

**Commonwealth of Massachusetts
Center for Health Information & Analysis (CHIA)
Non-Governmental Application For Case Mix Data**

This form is required by all Applicants, except Government Agencies as defined in 957 CMR 5.02. All Applicants must also complete the Data Management Plan, attached to this Application. The Application and the Data Management Plan will be used by CHIA to determine if your organization may receive CHIA data. Please be sure the documents are completed fully and accurately. You may wish to consult the Evaluation Guide that CHIA will use to review your documents. Prior to receiving CHIA Data, the organization must execute the Data Use Agreement. You may wish to review that document as you complete these forms.

NOTE: *In order for your application to be processed, you must submit the required application fee. Please consult the fee schedule for the appropriate fee amount. A remittance form with instructions for submitting the application fee is available on the CHIA website.*

All attachments must be uploaded to IRBNet with your Application. All applications documents can be found on the CHIA website in Word and/or PDF format.

I. GENERAL INFORMATION

APPLICANT INFORMATION	
Applicant Name:	Christopher J. Louis, PhD
Title:	Clinical Assistant Professor
Organization:	Boston University School of Public Health
Project Title:	Evaluation Services to Support the Community Hospital Acceleration, Revitalization and Transformation (CHART) Investment Program
IRBNet ID:	947617-1
Mailing Address:	715 Albany Street, Talbot 261W, Boston, MA 02118
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Email Address:	louisc@bu.edu
Names of Co-Investigators:	Sally Bachman, David Rosenbloom, Kathleen Carey, Vicky Parker, Alan Sager, Rani Elwy
Email Addresses of Co-Investigators:	sbachman@bu.edu, drosenbloom@bu.edu, kcarey@bu.edu, vaparker@bu.edu, asager@bu.edu, relwy@bu.edu
Original Data Request Submission Date:	9/12/16
Dates Data Request Revised:	
Project Objectives (240 character limit):	The objective of this project is to conduct a mixed-methods evaluation of the performance of Phase 2 of the CHART Investment program of the Health Policy Commission.
Project Research Questions (if applicable) Business Use Case(s):	The current proposal has 9 research questions: <ol style="list-style-type: none"> 1. Were the program activities effectively implemented by the awardee? 2. Were there subgroup-level patterns in program implementation? 3. Was the CHART program as a whole implemented effectively? 4. What outcomes were achieved by the awardee? 5. Were there subgroup-level patterns in outcomes? 6. Did the CHART program as a whole accomplished the desired outcomes? 7. Will the awardee sustain program activities past the CHART Phase 2 period?

	<p>8. Are there subgroup-level patterns in program sustainability?</p> <p>9. Has the CHART program as a whole produced lasting changes that will continue to benefit stakeholders?</p>
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II. PUBLIC INTEREST & PROJECT SUMMARY

1. Briefly explain why completing your project is in the public interest.

Background

Established through the Commonwealth’s landmark cost containment law, Chapter 224 of the Acts of 2012, the Health Policy Commission (HPC) is an independent state agency that monitors reform in the health care delivery and payment systems and develops policies to reduce overall cost growth while improving the quality of patient care. The HPC Community Hospital Acceleration, Revitalization, and Transformation Investment Program (CHART) makes phased investments for certain Massachusetts community hospitals to enhance their delivery of efficient, effective care. The goal of the program is to promote care coordination, integration, and delivery transformations; advance electronic health records adoption and information exchange among providers; increase alternative payment methods and accountable care organizations; and enhance patient safety, access to behavioral health services, and coordination between hospitals and community-based providers and organizations.

Phase 2 of the CHART Investment Program awarded over \$60 million to 27 community hospitals across the Commonwealth over a yearlong implementation planning period and a 2-year program period. Each awardee has, in collaboration with the HPC, set specific aims for maximizing appropriate hospital utilization, such as reducing readmissions, ED revisits, or any-bed returns. Each awardee is pioneering a care-delivery initiative customized for the local patient population. CHART Phase 2 initiatives are specifically intended to promote the transformation of community hospitals by more effectively aligning their services and capabilities to address the physical, behavioral, and social needs of the communities they serve. Thus, a goal of CHART Phase 2 is not only to promote quality care at awardee hospitals, but to transform their role within the community and the healthcare system.

