



UNIVERSITY OF UTAH  
SCHOOL OF MEDICINE

Department of Population Health Sciences

MEMORANDUM

TO: Graduate Council  
Academic Senate Executive Committee  
Academic Senate  
Utah System of Higher Education Board of Regents

DATE: March 14, 2016

SUBJECT: Approval to Implement the Emphasis in Clinical and Translational Epidemiology in the Population Health Sciences PhD Program

This letter is to express my full support for implementing the Emphasis in Clinical and Translational Epidemiology, the third emphasis in the Department of Population Health Sciences Ph.D. Program in the School of Medicine. Our goal is to begin in Fall 2017.

This emphasis, which was included in the initial Ph.D. Program and approved by the Board of Regents in July 2015, is ready to implement. The goal of this proposed emphasis is to teach students to bring innovative discoveries from the molecular level through the continuum to implementation at the health systems level. Coursework reflects the translational process from cells to systems.

The emphasis in clinical and translational epidemiology is designed to complement, strengthen, and extend the capacity for scholarship across the campus. Educating researchers who investigate innovations in care with those who study innovations in care delivery provides a bridge to translational research. The connections among health systems researchers, clinical and molecular epidemiologists, and biostatisticians throughout the program exemplify team-based research.

We are delighted to be able to offer such an innovative and collaborative focus as part of the PhD in Population Health Sciences in the School of Medicine.

Sincerely,

A handwritten signature in black ink, appearing to be 'Angela Fagerlin', with a horizontal line extending to the right.

Angela Fagerlin, Ph.D.  
Professor and Chair, Department of Population Health Sciences

**Utah System of Higher Education  
New Academic Program Proposal  
Cover/Signature Page - Abbreviated Template**

**Institution Submitting Request:** University of Utah  
**Proposed Program Title:** Emphasis in Clinical and Translational Epidemiology  
**Sponsoring School, College, or Division:** School of Medicine  
**Sponsoring Academic Department(s) or Unit(s):** Department of Population Health Sciences  
**Classification of Instructional Program Code<sup>1</sup> :** 51.9999  
**Min/Max Credit Hours Required of Full Program:** 63 / 81  
**Proposed Beginning Term<sup>2</sup>:** Fall 2017  
**Institutional Board of Trustees' Approval Date:**

**Program Type:**

<input type="checkbox"/>	Certificate of Proficiency	<input type="checkbox"/>	Entry-level CTE CP	<input type="checkbox"/>	Mid-level CP
<input type="checkbox"/>	Certificate of Completion				
<input type="checkbox"/>	Minor				
<input type="checkbox"/>	Graduate Certificate				
<input type="checkbox"/>	K-12 Endorsement Program				
<input checked="" type="checkbox"/>	<b>NEW</b> Emphasis for Regent-Approved Program				
	<i>Credit Hours for NEW Emphasis Only:</i>	<b>63</b>	/	<b>81</b>	
	<i>Current Major CIP:</i>	<b>51.9999</b>			
	<i>Current Program Title:</i>				Population Health Sciences Ph.D.
	<i>Current Program BOR Approval Date:</i>	<b>07/31/2015</b>			
<input type="checkbox"/>	Out of Service Area Delivery Program				

**Chief Academic Officer (or Designee) Signature:**

I, the Chief Academic Officer or Designee, certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

Please type your first and last name \_\_\_\_\_ Date: \_\_\_\_\_

I understand that checking this box constitutes my legal signature.

<sup>1</sup> For CIP code classifications, please see <http://ncos.ed.gov/peds/cipcode/Default.aspx?y=55>.

<sup>2</sup> "Proposed Beginning Term" refers to first term after Regent approval that students may declare this program.

**Utah System of Higher Education  
Program Description - Abbreviated Template**

**Section I: The Request**

**University of Utah requests approval to offer the following Emphasis: Emphasis in Clinical and Translational Epidemiology effective Fall 2017. This program was approved by the institutional Board of Trustees on .**

**Section II: Program Proposal/Needs Assessment**

**Program Description/Rationale**

*Present a brief program description. Describe the institutional procedures used to arrive at a decision to offer the program. Briefly indicate why such a program should be initiated. State how the institution and the USHE benefit by offering the proposed program. Provide evidence of student interest and demand that supports potential program enrollment.*

The Department of Population Health Sciences is seeking approval to establish its third emphasis, Clinical and Translational Epidemiology, in the Population Health Sciences PhD. Both population health and health services research expertise exist within the University of Utah, but there is an urgent need to strengthen the program by building on existing expertise in clinical and translational epidemiology. This is a natural extension of the patient interface with the health system, incorporating clinical symptoms and molecular mechanisms to establish new evidence based-treatment and exemplary clinical outcomes.

**Faculty Consultation**

On February 10, 2016 the School of Medicine College Council Executive Committee unanimously approved the proposal to establish this emphasis in the Population Health Sciences Ph.D. Program. On March 10, 2016, the School of Medicine College Council were asked to vote on the implementation of this emphasis. This proposal in Clinical and Translational Epidemiology was unanimously approved. The voting summary is provided in Appendix D.

In the Ph.D. program, approved by the Board of Regents on July 31, 2015, this emphasis was mentioned with the intent to implement at a later date. As part of initial student recruitment, the Department of Population Health Sciences gauged student interest in this focus. Several undergraduate and graduate level students in the USHE schools have indicated interest in applying to this program once the emphasis is approved. Now that faculty have been recruited and infrastructure has been solidified, the department is poised to develop this emphasis for implementation in Fall 2017.

Educating researchers who investigate innovations in care with those who study innovations in care delivery provides a bridge to translational research. The goal of this proposed emphasis is to teach students how to bring innovative discoveries from the molecular level through the continuum to implementation at the health systems level. Coursework reflects the translational process from cells to systems. The emphasis in clinical and molecular epidemiology is designed to complement, strengthen, and extend the capacity for scholarship across the campus. This will be the only available Ph.D. emphasis in the state of Utah with this focus.

The proposed addition will increase opportunities to engage, rather than compete, with other departments and colleges across the University to strengthen collaborative scholarship around clinical and molecular

epidemiology; and will be overseen by the interdisciplinary curriculum committee. The connections among health systems researchers, clinical and molecular epidemiologists, and biostatisticians throughout the program exemplify team-based and research from inception.

This graduate program infrastructure in the Department of Population Health Sciences offers opportunities for collaborative research with clinician-scientists in the Health Sciences clinical departments as well as other campus investigators. Similar to other School of Medicine basic science departments, the Population Health Sciences department leverages and connects the resources being deployed specifically to improve care delivery to patient populations.

### **Labor Market Demand**

*Provide local, state, and/or national labor market data that speak to the need for this program. Occupational demand, wage, and number of annual openings information may be found at sources such as Utah DWS Occupation Information Data Viewer ([jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do](http://jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do)) and the Occupation Outlook Handbook ([www.bls.gov/oco](http://www.bls.gov/oco)).*

The demand for students trained in the Clinical and Translational Epidemiology curriculum outlined in this proposal is high and the supply is inadequate. The Epimonitor, a widely recognized resource for epidemiologists in both the latest developments in the field and career opportunities, has a job board that features over 30 open positions at any given time. This number has been consistent over the past several months and illustrates the urgency for moving forward with this uniquely designed program. Additionally, the Huntsman Cancer Institute is developing pre-doc and post-doctoral scholarships to continuously improve cancer outcomes and patient care and has several open positions that our students would be uniquely qualified for.

### **Consistency with Institutional Mission/Impact on Other USHE Institutions**

*Explain how the program is consistent with the institution's Regents-approved mission, roles, and goals. Institutional mission and roles may be found at [higheredutah.org/policies/policyr312/](http://higheredutah.org/policies/policyr312/). Indicate if the program will be delivered outside of designated service area; provide justification. Service areas are defined in [higheredutah.org/policies/policyr315/](http://higheredutah.org/policies/policyr315/).*

The Ph.D. program in Population Health Sciences will serve as an academic hub from which to broaden knowledge and expertise, it will significantly enhance the University of Utah Health Sciences' academic and clinical missions, and it will impact research and education in health sciences at other institutions. It also addresses, in part, the University's commitment to the Utah Legislature to prepare our students to meet the demands of a transforming healthcare system.

This is a unique and targeted program that is not offered elsewhere in USHE institutions. There is a close relationship with the field of Public Health and a natural path between those programs to the academic mission of Population Health Sciences that will resonate with students at other USHE Institutions. The implementation of this emphasis will provide a strong foothold for Clinical and Translational Epidemiology scholarship in the state of Utah and within the intermountain region.

The continued growth and development of the Population Health Sciences Ph.D. program will fulfill the University of Utah's commitment to the Utah State Legislature that the University will prepare its students to meet the demands of a transforming health care system and have an immediate impact on the workforce and health care sector upon graduation. Additionally, by allowing students interested in research in the areas around clinical and translational epidemiology, health systems research, and

biostatistics to remain in-state for their doctoral degree, it will help meet the Governor's call that 66% of Utahns will have a post secondary degree by 2020.

### **Finances**

*What costs or savings are anticipated in implementing the proposed program? If new funds are required, indicate expected sources of funds. Describe any budgetary impact on other programs or units within the institution.*

The creation of this program within the existing degree is not expected to substantially increase costs. The majority of courses offered for the program exist, and the faculty costs associated with new courses will be paid by a combination of state funds, differential tuition (if approved), and institutional funds.

Administrative support will come from funds already designated for the department and the education program.

### Section III: Curriculum

#### Program Curriculum

List all courses, including new courses, to be offered in the proposed program by prefix, number, title, and credit hours (or credit equivalences). Indicate new courses with an X in the appropriate columns. The total number of credit hours should reflect the number of credits required to receive the award. **For NEW Emphases, skip to emphases tables below.**

For variable credits, please enter the minimum value in the table below for credit hours. To explain variable credit in detail as well as any additional information, use the narrative box below.

Course Number	NEW Course	Course Title	Credit Hours
General Education Courses (list specific courses if recommended for this program on Degree Map)			
<b>General Education Credit Hour Sub-Total</b>			
<b>Required Courses</b>			
PHS 7000		Biostatistics for Clinical Research	3
FP MD 7300		Epidemiology II	3
WRTG 7060/7066		Scientific Writing	3
PHS 7303		Compliance Training	1
FP MD 6305		Cancer Epidemiology	3
PHS 7020		Analysis of Secondary Data	4
BIO 5210		Cell Structure and Functions	3
PHS XXXX		Comparative Health Systems Seminar I	1
PHS 7100	X	Clinical and Translational Epidemiology (Epi III)	3
PHS 7030		Applied Modern Causal Inference	2
PHS 7XXX	X	Seminar in Population Health Sciences: Epidemiology	1
PHS 7XXX	X	Molecular Epidemiology	3
PHS 7XXX	X	Advanced Seminar in Population Health Sciences: Epidemiology	1
MDCRC 6450		Grant Writing	2
PHS 7900		PHS Dissertation	18
Add Another Required Course			
<b>Required Course Credit Hour Sub-Total</b>			51
<b>Elective Courses</b>			
		Directed Elective	3
		Directed Elective	3
		Directed Elective	3
		Directed Elective	3
Add Another Elective Course			
<b>Elective Credit Hour Sub-Total</b>			12
<b>Core Curriculum Credit Hour Sub-Total</b>			63

Propose a NEW Emphasis to an existing Regent approved program

**Program Curriculum Narrative**

*Describe any variable credits. You may also include additional curriculum information, as needed.*

The Population Health Sciences Curriculum Committee and its external advisory board may add or delete directed electives to the approved list to reflect new science and innovation.

Ethics in biomedical research will be emphasized within the courses developed in Population Health Sciences. Additionally, students will have the opportunity to focus in depth on ethics in their directed electives from course offerings across campus.

To avoid duplicating classes already taught at the university, this degree program will utilize the existing course catalog through required courses and directed electives.

**Degree Map**

*Degree maps pertain to undergraduate programs ONLY. Provide a degree map for proposed program. Degree Maps were approved by the State Board of Regents on July 17, 2014 as a degree completion measure. Degree maps or graduation plans are a suggested semester-by-semester class schedule that includes prefix, number, title, and semester hours. For more details see <http://higheredutah.org/pdf/agendas/201407/TAB%20A%202014-7-18.pdf> (Item #3).*

*Please cut-and-paste the degree map or manually enter the degree map in the table below*

See next page for Degree Map





Degree Map  
Population Health Sciences Ph.D. Emphasis in Clinical and Translation Epidemiology

<b>First Year Fall</b>	<b>Cr. Hr.</b>	<b>First Year Spring</b>	<b>Cr. Hr.</b>
PHS 7000 Biostatistics for Clinical Research	3	FP MD 6305 Cancer Epidemiology	3
FP MD 7300 Epidemiology II	3	PHS 7020 Analysis of Secondary Data	4
WRTG 7060/7080 Scientific Writing	3	BIO 5210 Cell Structure and Functions	3
PHS 7305 Research Compliance Training	1	PHS 7310 Comparative Health Systems Seminar	1
<b>Total</b>	<b>10</b>	<b>Total</b>	<b>11</b>
<b>Second Year Fall</b>	<b>Cr. Hr.</b>	<b>Second Year Spring</b>	<b>Cr. Hr.</b>
PHS 7100 Clinical and Translational Epidemiology	3	PHS 7110 Molecular Epidemiology	3
PHS 7030 Applied Modern Causal Inference	2	Directed Elective	3
Directed Elective	3	Directed Elective	3
PHS 7115 PHS Seminar	1	PHS 7125 Advanced PHS Seminar	1
<b>Total</b>	<b>9</b>		<b>10</b>
<b>Third Year Fall</b>	<b>Cr. Hr.</b>	<b>Third Year Spring</b>	<b>Cr. Hr.</b>
MDCRC 6450 Grant Writing	2.5	PHS 7900 Dissertation	9
Directed Elective	3		
PHS 7900 Dissertation	4		
<b>Total</b>	<b>9.5</b>	<b>Total</b>	<b>9</b>
<b>Fourth Year Fall</b>	<b>Cr. Hr.</b>	<b>Fourth Year Spring</b>	<b>Cr. Hr.</b>
PHS 7900 Dissertation	9	PHS 7900 Dissertation	9
<b>Total</b>	<b>9</b>	<b>Total</b>	<b>9</b>

# Appendix A

## Approved Electives

## Approved Electives

### Ethics

- Research Ethics & Protection of Human Subjects (2 Credits, NURS 7101)
- Research Ethics (1 Credit, PCTH 6500)
- Case Studies and Research Ethics (1 Credit, PHIL 7570)
- Seminar: Public Administration and Ethics (3 Credits, PADMN 6870)

### Mathematical Statistics

- Multilinear Models (3 credits, MA 6020)
- Mathematical Statistics (3 credits, MA 6070)
- Time Series Analysis (3 credits, MA 5075)

### Mathematical Biology

- Mathematical Biology I (3 credits, MA 6830)
- Mathematical Biology II (3 credits, MA 6835)

### Computational Methods

- Computational Statistics (3 credits, CS 6130 or STAT 6969)
- Natural Language Processing (3 credits, CS 6340)
- Machine Learning (3 credits, CS 6350)
- Demographic Methods (FCS 6120)

### Health Economics & Econometrics

- Health Economics (3 credits, Econ 6190)
- Econometrics I (3 credits, 7800)
- Econometrics II (3 credits, 7801)

### Genetic Epidemiology

- Genetic epidemiology I (2 credits, MDCRC 6320)
- Genetic epidemiology II (3 credits, MDCRC/PHS, Course Under Development)
- Statistical genetics (3 credits, Human Genetics, Course Under Development)
- Cancer Epidemiology (3 Credits FPMD 6302)
- Medical Genetics for Clinical Investigation (MDCRC 6440)

### Biomedical Informatics

- Foundations of Healthcare Informatics (3 credits, BMI 6010) ONLINE
- Foundations of Bioinformatics (2 credits, BMI 6020)
- Biomedical Information Retrieval (2 credits, BMI 6470)
- Population and Public Health Informatics (1.5 credits, BMI 6701) ONLINE
- Population and Public Health Informatics (0.5 credits, BMI 6702) Lab

- Clinical & Public Health Informatics Terminologies and Standards I (1.5 credits, BMI 6120)

#### Grant Writing (2.5 credits, MDCRC 6450)

#### Health Systems and Epidemiology for Students in Biostatistics Track

- Health Systems Research Methods (PHS, Under Development)
- Epidemiology II (FP MD 7300)

#### Biostatistics Methods for Students in Health Systems Track

- Quantitative Population Health Sciences II (3 credits, PHS Under Development)

#### Public Policy

- Public Health Administration and Policy (3 credits FPMD 6400)
- Health Policy and Leadership (3 Credits, FPMD 7410)
- Health Policy (3 credits, PADMN 6321)
- Policy Analysis (3 Credits, PADMN 6323)

#### Global Health

- International Public Health Issues (3 Credits, FPMD 6502)
- Global Health (3 Credits, FPMD 6530)
- Issues in Underserved (3 Credits, NURS 7515)

#### Health Communications

- Foundations of Health Communications (COMM 6115)
- Health, Communication, and Culture (3 Credits, COMM 6116)
- Health Campaigns & Media (3 Credits, COMM 6117)
- Issues in Organizational Communication (3 Credits, COMM 6170)

#### Sociology

- World Population Policies and Problems (3 Credits, SOC 6657)
- Medical Sociology (3 Credits, SOC 6720)
- Global Health (SOC 6674)

#### Women's Health

- Issues in Women's Health (3 Credits, NURS 6520)
- Global Issues in Women's Health (3 Credits, NURS 6555)

#### Comparative Effectiveness Research

- Health Services Research (3 Credits, MDCRC 6460)
- Methods in Comparative Effectiveness Research (3 Credits, MDCRC 6270)
- Patient Centered, Community Engaged Research (3 Credits, MDCRC 6460)

### Clinical Trials

- Design and Implementation of Clinical Trials (MDCRC 6040)
- Bioethical Issues in Clinical Research (MDCRC 6430)
- Cost Effective Analysis (MDCRC 6120)
- Intro to Decision Analysis (MDCRC 6130)
- Survey Methods (MDCRC 6220)

### Epidemiology

- Infectious Disease Epidemiology (3 Credits, FP MD 6340)
- Occupational Epidemiology (3 Credits, FP MD 6370)
- Occupational and Injury Epidemiology (3 Credits, FP MD 7720)
- Intro to Genetic Epidemiology (MDCRC 6320)
- Pharmacoepidemiology (MDCRC 6160)
- Epidemiology of Infectious Diseases (MDCRC 6250)

### Cancer and Cell Biology

- Clinical Cancer Biology (ONCSC 6500)

# Appendix B

## Letters of Support

## Letters of Support

(Listed in Alphabetical Order by Last Name)

Steve Alder, Vice Chair, Family and Preventive Medicine, and  
Chief, Division of Public Health\*\*

Mary Beckerle, CEO and Director, Huntsman Cancer Institute

Carrie Byington, AVP for Faculty and Academic Affairs,

Wendy Chapman, Chair, Biomedical Informatics

Kathleen Cooney, Chair, Internal Medicine

Angela Fagerlin, Chair, Population Health Sciences\*

Michael Magill, Chair Family and Preventive Medicine\*\*

Debra Scammon, Director, Master of Health Care  
Administration

Jean Shipman, Director, Eccles Health Sciences Library

Lina Svedin, Director Master Public Policy and Master of Public  
Administration Programs

*\*Cover Letter*

*\*\* Joint Letter signed by Steve Alder and Michael Magill*





Angie Fagerlin, Ph.D.  
Professor and Chair  
Department of Population Health Sciences  
University of Utah  
Williams Building, Room 1C448  
295 Chipeta Way  
Salt Lake City, UT 84108

RE: Proposed Emphasis in Clinical and Translational Epidemiology

Dear Dr. Fagerlin:

The purpose of this letter is to express our support for establishing the emphasis of Clinical and Translational Epidemiology in the Department of Population Health Sciences doctoral program. Discussions across the organization reflect the University of Utah's priority to strengthen its research program focused on effective and focused care of patient populations. The Clinical and Translational Epidemiology emphasis provides a singular and novel focus to achieving this aim.

