

**New Program Proposal**  
**Master of Science/Doctor of Philosophy, Applied Health Research and Evaluation**  
**Clemson University**

**Summary**

Clemson University requests approval to offer a program leading to the Master of Science and Doctor of Philosophy degree in Applied Health Research and Evaluation to be implemented in Fall 2014. The proposed program is to be offered through traditional instruction with the Master of Science degree awarded en route to the Doctor of Philosophy degree. The following chart outlines the stages for approval of the proposal; the Committee on Academic Affairs and Licensing (CAAL) voted to recommend approval to the Commission. The full program proposal **is attached**.

<b>Stages of Consideration</b>	<b>Date</b>	<b>Comments</b>
Program Planning Summary received and posted for comment	5/1/2012	
Program Planning Summary considered at ACAP	7/12/2012	ACAP members expressed support for the proposed program and suggested that Clemson consider awarding a M.S. degree en route to the Ph.D. ACAP also requested that the full proposal better explain the differences between the proposed program and a similar program offered by USC Columbia.
Program Proposal Received	9/16/2013	
Comments and suggestions from CHE staff to the institution	10/1/2013	Staff asked questions about equipment and possible articulation as well as suggested edits for clarity and consistency.
Revised Program Proposal received	10/5/2013	Revisions addressed staff's questions.
ACAP Consideration	10/17/2013	ACAP voted to recommend approval of the program.
Comments and suggestions from CHE staff to the institution	10/22/2013	Commission staff asked for additional information about library resources.
Revised Proposal Received	11/4/2013	Minor revisions made to the proposal to address staff's question.
Comments received from CAAL members	1/2/2014	Commissioner Munns asked for additional information about how the proposed program would lead to efficiency in the healthcare system, the institution's capacity to produce the required new courses, and employment opportunities for graduates. He also requested some clarification about student-faculty ratios and estimated new costs, particularly with respect to faculty salaries. Staff requested this information from the institution.

<b>Stages of Consideration</b>	<b>Date</b>	<b>Comments</b>
Responses provided to CAAL	1/8/2014	Staff distributed the requested information to CAAL (attached).
CAAL Consideration	1/9/2014	Commissioners emphasized the need for better employment data in the program proposals. Commissioners requested additional information regarding employment opportunities for graduates within the state. CAAL voted to recommend approval to CHE.
Additional information provided to CAAL	1/22/2014	Staff received the requested information and distributed it to CAAL (attached).

### **Recommendation**

The Committee on Academic Affairs and Licensing recommends that the Commission approve the program leading to the Master of Science and Doctor of Philosophy degree in Applied Health Research and Evaluation at Clemson University to be implemented in Fall 2014.

**Clemson University Department of Public Health Sciences:  
MS/PhD Applied Health Research and Evaluation proposal  
1.17.14**

The CAAL committee of SC CHE requested further information regarding employment opportunities within the state of South Carolina for graduates with doctoral training in applied health research and evaluation. We have compiled a list of the most recent (January 10-16, 2014) job announcements for professionals with skill and knowledge similar to those our graduates will possess. We identified 5 positions posted at the University of South Carolina, 4 positions posted at the Medical University of South Carolina, and 2 positions posted within the State government of South Carolina (see Table 1). While some of these positions are not what we consider to be exact matches for our future graduates, they nevertheless reflect a current (and growing) demand for professionals with analytical expertise in the area of health services data.

This program is responding to emerging health service research needs. While there currently are a larger number of jobs outside of South Carolina that closely reflect the skills, knowledge base and expertise of future graduates of our program, the positions that we identified within South Carolina show that this need is growing here as well. Additional evidence of the emerging demand for the skills and knowledge emphasized in our program can be seen in:

- Greenville Health System's Strategic Research Goals (Appendix 1)
  - As GHS executes their Strategic Research plan and their partnership with the Department of Public Health Science grows, graduate students from the DPHS doctorate in Applied Health Research and Evaluation will play a critical role in expanding each institution's capacity to secure and implement research grants. In addition, graduates from the program will become integrated into the health system networks that increasingly need these analytical skills to meet the goals of institutions and businesses impacted by health care services.
- South Carolina Clinical and Translational Research Institute (SCTR) (Appendix 2)
  - The SCTR Institute demonstrates the important impact health research can have on local and statewide economy. According to their 2011 annual report, 2011 funding from grant activity supported 775 jobs and paid \$42,458,121 in labor income over the life of the research. Graduates from the DPHS doctorate in Applied Health Research and Evaluation will contribute to capacity building across institutions to secure and implement future grants.
- Health Sciences of South Carolina's Strategic Goals (Appendix 3)
  - As this statewide organization promotes the advancement of their health research agenda, graduates from the DPHS doctorate in Applied Health Research and Evaluation will be in increasing demand to serve as the researchers who will advance these goals.

As part of our efforts to address the CAAL committee's request, we consulted with a two of our partners in South Carolina to provide their perspective on the need for professionals in South Carolina with skills and knowledge emphasized in our program. Their feedback supports our expectation that employment for this type of professional is growing in South Carolina as well as other states in the US (Appendices 4 and 5)

Table 1		
Institution	Position	Description
USC	POST DOCTORAL FELLOW	Will provide expertise in surveillance systems and epidemiology and evaluation. Joint appointment with SCDHEC Bureau of Maternal/child Health and Arnold SPH. Requires doctorate in health related field
USC Center for Health Services and Policy Research	RESEARCH ASSOCIATE	Will manage and evaluate projects funded by grants/contracts. PhD in public health or related field preferred
USC Center for Child and Family Studies	RESEARCH ASSOCIATE	Assist in conducting complex research and evaluation projects. Master's degree required
USC Institute for Families in Society	RESEARCH ASSOCIATE/PROGRAM EVALUATOR	Will work with Division of Policy and Research on Medicaid and Medicare to support evaluation efforts associated with the SC DHHS (6 positions available). Master's degree required.
USC Institute for Families in Society	RESEARCH ASSOCIATE/HEALTH DATA ANALYTIC ANALYST	Will perform data extracts using SQL or SAS and integrates data across multiple areas of Delivery Systems, including medical pharmacy, quality and operational transactional systems. Develops and prepares highly complex reports and provides/interprets information and data across divisions and departments. Master's degree +5 years of experience required.
SC Government	STATISTICAL AND RESEARCH ANALYST III - STD/HIV (DIS)	Coordinate data entry and analysis with and for the Disease Intervention Specialist (DIS) regional staff to gain maximum efficiency, productivity, and STD/HIV partner services integration. Ensure adherence with established policy, procedure, and grant specified objectives. Develop procedures and provide guidance in the variables collection, data verification, and maintenance of STD/HIV data systems, including morbidity reporting, field records, and interviews. Master's degree in epidemiology or biostatistics plus experience required

Table 1		
Institution	Position	Description
SC Government HHS	PROGRAM MANAGER I	Provides technical, analytical and managerial support for work that requires data analysis and reporting of the Department's operational and strategic activities. Reports directly to the Program Manager II of Medical Services. Serves as the manager of program area personnel charged with the planning, design, development, dissemination, supervision, monitoring and oversight of documents, materials and programmatic information that is related to the technical, scientific and legislative policy elements of SCDHHS integrated and coordinated care initiatives (e.g., SCDuE Demonstration, etc.). Responsible for day-to-day leadership, direction and management of Health Programs and Managed Care data management, research and/or planning-- inclusive of Medicare-Medicaid programs, special projects, initiatives and/or demonstrations. Provides technical assistance to program staff, Agency leaders, policy makers, public-private community group(s)/collaborative(s) on data collection, analyses and reporting. Master's degree in epidemiology or biostatistics plus 5+ years of experience is required.
MUSC Pediatrics	EPIDEMIOLOGY/HEALTH SERVICE RESEARCH	A doctorally trained epidemiologist with experienced in SAS, database development, and statistical analysis. The successful candidate will be responsible for consulting on various clinical research projects, performing basic biostatistical analyses, collaboration on grant development, functioning as a team member under the direction of the Director of the Division of Pediatric Epidemiology, teaching in the graduate program, advising students, and faculty support.
MUSC CHILDREN'S RESEARCH INSTITUTE	ASSISTANT/ASSOCIATE PROFESSOR	Director of the Medical University of South Carolina (MUSC) Charles P. Darby Children's Research Institute (DCRI). Our current research strengths include cardiac regenerative medicine, neonatal pulmonary biology, bone metabolism and vitamin D metabolism, and we are also creating a new MUSC Center for Genomic Medicine to complement our core genetics research areas. We are looking for a pediatric-related basic researcher (MD, or PhD, or MDPhD) with a funding track record, strong leadership and communication skills with broad interest in research related to children and a demonstrated ability to work with both physician-scientists and non-physician researchers.

Table 1		
Institution	Position	Description
MUSC – Biostatistics - Epidemiology	POST DOCTORAL FELLOWSHIP	Post-doctoral research fellow in a research project that focuses on the spatio – temporal model-based methods for monitoring of large multivariate geo-referenced health databases. This position will involve the development and application of new statistical approaches to detection of disease clusters and infectious disease outbreaks in space-time.
MUSC	SENIOR DATA ANALYST - SPECIAL PROJECTS	Reports to the Director of Enterprise Analytics. Under limited supervision, the Senior Data Analyst – Special Projects collaborates with other members of the team to provide database development and maintenance and accurate data entry and reports for Operational and Clinical Services related to strategic priorities. The Senior Data Analyst works independently amongst stakeholders, leaders and PI teams across the clinical enterprise to support decision making, strategy, performance improvement, and other key operational goals through valid, relevant, and quality decision support reports, dashboards, and other tools for Transplant. This role develops and maintains analytical resources for the MUSC Medical Center to support Transplant leadership in strategic decision making and ongoing optimization of organizational performance.

