

Non-Governmental Application for Massachusetts Case Mix and Charge Data [Exhibit A]

I. INSTRUCTIONS

This form is required for all Applicants, except Government Agencies as defined in 957 CMR 5.02, requesting protected health information. All Applicants must also complete the Data Management Plan, attached to this Application. The Application and the Data Management Plan must be signed by an authorized signatory of the Organization. This Application and the Data Management Plan will be used by CHIA to determine whether the request meets the criteria for data release, pursuant to 957 CMR 5.00. Please complete the Application documents fully and accurately. Prior to receiving CHIA Data, the Organization must execute CHIA's Data Use Agreement. Applicants may wish to review that document prior to submitting this Application.

Before completing this Application, please review the data request information on CHIA's website:

- Data Availability
- Fee Schedule
- Data Request Process

After reviewing the information on the website and this Application, please contact CHIA at <u>casemix.data@state.ma.us</u> if you have additional questions about how to complete this form.

All attachments must be uploaded to IRBNet with your Application. All Application documents can be found on the <u>CHIA website</u> in Word and in PDF format or on <u>IRBNet</u> in Word format. If you submit a PDF document, please also include a Word version in order to facilitate edits that may be needed.

Applications will not be reviewed until the Application and all supporting documents are complete and the required application fee is submitted. A Fee Remittance Form with instructions for submitting the application fee is available on the CHIA website and IRBNet. If you are requesting a fee waiver, a copy of the Fee Remittance Form and any supporting documentation must be uploaded to IRBNet.

II. FEE INFORMATION

- 1. Consult the most current Fee Schedule for Case Mix and Charge Data.
- 2. After reviewing the Fee Schedule, if you have any questions about the application or data fees, contact casemix.data@state.ma.us.
- 3. If you believe that you qualify for a fee waiver, complete and submit the <u>Fee Remittance Form</u> and attach it and all required supporting documentation with your application. Refer to the <u>Fee Schedule</u> (effective Feb 1, 2017) for fee waiver criteria.
- 4. Applications will not be reviewed until the application fee is received.
- 5. Data for approved Applications will not be released until the payment for the Data is received.

III. ORGANIZATION AND INVESTIGATOR INFORMATION

Project Title:	Identifying Trends and Changes in the Massachusetts
	Health Care Market
IRBNet Number:	1411713-1
Organization Requesting Data (Recipient):	South Shore Health System
Organization Website:	https://www.southshorehealth.org/
Authorized Signatory for Organization:	Zeshan Rajput
Title:	Medical Director
E-Mail Address:	zrajput@southshorehealth.org
Address, City/Town, State, Zip Code:	55 Fogg Road, South Weymouth, MA 02190
Data Custodian:	Ashraf Fadel
(individual responsible for organizing, storing, and archiving Data)	
Title:	Associate Vice President, Data Operations, Sg2
E-Mail Address:	Ajfadel@Sg2.com
Telephone Number:	847-779-5459
Address, City/Town, State, Zip Code:	5250 Old Orchard Road, Skokie, IL 60077
Primary Investigator:	Zeshan Rajput
(individual responsible for the research team using the Data)	
Title:	Medical Director
E-Mail Address:	zrajput@southshorehealth.org
Telephone Number:	781-624-8000
Names of Co-Investigators:	
E-Mail Addresses of Co-Investigators:	

IV. PROJECT INFORMATION

☐ Epidemiological	⋈ Health planning/resource allocation	☐ Cost trends
☐ Longitudinal Research	☐ Quality of care assessment	☐ Rate setting
☐ Reference tool	☑ Research studies	☐ Severity index tool
☐ Surveillance	☐ Student research	☐ Utilization review of resources
☐ Inclusion in a product	☐ Other (describe in box below)	

2. Provide an abstract or brief summary of the specific purpose and objectives of your Project. This description should include the research questions and/or hypotheses the project will attempt to address, or describe the intended product or report that will be derived from the requested data and how this product will be used. Include a brief summary of the pertinent literature with citations, if applicable.

South Shore Health System seeks to deepen its understanding of the Massachusetts health care market, including examination of inpatient, outpatient, and ED utilization patterns in the state. The requested data will help South Shore understand the market dynamics and our organization's impact. It will also inform our planning effort to deliver the services our patient's need while driving value in our market. Through multiple ongoing analyses, South Shore also seeks to understand our patient base and

service mix in comparison to the overall market environment. With this information, South Shore can conduct health resource planning for the communities we serve.