The multi-disciplinary nature of this work is enhanced by the availability of colleagues with rigorous training in areas such as translational epidemiology, biostatistics and health systems research that are already established within this program. Thus, the faculty teaching and mentoring in this emphasis, and within the entire Ph.D. program, will provide an excellent opportunity for collaboration as well as complementary methodological expertise for students and scientific investigators across the health sciences and main campus.

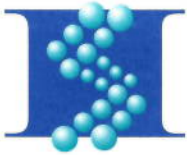
This is an exciting new program that will position the University of Utah as a leader in this burgeoning field. The Department of Family and Preventive Medicine, with its breadth and depth, is looking forward to collaborating with you to ensure the success of the doctoral program in Population Health Sciences and this emphasis in Clinical and Translational Epidemiology.

Sincerely,

Michael K. Magill, M.D.  
Professor and Chairman  
Department of Family and Preventive Medicine  
University of Utah School of Medicine

Stephen C. Alder, Ph.D.  
Professor, Vice Chair, and Chief, Division of  
Public Health  
Department of Family and Preventive Medicine  
University of Utah School of Medicine

March 14, 2016



**HUNTSMAN**  
CANCER INSTITUTE  
UNIVERSITY OF UTAH



MARY C. BECKERLE, PH.D.  
CEO AND DIRECTOR  
RALPH E. AND WILLIA T. MAIN  
PRESIDENTIAL PROFESSOR

2000 CIRCLE OF HOPE  
SALT LAKE CITY, UTAH 84112-5550  
OFFICE 801-581-4485  
FAX 801-585-0900  
mary.beckerle@hci.utah.edu

Angie Fagerlin, PhD  
Professor and Chair, Department of Population Health Sciences  
University of Utah  
Via email: [angie.fagerlin@hsc.utah.edu](mailto:angie.fagerlin@hsc.utah.edu)

Dear Angie:

On behalf of Huntsman Cancer Institute (HCI), I am writing this letter to express my support for the creation of a new emphasis in Clinical and Translational Epidemiology in the Population Health Sciences PhD program in the School of Medicine. This emphasis is key to the success of the program and to strengthen the educational bridge between HCI and the department.

HCI is organized around the theme of cancer genetics and features four robust cancer research programs that span the basic cell biology to cancer control and population sciences. Major goals of our population sciences-focused cancer research is to define genetic risk factors for cancer, explore how to best communicate genetic and genomic information, develop and improve adherence to cancer screening guidelines, and improve patient outcomes by, for example, addressing symptom management, survivorship, and disparities. The research environment created by the department's PhD program, specifically this emphasis, is well aligned with HCI's goals and we look forward to working with the department to create learning experiences for your trainees.

HCI's early support of the establishment of the Department of Population Health Sciences and the first two emphases established in the PhD program was informed by the knowledge that it will be critical to HCI's mission to integrate strong training within the cancer research efforts. We are excited about the potential for the department to create a framework for development of a central program of advanced graduate training in population health sciences. The availability of such a training program will dramatically enhance HCI's ability to recruit talented cancer population sciences researchers in our community. Clinical and translational epidemiology in population sciences is a major HCI priority for recruitment and we have invested substantial resources to recruit senior faculty in this area. I believe this emphasis will be a major attraction for recruitment of top talent in this critical area.

In summary, I want to restate HCI's continued support in the continued development of the PhD program in the Department of Population Health Sciences. Please let me know if there is any further information I can provide.

Sincerely,  
A handwritten signature in black ink that reads "Mary Beckerle".

Mary Beckerle, PhD  
Ralph E. and Willia T. Main Presidential Professor  
CEO and Director, Huntsman Cancer Institute  
Associate Vice President for Cancer Affairs, University of Utah



UNIVERSITY OF UTAH  
HEALTH SCIENCES

Office of the Associate Vice President for Faculty and  
Academic Affairs

March 10, 2016

Angie Fagerlin, Ph.D.  
Professor and Chair, Population Health Sciences  
University of Utah

**RE:** Proposed Emphasis in Clinical and Translational Epidemiology

Dear Dr. Fagerlin:

As Associate Vice President for Faculty and Academic Affairs for the Health Sciences, and Vice Dean Academic Affairs and Faculty Development for the School of Medicine, I fully support the development of a third emphasis of Clinical and Translational Epidemiology in the Department of Population Health Sciences (PHS) Ph.D. program. This program is unique in that it will focus on graduating academic researchers with a specific focus on populations related to health care systems. PHS has collaborated with existing and complementary graduate programs since its creation and this proposal has my continued support as a foundation to advance knowledge that is vital for our health system.

By leveraging current resources within the University of Utah, particularly the career development and education programs that have proven to be outstandingly successful, students, fellows, and faculty will be able to collaboratively interact and develop new projects. In this manner, faculty researchers will help train junior investigators and the paradigm of collaborative research will be strengthened and allowed to evolve. The unique atmosphere of collaboration between the Departments of Biomedical Informatics, Family and Preventive Medicine, Pharmacology, Political Science, College of Nursing, Master of Science in Clinical Investigation (MSCI), and Master of Statistics (MSTAT) partners will make for a strong program.

My primary professional efforts are directed towards career development for faculty members and for students. This new emphasis compliments and expands those efforts and I am committed to supporting this program as it provides graduate students opportunities to receive training and become involved in multi-disciplinary and collaborative research. I anticipate that this will provide great benefit in the efforts to improve healthcare in our region and nationally.

Sincerely,

A handwritten signature in black ink that reads "Carrie Byington".

Carrie L. Byington, MD  
H.A. and Edna Benning Presidential Professor of Pediatrics  
Associate Vice President for Faculty and Academic Affairs  
Co-Director Utah Center for Clinical and Translational Science, Health Sciences  
Vice Dean Academic Affairs and Faculty Development, School of Medicine  
University of Utah

HSEB 5515  
26 South 2000 East  
Salt Lake City, UT 84112  
(801) 585-6283



March 8, 2016

Angie Fagerlin, Ph.D.  
Professor and Chair, Department of Population Health Sciences  
University of Utah

RE: Proposal for Emphasis in Clinical and Translational Epidemiology

Dear Angie:

I am writing to offer my enthusiastic support the creation of a new emphasis in Clinical and Translational Epidemiology the Department of Population Health Sciences Ph.D. Program in the School of Medicine. As the Chair of the Department of Biomedical Informatics, I have been keenly interested in the discussions leading to the creation of the department and in the development of the PHS PhD curriculum. There is incredible synergy between the two departments, offering research, clinical, and educational collaborative opportunities.

Our research focuses on individuals as well as populations and includes surveillance, decision support, predictive analytics, implementation, and outcome measurement. There is obvious overlap between our goals and the goals of the PHS department. Because of this overlap, I served on the PHS Education Committee and actively participated in the development of the curriculum for the PHS PhD program's initial two emphases in biostatistics and health systems research. We offer several classes relevant to population health sciences. One informatics class will be required for PHS students to help them understand the clinical environments where patients are treated and the source of clinical data sources important for health services and comparative effectiveness research. Directed electives in the PHS PhD program include several classes in biomedical informatics to provide students with a basic understanding of informatics principles that will greatly enhance the training of students in all three emphases.

The potential relationship between PHS and BMI is truly synergistic. Just as the PHS program will benefit from informatics classes, our students will benefit greatly from the further rigor the PHS program will offer. Our faculty are enthused about the prospect of bringing additional faculty members to the University of Utah with research focused in PHS and look forward to collaborative opportunities focused on populations.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Wendy Chapman'.

Wendy Chapman, Ph.D.  
Professor and Chair  
Biomedical Informatics, University of Utah



UNIVERSITY OF UTAH  
SCHOOL OF MEDICINE

Department of Medicine

March 9, 2016

Angie Fagerlin, Ph.D.  
Professor and Chair, Population Health Sciences  
University of Utah

RE: Proposed Emphasis in Clinical and Translational Epidemiology

Dear Angie:

The purpose of this letter is to express my enthusiastic support to develop the third emphasis of Clinical and Translational Epidemiology in the Department of Population Health Sciences Ph.D. program. Discussions across the organization reflect the University of Utah's priority to strengthen its research program focused on effective and focused care of patient populations. The Clinical and Translational Epidemiology emphasis provides a singular and novel focus to achieving this.

The multi-disciplinary nature of this work is enhanced by the availability of colleagues with rigorous training in areas such as translational epidemiology, biostatistics and health systems research, already established within this program. Thus, the faculty teaching and mentoring in this emphasis, and within the entire Ph.D. program, will provide an excellent opportunity for collaboration as well as complementary methodological expertise for students and scientific investigators across the health sciences and main campus.

This is an exciting new program that will position the University of Utah as a leader in this burgeoning field. The Department of Internal Medicine, with its breadth and depth, will be eager collaborators to ensure the success of the PhD program and this emphasis in particular.

Sincerely,

A handwritten signature in black ink, appearing to read 'K.A. Cooney'.

Kathleen A. Cooney, MD  
Professor and Chair  
Department of Internal Medicine

/kj



March 11, 2016

Angie Fagerlin, PhD  
Professor and Chair, Department of Population Health Sciences  
University of Utah

Re: New Emphasis in Clinical and Translational Epidemiology

Dear Angie:

I fully support the creation of a new emphasis in Clinical and Translational Epidemiology in the Department of Population Health Sciences Ph.D. Program in the School of Medicine.

As director of the University's Master of Healthcare Administration program, I see the value of a PhD program in which students with a focus in health services administration and research based in both academic departments and healthcare enterprise management could pursue their interests. I have long felt that such a PhD program would benefit the future of healthcare delivery and research and continue to support the growth and development including this new emphasis.

The PhD program in Population Health Sciences adds to the attraction of the University of Utah for faculty in a number of the departments in the School of Business and that participate in our joint MHA degrees. Expanding the existing program would likely stimulate collaborations in both research and teaching.

Sincerely,



Debra L. Scammon, PhD.  
Emma Eccles Jones Professor of Marketing  
Director, MHA Program



March 10, 2016

Angie Fagerlin, Ph.D.  
Professor and Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Emphasis in Clinical and Translational Epidemiology

Dear Angie:

I fully support the creation of an additional emphasis in Clinical and Translational Epidemiology in the Department of Population Health Sciences Ph.D. Program in the School of Medicine. The Spencer S. Eccles Health Sciences Library is committed to fostering the growth and development of students through the provision of information, teaching life-long learning strategies, and encouraging discovery. We are particularly delighted to support transdisciplinary programs such as this.

Eccles Library faculty and staff provide access to a wealth of information resources and tools designed to support learners, researchers, and educators in biostatistics, health care quality and value, epidemiology, and health systems research. We also offer personalized learning opportunities and literature-based research assistance, plus course-integrated information discovery and management education. Access to collections of the Marriott Library, Quinney Law Library, and a nationwide network of health sciences libraries are available through cooperative agreements and interlibrary loan.

Our faculty embrace the opportunity to interact with faculty and students in the Population Health Sciences Ph.D. Program including this new emphasis, and we would be delighted to collaborate on classes teaching information use, searching, or management methodologies.

Again, I am delighted to have this opportunity to express my support the establishment of this new emphasis, and I look forward to its success and many rewarding partnerships.

Sincerely,

A handwritten signature in black ink that reads "Jean P. Shipman". The signature is written in a cursive style.

Jean P. Shipman, MSLS, AHIP, FMLA  
Library Director

The University of Utah  
Spencer S. Eccles  
Health Sciences Library  
10 N 1900 E  
Salt Lake City, Utah 84112  
Phone (801) 581-8771  
Fax (801) 581-5410



MASTER OF PUBLIC ADMINISTRATION

The University of Utah

260 S. Central Campus Drive, Room 214 • Salt Lake City, Utah 84112-9154 • (801) 581-6781

To: Angie Fagerlin, Ph.D.  
Professor and Chair, Department of Population Health Sciences  
University of Utah

14 March, 2016

**RE: Proposed Emphasis in Clinical and Translational Epidemiology**

Dear Angie:

I fully support the creation of an emphasis in Clinical and Translational Epidemiology in the Population Health Sciences Ph.D. program in the School of Medicine.

These students will be trained to take an active leadership role in the research and development of health care systems, care delivery, value-based health outcomes, and other population health trends. This type of research is inherently inter-disciplinary both in how we best conduct this research and in how we spread this knowledge to policy makers, hospital administrators and public health officials. The pace at which health care systems, not only in the US, but around the world (including China, Japan, India, the EU\_ makes it imperative that we conduct comparative research on trends and best practices but also that we take a holistic view of what shapes individuals, families and communities' understanding and experience of health, wellbeing and quality of life. The establishment of the Population Health Sciences Department was tremendously insightful and forward thinking decision by the University of Utah and Board of Regents. The establishment of their first two emphases in biostatistics and health systems research was a vital step in making this research possible, and this third emphasis has my continued support. It will create pools of well-trained graduate students who, not only will get experience in grant writing and contributing to funded research, but they will have the particular skills necessary to tie together and collaborate across traditional academic divides.

The Masters of Public Administration students and we as faculty focusing on public management, public service and policy evaluation see great merit in linking up with these students and researchers to do some of the analysis, design joint projects as well as connecting and translating the Department of Population Health Sciences' research for policy makers, hospital managers and public health officials. Many of our students in the MPA program are already well connected in the public, non-profit, and for profit sectors. They are getting a Master's degree to be able to continue to climb the ranks of, among other things, public health organizations as well as local, state, and federal governments. By drawing on and creating new opportunities together with the Population Health Science Departments and their graduate students we can enrich our Master students' experience, enrich our teaching of health policy and changes in health demographic trends and in methods training. We can also provide unique research opportunities for our faculty and bring in more research funding to our college, the College of Social and Behavioral Science. We also know that our vast and long-standing network of alumni can help PHS PhD students gain access to gather data, do on-site research, and translate what they find into



formats and language that policy makers and elected officials will understand and can do something with.

The Populations Health Sciences Department engaged in a rigorous process of seeking input and feedback on the design of their Ph.D. program and this emphasis as well. Since the time of the original program development and collaboration, we have also collaborated on the Transformative Excellence Proposal for a cluster hire on Health Policy and Health Economics that was funded by SVP Ruth Watkins. The Masters of Public Administration program is very much looking forward to the continued growth of this department and several future collaborations between the College of Social and Behavioral Sciences and the School of Medicine.

Sincerely,

A handwritten signature in black ink, appearing to read "Lina Svedin", with a long horizontal flourish extending to the right.

Lina Svedin

Director – the Master of Public Administration and Master of Public Policy programs  
Associate Professor of Political Science

260 S. Central Campus Dr., Room 252  
Salt Lake City, UT 84112


Appendix C  
R401 for Establishment of Ph.D.  
Program and all Appendices  
*Approved by the Board of Regents July 31, 2015*



UNIVERSITY OF UTAH  
SCHOOL OF MEDICINE

**MEMORANDUM**

**TO:** Graduate Council  
Academic Senate Executive Committee  
Academic Senate

**FROM:** Vivian S. Lee, MD, PhD, MBA   
Dean, School of Medicine  
Senior Vice President for Health Sciences  
CEO, University of Utah Health Care

**DATE:** February 3, 2015

**SUBJECT:** Proposal to Establish a Population Health Sciences Ph.D. Program

It is with great pleasure that I present to you a proposal to establish a Ph.D. Program in Population Health Sciences (PHS).

