ grantees enhancing the clinical content of and improving race/ethnicity identifiers in statewide all-payor hospital-based HCUP databases. Managed task reporting, timelines and deliverables.

Researcher, Truven Health Analytics, 2009–2012

- Led workplace health and productivity research studies for federal, state, and commercial clients, including research design, quantitative and qualitative data collection, and analysis of health and financial outcomes.
- Managed costs for projects ranging from \$50,000 to \$250,000, staffing resources, and production of deliverables such as reports, technical memoranda, peer-reviewed manuscripts, and presentations.
- Performed quantitative and qualitative research and analysis for projects including the HCUP, the Substance Abuse and Mental Health Services Administration Spending Estimates, and CMS.
- Contributed to methodological development and ongoing revision of Thomson Reuters “Workforce Wellness Index,” which measures the health care cost impact of behavioral risk factors in employed populations using medical claims and health risk assessment data.

Research Assistant, Institute for Health Research and Policy (IHRP), 2000–2009

- Under direction of IHRP researchers, conducted research on impact of economic, policy, and other environmental influences on health behaviors such as tobacco and alcohol use.
- Explored the effect of tobacco advertising on beliefs about smoking and intentions to quit by analyzing longitudinal data on smokers from the International Tobacco Control Policy Evaluation Survey (ITCPES) using fixed and random effect models, difference estimators, and probit models in Stata; conducted psychometric testing by constructing scales for variables in analytic dataset, and using factor analysis to test for scale validity and reliability.
- Examined the impact of tobacco quitline advertising on young smokers’ knowledge and perceptions of helpfulness of quitlines by analyzing data from the National Youth Smoking Cessation Survey (NYSCS) and Nielsen Media Research advertising ratings data; analyses included model diagnostics, testing, and logistic regression modeling.
- Co-authored a study examining trends in the tobacco retail environment post–Master Settlement Agreement (MSA); and aggregated and analyzed data on the retail environment in stores selling tobacco/alcohol products for project ImpacTeen.

Relevant Publications

Selected from more than 15 publications

Pine, M., Kowlessar, N. M., Salemi, J. L., Miyamura, J., Zingmond, D. S., Katz, N. E., & Schindler, J. (2015). Enhancing clinical content and race/ethnicity data in statewide hospital administrative databases: Obstacles encountered, strategies adopted, and lessons learned. *Health Services Research*, 50 Suppl 1, 1300–1321.

Kowlessar, N., Zhao, L., & Schur, C. (2014). The Evolving Landscape of Health Care Reform and Health Care Spending in Maryland (Spotlight on Maryland). Maryland Health Care Commission.

Kowlessar, N., Zhao, L., & Schur, C. (2014). Payment for Professional Services in Maryland (Spotlight on Maryland). Maryland Health Care Commission.

- Kowlessar, N., Zhao, L., & Schur, C. (2013). Health Care Spending in Maryland Prior to Implementation of the Health Benefit Exchange (Spotlight on Maryland). Maryland Health Care Commission.
- Mark, T., Tomic, K. S., Kowlessar, N., Chu, B. C., Vandivort-Warren, R., Smith, S. (2013). Hospital readmission among medicaid patients with an index hospitalization for mental and/or substance use disorder. *The Journal of Behavioral Health Services & Research* 40(2): 207–221.
- Kowlessar, N. M., Jiang, H. J. (AHRQ), & Steiner, C. Hospital stays for newborns, 2011. HCUP Statistical Brief #163. October 2013. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb163.pdf>.
- Kowlessar, N. M., Goetzl, R.Z., Carls, G.S., Tabrizi, M.J., Guindon, A. (2011). The relationship between eleven health risks and medical and productivity costs for a large employer. *Journal of Occupational and Environmental Medicine* 53(5): 468–477.
- Stranges, E., Kowlessar, N., & Elixhauser, A. Components of growth in inpatient hospital costs, 1997-2009. HCUP Statistical Brief #123. November, 2011. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb123.pdf>.
- Stranges, E., Kowlessar, N., & Davis, P. H. Uninsured hospitalizations, 2008. HCUP Statistical Brief #108. April 2011. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.hcupus.ahrq.gov/reports/statbriefs/sb108.pdf>.
- Kassed, C., Kowlessar, N., Pfuntner, A., Parlato, J., & Andrews, R. M. The case for the present-on-admission (poa) indicator: Update 2011 methods report. HCUP Methods Series Report # 2011-05. November 1, 2011. U.S. Agency for Healthcare Research and Quality. <http://www.hcupus.ahrq.gov/reports/methods/methods.jsp>.
- Kowlessar, N. M., Henke, R. M., Goetzl, R. Z., Colombi, A. M., & Felner, E. M. (2010). The influence of worksite health promotion program management and implementation structure variables on medical care costs at PPG industries. *Journal of Occupational and Environmental Medicine* 52(12):1160–1166.

