

Proposal to create a new Master of Science and Doctoral Degree

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Executive Summary
MASTER OF SCIENCE (MS) AND DOCTORATE (PhD)
POPULATION HEALTH SCIENCES (PHS)

Population health sciences (PHS) is the body of scientific disciplines that examines health outcomes, underlying determinants of health, and disease states in populations; PHS studies how these factors are influenced by multiple interrelated causes including geography, ethnicity, employment, and healthcare systems. Improving the health of a population requires a multi-faceted approach that examines the underlying causes of health and disease; uses data from environmental, social, behavioral, physical/ biological, and genetics sources; and informs policies that shape access to high quality healthcare. In line with our departmental mission statement and strategic priorities, our educational programs will focus on the fields of (1) epidemiology, (2) health services research and implementation science, and (3) measurement science. These three fields will work synergistically to provide a solid methodological and analytical foundation. This interdisciplinary effort is aligned with the University's strategic plan, *Together Duke*, and with the *Duke Health Strategic Framework*.

The Institute of Medicine sees a need for individuals trained in interdisciplinary health science and has “a vision for creating outstanding scientists who can take knowledge, theory, and methods from diverse disciplines and work with interdisciplinary teams to address complex population health issues.” The IOM proposes training and education with a deep commitment to inter- and/or trans-disciplinary science that combines discipline-based theories, methods, and knowledge to solve scientific questions.¹

The educational programs in the Department of Population Health Sciences (DPHS) will prepare the next generation of scientists to integrate knowledge, theory, and tools from multiple disciplines to develop a broad understanding of the intertwined pathways that produce health and health disparities, and use this knowledge to find solutions that are more effective. The program will also educate scientists to meet the current and future needs of the university and larger community, giving them the skills to develop new methods and evaluate models of care delivery, implement these findings, and engage a variety of stakeholders. To do this, we will leverage Duke University's multidisciplinary expertise, including but not limited to, health services research, health policy, public health, global health, epidemiology, behavioral science, measurement science, health economics, clinical informatics, and implementation science. We will foster collaboration across disciplines, centers, institutes, clinical departments, and the University. The educational programs will add value to existing scientific and educational efforts and expand the reach of Duke University and the School of Medicine locally, nationally, and globally.

The Department will offer a Master of Science and Doctor of Philosophy.

Intellectual vision

PHS is the body of scientific disciplines dedicated to the rigorous study of the distribution and determinants of health and disease states in the population. PHS utilizes an approach to health that addresses a broad range of factors impacting health on a population level, particularly focusing on reducing health inequities among population groups by exploring factors such as the environment, social structures, and resources distribution.

¹ National Research Council. 2015. *Enhancing the Effectiveness of Team Science*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/19007>

Through coursework and collaborative research, we will train students to employ rigorous scientific and analytic methods to identify the most effective ways of preventing and treating diseases and disorders, reducing the burden of morbidity and early mortality, and promoting population health.

The Department of Population Health Science's educational mission will prepare the next generation of scientific leaders and innovators by educating them in the advancement of population health through the discovery and translation of knowledge into policy and practice. Our graduate program's interdisciplinary approach will combine strong methodological research skills with basic biological, epidemiological, social and behavioral, and health services constructs from a population-based focus.

We will fulfill the mission by educating learners to:

- Use population-based methods to understand and address health and disease and their determinants.
- Conduct research with the highest scientific rigor and ethical standards and according to the needs/values of the research participants.
- Critically evaluate scientific evidence and apply it to improve population health.
- Develop and enhance methods and analytic techniques that examine population health issues and implement solutions.
- Think critically and solve problems across disciplinary domains.
- Disseminate population-level solutions through education and policy efforts.

To educate students, we will leverage technical tools from a variety of quantitative and qualitative disciplines that connect our students to data-driven inquiry. In addition, our graduates will have an understanding of medicine, social and behavioral research, and health services research, along with the skills to communicate effectively with various stakeholders including researchers, research participants, clinicians, and policy makers. Examples of specific projects our graduates might undertake, to differing levels in each program, include:

- The implementation and evaluation of a North Carolina Medicaid-supported sickle cell self-management program to improve pain management and reduce use of the emergency room.
- Working with a local primary care clinic to conduct a needs assessment of patients, providers and administrators to improve health care use and reduce unnecessary emergency room visits.
- Assessment of the burden of opioid dependency on state and federal agencies.
- Develop a comprehensive set of outcomes to measure disease burden and response to treatment in a rare pediatric disease population.
- Design and evaluate a process for broad consent to research in a health care system that promotes patient respect, patient privacy, and research productivity at the same time.
- Identify the cognitive causes of medical errors in an Emergency Department.

Our vision of interdisciplinary and applied methodology is the impetus for our proposed degree curriculum along with a complementary model for advancing university-wide engagement and cross-departmental training in other Duke departments (e.g., Biostatistics, Medicine, Economics, Psychology), schools (e.g., Public Policy, Nursing), centers (e.g., Margolis Center for Health Policy), and institutes (e.g., Global Health, Social Sciences Research Institute). To

accomplish this, we will cross-list courses so other graduate programs at Duke can leverage our courses, and share class space with students interested in taking our courses.