## Appendix 1.

**Greenville Health System** is positioning itself to engage in health services and outcome research that will advance population health and health care services. Below is a description of their research priority areas and goals. This initiative will cultivate research opportunities and jobs that don't exist today.

### Greenville Health System: Strategic Research Portfolio Areas

The following portfolio areas will guide initiative development, implementation and evaluation aligned with the IAHC, and address health issues related to quality, access, and cost.

- **Compare Effectiveness of Interventions and Inform Policy**  
The goal is to identify and support **Comparative Effectiveness Research (CER)** and **outcomes research** defined as “the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care. **The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels.**” (Institute of Medicine)
- **Investigate Patient-Centered Models of Care**  
Inextricably tied to comparative effectiveness research, this portfolio highlights Greenville Health Systems’ mission of Healing Compassionately. **Thus the goal is to develop, implement and evaluate new care models that improve patient outcomes** through emphasis on care management including such topics as patient-centered team-based care, patient self-management support, and models that stimulate innovation in care delivery and practice change. This portfolio parallels the Agency for Healthcare Research and Quality agenda including the use of health information technology to improve outcomes, quality and safety initiatives, and innovation.
- **Study Methods to Build Workforce Capacity**  
**The goal is to identify and support research and scholarly activities designed to inform innovative education and training (quality and quantity) of health and healthcare professionals.** This portfolio will facilitate and support research activities for IAHC Scholars and trainees (students and residents). The agenda of this portfolio is to develop educational research examining inter-professional education; innovative teaching and learning; and life-long learning strategies. Outcomes will inform training for future health and healthcare professionals.

### Research and scholarship Goals

The following broad research and scholarship goals will guide research development, implementation, and scholarly activities aligned with the IAHC three strategic portfolio areas.

- Identify and conduct Comparative Effectiveness Research (CER) and outcomes research designed to compare the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care.
- Contribute to research and scholarship assisting consumers, clinicians, purchasers, and policy makers to make informed decisions that improve health care at both the individual and population levels.
- Investigate new care models that improve patient outcomes through emphasis on care management including such topics as patient-centered team-based care, patient self-management support, and models stimulating care delivery innovation and practice change.
- Design research initiatives examining the use of evolving health information technology applications to improve outcomes, quality and safety initiatives, and reduce costs.
- Develop and promote research and scholarly activities designed to study workforce education and training (quality and quantity) that improves access and service.
- Develop educational research initiatives to examine inter-professional education, innovative teaching and learning, and life-long learning strategies.
- Support faculty research and scholarship initiatives.

## Research Resources

To fulfill IAHC research priorities and goals, the Greenville academic campus will foster and support a collaborative research environment. Faculty will have access to a large, multi-disciplinary, integrated health care delivery system with dominant market share and a commitment to healthcare innovation, community engagement, health promotion and disease prevention.

The following resources will be available to support research and scholarly activities:

- **IAHC Scholars Program** - Clinicians and researchers will have access to an IAHC Scholars Program designed to foster and support collaborative research and scholarly activities as well as facilitate mentoring relationships for junior faculty and students. The program will facilitate identification of research expertise aligned with the three research portfolio areas of the Institute. The program will provide a conduit for aligning collaborative research opportunities among clinical, academic and industry partners. Scholars will address a health care “theme” that contributes to one or more of the three strategic research portfolio areas, and will be supported in their research development, implementation and dissemination activities. Prospective Scholars will complete the IAHC Scholars Interest Form that captures their research expertise/interest. This information will be captured in a searchable database and posted on the IAHC website to facilitate collaborative research.
- **IAHC Research and Scholarship Support Program** - The purpose of the program is to provide financial support for pilot research and scholarly activities with potential to contribute to transforming health care and position IAHC Scholars to be competitive for extramural funding. Pilot projects addressing one or more of the three Institute portfolio areas may compete for funds up to \$30,000. Recipients will be required to disseminate their work locally, regionally and/or nationally and must agree to serve on the application review panel for the next competition.
- **Health Sciences Quality and Research Team** - The Health Sciences Quality and Research Team (HSQRT) will foster and support research and scholarly activities of the Greenville academic campus. This team will provide expertise in research administration across the Greenville academic campus and with all collaborative partners. Key infrastructure will be designed to support research activities on campus and appropriately linked to each academic partner’s research infrastructure.
- **Office of Research Compliance and Administration (ORCA)** - The Office of Research Compliance and Administration (ORCA) oversees all human research using three Institutional Review Committees. Each committee is comprised of members with scientific expertise in the specific research domain of the committee. In March 2010, GHS received full accreditation from the Association for the Accreditation of Human Research Protection Program (AAHRPP), one of only four such designations in the state of South Carolina. The GHS ORCA, having converted all IRB activity to electronic submission and review, now serves as a statewide Health Sciences South Carolina (HSSC) resource for eIRB implementation - a major initiative of the aforementioned HSSC research collaborative.

## **Appendix 2.**

**South Carolina Clinical and Translational Research Institute (SCTR)** 2010-11 Annual report highlights the impact that health research can have on the local and statewide economy.

The National Institutes of Health (NIH) implemented Clinical and Translational Science Awards (CTSA) to advance and translate scientific or basic science discoveries into practical applications for patients. CTSA institutions address pipeline issues associated with creating timely treatments from science discoveries. The South Carolina Clinical & Translational Research Institute (SCTR) will receive \$19.5 million from the NIH over a five-year period. This funding began in 2009 and equates to \$3.9 million in award funds annually. Like many grants, MUSC contributes as a co-funder with matching dollars.

Apart from the future impacts that CTSA's will have on our nation in both health and economic terms, SCTR has made an immediate impact on the economy in South Carolina.

Through March 2010, SCTR's economic impact has been \$208,497,511. To calculate the economic impact of this impressive research activity on South Carolina's economy, a regional impact model, IMPLAN (Impact Analysis for Planning) was used. In March 2011, the total economic impact was estimated to be \$306,057,880. Fiscal year 2011 activity alone will support 775 jobs and pay \$42,458,121 in labor income over the life of the research. Total state and local taxes collected in FY2011 from this activity is estimated to be \$3,415,874.

<https://sctrweb2.musc.edu/pups/files/0000/0244/SCTRAnnualReport11.pdf>

**Appendix 3.**

**Health Sciences South Carolina** has identified the following Research Agenda priorities for its organization. (Patient-Centered Outcomes Research Institute, Draft National Priorities for Research and Research Agenda, Version 1, January 23, 2012):

**Improving Health Care Systems.** Research should focus on 1) ways to improve access to care, receipt of care, coordination of care, self-care, and decision-making, 2) use of non-physician health care providers, such as nurses and physician assistants, and the impact on patient outcomes, 3) system-level changes affecting all populations, diseases, and health conditions.

**Communication and Dissemination.** Research should focus on 1) strategies to improve patient and clinician knowledge about prevention, diagnosis and treatment options, 2) methods to increase patient participation in care and decision-making and the impact on health outcomes, 3) communication tools that enhance decision-making and achieve desired outcomes, 4) ways to use electronic data (“e-health records”) to support decision-making, 5) best practices for sharing research results.

**Addressing Disparities.** Research should focus on 1) ways to reduce disparities in health outcomes, 2) benefits and risks of health care options across populations, 3) strategies to address health care barriers that can affect patient preferences and outcomes.

**Accelerating Patient-Centered and Methodological Research.** Research should focus on 1) ways to improve the quality and usefulness of clinical data in follow-up studies, 2) methods to combine and analyze clinical data that follow patients over time, 3) use of registries and clinical data networks to support research about patient-centered outcomes, including rare diseases, 4) strategies to train researchers and enable patients and caregivers to participate in patient-centered outcomes research.

Initiative	Description
Implement claims and clinical data warehouse and tools for analyzing	Provide a shared service that will provide analytics and information gleaned from combined data sets
Population health management	Provide data and tools to evaluate and improve population health
Implement application for patient/cohort identification in support of clinical trials	Deploy application to mine HSSC data for patient/cohort identification
Clinical and research data and statistical analysis	A service to capture and analyze clinical or research data on demand
Implement multi-site registries in a network model (e.g. Diabetes, Stroke, CHF, other)	Source pre-populated registry templates and link to HSSC CDW for use at member care delivery sites
Research emphasis on comparative effectiveness - delivery system evaluations	Target research grants that establish and evaluate effectiveness
Federated Biorepository	HSSC-wide information management system for managing bio-sample data and linking it to CDW. Samples managed by participating institutions directly.

<sup>2</sup> Board and stakeholder retreat, November 4, 2011; Retreat exercise combined with follow up discussions that were specific to HSSC supporting organization priorities, and Manatt analysis.

#### Appendix 4.

##### Electronic communication from Spence M. Taylor M.D. on 1/17/14

Since 2008, the Greenville Health System (GHS), the largest health system in SC, has been on a deliberate course to create an academic health center devoted to addressing the shortcomings of the American health system. In so doing, we have partnered with USC to create a new medical school designed to graduate physicians capable of transforming the current health system. We have partnered with Clemson to create a research infrastructure to investigate comparative effectiveness of therapy, implementation barriers and patient centered outcomes--all considered health services research needed to transform healthcare. Lastly, we have partnered with Furman to address undergraduate pipelines capable of meeting the healthcare workforce needs in a transformed health system.

This model--a shared academic health system with three universities and a healthcare system-- we have chosen to call a clinical university model. Our goal is to target health services research to improve quality, access and value of care in order to actually improve various population health metrics in SC.

One of the barriers to our success will be the lack of scientists with expertise in health services research. I believe the graduate programs proposed by Dr. Crandall below will provide a pipeline of professionals capable of supporting our model and achieving our goals. As the chief academic officer at GHS, I plan to support this program and will encourage selective academic physicians in our System to pursue this academic degree.

I believe the future of healthcare services in America will depend on investigational work by scientists who will have the training proposed by Dr. Crandall. As such, I support the program and will be happy to help in the approval process any way I can.