Taharat Khan**Trainer-Support**

Social & Scientific Systems, Inc.

Ms. Khan, a Master of Public Health graduate, offers strong project management and data analytic experience with both the Centers for Medicare & Medicaid Services (CMS) and Maryland Health Care Commission (MHCC). She is involved in quality and claims-based monitoring through her work with the Frontier Community Health Integration Project (FCHIP) and MHCC. For the FCHIP project, she provides routine technical assistance to hospitals on data collection and data submission inquiries and data accuracy. Her experience includes tracking and reviewing data submissions to secure websites; analyzing discrepancies in data utilizing SAS and SQL; developing project management tools; writing quarterly and annual reports, agendas, and meeting summaries; and leading meeting/event scheduling and logistics. Additionally, her background includes working with diverse health care related stakeholders including hospital leadership, clinic staff in rural areas, Latino communities, and health care payors. She also participated in dynamic public health projects including a policy analysis focused on reducing the opioid epidemic whose team was recognized with the U.S Department of Health and Human Services' Secretary's Award for Distinguished Service. Other areas covered by her experience are qualitative and quantitative research.

Education and Certifications

- MPH, Community and Behavioral Health, The University of Iowa College of Public Health, 2015
- BA, Double Major in Health Sciences and Psychology, The University of Iowa, 2013

Experience

Research Associate, Health Policy and Data Analysis Group , Social & Scientific Systems, Inc., 2018–Present**Frontier Community Health Integration Project Demonstration Implementation and Monitoring Support (Centers for Medicare & Medicaid Services)**

- Monitor hospital data submitted to secure website including checking for personally identifiable information and quality checking data.
- Follow-up with hospitals when there are inconsistencies/errors in submitted data to gain clarification or resubmission.
- Support logistics for training and technical assistance webinars with 80–100 hospital and federal government agency leadership on billing and reimbursement, hospital quality data, and quality measure submission practices.
- Assist the hospital leadership, quality staff, and nurse/clinical staff on uploading data to secure website, facilitate data submission trainings, send reminders to hospitals to upload data, and manage one-on-one hospital-level data inquiries.
- Report analysis and data visualization to predict data in the quarterly and annual reports.
- Support data collection from 10 hospitals in three states regarding ambulance, telehealth, and swing bed interventions.
- Update project calendar and technical assistance (TA) call schedule.
- Develop agendas and take notes during monthly stakeholder meetings (CMS COR, CMS Evaluation COR, Health Resources and Services Administration (HRSA) COR, and HRSA's FCHIP TA contractor) and monthly hospital TA calls, and distributes note to attendees.

- Contribute to writing 10 quarterly and annual reports to include interview summaries, hospital level quality measures, and intervention specific measures.
- Oversee coordination of quarterly and annual monitoring reports for 10 hospitals-maintaining production schedule and calendar, report status, follow-up with writers, hospital clarification follow-ups, and quality assurance reviews.
- Develop hospital CEO and quality management leadership phone interview guides.

