

JH

**ATTORNEY GENERAL
DEPARTMENT OF JUSTICE**

1 GRANITE PLACE SOUTH
CONCORD, NEW HAMPSHIRE 03301

JOHN M. FORMELLA
ATTORNEY GENERAL



JAMES T. BOFFETTI
DEPUTY ATTORNEY GENERAL

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May 1, 2025

Her Excellency, Governor Kelly A. Ayotte
and the Honorable Council
State House
Concord, New Hampshire 03301

Your Excellency and Members of the Council:

REQUESTED ACTION

Authorize the New Hampshire Department of Justice (DOJ) to enter into a subgrant with the University of New Hampshire, in an amount not to exceed \$1,594,543, to establish the UNH Center for Studying Healthcare Markets for the purposes of conducting research and publishing studies on the New Hampshire healthcare market, effective upon Governor and Executive Council approval through December 31, 2028. 100% Revolving Funds.

Funding is available as follows:

02-20-20-200010-63930000	<u>SFY 2025</u>
<u>Health Care Consumer Prot TF</u>	
073-500579, Grants to Institutions-State	\$1,594,543

EXPLANATION

The purpose of the grant is for the University of New Hampshire to establish the UNH Center for Studying Healthcare Markets, which will research and publish information and studies on the New Hampshire healthcare market. There are three primary goals for the research grant: evaluate trends in healthcare market concentration in New Hampshire, conduct original research on the effects of healthcare market concentration on various outcomes relevant to consumers, and provide data analytics support to interested New Hampshire government agencies.

New Hampshire has seen a growing trend of hospital consolidation in recent years. The Department of Justice is responsible for reviewing proposed hospital merger transactions in the state. However, through the office's confidential antitrust review, information on the impacts of

Her Excellency, Governor Kelly A. Ayotte
and the Honorable Council
May 1, 2025
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the transactions is generally not accessible to the public. As a state, we lack reliable publicly available information on the impact of consolidation in our local communities. By having better information and studies on our healthcare markets, the state will be better equipped to assess future proposed transactions and explore policy solutions that fit New Hampshire. Additionally, information will be published for consumers to understand and make informed choices in their own healthcare.

The Department of Justice is requesting approval to award funding to the University of New Hampshire which will utilize the funds to conduct research and publish studies on the New Hampshire healthcare market. As part of the Department's recent investigations into proposed hospital mergers, the state obtained funds to be used for the benefit of healthcare consumers in New Hampshire. These funds are held in the New Hampshire Healthcare Consumer Protection Trust Fund. The state entered a Final Judgment with Exeter Hospital and Beth Isreal Lahey Health in June 2023. In that settlement, the priority use of the funds is to develop a health care market research entity or program to conduct studies and publish information regarding the impact of health care provider consolidation in the New Hampshire health care delivery system. These funds will be used to accomplish this goal of the settlement. Pursuant to RSA 7:6-h, this subgrant has been approved by the Health Care Consumer Protection Advisory Commission.

Please let me know if you have any questions concerning this request. Your consideration is greatly appreciated.

Respectfully submitted,



John M. Formella
Attorney General

#5018968

COOPERATIVE PROJECT AGREEMENT

between the

STATE OF NEW HAMPSHIRE, **Department of Justice**

and the

University of New Hampshire of the UNIVERSITY SYSTEM OF NEW HAMPSHIRE

- A. This Cooperative Project Agreement (hereinafter "Project Agreement") is entered into by the State of New Hampshire, **Department of Justice**, (hereinafter "State"), and the University System of New Hampshire, acting through **University of New Hampshire**, (hereinafter "Campus"), for the purpose of undertaking a project of mutual interest. This Cooperative Project shall be carried out under the terms and conditions of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, except as may be modified herein.
- B. This Project Agreement and all obligations of the parties hereunder shall become effective on the date the Governor and Executive Council of the State of New Hampshire approve this Project Agreement ("Effective date") and shall end on **12/31/28**. If the provision of services by Campus precedes the Effective date, all services performed by Campus shall be performed at the sole risk of Campus and in the event that this Project Agreement does not become effective, State shall be under no obligation to pay Campus for costs incurred or services performed; however, if this Project Agreement becomes effective, all costs incurred prior to the Effective date that would otherwise be allowable shall be paid under the terms of this Project Agreement.
- C. The work to be performed under the terms of this Project Agreement is described in the proposal identified below and attached to this document as Exhibits, the content of which is incorporated herein as a part of this Project Agreement.

Project Title: Health Care Consumer Protection Commission Grant, UNH Center for Studying Healthcare Markets

- D. The Following Individuals are designated as Project Administrators. These Project Administrators shall be responsible for the business aspects of this Project Agreement and all invoices, payments, project amendments and related correspondence shall be directed to the individuals so designated.

State Project Administrator

Name: Thomas Kaempfer
Address: New Hampshire Department of Justice
One Granite Place South
Concord NH 03301-6397

Phone: 603-271-3658

Campus Project Administrator

Name: Gretchen Swain
Address: University of New Hampshire
Sponsored Programs Administration
51 College Rd.
Durham, NH 03824

Phone: 603-862-4865

- E. The Following Individuals are designated as Project Directors. These Project Directors shall be responsible for the technical leadership and conduct of the project. All progress reports, completion reports and related correspondence shall be directed to the individuals so designated.

State Project Director

Name: Alexandra Sosnowski
Address: New Hampshire Department of Justice
One Granite Place South
Concord NH 03301-6397

Phone: 603-271-2678

Campus Project Director

Name: Brad Herring
Address: Paul College 365E,
10 Garrison Ave
Durham, NH 03824

Phone: 603-862-3323

F. Total State funds in the amount of \$1,594,543.00 have been allotted and are available for payment of allowable costs incurred under this Project Agreement. State will not reimburse Campus for costs exceeding the amount specified in this paragraph. The funding for this grant will be provided from the Health Care Consumer Protection Trust Fund.

Check if applicable

Campus will cost-share _____ % of total costs during the term of this Project Agreement.

Federal funds paid to Campus under this Project Agreement are from Grant/Contract/Cooperative Agreement No. _____ from _____ under CFDA# _____. Federal regulations required to be passed through to Campus as part of this Project Agreement, and in accordance with the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002, are attached to this document as Exhibit B, the content of which is incorporated herein as a part of this Project Agreement.