The School of Medicine Department of Population Health Sciences was approved by the State Board of Regents on May 16, 2014. Tom Greene, Ph.D., Professor of Internal Medicine, was appointed Interim Chair in August 2014, and his first priority and primary assignment in this position was to work with population health sciences stakeholders to develop a program that builds on and leverages existing resources. Many hours of meetings and consultation with colleagues have been spent in this effort, and care has been taken to ensure that this program complements other graduate programs on campus.

The goal of the PHS Ph.D. program is to provide the knowledge and skills necessary for graduates to pursue an academic career in health systems delivery, with a focus on strategies to improve the delivery of care to patient populations. In addition, because of the close relationship between the School of Medicine and University of Utah Health Care, this program will be positioned to serve as a linchpin for transforming the University's own healthcare system. This effort will not only impact our hospital network, the School of Medicine and the entire Health Sciences Center, it will require partnership with our Business, Economics, Social Work, Mathematics, Computing, and other University colleagues to make the fullest imprint on our state and our national reputation.

Given the existing health systems resources on the campus and the commitment to further invest in this critical area, the University of Utah has a unique opportunity to develop an innovative Ph.D. program and to position itself at the forefront of health care transformation.

Thank you for your review of this proposal.

## Appendix B: Full Template

### Instructions:

- The Full Template should be used for those items identified as needing the Full Template in R401-4 and R401-5 and listed as possible items to check on the Cover/Signature Page below.
- **A Full Template consists of a Cover/Signature Page – Full Template, Executive Summary – Full Template, and Program Description – Full Template.**
  - **Cover/Signature Page – Full Template:** Complete the items requested at the top of the page, INCLUDING SELECTING a CIP Code. Check which type(s) of item(s) apply. For example, you may check a certain kind of certificate AND “fast tracked.”
  - **Executive Summary – Full Template:** The executive summary must not exceed two (2) pages.
  - **Program Description – Full Template:** Complete the sections requested, removing the descriptive italics and replacing them with the content of the proposal.
  - **Faculty Consultation** - Each proposal must include a description of the process by which faculty in the participating departments or programs were consulted in the preparation of the proposal. Please insert this information in Section 2, Program Description, Institutional Readiness.
  - **66% by 2020** - Include 1-3 sentences that describes how this proposal will help the University of Utah meet the Governor's call that 66% of Utahns will have a post-secondary degree or certificate by 2020. Please insert under Market Demand section. Click [here](#) for more description of 66% of 2020.
- Prepare the Full Template per R401-6 instructions **as a Word document** (no PDF formats). Begin each of the three sections (Cover/Signature Page, Executive Summary, and Program Description) at the top of a new page. When **descriptions of the content required for each section appear in this font color, the italics are to be removed before the institution submits the proposal to the OCHE.**
- Submit the completed proposal to [curriculum@utah.edu](mailto:curriculum@utah.edu) and it will be distributed to the Undergraduate and/or Graduate Council, as appropriate.
- The institution is responsible for maintaining a record of the submission as the OCHE Academic and Student Affairs office is not responsible for storing electronic copies of submitted proposals.

**Cover/Signature Page – Full Template**

**Institution Submitting Request:** University of Utah  
**Proposed Title:** Ph.D. in Population Health Sciences  
**To include two emphases:** 1. Biostatistics; 2. Health Systems Research  
**School or Division or Location:** School of Medicine  
**Department(s) or Area(s) Location:** Department of Population Health Sciences  
**Recommended Classification of Instructional Programs (CIP) Code<sup>1</sup> :** 51.9999  
**Proposed Beginning Date:** 8/22/2016  
**Institutional Board of Trustees' Approval Date:** MM/DD/YEAR

**Proposal Type (check all that apply):**

Regents' Agenda Items		
R401-4 and R401-5 Approval by Committee of the Whole		
SECTION NO.		ITEM
4.1.1	<input type="checkbox"/>	(AAS) Associate of Applied Science Degree
4.1.2	<input type="checkbox"/>	(AA) Associate of Arts Degree
	<input type="checkbox"/>	(AS) Associate of Science Degree
4.1.3	<input type="checkbox"/>	Specialized Associate Degree
4.1.4	<input type="checkbox"/>	Baccalaureate Degree
4.1.5	<input type="checkbox"/>	K-12 School Personnel Programs
4.1.6	<input type="checkbox"/>	Master's Degree
4.1.7	<input checked="" type="checkbox"/>	Doctoral Degree
5.2.2	<input type="checkbox"/>	(CER C) Certificate of Completion
5.2.4	<input type="checkbox"/>	Fast Tracked Certificate

**Chief Academic Officer (or Designee) Signature:**

I certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

\_\_\_\_\_  
**Signature**

**Date:** MM/DD/YEAR

**Printed Name:** Name of CAO or Designee

<sup>1</sup> CIP codes must be recommended by the submitting institution. For CIP code classifications, please see <http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55>.

**Executive Summary – Full Template**  
**University of Utah School of Medicine**  
**Ph.D., Population Health Sciences**  
**08/28/2017**

**Program Description**

The Population Health Sciences Ph.D. Program will employ an interdisciplinary approach to educate students in rigorous scientific and analytic methods to improve population health, with a focus on strategies to improve the delivery of care to patient populations. The Ph.D. program will initially include two emphases: biostatistics and health systems research. Students will interact closely across the emphases through a group of shared core courses and common research projects that develop cross-disciplinary collaborative skills. The program requires a minimum of 62 credits (including dissertation) for those with an applicable master's degree, and a minimum of 80 credits (including dissertation) for those without a master's degree. This Ph.D. program is designed to collaborate with and complement existing graduate programs at the University of Utah. These include, but are not limited to, graduate programs in the Departments of Biomedical Informatics, Family and Preventive Medicine, Pharmacotherapy, Mathematics, Economics, Political Science, the School of Computing, the College of Nursing, as well as the Master of Science in Clinical Investigation (MSCI) and the Master of Statistics (MSTAT) programs.

**Role and Mission Fit**

The mission of the Population Health Sciences Ph.D. program is to produce academic leaders who are committed to improving patient and population-oriented care in an increasingly complex health care delivery system. The Department of Population Health Sciences that houses this program is the cornerstone for transforming the University's own \$2.1B healthcare system. The program will guide students in developing the methodological expertise and collaborative skills required to assume leadership roles in cross-disciplinary research areas such as comparative effectiveness, health system improvement, patient-centered outcomes, value-based outcomes, and clinical and translational investigation of cancer etiology and outcomes. The PhD program will provide students with practical skills in analyzing data, applicable to the Utah Population Database and to other healthcare data sets. The development and practice of these skills will be integrated across several core courses to provide continuity within the curriculum.

The objectives of the Population Health Sciences Ph.D. program are aligned with ongoing initiatives at the University of Utah Health Sciences Center that are focused on improving health care quality and strengthening value-based outcomes. The Ph.D. in Population Health Sciences will prepare graduates to shape and foster data-driven quality healthcare in this country and abroad.

**Faculty**

The new Population Health Sciences department, approved by the Board of Regents in May 2014, currently has three faculty members with a plan to recruitment an additional 13 full time faculty members for a total of 16. The Department Chair will recruit approximately five faculty members directly to the Department. The department Division Chiefs will partner with departments across campus, including clinical departments and the Huntsman Cancer Institute, to recruit an additional seven regular faculty members and investigators. The majority of faculty members will be in place prior to accepting students. Three current faculty members have expertise in biostatistics, health systems research, and epidemiology. The nature of this department encourages the recruitment of faculty across disciplines, therefore some faculty recruits may be researchers from outside the traditional health science disciplines. Teaching and

mentoring responsibilities will also include adjunct and graduate program faculty from other departments whose expertise qualifies them to supervise graduate students in this program.

**Market Demand**

The cost and complexity of health care in the United States are unsustainable. In addition, information on the value of health care as it relates to quality and cost is often unreliable and sometimes absent. The demand for leaders who have the expertise and skills to systematically address these problems and lead healthcare transformation remains unmet. This unique doctoral program is designed to meet these needs.

The demand for students trained in the curriculum outlined in this proposal is high and the supply is inadequate. The national shortage of biostatisticians with graduate training is documented in the *Objectives for the Nation* and the *Seventh Report to the President and Congress on the Status of Health Personnel in the United States*. Similarly, Academy Health, a nonpartisan, not-for-profit, health services research and policy organization, has documented a lack of researchers prepared to take on positions addressing current and future needs of the evolving healthcare system. Currently there are more than forty open positions for biostatisticians and health systems researchers across the country posted on Academy Health’s career page. This illustrates the urgency for moving forward with this uniquely designed program. A significant collaboration with the Huntsman Cancer Institute will provide students with the opportunity to develop expertise in cancer research. The need to expand expertise in population science and translational research related to cancer is widely recognized, with cancer representing a major component of United States health care expenditures (estimated as \$86.6 billion in 2009), health care burden (with approximately 1 in 2 men and 1 in 3 women diagnosed with cancer in their lifetimes), and health care research dollars (with \$4.92 billion National Cancer Institute funding in fiscal year 2014).

**Student Demand**

The Ph.D. in Population Health Sciences is a degree specifically designed to meet the increasing need for academic researchers and leaders with the knowledge and skills to create higher value in healthcare systems. Program graduates will have the expertise to implement value driven healthcare in the United States and abroad. This is a unique and innovative program that will complement other terminal degree programs offered in Utah and/or in the Intermountain region.

**Statement of Financial Support**

Appropriated Fund.....	<input checked="" type="checkbox"/>
Special Legislative Appropriation.....	<input type="checkbox"/>
Grants and Contracts.....	<input type="checkbox"/>
Special Fees .....	<input type="checkbox"/>
Differential Tuition (must be approved by the Regents).....	<input checked="" type="checkbox"/>
Other (please describe).....	<input type="checkbox"/>

**Similar Programs Already Offered in the USHE**

While the USHE offers complementary graduate programs in related fields, the Ph.D. in Population Health Sciences differs fundamentally from other programs offered in the USHE in its primary focus on the development of rigorous methodological expertise directed to the study of health care systems and the delivery of care to patient populations. The Health Systems Research and Biostatistics emphases will provide the only doctoral programs in these disciplines within the state of Utah.

**Program Description – Full Template**  
**University of Utah School of Medicine**  
**Ph.D., Population Health Sciences**  
**08/28/2017**

**Section I: The Request**

The University of Utah School of Medicine requests approval to offer a Ph.D. in Population Health Sciences beginning in Fall 2016.

**Faculty Consultation**

In November 2014 the School of Medicine College Council Executive Committee unanimously approved the proposal for the new Ph.D. program in Population Health Sciences.

**School of Medicine Faculty Vote**

Between February 17 and 27, 2015, all SOM full-time faculty were asked to vote on the establishment of a new Ph.D. in Population Health Sciences. Fifty-one percent of faculty participated, with 92% voting in favor of the proposal. The voting summary is provided in Appendix D.

**Section II: Program Description**

**Complete Program Description**

The Population Health Science Ph.D. program will focus primarily on the development of the rigorous methodological expertise required to conduct high impact research to improve the delivery of care to patient populations. The Population Health Sciences degree program will produce academic researchers with emphases in Biostatistics and Health Systems Research. The Biostatistics Emphasis will produce researchers with methodological and collaborative expertise to drive healthcare transformation and quantitative health science research. The Health Systems Research Emphasis will produce researchers whose work furthers the efficiency, value, and quality of health care for Utah, the United States, and the global population.

By creating common courses between the two emphases, this Ph.D. program will instill from its onset the concept of team science and collaboration. Students in both Biostatistics and Health Systems Research will have broad understanding of the issues in current healthcare delivery, and will work together to improve the breadth of research. Collaboration with the Cancer Control and Population Sciences (CCPS) Program of the Huntsman Cancer Institute will provide students with the opportunity to develop these skills in the setting of cancer research. This program will be a model for team-based science in the workplace. Students will learn in an integrated and collaborative environment and be able to make an immediate impact on health care research and transformation upon graduation from this program.

**Purpose of Degree**

The structure and curriculum of the Ph.D. in Population Health Sciences as well as the integrated approach between the emphases in Health Systems Research and Biostatistics is unique. This program will cultivate the scholarship required to impact healthcare delivery. Population Health Sciences will educate students in content and methodology to advance health science research.



## Institutional Readiness

The new Department of Population Health Sciences in the School of Medicine was approved by the Utah State Board of Regents on May 16, 2014. An Interim Chair was appointed in August 2014 and initial faculty members have been recruited to this basic science department. Staffing is in place to support the new department and Ph.D. program (pending institutional approval). As the department grows, permanent staff and faculty members will be recruited. The proposed degree will provide opportunities to engage, rather than compete with, other departments and colleges across the University to strengthen collaborative scholarship in this academic area. This degree program will also be overseen and evaluated by an interdisciplinary external advisory board in order to maintain and uphold its collaborative mission.

This graduate program infrastructure in the Department of Population Health Sciences offers opportunities for collaborative research with clinician-scientists in the Health Sciences clinical departments as well as other campus investigators. Similar to other School of Medicine basic science departments, the Population Health Sciences department leverages and connects the resources being deployed specifically to improve care delivery to patient populations.

## Departmental Faculty

Department Faculty Category	Dpt Faculty Headcount – Prior to Program Implementation	Faculty Additions to Support Program	Dpt Faculty Headcount at Full Program Implementation
<b>With Doctoral Degrees</b> (Including MFA and other terminal degrees, as specified by the institution)			
Full-time Tenured	3	7	10
Full-time Non-Tenured	X	6	6
Part-time Tenured	X	X	X
Part-time Non-Tenured	X	X	X
<b>With Master's Degrees</b>			
Full-time Tenured	X	X	X
Full-time Non-Tenured	X	X	X
Part-time Tenured	X	X	X
Part-time Non-Tenured	X	X	X
<b>With Bachelor's Degrees</b>			
Full-time Tenured	X	X	X
Full-time Non-Tenured	X	X	X
Part-time Tenured	X	X	X
Part-time Non-Tenured	X	X	X
<b>Other</b>			
Full-time Tenured	X	X	X
Full-time Non-Tenured	X	X	X
Part-time Tenured	X	X	X
Part-time Non-Tenured	X	X	X
<b>Total Headcount Faculty in the Department</b>			
Full-time Tenured	3	7	10
Full-time Non-Tenured	X	6	6

Part-time Tenured	X	X	X
Part-time Non-Tenured	X	X	X
<b>Total Department Faculty FTE</b> (As reported in the most recent A-1/S-11 Institutional Cost Study for “prior to program implementation” and using the A-1/S-11 Cost Study Definition for the projected “at full program implementation.”)			

We anticipate that the majority of the departmental faculty members will be tenure line. The task of mentoring and teaching approximately 4 students per emphasis, per year, in the Ph.D. program will be performed by a combination of fulltime Population Health Sciences faculty members and qualified adjunct and graduate program faculty members from across the University of Utah. This will ensure that students have expert mentors for their dissertation topics. By giving students access to both internal and adjunct faculty members, the doctoral program in Population Health Sciences will foster an educational experience that will facilitate cross-disciplinary learning and develop graduates who are readily employable, fundable investigators.

### Staff

Additional Department of Population Health Sciences staff at both the departmental and divisional levels will be in place prior to the acceptance of students. At the department level, there will be an administrative manager, an administrative assistant or executive secretary, a grants and contracts officer, and an academic program manager. Divisional administrative and scientific support will be provided based on the specific needs of each division.

### Library and Information Resources

The students of the Ph.D. program in Population Health Sciences will have full access to the facilities and staff of the Spencer S. Eccles Health Sciences Library (EHSL), and the Marriott and Quinney libraries. Our librarians are experts at navigating the sphere of information sources, ideation, identifying and creating dissemination venues for outcomes, and most importantly, teaching these lifelong information skills to others. Librarians facilitate and produce exemplary research by providing access to existing cutting edge research, performing high-level literature searching and management for evidence synthesis, and teaching best practice discovery and management techniques. Librarians’ expertise in information retrieval saves valuable provider and researcher time. The EHSL has transformed to a vital collaboration space where teams and communities gather to share ideas, execute projects, create and innovate (educational design, devices, games, apps, etc.), and seek professional expertise from others, including librarians and staff.

### Admission Requirements

Applicants for admission to the Ph.D. in Population Health Sciences must be recommended by the admissions committee of the Department of Population Health Sciences and approved by the Graduate School at the University of Utah. Applicants should have a demonstrated interest in population science research. We anticipate that most applicants will have a master’s or clinical doctoral degree, but compelling work experience, subject matter expertise, research or exemplary undergraduate coursework will be considered in lieu of a master’s degree. We also anticipate refining admissions requirements over time based on experience and a more defined applicant pool.

The following information must be submitted to the Graduate School via ApplyU:

1. Graduate Admission Application
2. Official transcripts of undergraduate and graduate coursework

3. Graduate Entrance Exam Scores (GRE recommended, but others may be considered with consent of the Department of Population Health Sciences)
4. For international students, a Test of English as a Foreign Language (TOEFL) score
5. A current Curriculum Vitae
6. A Statement of Purpose (less than 1000 words) that includes research experience and interest and long term career goals
7. 3-5 letters of recommendation from individuals with knowledge of the applicant's potential for success in a doctoral program

Admission to the Ph.D. in Population Health Sciences will require:

1. Acceptance to the Graduate School at the University of Utah
2. A minimum GPA of 3.0 in all college and post-baccalaureate work
3. Availability of faculty mentor resources that match the student's research interest
4. TOEFL score of at least 550, if applicable
5. Interview with Department of Population Health Sciences faculty and approval by the admissions committee
6. Completion of departmental pre-requisites

### **Student Advisement**

Academic counseling for Ph.D. students in the Department of Population Health Sciences will be coordinated by the department Academic Program Manager and Director of Graduate Studies. The Academic Program Manager will inform students of academic expectations and financial obligations. The Academic Program Manager will also advise students on course offerings, compliance with departmental course requirements, and graduation requirements, in order to stay on track and on time for graduation. All tuition benefit positions will be coordinated through the Academic Program Manager.