Some of the primary project questions we hope to answer include:

- 1) What are the patterns of inpatient, outpatient and ED utilization in the MA market and how do those trends vary by geography, payer type, and type of service? Additionally, how have these patterns varied over time?
- 2) Where do South Shore's patients come from, and what are the health care needs of the communities we serve?
- 3) How can trends observed in inpatient, outpatient, and ED utilization be accounted for in South Shore's system planning efforts?
- 4) How have past initiatives at South Shore effected patient utilization?
- 3. Has an Institutional Review Board (IRB) reviewed your Project?
- \square Yes [If yes, a copy of the approval letter and protocol <u>must</u> be included with the Application package on IRBNet.]
- ☑ No, this Project is not human subject research and does not require IRB review.
- 4. **Research Methodology**: Applicants must provide either the IRB protocol or a written description of the Project methodology (typically 1-2 pages), which should state the Project objectives and/or identify relevant research questions. This document must be included with the Application package on IRBNet and must provide sufficient detail to allow CHIA to understand how the Data will be used to meet objectives or address research questions.

V. PUBLIC INTEREST

1. Briefly explain why completing your Project is in the public interest. Use quantitative indicators of public health importance where possible, for example, numbers of deaths or incident cases; age-adjusted, age-specific, or crude rates; or years of potential life lost. Uses that serve the public interest under CHIA regulations include, but are not limited to: health cost and utilization analysis to formulate public policy; studies that promote improvement in population health, health care quality or access; and health planning tied to evaluation or improvement of Massachusetts state government initiatives.

South Shore Health System is a community based not-for-profit, charitable health system offering primary and specialty care, hospital care, home health and community care, and preventive and wellness services. Our health system is the largest independent health system in Southeastern Massachusetts based health system. South Shore is committed to providing high quality, cost effective integrated care in the communities where our patients live. Understanding health care utilization in our market as well as across the state is crucial so that South Shore can plan for and allocate health care resources so they have the greatest effect.

VI. DATASETS REQUESTED

The Massachusetts Case Mix and Charge Data are comprised of Hospital Inpatient Discharge, Emergency Department and Outpatient Hospital Observation Stay Data collected from Massachusetts' acute care hospitals, and satellite emergency facilities. Case Mix and Charge Data are updated each fiscal year (October 1 – September 30) and made available to approved data users. For more information about Case Mix and Charge Data, including a full list of available elements in the datasets please refer to release layouts, data dictionaries and similar documentation included on CHIA's website.

Data requests are typically fulfilled on a one time basis, however; certain Projects may require years of data not yet available. Applicants who anticipate a need for future years of data may request to be considered for a subscription. Approved subscriptions will receive, upon request, the <u>same data files and data elements</u> included in the initial release annually or as available. Please note that approved subscription request will be subject to the Data Use Agreement, will

the approved Project. 1. Please indicate below whether this is a one-time request, or if the described Project will require a subscription. ☐ One-Time Request **OR** Subscription 2. Specify below the dataset(s) and year(s) of data requested for this Project, and your justification for requesting each dataset. Data prior to 2004 is not available. □2004 □2005 □2006 □2007 □2008 □2009 □2010 □2011 □2012 ⊠2013 ⊠2014 ⊠2015 ⊠ 2016 ⊠ 2017 Describe how your research objectives require Inpatient Discharge data: The inpatient discharge data will allow South Shore to understand our market dynamics and trends in inpatient utilization allowing us to plan for and provide the services our communities need. Without inpatient data South Shore will be unable to accurately measure current inpatient utilization and predict future demand. Additionally, we would like to analysis our potentially avoidable inpatient visits and length of stay as it compares to others across the state. **☒** Outpatient Hospital Observation Stay Data □2004 □2005 □2006 □2007 □2008 □2009 □2010 □2011 □2012 ⊠2013 ⊠2014 ⊠2015 ⊠ 2016 ⊠ 2017 Describe how your research objectives require Outpatient Hospital Observation Stay data: Like our need for inpatient data, South Shore's ability to understand health care utilization across the System of Care is vital to our ability to serve the needs of our patients in the right care setting which include inpatient, hospital outpatient, and ED. Without hospital outpatient data we will not have a complete picture of patient utilization. **⊠** Emergency Department Data □2004 □2005 □2006 □2007 □2008 □2009 □2010 □2011 □2012 ⊠2013 ⊠2014 ⊠2015 ⊠ 2016 ⊠ 2017 Describe how your research objectives require Emergency Department data:

require payment of fees for additional Data, and subject to the limitation that the Data can be used only in support of

VII. DATA ENHANCEMENTS REQUESTED

State and federal privacy laws limit the release and use of Data to the minimum amount of data needed to accomplish a specific Project objective.