G. Check if applicable

Article(s) _____ of the Master Agreement for Cooperative Projects between the State of New Hampshire and the University System of New Hampshire dated November 13, 2002 is/are hereby amended to read:

H. State has chosen **not to take** possession of equipment purchased under this Project Agreement.

State has chosen **to take** possession of equipment purchased under this Project Agreement and will issue instructions for the disposition of such equipment within 90 days of the Project Agreement's end-date. Any expenses incurred by Campus in carrying out State's requested disposition will be fully reimbursed by State.

This Project Agreement and the Master Agreement constitute the entire agreement between State and Campus regarding this Cooperative Project, and supersede and replace any previously existing arrangements, oral or written; all changes herein must be made by written amendment and executed for the parties by their authorized officials.

IN WITNESS WHEREOF, the University System of New Hampshire, acting through the **University of New Hampshire** and the State of New Hampshire, **New Hampshire Department of Justice** have executed this Project Agreement.

By An Authorized Official of:
University of New Hampshire
Name: Dianne Hall
Title: Manager, Pre-Award Compliance
Signature and Date: *Dianne Hall* Digitally signed by Dianne Hall
Date: 2025.04.14 16:54:21
-04'00'

By An Authorized Official of:
New Hampshire Department of Justice
Name: Thomas Kaempfer
Title: Deputy Director of Administration
Signature and Date: *Thomas D. Kaempfer* 4/15/25

By An Authorized Official of: the New Hampshire Office of the Attorney General
Name: Jessica A. King
Title: Senior Assistant Attorney General
Signature and Date: *Jessica A King* 4/15/25

By An Authorized Official of: the New Hampshire Governor & Executive Council
Name: _____
Title: _____
Signature and Date: _____

EXHIBIT A

A. Project Title: Health Care Consumer Protection Commission Grant, UNH Center for Studying Healthcare Markets

B. Project Period: April 1, 2025– December 31, 2028

C. Objectives: Campus will conduct research related to healthcare provider consolidation with three broad aims:

- (1) evaluating trends in healthcare market concentration in New Hampshire
- (2) conducting original research on the effects of healthcare market concentration on various outcomes relevant to consumers
- (3) providing data analytics support to interested governmental agencies in New Hampshire.

D. Scope of Work: Summary: This research project will examine the effects of healthcare market consolidation on healthcare costs, quality, and access. We will use various data for healthcare hospitals, physicians, and insurers to construct local-level measures of healthcare concentration over time. These measures of healthcare concentration will be used in Aim #1 to describe trends in New Hampshire and to translate the existing research literature's results to NH residents. These measures of healthcare concentration will be combined with several hospital databases in Aim #2 to conduct six original empirical studies examining several effects of market concentration on outcomes: specifically, opening/closing several hospital service lines (#2A), hospital quality outcomes (#2B), nonprofit community benefits (#2C), hospital cost efficiency measures (#2D), hospital EHR adoption (#2E), and tax-exempt bond rates (#2F). In addition, these local provider concentration measures (constructed for Aim #1's reports) and the various combined hospital datasets (used for Aim #2's studies) will be used for additional research analyses/extensions identified by NH agencies in Aim #3.

See Exhibit B for full Scope of Work from Proposal.

Exhibit C shall be considered a guiding framework for the research described in the Scope of Work. Campus shall incorporate the framework in Exhibit C whenever possible and consistent with the goals of the Scope of Work.

The research conducted pursuant to this Project Agreement shall be considered in the public domain.

When purchasing any data necessary to complete the Project, Campus shall use reasonable efforts to ensure data can be utilized, accessed, and provided to New Hampshire State Agencies to facilitate future studies and projects, and to maximize state resources for the benefit of healthcare consumers in New Hampshire.

E. Deliverables Schedule: Campus shall prepare written quarterly updates to the Project Director and the Health Care Consumer Protection Advisory Commission. Upon request by the Commission, with at least 30 days advance notice, Campus shall appear in person and present to the Commission regarding progress on the Project. Campus shall present to the Commission at least annually. Each quarterly and annual update shall include detailed information on how Campus is progressing on each Research Aim and how Campus is meeting each projected timeline as indicated in Table 1 below.

See Exhibit B for Table details from Proposal.

Table 1. Timeline for Deliverables by Specific Aim (Assuming a 1/1/2025 Project Start Date)

Specific Aim:	Year 1: Spring 2025	Year 1: Fall 2025	Year 2: Spring 2026	Year 2: Fall 2026	Year 3: Spring 2027	Year 3: Fall 2027	Year 4: Spring 2028	Year 4: Fall 2028
#1: Hospital HHI Figures/Maps	✓✓		✓✓		✓✓		✓✓	
#1: Hospitals Policy Brief		✓						
#1: Insurer HHI Figures/Maps			✓✓		✓✓		✓✓	
#1: Hospital/Insurer Policy Brief				✓				
#1: Physician HHI Figures/Maps					✓✓		✓✓	
#1: Healthcare Markets Brief						✓		✓
#2A: Service Line Paper/Brief			✓✓					
#2B: Quality Paper/Brief					✓✓			
#2C: Comm. Benefit Paper/Brief			✓✓					
#2D: Cost Efficiency Paper/Brief							✓✓	
#2E: Hospital EHR Paper/Brief	✓✓							
#2F: Nonprofit Bond Paper/Brief					✓✓			
#3: Analytics Support to NH	✓	✓	✓	✓	✓	✓	✓	✓

Note: A double check (✓✓) indicates two separate deliverables for that aim. A single check (✓) indicates one deliverable.

F. Budget and Invoicing Instructions: Campus shall submit incurred expenses for reimbursement. Invoices will be based on actual project expenses incurred during the invoicing period, and shall show current and cumulative expenses by major cost categories as shown below. State will pay Campus within 30 days of the State’s approval of each invoice. Campus will submit its final invoice not later than 75 days after the Project Period end date.

Campus will not be required to invoice separately by calendar year. Campus shall request prior approval for carryforward of unexpended funds from one year to the next.