See www.mass.gov/hpc for further information about the CHART investment program.

CHART Phase 2 Evaluation

Under Chapter 224, the HPC is required to conduct an evaluation of Phase 2 of the CHART Investment Program. The planned evaluation is a mixed-methods summative evaluation with performance feedback to hospitals. The goals of this evaluation include investigation of the implementation, impact, and sustainability of the CHART Phase 2 initiatives.

The HPC has engaged a team at the Boston University School of Public health, lead by Dr. Chris Louis, to provide the necessary expertise and resources for an independent, rigorous, and insightful evaluation. In order to document the impact of the CHART phase 2 initiatives, the evaluation will analyze hospital utilization, including inpatient readmissions, ED revisits, and any-bed returns. This quantitative analysis, based on CHIA Case Mix Data, will be used in combination with qualitative findings to generate a public Final Summative Report on the CHART Phase 2 Investment Program.

2. Has an Institutional Review Board (IRB) reviewed your project?

- Yes, a copy of the approval letter and protocol must be **attached** to this Application
- No, this project is not human subject research and does not require IRB review.

3. If your project has not been reviewed by an IRB, please **attach** a brief (1-2 page) description of your project including the methodology, objectives, and research questions. **Not applicable.**

III. DATA FILES REQUESTED [Applicants seeking 2015 data only should skip to Question 2]

1. **FY 2004 – 2014 Data:** Please indicate the Case Mix files from which you seek data, the Level(s), the year(s) of data requested, and your justification for requesting each file. Please refer to the Case Mix Data Specifications for details of the file contents.

CASE MIX FILES	Levels 1 – 6	Years Available 2004 - 2014
Inpatient Discharge	<input checked="" type="checkbox"/> Level 1 – 3 Digit Zip Code <input checked="" type="checkbox"/> Level 2 – Unique Physician Number (UPN) + 5 Digit Zip Code <input checked="" type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input checked="" type="checkbox"/> Level 4 – UHIN and UPN <input checked="" type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures <input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number PLEASE PROVIDE JUSTIFICATION BELOW FOR REQUESTING THE CHOSEN LEVEL: Up through Level 5 data (admission date, discharge date, and significant procedures) is required to meet our project’s aims and objectives, and answer our research questions. Specifically, Level 5 data is needed to examine utilization patterns specific to inpatient admissions and readmissions among patients in the target populations for each CHART hospital project.	Year(s) of Data Requested: 2013 Release (10/1/2012-9/30/2013) 2014 Release (10/1/2013-9/30/2014)
Outpatient Observation	<input checked="" type="checkbox"/> Level 1 – 3 Digit Zip Code <input checked="" type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input checked="" type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input checked="" type="checkbox"/> Level 4 – UHIN and UPN <input checked="" type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures <input type="checkbox"/> Level 6 – Date of Birth; Medical Record Number; Billing Number PLEASE PROVIDE JUSTIFICATION BELOW FOR REQUESTING THE CHOSEN LEVEL: Up through Level 5 data (admission date, discharge date, and significant procedures) is required to meet our project’s aims and objectives, and answer our research questions. Specifically, Level 5 data is needed to examine utilization patterns specific to readmission or return visits (for example, a patient is initially admitted as an inpatient but returns and is put into outpatient observation status within 30 days) among patients in the target populations for each CHART hospital project. Note: 5-digit ZIP is not listed here as in Inpatient for Level 2 and we would like that as well.	Year(s) of Data Requested: 2013 Release (10/1/2012-9/30/2013) 2014 Release (10/1/2013-9/30/2014)
Emergency Department	<input checked="" type="checkbox"/> Level 1 – 3 Digit Zip Code <input checked="" type="checkbox"/> Level 2 – Unique Physician Number (UPN) <input checked="" type="checkbox"/> Level 3 – Unique Health Information Number (UHIN) <input checked="" type="checkbox"/> Level 4 – UHIN and UPN <input checked="" type="checkbox"/> Level 5 – Date(s) of Admission; Discharge; Significant Procedures	Year(s) of Data Requested: 2013 Release (10/1/2012-9/30/2013) 2014 Release