Maryland Health Care Commission

- Oversaw status of each submission and next steps for more than 30 health insurance payors' submissions to the Maryland Medical Care Database (MCDB), a secure database built for payor submissions.
- Review Maryland private health insurance payors' reports submitted on a quarterly basis to the MCDB (consisting of more than 50 payors), which contributes to measuring costs and utilization, policy analyses, and evaluations of demonstration programs all for the state of Maryland serve as a decision support mechanism for state partners.
- Resolve technical errors and payor submission discrepancies through data analysis in SQL and SAS.
- Facilitate the retrieval of SAS and SQL logic from programmers to answer payors' inquiries
- Report to and communicate directly with the Maryland Health Care Commission to ensure payors' reports are in compliance with the regulations for the state of Maryland and the Maryland Medical Care Database Submission Manual.
- Liaise directly with Maryland payors when solving issues.
- Analyze discrepancies in payors' health insurance submissions by reviewing previous quarter submissions which included enrollee eligibility, types of medical services, hospital bills, provider information, and enrollee demographics.
- Utilize Microsoft SharePoint to create a Standard Operating Procedure on how to analyze Maryland health insurance data submissions, update meeting notes, and organize documents.
- Design and implement project workflow improvements in SharePoint and Team Foundation Server (TFS) resulting in improved team-wide output, productivity, and efficiency in reviewing data submissions.
- Verify validity of waiver requests from payors by reviewing previous requests and evaluating data content in payor submissions.
- Recommend waivers directly to the MHCC.

Freelance Consultant, SVB Consulting and BloomShift, 2018–2018

- Researched and created project proposal for private clients to partner with federal health sector.
- Created data collecting procedure and analyzed research to create actionable and usable guides.
- Developed reports, presented to clients, problem solved client issues, and assisted in proposal development.

International Marketing Manager, Quad Learning, Inc., 2017–2017

- Managed development of critical marketing strategy across key regions in Europe and Asia by handling multiple priorities, real-time reporting of updates, managing timelines, and on-time submission of deliverables for 10 countries.
- Created materials by researching, writing content, and providing design input for a 70-page book and social media.

- Developed and edited PowerPoint presentations and guides to train international field teams on Quad Learning programs.

Congressional Intern, Office Of Congresswoman Bonnie Watson Coleman, Feb. 2017–June 2017

- Managed research and evaluation efforts focused on the impact of U.S. foreign policies on global health programs (e.g., President’s Emergency Plan for AIDS Relief and Global Fund) to draft communication correspondence to constituents.
- Supported senior staff in conducting environmental scans, taking notes in meetings, and creating briefs on health policies.

Office of Policy, Planning, and Innovation Intern, U.S. Department of Health and Human Services, 2015–2016

- Contributed to the strategic development of an award-winning health policy by conducting qualitative analysis, performing literature searches, analyzing related policies, and synthesizing findings to address the opioid epidemic (in full effect).
- Received special recognition for coordination of preparation for agency meetings in South Africa, Tanzania, and Zambia.
- Strengthened coalition with South Korean delegations by ensuring impeccable creation and delivery of agenda and notes.
- Informed behavioral health regulations regarding criminal justice and Tribal populations by researching data and grants.
- Obtained approval for federal sustainability proposal by researching, writing, and presenting the project proposal.

Graduate Research Assistant, Health Equity Advancement Lab, 2014–2015

- Directed three-person team to research and reduce health disparity for cancer screenings for Latinos in rural Iowa to create an educational guide for lay health advisors.

Graduate Communication Intern, Health Communication Campaign, 2015–2015

- Created successful radon campaign by conducting focus groups and key informant interviews to collect primary data.

Graduate Student, MPH Practicum, 01/2015–05/2015

- Increased health access for children with special needs in rural areas in Iowa by creating a formative questionnaire to assess needs and conducting literature reviews to develop information guides and recommendations to improve program.

Professional Affiliations

- 2016, Secretary’s Award for Distinguished Service
- 2016, Special Recognition from Administrator
- 2014–2015, Vice-President, Community and Behavioral Health Student Association
- 2008–2012, Recipient of the University of Iowa Tuition Scholarship

Computer Systems and Languages

SAS, SQL, Google Tools, Microsoft Office Suite, and Adobe InDesign

Richard Monforti**Director of Information Technology**

Social & Scientific Systems, Inc.

Mr. Monforti is a proven IT Leader with a diverse range of experience in managing personnel and information systems in regulated industries. He has worked in the FDA/CRO/Health Sciences space for more than 20 years and has a keen understanding of the IT challenges these organizations face. He also has deep knowledge in Cyber Security, PII/PHI data management, and compliance working in the U.S. Department of Defense and in Government Health Research sectors.

