Massachusetts Division of Health Care Finance and Policy
Application for All-Payer Claims Database (APCD) Data

Applications for APCD data must meet the requirements set forth in regulation **114.5 CMR 22.00: Health Care Claims Data Release** and any Administrative Bulletins promulgated under this regulation. The regulation and bulletins are available online at
http://www.mass.gov/eohhs/gov/departments/hcf/regulations.html.
Information provided on pages 1-4 of this application will be posted on the internet for public comment.

A. APPLICANT INFORMATION	
Applicant Name:	Wenjun Li, PhD
Title:	Director of Health Geography Lab, Associate Professor of Medicine
Organization:	Division of Preventive and Behavioral Medicine, University of Massachusetts Medical School
Project Title:	Health Care Reform and Disparities in the Care and Outcomes of Trauma Patients
Date of Application:	08/30/2012
Brief Description of Project (240 character limit)	This NIH funded disparities project examines the cost of traumatic injuries and extent to which insurance coverage influences quality of care, post-discharge morbidity and mortality, and post-acute care resource utilization.

B.   DATA REQUESTED

1. PUBLIC USE			
File	SINGLE USE* '08 – '09 – '10	REPEATED USE* '08 – '09 – '10	MULTIPLE USE* '08 – '09 – '10
Medical Claims	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Pharmacy Claims	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Dental Claims	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Membership Eligibility	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Provider	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Product	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐

2. RESTRICTED USE			
File	SINGLE USE* '08 – '09 – '10	REPEATED USE* '08 – '09 – '10	MULTIPLE USE* '08 – '09 – '10
Medical Claims	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Pharmacy Claims	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Dental Claims	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Membership Eligibility	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Provider	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐
Product	☐ ☐ ☐	☒ ☒ ☒	☐ ☐ ☐

3. **Filters:** If you are requesting data elements from the Restricted Use dataset, describe any filters you are requesting to use in order to limit your request to the minimum set of records necessary to complete your project. (For example, you may only need individuals whose age is less than 21, claims for hospital services only, or only claims from small group products.)

File	Data Element(s)	Range of Values Requested
Medical Claims	MC041 (principal diagnosis)	800-959.9, 994.1, 994.7, 995.55
Pharmacy Claims		
Dental Claims		
Membership Eligibility		
Provider		
Product		

4. **Restricted data elements:** If you are requesting Data Elements from the Restricted Use dataset, list each restricted data element you are requesting on the attached Data Element List and explain why you need access to EACH Restricted Use data element for your project. Limit your request to the minimum data elements necessary to complete the project and be specific as to how each element relates to your proposed model/analytic plan. Add rows to this table as needed.

Restricted Data Element	Restricted Data Element Description	Data File	Justification (reason this data element is necessary for your project)
Patient basic information			
Assigned by DHCFP	Admission Month		Assess temporal trends in utilization, outcomes and costs
Assigned by DHCFP	Admission Year		Assess temporal trends in utilization, outcomes and costs
Assigned by DHCFP	First 3 of Member zip code		Assess variations in utilization, outcomes and costs at the levels of municipal community and postal geographic area
Assigned by DHCFP	First 3 of Subscriber zip code		Assess variations in utilization, outcomes and costs at the levels of municipal community and postal geographic area
Assigned by DHCFP	Member Birth Month		Age risk profiles and age-adjusted rate calculations
Assigned by DHCFP	Member Birth Year		Age risk profiles and age-adjusted rate calculations

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Restricted Data Element	Restricted Data Element Description	Data File	Justification (reason this data element is necessary for your project)
Medical Claims (MC)			
MC004	Payer Claim Control Number	MC	Analysis of medical payments by insurance payer
MC006	Insured Group or Policy Number	MC	Analysis of medical coverage and payment differences by employer groups
MC011	Individual Relationship Code	MC	Assess demographic differences in payment and coverage trends by patient-subscriber relationship
MC014	Member City Name	MC	Assess geographic differences in aggregated costs and payment trends by member's city of residence
MC016	Member ZIP Code (first 3 Digits)	MC	Assess variation in utilization, outcomes and costs at the levels of municipal community and postal geographic area
MC018	Admission Date	MC	Analyze seasonality of acute inpatient care examining costs and payments and outcome differences associated with length of stay, seasons of the year, months, days of the week
MC019	Admission Hour	MC	Analyze temporality of acute inpatient care examining costs and payment and outcome differences associated with hour of day
MC022	Discharge Hour	MC	Analyze temporality of acute inpatient care examining costs and payment and outcome differences associated with hour of day and length of stay
MC025	Service Provider Tax ID Number	MC	Analyze differences in coverage and costs by insurance provider