	<p><input type="checkbox"/> Level 6 -- Date of Birth; Medical Record Number; Billing Number PLEASE PROVIDE JUSTIFICATION BELOW FOR REQUESTING THE CHOSEN LEVEL:</p> <p>Up through Level 5 data (admission date, discharge date, and significant procedures) is required to meet our project's aims and objectives, and answer our research questions. Specifically, Level 5 data is needed to examine utilization patterns specific to ED return visits (for example, a patient is initially admitted as an inpatient but returns to the Emergency Department within 30 days) and ED revisits among patients in the target populations for each CHART hospital project.</p> <p>Note: 5-digit ZIP is not listed here as in Inpatient for Level 2 and we would like that as well.</p>	(10/1/2013-9/30/2014)
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2. FY 2015 Data: Beginning with fiscal year 2015, Massachusetts Acute Care Hospital and Case Mix and Charge Data (collectively Case Mix Data) are released in **Limited Data Set (LDS) files**. Please refer to the Case Mix Data Specifications for details of the file contents.

Please indicate the Case Mix files from which you seek data, the year(s) of data requested, and your justification for requesting each file.

CASE MIX LIMITED DATA SET FILES	Year(s) Of Data Requested Current Yrs. Available <input checked="" type="checkbox"/> 2015	
<input checked="" type="checkbox"/> Inpatient Discharge	<p>Please describe how your research objectives require Inpatient Discharge data:</p> <p>Inpatient discharge data is required to meet our project's aims and objectives, and answer our research questions. Specifically, these data are needed to examine utilization patterns specific to inpatient admissions and readmissions among patients in the target populations for each CHART hospital project.</p>	
<input checked="" type="checkbox"/> Outpatient Observation	<p>Please describe how your research objectives require Outpatient Observation data:</p> <p>Outpatient observation data is required to meet our project's aims and objectives, and answer our research questions. Specifically, these data are needed to examine utilization patterns specific to readmission or return visits (for example, a patient is initially admitted as an inpatient but returns and is put into outpatient observation status within 30 days) among patients in the target populations for each CHART hospital project.</p>	
<input checked="" type="checkbox"/> Emergency Department	<p>Please describe how your research objectives require Emergency Department data:</p> <p>Emergency Department data is required to meet our project's aims and objectives, and answer our research questions. Specifically, these data are needed to examine utilization patterns specific to ED return visits (for example, a patient is initially admitted as an inpatient but returns to the Emergency Department within 30 days) and ED revisits among patients in the target populations for each CHART hospital project.</p>	

Sections IV-IX must be completed by all Applicants requesting 2015 data. Applications that only include requests for prior years of data can skip to Section X.

IV. GEOGRAPHIC DETAIL

Please choose one of the following geographic options for MA residents:

<input type="checkbox"/> 3 Digit Zip Code (Standard)	<input type="checkbox"/> 3 Digit Zip Code & City/Municipality ***	<input checked="" type="checkbox"/> 5 Digit Zip Code ***	<input type="checkbox"/> 5 Digit Zip Code & City/Municipality ***
<p>***Please provide justification for the chosen level of geographic detail if requesting something other than 3-Digit Zip Code only. Refer to specifics in your methodology:</p> <p>CHART hospitals serve patients originating from across the state of MA. 5-digit zip code data are necessary for more accurate analysis of each hospital's patient populations with respect to the key outcomes in our study (e.g., readmission rates). More specifically, we can use this information (patient's home zip code at time of visit/admission) to see the distance patients are traveling for care. 3-digit zip codes limit our ability to perform these analyses in that they provide information on a more aggregate level. This level of geographic detail will also allow us develop refined measures of hospital catchment areas.</p>			