Education and Certifications

- MSIS, Master of Science in Information Systems, Strayer University
- BS, Business Administration of Technical Studies, Bellevue University
- AAS, Electronic System Technology, Community College of the Air Force
- Certified Information Systems Security Professional (CISSP), ISC2
- MCSE Certification, Microsoft Certified Systems Engineer
- MCTS Certification, (2008 Active Directory, SharePoint 2010)
- ITIL V3 Foundation Certification
- Top Secret/SCI Security Clearance

Experience

Directory, Information Technology, Social & Scientific Systems, Inc., 2014–Present

Responsible for Strategic IT Planning, Business Relationship Management (Internal/External), IT staff management, proposal development, budgeting, IT Security and FDA/FISMA/HIPPA compliance in highly complex and secured computing environments. Leads Senior IT Leadership team.

- Responsible for developing the annual IT Strategic Plan, which aligns IT initiatives to corporate business goals. Ensures IT resourcing is appropriate to the execute the plan and that labor/material costs are properly contained.
- Manages team of IT systems engineers in the design, implementation, and support of highly complex and secure information systems and hosting environments. These environments host more than 1,500 Virtual Machines in FISMA (Low/Mod/High) rated government systems, FDA regulated systems, and corporate infrastructure.
- Designs, implements and support Global Data Centers consisting of 15 VMWare Clusters, Networking/Firewall infrastructure, and 1PetaByte Storage Are Network/Direct Attached Storage. Environment contains more than 40 Active Directory Forests/Domains.
- Developed procedural framework to comply with applicable FISMA, NIST, and FDA regulatory requirements. Institutional processes to ensure regulatory compliance is strictly adhered to.
- Performs business analysis and develops technical solutions for organizational business units in the company. Defines requirements, performs vendor/solutions analysis, executes ROI/Cost Benefit Analysis, creates project plans, and manages IT staff for solutions implementation.
- Manages Enterprise Applications across the organization including SharePoint, Financial Systems (Deltek/Cognos), Clinical Data Management/Clinical Trials Management, Study Management Systems, Lab Management/Monitoring Systems, CATI/CAWI systems, and eTMF.

Director, Information Technology, Aptiv Solutions (Acquired SRA International), 2011 – 2014

Responsible for leading all IT operations for the organization. Locations included U.S., U.K., Germany, France, Switzerland, Ukraine, Russia, and Japan. Managed staff of 25 and \$8M budget. Member of Senior Organizational Leadership Team.

- Responsible for all IT areas of operations including helpdesk, networking, operations, applications development, information security, and computerized systems validation for global organization of 900+ personnel in 14 locations and eight countries.
- Led the post-acquisition consolidation of five separate IT organizations into one global workforce. This included reorganizing the groups, defining standard HR positions/title, job leveling, and a consolidation of operations and data centers.
- Managed global data center operations consisting of 500+ servers/virtual machines in a multiple SAN and VMWare Cluster environments. Implemented disaster recovery and global replication.
- Responsible for selecting vendors, consultants, and contractors. Develops RFPs and manages the evaluation and selection processes. Negotiates with hardware and software vendors on purchases contracts, and agreements.
- Developed IT business unit strategic plan and annual budget. Responsible for monthly budget and operations reporting to Senior Corporate Leadership.

Senior Network Engineer, Constella Group (Acquired Lineberry Research Associates), 2006–2008

Responsible for designing and supporting global network infrastructure and corporate information systems.

- Managed and maintained global network infrastructure that supported 1,200+ employees. Technologies managed included Microsoft Windows 2003 Servers, Exchange/Email, SQL, SharePoint, File, Active Directory, web servers and security/firewall servers.
- Supported day-to-day systems operations for Research Triangle Park location. This facility was U.S. operations headquarters for the PPD business unit and housed more than 110 personnel responsible for clinical research, bioinformatics, and regulatory activities.

Manager, Information Systems, Lineberry Research Associates, 1999–2006

Responsible for implementing and supporting all company IT assets and systems validation and regulatory compliance.

- Designed and implemented the systems infrastructure to support a validated, 21 CFR Part 11 compliant Clinical Data Management System (CTMS). Developed a method of creating regulatory compliant audit trails that saved the company more than \$20,000 in consulting costs.
- Created all company SOPs for information technology. These SOPs included Backup and Restore, Computerized Systems Security, Change Control, and Disaster Recovery. These SOPs had been through several sponsor audits without any significant findings.
- Migrated the company from Office 97 business suite to Office 2003. Developed a training network and trained all company employees on the new business suite. This training ensured and smooth transition and saved the company \$25,000+ in training costs.