Sincerely,

Spence M Taylor MD  
President & Chief Academic Officer GHS Clinical University

## Appendix 5.

### Electronic communication from Dr. Carolyn Jenkins on 1/15/14

Our vision at the Medical University of South Carolina is to “change what’s possible,” and the goal of the **South Carolina Clinical and Translational Research Institute (SCTR)** is to improve health outcomes and quality of life for the population of SC through discoveries translated into evidence-based practice. SCTR is the catalyst for changing the culture of biomedical research, facilitating sharing of resources and expertise, and streamlining research-related processes to bring about large-scale, change in the clinical and translational research efforts in South Carolina. Clemson University is one of the partner institutions that compose SCTR. The proposed program at Clemson will help to reach the goals of SCTR. This is particularly true in a state that has a shortage of programs that focus on promoting health of South Carolinians through effective evaluation and implementation.

South Carolina (SC) is a largely rural state with a population of approximately 4.3 million characterized by critical unmet health care needs. Recent data from the Centers for Disease Control and Prevention rank SC first in deaths from cerebrovascular disease and in the top 20 for age-adjusted death rates attributable to HIV, Alzheimer’s disease, cancer, heart disease, kidney disease, accidents and violent crime. More than 25% of the population of SC is obese or overweight, and more than 22% are smokers. SC is among the most rapidly growing states in the nation, with a high ratio of people who are under-educated, under- or unemployed, and under- or uninsured. SCTR facilitates the kind of cross-disciplinary research that can provide answers to these complex problems by coordinating expertise and resources throughout the state. The proposed program at Clemson will help to catalyze the development of teams of researchers with unique and complimentary perspectives who create, implement, evaluate, and disseminate effective, culturally sensitive primary and secondary prevention and treatment programs.

The shortage of PhD prepared scientists to work with communities impedes this vision. Additionally the lack of trained scientists to work with the evaluation and dissemination of effective community programs also is critical to the success of improving health and decreasing disparities. This is exactly what the proposed program at Clemson University is proposing. If I can provide further input or address questions, please let me know.

Sincerely,



Carolyn Jenkins, DrPH, APRN-BC-ADM, RD, LD, FAAN  
Professor and Ann Darlington Edwards Endowed Chair  
Medical University of South Carolina, College of Nursing

Director, Community Engagement

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**Commissioner Munns's Questions and Institutional Responses  
Regarding New Academic Degree Program Proposals  
Committee on Academic Affairs and Licensing, January 9, 2014**

**Clemson University, M.S./Ph.D., Applied Health Research and Evaluation**

QUESTION: Why 21 months since Trustees approval? Have any conditions for approval changed?

INSTITUTIONAL RESPONSE: Our first submission of a program summary to ACAP in July 2012 raised several questions that helped us improve the proposal during the fall 2012 semester. To address some ACAP concerns we created an External Advisory Group composed of leading researchers and evaluators from academic, healthcare, and government sectors. That group met in January 2013 and we again revised the proposal to address their recommendations. The PhD task force met weekly throughout this time period to refine courses, address recommendations raised by our Advisory Group, meet with faculty outside our department, and keep our faculty abreast of the evolution of the program. We also used the spring and summer of 2013 to obtain curriculum committee approval (at all levels) for the curriculum and for all classes. We anticipated taking the proposal to the next step sooner, but CHE revised its process requiring that the entire proposal be reviewed by ACAP before it could be sent to CAAL. The time delay necessary for a second ACAP review added several months to the process.

In the interim, the department has been allocated two additional faculty positions, which adds additional resources for development of the graduate program.

QUESTION: Pg. 3. The program purpose says little about improving the cost and efficiency of our health care system. Please discuss the how this program would or would not contribute to system efficiency.

INSTITUTIONAL RESPONSE: Our Ph.D. program is designed to prepare future researchers to evaluate programs that aim to improve population health and health care programs. That would contribute to improving the efficiency and cost-effectiveness of the health care system. The curriculum also includes specific core courses (Health Care Delivery Systems - HLTH 811 and quantitative analyses HLTH 831 and HLTH 832) and elective courses have been proposed by the faculty (Cost-Effectiveness Analysis, Health and Health Care Modeling) that focus on various technical aspects of health care cost and economic efficiency of health care delivery systems.

QUESTION: Pg. 4. The 6th program goal says "... to empower change in population and health care practice". What is meant by decision making to empower change in population?

INSTITUTIONAL RESPONSE: The word "health" was omitted inadvertently from program goal 6 in the editing process. This goal should read " #6 Provide structured data-informed decision making to empower change in population health and healthcare practice." Emerging healthcare delivery systems are organized around financial incentives that are sometimes labeled "Accountable Care Organizations" or "Pay for Performance" and that focus on improving population health by holding providers accountable for aggregate health outcomes. Inputs to achieve improved health outcomes of defined populations include delivery of high quality healthcare services to those who are ill, but also may include prevention and built-environmental changes (e.g. workplace anti-smoking programs, modification of foods available to at-risk communities, development of low cost exercise venues, etc.) Therefore, twenty-first century healthcare systems need to focus not just on cost-effective and high-quality delivery of individual-level sick care, but also on the relative benefit of expenditures on sick care, preventive care and/or environmental change. Thorough analysis and careful interpretation of data on the

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costs and effects of competing approaches is needed to make efficient and effective policy and spending decisions at both the individual and population health level.

QUESTION: Pg. 6. The last sentence of the second paragraph refers to "numerous jobs were posted". Please quantify.

INSTITUTIONAL RESPONSE: At the time of the proposal development the following positions were being advertised during a one month period and are referred to as part of the "numerous jobs were posted."

<b>Universities</b>	<b>Government</b>	<b>Private Sector</b>
Scientific Evaluation Director, Simon Fraser University, BC	Public Health Analyst (Policy), (2 positions), CDC, Applied Research and Evaluation Branch	Research Associate, Group Health Research Institute (Seattle, WA)
Health Care Data and Analysis Core Director, Dartmouth College	Interdisciplinary Statistician/Epidemiologist, CDC, Surveillance and Field Investigation	Research Analyst, MANILA Consulting Group (McLean, VA)
Health Policy, Management and Behavior (2 tenure-track), University of NY	National Center for Health Statistics Postdoctoral Research Program (2-year appointment)	Prevention Advisory Services, CTS Global, Inc. (Santo Domingo, Dominica Republic)
Community and Behavioral Health – Obesity (tenure track), University of Iowa	Applied Epidemiology Fellowship, CDC-ASPH	Research Scientist, New England Research Institute (Watertown, MA)
Research Officer Causal Eligibility, University of Western Sydney (Aus)	Evaluation Lead, Mississippi State Department of Health	Public Policy Project Manager, WellCare Health Plans, Inc. (Tampa, FL)
Public Health and Health Systems (2 tenure-track), University of Waterloo (Can)		
Health Services Management and Policy (tenure-track), Ohio State University		
Health Services Researcher, George Washington University		
Youth Alcohol, Tobacco and Drug Use (tenure-track), University of Michigan		
Research/Data Analyst (tenure-track) University of Hawaii Economic Research Organization		
Director of the Gund Institute for Ecological Economics, University of Vermont		
Research Associate, (tenure-track) University of New England		

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QUESTION: Pg. 9. Enrollment is based on "the department's estimate of the faculty capacity..." Please also comment on the effect of student demand on enrollment, will there be enough demand to produce an efficient program?

INSTITUTIONAL RESPONSE: As noted elsewhere in the proposal, the Department conducted a survey of current Clemson University graduate students and former Public Health students to identify potential student interest. One hundred and forty-six students responded to the survey and 48 were either working or studying in a health-related area. Forty-two percent of the students working or studying in health (20 individuals) reported that they would have been "very" or "extremely" interested in the proposed program if it had been available after the completion of their undergraduate degree. The approval by the Clemson Trustees was announced in a brief newspaper clipping. That announcement elicited a number of inquiries from students inside and outside Clemson. Although we explained that we were still some time away from implementation, several of those individuals have maintained interest and continue to contact the program to see if we have received approval. They include individuals currently enrolled in graduate programs elsewhere and some who are enrolled in Master's degree programs at Clemson. In addition, a number of M.D. faculty members in the GHS system have expressed interest in pursuing classes on a part-time basis. Finally, we note that enrollment in the majority of classes in the Ph.D. may be substantially augmented by graduate students in other programs taking the classes as electives.

QUESTION: Pg. 11. The program is dependent on 11 new courses. Please justify that the capacity exists to produce these courses for student enrollment by this fall?

INSTITUTIONAL RESPONSE: There are 8 new 3 credit classes (four new courses added in 2014-2015 and four new courses added in 2015-2016). The other three courses listed as new include one course that will be a revision of an existing 700 level class that we have been teaching for several years in the graduate certificate program (MHA732, which becomes HLTH 821). One of the new classes is a one-credit doctoral seminar that primarily promotes project learning and will be a shared faculty responsibility repeated each semester. The third course is HLTH 899 which allows us to provide credit hours for the dissertation. In allocating FTE for year one, effort was allocated to include preparation time for development of the new classes to be taught in each of the first two years of the program. However, faculty members will continue to teach in the undergraduate students and conduct research.

QUESTION: Pg. 18. The program plans to use 3 full faculty FTE in the first year for only 3 students, and 4 FTE the second for only 6 students. Is this one to one ratio an efficient use of state resources?

INSTITUTIONAL RESPONSE: Actual instructional FTE for the required classes in year one is about 1.5 FTE and this instruction will reach students in other graduate programs who may take classes as electives (MBA-Health Administration focus). We will continue to enroll students in a related certificate program (Clinical and Health Services Research) and two of the classes in the certificate program will be used in this degree program. In addition, Graduate Students will be engaged also in the funded research programs of the faculty members. This is captured in the faculty FTE through dissertation hours and doctoral seminar credits. This program expands the faculty member capacity to conduct research and to engage graduate and undergraduate students in the research programs. This is a reasonable use of resources and is consistent with other units that house small graduate programs along with large undergraduate programs (in our case, approximately 440 undergraduate majors).