V. DEMOGRAPHIC DETAIL

Please choose one of the following demographic options:

<input type="checkbox"/> Not Requested (Standard)	<input checked="" type="checkbox"/> Race & Ethnicity***
<p>*** If requested please, provide justification for requesting Race and Ethnicity. Refer to specifics in your methodology:</p> <p>Race and ethnicity data are necessary to control for trends in utilization that may relate to health care disparities in order to better understand the impacts of the CHART Phase 2 Investment program. We are specifically interested in how issues of African Americans and non-white Latinos compare to whites in terms of their admissions and readmission rates among the CHART hospital programs.</p>	

VI. DATE DETAIL

Please choose one option from the following options for dates:

<input type="checkbox"/> Year (YYYY)(Standard)	<input type="checkbox"/> Month (YYYYMM) ***	<input checked="" type="checkbox"/> Day (YYYYMMDD)***
<p>***Please provide justification for the chosen level of date detail if requesting Month or Day. Refer to specifics in your methodology:</p> <p>Dates of discharge and admission are necessary to determine the main quantitative improvement targets under the CHART program, namely inpatient readmission and ED revisit rates. Moreover, the program is focused, in part, on the readiness of CHART hospitals to adopt the practices consistent with ACO readiness. Thus, we must investigate outcomes (e.g., readmissions) that are consistent with evaluating where hospitals lie on that spectrum of readiness. More specifically, without the ability to calculate Length of Stay (LOS) and having the exact date of admission and discharge, we will be unable to create the time intervals needed to determine the how far apart the patient admissions were.</p>		

VII. PHYSICIAN IDENTIFICATION NUMBERS (UPN)

Please choose one of the following options for Provider Identifier(s):

<input checked="" type="checkbox"/> Not Requested (Standard)	<input type="checkbox"/> Hashed ID ***	<input checked="" type="checkbox"/> Board of Registration in Medicine # (BORIM) ***
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***If requested please, provide justification for requesting Hashed ID or BORIM #. Refer to specifics in your methodology: *As documented in the uploaded CHART Phase 2 Evaluation: Design Report, the project evaluation involves evaluating the coordination of high risk care teams, in order to evaluate those teams provider data is needed.*

VIII. HASHED UNIQUE HEALTH IDENTIFICATION NUMBER (UHIN)

Please choose one of the following:

<input type="checkbox"/> Not Requested (Standard)	<input checked="" type="checkbox"/> UHIN Requested ***
*** If requested please, provide justification for requesting UHIN. Refer to specifics in your methodology:	
UHIN numbers are to be used in this study to link the inpatient, observation and ED data.	

IX. HASHED MOTHER'S SOCIAL SECURITY NUMBER

Please choose one of the following:

<input checked="" type="checkbox"/> Not Requested (Standard)	<input type="checkbox"/> Hashed Mother's SSN Requested ***
*** If requested please, provide justification for requesting Hashed Mother's SSN. Refer to specifics in your methodology:	

X. DATA LINKAGE AND FURTHER DATA ABSTRACTION

Note: Data linkage involves combining CHIA Data with other databases to create one extensive database for analysis. Data linkage is typically used to link multiple events or characteristics that refer to a single person in CHIA Data within one database.

1. Do you intend to link or merge CHIA Data to other datasets?

- Yes
- No linkage or merger with any other database will occur

2. If yes, please indicate below the types of database to which CHIA Data be linked. [Check all that apply]

- Individual Patient Level Data (e.g. disease registries, death data)
- Individual Provider Level Data (e.g., American Medical Association Physician Masterfile)
- Individual Facility Level Data level (e.g., American Hospital Association data)
- Aggregate Data (e.g., Census data)
- Other (please describe):

3. If yes, describe the data base(s) to which the CHIA Data will be linked, which CHIA data elements will be linked; and the purpose for the linkage(s):

Individual Facility-level Data: Since the CHIA database uses codes to identify hospitals, we would need to link these codes to a Masterfile or reference table to translate the code into a hospital name. (<http://www.chiamass.gov/case-mix-data-documentation-archive/>). The most likely example of an existing database that we would use here would be the American Hospital Association Annual Survey of Hospitals). Linkage will be made to include structural characteristics of hospitals (e.g., bed size, admissions, etc.) where needed.