Budget Items	State Funding	Cost Sharing	Total
1. Salaries & Wages	\$1,093,715	\$0	\$1,093,715
2. Fringe Benefits	\$94,296	\$0	\$94,296
3. Travel	\$0	\$0	\$0
4. Equipment	\$0	\$0	\$0
5. Tuition	\$150,231	\$0	\$150,231
6. Supplies and Services	\$125,000	\$0	\$125,000
7. Facilities & Admin	\$131,301	\$0	\$131,301
Subtotals	\$1,594,543	\$0	\$1,594,543

See Exhibit B for full budget details from Proposal.

In addition to monthly invoicing, expenditure reports shall be submitted on a quarterly basis, within fifteen (15) days following the end of the current quarterly activities.

Campus shall be awarded an amount not to exceed \$336,231 of the total Grant from Governor and

Council approval, until 12/31/25, with approved expenditure reports. This shall be contingent on continued funding and program performance.

Campus shall be awarded an amount not to exceed \$413,368 of the total Grant between 01/01/26 and 12/31/26, with approved expenditure reports. This shall be contingent on continued funding and program performance.

Campus shall be awarded an amount not to exceed \$390,194 of the total Grant between 01/01/27 and 12/31/27, with approved expenditure reports. This shall be contingent on continued funding and program performance.

Campus shall be awarded an amount not to exceed \$454,750 of the total Grant between 01/01/28 and 12/31/28, with approved expenditure reports. This shall be contingent on continued funding and program performance.

With sufficient reason and under limited circumstances, Campus may apply for an extension of the grant period listed above for up to three months. Campus must submit the request in writing. No extension is granted until approval is received by DOJ in writing.

**Proposal to the New Hampshire Health Care Consumer Protection Advisory Commission
to Create the UNH Center for Studying Healthcare Markets**

**Bradley Herring, PhD
McKerley Professor of Health Economics
University of New Hampshire**

Version: October 25, 2024

Summary: We propose to create the Center for Studying Healthcare Markets at the University of New Hampshire with funding from New Hampshire's Health Care Consumer Protection Trust Fund. Under this four-year pilot program, the new UNH Center will conduct research related to healthcare provider consolidation with three broad aims: (1) evaluating trends in healthcare market concentration in New Hampshire, (2) conducting original research on the effects of healthcare market concentration on various outcomes relevant to consumers, and (3) providing data analytics support to interested governmental agencies in New Hampshire. Funding to the Center will provide research support to several professors and PhD students in the Departments of Economics and Health Management and Policy to accomplish these aims. Total estimated direct costs over the initial four-year period are \$1,463,242, with an F&A rate of 10% bringing total costs to \$1,594,544.

Aim #1 to Evaluate Trends in Healthcare Market Concentration: What are the trends in hospital market consolidation in New Hampshire? How do these trends in hospital market consolidation compare to Maine and Vermont? How do these hospital market trends compare to states in New England, the Northeast, and nation overall? What are these trends like for physician markets for primary and specialty care? What are these trends like for private health insurance markets? To what extent should policymakers be concerned about the wide range of effects on consumers? And to what extent is there variation *within* New Hampshire across its geographic areas?

While the answers to these questions are generally not very well understood now, there is an opportunity to apply rigorous state-of-the-art economic analyses using timely data to formulate the answers to these (and other) important questions. Analysts at the Federal Trade Commission and U.S. Department of Justice generally use a metric called a Herfindahl–Hirschman index (HHI) to measure the degree of market concentration based on firm-level market shares and, in turn, gauge whether a given geographic market for goods or services is adequately competitive for consumers.¹ To calculate the market shares necessary for these HHI measures, proprietary data to determine local hospital-level market shares are available from Health Forum's American Hospital Association (AHA) Annual Survey, proprietary data to determine local physician group-level market shares are available from IMS Health's SK&A database, and proprietary data to determine local insurer-level market shares are available from Clarivate's Managed Care Directory (formerly Decision Resources Group and, before that, HealthLeaders/InterStudy).²

¹ An HHI is calculated as the sum of the squared market shares across competitors in a market; a value of 1 represents a perfectly competitive market, while a value of 10,000 represents a monopoly. The FTC and US DOJ generally view competitive markets as having HHIs less than 1,500, moderately concentrated markets as having HHIs between 1,500 and 2,500, and concentrated markets as having HHIs over 2,500.

² Clarivate's Managed Care Directory (original obtained through HealthLeaders/InterStudy) is a detailed dataset of county-level enrollment numbers for January and July of a given year for each insurance carrier's product line. The enrollment count is comprehensive in that this dataset includes separate estimates for each commercial plan, each Medicare Advantage plan, and each Medicaid MCO plan. Moreover, within the subset of commercial plans, there are separate county enrollment numbers for a given carrier's ASO plans for self-funded employers, fully insured plans, and Marketplace/Exchange plans; additionally, each of these is broken down across PPO and HMO plans.

Returning to the first two questions above regarding the trends in hospital market consolidation in New Hampshire and how they compare to nearby states, for example, we will use the AHA data to first construct an annual HHI value for each local hospital market (e.g., Manchester) and then compare the average annual HHI for NH to the average annual HHI across the set of comparison states.³ In addition to comparing the degree of competitiveness for NH to nearby states, we can also assess the degree to which hospital consolidation has changed differently for NH historically over time. Similarly, we can answer the last question above regarding the extent of variation *within* NH by producing visually appealing maps of NH with lighter-to-darker shading of each individual county to illustrate the degree of hospital market concentration (and produce similar maps representing physician and insurer markets).

In addition to posting these graphics on a website we will create for the UNH Center for Studying Healthcare Markets, we will write (and post) policy-oriented briefs to summarize the implications of NH's hospital, physician, and insurer market characteristics on outcomes salient to consumers such as provider prices, insurer premiums, access to care, healthcare quality, and population health outcomes. Specifically, we will utilize the existing literature in health economics and health services research to describe the likely magnitudes of the effects of differences in market concentration (measured by these HHIs) on differences in these various outcomes.⁴

For instance, a robust economic literature that has evolved over the past two decades has already established that hospital prices for privately insured patients are higher in markets with higher levels of hospital concentration. We will use the existing empirical estimates from this literature, coupled with our new empirical HHI measures for NH and surrounding states, to describe how a given outcome in NH would be different under alternative scenarios (e.g., Scenario A assumes that NH's average HHI for market concentration was instead the same as Maine and Vermont's, Scenario B assumes that NH's current average HHI had instead not changed from its value a decade earlier, etc.). This will enable takeaway messages such as "New Hampshire's hospital prices would be X% lower under alternative Scenario A." Additionally, we will include descriptions of the effects broken down by certain demographic subpopulations.⁵

Additional details on the specific deliverables for Aim #1 and the timeline for their release are presented further below following a thorough description of the data we will use across all three aims and, for each individual dataset, details on what data we currently possess and have up-and-running versus what data we will have to acquire and process.