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Restricted Data Element	Restricted Data Element Description	Data File	Justification (reason this data element is necessary for your project)
Medical Claims (MC)			
MC059	Date of Service - From	MC	Analyze frequency of care, costs, and differences between seasons, days of the week
MC060	Date of Service - To	MC	Analyze frequency of care, costs, and differences between seasons, days of the week
MC068	Patient Control Number	MC	Analyze cumulative costs of same patient by number assigned by hospital
MC069	Discharge Date	MC	Analyze length of stay, costs, and differences discharge dispositions between seasons, days of the week
MC137	CarrierSpecificUniqueMemberID	MC	Used within APCD file types to internally match patient's medical claims data to medical eligibility data
MC141	CarrierSpecificUniqueSubscriberID	MC	Used within APCD file types to internally match patient's medical claims data to medical eligibility data

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Restricted Data Element	Restricted Data Element Description	Data File	Justification (reason this data element is necessary for your project)
Dental Claims (DC)			
DC002	National Plan ID	DC	Analyze outcomes and costs by patient provider demographics
DC004	Payer Claim Control Number	DC	Analyze dental payments by insurance payer
DC006	Insured Group or Policy Number	DC	Analyze dental coverage and payment differences by employer groups
DC011	Individual Relationship Code	DC	Assess demographic differences in payment and coverage trends by patient-subscriber relationship
DC014	Member City Name	DC	Assess geographic differences in aggregated costs and payment trends by member's city of residence
DC016	Member ZIP Code (first 3 Digits)	DC	Assess variation in utilization, outcomes and costs at the levels of municipal community and postal geographic area
DC019	Service Provider Tax ID Number	DC	Analyze differences in coverage and costs by insurance provider
DC035	Date of Service - From	DC	Analyze frequency of care, costs, and differences between seasons, days of the week
DC036	Date of Service - Thru	DC	Analyze frequency of care, costs, and differences between seasons, days of the week
DC044	Billing Provider Tax ID Number	DC	Analyze differences in coverage and costs by insurance provider
DC056	CarrierSpecificUniqueMemberID	DC	Used within APCD file types to internally match patient's dental claims data to eligibility data
DC057	CarrierSpecificUniqueSubscriberID	DC	Used within APCD file types to internally match patient's dental claims data to eligibility data

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Restricted Data Element	Restricted Data Element Description	Data File	Justification (reason this data element is necessary for your project)
Medical Eligibility (ME)			
ME002	National Plan ID	ME	Analyze outcomes and costs by patient provider demographics
ME006	Insured Group or Policy Number	ME	Analyze insurance coverage and payment differences by employer groups
ME012	Individual Relationship Code	ME	Assess demographic differences in payment and coverage trends by Grandparents, Grandchildren, Life Partners, Significant Others, Nephews/Nieces, Cadaver Donors, Dependents, Handicapped Dependents, Parents, Spouses, Emancipated Minors, Foster Children, Wards, Stepchildren, Children, or Employee/Self
ME015	Member City Name	ME	Assess geographic differences in aggregated costs and payment trends by member's city of residence
ME046	Member PCP ID	ME	Care analysis by provider and internally matching APCD files eligibility file to provider file
ME054	Eligibility Determination Date	ME	Analyze coverage differences at time of care
ME057	Date of Death	ME	Analyze post discharge survival and all injury mortality rates
ME065	Date of Retirement	ME	Determine timing of changing insurer(s)
ME067	Spouse Plan Type	ME	Assess demographic differences in payment and coverage and costs analysis
ME068	Spouse Plan	ME	Assess demographic differences in payment and coverage and costs analysis

Restricted Data Element	Restricted Data Element Description	Data File	Justification (reason this data element is necessary for your project)
Medical Eligibility (ME)			
ME069	Spouse Medical Coverage	ME	Assess demographic differences in payment and coverage and costs analysis
ME070	Spouse Medicare Indicator	ME	Assess demographic differences in payment and coverage and costs analysis
ME071	Pool Indicator	ME	Analyze patient/provider demographic analysis and costs
ME076	Member rating category	ME	Analyze costs, quality, outcomes of health services
ME107	CarrierSpecificUniqueMemberID	ME	Used within APCD file types to internally match patient's claims data to eligibility data
ME108	Subscriber City Name	ME	Used within APCD file types to internally match patient's claims data to eligibility data
ME117	CarrierSpecificUniqueSubscriberID	ME	Used within APCD file types to internally match patient's claims data to eligibility data
Product File (PR)			
PR002	Product Name	PR	Analysis of differences in utilization and costs by product
PR005	Insurance Plan Market	PR	Analysis of utilization, outcomes, costs
PR007	Other Product Benefit Description	PR	Analysis of utilization, outcomes, costs
PR009	Product Start Date	PR	Analysis of utilization, outcomes, costs
PR010	Product End Date	PR	Analysis of utilization, outcomes, costs
Provider File (PV)			
PV016	Street Address1 Name	PV	Geographic analysis of provider utilization volume
PV017	Street Address2 Name	PV	Geographic analysis of provider utilization volume