Individual Provider-level Data: Individual physicians are identified in the data with a code that would need to be linked to a Masterfile or reference table to translate the code into a provider. The specifics of the linkages and the crosswalk needed are to be determined at this point, but we would likely rely on publicly available information whenever possible.

Aggregated Data: Census data would be used (U.S. census data) to include demographic characteristics into our evaluation analysis. Zip code level data would most likely be used.

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.

Data linkages would be made by employing deterministic approach. For example, in linking the AHA data set to the Case Mix Data, hospital ID is a variable that would be found in multiple datasets and we would link the two data sets using that variable.

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

Data will only be linked in aggregate form. We do not have patient level information (e.g., level 6 data) that would be required to identify individual patients.

XI. PUBLICATION / DISSEMINATION / RE-RELEASE

1. Describe your plans to publish or otherwise disclose CHIA Data, or any data derived or extracted from such CHIA Data, in any paper, report, website, statistical tabulation, seminar, conference, or other setting. 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 display a cell less than 11, and no percentages or other mathematical formulas will be used if they result in the display of a cell less than 11.

The researchers involved in this evaluation intend to publish the results of the proposed project in academic peer-reviewed journals, present findings at conferences, and provide the Health Policy Commission with a number of reports that will be based on the data. The researchers will not disaggregate data below the cell size limitations (11) stipulated by MA CHIA.

2. Do you anticipate that the results of your analysis will be published and/or publically available to any interested party? Please describe how an interested party will obtain your analysis and, if applicable, the amount of the fee, that the third party must pay.

Yes, we anticipate our results to be published in peer-reviewed journals and the Health Policy Commission will post our reports publicly (e.g., available on the HPC website). We do not intend on making the details of our analysis available to any third-party for free or a fee.

3. Will you use CHIA Data for consulting purposes?

- Yes
 No

4. Will you be selling standard report products using CHIA Data?

- Yes
 No

5. Will you be selling a software product using CHIA Data?

- Yes
 No

6. Will you be reselling CHIA Data in any format?

- Yes
 No

If yes, in what format will you be reselling CHIA Data (e.g., as a standalone product, incorporated with a software product, with a subscription, etc.)?

N/A

7. If you have answered "yes" to questions 4, 5 or 6, please describe the types of products, services or studies.

N/A

8. If you have answered "yes" to questions 4, 5, or 6, what is the fee you will charge for such products, services or studies?

N/A

XII. APPLICANT QUALIFICATIONS

1. Describe your qualifications (and the qualifications of your co-investigators) to perform the research described.

The members of our program evaluation team are expert in all components of the CHART evaluation. Our experience includes performing quantitative examinations of community, organization and patient-level issues. Members of our team include experts (some with more than 30 years of experience) in state and federal health policy, the MA provider landscape—with a particular specialization on community hospitals, payment model innovation, innovative care delivery models, hospital strategy and operations, quality improvement (e.g., hospital readmissions), behavioral and mental health, mixed-methods evaluation, advanced econometric and other analytic methods such as patient outcomes measurement, performing and analyzing key informant interviews and focus groups, and survey research design and analysis.

Our evaluation team and supporting seasoned programmers and statisticians are well-versed in using hospital discharge and medical claims data, survey data, cost and utilization data to analyze a broad range of clinical, process, and financial outcomes. The BUSPH also operates a Data Coordinating Center (DCC), which specializes in statistical and database programming, survey administration and study design.