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QUESTION: Page 19. Please clarify the estimated costs, for instance faculty salaries of \$125,000 for 3 FTE in the first year. Wouldn't a faculty FTE in a PHD program have a higher salary than \$42,000?

INSTITUTIONAL RESPONSE: In this calculation of \$125,000 we only considered the instructional cost of the number of courses to be taught in year one, doubling that in year two. (Table D). In the first year, only half of the classes will be offered, with 1.5 FTE of teaching effort in year 1. From that point on 3 FTE's of resources will be used (approximate average faculty salary of  $257,500/3 = \$85,800$ ). We estimate that each departmental faculty member (excluding Instructors) (12 FTE) will contribute an average 25% time to the total graduate program in Table C (amounting to a sum of 3 FTE's) once the program is offering all the classes (all 11 classes in year two) and when dissertation committees are formed, but relatively modestly as graduate student research is integrated with faculty research.

**CLEMSON UNIVERSITY**

**COLLEGE OF HEALTH, EDUCATION AND HUMAN DEVELOPMENT**  
Department of Public Health Sciences (DPHS)

**REQUESTING TO OFFER A NEW DEGREE PROGRAM**

**Master of Science/Doctor of Philosophy**

in

Applied Health Research and Evaluation

Date of Submission: September 15, 2013

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James F. Barker, President

Program Contact

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## **Classification**

- Program Title: Applied Health Research and Evaluation
- Academic Unit: Department of Public Health Sciences, College of Health, Education and Human Development
- Designation, Type, and Level of Degree: PhD and MS, graduate degrees
- Implementation Date: Fall 2014
- CIP code: 51.2299
- Site: Clemson University (one or two courses may be offered at the University Center of Greenville)
- Palmetto/Life scholarships: N/A
- Delivery Mode: Traditional

## **Institutional Approval**

- ACAP: July 12, 2013
- Departmental Curriculum Committee: November 14, 2012
- College Curriculum Committee: April 17, 2013
- Departmental Faculty Final Approval: April 24, 2013
- University Graduate Curriculum Committee: August 26, 2013
- Provost: September 5, 2013
- President: September 15, 2013
- Board of Trustees: April 19, 2012

## **Program Purpose**

The purpose of the M.S./Ph.D. program is to produce healthcare researchers who incorporate skills from, and collaborate among, a wide range of disciplines. Because the program fosters transdisciplinary faculty collaboration and will involve research partnerships in communities and healthcare settings in the region, its graduates will be prepared to conduct applied research and evaluation that improves a wide variety of health delivery systems.

Students are expected M.S/Ph.D. to apply for admission to the Ph.D. program. The M.S. degree is awarded en route to the Ph.D. program or as an exit for a student who finds him/herself unable to complete the doctoral studies. Applicants with a master's degree or higher may apply up to twelve credits of their graduate work toward the M.S/Ph.D. program if deemed appropriate by the Admissions Committee.

The proposed M.S/Ph.D. program is based on the research experience of the faculty of the Department of Public Health Sciences in partnership with researchers in other academic units at Clemson University, and with researchers and research-oriented practitioners in the healthcare system of upstate South Carolina. The program is committed to scientific inquiry and focuses on developing applied health research and evaluation knowledge and skills. The learning framework combines rigorous instruction in the collection, analysis, and interpretation of health data, and practical experience in applying these tools and methods to improve health systems performance and population health. The curriculum includes a core of conceptual courses that foster a thorough understanding of health issues and contemporary technical issues in healthcare delivery and population health. The methodological core of the program consists of a combination of course work, research, and advanced practice application.

The combination of a strong conceptual framework, advanced research skills, and application to a cognate area (outside the department) is designed to provide graduates with a depth and

breadth of knowledge in applied health research and evaluation that makes them highly competitive for employment in both academia and the applied health research community.

The program goals are to prepare researchers to:

- (1) Conduct applied research and evaluation that improves a wide variety of health delivery systems.
- (2) Lead applied health research programs in private and public sectors.
- (3) Enhance oversight and accountability in health services delivery and in the development of healthcare programs.
- (4) Improve the effectiveness and efficiency of public and private health and medical services delivery systems.
- (5) Evaluate the implementation of services and compare effectiveness of competing programs and interventions.
- (6) Provide structured data-informed decision making to empower change in population and healthcare practice.
- (7) Work in both academia and the applied health research community.

The graduates will provide leadership to applied health research programs in private and public sectors. The program is designed to provide graduates with a depth and breadth of knowledge in applied health research and evaluation that makes them highly competitive for employment in both academia and the applied health research community. Specifically, graduates will gain knowledge and develop skills to: enhance oversight and accountability; assess effectiveness of programs and interventions; improve the effectiveness and efficiency of services; and ultimately, provide structure for data-informed decision making to empower change in population and healthcare practice.

### **Program Justification**

There is a nationally recognized need for researchers skilled in rigorously evaluating clinical and population health data and capable of working across traditional disciplinary boundaries. The National Research Council has stated:

...some of the most significant research occurs at the interfaces between traditional research areas. This is even more likely to be true in the future because the solution to complex biological and health care problems will require experts and expertise in many different disciplines—and increasingly expertise in more than one field. Consequently, it is important to encourage such research. If this research is to be successful, individuals must be broadly trained so that they can understand and contribute to research that overlaps different fields.<sup>1</sup>

(<sup>1</sup> *Advancing The Nation's Health Needs*. (2005) Committee for Monitoring the Nation's Changing Needs for Biomedical, Behavioral, and Clinical Personnel, Board on Higher Education and Workforce, Policy and Global Affairs, National Research Council Of The National Academies, The National Academies Press, Washington, D.C.)

System changes already underway in the 21<sup>st</sup> century have been spurred by provisions of the *Affordable Care Act* of 2010 (ACA). Providers are being encouraged to join together to form "Accountable Care Organizations," through which doctors can better coordinate patient care and improve the quality of care, help prevent disease and illness, and reduce unnecessary hospital admissions. The future funding of American health care will involve a system that rewards the value gained from services (quality, safety, effectiveness), not merely the volume of services provided. However in order to achieve this goal there is a tremendous need for researchers

trained to work across traditional disciplines with health data of all types and to evaluate health programs and health outcomes.

The goal of the Applied Health Research and Evaluation MS/PhD program is to prepare researchers to investigate a wide array of health issues and problems in order to foster the development of improved, evidence-based policies, guidelines, interventions and practices. The program will include trans-disciplinary faculty collaboration and research partnerships in the context of high quality graduate research instruction. Target audiences include both beginning professionals and established professionals who need to incorporate this new set of research skills.

The proposed M.S/Ph.D. program reflects the goals of Clemson University to serve the public good by focusing on one of the great challenges of the 21<sup>st</sup> century—the maintenance and improvement of population health. Applied Health Research and Evaluation is designed to prepare graduates with the core competencies of applied health research, balancing instruction in the determinants and disparities of population health with rigorous methodological training in several key disciplines supporting the practical application of research. Graduates will provide leadership in research that is essential to health-related programs in private and public sectors.

On January 17, 2013, the Department of Public Health Sciences convened its External Advisory Board to provide feedback on the knowledge and skill they felt would be critical for future applied health researchers and evaluators. The Advisory Board consists of eight members from across the United States and from a variety of settings (academic [LSU, UNC Chapel Hill, MUSC, RAND-Pardee Graduate School], state-level public health, health system/health care, and private consulting). The Board strongly endorsed the need for a program of this type and emphasized the need for strong analytical skills, the ability to appropriately apply and interpret data analytic methods, the ability to comfortably work with large data sets, and the ability to work with a wide range of professionals and in multiple settings. The Board also stressed that innovative partnerships among academic mentors, clinical mentors and students would best prepare students for the demands of complex health problems and health data.

The Advisory Board endorsed our core courses, but recommended we require that students take an additional class in advanced data analysis to increase their expertise as applied health researchers and evaluators. In response to the Advisory Board's recommendations, we required an additional analysis class through the cognate course option and increased the minimum cognate hours by three. We also increased the number of required seminar courses to ensure that students had sufficient opportunities for professional development, networking and communication skill building.

In addition, the Department conducted a survey of current Clemson University graduate students and former Public Health students. The purpose of the survey was to identify potential student interest in the proposed program, factors that would promote enrollment and barriers to enrolling, current employment areas, need for research and evaluation skills, and demographic data. One hundred and forty-six students responded to the survey and 48 were either working or studying in a health-related area. Forty-two percent of the students working or studying in health reported that they would have been “very” or “extremely” interested in the proposed program if it had been available after the completion of their undergraduate degree. (Survey submitted with report.)

### **Anticipated Program Demand and Economic Productivity**

Rising health care costs, limited resources, the Affordable Health Care Act, and the need to make evidence-based decisions about program impact on population health are driving a demand for researchers skilled in making meaningful use of data collected across settings. Graduates of the proposed program will be needed not only in academic departments but also in large corporations, the health insurance industry, government agencies, health care organizations, and consulting firms. The demand for these graduates will increase as health system change occurs, evidence-based program requirements grow, and new economic opportunities emerge.

Job announcements from multiple sources between 2010 and 2011 were reviewed as part of program planning. Sources included the *Chronicle of Higher Education*, American Public Health Association's *Nations Health*, the Health Sciences Career list-serve, the Center for Disease Control website, and the Emory Health Careers website. Using a maximum two-month time frame for any one source, we identified health-related, doctorally-prepared academic, government, and private sector job announcements that included one or more of the following terms in their titles or descriptions: scientific evaluation director, health care data and analysis director, health analyst, applied research and evaluation, evaluation lead, research analyst, interdisciplinary statistician/epidemiologist, comparative effectiveness research, outcomes research, health services research, economic evaluation, health impact assessment, program effectiveness, and continuous quality improvement. Numerous jobs were posted by multiple organizations across the US, Canada, and Australia. (Sample announcements are available).