³ Geographic hospital market boundaries are often defined by the Dartmouth Atlas' "Hospital Referral Regions" (which generally combine a few surrounding counties); the publicly available Dartmouth Atlas database has defined these areas based on the composition of patient zip codes travelling to a given hospital. Geographic physician market boundaries are often defined by counties, and geographic private health insurance market boundaries are often defined by CCIO's Rating Areas (which generally combine several surrounding counties) or Commuting Zones developed by the federal government.

⁴ See, for example, Trish E, Herring B. How Do Health Insurer Market Concentration and Bargaining Power with Hospitals Affect Health Insurance Premiums? *Journal of Health Economics* 42, July 2015: 104-114. See also Hanson C, Herring B, Trish E. Do Health Insurance and Hospital Market Concentration Influence Hospital Patients' Experience of Care? *Health Services Research* 54.4, August 2019: 805-815.

⁵ For instance, the effect of increases in hospital market concentration on commercial hospital prices will, in turn, likely increase private health insurance premiums and out-of-pocket cost sharing (especially for those with high-deductible health plans); moreover, those increases in premiums will likely depress worker wages for those with employment-based coverage, while not result in increased premium shares for subsidized Exchange/Marketplace plans because of the way those tax credits are structured. In contrast, Medicaid's limited out-of-pocket copayments would shield these low-income patients from higher prices. Similarly, Medicare's administered prices for elderly and disabled patients mean that their out-of-pocket copayments for hospital care will be unaffected. However, Medicaid and Medicare's use of administered prices generally indicate that the quality of hospital care might decrease with increased market concentration.

Aim #2 to Conduct Original Research on the Effects of Healthcare Market Concentration: While Aim #1 (described above) would, in part, utilize the existing research literature on healthcare market concentration to characterize various effects on consumers, Aim #2 (described below) would produce new peer-reviewed studies to add to this literature on market concentration by considering new or understudied outcomes. The Center's affiliated faculty currently have formulated six specific research questions spanning two broad areas; we are eager to continue to develop additional novel research questions based on additional feedback from the Commission (as the first two questions were added based on reactions to Dr. Herring's 9/16 presentation). One broad area spans access to care and population health, and the other broad area spans underlying cost efficiencies; each broad area has three specific questions, with one question in each area focusing on nonprofits. We first describe each of the six specific outcomes and that specific outcome's data source. We then provide details on the empirical methodology common across all six of these outcomes.

One proposed research question (Aim #2A) is whether hospital market concentration affects patient access to care through hospitals closing less-profitable service lines such as obstetrics. The AHA Annual Survey includes information on the presence of various services lines. Specifically, we will examine the likelihood that a given hospital each year has the following less-profitable service lines: behavioral health, obstetrics, and pediatrics. We will also examine the likelihood of having the following more-profitable service lines: cardiology, neurology, oncology, and orthopedics. One possibility for an observed relationship is that consolidated health systems have more capacity to support the less-profitable services lines through cross-subsidizing their losses, while another possibility is that a more profit-driven hospital system seeks to close less-profitable lines after an acquisition (especially if the system headquarters is far from the site).

A second proposed research question (Aim #2B) is whether hospital market concentration affects hospital quality and population health outcomes. The CMS Hospital Compare database has compiled these various annual hospital-level measures of quality: (1) process measures for recommended care derived by CMS from patient medical record data, (2) outcome measures reflecting the results of care also derived from patient records, and (3) patient experience of care derived from the HCAHPS patient survey data. In a 2019 publication, we found that increases in hospital concentration (and decreases in insurance concentration) worsened hospital-level measures of patient experience of care, as that particular outcome was the most complete data series available for us to examine at the time.⁶ There are much more complete data for various process and outcomes measures from CMS Hospital Compare available now (five years later), so we are eager to conduct follow-on studies for additional related outcomes.

A third proposed research question (Aim #2C) related to access to care is whether hospital market concentration affects the provision of community benefits by nonprofit hospitals. The IRS collects (and makes available) data for community benefits (e.g., charity care to the uninsured, community health improvement expenditures) through its form #990H.⁷ Prior research has shown that there is wide variation across hospitals in how the amount of community benefits compares to the value of the nonprofit tax exemption.⁸ It is possible that the degree of hospital market concentration affects the amount of community benefits provided, though the likely direction is unclear; hospital competition might increase incentives to publicize higher amounts of community benefits, while competition might decrease the resources available to cross-subsidize them.

A fourth proposed research question (Aim #2D) is one within our second set of three questions related to cost efficiencies. This fourth question will focus on whether hospital market

⁶ See Hanson, Herring, and Trish 2019 (Note #4).

⁷ Nonprofit hospitals likely report services like Advance Life Support (ALS) within the IRS 990H "Community Health Improvement" category or the "Subsidized Health Services" category. We can explore this issue further with these data.

⁸ See, for example, Herring B, Gaskin D, Zare H, Anderson G. Comparing the Value of Nonprofit Hospitals' Tax Exemption to Their Community Benefits. *Inquiry: Journal of Health Care Organization, Provision, and Financing* 55, Feb. 2018: 1-11.

concentration affects an aggregate measure of a hospital's underlying hospital efficiency. Hospital leaders argue that hospital mergers can produce economies of scale and allow the hospital system to reduce costs (and, in principle, reduce prices). We propose to use methodological advances in operations management and systems engineering to examine whether increases in hospital market concentration enable hospitals to be better situated on the production possibilities frontier. To conduct these analyses, we will use detailed cost data from the CMS Hospital Cost Reports (merged with the AHA Annual Survey).