Quantitative Experience. Our quantitative experience focuses in managing large and complex data systems, such as Medicaid and Medicare claims data, the MA APCD, and hospital claims and discharge data. Moreover, our evaluation team members have deployed methodologies commonly used in comparative analyses, including difference-in-differences, risk-adjustment, and patient measurement each of which we will be using in this evaluation. BUSPH operates an internal group of data cleaning, data management, and SAS programming experts within its Data Coordinating Center. We will leverage their knowledge of large data sets and vast programming capabilities to perform complex analyses in a timely manner. For example, members of our team leading the quantitative analysis have recently performed studies focusing on health care cost and utilization (Carey, 2016; Carey, 2015) and hospital readmissions (Carey & Lin, 2015; Carey, 2015; Carey & Lin, 2014).

2. **Attach** résumés or curricula vitae of the Applicant/principal investigator, and co-investigators. (These attachments will not be posted on the internet.)

XIII. USE OF AGENTS AND/OR CONTRACTORS

Please note: by signing this Application, the Organization assumes all responsibility for the use, security and maintenance of the CHIA Data by its agents, including but not limited to contractors.

Third-Party Vendors. Provide the following information for all agents and contractors who will work with the CHIA Data.

Company Name:	
Contact Person:	
Title:	
Address:	
Telephone Number:	
E-mail Address:	
Organization Website:	

1. Will the agent have access to the CHIA Data at a location other than your location, your off-site server and/or your database?

- Yes, a separate Data Management Plan must be completed by each agent who will store CHIA Data
- No

2. Describe the tasks and products assigned to this agent for this project; their qualifications for completing the tasks; and the Organization’s oversight of the agent, including how the Organization will ensure the security of the CHIA Data to which the agent has access.

N/A

XIV. FEE INFORMATION

Please consult the fee schedules for Case Mix Data and select from the following options:

- Single Use
- Limited Multiple Use
- Multiple Use

Are you requesting a fee waiver?

- Yes
- No

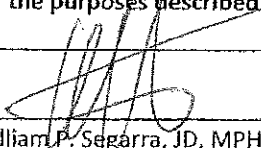
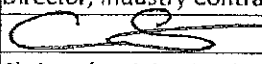
If yes, please refer to the Application Fee Remittance Form and submit a letter stating the basis for your request (if required). Please refer to the fee schedule for qualifications for receiving a fee waiver. If you are requesting a waiver based on the financial hardship provision, please provide documentation of your financial situation. Please note that non-profit status alone isn’t sufficient to qualify for a fee waiver.

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By submitting this Application, the Data Applicant attests that it is aware of its data use, privacy and security obligations imposed by state and federal law *and* is compliant with such use, privacy and security standards. The Data Applicant further agrees and understands that it is solely responsible for any breaches or unauthorized access, disclosure or use of any CHIA Data provided in connection with an approved Application, including, but not limited to, any breach or unauthorized access, disclosure or use by its agents.

Applicants requesting data from CHIA will be provided with data following the execution of a Data Use Agreement that requires the Data Applicant to adhere to processes and procedures aimed at preventing unauthorized access, disclosure or use of data.

By my signature below, I attest to: (1) the accuracy of the information provided herein; (2) that the requested data is the minimum necessary to accomplish the purposes described herein; (3) the Data Applicant will meet the data privacy and security requirements describe 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) my authority to bind the organization seeking CHIA Data for the purposes described herein.

Signature: (Authorized Agent)	
Printed Name :	William P. Segarra, JD, MPH
Title:	Director, Industry Contracts & Agreements
Applicant's Signature:	
Name:	Christopher J. Louis, PhD
Title:	Clinical Assistant Professor
Original Data Request Submission Date:	9/12/16
Dates Data Request Revised:	

Attachments. Please indicate below which documents have been attached to the Application and uploaded to IRBNet:

- 1. IRB approval letter or summary of project (if applicable)
- 2. Resumes of Applicant and co-investigators
- 3. Data Management Plan (for each institution that will store CHIA Data) – BUSPH Only