### **Faculty Advisement**

Each student will be mentored by both the faculty Director of Graduate Studies and will be matched with an individual faculty advisor. Meetings for advisors and their advisees will be scheduled at regular intervals throughout the academic year to ensure that each student will meet his/her advisors and maintain open lines of communications. Advisors will assist with career development, finding research and scholarship opportunities, selection of dissertation topic, and recruitment of dissertation committee members, among other topics.

### **Justification for Graduation Standards and Number of Credits**

Each student must successfully complete all graduation requirements to be awarded the PhD degree. These requirements include a minimum of 62 graduate credits for a Ph.D. in Population Health Sciences when students enter the program with a relevant master's degree; this includes a minimum of 18 dissertation hours. Students who enter the degree program without a relevant master's degree must complete a minimum of 80 credits, including a minimum of 18 dissertation hours. All students must pass a departmental qualifying examination during the Spring semester of their second year. All students must successfully defend a doctoral dissertation. The department's examination processes and dissertation evaluation are consistent with other Ph.D. programs at the University of Utah. Students must complete all coursework and dissertation within 7 years of admission. Any exceptions must be approved by both the Graduate School and department.

### External Review and Accreditation

This Ph.D. program is novel in its approach and does not have an accrediting body. Instead, there will be an advisory board that will comprise qualified persons across the University of Utah, other health systems in Salt Lake City, industry leaders, and national leaders in healthcare research. Assembling an external advisory board will be a first priority of the permanent Chair of Population Health Sciences.

### Projected Program Enrollment and Graduates; Projected Departmental Faculty/Students

Data Category	Current – Prior to New Program Implementation	PROJ YR 1	PROJ YR 2	PROJ YR 3	PROJ YR 4	PROJ YR 5
<b>Data for Proposed Program</b>						
Number of Graduates in Proposed Program	X	0	0	0	0	8
Total # of Declared Major in Proposed Program	X	8	16	24	32	32
<b>Departmental Data – For All Programs Within the Department</b>						
Total Department Faculty FTE (as reported in Faculty table above)	3	16	16	16	16	16
Total Department Student FTE (Based on Fall Third Week)		8	16	24	32	32
Student FTE per Faculty FTE (ratio of Total Department Faculty FTE and Total Department Student FTE above)		8:16	16:16	24:16	32:16	32:16
<b>Program accreditation-required ratio of Student FTE/Faculty FTE, if applicable: (Provide ratio here: _____)</b>						

Approximately 4 students per emphasis will be admitted in each of the first five years of the program. Student numbers will increase proportionally as additional emphases are established and approved.

### Expansion of Existing Program

This is not an expansion of an existing academic program.

### Section III: Need

#### Program Need

Population health and health services research expertise and successful scholarship already exist within the University of Utah, but there is an urgent need to broaden this knowledge and build on existing expertise in biostatistics, health systems research, and cancer population science. Cultivating these significant strengths will better equip the University to meet important challenges of evolving healthcare

systems. The proposed Ph.D. in Population Health Sciences is designed to complement, strengthen, and extend the capacity for scholarship throughout the University of Utah. The emphases in biostatistics and in health systems research will constitute the only Ph.D. level programs in these disciplines in the state of Utah.

There is a significant need to make US health care delivery more value-driven and less complex and fragmented. Advanced healthcare scholarship produced by researchers in the Department of Population Health Sciences will enable healthcare transformation and improvement. By offering this degree program and recruiting established health sciences researchers to Salt Lake City, the University of Utah has the potential to become a flagship institution promoting and driving healthcare transformation in the United States. Recruitment of faculty to Utah will enrich the scholarship of a large number of existing graduate programs in addition to Population Health Sciences. The program will create a hub for education, investigation, and expertise in value-driven health services, cost, quality, outcomes, and health delivery systems research. It will also facilitate increased efficiency and effectiveness of clinical operations through population health management and quality improvement initiatives. The Ph.D. program will fulfill the University of Utah's commitment to the Utah State Legislature that the University will prepare its students to meet the demands of a transforming health care system and have an immediate impact on the workforce and health care sector upon graduation. Through this Ph.D. program, the University of Utah can become the national leader in health system transformation and can continue to increase its impact on healthcare nationwide by disseminating innovative scholarly research and policy considerations.

Historically, departments within the School of Medicine have followed a traditional structure of aligning along defined specialties, functions, and educational requirements. The introduction of the Ph.D. in Population Health Sciences and its initial emphases in Biostatistics and Health Systems Research represents a shift in this paradigm to more cross-training and research. With increasing prominence of team-based scholarship, the distinctions along these traditional academic lines are becoming blurred, thus allowing for more collaborative approaches to the advancement of knowledge. Students completing a degree in Population Health Sciences at the University of Utah will be in a strong position to take advantage of this shifting paradigm. The program will provide opportunities for cross-institutional research and education in health systems and quantitative methods scholarship to meet the multi-faceted challenges of health care delivery in a multitude of decentralized, networked and collaboration based service systems.

In parallel, new practices, policies, and accreditation standards are promoting integrated health systems that rely on interdisciplinary partnerships. As more inter-professional approaches to learning, innovation, and care are adopted, the responsibility, accountability, and authority for safety, quality, efficiency and effectiveness of patient care are shifting away from an individual perspective to one that is focused on system-based solutions. Multiple elements, including the Affordable Care Act (ACA), are influencing the transformation of our health care systems. Public and private clients and consumers are increasing the pressure on these health care systems to provide accurate and relevant data that report on quality of care, efficiency and value.

The Ph.D. in Population Health Sciences has been created to align with, and drive, the changing trends in healthcare delivery. The collaboration between health systems researchers and biostatisticians throughout the program exemplify team-based and collaborative research from inception. There will be seamless transition from students to professionals in the field to leaders in healthcare transformation, mirroring the shift in medicine towards multi- and trans-disciplinary collaboration.

## **Labor Market Demand**

The cost and complexity of health care in the United States are unsustainable. Information on the value of health care as it relates to quality and costs is sometimes absent and often unreliable. The demand for leaders who have the expertise and skills to systematically address these problems and lead healthcare transformation remains unmet.

The demand for students trained in the curriculum outlined in this proposal is high and the supply is inadequate. The national shortage of biostatisticians with graduate training is documented in the *Objectives for the Nation* and the *Seventh Report to the President and Congress on the Status of Health Personnel in the United States*. Similarly, Academy Health, a nonpartisan, not-for-profit, health services research and policy organization has documented a lack of researchers prepared to take on positions addressing current and future needs of the evolving healthcare system. Currently there are more than forty open positions for biostatisticians and health systems researchers across the country posted on Academy Health's career page. This number has been constant over the past several months. This illustrates the urgency for moving forward with this uniquely designed program.

## **Student Demand**

The Ph.D. in Population Health Sciences is a degree aimed specifically at the increased need to create a more efficient and effective healthcare system. This program will produce graduates with expertise in different concentrations in order to make an immediate impact on healthcare in the United States and beyond. This is a unique and innovative program unlike any other terminal degree program offered in Utah or in the Intermountain region. This PhD is not a continuation of a traditional undergraduate degree, which allows candidates to be drawn from a variety educational and professional experience across and beyond health sciences disciplines.

This Ph.D. will provide students an opportunity to pursue Health Systems Research and Biostatistics in Utah while creating a core of healthcare scholarship and innovation at the University of Utah. As the biostatistics emphasis will constitute the sole doctoral program in biostatistics in the state of Utah, it can be expected to attract students who graduate from master's degree programs in statistics at the University of Utah, Utah State University, and Brigham Young University who wish to advance their education in biostatistics or related quantitative health science fields. During 2012-2014, an average of 3 graduates per year from the Brigham Young master's program went on to enter PhD programs in either biostatistics or statistics. Approximately four University of Utah MSTAT students per year going back to 2012 have expressed interest in pursuing this type of Ph.D. An increasing number of scholars are turning their attention to the field of Population Health Sciences and healthcare transformation. By providing the program to educate researchers in this field, students and faculty alike will find an academic home for their research interests.

## **Similar Programs**

The Public Health discipline is related to but different from the academic scope of this proposed department in important ways. Along with the University of Utah's Division of Public Health in the Department of Family and Preventive Medicine, there are several other accredited academic public health units in the Intermountain region. In Utah, both Brigham Young University and Westminster College have graduate public health programs. In the surrounding states, there are public health units in Colorado (University of Colorado, School of Public Health), Nevada (both University of Nevada Reno and University of Nevada Las Vegas have Schools of Community Health Sciences), and Idaho (Idaho State Public Health Program). Oregon State University has a School of Biological and Population Health Sciences that follows a traditional



public health model with a multi-disciplinary approach linking biology and behavior to population and environmental health. The distinction between the PHS program and these Council on Education for Public Health-accredited programs is that the PHS program takes the perspective of the application of biostatistical and health systems research methodology as they pertain to the health care system for the purpose of improving delivery of care to patient populations. The Population Health Science's Ph.D. program will focus on graduating academic researchers with specific focus on populations related to health systems.

There are other biostatistics programs and traditional public health-based health research programs in the Pacific 12 Conference, but this program is distinct from those.\* The most similar Ph.D. programs are at New York University and the University of Wisconsin, Madison.

\*See Appendix E for list of programs offered at other Pacific 12 Conference Schools

### **Collaborative Programs**

Within the University of Utah, there are several programs that will have a collaborative relationship with the Department of Population Health Science and its PhD students. A significant collaboration with the Huntsman Cancer Institute (the Division of Cancer Population Science is housed within the Huntsman Cancer Institute and constitutes the academic hub of HCI's Cancer Control and Population Sciences program) will provide students with the opportunity to develop expertise in cancer research. This collaboration will address the growing cost and prevalence of cancer-related treatments, which is one of the largest funded research areas in health care. It is estimated that one in two men and one in three women will get cancer in their lifetimes, creating a substantial need for specialized expertise in this area. This unique partnership will allow students in all emphases to take advantage of the cutting edge research at Huntsman.

Across the University, there will be course sharing, appointment of adjunct professors, Ph.D. mentors for Population Health Sciences students, and collaborative research projects for students to participate in while matriculated.

In addition to the Huntsman Cancer Institute\*, potential partners for collaboration across the University of Utah include:

Department of Family and Preventive Medicine\*

Division of Public Health\*

Department of Internal Medicine\*

Division of Epidemiology

Division of Genetic Epidemiology\*

Department of Biomedical Informatics\*

College of Pharmacy

Department of Pharmacotherapy (and the Pharmacotherapy Outcomes Research Center)\*

Department of Pediatrics\*

Intermountain Injury Control Research Center

Center for Clinical and Translational Sciences\*

Masters in Clinical Investigation

College of Social and Behavioral Sciences

Economics

- Family and Consumer Studies\*
- Political Science\*
- Psychology
- Public Administration\*
- Sociology\*
- College of Engineering
  - Mechanical Engineering
- David Eccles School of Business
  - Master of Healthcare Administration\*
- College of Health\*
- College of Nursing\*
- College of Social Work\*
- Eccles Health Sciences Library\*
- College of Humanities
  - Department of Communications (Health Communication)
- College of Science
  - Department of Math\*
- School of Computing
  - Department of Computer Science

\*Indicates Letters of Support in Appendix C

The Population Health Sciences Educational Committee convened in September 2014 and met regularly to provide input to the new Ph.D. curriculum. This represents an early example of the collaboration efforts in the development of this program. This committee and its subcommittees included faculty from the Division of Public Health in the Department of Family and Preventative Medicine, the Division of Epidemiology in the Department of Internal Medicine, the Departments of Biomedical Informatics, Pediatrics, Internal Medicine, and Pharmacotherapy, as well as the Master of Statistics and Master of Science in Clinical Investigation programs. Intermountain Health Care and the Veterans Administration were also represented on the Education Committee. Finally, there were several meetings with leaders and faculty members of divisions with areas of similar academic and research interests as this new program, specifically the Division of Public Health and the Division of Epidemiology, and input on the curriculum was also solicited from numerous additional faculty across the University. All aspects of the curriculum and proposal were shared for feedback and input throughout the development process from the key collaborative programs mentioned.

The Department of Population Health Sciences is committed maintaining close communications with these collaborative programs to ensure that the PHS Ph.D. remains synergistic and complimentary to existing and expanding programs. Permanent mechanisms will be put in place to facilitate ongoing collaboration as department structure develops.

### **Collaboration with and Impact on Other USHE Institutions**

This is a unique and targeted program that is not offered elsewhere in USHE institutions. There is a close relationship with the field of Public Health and a natural path between those programs to the academic mission of Population Health Sciences that will resonate with students at other USHE Institutions. The creation of this degree program will generate a strong foothold for healthcare transformation scholarship in the state of Utah and within the Intermountain Region.



## **Benefits**

There is a pressing need for scholarship and research to improve healthcare in this country as well as other countries. By creating a core at the University of Utah for this type of research, and fostering an environment of innovation and cutting edge health systems and biostatistics methods research, the USHE has the potential to transform into a beacon of innovation and research in this field, which will contribute to attracting exemplary faculty and students. The University of Utah will find itself at the forefront of healthcare transformation study and research.

## **Consistency with Institutional Mission**

The Ph.D. program in Population Health Sciences will serve as an academic hub from which to broaden knowledge and expertise, and it will significantly enhance the University of Utah Health Sciences' academic and clinical missions, and it will impact research and education in health science at larger institutions. It also addresses, in part, the University's commitment to the Utah Legislature to prepare our students to meet the demands of a transforming healthcare system.

## **Section IV: Program and Student Assessment**

### **Program Assessment**

This program is not subject to accreditation from any agency. As a graduate program at the University of Utah, the program will be subject to review by the Graduate Council and the University's Academic Senate. In addition, the School of Medicine will evaluate the program the same way it currently evaluates programs in other departments within the College. This Ph.D. program will also be subject to review by its advisory board, which will be comprised of qualified persons from across the University of Utah, the Veterans Administration, Intermountain Healthcare, and other industry partners. Student and faculty feedback will be critical components of the program evaluation process. Students will provide feedback on courses mid-semester and at semester completion. Faculty will evaluate student performance and curriculum.

### **Expected Standards of Performance**

Graduates of the Ph.D. program will have specific knowledge in the emphases within Population Health Sciences, specifically Biostatistics and Health Systems Research. These graduates will become researchers, teachers, thinkers, and planners in academia, government, and industry. The graduates will have the skills required to lead in universities, hospitals, insurance companies, and government where healthcare delivery, biostatistics, and healthcare transformation research is practiced and taught. Students will acquire these skills through the completion of the graduate requirements. These are:

1. Coursework: Students in the Ph.D. program will be expected to complete coursework in biostatistics, epidemiology, and research design to develop the tools to conduct independent scholarship in Population Sciences research.
2. Qualifying Examinations: During the spring semester of their second year, students will take a qualifying examination to assess their knowledge within their specific discipline and of the tools of research required in Population Health Sciences.
3. Dissertation: After successful completion of the Qualifying Examination and advancement to candidacy, students will develop a proposal for the dissertation, complete and defend the research.

**Section V: Finance**

**Department Budget**

<b>Three-Year Budget Projection</b>							
<b>Departmental Data</b>	<b>Current Departmental Budget – Prior to New Program Implementation (Y1-Y3)</b>	<b>Departmental Budget</b>					
		<b>Year 1</b>		<b>Year 2</b>		<b>Year 3</b>	
		<b>Addition to Budget</b>	<b>Total Budget</b>	<b>Addition to Budget</b>	<b>Total Budget</b>	<b>Addition to Budget</b>	<b>Total Budget</b>
<b>Personnel Expense</b>							
Salaries and Wages	7,431,293	111,000	2,515,249	127,810	2,604,186	140,644	2,691,312
Benefits	2,306,139	39,300	785,406	44,793	813,282	48,730	840,274
<b>Total Personnel Expense</b>	<b>\$9,737,432</b>	<b>\$150,300</b>	<b>3,300,655</b>	<b>\$172,603</b>	<b>3,417,468</b>	<b>\$189,374</b>	<b>3,531,586</b>
<b>Non-Personnel Expense</b>							
Travel*	36,000	6,000	18,000	6,500	18,500	7,000	19,000
Capital	0	0	0	0	0	0	0
Library	0	0	0	0	0	0	0
Current Expense/Other	529,000	11,812	194,812	2,112	175,112	2,112	175,112
Total Non-personnel Expense	565,000	14,812	208,812	5,612	190,612	5,612	191,112
<b>Total Expense (Personnel + Current)</b>	<b>\$10,302,432</b>	<b>\$168,112</b>	<b>\$3,513,467</b>	<b>\$181,215</b>	<b>\$3,611,080</b>	<b>\$198,486</b>	<b>\$3,725,698</b>
<b>Departmental Funding</b>							
Appropriated Fund	5,201,801	142,912	1,729,124	151,215	1,947,441	164,886	2,009,450
Other: Clinical Dept./HCI	1,470,289	0	676,271	0	391,142	0	402,876
Special Legislative Appropriation	0	0	0	0	0	0	0
Grants and Contracts	3,630,341	0	1,108,072	0	1,242,497	0	1,279,772
Special Fees / Differential Tuition	0	25,200	25,200	30,000	30,000	33,600	33,600

<b>Total Revenue</b>	\$10,302,432	\$168,112	\$3,513,467	\$181,215	\$3,611,080	\$198,486	\$3,725,698
<b>Difference</b>							
Revenue-Expense	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Departmental Instructional Cost / Student Credit Hour* (as reported in institutional Cost Study for "current" and using the same Cost Study Definition for "projected")	\$	\$	\$	\$	\$	\$	\$

*\*Travel funds for students, faculty, and staff*

**\*See Appendix 1 for budget breakdown**

### Funding Sources

The program will be funded through a combination of state funds, tuition differential (if approved), and institutional funds. Host departments of educational activities and programs within the University Health Sciences Center (HSC) receive educational funds (state, tuition, and other) through a formula developed and administered by the HSC Mission Based Management Office and the School of Medicine Executive Committee. The relevant funding formula for allocations associated with this Ph.D. program would be derived from student credit hours and from a Ph.D. student count. The applicable formula funds \$252.18 per student for each credit hour generated by the department ( $\$252.18 \times \text{number of credits taught} \times \text{number of students}$ ), with an additional \$21,579 per Ph.D. graduate. (Amounts referenced are for FY 2015; per unit values may fluctuate from year to year based on state allocation and educational activities.)