Like our need for inpatient and hospital outpatient data South Shore's ability to understand health care utilization across the System of Care is vital to our ability to serve the needs of our patients in the right care setting which include inpatient, hospital

outpatient, and ED. Without ED data we will not have a complete picture of patient utilization.

Case Mix and Charge Data are grouped into six "Levels" or Limited Data Sets (LDS) for release, depending on the fiscal year. Data for FY 2004 – 2014 are organized into Levels. Level 6 Data will be released to Government Applicants only. CHIA staff will use the information provided in this section to determine the appropriate Level of Data justified for release.

Data for FY 2015 and later are organized into LDS's. All applicants receive the "Core" LDS, but may also request the data enhancements listed below for inclusion in their analyses. Requests for enhancements will be reviewed by CHIA to determine whether each represents the minimum data necessary to complete the specific Project objective.

For a full list of elements in the release (i.e., the "Core" elements and enhancements), please refer to <u>release layouts</u>, <u>data dictionaries</u> and similar documentation included on CHIA's website.

1. Specify below which enhancement to determine what Level of data is r		•	"Core" LDS. CHIA will u	ise this information
Geographic Subdivisions				
State, five-digit zip code, and 3-digit Town of residence is available for re				-
Select <u>one</u> of the following options:				
(Standard) City/Town		☐ 5-Digit Zip Code		ode & City/Town ***
***If requested, provide justificat methodology: With zip code & city/town data we referral patters and compare lengt data at the zip code level so that Scode level.	plan to study the o	changes in utilization i fic service in each geo	including patient migra ography. Additionally, it	tion, physician is essential to have
Demographic Data				
Select <u>one</u> of the following options:				
☐ Not Requested (Standard)		☑ Race & Ethnicit	y***	
** If requested, provide justificati Like zip code we plan to study the and compare lengths of stay for sp Date Resolution Select <u>one</u> of the following options f	changes in utilization changes in utilization changes by ra	on including patient mace and ethnicity.	nigration and physician	
☐ Year (YYYY)(Standard)	☐ Month (YYYY)	MM) ***	⊠ Day (YYYYMMDD)*	**
***If requested, provide justificat South Shore is requesting dates of patterns for specific services to see different times of the month. Addithere are difference for patients the	service to analyze e if there are season tionally, we plan to	utilization trends inclu nal trends or variance i investigate time-serio	uding patient migration s in utilization around h es for disparities in orde	, physician referral nolidays or during
Practioner Identifiers (UPN)				
Select <u>one</u> of the following options.				
☐ Not Requested (Standard)	☐ Hashed ID ***		⊠ Board of Registrati Number(BORIM) ***	
***If requested, provide justificate methodology: South Shore is requesting BORIM to referral patterns. This will aid our referral patterns.	o aid in the analysis	s of utilization trends	including patient migra	tion and physician

procedure codes in order to apply Sg2's proprietary utilization and growth rates.

Unique Health Information Number (UHIN) Select <i>one</i> of the following options.	
select <u>one</u> of the following options.	
☐ Not Requested (Standard)	☑ UHIN Requested ***
	questing UHIN. Refer to specifics in your methodology: e accurate analysis of utilization trends including readmissions analysis.
Hashed Mother's Social Security Number Select <u>one</u> of the following options:	
☐ Not Requested (Standard)	
*** If requested, provide justification for red South Shore is requesting the hashed mother's SS neonates.	questing Hashed Mother's SSN. Refer to specifics in your methodology: SN to aid in analyses of readmission in cases involving the readmission of
VIII. DATA LINKAGE	
 linkage is typically used to link multiple events CHIA Data. 1. Do you intend to link or merge CHIA Data to ☒ Yes 	
☐ No linkage or merger with any othe	r data will occur
\square Individual Patient Level Data (e.g. d	American Medical Association Physician Masterfile) American Hospital Association data)
3. If yes, describe the data base(s) to which the linked and the purpose for each linkage.	e CHIA Data will be linked, indicate which CHIA Data elements will be
household income for disparate populations. The patient's diagnostic and procedural code	o better understand census demographic elements such as median es will also be aggregated into Sg2's standard service line and sub-service of the patient's zip code, age, gender, primary diagnosis and primary

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4. If yes, for each proposed linkage above, please describe your method or selected algorithm (e.g., deterministic or probabilistic) for linking each dataset. If you intend to develop a unique algorithm, please describe how it will link each dataset.