1. Please describe the purpose of your project and how you will use the APCD.

Purpose of the project:

Health Care Reform (HCR) is of paramount importance to Massachusetts and to the national agenda. UMass teamed with MDPH to successfully procure NIH R01 funding to analyze the impact of Massachusetts (MA) HCR on disparities in trauma care delivery and quality and identify changes in care infrastructure and policies that are critical for quality improvement, cost reduction and ultimate elimination of disparities. The State's latest death report revealed that over the past decade (from 2000-2009), injury deaths have been increasing in Massachusetts at a rate of 1.6% per year and that disparities persist in premature mortality. Premature mortality is one of the leading indicators of a lack of access to care and in Massachusetts traumatic injuries are the leading contributor to years of potential life loss. One of the goals of MA HCR has been to lower financial barriers to lifesaving medical resources. Lifesaving medical resources are the sum of all diagnostic, therapeutic, and rehabilitative procedures. For the first time ever, the APCD database will enable our project team to characterize the costs and coverage for the full spectrum of care for trauma patients. This investigation focuses on 5 groups of outcomes and quality indicators of clinical and policy significance: utilization, trauma mortality risk, quality indicators, and cost of trauma care. Multi-level models will be used to analyze data routinely collected by state agencies between 2002 and 2011 includes: 1) Trauma Registry (2008-2011), 2) ED data, 3) Inpatient discharge data, 4) Observation stay data, 5) Vital records/death statistics, and 6) All Payers Claims Database. The 3 specific aims are to:

1. Determine the predictors, extent and temporal changes of disparities in the 5 groups of key outcomes and quality indicators, before and after the implementation of MA HCR;
2. Determine the impact of MA HCR on the reduction of these disparities by comparing disparity indices and their components before and after the HCR, and
3. Develop evidence-based recommendations on critical changes in infrastructure and trauma care policies to improve outcomes and eliminate disparities when HCR is already in place.

Use of APCD data: APCD database will be used to examine total trauma care costs at patient and population subgroup and municipality levels. We will examine the extent to which limited insurance coverage influences quality of care, outcomes after inpatient hospitalization, and continuity of care based on post-acute resource utilization. The use of APCD data will enable the assessment of disparities in access to post-acute rehabilitation services, free standing CT scanning services, ambulatory surgery and pharmaceutical needs, including analyses of coinsurance amounts, deductible amounts, dispensing fees with demographic and regional treatment patterns. The cost and utilization data will be aggregated by select patient and population subgroups (e.g., sex by age groups, racial ethnic categories), insurance characteristics (e.g., insurance type, co-payments), and geography (e.g., municipality, county, EMS region and rural-urban classification). The findings of this analysis will inform State trauma care coordination by MDPH.

2. Please explain why completing your project is in the public interest.

This project investigates the impact of Massachusetts health care reform on disparities in trauma care. The MA HCR law was enacted in 2006 to provide universal access to medical care and to improve health. However, little is known about whether this has actually improved health care utilization by economically marginalized populations, reduced disparities in the quality of care, and consequently improved health outcome. To our knowledge, such an investigation has not been carried out.

This proposed investigation will thus fill a critical knowledge gap on the role of HCR in eliminating health care disparities by providing timely, unique, and valuable information to the current policy debate on national HCR. This investigation will have a profound impact on the utility of the MA Trauma Registry and the capacities of the MA State Trauma System, by providing community- and system-level information on trauma surveillance and care to support policy decisions. As a community body with broad representation by stakeholders who care for traumatized patients, the MA State Trauma Committee serves as an effective dissemination agent and advocacy arm for policy recommendations and adoption of practice guidelines. This Committee advises the State Emergency Medical Services Board and Public Health Commissioner regarding issues on trauma care. The investigation team will collaborate with the Committee to translate evidence-based treatment guidelines into practice through community- and/or systems-specific planning and policy development. This is project is strongly supported by MDPH leadership, State Trauma Committee, and American College of Surgeons. In summary, this investigation should have an impact on trauma care at the state, community and system levels by 1) Identifying geographic, socioeconomic, racial/ethnic and systems disparities in trauma care among the 6 million MA residents; 2) Determining the impact of HCR on trauma care delivery and outcomes (i.e., post-HCR changes over time); 3) Providing evidence-based recommendations to reduce disparities in trauma care delivery and outcomes; and 4) Developing methodologies potentially generalizable to other diseases, geographic units, and populations.