The program will be initially supported by state appropriated funds allocated by the HSC to allow for the development of the program and start up operations. During Year 4 the HSC allocation will be amended to include Population Health Sciences so the department will then receive funding based on the MBM funding formula. During Year 8 the program will be sustainably funded by a combination of student differential tuition (if approved) and the applicable MBM formula.

### Reallocation

Funds are not being reallocated from other School of Medicine Departments to support this program.

### Impact on Existing Budgets

State fund allocations for any current School of Medicine basic or clinical department will not be diminished based on the establishment of this graduate program.

## Section VI: Program Curriculum

The curriculum for the Population Health Sciences Ph.D. is designed as a 4-year program for students who enter the program with a master's degree in a field related to its Biostatistics or Health Systems Research emphases. Students who are admitted without a related graduate degree will be required to take an additional year of classes, labeled Year-0 in the tables below, to obtain the core background expertise required by the Ph.D. program.

### All Program Courses (with New Courses in Bold)

#### Population Health Sciences Ph.D. Core Courses for All Emphases

Course Prefix and Number	Title	Credit Hours
Required Courses		
<b>PHS 7000</b>	<b>Biostatistics for Clinical Research</b>	<b>3</b>
<b>PHS 7020</b>	<b>Analysis of Secondary Data</b>	<b>4</b>
<b>PHS 7030</b>	<b>Applied Modern Causal Inference</b>	<b>2</b>
WRTG 7060 or WRTG 7080	Scientific Writing (WRTG 7060) or Scientific Writing (WRTG 7080)	3
<b>PHS 7100</b>	<b>Foundations of Population and Clinical Health</b>	<b>3</b>
<b>PHS 7310</b>	<b>Comparative Health Systems Seminar I</b>	<b>2</b>
<b>PHS 7305</b>	<b>Research Compliance Training</b>	<b>1</b>
<b>Total Number of Credits</b>		<b>18</b>

### Biostatistics Emphasis

**Required Courses: Biostatistics Emphasis for students entering without a graduate degree in Statistics, Biostatistics, Math, or other relevant graduate degree- Year 0**

Course Prefix and Number	Title	Credit Hours
Required Courses		
MA 5080	Statistical Inference I	3
FPMD 6300 or MDCRC 6100 and 6110	Introduction to Epidemiology	3
FPMD 7120 or Math 6010	Linear and Logistic Regression (FPMD 7120) or Linear Models (Math 6010)	3
MA 5090	Statistical Inference II	3
FPMD 6107 or FPMD 7130	Survival Analysis (FPMD 6107) or Longitudinal Data Analysis (FPMD 7130)	3
STAT 6003	Statistical Programming	3
<b>Total Number of Credits</b>		<b>18</b>

Population Health Sciences Ph.D.- Biostatistics Emphasis Years 1-4

Course Prefix and Number	Title	Credit Hours
Required Courses		
PHS 7000	Biostatistics for Clinical Research	3
PHS 7010	Analysis of Multilevel Data	3
PHS 7020	Analysis of Secondary Data	4
PHS 7030	Applied Modern Causal Inference	2
PHS 7035	Theory of Modern Causal Inference	2
FP MD6107 or FP MD 7130*	Survival Analysis or Longitudinal Data Analysis	3
WRTG 7060 or WRTG 7080	Scientific Writing (WRTG 7060) or Writing in the Health Sciences (WRTG 7080)	3
PHS 7100	Foundations of Population and Clinical Health	3
PHS 7500	Special Topics Biostatistics	3
PHS 7310	Comparative Health Systems Seminar I	2
PHS 7305	Research Compliance Training	1
PHS 7900	Dissertation Work (minimum)	18
<b>Sub-Total</b>		<b>47</b>
Elective Courses		
	Directed Elective from Departmental Approved List	3
	Directed Elective from Departmental Approved List	3
	Directed Elective from Departmental Approved List	3
	Directed Elective from Departmental Approved List	3
	Directed Elective from Departmental Approved List	3
<b>Sub-Total</b>		<b>15</b>
<b>Minimum Number of Credits with previous MS</b>		<b>62</b>
<b>Minimum Number of Credits without previous MS</b>		<b>80</b>

\* Qualified students may substitute one of the classes from the mathematical statistics directed electives. These classes include MA 5075, MA 6020, MA 6070.

## Health Systems Research Emphasis

**Required Courses: Health Systems Research Emphasis for students entering without a graduate degree in Statistics, Biostatistics, Math, Economics, or other relevant graduate degree- Year 0**

Course Prefix and Number	Title	Credit Hours
Required Courses		
FPMD 6300 or MDCRC 6100 and 6110	Introduction to Epidemiology	3
FPMD 7300	Epidemiology II	3
PHS 6000	Advanced Quantitative Methods I	3
PHS 6010	Advanced Quantitative Methods II	3
MDCRC 6230	Health Services Research	3
<b>Sub-Total</b>		<b>15</b>
Directed Elective (Optional)		3
<b>Total Number of Credits</b>		<b>18</b>

## Population Health Sciences Ph.D.- Health Systems Research Emphasis Years 1-4

Course Prefix and Number	Title	Credit Hours
Required Courses		
<b>PHS 7000</b>	<b>Biostatistics for Clinical Research</b>	<b>3</b>
<b>PHS 7200</b>	<b>Health Systems Research Methods</b>	<b>3</b>
<b>PHS 7020</b>	<b>Analysis of Secondary Data</b>	<b>4</b>
<b>PHS 7030</b>	<b>Applied Modern Causal Inference</b>	<b>2</b>
<b>PHS 7310</b>	<b>Comparative Health Systems Seminar I</b>	<b>2</b>
<b>PHS 7320</b>	<b>Comparative Health Systems Seminar Domestic</b>	<b>1</b>
<b>PHS 7330</b>	<b>Comparative Health Systems Seminar International</b>	<b>1</b>
<b>PHS 7315</b>	<b>Comparative Health Systems Survey I</b>	<b>1</b>
<b>PHS 7325</b>	<b>Comparative Health Systems Survey Domestic</b>	<b>1</b>
<b>PHS 7335</b>	<b>Comparative Health Systems Survey International</b>	<b>2</b>
WRTG 7060 or WRTG 7080	Scientific Writing (WRTG 7060) or Writing for the Health Sciences (WRTG 7080)	3
<b>PHS 7100</b>	<b>Foundations of Population and Clinical Health</b>	<b>3</b>
PADMN 6190 or FPMD 7140	Health Policy	3
ECON 6190 or ECON 7320	Health Economics	3
MDCRC 6120	Cost Effectiveness Analysis	1
FPMD 6600	Social Context of Medicine and Public Health	3
MDCRC 6260	Health Measurement and Survey Methods	2
<b>PHS 7305</b>	<b>Compliance Training</b>	<b>1</b>
MDCRC 6450	Grant Writing	2.5

Course Prefix and Number	Title	Credit Hours
<b>PHS 7900</b>	Dissertation (minimum)	18
	<b>Sub-Total</b>	<b>59.5</b>
Elective Courses		
	Directed Elective	3
	<b>Sub-Total</b>	<b>3</b>
<b>Minimum Number of Credits with previous MS (including Dissertation)</b>		<b>62.5</b>
<b>Minimum Number of Credits without previous MS</b>		<b>80.5</b>

\*See Appendix B for list of Approved Electives

The Population Health Sciences Curriculum Committee and external advisory board will continue to add appropriate directed electives to the approved list.

Ethics in biomedical research will be emphasized within the courses developed in Population Health Sciences. Additionally, students will have the opportunity to focus in depth on ethics in their directed electives from course offerings across campus.

To avoid duplicating classes already taught at the university, this degree program will borrow heavily from the existing course catalog through required courses and directed electives.

Population Health Sciences will initially have 2 emphases in its Ph.D. program. Additional emphases are being considered, including an emphasis in Epidemiology. Epidemiology and any other future emphases will go through the governance process and separately seek approval from faculty, the Graduate Council, the Academic Senate, and the Board of Regents.

## Program Schedule

**Suggested Program Schedule: Biostatistics Emphasis for students entering without a graduate degree in Statistics, Biostatistics, Math, or other relevant graduate degree- Year 0**

Course Prefix and Number	Title	Credit Hours
Required Courses		
<b>Fall Semester Year 0</b>		
MA 5080	Statistical Inference I	3
STAT 6003	Statistical Programming	3
FPMD 7120 or Math 6010	Linear and Logistic Regression (FPMD 7120) or Linear Models (Math 6010)	3
<b>Spring Semester Year 0</b>		
MA 5090	Statistical Inference II	3
FPMD 6107 or FPMD 7130	Survival Analysis (FPMD 6107) or Longitudinal Data Analysis (FPMD 7130)	3
FPMD 6300 or MDCRC 6100 and 6110	Introduction to Epidemiology	3
<b>Total Number of Credits</b>		<b>18</b>

**Suggested Program Schedule: Biostatistics Emphasis for students entering with a graduate degree in Statistics, Biostatistics, Math, or other relevant graduate degree- Years 1-4**

<b>Course Prefix and Number</b>	<b>Title</b>	<b>Credit Hours</b>
<b>Required Courses</b>		
<b>Fall Semester Year 1</b>		
PHS 7000	Biostatistics for Clinical Research	3
PHS 7100	Foundations of Population and Clinical Health	3
FPMD 6107 or FPMD 7130	Survival Analysis or Longitudinal Analysis (If not previously taken)	3
PHS 7305	Research Compliance Training	1
	<b>Total Number of Credits</b>	<b>10</b>
<b>Spring Semester Year 1</b>		
PHS 7020	Analysis of Secondary Data	4
PHS 7010	Analysis of Multilevel Data	3
PHS 7310	Comparative Health Systems Seminar I	2
	<b>Total Number of Credits</b>	<b>9</b>
<b>Fall Semester Year 2</b>		
PHS 7030	Applied Modern Causal Inference	2
PHS 7035	Theory of Modern Causal Inference	2
	Directed Elective	3
	Directed Elective	3
	<b>Total Number of Credits</b>	<b>10</b>
<b>Spring Semester Year 2</b>		
WRTG 7060 or WRTG 7080	Scientific Writing (WRTG 7060) or Writing in the Health Sciences (WRTG 7080)	3
	Directed Elective	3
	Directed Elective	3
	<i>Comprehensive Exams</i>	
	<b>Total Number of Credits</b>	<b>9</b>
<b>Fall Semester Year 3</b>		
PHS 7500	Special Topics in Biostatistics	3
PHS 7900	Dissertation Work	6
	<b>Total Number of Credits</b>	<b>9</b>
<b>Spring Semester Year 3</b>		
PHS 7900	Dissertation Work	9
	<b>Total Number of Credits</b>	<b>9</b>
<b>Fall Semester Year 4</b>		
PHS 7900	Dissertation Work	9
	<b>Total Number of Credits</b>	<b>9</b>



Course Prefix and Number	Title	Credit Hours
<b>Spring Semester Year 4</b>		
PHS 7900	Dissertation Work	9
	<b>Total Number of Credits</b>	<b>9</b>

**Suggested Program Schedule: Health Systems Research Emphasis for students entering without a Master's degree in Statistics, Biostatistics, Math, or other relevant graduate degree- Year 0**

Course Prefix and Number	Title	Credit Hours
<b>Fall Semester Year 0</b>		
FPMD 6300 or MDCRC 6100 and 61111	Introduction to Epidemiology	3
	Directed Elective (Optional)	3
	Advanced Quantitative Methods I	3
<b>Spring Semester Year 0</b>		
FPMD 7300	Epidemiology II	
	Advanced Quantitative Methods II	3
MDCRC 6230	Health Services Research	3
	<b>Sub-Total</b>	<b>15</b>
	Directed Elective (Optional)	3
	<b>Total Number of Credits</b>	<b>18</b>

**Suggested Program Schedule: Health Systems Research Emphasis for students entering with a graduate degree in Statistics, Biostatistics, Math, or other relevant graduate degree- Years 1-4**

Course Prefix and Number	Title	Credit Hours
Required Courses		
<b>Fall Semester Year 1</b>		
PHS 7000	Biostatistics for Clinical Research	3
PHS 7100	Foundations of Population and Clinical Health	3
FPMD 6400	Social Context of Medicine & Public Health	3
PHS 7305	Research Compliance Training	1
	<b>Total Number of Credits</b>	<b>10</b>
<b>Spring Semester Year 1</b>		
PHS 7300	Health Systems Research Methods	3
PHS 7020	Analysis of Secondary Data	4
MDCRC 6220	Health Measurement and Survey Methods	2
PHS 7310	Comparative Health Systems Seminar I	2
	<b>Total Number of Credits</b>	<b>11</b>
<b>Summer Year 1</b>		
PHS 7315	Comparative Health Systems Survey I	1
	<b>Total Number of Credits</b>	<b>1</b>
<b>Fall Semester Year 2</b>		

Course Prefix and Number	Title	Credit Hours
MDCRC 6120	Cost Effectiveness Analysis	1
PHS 7030	Applied Modern Causal Inference	2
ECON 6190 or ECON 7320	Health Economics	3
	Directed Elective	3
	<b>Total Number of Credits</b>	<b>9</b>
<b>Spring Semester Year 2</b>		
WRTG 7060 or WRTG 7080	Scientific Writing (WRTG 7060) or Writing in the Health Sciences (WRTG 7080)	3
PADMN 6190 or FP MD 7410	Health Policy	3
	Directed Elective	2
PHS 7320	Comparative Health System Seminar Domestic	1
PHS 7325	Comparative Health System Survey Domestic	1
	<i>Comprehensive Exams</i>	
	<b>Total Number of Credits</b>	<b>10</b>
<b>Fall Semester Year 3</b>		
MDCRC 6450	Grant Writing	2.5
	Directed Elective	3
PHS 7900	Dissertation Work	4
	<b>Total Number of Credits</b>	<b>9.5</b>
<b>Spring Semester Year 3</b>		
PHS 7330	Comparative Health Systems Seminar International	2
PHS 7900	Dissertation Work	7
	<b>Total Number of Credits</b>	<b>9</b>
<b>Summer Year 3</b>		
PHS 7335	Comparative Health Systems Survey International	2
	<b>Total Number of Credits</b>	<b>2</b>
<b>Fall Semester Year 4</b>		
PHS 7900	Dissertation Work	9
	<b>Total Number of Credits</b>	<b>9</b>
<b>Spring Semester Year 4</b>		
PHS 7900	Dissertation Work	9
	<b>Total Number of Credits</b>	<b>9</b>

## **Section VII: Faculty**

### **Department of Population Health Sciences**

#### **Department Chair (To Be Named)**

Full Time Faculty

Full Time Faculty

Full Time Faculty

Full Time Faculty

### **Biostatistics**

Dr. Tom Greene Ph.D., M.S., Interim Chair, Department of Population Health Sciences; Proposed Division Chief

Full Time Faculty

Full Time Faculty

### **Health System Innovation and Research**

Dr. Rachel Hess, M.D., M.S., Proposed Division Chief

Full Time Faculty

Full Time Faculty

Full Time Faculty

### **Cancer Population Sciences**

Dr. Cornelia Ulrich, Ph.D., M.S., Proposed Division Chief

Full Time Faculty

Full Time Faculty

Full Time Faculty

# Appendix A

## Budget Justification



<b>PHS PhD BUDGET SUMMARY</b>						<b>Ten Year Total</b>
<b>Revenue</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	
MBM Funds	\$ 160,961	\$ 247,277	\$ 247,277	\$ 247,277	\$ 247,277	\$ 1,300,153
Student tuition differential	\$ 44,400	\$ 44,400	\$ 44,400	\$ 44,400	\$ 44,400	\$ 399,600
State Funds	\$ 57,393	\$ -	\$ -	\$ -	\$ -	\$ 784,108
<b>Income</b>	<b>\$ 262,755</b>	<b>\$ 291,677</b>	<b>\$ 291,677</b>	<b>\$ 291,677</b>	<b>\$ 291,677</b>	<b>\$ 2,483,861</b>
<b>Expenses</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	
<u>Personnel</u>						
Salaries and Wages	\$ 188,550	\$ 189,489	\$ 190,457	\$ 191,453	\$ 192,479	\$ 1,687,775
Benefits	\$ 64,092	\$ 64,183	\$ 64,599	\$ 64,856	\$ 65,116	\$ 577,036
Personnel Total	\$ 252,643	\$ 253,672	\$ 255,055	\$ 256,309	\$ 257,595	\$ 2,264,811
<u>Non-Personnel</u>						
Computers (1 per fac. x 8)	\$ -	\$ -	\$ -	\$ 9,600	\$ -	\$ 28,800
Telecommunications	\$ 312	\$ 312	\$ 312	\$ 312	\$ 312	\$ 3,220
Conferences	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 8,000	\$ 75,000
Supplies (copies, textbooks, etc.)	\$ 1,800	\$ 1,800	\$ 1,800	\$ 1,800	\$ 1,800	\$ 18,000
Non-Personnel Total	\$ 10,112	\$ 10,112	\$ 10,112	\$ 19,712	\$ 10,112	\$ 125,020
<b>Expenses</b>	<b>\$ 262,755</b>	<b>\$ 263,784</b>	<b>\$ 265,167</b>	<b>\$ 276,021</b>	<b>\$ 267,707</b>	<b>\$ 2,389,831</b>
<b>Net (loss)</b>	<b>\$ -</b>	<b>\$ 27,893</b>	<b>\$ 26,510</b>	<b>\$ 15,656</b>	<b>\$ 23,970</b>	<b>\$ 94,029</b>