A deterministic algorithm will be used to create the linkage from available census data to the data set. A deterministic algorithm will also be used to aggregate individual episodes of care into Sg2's standard service line and sub-service line definitions. Sg2 groups patients into "Sg2 CARE Groups" based similar combinations of age, gender, primary diagnosis, and primary procedure codes. Using a patient's assigned "Sg2 CARE Group" as the baseline, Sg2 then applies proprietary growth rates to these baseline volumes in order to predict the demand for similar services 10 years into the future.

5. If yes, attach complete listing of the variables from all sources to be included in the final linked analytic file.

Census Data - Median Household Income, Language

Service Line – Sg2's standard service line and sub service line descriptions

Sg2 CARE Groups – growth and utilization rates for aggregated populations

6. If yes, please identify the specific steps you will take to prevent the identification of individual patients in the linked dataset.

All analyses will be aggregated and cells less than 11 will be suppressed. In addition, all fields that contain patient specific information are excluded on load into Sg2's platform.

IX. PUBLICATION / DISSEMINAITON / RE-RELEASE

1. Do you anticipate that the results of your analysis will be published or made publically available? If so, how do you intend to disseminate the results of the study (e.g.; publication in professional journal, poster presentation, newsletter, web page, seminar, conference, statistical tabulation)? Any and all publication of CHIA Data must comply with CHIA's cell size suppression policy, as set forth in the Data Use Agreement. Please explain how you will ensure that any publications will not disclose a cell less than 11, and percentages or other mathematical formulas that result in the display of a cell less than 11.

South Shore may occasionally share aggregated analyses of the CHIA Case Mix data with state agencies, such as MassHealth and the Health Policy Commission to support or advance health care policy initiatives that will enable South Shore to meet its mission of providing high quality and timely health care to the communities we serve.

2. Describe your plans to use or otherwise disclose CHIA Data, or any data derived or extracted from such data, in any paper, report, website, statistical tabulation, seminar, or other setting that is not disseminated to the public.

Only aggregated, de-identified, and cell-suppressed data will be used in any publication.

3. What will be the lowest geographical level of analysis of data you expect to present for publication or presentation (e.g., state level, city/town level, zip code level, etc.)? Will maps be presented? If so, what methods will be used to ensure that individuals cannot be identified?

Maps would be created to visualize market area. Maps may also be created to visualize populations for major diagnostic and procedural groups. Again, only aggregated data would be visualized and any cell less than 11 will be suppressed along with the relevant boundaries.

 4. Will you be using CHIA Data for consulting purposes? ☐ Yes ☒ No
5. Will you be selling standard report products using CHIA Data?☐ Yes☒ No
6. Will you be selling a software product using CHIA Data? ☐ Yes ☑ No
7. Will you be using CHIA Data as in input to develop a product (i.e., severity index took, risk adjustment tool, reference tool, etc.) ☐ Yes ☐ No
 8. Will you be reselling CHIA Data in any format not noted above? ☐ Yes ☒ No
If yes, in what format will you be reselling CHIA Data?
N/A
9. If you have answered "yes" to questions 5, 6, 7 or 8, provide the name and a description of the products, software, services, or tools.
N/A
10. If you have answered "yes" to questions 5, 6, 7 or 8, what is the fee you will charge for such products, software, services or tools?
N/A

XI. INVESTIGATOR QUALIFICATIONS

1. Describe your previous experience using hospital data. This question should be answered by the primary investigator and any co-investigators who will be using the Data.

The primary investigator has a decade of experience in healthcare informatics including formal fellowship training, the development of standards on behalf of ONC for meaningful use, and electronic medical record systems. In the past several years he has worked almost exclusively with claims data including the Medicare CCLF format for two CMS ACOs as well as regional commercial payor files. He is experienced with several common aspects of claims analysis including:

- Extraction, transformation, and loading from raw claim file formats into Microsoft Access, R data frames, and Python data frames using pandas;
- Risk stratification using methodologies such as Milliman MARA, DRG, and CMS-HCC;
- Creation of common descriptive statistical analyses such as medical expense, avoidable admissions and ER visits, admission rates for ER visits, and quality metrics reportable from claims; and
- Generation of in-workflow solutions for the provision of insight at the bedside.
- 2. <u>Resumes/CVs</u>: When submitting your Application package on IRBNet, include résumés or curricula vitae of the principal investigator and co-investigators. (These attachments will not be posted on the internet.)