The Bureau of Labor Statistics does not refer directly to researchers of applied health research and evaluation but when occupations with comparable skill sets were searched job growth projections between 2010-2020 were at least average (approximately 14%) or higher than average: Statisticians 14%, Actuaries 27%, Market research analyst 41%, Operations research analysts 15%, Survey research 24%, Epidemiologist 24%, and Medical scientists 36%. These skill areas are also sought by the Bureau of Labor Statistics, National Center for Health Statistics, and US Census Bureau through their Postdoctoral Research program for researchers with skills in statistics, mathematics, social and behavioral sciences, epidemiology, health statistics, and survey methodology. These are all areas emphasized in the Department of Public Health Sciences Ph.D. program.

In the March 2013 edition of **Nation's Health** (p1, 10), the editor highlighted health services and systems research as an important area of growth in health research. This area of research will play a critical role in providing information practitioners and policy makers need to make decisions that allow for the effective translation of research to practice. This type of applied health research considers organizational structure, health care financing and service delivery and their impact on people's health. According to Glen Mays, co-principal investigator with the National Coordinating Center for Public Health Services and Systems Research at the University of Kentucky, practitioners need continuous and rapid access to health care service and delivery data to best respond to community needs. This area of research also engages practitioners on the 'front end' of building the research agenda so that research questions are relevant to what practitioners are dealing with in the field. The program proposed here speaks directly to this growing need for researchers who can collaborate across traditional disciplinary boundaries to use health research to assist practitioners in accessing and using health data for positive change in their systems and health care delivery services.

### **Centrality of the Program to the Mission of the Institution**

Clemson University has identified health as an area in which the university promotes excellence in education and scholarship. As a land grant university, Clemson is committed to offering doctoral and research programs that contribute to the economic future of the state, nation, and the world. The Clemson 2020 Road Map strategic plan for the university states that one of Clemson's responsibilities to students and the state of South Carolina is to serve the public good by focusing on four emphasis areas that address the great challenges of the 21<sup>st</sup> century. Health is specifically identified as one of these emphasis areas. One of the university's ten-year goals is to "Increase the number and quality of doctoral students in focus areas by 30%." The proposed doctoral program in Applied Health Research and Evaluation fulfills the stated goal of developing a doctoral program that specifically addresses a key emphasis area as identified in the Clemson 2020 Road Map by addressing one of the emerging priorities of the 21<sup>st</sup> century—the need to develop more efficient and effective approaches to the delivery of health care and health services.

### **Relationship of the Proposed Program to Existing Programs at the Proposing Institution**

The Department of Public Health Sciences (DPHS) has academic and research relationships with multiple graduate programs at Clemson University. The Department provides graduate instruction in health each semester for the MBA program. We also collaborate with Health Care Architecture to cross list courses for our students to take together. In addition, we have recently partnered with faculty in the Mathematical Sciences Department to offer quantitative analysis courses for our new graduate-level Certificate in Clinical and Health Services Research. The DPHS regularly provides graduate-level instruction in multiple health content areas that attract graduate students from Food, Nutrition, and Packaging Science; Parks, Recreation, and Tourism Management; Psychology; Education; Nursing; Industrial Engineering; Computer Sciences; and Health Care Architecture. The DPHS faculty is actively involved with master's and doctoral committees for students in the programs listed above. The faculty of the DPHS has productive research relationships with faculty within these disciplines as evidenced by the numerous publications, grants, and graduate committees they have successfully completed with these partners. Students in our doctoral program will develop concentration areas in these and other disciplines at Clemson and likewise, we anticipate that our courses will complement classes available to students in existing graduate programs. The DPHS is also actively involved with Clemson Extension and The Youth Learning Institute in program delivery and evaluation.

### **Similar Programs Existing in the State:**

At present, there are no doctoral programs within the state of South Carolina that reflect the historical land-grant responsibilities of teaching, research, and public service while focusing specifically on providing researchers prepared to conduct interdisciplinary research and program evaluation with application to health services and systems. There are Ph.D. programs in health-related fields at USC (Arnold School of Public Health a Ph.D. in Health Services Policy and a Ph.D. in Health Promotion, Education, and Behavior), MUSC (a Ph.D. in Health and Rehabilitation Sciences and a D.H.A., Health Administration), and Clemson (Ph.D., Healthcare Genetics with a concentration in Ethics and Public Policy, ) but none of these programs focuses primarily on applied health research and evaluation.

### **Similar Programs in the Region and Nation**

The program we are proposing is similar to other applied health research doctoral programs and evaluation programs outside the state of South Carolina at institutions within the land grant university tradition, such as the Ph.D. program in Health Services Research recently established at Texas A & M University. There are also similar programs in place at Johns Hopkins University, the University of Nebraska Medical College, and the University of Washington.

Doctoral programs in applied health services research also exist outside the United States, particularly in the United Kingdom and Canada. Several Ph.D. programs in evaluation research also exist around the country but not in the state of South Carolina (Florida State University – Ph.D. Policy and Program Evaluation, George Washington University – Ph.D. Program Evaluation, University of Pittsburg – Ph.D. Public Health with program evaluation concentration).

The Southern Regional Education Board's Academic Common Market includes programs from the following states: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia. Florida and Texas, as noted above, have Ph.D. programs similar to the one we are proposing; however, neither of them includes the emphasis on evaluation research.

The DPHS Applied Health Research and Evaluation MS, PhD has incorporated competencies and skills unique to existing doctoral programs in South Carolina. Competencies have been drawn from the American Evaluation Society, Council on Linkages Between Academia and Public Health Practice, the CDC/Council of State and Territorial Epidemiologists, National Association of Chronic Disease Directors, and Agency for Health Care Research and Quality. The DPHS will integrate the proposed program into unique partnerships the Department has established with state health care leaders (e.g. Greenville Health System - Institute for Advancement of Health Care), community coalitions (e.g., LiveWell Greenville) and the Clemson's Institute for Engaged Aging.

The faculty members of the DPHS reflect the trans-disciplinary core necessary for this program. Faculty hold graduate degrees in a wide variety of fields applied to healthcare including Health Promotion and Behavior, Medical Sociology/Health Services Research, Health Policy, Community Psychology, Health Economics, Policy Analysis, Epidemiology, Health Communication, and Medicine. Over the course of their careers, ranging from 5 to 30 years, each faculty member has developed expertise across various areas of health research and each has significantly advanced and expanded their expertise. Nine of the twelve faculty members in the Department have worked in other research settings around the nation prior to coming to Clemson University. Their continuous career development efforts through fellowships in areas such as cancer research and physical activity research; certificates and post-doc graduate classes in areas such as statistics, chronic disease, health coaching, and epidemiology have allowed the Department to cultivate a unique mixture of backgrounds and talents that will support this Ph.D. program.

### **Relationship of the Proposed Program to Other Institutions via Inter-institutional Cooperation:**

The DPHS currently has active and productive relationships with other institutions at international, national, state, and local levels. Faculty within our Department have working relationships (e.g. research, instruction, or intervention) with Greenville Health System, AnMed Hospital, Oconee Medical Center, the Medical University of South Carolina, the University of South Carolina Arnold School of Public Health, The Health Services South Carolina Data Warehouse, SC Department of Health and Environmental Control, Center for Disease Control and Prevention, Rand Corporation, ABT Associates, University of Queensland, and the nations of Australia, Vietnam, Taiwan, Costa Rica, and Kenya. The Department of Public Health Sciences faculty are actively serving on state level initiatives in aging, physical activity, cardiovascular disease prevention, obesity prevention, cancer prevention and substance abuse prevention. Faculty also are serving professional organizations as editorial board members and manuscripts reviewers and federal organizations (e.g., CDC, NIH) as grant reviewers. These

relationships will provide important opportunities for our students to engage in applied research and evaluation projects.

### **Admission Criteria**

Applicants for the M.S/Ph.D. in applied Health Research and Evaluation must meet the University minimum requirement of (at minimum) a bachelor's degree from an accredited institution with a B (3.0) average in upper division courses and/or prior graduate study as well as satisfactory performance on the verbal and quantitative sections for the Graduate Record Exam (GRE). Applicants will be required to submit GRE test results and transcripts to demonstrate foundational competencies in math and statistics. The general admissions requirements will be GRE verbal scores of at least 153 (on the old tables 500) and quantitative reasoning scores of approximately 155 (on the old tables 700). Any applicant with a composite verbal/quantitative score below 1,200 must be able to submit exceptional supporting materials to have a competitive application (transcripts, reference letters, etc.).

All applicants will be required to submit a statement of purpose outlining goals and career objectives as they relate to the graduate program, three letters of recommendations (at least two from former professors and, if appropriate, one from an employer), and an example of published or other written work where applicant is the sole author. International applicants must also report TOEFL scores. Applicants with a master's degree or higher may apply up to twelve credits of their graduate work toward the M.S/Ph.D. program if deemed appropriate by the Admissions Committee. Students are expected to apply for admission to the Ph.D. program. The M.S. degree is awarded en route to the Ph.D. program or as an exit for a student who finds him/herself unable to complete the doctoral studies. Explicit criteria for the M.S. degree are outlined below.

### **Enrollment**

Enrollment estimates are based on the Department's estimate of faculty capacity to accommodate the courses, mentors, and assistantships needed to conduct the program. It is estimated that three new students will be admitted to the program during the first two academic years. In year three, the enrollment will increase to four students each academic year. The enrollment in the program is limited as a result of the size of the Department, the large undergraduate teaching obligation, available stipends for graduate students, placement opportunities, and time to degree. After four years, twelve to sixteen students will be enrolled in the program at various stages of completion—coursework to dissertation. The Department will continuously evaluate enrollment and interest in the program. As additional resources become available, the number of students would be increased as appropriate.