<b>PHS PhD FUNDING DETAIL</b>						
<b>Differential Tuition</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>	<b>Five Year Total</b>
<i>Amount of differential tuition per credit:</i>	\$150					
<i>No. of PHS Credits Taught (PhD1=21, PhD2=4, Phd3=3, PhD4=9)</i>	<u>21</u>	<u>25</u>	<u>28</u>	<u>37</u>	<u>37</u>	
<i>No. of PhD 1st year students</i>	8	8	8	8	8	
<i>No. of PhD 2nd year students</i>		8	8	8	8	
<i>No. of PhD 3rd year students</i>			8	8	8	
<i>No. of PhD 4th year students</i>				8	8	
<b>Total no. of PHD students</b>	8	16	24	32	32	
<b>Diff. Tuition Total</b>	<b>\$25,200</b>	<b>\$30,000</b>	<b>\$33,600</b>	<b>\$44,400</b>	<b>\$44,400</b>	<b>\$177,600</b>
<b>MBM Model Funding</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>	
<i>Courses (\$252.18 x credit x student)</i>	\$ -	\$ -	\$ -	\$ 50,436.00	\$ 56,488.32	\$ 106,924.32
<i>Degrees granted (\$21,579 x graduate, 75% grad rate)</i>	\$ -	\$ -	\$ -	\$ -	\$ 43,158.00	\$ 43,158.00
<b>MBM Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 50,436.00</b>	<b>\$ 99,646.32</b>	<b>\$ 150,082.32</b>
<b>State Funds (start up)</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>	
	\$ 142,912.00	\$ 151,214.60	\$ 164,886.24	\$ 152,916.26	\$ 114,785.46	\$ 726,714.56
<b>FUNDING TOTAL</b>	<b>\$168,112</b>	<b>\$181,215</b>	<b>\$198,486</b>	<b>\$ 247,752.26</b>	<b>\$ 258,831.78</b>	<b>\$ 1,054,396.88</b>

<b>PHS PhD FUNDING DETAIL</b>						
<b>Differential Tuition</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	<b>Ten Year Total</b>
<i>Amount of differential tuition per credit:</i>						
No. of PHS Credits Taught (PhD1=21, PhD2=4, PhD3=3, PhD4=9)	<u>37</u>	<u>37</u>	<u>37</u>	<u>37</u>	<u>37</u>	
<i>No. of PhD 1st year students</i>	8	8	8	8	8	
<i>No. of PhD 2nd year students</i>	8	8	8	8	8	
<i>No. of PhD 3rd year students</i>	8	8	8	8	8	
<i>No. of PhD 4th year students</i>	8	8	8	8	8	
Total no. of PHD students	32	32	32	32	32	
<b>Diff. Tuition Total</b>	<b>\$44,400</b>	<b>\$44,400</b>	<b>\$44,400</b>	<b>\$44,400</b>	<b>\$44,400</b>	<b>\$399,600</b>
<b>MBM Model Funding</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	
<i>Courses</i> <i>(\$252.18 x credit x student)</i>	\$ 74,645.28	\$ 74,645.28	\$ 74,645.28	\$ 74,645.28	\$ 74,645.28	\$ 480,150.72
<i>Degrees granted</i> <i>(\$21,579 x graduate, 75% grad rate)</i>	\$ 86,316.00	\$ 172,632.00	\$ 172,632.00	\$ 172,632.00	\$ 172,632.00	\$ 820,002.00
<b>MBM Total</b>	<b>\$ 160,961.28</b>	<b>\$ 247,277.28</b>	<b>\$ 247,277.28</b>	<b>\$ 247,277.28</b>	<b>\$ 247,277.28</b>	<b>\$ 1,300,152.72</b>
<b>State Funds (start up)</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	
	\$ 57,393.30	\$ -	\$ -	\$ -	\$ -	\$ 784,107.86
<b>FUNDING TOTAL</b>	<b>\$ 262,754.58</b>	<b>\$ 291,677.28</b>	<b>\$ 291,677.28</b>	<b>\$ 291,677.28</b>	<b>\$ 291,677.28</b>	<b>\$ 2,483,860.58</b>



<b>PHS PhD EXPENSE DETAIL</b>						
<b>Personnel</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>	<b>Five Year Total</b>
Salaries and Wages						
<i>Faculty (\$4,000 per credit Y1-5, \$4,250 Y6-10)</i>	\$ 84,000.00	\$ 100,000.00	\$ 112,000.00	\$ 148,000.00	\$ 148,000.00	\$ 592,000.00
<i>Academic Prog. Manager (.5 FTE +3% COLA)</i>	\$ 27,000.00	\$ 27,810.00	\$ 28,644.30	\$ 29,503.63	\$ 30,388.74	\$ 143,346.67
Sub-total	\$ 111,000.00	\$ 127,810.00	\$ 140,644.30	\$ 177,503.63	\$ 178,388.74	\$ 735,346.67
Benefits						
<i>Faculty (32% fringe)</i>	\$ 26,880.00	\$ 32,000.00	\$ 35,840.00	\$ 47,360.00	\$ 47,360.00	\$ 189,440.00
<i>Academic Prog. Manager (.5 FTE)</i>	\$ 12,420.00	\$ 12,792.60	\$ 12,889.94	\$ 13,276.63	\$ 13,371.04	\$ 64,750.21
Sub-total	\$ 39,300.00	\$ 44,792.60	\$ 48,729.94	\$ 60,636.63	\$ 60,731.04	\$ 254,190.21
<b>Personnel Total</b>	<b>\$ 150,300.00</b>	<b>\$ 172,602.60</b>	<b>\$ 189,374.24</b>	<b>\$ 238,140.26</b>	<b>\$ 239,119.78</b>	<b>\$ 989,536.88</b>
<b>Non-Personnel</b>	<b>Y1</b>	<b>Y2</b>	<b>Y3</b>	<b>Y4</b>	<b>Y5</b>	
Computers (1 per fac. x 8)	\$ 9,600.00	\$ -	\$ -	\$ -	\$ 9,600.00	\$ 19,200.00
Telecommunications:						
<i>Setup</i>	\$ 100.00					\$ 100.00
<i>Annual fees</i>	\$ 312.00	\$ 312.00	\$ 312.00	\$ 312.00	\$ 312.00	\$ 1,560.00
Conferences	\$ 6,000.00	\$ 6,500.00	\$ 7,000.00	\$ 7,500.00	\$ 8,000.00	\$ 35,000.00
Supplies (copies, textbooks, etc.)	\$ 1,800.00	\$ 1,800.00	\$ 1,800.00	\$ 1,800.00	\$ 1,800.00	\$ 9,000.00
<b>Non-Personnel Total</b>	<b>\$ 17,812.00</b>	<b>\$ 8,612.00</b>	<b>\$ 9,112.00</b>	<b>\$ 9,612.00</b>	<b>\$ 19,712.00</b>	<b>\$ 64,860.00</b>
<b>EXPENSE TOTAL</b>	<b>\$ 168,112.00</b>	<b>\$ 181,214.60</b>	<b>\$ 198,486.24</b>	<b>\$ 247,752.26</b>	<b>\$ 258,831.78</b>	<b>\$ 1,054,396.88</b>

<b>PHS PhD EXPENSE DETAIL</b>						
<b>Personnel</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	<b>Ten Year Total</b>
Salaries and Wages						
<i>Faculty (\$4,000 per credit Y1-5, \$4,250 Y6-10)</i>	\$ 157,250.00	\$ 157,250.00	\$ 157,250.00	\$ 157,250.00	\$ 157,250.00	\$ 1,378,250.00
<i>Academic Prog. Manager (.5 FTE +3% COLA)</i>	\$ 31,300.40	\$ 32,239.41	\$ 33,206.59	\$ 34,202.79	\$ 35,228.88	\$ 309,524.74
Sub-total	\$ 188,550.40	\$ 189,489.41	\$ 190,456.59	\$ 191,452.79	\$ 192,478.88	\$ 1,687,774.74
Benefits						
<i>Faculty (32% fringe)</i>	\$ 50,320.00	\$ 50,320.00	\$ 50,320.00	\$ 50,320.00	\$ 50,320.00	\$ 441,040.00
<i>Academic Prog. Manager (.5 FTE)</i>	\$ 13,772.18	\$ 13,862.95	\$ 14,278.84	\$ 14,536.19	\$ 14,796.13	\$ 135,996.49
Sub-total	\$ 64,092.18	\$ 64,182.95	\$ 64,598.84	\$ 64,856.19	\$ 65,116.13	\$ 577,036.49
<b>Personnel Total</b>	<b>\$ 252,642.58</b>	<b>\$ 253,672.36</b>	<b>\$ 255,055.43</b>	<b>\$ 256,308.98</b>	<b>\$ 257,595.00</b>	<b>\$ 2,264,811.23</b>
<b>Non-Personnel</b>	<b>Y6</b>	<b>Y7</b>	<b>Y8</b>	<b>Y9</b>	<b>Y10</b>	
Computers (1 per fac. x 8)				\$ 9,600.00		\$ 28,800.00
Telecommunications:						
<i>Setup</i>						\$ 100.00
<i>Annual fees</i>	\$ 312.00	\$ 312.00	\$ 312.00	\$ 312.00	\$ 312.00	\$ 3,120.00
Conferences	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 8,000.00	\$ 75,000.00
Supplies (copies, textbooks, etc.)	\$ 1,800.00	\$ 1,800.00	\$ 1,800.00	\$ 1,800.00	\$ 1,800.00	\$ 18,000.00
<b>Non-Personnel Total</b>	<b>\$ 10,112.00</b>	<b>\$ 10,112.00</b>	<b>\$ 10,112.00</b>	<b>\$ 19,712.00</b>	<b>\$ 10,112.00</b>	<b>\$ 125,020.00</b>
<b>EXPENSE TOTAL</b>	<b>\$ 262,754.58</b>	<b>\$ 263,784.36</b>	<b>\$ 265,167.43</b>	<b>\$ 276,020.98</b>	<b>\$ 267,707.00</b>	<b>\$ 2,389,831.23</b>

# Appendix B

## Approved Directed Electives

## Approved Electives

### Ethics

- Research Ethics & Protection of Human Subjects (2 Credits, NURS 7101)
- Research Ethics (1 Credit, PCTH 6500)
- Case Studies and Research Ethics (1 Credit, PHIL 7570)
- Seminar: Public Administration and Ethics (3 Credits, PADMN 6870)

### Mathematical Statistics

- Multilinear Models (3 credits, MA 6020)
- Mathematical Statistics (3 credits, MA 6070)
- Time Series Analysis (3 credits, MA 5075)

### Mathematical Biology

- Mathematical Biology I (3 credits, MA 6830)
- Mathematical Biology II (3 credits, MA 6835)

### Computational Methods

- Computational Statistics (3 credits, CS 6130 or STAT 6969)
- Natural Language Processing (3 credits, CS 6340)
- Machine Learning (3 credits, CS 6350)

### Health Economics & Econometrics

- Health Economics (3 credits, Econ 6190)
- Econometrics I (3 credits, 7800)
- Econometrics II (3 credits, 7801)

### Genetic Epidemiology

- Genetic epidemiology I (2 credits, MDCRC 6320)
- Genetic epidemiology II (3 credits, MDCRC/PHS, Course Under Development)
- Statistical genetics (3 credits, Human Genetics, Course Under Development)
- Cancer Epidemiology (3 Credits FPMD 6302)

### Biomedical Informatics

- Foundations of Healthcare Informatics (3 credits, BMI 6010) ONLINE
- Foundations of Bioinformatics (2 credits, BMI 6020)
- Biomedical Information Retrieval (2 credits, BMI 6470)
- Population and Public Health Informatics (1.5 credits, BMI 6701) ONLINE
- Population and Public Health Informatics (0.5 credits, BMI 6702) Lab
- Clinical & Public Health Informatics Terminologies and Standards I (1.5 credits, BMI 6120)

Grant Writing (2.5 credits, MDCRC 6450)

Health Systems and Epidemiology for Students in Biostatistics Track

- Health Systems Research Methods (PHS, Under Development)
- Epidemiology II (FP MD 7300)

Biostatistics Methods for Students in Health Systems Track

- Quantitative Population Health Sciences II (3 credits, PHS Under Development)

Public Policy

- Public Health Administration and Policy (3 credits FPMD 6400)
- Health Policy and Leadership (3 Credits, FPMD 7410)
- Health Policy (3 credits, PADMN 6321)
- Policy Analysis (3 Credits, PADMN 6323)

Global Health

- International Public Health Issues (3 Credits, FPMD 6502)
- Global Health (3 Credits, FPMD 6530)
- Issues in Underserved (3 Credits, NURS 7515)

Health Communications

- Foundations of Health Communications (COMM 6115)
- Health, Communication, and Culture (3 Credits, COMM 6116)
- Health Campaigns & Media (3 Credits, COMM 6117)
- Issues in Organizational Communication (3 Credits, COMM 6170)

Sociology

- World Population Policies and Problems (3 Credits, SOC 6657)
- Medical Sociology (3 Credits, SOC 6720)
- Global Health (SOC 6674)

Women's Health

- Issues in Women's Health (3 Credits, NURS 6520)
- Global Issues in Women's Health (3 Credits, NURS 6555)

Comparative Effectiveness Research

- Health Services Research (3 Credits, MDCRC 6460)
- Methods in Comparative Effectiveness Research (3 Credits, MDCRC 6270)
- Patient Centered, Community Engaged Research (3 Credits, MDCRC 6460)

Clinical Trials

- Design and Implementation of Clinical Trials (MDCRC 6040)
- Bioethical Issues in Clinical Research (MDCRC 6430)

- Cost Effective Analysis (MDCRC 6120)
- Intro to Decision Analysis (MDCRC 6130)
- Survey Methods (MDCRC 6220)

# Appendix C

## Letters of Support

# Letters of Support

*(listed in order mentioned on pages 13-14)*

Vivian Lee, Dean, School of Medicine\*

Mary Beckerle, CEO and Director, Huntsman Cancer Institute

Michael Magill, Chairman, Family and Preventive Medicine\*\*

Steve Alder, Division Chief, Public Health\*\*

John Hoidal, Chair, Internal Medicine

Lisa Cannon-Albright, Division Chief, Genetic Epidemiology

Wendy Chapman, Chair, Biomedical Informatics

Diana Brixner, Chair, Pharmacotherapy

Edward Clark, Chair, Pediatrics

Don McClain, Director, Center for Clinical and Translational Science

Robert Mayer, Chair, Family and Consumer Studies

Lina Svedin, Acting MPA Director, Associate Chair, Political Science

Kim Korinek, Chair, Sociology

Debra Scammon, Director, Master of Healthcare Administration Program

David Perrin, Dean, College of Health

Patricia Morton, Dean, College of Nursing

Hank Liese, Interim Dean, College of Social Work

Joanne Yaffe, Professor, College of Social Work

Jean Shipman, Director, Spencer S. Eccles, Health Sciences Library

Peter Trapa, Chair, Mathematics

Dr. Carrie Byington, Associate Vice President for Faculty and Academic Affairs

*\*Cover Memorandum*

*\*\*Joint Letter signed by Michael Magill and Steve Alder*



February 2, 2014

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah



**HUNTSMAN**  
CANCER INSTITUTE  
UNIVERSITY OF UTAH



MARY C. BECKERLE, PH.D.  
CEO AND DIRECTOR  
RALPH E. AND WILLIA T. MAIN  
PRESIDENTIAL PROFESSOR

2000 CIRCLE OF HOPE  
SALT LAKE CITY, UTAH 84112-5550  
OFFICE 801-581-4485  
FAX 801-585-0900  
mary.beckerle@hci.utah.edu

Dear Dr. Greene:

On behalf of Huntsman Cancer Institute (HCI), I am writing this letter to express my support for the creation of a PhD program in the Department of Population Health Sciences. HCI was among the earliest supporters of this initiative to create a Department of Population Health Sciences in the School of Medicine. A PhD program will be key to the success of the department.

HCI is organized around the theme of cancer genetics and features four robust cancer research programs that span the basic cell biology to cancer control and population sciences. Major goals of our population sciences-focused cancer research is to define genetic risk factors for cancer, explore how best to communicate genetic and genomic information, develop and improve adherence to cancer screening guidelines, and improve patient outcomes by, for example, addressing symptom management, survivorship, and disparities. From the perspective of HCI, the integration of robust population science in the medical research arena is essential to ensure the maximum impact of our work. The research environment created by the department's PhD program is well aligned with HCI's goals and we would look forward to working with the department to create learning experiences for your trainees.