A fifth proposed research question (Aim #2E) is whether hospital market concentration affects hospital adoption of advanced electronic health record (EHR) systems. Given the high fixed cost of purchasing and implementing an EHR system, it is possible that larger consolidated hospital systems are more likely to afford (and adopt) a more expensive EHR system with advanced functionalities. Simultaneously, though, increased market concentration might reduce the competitive pressures on hospitals to produce higher quality care to be able to attract more patients. Our methodology will attempt to disentangle these two contributing effects by essentially comparing larger versus smaller systems while holding the local-level amount of market concentration constant and by essentially comparing more competitive versus more concentrated geographic markets while holding the size of the hospital system constant. To conduct these analyses, we will use data from the AHA Survey's Information Technology Supplement.

A sixth proposed research question (Aim #2F) is whether hospital market concentration affects the favorability of the hospital's financial terms in the tax-exempt bond market. For industries comprised of for-profit firms, it is often straightforward to examine the effect of market concentration on firm-level profit margins. For hospital markets characterized by nonprofits, the margins of hospital revenues compared to hospital costs can instead be quite challenging to examine; that said, economic models of nonprofit behavior still envision management generally optimizing revenues relative to costs (like for-profit hospitals do). We therefore expect that the investors in the tax-exempt bond market will consider a nonprofit hospital's "profitability" and offer more favorable financial terms for borrowing (i.e., lower interest rates for hospitals) if they believe that the local hospital market is more lucrative under higher levels of market concentration.

Each of these six proposed research questions will use a multivariate regression framework in which the hospital/year is the unit of observation, a specific outcome described above (i.e., the presence of an obstetrics service line) is the dependent variable, the market concentration measure is the primary explanatory variable, and a set of hospital-level characteristics (e.g., bed size) and local-level characteristics (e.g., county's percent in poverty) are included as controls; moreover, a set of market and time "fixed effects" will be included so that the identification strategy focuses on how changes in concentration over time affect changes in the outcome. One primary set of models will use the market-level hospital HHI measure to test for the effects of hospital market concentration, while a second set of models will instead use an indicator for whether the specific hospital was acquired (for an alternative set of pre/post-transaction analyses).

Additionally, for each of these six proposed research questions, we will test for differential effects of hospital market concentration by whether the private health insurance market has low or high levels of market concentration (generated from the Clarivate data). The underlying rationale for this variant to the analyses is recognizing that there are bilateral negotiations between hospitals and insurance companies with the latter having some leverage.⁹ A diffuse competitive insurance market implies a smaller size for any given insurer and thus a diminished ability to counterbalance a dominant hospital. In contrast, a dominant insurer might counterbalance a dominant hospital.

Moreover, for each of these six proposed research questions, we will test for differential effects of hospital (and insurer) market concentration across different types of hospitals. One set of

⁹ See, for example, Trish and Herring 2015 (Note #4) and Hanson, Herring, and Trish 2019 (Note #4).

analyses (for Aims #2A, #2B, #2D, #2D) will stratify hospitals into for-profit hospitals versus nonprofit hospital to test for different effects of market concentration between the two. Another set of analyses (for all six aims) will stratify hospitals into Critical Access Hospitals versus other hospitals to test for different effects of market concentration for these rural-based Critical Access Hospitals.

Finally, for each of these six proposed research questions, we will have two main deliverables. One is a more-technical manuscript with the goal of being published in a high-impact, peer-reviewed journal and presented at academic conferences and seminars. The second deliverable for each research question is a policy-oriented brief focusing on the translating that paper's findings and emphasizing the policy implications of a given set of analyses on New Hampshire's healthcare system. Both types of papers will be posted to the new Center's public website (with an expected timeline for their release presented below).

Aim #3 to Provide Data Analytics Support to State Departments: Aims #1 and #2 will have built a large infrastructure of up-to-date data on individual hospitals, individual physicians, and individual insurers in New Hampshire; the hospital data include the AHA Annual Survey and its IT Supplement, the CMS Hospital Cost Reports, the CMS Hospital Compare quality data, and the IRS 990H data for nonprofit community benefits. The physician data is from SK&A, and the insurer data is from Clarivate. In addition to having these provider-level and insurer-level datasets, we will have used them to construct the local-level HHI measures of market concentration for hospitals, physicians, and insurers. Moreover, patient-level data from the New Hampshire Uniform Healthcare Facility Discharge Data Set, the Maine Health Data Organization's Inpatient and Outpatient Hospital Encounter Data Sets, and the Vermont Uniform Hospital Discharge Data System will be obtained and linked to our hospital/year-level data for additional potential analyses.¹⁰ As noted above (and reiterated here), details on what datasets we currently possess and have up-and-running versus what datasets we will have to acquire and process are provided below in the context of our overall timeline for the Center's deliverables.

These various data will enable the Center's staff to provide timely data analytics support to the New Hampshire Department of Justice and Attorney General, the Department of Health and Human Services, the Department of Insurance, and any other interested agencies. For example, suppose Hospital System A announced that it is exploring an acquisition of independent Hospital B. We can offer a quick yet careful assessment of the current extent of hospital market concentration in Hospital B's geographic market and an assessment of the proposed acquisition's impact on market concentration. Similarly, we could assess a proposed merger between Hospital System A and Hospital System C in each of the multiple affected geographic markets.¹¹ Center staff could prepare confidential memos, perform quick data analyses, and/or attend agency meetings.

¹⁰ While none of the six projects currently proposed in Aim #2 directly use patient-level healthcare claims, we plan to develop additional Aim #2 studies with these combined NH, ME, and VT hospital discharge data; we do have considerable experience working with claims data across multiple states (albeit other states). (See, for example, Pollack CE, Blackford AL, Du S, DeLuca S, Thornton R, Herring B. Association of Receipt of a Housing Voucher with Subsequent Hospital Utilization and Spending. *JAMA* 322.21, December 2019: 2115-2124.) Additionally, New Hampshire's All-Payer Claims Database is used by UNH's separate Institute for Health Policy and Practice (IHPP). Our proposed Center would therefore have the capacity to partner with UNH's IHPP on potential Aim #3 tasks which might benefit from the use of these patient-level claims data (spanning services beyond NH's hospital discharges). That said, the well-known limitations of such all-payer databases in (1) not receiving data from self-funded employers (constituting roughly half of all employment-based plans), (2) not having data for uninsured patients, and (3) having limited information for evaluating health outcomes led to our not proposing a specific topic within our set of Aim #2's research questions which would use these alternative data.