Noncommissioned Officer in Charge, Cyber Surety & Boundary Protection/First Sergeant, United States Air Force, 2011–Present

Provides perimeter security to \$1.5B Air Force network supporting six Major Commands, 64 locations, and 400K+ network nodes across the U.S., Europe, and Pacific theaters. Leads teams of security engineers responsible for Defensive Cyber Operations (DCO) protecting critical classified and unclassified Air Force information system assets.

- Supports 240+ firewall/proxy devices for the Air Force’s largest weapon, the Cyber Security and Control System. Manages 10-member Boundary Protection security engineer team.
- Served as Cyber Liaison Officer for the Joint Cyber Center, United States Forces Korea (USFK) during Key Resolve military exercises. Coordinated intelligence and Defensive Cyber Operations.
- Enforces discipline standards and ensures a mission ready force of more than 100 airmen. Provides guidance and support to the Squadron Commander in unit morale, welfare, and readiness.

Appendix B — Signed Contract Documents

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

CONSTRUCTION CONTRACTS: Under W. Va. Code § 5-22-1(i), the contracting public entity shall not award a construction contract to any bidder that is known to be in default on any monetary obligation owed to the state or a political subdivision of the state, including, but not limited to, obligations related to payroll taxes, property taxes, sales and use taxes, fire service fees, or other fines or fees.

ALL CONTRACTS: Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

EXCEPTION: The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

DEFINITIONS:

"Debt" means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

"Employer default" means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

"Related party" means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

AFFIRMATION: By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that: (1) for construction contracts, the vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

WITNESS THE FOLLOWING SIGNATURE:

Vendor's Name: social scientific systems Inc

Authorized Signature: [Signature] Date: 9/17/2019

State of MD

County of Montgomery to-wit:

Taken, subscribed, and sworn to before me this 17 day of September, 2019.

My Commission expires January 26, 2023.

AFFIX SEAL HERE

NOTARY PUBLIC [Signature]

SHERRY ROCKWELL-PHILLIPS
Notary Public-Maryland
Howard County
My Commission Expires
January 26, 2023

Purchasing Affidavit (Revised 01/19/2018)

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: CRFQ 0511 HHR2000000001

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input checked="" type="checkbox"/> Addendum No. 6 |
| <input checked="" type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input checked="" type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input checked="" type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input checked="" type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Social Scientific Systems INC
Company

Authorized Signature
9/30/19
Date

NOTE: This addendum acknowledgment should be submitted with the bid to expedite document processing.

REQUEST FOR QUOTATION
CRFQ 0511 HHR200000001
Hospital Inpatient Data System (HIDS)

4.5. Vendor shall inform all staff of Agency's security protocol and procedures.

5. VENDOR DEFAULT:

5.1. The following shall be considered a vendor default under this Contract.

5.1.1. Failure to perform Contract Services in accordance with the requirements contained herein.

5.1.2. Failure to comply with other specifications and requirements contained herein.

5.1.3. Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.

5.1.4. Failure to remedy deficient performance upon request.

5.2. The following remedies shall be available to Agency upon default.

5.2.1. Immediate cancellation of the Contract.

5.2.2. Immediate cancellation of one or more release orders issued under this Contract.

5.2.3. Any other remedies available in law or equity.

6. MISCELLANEOUS:

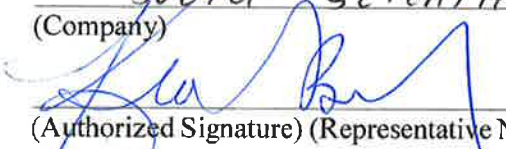
6.1. **Contract Manager:** During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: DAVID D. WAGNER
Telephone Number: 301 628-3234
Fax Number: 301 628-3001
Email Address: DWAGNER@S-3.COM

DESIGNATED CONTACT: Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

David D Wagner, Vice President Contracts
(Name, Title)
DAVID D. WAGNER, Vice President, Contracts
(Printed Name and Title)
8757 Georgia Ave, Silver Spring, MD 20910
(Address)
301 628-3234
(Phone Number) / (Fax Number)
dwagner@s-3.com
(email address)