HCI's early support of the establishment of the Department of Population Health Sciences was informed by the knowledge that it will be critical to HCI's mission to integrate strong training within the cancer research efforts. We are excited about the potential for the department to create a framework for development of a central program of advanced graduate training in population health sciences. The availability of such a training program will dramatically enhance HCI's ability to recruit talented cancer population sciences researchers to our community. Population sciences is a major HCI priority for recruitment and we have invested substantial resources to recruit senior faculty in this area. I believe that the establishment of the PhD program will serve as an academic hub for training and research, within the context of health sciences, will be a major attraction for recruitment of top talent in this critical area.

In summary, I want to restate that HCI is in full support of the initiative to establish a PhD program in the Department of Population Health Sciences at the University of Utah. Please let me know if there is any further information I can provide.

Sincerely yours,

Mary Beckerle, PhD  
Ralph E. and Willia T. Main Presidential Professor  
CEO and Director, Huntsman Cancer Institute  
Associate Vice President for Cancer Affairs, University of Utah



January 25, 2015

Tom H. Greene, Ph.D.  
Professor and Interim Chair  
Department of Population Health Sciences  
295 Chipeta Way, RM 1N400  
Salt Lake City, Utah 84108

Re: Letter of Support for Ph.D. Program in Population Sciences

Dear Professor Greene:

On behalf of the Department of Family and Preventive Medicine, we are writing to express support for the approval of the Doctor of Philosophy in Population Health Sciences. The need for advancing the scholarship of health care delivery and managing patients from a population perspective is clear and represents a complement to the public health and primary care emphasis of Family and Preventive Medicine. Creating the proposed doctoral degree provides an opportunity to enhance the graduate offerings within the School of Medicine to address growing challenges in health care transformation with an emphasis on assuring optimal care of patient populations.

The Department of Family and Preventive Medicine represents one of the rare academic units in the US that combines primary care and public health. Through the integration of these health fields, engaging in the scholarship of health care transformation with an emphasis on primary care linked with the health of populations has been a hallmark of the academic contributions of Family and Preventive Medicine. The Department of Population Health Sciences, including the proposed Doctor of Philosophy in Population Health Sciences, contributes a health care systems-based perspective to this endeavor, with ample opportunities for curricular and research collaboration between these two departments.

Critical to the joint success of the Doctor of Philosophy in Population Health Sciences and other graduate programs with closely related missions, including the graduate programs in Family and Preventive Medicine, will be adherence to the commitment stated in the proposal for the Department of Population Health Sciences to “augment and complement [existing academic units’ abilities] to strengthen their education and research programs”. Given the closely related content of the proposed doctoral degree and existing degree programs at both the masters and doctoral levels, particular sensitivity will need to be exercised as the Doctor of Philosophy in Population Health Sciences becomes operational. However, given the breadth of opportunity in this area of scholarship and the clearly designated purpose of this new degree, complementary and collaborative relationships among these degree programs can be attained.

Letter of Support for Ph.D. Program in Population Sciences

Of particular importance in assuring that this proposed degree program provides an academic capacity enhancement is how emphases are crafted. Per the degree proposal, initial emphases of interest include *Health Services Research* and *Biostatistics*, with anticipated pursuit of an emphasis in *Epidemiology* in the near future. While these three emphases are clearly important to the stated purpose of both the proposed doctoral degree and this new department, it is also important to recognize that these academic areas are already represented in existing departments and degree programs. Therefore, it will be critical to clarify that these emphases are being introduced as they relate to the understanding and improvement of patient and population-oriented care from the health care system perspective, rather than representing them as novel additions in their more general form to the academic portfolio of the University of Utah Health Sciences. Support for the approval of the Doctor of Philosophy in Population Health Sciences by Family and Preventive Medicine is based on the commitment by leadership of the Department of Populations Health Sciences that degree and other development will occur with sensitivity to and in cooperation with peer academic programs.

We encourage thoughtfulness in developing the Doctor of Philosophy in Population Health Sciences to insure that its clarified purpose continues to be consistent with the distinct Department of Population Health Sciences roles and that it clearly complements existing graduate education in similar fields. We also encourage making efficient use of existing academic resources as the design of any additional graduate training is developed.

In summary, we are pleased to offer the support of the Department of Family and Preventive Medicine for the development and implementation of the Doctor of Philosophy in Population Health Sciences. Linking with other academic units and finding areas of mutual benefit and collaboration will enhance the impact of this new degree.

Respectfully,



Michael K. Magill, M.D.  
Professor and Chairman, Family and Preventive  
Medicine  
University of Utah School of Medicine



Stephen C. Alder, Ph.D  
Professor and Chief  
Division of Public Health  
University of Utah School of Medicine



UNIVERSITY OF UTAH  
SCHOOL OF MEDICINE

Department of Medicine

February 5, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences PhD Program in the School of Medicine

Dear Tom:

I write in strong support of the creation of a Department of Population Health Sciences PhD Program in the School of Medicine.

The current top priority for the Department of Internal Medicine is to develop a robust health services research program in order to improve understanding of health, and translate population health research findings into policy and practice. To accomplish this, we need colleagues with rigorous methodology training, mentorship and education in epidemiology, health services research, biostatistics and behavioral health sciences. The Department of Population Health Sciences is where the education and training of individuals with these areas of expertise should occur. To wit, we need a strong Population Health Sciences PhD and post-doctoral program.

As we move toward developing the health services research program within our department, one of the key determinants in the success of recruiting new faculty members is the presence of and access to graduate students via adjunct appointments and collaboration to methodologists and experts in areas outlined above. I believe that this will be achieved only by a robust PhD program residing in the Department of Population Health Sciences. Thus, the success of the health services efforts in Internal Medicine is very dependent on a robust Ph.D. program within Population Health Services. Please let me know if I can help in any way.

Sincerely,

A handwritten signature in black ink that reads "John Hoidal".

John R. Hoidal, MD  
Professor of Medicine  
The Clarence M. and Ruth N. Birrer Presidential Endowed Chair  
Chair, Department of Internal Medicine



# The University of Utah

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## Genetic Epidemiology

Division of Genetic Epidemiology, Department of Medicine  
391 Chipeta Way Suite D, Salt Lake City UT 84108-1266  
Phone: 801-581-5070 Fax: 801-581-6052

January 23, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

I fully support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. Utah is in a strong position to be able to develop a unique training program that will produce academic leaders in patient and population-based care who are adept in key areas in the rapidly changing health care delivery system.

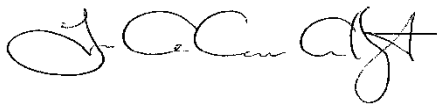
My Division of Genetic Epidemiology is happy to play a role in training and mentoring of students for this new Ph.D. program. We have a long history of teaching and mentoring in the field of Genetic Epidemiology at the School of Medicine. We will provide training in powerful utilization of the Utah Population Database, as well as training in the newest and most powerful tools for appropriate genetic analyses for a wide variety of disorders and diseases. Our group has decades of experience with use of the UPDB to expand our understanding of the contribution of genetics to disease and has played a defining role in the discovery of the major common cancer genes recognized today. In addition we have recently developed new methods for risk estimation based on family history that are already being integrated into national cancer screening guidelines and which we hope can change medical practice and outcomes in Utah for the better. The University of Utah SOM will benefit hugely from expanded training in Genetic Epidemiology; our trainees will learn to use the unique Utah resources to become leaders in the understanding of genetics in population health sciences and be a part of the

leading edge of research that will improve morbidity and mortality for multiple diseases and many populations.

My Division is small in numbers (8 faculty members and 20 staff) but currently collaborates with Intermountain Healthcare, the Huntsman Cancer Institute, and almost every department at the UU School of Medicine. Our impact is only limited by the manpower we have available and the need to support the faculty and staff entirely with research funding. An increase in training and mentoring opportunities in this new program would lead to additional funding opportunities which would lead to expansion of our faculty size, and thus our ability to collaborate further and contribute to medicine more widely.

I thank you for your efforts to date to bring this new Ph.D. Program to fruition. I wholeheartedly support this program and look forward to joining you in this exciting opportunity to expand the image and strength of the University of Utah.

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa A Cannon-Albright". The signature is fluid and cursive, with the first name "Lisa" being the most prominent.

Lisa A Cannon-Albright, PhD  
Professor, Division Chief  
Division of Genetic Epidemiology  
Department of Internal Medicine





The University of Utah

Biomedical Informatics

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421 S. Wakara Way Ste. 140; Salt Lake City, UT 84108  
(801) 581-4080 FAX (801) 581-4297 <http://www.bmi.utah.edu>

February 7, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:


I am writing to offer my enthusiastic support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. As the Chair of the Department of Biomedical Informatics, I have been keenly interested in the discussions leading to the creation of the department and in the development of the PHS PhD curriculum. There is incredible synergy between the two departments, offering research, clinical, and educational collaborative opportunities.

Our research focuses on individuals as well as populations and includes surveillance, decision support, predictive analytics, implementation, and outcome measurement. There is obvious overlap between our goals and the goals of the PHS department. Because of this overlap, I served on the PHS Education Committee and actively participated in the development of the curriculum for the PHS PhD program. We offer several classes relevant to population health sciences. One informatics class will be required for PHS students to help them understand the clinical environments where patients are treated and the source of clinical data sources important for health services and comparative effectiveness research. Directed electives in the PHS PhD program include several classes in biomedical informatics to provide students with a basic understanding of informatics principles that will greatly enhance the training of students in both the biostatistics and health systems research emphases. In addition, the class entitled Analysis of Secondary Data, which is proposed in the PHS PhD curriculum, is a novel 4-credit class being developed jointly by Biomedical Informatics, the Division of Epidemiology in the Department of Internal Medicine, and the Department of Population Health Sciences. This class will use an integrative approach to instruct students in modern methods to extract, process, and analyze secondary data based on concepts from biomedical informatics, epidemiology and biostatistics.

The potential relationship between PHS and BMI is truly synergistic. Just as the PHS program will benefit from informatics classes, our students will benefit greatly from the further rigor

the PHS program will offer for training in statistical methods. Also, the track on Health Systems will be extremely useful for our students to better learn about the health care environment and how research can be translated to operations to help transform health care. Our faculty are enthused about the prospect of bringing additional faculty members to the University of Utah with research focused in PHS and look forward to collaborative opportunities focused on populations.

Sincerely,



Wendy W. Chapman, PhD  
Professor and Chair  
Department of Biomedical Informatics  
University of Utah





UNIVERSITY OF UTAH  
COLLEGE OF PHARMACY  
L. S. SKAGGS PHARMACY INSTITUTE

01/26/2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

I fully support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. Doctoral training in the health science of populations is becoming more important in modern medicine, and health care professionals are eager to improve customer care using the important data newly available in our complex technological world.

As Chair of the Department of Pharmacotherapy, our PhD in Pharmacotherapy Outcomes Research & Health Policy program was approved by the Board of Trustees in 2011. Each year our applicant list increases in numbers, and our first students will be graduating this year with the necessary skills to analyze clinical and economic outcomes from pharmacotherapy. It has been rewarding for our Department to be a part of the program's progress. We have revised many courses and created other courses to ensure the competencies of our students. The proposed PhD in Population Health Sciences will be an important opportunity for educational collaboration (along with our current research collaborations) with the Department of Population Health Sciences, which will be very conducive to an outstanding research environment for both of our student bodies.

Today's effective and cost-effective healthcare transformations will depend on capable researchers in population health, and the University of Utah's reputation in healthcare outcomes will be enhanced by such a program.

Sincerely,

A handwritten signature in blue ink that reads "Diana Brixner".

Diana Brixner, PhD, RPh  
Professor and Chair  
Department of Pharmacotherapy  
Executive Director Outcomes Research Center  
College of Pharmacy  
Director of Outcomes  
Program in Personalized Health Care  
University of Utah

**Department of Pharmacotherapy**

30 South 2000 East, Room 4410

Phone 801-581-5941

Fax 801-585-6160



UNIVERSITY OF UTAH  
SCHOOL OF MEDICINE

Department  
of Pediatrics

 Intermountain  
Primary Children's Hospital

EDWARD B. CLARK, M.D.  
Wilma T. Gibson Presidential Professor  
Chairman, Department of Pediatrics  
Chief Medical Officer, PCH

January 26, 2015

Tom H. Greene, Ph.D.  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

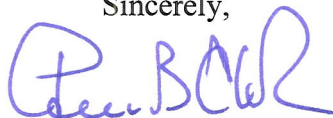
I fully support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine.

The proposed Ph.D. Program will be integral to assisting members of our faculty to improve patient and population-oriented care in an increasingly complex health care delivery system. Several of our faculty members in the Department of Pediatrics have experienced greater success in their research with the unique resources found in the Utah Population Data Bases.

This program will assist in critical recruitment of key faculty members and will provide them collaborative opportunities, which leads to increased faculty enrichment.

In summary, the Department of Pediatrics, and I personally am fully supportive of this proposed program.

Sincerely,



Edward B. Clark, M.D.  
Wilma T. Gibson Presidential Professor  
Chair, Department of Pediatrics  
Chief Medical Officer, Primary Children's Hospital

P.O. Box 581289  
Salt Lake City, Utah 84158 (mailing)

295 Chipeta Way, 2S010  
Salt Lake City, Utah 84108 (campus)  
Phone: 801-587-7415  
Fax: 801-587-7417  
Email: ed.clark@hsc.utah.edu



UNIVERSITY OF UTAH  
SCHOOL OF MEDICINE

January 22, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

I strongly support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. As Co-Director of the Utah Center for Clinical and Translational Science (CCTS), I see several reasons why we need this training program. First, the CCTS offers the degree of Master of Science in Clinical Investigation, and the PhD would provide a further option for those MSCI graduates who desire further professional training in the disciplines related to population health. Second, it will allow the faculty in the new Department and across the campus to include graduate students in their research programs, thus strengthening them. Third, it will allow us to attract more highly qualified faculty as we build Population Health Sciences at the University. Finally, it will provide another pool of individuals to build our programs in translational science and with whom to collaborate.

Sincerely,

*Donald A. McClain*

Don McClain MD, PhD  
Professor of Medicine and Biochemistry  
Director, Center for Clinical and Translational Science  
Associate Vice President for Clinical Research  
University of Utah School of Medicine

**The University of Utah**  
**School of Medicine**  
**Center for Clinical and Translational Science**  
10 N. 1900 East, rm 22  
Salt Lake City, Utah 84112-5890  
Phone (801) 581-6736  
Fax (801) 585-1461



February 4, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

On behalf of the Department of Family and Consumer Studies and its graduate program in Human Development and Social Policy (HDSPP), I offer support for the creation of a Department of Population Health Sciences (PHS) Ph.D. Program in the School of Medicine and fully anticipate that our Department will benefit from and will contribute to its success.

The mandate of the PHS PhD Program to “produce academic leaders in the conduct of research to improve patient and population-oriented care in an increasingly complex health care delivery system” is important and correctly multidisciplinary in its orientation. Accordingly, our own Masters-level graduate program in HDSPP and the faculty who actively participate in it have expertise that could contribute to the PHS program. Some courses that come quickly to mind are our offerings on Child Health Care; Families, Consumers and Health; Healthy Communities; and Demographic Methods. These and related courses, and the faculty who teach them, should be given serious attention as you finalize your curriculum. The need that should be met by the PHS program is the lack of a centralized unit on campus that is addressing, in a fully integrative way, health care delivery. This is inherently complex and requires “all hands on deck” from all disciplines, including the social sciences, to create a robust graduate program.

The PHS PhD Program should provide our Department with the potential to recruit new faculty, increase adjunct faculty appointments, cross list courses, and catalyze joint research opportunities. For this to be most successful and to mesh optimally with our Department, it is our full expectation that the new PHS graduate program will broaden its perspective on health beyond a potentially narrow patient-oriented and health care delivery emphasis by including additional social science perspectives on core principles related to family and community influences.

Sincerely,

*Robert N. Mayer*

Department Chair

**Department of Family and Consumer Studies**

College of Social and Behavioral Science  
225 South 1400 East, Room 228  
University of Utah  
Salt Lake City, UT 84112  
(801) 581-7847  
FAX: (801) 581-5156

4 February 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

I fully support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine.

These students will be trained to take an active leadership role in the research of and development of health care systems, value-based health outcomes and the monitoring of population health trends. This type of research is inherently inter-disciplinary both in how we best conduct this research and in how we spread this knowledge to policy makers, hospital administrators and public health officials. The pace at which health care systems, not only in the United States, but around the world (including China, Japan, India, the European Union) makes it imperative that we conduct comparative research on trends and best practices but also that we take a wholistic view of what shapes individuals, families and communities' understanding and experience of health, wellbeing and quality of life. The establishment of the Population Health Sciences Department was a tremendously insightful and forward-looking decision by the University of Utah and the Board of Regents. The establishment of the department's PhD program is a vital step in making this research possible. It will create pools of well-trained graduate students who, not only will get experience in grant writing and contributing to funded research, but they will have the particular skills necessary to tie together and collaborate across traditional academic divides. Here on campus they will work as a virtual task force, a body of highly motivated smart graduate students and their excellent supervisors, seeking to overcome and move our country and other countries' health care systems and health service provision to a qualitatively different plane.