¹¹ In September 2015, Dr. Herring and Erin Trish presented our research on the effects of insurance market concentration on private health insurance premiums (Note #4) to a joint meeting of the Federal Trade Commission and U.S. Department of Justice. In addition to presenting our findings from analyzing data from the 2006-2011 period, we used our model's results to simulate the likely effects of two proposed major health insurance mergers that had been announced (yet ultimately abandoned): Humana's proposed merger with Aetna and Anthem's proposed merger with Cigna.

Center Personnel: Bradley Herring, PhD, will be the Center's Director and will be involved in each of the three Aims. Dr. Herring joined UNH in the fall of 2020 as the Forrest D. McKerley Professor of Health Economics, with a joint appointment in the Economics Department of the Paul College of Business and Economics and the Health Management and Policy Department in the College of Health and Human Services. His research focuses on several economic and policy issues related to health insurance markets, hospital markets, and healthcare reform. He has published in the *Journal of Health Economics*, *New England Journal of Medicine*, and *JAMA*, and been funded by the Robert Wood Johnson Foundation, NIH's National Cancer Institute, HHS ASPE, and AHRQ. Dr. Herring previously held faculty appointments in the Schools of Public Health at Johns Hopkins University and Emory University. His policy experience includes serving for one year as a Senior Staff Economist with the White House's Council of Economic Advisers and serving for several years as the Chair of the Board of Directors for the state-run Maryland Health Insurance Plan. He received his PhD from the Wharton School at the University of Pennsylvania and completed a two-year RWJF Health Policy fellowship at Yale University.

Bingnin (Ben) Xue, PhD, will be a faculty affiliate of the Center and will be involved in Aims #1, #2A, #2D, #2E, and #3, given his broad expertise as a health economist. Dr. Xue joined UNH's Paul College as an Assistant Professor in the fall of 2023. His research focuses on causal inference in the field of health economics using econometric methods, machine learning, and large-scale data. Dr. Xue's current research includes a project examining how health IT affects healthcare providers and consumers; the impact of public policies on the population mental health and wellbeing; and dynamic demand functions analysis. He received his PhD in Economics from Lehigh University.

Linda Ragland, PhD, will be a faculty affiliate of the Center and will be primarily involved in Aims #2C and #2F, given her prior work in nonprofit hospitals and her expertise in bond markets. Dr. Ragland joined UNH's Paul College in the fall of 2013. She is an Associate Professor of Accounting whose research interests include both financial and governmental/nonprofit accounting. Before joining UNH, Dr. Ragland was a visiting assistant professor at Georgia State University; and prior to that, she was a Fiscal Director for a Component Unit of the State of Tennessee, so she may be well-suited for certain Aim #3 research tasks. Her research has been published in various peer-reviewed accounting academic journals including the *Journal of Accounting and Public Policy* and the *Journal of Governmental and Nonprofit Accounting*. She received her PhD in Accounting from the University of South Florida.

Semra Aytur, PhD, will be a faculty affiliate of the Center and will be primarily involved in Aims #2B, #2C, and #3, given her expertise in epidemiology, population health, and health policy. Dr. Aytur is a Professor of Health Management & Policy in UNH's College of Health and Human Services. Her research focuses on relationships between policy, environment, and systems change to promote healthy behaviors and prevent chronic diseases such as diabetes, heart disease, and stroke, with an emphasis on health disparities. Dr. Aytur has experience working in public health departments in several states, along with experience working in hospitals conducting patient-centered outcomes research. She received her PhD in Epidemiology from the University of North Carolina at Chapel Hill, where she also completed a fellowship in cardiovascular epidemiology.

Esmail Bahalkeh, PhD, will be a faculty affiliate of the Center and will be primarily involved in Aims #2A and #2D, given his expertise in healthcare operations management. Dr. Bahalkeh joined UNH's Health Management & Policy Department in the fall of 2021. His research utilizes a collection of quantitative methods and tools to improve quality and processes efficiencies and to evaluate the effectiveness of operational policies in health systems. Specifically, his research focuses on microsimulation, optimization, applied statistics, and machine learning tools to improve quality and process efficiencies in health systems and evaluate the effectiveness of operational policies in health systems. He received his PhD in Industrial Engineering from Purdue University.

Fahimeh Ebrahimi will be the first student affiliate of the Center; she will be primarily involved in Aims #1, #2B, and #2E. Miss Ebrahimi is currently a third-year PhD student in the Economics Department (so this grant will cover her time remaining in the PhD program). Her primary field in the Department is Health Economics and she is currently extending her second-year paper on the effects of hospital market concentration on hospital EHR adoption using earlier data from the AHA IT Supplement and initiating work on EHR's effects on health outcomes.

Five additional PhD students (to be identified in the future) will join as student affiliates of the Center in a staggered approach. The strategic approach to using the Center to fund doctoral students is to cover their tuition and stipend support during their third, fourth, and fifth/final year of their PhD program's research stage. (UNH will cover their tuition and stipend support during the first and second year of the program's coursework stage.) One new Economics PhD student will join the Center each summer before their third year in the PhD program and remain as a student affiliate until graduating at the end of their fifth year in the PhD program. As a result, a second Economics student will join the Center in Summer 2025, a third Economics student will join the Center in Summer 2026, a fourth Economics student will join in Summer 2027, and a fifth Economics student will join in Summer 2028. The fourth Economics student's entry will coincide with Miss Ebrahimi's graduation, and the fifth Economics student's entry will coincide with the second Economics student's graduation. Moreover, one PhD student in Health Management and Policy will join as a student affiliate in Summer 2027, as UNH's College of Health and Human Services will be enrolling its first cohort of PhD students this Fall 2025. The Center will cover a new third-year HMP student every three years (coinciding with the graduation of the preceding HMP student affiliate).