The analysis of trauma care cost and outcomes in relation to insurance status using APCD data is critical to public policy evaluation and future improvement of the state's trauma care system. In addition, this investigation will result in actionable information as well as new and refined methods for the analysis of large population-based government databases, and generate findings that are uniquely useful to both trauma care providers and disparities policy specialists.

3. **Attach** a brief (1-2 pages) description of your research methodology.
    <u>See attached</u>.

4. Has your project received approval from your organization's Institutional Review Board (IRB)?
    ☐ Yes, and a copy of the approval letter is attached to this application
    ☒ No, the IRB will review the project (Phase Two) immediately <u>after this application for APCD data is approved by DHCFP. The project has received MDPH IRB approval for its Phase One study that does not include the use of APCD data.</u>
    ☐ No, this project is not subject to IRB review
    ☐ No, my organization does not have an IRB

1. Describe your qualifications to perform the research described or accomplish the intended use.

> The Principal Investigator Wenjun Li, PhD, is Associate Professor of Medicine (Biostatistics) at UMass Medical School. He has expertise in survey sampling, biostatistics, epidemiology and applications of Geographic Information Systems and spatial statistics in public health research. He has extensive experience in analyzing observational cohort, clinical registry and public health surveillance data, in particular, assessing community compositional and contextual effects on health behaviors, health outcomes and health care utilization patterns. Dr. Li's research experience directly relevant to this proposed project includes a) statistical analysis of mortality, clinical complications and outcomes using hospital administrative data, statewide and national clinical registries and epidemiologic surveillance databases; b) deriving community-level socioeconomic and physical environment data from U.S. Census and other publically available databases, c) analyzing impact of community socioeconomic and built environment on health outcomes and behaviors, and health care utilizations using data from large cohort studies and governmental health-related databases, and d) deriving and disseminating community-level statistics for policy considerations.

2. Describe the software you plan to use to analyze the data and the experience that the applicant's team members have in using that software.

> We will use SAS 9.2/9.3, SQL Server and Stata MP 12 to conduct statistical analyses of the data. Both the PI (Dr. Li), Co-PI (Sylvia Hobbs), and project staff are experienced statistical programmers with at least MS in Biostatistics or Epidemiology, and minimum of four years of programming experiences. Statistical programming and analysis will be supervised by Dr. Li.
>
> UMMS site:
> Wenjun Li, PI, has a PhD in Biostatistics and > 15 years of experience in analyzing complex health data.
> Kevin Kane, MS, Biostatistician III, 17 years of experience in analyzing clinical and hospital data
> Lili Chen, MS, Biostatistician II, 4 years of experience in analyzing public health data
> Hyung-joo Kang, MS, Biostatistician II, 5 years of experience in analyze clinical data
> Elizabeth Procter-Gray, PhD, MPH, Biostatistician II, 6 years of experience in analyzing epidemiologic and clinical data
> CHIA site:
> Sylvia Hobbs, MPH, Director of Research Evaluation, has >20 years of experience in hospital administrative data.
> MDPH site:
> Holly Hackman, MD, MPH, Injury Epidemiologist, has >20 years of experience in analyzing hospital administrative data using Stata.
> Chloen System:
> Chris Campeau, System Engineer, will be responsible for extracting data subsets needed by the above named analysts. He will not conduct statistical analysis of the data..

3. Attach résumés or curriculum vitae of the applicant/principal investigator, key contributors, and of all individuals who will have access to the data. (These attachments will not be posted on the internet.)

Attached are the CVs of the above named individuals having access to the data.

E. DATA LINKAGE AND FURTHER DATA ABSTRACTION

1. Does your project require linking the APCD to another dataset?
   YES ☐   NO ☒

2. If yes, will the APCD be linked to other patient level data or with aggregate data (e.g. Census data)?
   Patient Level Data ☐   Aggregate Data ☐

3. If yes, please identify all linkages proposed and explain the reasons(s) that the linkage is necessary to accomplish the purpose of the project.

   Not applicable.

4. If yes, specify the specific steps you will take to prevent the identification of individual patients in the linked dataset.

   Not applicable.