<b>Table A: PROJECTED TOTAL ENROLLMENT</b>						
<b>YEAR</b>	<b>FALL</b>		<b>SPRING</b>		<b>SUMMER</b>	
	Headcount	Credit Hours	Headcount	Credit Hours	Headcount	Cr Hours
2014– 15	3	30	3	30		
2015– 16	6	60	6	60	2	6
2016– 17	10*	90	10	90	3	6
2017– 18	14	126	14	126	3	6
2018– 19	16**	144	16	144	4	8

\*Enrollment increases to 4 new students;

\*\*Anticipates students graduating.

### **Brief Description of Curriculum:**

This program is built upon instruction that emphasizes the application of theory and research to the resolution of practical problems in communities and healthcare settings in the region and beyond. Specifically, graduates will gain knowledge and develop skills to enhance oversight and accountability and assess effectiveness of programs and interventions, improve the effectiveness and efficiency of services, and ultimately, to participate in data-informed decision making to empower change in population health and healthcare practice. This doctoral program will prepare students to examine critically how ecological factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect the quality and cost of health care, access to health care, and ultimately the health and well-being of the population.

The M.S. in *Applied Health Research and Evaluation* requires a minimum of 30 credits of the core courses; passing the qualifying exam; preparing a research manuscript; submitting the manuscript to a scientific, peer-review journal approved by a faculty committee. This degree allows the Department the option of awarding a master's degree (en route) to students who enter the doctoral program with only a bachelor's degree or those leaving the Ph.D. program due to a personal decision after completing a major component of the degree requirements.

The Ph.D. in *Applied Health Research and Evaluation* has a minimum requirement of 66 credit hours for students entering with a bachelor's degree or 54 credit hours for students entering with a master's degree. Students are required to complete core course requirements, cognate course requirements, and dissertation credit hour requirements. In addition, students will be required to pass the qualifier exam, dissertation proposal defense, final oral dissertation defense, and final comprehensive exam.

The Ph.D. curriculum is the culmination of review of other applied health research and evaluation programs, faculty experiences, and Advisory Board recommendations. Students will complete core courses offered in the DPHS related to health research theory, measures, design,

implementation, analysis, and evaluation. Students will develop expertise in a content area (cognate) of their choosing with departmental approval and guidance. Students will identify an additional set of four or five courses, primarily outside the home department, to create this content area. One of these courses must be an advanced statistics or analysis class related to the student's research. Cognates can also be enhanced through internships at an appropriate research setting in public, private, or government organizations. Students will also be required to participate in teaching effectiveness workshops, academic governance meetings (when appropriate), and manuscript or grant writing teams (e.g. through seminar classes). Cross-campus linkages will be expanded and strengthened through the doctoral program to fulfill the University's goal of promoting interdisciplinary research across the eight specific programmatic emphasis areas. Students will partner with both an academic mentor and a clinical mentor.

### **Curriculum:**

This graduate program will award an M.S. (en route) and Ph.D. in *Applied Health Research and Evaluation* upon completion of minimum of 66 hours for students entering with a bachelor's degree or a minimum of 54 hours for students entering with a master's degree. Students who choose to leave the program before the completion of the Ph.D. must complete 30 hours of the research core coursework and perform adequately on qualifying examinations to be awarded the M.S. in Applied Health Research and Evaluation. Students entering the program with an M.S. could exempt a maximum of 12 credit hours if appropriate courses were taken in their master degree program (\* Courses eligible for this exemption are noted below with an asterisk.). Students applying to the Ph.D. program will be expected to have completed 6 credit hours of statistics or research methods.

**Total Hours:** 66 credit hour minimum for students entering with a BS  
54 credit hour minimum for students entering with MS and with 12 credits of approved graduate courses from their MS

### **Core Courses (36 credit hours)**

\*HLTH 810 (3 cr) Theory and Determinants in Health Research - NEW COURSE  
\*HLTH 811 (3 cr) Health Care Delivery Systems - NEW COURSE  
\*HLTH 821 (3 cr) Health Research – Design and Measurement - NEW COURSE  
\*HLTH 822 (3 cr) Health Research - Qualitative and Mixed Methods – NEW COURSE  
\*HLTH 809 (3 cr) Epidemiological Research  
HLTH 829 (3 cr) Epidemiology II – Applied Epidemiology – NEW COURSE  
HLTH 841 (3 cr) Foundation of Evaluation in Health – NEW COURSE  
HLTH 842 (3 cr) Applied Evaluation Methods in Health – NEW COURSE  
HLTH 831 (3 cr) Quantitative Analysis in Health Research I - NEW COURSE  
HLTH 832 (3 cr) Quantitative Analysis in Health Research II - NEW COURSE  
HLTH 889 (1 cr) Seminar (class repeated six times) – NEW COURSE

**Dissertation (18 credit hours)** HLTH 899 (variable credit) – NEW COURSE

### **Cognate Courses (12 credit hours)**

Cognate courses allow the student to develop an appropriate content area if he or she is entering the program with a bachelor's degree or if the master's degree lacks content specific to the research interests and constitute 12-credit hours (4 classes) approved by the student's advisor. One of the cognate courses must include three credits in an advanced statistics or analysis class relevant to the research interests (e.g., methods courses in Nutrition, Physical Activity, Built Environment, Aging, Substance Abuse, Violence, Health Communication, Health Care, Research Specialization, Survey Design, Secondary Data Analysis, Advanced Qualitative Analysis, etc.)

## Curriculum Map

<b>Year 01-Fall</b>	<b>Year 01-Spring</b>
HLTH 810 (3 cr) Theory and Determinants in Health Research HLTH 821 (3 cr) Health Research – Design and Measurement HLTH 809 (3cr) Epidemiology Research (3cr) HLTH 889 (1 cr) Seminar #1	HLTH 829 (3 cr) Epidemiology II HLTH 811 (3 cr) Health Care Delivery Systems HLTH 831 (3 cr) Quantitative Analysis in Health Research I HLTH 889 (1 cr) Seminar #2
<b>Year 02-Fall</b>	<b>Year 02-Spring</b>
HLTH 822 (3 cr) Health Research – Qualitative and Mixed Methods HLTH 841 (3 cr) Foundation of Evaluation in Health HLTH 832 (3 cr) Quantitative Analysis in Health Research II HLTH 889 (1 cr) Seminar #3	HLTH 842 (3 cr) Applied Evaluation Methods in Health HLTH 889 (1 cr) Seminar #4 Cognate course(s)
<b>Year 03-Fall</b>	<b>Year 03-Spring</b>
HLTH 889 (1 cr) Seminar #5 Cognate course(s) Dissertation Hours	HLTH 889 (1 cr) Seminar #6 Cognate course(s) Dissertation Hours
<b>Year 04-Fall</b>	<b>Year 04-Spring</b>
Dissertation	Dissertation

Course	Description
<b>HLTH 811 Health Care Systems (3 cr)</b>	This course examines healthcare delivery systems with a focus on the U.S. It first describes healthcare systems and their functions. Economic theory will then be used to examine a number of critically important issues including the organizational structure of U.S. healthcare, payment systems, access and quality of care.
<b>HLTH 810 Theory in Health Research (3 cr)</b>	An ecological perspective of biological, behavioral and social health determinants and how theory is used to explain relationships between determinants and health and describe behavior change process. Emphasizes theories or individual behavior, community and group models of behavior change, and the use of theory in practice, research, and
<b>HLTH 821 Research Methods I (3 cr)</b>	Addresses issues in research design, measurement, project planning, data collection and data management for health research. Topics include experimental and quasi experimental design, measuring key health concepts, introduction to survey methodology, observational research and research ethics.

<b>HLTH 822 Research Methods II (3 cr)</b>	Qualitative research methods and mixed methods including identification and creation of research problems, the development of designs, actual data collection, and analysis procedures to address those problems. Includes qualitative-interpretive methods of accessing and analyzing data including participant observation/ethnography, case studies and grounded theory. The course addresses the methodological grounding for these methods, some of the methods themselves (through field exercises), and research designs. Prerequisite: HLTH 811
<b>HLTH 809 Epidemiology I (3 cr)</b>	Introduction to epidemiological principles and methods utilized in the study of the origin, distribution, and control of disease.
<b>HLTH 819 Epidemiology II (3 cr)</b>	Instruction in basic and advanced epidemiological principles, concepts and methods with an emphasis on the practical application of epidemiological methods in public health and clinical settings. Students will be challenged to apply epidemiologic concepts and methods to analysis of data on current issues using case studies and a variety of practice-related exercises in real world public health problem-solving simulations. <b>Pre-Requisite: HLTH 809</b>
<b>HLTH 841 Program Evaluation I (3 cr)</b>	Foundational course on historical and theoretical aspects of evaluation as applied to population health, medicine and healthcare. Paradigms and philosophies associated with methods, use, values and social justice branches are emphasized. Other topics: evaluation terminology and standards, theory-driven evaluation, planning models, planning and evaluation cycle, engaging stakeholders, and presenting findings.
<b>HLTH 842 Program Evaluation II (3 cr)</b>	Continuation of HLTH 841. Practical aspects of planning, designing and managing evaluations in population health, medicine and healthcare are emphasized. Topics include: scoping, selecting an appropriate design, threats to validity, common and emerging methods of formative and summative evaluation, staffing and management, collecting and analyzing data, and writing evaluation reports. Prerequisite: HLTH
<b>HLTH 831 Quantitative Analysis I (3 cr)</b>	This course focuses on the application of statistical methods to health research questions using health survey data. The course material is built on knowledge gained from previous courses in research design methods and statistics. It gives students hands-on experience in investigating health research questions analyzing complex health data sets. Prerequisite(s): MTHSC 206 and MTHSC 403 or equivalent
<b>HLTH 832 Quantitative Analysis II (3 cr)</b>	This course covers other common statistical and econometric methods used in population health research. Extended from the topics covered in Quantitative Analysis I, students get more hands-on experience in applying advanced analytic techniques and tools to investigate health research questions using complex health data sets. Prerequisite(s): Quantitative Analysis in Health Research I (HLTH 831)
<b>HLTH 889 Seminar (1 cr)</b>	Provides an opportunity for students to present, critically discuss and examine issues related to their research with students, faculty and visitors in a formal setting, approximating professional meetings. Students will develop communication skills, leadership skills and professional conduct expected of the Applied Health Research and Evaluation graduate student. <b>Prerequisite: HLTH 822</b>
<b>HLTH 899</b>	Doctoral dissertation research includes research topic identification,

<b>Dissertation (variable credit)</b>	proposal development, research execution and finalization of dissertation report
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(All courses in the program are new except for HLTH 809.)