Data Availability: The AHA Annual Survey data is proprietary, requiring a Data Use Agreement (DUA) and purchase price between HealthForum and each receiving organization. We currently have these AHA data for 1996 through 2022; the 2023 AHA Annual Survey is scheduled to be released in December 2024. The AHA IT Supplement is also a proprietary dataset; it was first fielded in 2008. We currently have these AHA IT Supplement data for 2008 through 2019; data for 2020 through 2023 are currently available and would need to be purchased through a DUA with UNH. The CMS Hospital Cost Reports are free to download from a CMS website, and we currently have these data compiled for 1996 through 2023. The CMS Hospital Compare databases are also free to download from a CMS website, and we have obtained all available datafiles; the years vary considerably by the specific outcome measure. The IRS 990H data for nonprofit hospitals begun in 2011 and are free to download from an IRS website (albeit with a complex coding procedure in the language Python); we currently have data for 2011 through 2018 and would need to acquire data for 2019 through 2023. The New Hampshire Uniform Healthcare Facility Discharge Data Set is available for free after completing an application to NH's DHHS. (The process is similar for ME and VT's discharge data.) Clarivate's Managed Care Directory (formerly available through HealthLeaders/InterStudy) is a proprietary dataset that began with 2004 data. We currently have data for 2004 through 2015, so we would need to purchase data for 2016 to 2023 through a DUA with UNH and update the SAS programs to construct the HHI measures from the new versions of these data. We have no substantive experience with IMS Health's SK&A database for physicians; we would need to acquire this proprietary dataset through a DUA with UNH and face the learning curve of getting these data up and running.¹²

¹² We have experience with other datasets that may be useful for Aim #3's potential research tasks. These datasets include the Area Health Resources File (AHRF), the Behavioral Risk Factor Surveillance System (BRFSS), CDC's Wonder database for county-level mortality measures, the Current Population Survey (CPS), the Dartmouth Atlas crosswalk for Hospital Referral Regions to patient zip codes, the Medical Expenditure Panel Survey's Household Component (MEPS HC), the Medical Expenditure Panel Survey's Insurance Component (MEPS IC), the National Health Interview Survey (NHIS), and the Survey of Income and Program Participation (SIPP).

Deliverables and Timeline: Table 1 shows the timeline for our deliverables, separated by each specific aim. The dates in this table assume a 1/1/2025 start date for the Center’s funding from the Commission. For Aim #1’s evaluation of trends in market concentration, we will begin by posting the information for New Hampshire’s hospital market HHIs on the Center’s new public website in the Spring 2025 semester. This will include: (1) figures for comparing NH’s trend in its average hospital HHI over time to the comparison states’ time trends; and (2) color-coded maps for variation in the hospital HHI within NH (hence the two check marks in Table 1). We can do this quickly after incorporating the release of AHA’s 2023 data. The next deliverable to be posted to the Center’s website will be in Fall 2025 with our first policy brief describing the effects of NH’s hospital market concentration on various outcomes studied in the existing literature (i.e., prices, premiums, access, quality, and outcomes). In Spring 2026, we will both update the website’s figures/maps for NH’s hospital HHIs (with the 2024 release of AHA data) and release figures/maps for NH’s insurer HHIs (allowing that time for us to acquire/process these new data from a new vendor). In Fall 2026, we will update our website’s Fall 2025 policy brief’s material on hospitals and add new material covering the existing literature related to NH’s insurer concentration. Similarly, in Spring 2027, we will update the website’s existing figures/maps for NH’s hospital and insurer HHIs and add new figures/maps for NH’s physician HHIs (allowing extra time to become familiar with the SK&A data). In Fall 2027, we will update our website’s Fall 2026 policy brief’s material on hospitals and insurers and add new material covering the literature related to NH’s physician concentration trends. Finally, each of 2027’s materials will be updated in 2028 with new data.

For Aim #2’s original research studying the effects of healthcare market concentration on six specific outcomes (i.e., Aims #2A through #2F), the deliverables will (as noted above) include both the technically-oriented paper for peer-reviewed publication in an academic journal and the policy-oriented brief translating those findings specifically to NH’s healthcare market characteristics (hence the two check marks here in Table 1, too). The expected timeline for each of these papers/briefs in Table 1 reflects our estimate of the availability of data and complexity of the analyses. Finally, Aim #3’s data analytics support to state departments for their research questions can begin immediately.

Table 1. Timeline for Deliverables by Specific Aim (Assuming a 1/1/2025 Project Start Date)

Specific Aim:	Year 1: Spring 2025	Year 1: Fall 2025	Year 2: Spring 2026	Year 2: Fall 2026	Year 3: Spring 2027	Year 3: Fall 2027	Year 4: Spring 2028	Year 4: Fall 2028
#1: Hospital HHI Figures/Maps	✓✓		✓✓		✓✓		✓✓	
#1: Hospitals Policy Brief		✓						
#1: Insurer HHI Figures/Maps			✓✓		✓✓		✓✓	
#1: Hospital/Insurer Policy Brief				✓				
#1: Physician HHI Figures/Maps					✓✓		✓✓	
#1: Healthcare Markets Brief						✓		✓
#2A: Service Line Paper/Brief			✓✓					
#2B: Quality Paper/Brief					✓✓			
#2C: Comm. Benefit Paper/Brief			✓✓					
#2D: Cost Efficiency Paper/Brief							✓✓	
#2E: Hospital EHR Paper/Brief	✓✓							
#2F: Nonprofit Bond Paper/Brief					✓✓			
#3: Analytics Support to NH	✓	✓	✓	✓	✓	✓	✓	✓

Note: A double check (✓✓) indicates two separate deliverables for that aim. A single check (✓) indicates one deliverable.

Center Renewal for January 2029: We hope that the Health Care Consumer Protection Advisory Commission will be pleased with the Center's activities during this four-year pilot program and will want to continue its support of the Center in 2029 onward with renewed funding from the Health Care Consumer Protection Trust Fund. Moreover, we note that a renewal would be scalable to accommodate changes in funding. UNH would have the capacity to expand the Center's activities with additional affiliated faculty and/or PhD students, and/or incorporating undergraduate student workers and/or dedicated staff. Likewise, the Center's activities could be scaled back, if necessary, by reducing the effort covered for the affiliated faculty and/or the number of PhD students. A renewal would presumably maintain the structure of Aims #1, #2, and #3 (albeit with a new set of proposed specific studies comprising Aim #2), though we would consider additional aims desired by the Advisory Commission and within the scope of Trust Fund's goals.