F.   RE-RELEASE OF DATA

Applicants must obtain prior approval from the Division to publish reports that use APCD files. Applicants must provide the Division with a copy of any report at least 30 days prior to release to outside parties, including peer review and prepublication analysis by anyone other than the individuals named in this Application. The Division will review the report to ensure that the publication will not permit identification of an individual patient or permit identification of a specific payment by individual payer. The Division may prohibit release of reports that may permit identification of individual patients or specific payment by individual payer.

1. Describe your plans to publish or otherwise disclose any APCD data elements, or any data derived or extracted from such data, in any paper, report, website, statistical tabulation, or similar document.

    a) No person level data will be published or released.
    b) We will prepare manuscripts and reports for publication in peer reviewed journals or to be presented at academic conferences or other public forums. Following the Division's requirements, we will submit to the Division our manuscripts, statistical tabulations or report for approval, at least 30 days prior to release to outside parties.
    c) As required by the federal government and NIH, we will file annual report to NIH that may or may not include results from APCD data.
    d) Interim and final reports will be generated and disseminated to MA State Trauma Committee, project staff, state policymakers and to the general public. Only aggregate data will be disseminated.
    e) All results presented will comply with the suppression standards required for APCD and that complementary suppression will be employed when necessary.

2. Will the results of your analysis be publicly available to any interested party? Will you charge a fee for the reports or analysis? Please describe how an interested party will obtain your analysis and, if applicable, the amount of the fee.

    Our analytic results will made publicly available to any interested party, free of charge.

3. Will you use the data for consulting purposes?
    YES   ☐   NO   ☒

4. Will you be selling standard report products using the data?
    YES   ☐   NO   ☒

5. Will you be selling a software product using the data?
    YES   ☐   NO   ☒

6. If you have answered "yes" to questions 3, 4 or 5, please (i) describe the types of products, services or studies; (ii) estimate the number and types of clients for which the data will be used and (iii) describe any rerelease of data by your clients.

    N/A.

G. USE OF AGENTS OR CONTRACTORS

<u>Third-Party Vendors</u>. Provide the following information for all agents and contractors who will work with the APCD data.

Company Name:	Chloen Systems
Contact Person:	Christopher Campeau
Title:	Systems Analyst
Address:	16 Cedar Pond Road, Lakeville, MA
Telephone Number:	774.218.3591
Fax Number:	
E-mail Address:	ccampeau@chloensystems.com
Organization Website:	http://www.chloensystems.com/

1. Will the agent/contractor have access to the data at a location other than your location or in an off-site server and/or database?

    YES   ☐   NO   ☒

2. Describe the tasks and products assigned to this agent or contractor for this project.

    Data management and prioritizing data subset extracts needed by technical project team (statisticians and biostatisticians for analyses) and curating aggregated analytic data sets.

3. Describe the qualifications of this agent or contractor to perform such tasks or deliver such products.

    Chloen Systems has been involved in currently involved in numerous aspects of the software delivery process for the Executive Office of health and Human Services and has managed and been technical leader on many large scale projects on behalf of Commonwealth of Massachusetts government agencies including, but not limited to:
    - MCADCMS – MA Commission Against Discrimination
    - HSNO Claims Processing - Division of Health Care Finance and Policy
    - Trauma Data Collection and Processing– Department of Public Health
    - INET/Enterprise Processing Systems (EPS) – Division of Health Care Finance and Policy
    - eMarriages (EMR) – Department of Public Health/Registry of Vital Records and Statistics
    - Statewide Trauma Registry Data Collection – Department of Public Health/Division of Health Care Finance and Policy/Massachusetts Highway Department
    - Customer Management System (CMS2) - Division of Health Care Finance and Policy
    - Strategic Plan for Department of Public Health/Registry of Vital Records and Statistics
    - Hospital Inpatient (casemix/HDD) Data Collection - Division of Health Care Finance and Policy
    - Emergency Department Data Collection (ED) - Division of Health Care Finance and Policy
    - Outpatient Observation Data Collection (OOA)- Division of Health Care Finance and Policy
    - UCP Hospital/CHC Claims Data Collection - Division of Health Care Finance and Policy
    - Hospital 403 Cost Report Data Collection (H403) - Division of Health Care Finance and Policy

- QSHIP - Division of Health Care Finance and Policy
- Recipient Eligibility and Verification (REVS) – MA Department of Medical Assistance
- Uncompensated Care Pool Free Care – Division of Health Care Finance and Policy

4. Describe your oversight and monitoring of the activity and actions of this agent or subcontractor.

The Contractor has worked with DPH for several years managing the trauma registry data and DHCFP data and is located onsite and provides weekly updates during technical project team meetings and has undergone confidentiality training for handling the State's protected data.