The Masters of Public Administration students and we as faculty focusing on public management, public service and policy evaluation would see great merit in linking up with these students and researchers to do some of the analysis, design joint projects as well as connecting and translating the Department of Population Health Sciences' research for policy makers, hospital managers and public health officials. Many of our students in the Masters of Public Administration program are already well connected in the public, non-profit and for profit sectors. They are getting a Master's degree to be able to continue to climb the ranks of, among other things, public health organizations as well as local, state and federal

governments. By drawing on and creating new opportunities together with the Population Health Science Departments and their graduate students we can enrich our Master students' experience, enrich our teaching of health policy and changes in health demographic trends and in methods training. We can also provide unique research opportunities for our faculty and bring in more research funding to our college, the College of Social and Behavioral Science. We also know that our vast and long-standing network of alumni can help PHS PhD student gain access to gather data, to do research on site, and to translate what they find into formats and language that policy makers and elected officials will understand and can do something with.

The Population Health Sciences Department has, despite its nascent state has engaged in a rigorous process of seeking input and feedback on the design of their proposed PhD program. This has included sharing drafts of the proposal with me as the acting Director of the Master of Public Administration program and incorporating suggestions I have made. The focus of the department and the content of the proposal they have been circulated was so interesting to me that it got us collaborating on a Transformative Excellence Proposal for a cluster hire on Health Policy and Health Economics that we are submitting to SVP Ruth Watkins in the next few days. The Masters of Public Administration Program is very much looking forward to seeing this department grow and its PhD program get off the ground.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lina Svedin', with a horizontal line extending to the right from the end of the signature.

Lina Svedin

Acting MPA Director  
Associate Department Chair - Political Science



February 4, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

On behalf of the Department of Sociology, I offer support for the creation of a Department of Population Health Sciences (PHS) Ph.D. Program in the School of Medicine and fully anticipate that our Department will benefit from and contribute to its success.

The mandate of the PHS PhD Program to “produce academic leaders in the conduct of research to improve patient and population-oriented care in an increasingly complex health care delivery system” is important and correctly multidisciplinary in its orientation. Accordingly, our own Ph.D. program in Sociology, and in particular our graduate concentration area in Population and Health, have key elements that could contribute to the PHS program. Our faculty members are conducting impactful, health-related research on themes ranging from health disparities, gerontology, neighborhood contexts and health, physical activity and obesity, health care systems and underserved populations. Our Ph.D. curriculum is also highly relevant to PHS. Some courses that come quickly to mind that are pertinent to the proposed PHS Ph.D. program are our offerings on Medical Sociology, Population and Health Principles, Population and Health Techniques, and Global Health. These and related courses and the faculty who teach them should be given serious attention as you finalize your curriculum. The need that should be met by the PHS program pertains to the lack of a centralized unit on campus that is addressing health care delivery. This is inherently complex and requires ‘all hands on deck’ from all disciplines, including the social sciences, to create a robust graduate program.

The PHS PhD Program should provide our Department with the potential to recruit new faculty, provide adjunct faculty appointments, cross list courses, and catalyze joint research opportunities. For this to be most successful and to mesh optimally with our Department, it is our full expectation that the new PHS graduate program will broaden its perspective on health beyond its narrower patient-oriented and health care delivery emphases by including additional social science perspectives on core principles related to social structural, family and community influences as they influence patient populations and health care delivery.

Sincerely,

Kim Korinek, Chair

February 3, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

I fully support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine.

As director of the University's Master of Healthcare Administration program, I see the value of a PhD program in which students with a focus in health services administration and research based in both academic departments and healthcare enterprise management could pursue their interests. I have long felt that such a PhD program would benefit the future of healthcare delivery and research.

A PhD program in Population Health Sciences would add to the attraction of the University of Utah for faculty in a number of the departments in the School of Business and that participate in our joint MHA degrees. Such a department would likely stimulate collaborations in both research and teaching.

Sincerely,



Debra L. Scammon, PhD.  
Emma Eccles Jones Professor of Marketing  
Director, MHA Program





COMMUNICATION SCIENCES  
AND DISORDERS

EXERCISE AND  
SPORT SCIENCE

HEALTH PROMOTION  
AND EDUCATION

NUTRITION

OCCUPATIONAL THERAPY

PARKS, RECREATION  
AND TOURISM

PHYSICAL THERAPY

February 6, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

As Dean of the College of Health, I would like to express my full support for the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. As we have discussed, a top priority of the College is to strengthen its research program focused on the health and well-being of human populations. Much of this research is multi-disciplinary in nature, and is enhanced by the availability of colleagues with rigorous training in areas such as biostatistics and health systems research with orientations towards the population health sciences. Thus, the faculty of the new Population Health Sciences Ph.D. program will constitute an excellent resource for collaboration and methodological expertise for students and scientific investigators within the College of Health. Moreover, opportunities for College faculty to serve as Adjunct faculty in the new department will help to enrich the academic environment and to integrate the research efforts of the College with related research throughout the University.

The Population Health Sciences Ph.D. Program is developing a number of new courses involving research methodology and health systems research that will complement the existing graduate curriculum in the College of Health. Additionally, doctoral students within the College will benefit from new training opportunities that will become available as a result of the creation of the new Ph.D. program.

I am confident that the creation of a Ph.D. program in the Department of Population Health Sciences will enhance the research and teaching programs of the College of Health, and I look forward to the new opportunities for collaboration. Please let me know if I may be of further assistance.

Sincerely,

David H. Perrin, PhD  
Dean and Professor  
College of Health



UNIVERSITY OF UTAH  
COLLEGE OF NURSING

February 4, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Dr. Greene:

As Dean of the College of Nursing, I fully support the creation of a PhD Program in the Department of Population Health Sciences in the University of Utah School of Medicine. Faculty involved in this new program will be a natural source of interprofessional collaboration and synergy for both students and scientists in our college.

Much of the research done by faculty and students in the College of Nursing is population based, so the development of this new organizational unit offers great promise to complement the research in our college. This opportunity includes research in technology-assisted models of care such as the telephone-linked system of care, developed by Distinguished Professor Kathleen Mooney, currently under investigation in several large NIH-supported studies and Dr. Mollie Cummins's AHRQ-funded studies linking Poison Control Centers and the Emergency Departments to improve the handoff of care and outcomes in children and adults. A few of the many examples of other relevant funded research of the College of Nursing faculty are a systems-level intervention to improve pain management for patients in over 300 hospitals, evaluation of interprofessional training on management of care transitions, and clinical decision support for prescribers in pediatric critical care. Further, a growing number of the studies in the College of Nursing utilize "big data" approaches to determine patients at risk for adverse outcomes and the most effective nursing strategies to improve outcomes and reduce costs.

Our students will benefit from this new program in Population Health Sciences as well. Our PhD program emphasizes research immersion for our students and promotes interdisciplinary collaboration and team science. Virtually every current research project in the College of Nursing involves investigators from multiple disciplines. Doctoral students and postdoctoral trainees in the college will benefit from enhanced training opportunities and mentored experiences that will be newly available as a result of this proposed new program.

Sincerely,

A handwritten signature in cursive script that reads "Patricia Gonce Morton".

Patricia Gonce Morton, PhD, RN, FAAN  
Dean and Professor  
Louis H. Peery Endowed Chair  
Robert Wood Johnson Executive Nurse Fellow Alumna

Office of the Dean  
10 South 2000 East  
Salt Lake City, UT 84112-5880  
801-581-8262 – Office

March 25, 2015

Tom H. Greene, Ph.D.  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Dear Dr. Greene:

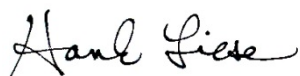
As Interim Dean of the College of Social Work, I fully support the proposed Ph.D. Program in the Department of Population Health Sciences in the School of Medicine. We look forward to exploring and establishing collaborative relationships to the mutual benefit of our College, your Department, the School of Medicine, and the wider University.

Research within the College of Social Work aligns nicely with the Ph.D. Program's focus on health system improvement, patient- and value-based outcomes, and translational investigation of cancer etiology and outcomes. Regarding the latter, two of our faculty currently hold positions within the Huntsman Cancer Institute: Dr. Eric Garland is Associate Director of HCI's Integrative Medicine, Supportive Oncology & Survivorship Program; and Dr. Jaehee Yi is an investigator with HCI's Cancer Control and Population Science Program.

Dr. Garland's research involves RCT's to assess the specific effects of mindfulness training on biopsychosocial aspects of pain-related impairment. He is also Co-Investigator on a grant submitted recently to the Department of Defense to study the moderators and mediators of Brief Cognitive Behavior Therapy to prevent suicide attempts in military personnel. Dr. Marilyn Luptak's research with the Veterans Administration is addressing care management of caregivers of veterans with dementia, and she also explores interventions and outcomes for chronically ill older adults. Dr. Caren Frost explores the health care needs and outcomes of refugee women, and Dr. Dena Ned's research focuses on health disparities among racial and ethnic minorities, with an emphasis on Native Americans.

The opportunities for interdisciplinary collaboration presented by your Ph.D. Program are exciting, and the College of Social Work looks forward to partnering with you in the near future.

Sincerely,



Hank Liese, Ph.D.  
Interim Dean

February 5, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Dr. Greene:

I am writing to express my full support for the creation of Ph.D. Program within the Department of Population Health Sciences in the School of Medicine. As a former chair of and current instructor in the PhD program in the College of Social Work, I see a clear need for transdisciplinary, collaborative programs to train scholars who are prepared to transform our health care interventions and services with research strategies and tools we are just now beginning to operationalize. With creation of this program, the University of Utah will be at the cutting edge of an era of personalized medicine and behavioral health interventions.

I look forward to collaborating with the PHS PhD program to produce systematic reviews of research which will provide clear directions for intervention and implementation trials. As the College of Social Work increases its focus on the evidentiary basis of practice and evidence-based practice and policy decision-making, we will undoubtedly find ways to increase our collaborative efforts to both train future scientists and carry out research protocols which will enhance health care delivery in Utah, in the United States, and globally. I am looking forward to working with the faculty and students of this new program.

Sincerely,



Joanne Yaffe, ACSW, PhD  
Professor of Social Work  
Adjunct Professor of Psychiatry



January 26, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Dr. Greene:

I fully support the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. The Spencer S. Eccles Health Sciences Library is committed to fostering the growth and development of students through the provision of information, teaching life-long learning strategies, and encouraging discovery. We are particularly delighted to support transdisciplinary programs such as this.

Eccles Library faculty and staff provide access to a wealth of information resources and tools designed to support learners, researchers, and educators in biostatistics, health care quality and value, epidemiology, and health systems research. We also offer personalized learning opportunities and literature-based research assistance, plus course-integrated information discovery and management education. Access to collections of the Marriott Library, Quinney Law Library, and a nationwide network of health sciences libraries are available through cooperative agreements and interlibrary loan.

Our faculty embrace the opportunity to interact with faculty and students in the Population Health Sciences Ph.D. Program, and we would be delighted to collaborate on classes teaching information use, searching, or management methodologies.

Again, I am delighted to have this opportunity to express my support for your Ph.D. program's establishment, and I look forward to its success and many rewarding partnerships.

Sincerely,

A handwritten signature in cursive script that reads 'Jean P. Shipman'.

Jean P. Shipman, MSLS, AHIP, FMLA  
Director

February 3, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences Ph.D. Program in the School of Medicine

Dear Tom:

It is a pleasure to express my support for the creation of a Department of Population Health Sciences Ph.D. Program in the School of Medicine. We have met several times over the past few months, so I feel well informed about your plans.

As you know, Ross Whittaker (from the School of Computing) and I have been collaborating on a cluster hiring effort in Data Science. We envision new research directions, new courses, and possibly new degree programs in theoretical and computational Data Science.

The PHS PhD program will complement our efforts. In particular, the curriculum offered by the biostatistics emphasis will take advantage of the existing classes in the Department of Mathematics rather than creating duplicate classes. At the same time, the new classes that you are developing will complement the existing and planned offerings related to the Data Science cluster hiring effort.

Please don't hesitate to get in touch should you need more details.

Sincerely,



Professor and Chair  
Department of Mathematics





UNIVERSITY OF UTAH  
HEALTH SCIENCES

Office of the Associate Vice President for Faculty and  
Academic Affairs

February 3, 2015

Tom H. Greene, PhD  
Professor of Internal Medicine  
Interim Chair, Department of Population Health Sciences  
University of Utah

Re: Proposed Population Health Sciences PhD program in the School of Medicine

Dear Dr. Greene,

As Associate Vice President for Faculty and Academic Affairs for the Health Sciences, and Vice Dean Academic Affairs and Faculty Development for the School of Medicine, I fully support the creation of a Department of Population Health Sciences (PHS) PhD program in the School of Medicine. This program is unique in that it will focus on graduating academic researchers with a specific focus on populations related to health-care systems. The program will collaborate with and complement existing graduate programs. Additionally, with the focus on team-based scholarship, the PHS department will use collaboration as a foundation to advance knowledge that is vital for our health system.

By leveraging current resources within the University of Utah, particularly the career development and educational programs that have proven to be outstandingly successful, students, fellows, and faculty will be able to collaboratively interact and develop new projects. In this manner, faculty researchers will help train junior investigators and the paradigm of collaborative research will be strengthened and allowed to evolve. The unique atmosphere of collaboration between the Departments of Biomedical Informatics, Family and Preventive Medicine, Pharmacotherapy, Mathematics, Economics and Political Science, and in the School of Computing, the College of Nursing, the Master of Science in Clinical Investigation (MSCI) and Master of Statistics (MSTAT) partners will make for a strong program.

As Vice Dean for Academic Affairs and Faculty Development, my efforts are directed towards career development for faculty members and for students. This program compliments and expands those efforts and I am committed to supporting this program as it provides graduate students opportunities to receive training and become involved in multi-disciplinary and collaborative research. I anticipate that this will provide great benefit in the efforts to improve healthcare in our region and nationally.

Sincerely,

A handwritten signature in black ink that reads "Carrie Byington".

Carrie L. Byington, MD  
H.A. and Edna Benning Presidential Professor of Pediatrics  
Associate Vice President for Faculty and Academic Affairs  
Co-Director Utah Center for Clinical and Translational Science, Health Sciences  
Vice Dean Academic Affairs and Faculty Development, School of Medicine  
University of Utah

HSEB 5515  
26 South 2000 East  
Salt Lake City, UT 84112  
(801) 585-6283

Appendix D  
School of Medicine Faculty Vote



# New College Council Charter and PhD Program 2015 Brief Report

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Generated: February 27, 2015 5:10 PM

## Campaign Settings

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Access Type: Invited

Anonymous: Yes

## Invitee Participation

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Total Invitees	Invitees Completed Questionnaire	Percent Completed
568	288	51%

## Page 1: Introduction

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### Page 2: College Council Charter

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1. College Council Charter  
*Invitees Answered = 288*  
*Avg. Choice Number = 1.18*

1. Approve	2. Disapprove	3. Abstain	4. Comments
89% (256)	6% (16)	5% (13)	1% (3)

### Page 3: PHS Department to establish a Ph.D. Program

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2. PhD Program in Population Health Sciences  
*Invitees Answered = 288*  
*Avg. Choice Number = 1.13*

1. Approve	2. Disapprove	3. Abstain	4. Comments
92% (265)	3% (10)	4% (11)	1% (2)

Appendix E  
Program Offerings in the Pacific 12  
Conference

**University of Arizona**

Biostatistics M.S., Ph.D.

Statistics M.S., Ph.D.

Statistical Informatics PhD

**Arizona State**

Statistics M.S., Ph.D.

Health Care Innovation MHI

**Cal**

Biostatistics M.A., Ph.D.

Health Services & Policy Analysis Ph.D.

Statistics M.A., Ph.D.

**Oregon State University**

Statistics MA, MS, PhD

**Stanford**

Health Policy M.S., Ph.D.

Health Services Research M.S.

Statistics M.S., Ph.D.

**UCLA**

Biostatistics M.S., MPH, Ph.D., Dr.PH.

Statistics M.S., Ph.D.

**USC**

MSTAT

**University of Washington**

Biostatistics MPH, M.S., Ph.D.

Health Services MPH, M.S., Ph.D.

Statistics M.S., Ph.D.

**Washington State**

Statistics M.S.

# Appendix D

## School of Medicine College Council Vote

**Subject:** Results - SOM College Council e-Vote

**Date:** Thursday, March 10, 2016 at 11:48:52 AM Mountain Standard Time

**From:** JANETTE M CUNDEY

**To:** Alfred Cheung, Antoinette Laskey, BRADLEY PAUL MEYER, Caroline Milne, Carrie Byington, Charles Saltzman, Christy Porucznik, Dean Y Li, Debra Simmons, Ed Clark, Frederick G Strathmann, Harriet Hopf, Heidi Schubert, Jennifer Garvin, Jennifer Leiser, Jody Rosenblatt, John Langell, Jon-Kar Zubieta, Katherine Kendall, Kathryn B Moore, Maureen Murtaugh, Michelle Hofmann, Monica L Vetter, Nikki Mihalopoulos, Peter Jensen, Ravi Ranjan, Ricky Chen, Robert Stephenson, Sam Finlayson, SATOSHI MINOSHIMA, Scott Youngquist, Wayne Samuelson, Wes Sundquist, Will Lowrance, John Zone

**CC:** Janis Evanoff, Tana Gaia, Monica Bailey, Monica Boice, Jane Griffith, Lisa Marley, Allison Boyer, Sara Allen, Marilyn Burton, Kim Clark, SUSANNA KAZARYAN, Michelle Briggs, Anne Marie Lind, Cynthia Best, JANETTE M CUNDEY, Lauren Kirwan, Piikea Akimseu

Hello SOM College Council Members,

I would like to thank those of you who took part of this election, as we met our quorum.

Result of the SOM College Council e-Vote:

The Minutes of the April 2015 meeting were approved, no discussion requested. (23/0/2)

The Population Health Sciences Proposal to establish its third Ph.D. emphasis in clinical and molecular epidemiology was approved, no discussion requested. (25/0/0)

Thank you,

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