### **Assessment Plan**

The University engages in program evaluation and assessment that focuses on program outcomes as well as student learning outcomes. While assessment of students is essential, program assessment is an important component well. The faculty examines a number of factors related to program quality and effectiveness including, but not limited to, enrollment and graduate rates, publications and presentations of faculty and students, student assessment of instructors, and exit interviews. These data assist faculty in evaluating and improving program implementation. The University provides annual data for department chairs to use in conducting program reviews. The student learning outcomes are of particular importance and relate directly to the curriculum plan of study.

Students Learning Outcomes include the following:

Students will be able to:

- Compute and interpret accurately statistics used in applied health research and evaluation.
- Design research and evaluation studies using quantitative and qualitative methods and analysis.
- Employ correctly methods for measuring health variables and assessment of health outcomes.
- Assemble secondary data from existing public and private sources and use information technology to conduct research.
- Pose innovative and important research and evaluation questions informed by critical and systematic review of the literature, stakeholder needs and relevant theoretical and conceptual models.
- Address systems models and the policy process for improving population health.
- Describe and appropriately incorporate issues in the organization, financing and delivery of personal and population health services.
- Demonstrate effective written and oral communication and leadership skills for collaborating across disciplines and for constructive review and feedback of ideas with colleagues and partners from diverse backgrounds.
- Apply quality and performance improvement approaches to health care systems.
- Conduct research and evaluation that is appropriate from an ethical, legal and regulatory standpoint.
- Apply analytic techniques and methodologies from epidemiology, econometrics, outcomes research and risk assessment.
- Describe and apply individual, interpersonal and community models of health behavior in evaluating programs or interventions focused on social and structural determinants of health.
- Prepare and submit competitive grant proposals.
- Prepare and submit publishable manuscripts and prepare evaluation reports.
- Describe the four basic types of evaluation (formative, process, impact, outcome), evaluation concepts, and evaluation assumptions.
- Apply skills in evaluation paradigm interpretation, project planning and logic model development, data collection, data management and situational analysis.

- Know how to apply alternative theoretical and conceptual models from a range of disciplines relevant to applied health research and evaluation.
- Know how to collect primary health and health care data obtained by survey, qualitative, or mixed methods.

Accomplishment of learning objectives will be assessed through course artifacts, a qualifying examination upon completion of at least 80% of core coursework, a preliminary oral defense of a detailed dissertation proposal that addresses both the topic and proposed methodology, and a final oral defense of the dissertation. The department will also examine graduate student publications and postgraduate employment. Because student enrollment and growth per year will be small, if any student fails to achieve the expected performance for coursework (B or higher), qualifying exam (pass), or completion of the research dissertation (pass), the faculty advisor will meet with the curriculum committee to determine if the performance shortfall is a curricular issue, advising issue or student capacity issue. Learner outcome deficiencies linked to curriculum will be addressed through the curriculum committee and reported to the general faculty. The Advisory Committee will assist the faculty in monitoring post-graduate employment, publication rate, career advancement and other measures of impact of the program's graduates on applied health research.

### **Faculty**

As noted above, the program is built upon a strong core of existing faculty. Current faculty members have terminal degrees from Brandeis University, Emory University, Georgetown University, Johns Hopkins University, Rand Graduate School, Purdue University, and the University of South Carolina. New faculty hires will focus on individuals with strong quantitative analysis skills, experience in evaluation research, a successful record of scholarship and grant-awards, and competencies in teaching both undergraduate and graduate students. A new faculty hire was approved in fall 2013. New staff will have experience with graduate program coordination and graduate student supervision.

The faculty members of the Department are qualified to direct graduate students in this field. All faculty members attend professional conferences and publish peer-reviewed manuscripts in their areas of expertise. All faculty members are actively engaged in research. Faculty development resources will continue to be available through funds provided by the Mary Lohr Foundation.

The institutional definition of the full-time equivalents (FTE) is 12 credit hours

Table B – Faculty List

<b>List Staff by Rank</b>	<b>Highest Degree Earned</b>	<b>Field of Study</b>	<b>Teaching in Field (Yes/No)</b>
Professor #1	Ph.D.	Medical Sociology, Health Services Research, Survey Research	yes
Professor #2	Ph.D.	Older adult health and chronic disease self-management	yes
Professor#3	Ph.D.	Medical Sociology, Epidemiology, Social Determinants of Health and Illness	yes
Professor#4	Ph.D.	Women’s Health, Global Health, Cancer Disparities	yes
Professor#5	Ph.D.	Health Administration, Health Finance, Health Services Research and Evaluation, Health Disparities	yes
Professor #6	Ph.D.	Substance Abuse	yes
Associate Professor #1	Ph.D.	Public Health, Health Promotion, Obesity, Physical Activity	Yes
Associate Professor #2	Ph.D.	Health Behavior, Community Development, Public Health Practice and Evaluation, Physical Activity, Obesity Prevention, Health Disparities	yes
Associate Professor	Ph.D.	Health Behavior,	yes

<b>List Staff by Rank</b>	<b>Highest Degree Earned</b>	<b>Field of Study</b>	<b>Teaching in Field (Yes/No)</b>
#3		Physical Activity, Nutrition, Obesity, Evaluation, Applied Statistics	
Associate Professor #4	Ph.D.	Health Policy Analysis, Health Economics	yes
Assistant Professor #1	Ph.D.	Simulation and Modeling; Empirical Methods; Behavioral and Cognitive Economics; Health Communication	yes
Assistant Professor #2	MD, Ph.D.	Epidemiology, Nutrition, Biostatistics	yes

<b>Table C: UNIT ADMINISTRATION/FACULTY/STAFF SUPPORT</b>						
<b>YEAR</b>	<b>NEW</b>		<b>EXISTING</b>		<b>TOTAL</b>	
	<b>Headcount</b>	<b>FTE</b>	<b>Headcount</b>	<b>FTE</b>	<b>Headcount</b>	<b>FTE</b>
<b>Administration</b>						
2014 – 15			1	.5	1	.5
2015 – 16			1	.5	1	.5
2016 – 17			1	.5	1	.5
2017 – 18			1	.5	1	.5
2018 – 19			1	.5	1	.5
<b>Faculty</b>						
2014 – 15			12	.125	12	3
2015 – 16			12	.25	12	4
2016 – 17			12	.25	12	4
2017 – 18			12	.25	12	4
2018 – 19			12	.25	12	4
<b>Staff</b>						
2014 – 15			2	.10	20	.10
2015 – 16	.5	1	2	.20	2.5	.5
2016 – 17	.5	1	2	.20	2.5	.5
2017 – 18	.5	1	2	.20	2.5	.5
2018 – 19	.5	1	2	.20	2.5	.5

### **Physical Plant**

The M.S/Ph.D. in Applied Health Research and Evaluation will be housed in Edwards Hall. The Department of Public Health Sciences has office space to accommodate 12 faculty, three instructors, and three graduate students. The Department also has lab space available for research application and instruction. The College of Health Education and Human Development will remodel and subdivide existing space to provide individual study areas for the graduate students in the college. The existing facilities will be adequate, with minor adjustments, for the faculty and students for the next three years. For the following two years additional space for both faculty and students could be necessary if our faculty grows and this has addressed with the college dean.

### **Equipment**

There are no additional major research and scientific equipment items needed to support the proposed program. As stated in the budget, new computers and office desks for graduate assistants will be needed. These materials will be acquired through self-generated funds from the department's certificate programs.

### **Library Resources**

The Clemson University Library holdings and electronic access are adequate to support the program. All major journals in our files are available online or through open access. No additional library resources are anticipated; however, a small amount of funding will be budgeted to add journals or books if the need arises. The Clemson University Libraries hold more than 1.8 million items including books, periodicals, electronic resources, digital media collections, government publications and patents, musical recordings, maps and microforms. Resources include 3,593 print journal subscriptions, approximately 48,000 e-journals, more than 22,800 e-books, and more than 400 online databases. During the 2007-2008 fiscal year, the budget for electronic databases and journals was \$3.8 million; \$1 million for print periodicals; and \$1.4 million for e-books, printed books, standing orders, and media.

Interlibrary loan and PASCAL provide students and faculty access to this wide array of resources. PASCAL is the Partnership Among South Carolina Academic Libraries, a consortium of South Carolina's academic libraries together with their parent institutions and state agency partners. PASCAL fosters cooperation on a broad range of issues including shared licensing of electronic resources, universal borrowing, and ILS hosting. PASCAL provides timely and universal access to information resources and library services - through creative use of technology, central licensing, and collaborative action - in order to support a highly productive knowledge environment for every student and faculty member at every institution of higher learning in South Carolina.