CERTIFICATION AND SIGNATURE: By signing below, or submitting documentation through wvOASIS, I certify that I have reviewed this Solicitation in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that I am authorized by the vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

Social Scientific Systems Inc
(Company)

(Authorized Signature) (Representative Name, Title)
Kevin Beverly, President
(Printed Name and Title of Authorized Representative)
10/1/2019
(Date)
301 628-3000
(Phone Number) (Fax Number)



Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

State of West Virginia
 Request for Quotation
 27 - Miscellaneous

Proc Folder: 609429

Doc Description: Addendum #4- Hospital Inpatient Data System (HIDS)

Proc Type: Central Master Agreement

Date Issued	Solicitation Closes	Solicitation No	Version
2019-09-17	2019-09-26 13:30:00	CRFQ 0511 HHR2000000001	5

BID RECEIVING LOCATION

BID CLERK
 DEPARTMENT OF ADMINISTRATION
 PURCHASING DIVISION
 2019 WASHINGTON ST E
 CHARLESTON WV 25305
 US

VENDOR

Vendor Name, Address and Telephone Number:

Social Scientific Systems Inc
 8757 Georgia Ave
 Silver Spring, MD 20910 TEL: 301 628-3252

FOR INFORMATION CONTACT THE BUYER

April E Battle
 (304) 558-0067
 april.e.battle@wv.gov

Signature X

FEIN # 521114970

DATE 9/25/19

All offers subject to all terms and conditions contained in this solicitation

ADDITIONAL INFORMATION:

Addendum #4 is issued:

- 1) to extend the bid opening date from September 20, 2019, at 1:30 PM EST to September 26, 2019, at 1:30 PM EST;
- 2) to change the specification numbering as originally published by Addendum No. 1 dated 8/26/2019 since duplicate numbering appears in the document. See attached pages for more information.

No other changes.

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
1	Hospital In-Patient UB Data System and Emergency Department	4.00000	QTR	\$148,453	\$593,812

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Hospital In-Patient UB Data System and Emergency Department

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
2	Outpatient Surgery	3.00000	QTR	\$27,528	\$82,584

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Outpatient Surgery

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
3	Outpatient Observation stays	3.00000	QTR	\$24,707	\$74,121

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Outpatient Observation stays

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
4	Outpatient Diagnostic and Therapeutic Hospital	3.00000	QTR	\$27,919	\$83,757

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Outpatient Diagnostic and Therapeutic Hospital

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
5	Outpatient Physician Office visits	3.00000	QTR	\$28,773	\$86,319

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
 Outpatient Physician Office visits

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
6	Other hospital outpatient services	3.00000	QTR	\$29,052	\$87,156

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
 Other hospital outpatient services

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
7	Hourly rate for all optional services	500.00000	HOUR	\$223.99	\$111,995

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
 Hourly rate for all optional services

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
8	Optional Renewal Year 1-Hospital In patient UB data system	4.00000	QTR	\$122,885	\$491,540

Comm Code	Manufacturer	Specification	Model #
81112201			

Extended Description :
Optional Renewal Year 1-Hospital In patient UB data system

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
9	Optional Renewal Year 1-Outpatient Surgery	4	QTR	\$15,080	\$60,320

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 1-Outpatient Surgery

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
10	Optional Renewal Year 1-Outpatient Observation stays	4.00000	QTR	\$21,153	\$84,612

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 1-Outpatient Observation stays

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
11	Opt. Renewal Yr 1 Outpatient Diagnostic & Therapeutic Hospit	4.00000	QTR	\$16,831	\$67,324

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 1-Outpatient Diagnostic and Therapeutic Hospital

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
12	Optional Renewal Year 1-Outpatient Physician Office visits	4.00000	QTR	\$17,121	\$68,484

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 1-Outpatient Physician Office visits

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
13	Optional Renewal Year 1-Other hospital outpatient services	4.00000	QTR	\$17,121	\$68,484

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 1-Other hospital outpatient services

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
14	Optional Renewal Year 1-Hourly rate for all optional service	500.00000	HOUR	\$230.71	\$115,355

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 1-Hourly rate for all optional service

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
15	Optional Renewal Year 2-Outpatient Surgery	4.00000	QTR	\$15,233	\$60,932

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
18	Optional Renewal Year 2-Outpatient Physician Office visits	4.00000	QTR	\$17,969	\$71,876