XII. USE OF AGENTS AND/OR CONTRACTORS

By signing this Application, the Agency assumes all responsibility for the use, security and maintenance of the CHIA Data by its agents, including but not limited to contractors. The Agency must have a written agreement with the agent of contractor limiting the use of CHIA Data to the use approved under this Application as well as the privacy and security standards set forth in the Data Use Agreement. CHIA Data may not be shared with any third party without prior written consent from CHIA, or an amendment to this Application. CHIA may audit any entity with access to CHIA Data.

Provide the following information for <u>all</u> agents and contractors who will work with the CHIA Data. [Add agents or contractors as needed.]

AGENT/CONTRACTOR #1 INFORMATION	
Company Name:	Sg2, LLC
Company Website:	https://www.sg2.com/
Contact Person:	Aj Fadel
Title:	Associate Vice President, Data Operations
E-mail Address:	ajfadel@sg2.com
Address, City/Town, State, Zip Code	5250 Old Orchard Rd Skokie IL 60077
Telephone Number:	847-779-5759
Term of Contract:	

1. Describe the tasks and products assigned to the agent or contractor for this Project and their qualifications for completing the tasks.

Sg2 has been a recognized leader in providing hospitals with market intelligence and operational and clinical support services since 2001. The Sg2 tools with hospital discharge data provide analytics related to growth and clinical performance across the continuum of care. Over 1400 hospitals around the world rely on Sg2's analytics, intelligence, consulting and educational services.

Sg2's system and data users have all been trained in HIPPA compliance and are subject to policies and procedures that protect the safe management of PHI when necessary.

2. Describe the Organization's oversight and monitoring of the activities and actions of the agent or contractor for this Project, including how the Organization will ensure the security of the CHIA Data to which the agent or contractor has access.

The CHIA data will only be provided through access to the Sg2 Software applications under a subscription license. After ensuring the data is stripped of identifiable elements like name, address, SSN, the processed and standardized dataset is then incorporated into Sg2 software products. Additional information can be found in the Data Management plan that accompanies this application.

off-site server and/or database?	ccess to or store the CHIA Data at a location other than the Organization's location,
⊠ Yes	
□ No	
AGENT/CONTRACTOR #2	t Plan <u>must</u> be completed by the agent or contractor.
INFORMATION	
Company Name:	
Company Website:	
Contact Person:	
Title:	
E-mail Address:	
Address, City/Town, Zip Code	· ·
Telephone Number:	
Term of Contract:	
1. Describe the tasks and products ass completing the tasks.	igned to the agent or contractor for this Project and their qualifications for
	ht and monitoring of the activities and actions of the agent or contractor for this on will ensure the security of the CHIA Data to which the agent or contractor has
3. Will the agent or contractor have ac off-site server and/or database? ☐ Yes ☐ No	ccess to or store the CHIA Data at a location other than the Organization's location,

4. If yes, a separate Data Management Plan must be completed by the agent or contractor.

[INSERT A NEW SECTION FOR ADDITIONAL AGENTS/CONTRACTORS AS NEEDED]

XIII. ATTESTATION

By submitting this Application, the Organization attests that it is aware of its data use, privacy and security obligations imposed by state and federal law *and* confirms that it is compliant with such use, privacy and security standards. The Organization further agrees and understands that it is solely responsible for any breaches or unauthorized access, disclosure or use of CHIA Data including, but not limited to, any breach or unauthorized access, disclosure or use by any third party to which it grants access.

Applicants approved to receive CHIA Data will be provided with Data following the payment of applicable fees and upon the execution of a Data Use Agreement requiring the Organization to adhere to processes and procedures designed to prevent unauthorized access, disclosure or use of data.

By my signature below, I attest: (1) to the accuracy of the information provided herein; (2) that the requested Data is the minimum necessary to accomplish the purposes described herein; (3) that the Organization will meet the data privacy and security requirements described in this Application and supporting documents, and will ensure that any third party with access to the Data meets the data use, privacy and security requirements; and (4) to my authority to bind the Organization.

Signature: (Authorized Signatory for Organization)	
Printed Name :	Zeshan Rajput, MD MS
Title:	Medical Director, Population Health – South Shore Health System

Attachments

A completed Application must have the following documents attached to the Application or uploaded separately to IRBNet:

- ☑ 1. IRB approval letter and protocol (if applicable), or research methodology (if protocol is not attached).
- ☑ 2. Data Management Plan (including one for each agent or contractor that will have access to or store the CHIA Data at a location other than the Organization's location, off-site server and/or database)
- ☑ 3. CVs of Investigators (upload to IRBnet)

APPLICATIONS WILL NOT BE REVIEWED UNTIL THEY ARE COMPLETE, INCLUDING ALL ATTACHMENTS.