Specific journals available through Clemson's Library system and relevant to students in the PhD program of Applied Health Research and Evaluation include:

Administration and policy in mental health and mental health services research, American journal of epidemiology, American journal of evaluation, American journal of public health, Annals of family medicine, Annals of internal medicine, Behavioral medicine, BMC health services research, Clinical epidemiology, Diabetes Care, Epidemiology, Ethnicity & disease, Evaluation & the health professions, Evaluation & program planning, Evaluation review, Future medicine, Health affairs, Health and history, Health and human rights, Health and place, Health and quality of life outcomes, Health care analysis, Health care auditing strategies, Health care for women international, Health Communication, Health culture and society, Health data management, Health economics, Health economics policy and law, Health economics review,

Health education research, Health industry today, Health information science and systems , Health law and policy , Health management technology, Health outcomes research in medicine, Health, risk & society, Health service journal, Health services research, Health services and outcomes research methodology, Health statistics quarterly, Health system research , Healthcare benchmarks and quality improvement , Healthcare informatics research , Hypertension Research, Journal of behavioral health services & research, Journal of comparative effectiveness research, JAMA : the Journal of the American Medical Association and complete collection of AMA Journals, Journal of evaluation in clinical practice, New England Journal of Medicine, Medical Care, Obesity Research, Public Health Forum, Research Evaluation. Journals that will be considered in addition to the existing holdings include: Advances in Program Evaluation, Evaluation in Education and Human services, Journal of Multidisciplinary Evaluation, The Patient : Patient-Centered Outcomes Research.

### **Accreditation, Approval, Licensure, or Certification**

The proposed Applied Health Research and Evaluation M.S. and Ph.D. programs are not subject to specialized or professional accreditation or approval by any state agency other than the Commission on Higher Education.

### **Articulation**

This proposed program leads to a terminal degree. This program does not include collaborations or articulations with other state institutions and no agreements are required. Students who have been enrolled in graduate studies at other institutions do have an opportunity to apply for admission and appropriate course work completed will be evaluated for application to the degree program. When appropriate, articulation agreements may be developed for students to conduct their doctoral research at other institutions. These are unique situations and are not anticipated at this time.

### **Total new costs associated with implementing the proposed program:**

The estimated cost for Year 01 is \$291,200. Sixty-eight percent of this cost involves personnel items (faculty and staff) and will come from reallocation of existing funds. Future health services faculty hires currently planned by Clemson University are anticipated to contribute to and complement the expansion in health related programs and research at the University. One new faculty member has been allocated for the Department in the 2013-14 budget.

Twenty-two percent of this overall cost will include two new graduate assistant positions, space modifications and equipment, etc. Funds for graduate positions, remodeling, and other expenses as well as the recruitment, travel, library and other miscellaneous expenses of the Year 01 budget will come from self-generated revenues the Department currently collects through summer school course and graduate health courses that we offer for the MBA program in Greenville. Additional self-generated funds will come from two certificate programs that we have recently launched (Undergraduate Public Health and Graduate Clinical and Health Services Research). No “unique costs” or special state appropriations will be required for this program.

<b>Table D: ESTIMATED COSTS BY YEAR</b>						
<b>CATEGORY</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>	<b>5<sup>th</sup></b>	<b>TOTALS</b>
Program Administration	50,000	51,500	53,045	54,636	56,275	265,456
Faculty Salaries	125,000	257,500	265,525	273,182	281,277	1,202,484
Graduate Assistants	68,200	107,700	110,481	113,345	116,295	516,021
Clerical/Support Personnel	7,000	25,000	25,750	26,522	27,318	111,590
Supplies and Materials						
Library Resources	2,000	1,000	1,000	1,000	1,000	6,000
Equipment	10,000	0	0	5,000	5,000	20,000
Facilities	25,000	0	0	25,000	0	50,000
Other (Identify)						
travel	2,000	4,000	4,000	4,000	4,000	18,000
recruitment/seminars	2,000	4,000	4,000	4,000	4,000	18,000
<b>TOTALS</b>	<b>291,200</b>	<b>450,700</b>	<b>463,801</b>	<b>506,685</b>	<b>495,165</b>	<b>2,207,551</b>
<b>SOURCES OF FINANCING BY YEAR</b>						
Tuition Funding	\$24,000	48,000	72,000	96,000	96,000	336,000
Program-Specific Fees						
State Funding*						
Reallocation of Existing Funds** (Reassignment of existing faculty to graduate classes, etc.)	267,200	402,700	391,801	410,685	399,165	1,871,551
Federal Funding						
Other Funding (Specify)						
<b>TOTALS</b>	<b>\$291,200</b>	<b>450,700</b>	<b>463,801</b>	<b>506,685</b>	<b>495,165</b>	<b>2,207,551</b>

\* Special legislative appropriations to support the program.

\*\*Specify significant internal sources of reallocated funds. Add additional rows as necessary.



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SANDRA B. GREENE, DrPH  
*Interim Chair*

LAUREL FILES, PhD, MBA  
*Associate Chair*

April 30, 2013

Dr. Lee Crandall  
Chair, Department of Public Health Sciences  
Clemson University  
501 Edwards Hall  
Clemson SC 29634

Dear Lee,

It is a distinct privilege to serve on your External Advisory Board as you move forward with the proposed MS/PhD Program in Applied Health Research and Evaluation at Clemson University. As background, I have been Director of the PhD Program in Health Policy and Management at the University of North Carolina at Chapel Hill for the past decade. During that time, health care reform, Institute of Medicine reports recognizing the need for system-level approaches to increase value of our investment in health care, and funding for comparative effectiveness research are a few factors that have heightened the importance of health services/health policy research. In this rapidly-changing environment, our students must develop an understanding of how their research can be applied in real-world health care systems. As such, during the past 10 years, our Department has revised our curriculum to provide our students with the skills and experience for careers in which they can make a difference in health care. As a PhD Program Director who has overseen the revision of our curriculum, I believe that I have the expertise to serve on your External Advisory Board. Based upon our face-to-face meeting in January and my review of your proposal, I believe that the MS/PhD in Applied Health Research and Evaluation is extraordinarily well-crafted, and it will prepare your graduates with the skills to improve health care delivery in diverse systems. I will use the remainder of the letter to provide my rationale.

Let me begin with your curriculum, which is structured around explicit learning objectives for your doctoral students. You combine didactic and experiential learning activities to achieve these objectives (including specific metrics that will allow you to apply formative, process, impact, and outcome evaluations of your curriculum). The didactic component of your curriculum includes core courses that will provide all MS/PhD students with essential content, methodological, analytical, and professional development skills required for careers in applied health research. In particular, they will understand the principles for developing, implementing, and evaluating innovative strategies to improve the processes and outcomes of health care. Your students will

also understand how to appropriately use, analyze and interpret data from large secondary data sets; these skills are currently critical, but will become increasingly important in an era of "big data" and the proliferation of electronic medical records that can be linked to other datasets. In addition to core required courses, your students will select a cognate in which to focus their study. This is important because students will be able to tailor their formal training to their individual interests; a secondary benefit of this structure is that it will provide the Department with a richer, more diverse student population. This is similar to the structure of the curriculum in our PhD Program in Health Policy and Management.

Beyond the formal courses, you have capitalized on your strong relationships with health care systems throughout the state. As we recommended at the January External Advisory Board Meeting, these partnerships can provide your students with clinical and operations mentors to complement the strong academic mentors within your Department. This combination of didactic and experiential learning has many benefits. First and foremost, having mentors within organizational partners will help students develop the skills and experience to conduct meaningful health services research in real-world settings. Second, it has the potential to further ongoing research between faculty in your Department and your partners. Doing so would create a sustainable relationship that would expand opportunities for faculty and students alike. Third, it will distinguish your proposed MS/PhD program from others in South Carolina. As we discussed at the External Advisory Board meeting, your focus on applied health research will complement, rather than compete with, other PhD programs. For these reasons, your graduates will be exquisitely well-prepared to join diverse health care organizations that seek creative solutions to improve health care quality, organizational efficiency, and patient outcomes.

The faculty in your Department are excellent and have the skills to teach, mentor and guide the research of the students you will attract to your MS/PhD program. They have diverse expertise, including medical sociology, health services research, economics, health policy, epidemiology, health promotion, health behavior, and health communication. They also have wide-ranging research foci that can accommodate students' interests, including cancer prevention and control, minority health/health disparities, health systems/policy research, gerontology, and nutrition/physical activity/obesity. In addition to the excellent faculty within your Department, you have strong faculty throughout Clemson (especially within the College of Health Education and Human Development). And, you capitalize on mentors in health care organizations with which you currently have established partnerships (e.g., Greenville Health Care System, Institute for Engaged Aging). Together, you have outstanding resources to teach and mentor students in the proposed MS/PhD Program.

You have carefully evaluated the demand for your program, and based on the data in your proposal, I have no question that you will be able to recruit very strong students into your program. Although you will recruit students expecting them to complete the PhD, you have provided them with the ability to graduate with a master's degree should they wish to exit at that point. Regardless of which degree they complete, your graduates will be prepared to conduct applied health research in diverse health care organizations, as well as state and federal agencies. All of these organizations will face

challenges associated with health care reform. Your students will be prepared to help these organizations consider how to implement Accountable Care Organizations, new payment and reimbursement models, electronic health records, patient-centered medical homes, and community-based programs. They should possess the training and experiences to develop innovative and pragmatic ways to foster meaningful change in health care.

In closing, I believe that your proposed MS/PhD program in Applied Health Research and Evaluation fills an important niche that complements, rather than competes with, other PhD programs at Clemson University and the state of South Carolina. You have developed a very strong curriculum that capitalizes on the strengths of your Department, Clemson University, and your partnerships with various organizations in the State. Your current proposal has been very responsive to the suggestions made at the January External Advisory Board meeting. I am excited to serve on this Board and look forward to future meetings to offer advice as your program develops over time. If you have any questions, please feel free to contact me by email ([mweinber@email.unc.edu](mailto:mweinber@email.unc.edu)) or telephone (919-966-7385).

Sincerely,



Vergil N. Slee Distinguished Professor of Healthcare Quality Management  
Department of Health Policy and Management  
Gillings School of Global Public Health  
University of North Carolina at Chapel Hill  
Senior Research Career Scientist, Durham VAMC Center for Health Services Research