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 2-Outpatient Physician Office visits

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
19	Optional Renewal Year 2-Other hospital outpatient services	4.00000	QTR	\$18,034	\$72,136

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 2-Other hospital outpatient services

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
20	Optional Year 2-Hourly rate for all optional services	500.00000	HOUR	\$237.63	\$118,815

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 2-Outpatient Surgery

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
16	Optional Renewal Year 2-Outpatient Observation stays	4.00000	QTR	\$17,934	\$71,736

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 2-Outpatient Observation stays

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
17	Opt. Renewal Yr 2 Outpatient Diagnostic & Therapeutic Hospit	4.00000	QTR	\$18,180	\$72,720

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 2-Outpatient Diagnostic and Therapeutic Hospital

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Year 2-Hourly rate for all optional services

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
21	Optional Renewal Year 3-Outpatient Surgery	4.00000	QTR	\$15,690	\$62,760

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 3-Outpatient Surgery

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
22	Optional Renewal Year 3-Outpatient Observation stays	4.00000	QTR	\$18,681	\$74,724

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 3-Outpatient Observation stays

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
23	Opt. Renewal Yr 3 Outpatient Diagnostic & Therapeutic Hospit	4.00000	QTR	\$18,993	\$75,972

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 3-Outpatient Diagnostic and Therapeutic Hospital

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
24	Optional Renewal Year 3-Outpatient Physician Office visits	4.00000	QTR	\$18,164	\$72,656

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 3-Outpatient Physician Office visits

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
25	Optional Renewal Year 3-Other hospital outpatient services	4.00000	QTR	\$18,828	\$75,312

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 3-Other hospital outpatient services

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
26	Optional Renewal Year 3-Hourly rate for all optional service	500	QTR	\$244.76	\$122,380

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 3-Hourly rate for all optional service

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
27	Optional Renewal Year 2-Hospital Data System	4.00000	QTR	\$125,906	\$503,624

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :

Optional Renewal Year 2-Hospital Data System

INVOICE TO		SHIP TO	
PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR		PROCUREMENT OFFICER HEALTH CARE AUTHORITY 100 DEE DR	
CHARLESTON	WV25311-1692	CHARLESTON	WV 25311-1692
US		US	

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Total Price
28	Optional Renewal Year 3-Hospital Data System	4.00000	QTR	\$132,453	\$529,812

Comm Code	Manufacturer	Specification	Model #
81111503			

Extended Description :
Optional Renewal Year 3-Hospital Data System

SCHEDULE OF EVENTS

<u>Line</u>	<u>Event</u>	<u>Event Date</u>
1	Questions Due	2019-08-29

	Document Phase	Document Description	Page
HHR200000001	Final	Addendum #4- Hospital Inpatient Data System (HIDS)	14 of 14

ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

Social Scientific Systems Inc

WV Budget Assumptions-CRFQ# 0511 HHR2000000001

Assumptions for the main inpatient and emergency department task:

- Based on current Center for Disease Control and Agency for Healthcare Research and Quality data, SSS estimates the volume of West Virginia emergency department (ED) data to collect, validate, and report will be around four times as many records as inpatient data records, requiring additional labor and infrastructure costs.
- In the first year of the contract hospitals will need to test and fix their data files to accommodate the new ED requirements. SSS will likely need to provide more technical assistance to hospitals during this timeframe as they work through getting the data formatted and data validated for their data submissions.
- The additional ED data collection requires more IT server resources in terms of both server performance and storage over the life of the contract.
- SSS' Adjudication programs will need to be updated in the first year of the contract with custom programming and groupers for the ED data collected.

Assumptions for the optional modules:

- SS is including labor and infrastructure to perform data collection, validation, and reporting activities in its estimate for each module. In addition, each module will need updated documentation for the data file format, data elements, and submission guidelines.
- In the first year of the contract for any new module, hospitals will need to test and fix their data files to accommodate the new data module requirements. SSS will likely need to provide more technical assistance to hospitals during this timeframe as they work through getting the data formatted and validated for their data submissions.
- Each additional module requires more server resources in terms of both server performance and storage.
- SSS' Adjudication programs will need to be updated in the first year of the contract with custom programming and groupers depending on the specifics of the optional module.