Budget: A budget is provided as Table 2 at the end of this document. For those unfamiliar with the norms of grant funding for academic institutions, the general approach is to provide estimates of the various "direct" costs by period/year and then add funding for "indirect" or "Facilities and Administration" overhead costs as a set percentage of those direct costs (or modified direct costs). Often, a primary component of the direct cost category (as is the case with this proposal) is salary support for faculty and other personnel. Faculty receive a nine-month salary with an expectation of teaching four courses a year, serving on various internal and external committees, and conducting university-supported research (with the latter comprising three-eighths of their nine-month appointment). External grant support for additional research activities by faculty can take two forms: (1) a "course buyout" representing one-eighth of the professor's nine-month salary so that they teach three courses instead of four and replace that newly available time with additional research; and/or (2) "summer support" represented as the number of months effort during the three-month summer to which the professor's monthly salary during the nine-month academic year is applied. For PhD students, the approach is somewhat similar: (1) a nine-month stipend of approximately \$24,000 with an expectation of 20 hours/week devoted to the activity supported by that stipend (i.e., teaching assistant, research assistant) and 20 hours/week devoted to writing their own dissertation; and (2) additional summer support. External grants for PhD students also generally cover their tuition.

For the Center's faculty salary, the Director will devote 2.325 months effort during the twelve-month calendar year; this will equal 1.125 months for the one-eighth "course buyout" from the nine-month academic year plus 1.2 months during the three-month summer). Each faculty affiliate will devote a total of 1.8 months effort during the three-month summer period, as well as additional university-supported research time during their nine-month academic appointment.

For PhD student salary and tuition, there will be one student in Spring 2025, two students as of Summer 2025, three students as of Summer 2026, and four students as of Summer 2027 (and thereafter). As described above, this phased-in approach will eventually fund three Economics PhD students (consistently having one new third-year student, one continuing fourth-year student, and one graduating fifth-year student) and one Health Management and Policy PhD student (cycling through one new third-year student every three years). Each PhD student will receive UNH's designated nine-month stipend plus a \$5,000 summer supplement. UNH tuition is reduced once students complete their coursework and enter the dissertation phase in their fourth year.

The portion of the budget devoted to data includes license agreements for HealthForum's AHA Annual Survey and IT Supplement (for hospitals), IMS Health's SK&A database (for physicians), and Clarivate's Managed Care Directory (for insurers). (As noted above, Hospital data from the CMS Cost Reports and Hospital Compare and from IRS 990H are each available for free, but each is rather complex.) The higher start-up cost for the first two years reflects purchases of current and historical data, while the cost for the next two years reflects each data source's annual updates. (As noted above, we already have some older data from the AHA and Clarivate's predecessor.)

Table 2. Aggregated Budget for the UNH Center for Studying Healthcare Markets*

Category:	Year 1: 2025	Year 2: 2026	Year 3: 2027	Year 4: 2028	Total: 2025-2028
Faculty Salaries	166,876	171,882	177,038	182,349	698,145
Fringe Benefits**	21,913	22,942	24,384	25,057	94,296
PhD Student Salaries	47,415	105,110	105,255	137,790	395,570
PhD Student Tuition	21,408	44,941	30,849	53,034	150,231
Data Licenses	50,000	35,000	20,000	20,000	125,000
Total Direct Costs	307,611	379,875	357,527	418,230	1,463,242
<i>Total Direct Costs (Excluding Tuition)***</i>	<i>286,204</i>	<i>334,934</i>	<i>326,678</i>	<i>365,196</i>	<i>1,313,011</i>
Facilities and Administration***	28,620	33,493	32,668	36,520	131,301
Total Sponsor Costs	336,231	413,368	390,194	454,750	1,594,543

* An Excel file containing more detail for each line item is available upon request.

** UNH applies a 37.5% rate to nine-month academic salaries to compute a fringe benefit estimate during that time and applies a 7.9% rate to three-month summer salaries to compute that fringe benefit estimate during that time.

*** UNH's federally negotiated rate for indirect Facilities and Administration (F&A) cost is ordinarily 53.5% for on-campus research. UNH's Sponsored Program Administration has approved a waiver to accommodate the New Hampshire Department of Justice's requirement of a 10% F&A maximum. This F&A rate applies to each of the direct costs above except for tuition (which does not receive additional F&A).

EXHIBIT C

Year 1: Primary Research foci shall be to:

Define Hospital Market Structure in NH

- Ownership Status
- Affiliation Status
- Network Status (hospital, provider, groups)

Identify Optimal Data Sources to Achieve Research Foci

- Establish a healthcare data repository with relevant NH state agencies
 - Execute data use agreements for access to:
 - NH CHIS
 - NH Hospital Discharge Data
 - NASHP--Hospital Cost Tool---using MCR data
 - BLS--Hospital Services data
 - Pro-publica non-profit hospital I-990 H form
 - Other datasets, as appropriate and cost-effective

Evaluate Trends in Healthcare Market Concentration—derive market share and HHI measures:

- By geographic region
- By primary care provider markets
- By specialty care provider markets
 - BH/SUD
 - Women's Health
 - Diagnostic Service Providers
 - Radiological Imaging Svcs. (an inherently competitive market)

Create a case mix intensity map of NH Hospitals

- Which NH Hospitals treat 'sicker' populations?
 - For which service sectors?
- Using DRGs for IP; HCCs for OP (Hierarchical Condition Categories)

Publish a series of infographics reporting:

- Hospital IP/OP Market Share
- Healthcare System Market Share
- Hospital Case-Mix Intensity metrics
- Hospital Provider Network status

Year 2: Primary Research foci shall be to:

Create predictive/inferential models examining associations between:

Market Share and cost (overall, service-specific, by payor type, by CMI)

Market Share and Quality (HCAHPS, IQR/OQR, Joint Commission--NQIGs, NHSN)

Market Share and Health Outcomes

Market Share and Access

Median (or mean) travel distances to hospital (IP/OP), by service, hospital type

Create a set of regression coefficients to estimate the marginal social cost (MEC) of hospital mergers at the community, county, and/or state level—for regulators to use in adjudicating mergers.

Year 3 Primary Research foci shall be determined during the evolution of this research endeavor

Centered around State Government Policy Analysis and Recommendations