I. Rationale for the Program

I.a. MS and PhD Programs as Part of the Research and Teaching Mission of the Department of Population Health Sciences

The Department of Population Health Sciences is a basic science department and the academic home for School of Medicine faculty with doctoral training in public health, health services research and policy, epidemiology, implementation science, behavioral health sciences, and other related disciplines. The department comprises both tenured and non-tenured faculty positions. Secondary appointments in the Department of Population Health Sciences will be available to clinical faculty.

The Department of Population Health Sciences is differentiated from other Duke entities by its multidisciplinary focus on developing, evaluating, and intervening on approaches that address the determinants of health and optimize the health and well-being of populations. With a strong connection to the Duke University Health System, the program will create a living laboratory for health services research, implementation science, and health policy analysis. Signature research initiatives will accelerate that connection by using methods to address scientific questions that are of interest to the health system and generalizable beyond Duke.

The teaching and research missions are at the heart of the department. As a new department with no current degree programs, the MS and PhD programs will serve as the foundation of the teaching mission.

I.b. Program Justification: Benefits to Students, Faculty, and Duke

Consider these facts: The US spends more per capita on health than any other country,² yet life expectancy is markedly lower than other developed nations. Seven out of 10 deaths among Americans each year are from chronic diseases. Heart disease, cancer, and stroke account for more than 50 percent of all deaths each year.³ Other causes of death are also population health issues, including unintentional injury, substance misuse and abuse, and infectious disease.⁴

Issues related to population health are among the most challenging that our society faces. Indeed, population health is highlighted in *Together Duke* as one of three strategic areas in which Duke intends to build given its societal relevance, Duke's strong internal capacities, and its alignment with Duke's global strategies. For students, the proposed programs will arm them with theoretically grounded, applied, and pragmatic interdisciplinary approaches to solve those challenges. Duke University has many outstanding faculty researchers engaged in population-health related disciplines, yet no current program leverages these researchers in training the next generation of population health scientists. Population health sciences is fundamentally multidisciplinary, and no training program exists that can synergize collaborations across Duke University to prepare students for population health careers. The new department of PHS at Duke is the best place to house such program.

² Organisation for Economic Co-operation and Development. "Health Expenditure and Financing." OECD, <http://stats.oecd.org/Index.aspx?DataSetCode=SHA>, 14 August 2017.

³ Heron M. Deaths: Leading causes for 2014. National vital statistics reports; vol 65 no 5. Hyattsville, MD: National Center for Health Statistics. 2016.

⁴ Heron M. Deaths: Leading causes for 2014. National vital statistics reports; vol 65 no 5. Hyattsville, MD: National Center for Health Statistics. 2016.

I.b.i. Benefits to students

The need for population health sciences has become increasingly clear, and improving the value, access and quality of care requires a scientific workforce that is skilled in the development, dissemination and implementation of strategies to improve health. Thus, the proposed Master of Science and Doctoral program in Population Health Sciences will develop highly trained students and scientists capable of moving science into practice using quantitative/qualitative methods. Beyond investigating the broad determinants of health, the programs will train scholars in qualitative and quantitative methods to advance the evaluation, adoption, uptake, acceptability, affordability, fidelity, and sustainability of proven-effective interventions while using established implementation frameworks and engaging key stakeholders to influence health outcomes.

Specifically, our programs will train and prepare students to:

- Integrate population-level thinking in addressing health and disease.
- Critically evaluate scientific evidence and its potential impact on populations.
- Apply population-level strategies in health promotion, clinical care, research, teaching, and health policy efforts.
- Conduct research according to the highest scientifically rigorous and ethical standards and serve the needs/values of the populations with which they interact.
- Understand the ever-changing healthcare landscape.
- Appreciate the importance of stakeholder engagement.
- Learn how to develop and evaluate new models of healthcare delivery.

This set of skills will allow student to compete successfully for impactful jobs in a rapidly changing healthcare environment.

I.b.ii. Benefits to Faculty

As noted in *Together Duke*, Duke University currently has many outstanding faculty researchers making novel and impactful scientific contributions in the population health sciences, yet no current program leverages these researchers in training the next generation of population health scientists. The proposed academic programs will amplify those contributions through training and workforce development.

Specific benefits to faculty include:

- Opportunities to engage in the teaching mission of the department.
- Collaborations with students that will support and increase the impact of research findings.
- Contribute to their fields through training and workforce development.

I.b.iii. Benefits to Duke

Population health is one of three strategic areas highlighted for development in *Together Duke*. Given the many outstanding faculty members and deep interdisciplinary strengths, Duke has a unique opportunity to lead in training the next generation of population health scientists. Both the MS and PhD programs increase Duke's prestige by creating a generation of scientists who

are uniquely prepared to address major population health challenges.

Specific benefits to Duke include:

- PhD program will complement other Duke programs with terminal Master's degrees (e.g., Global Health, SSRI), allowing students to continue their training at Duke.
- Expand course offerings for existing programs through cross-departmental collaborations.
- Other departments and programs can financially benefit from collaborations through course cross-listing and sharing instructional costs.
- Increase intellectual collaborations and spillovers between students who study within the larger population health sciences landscape at Duke.
- Support strong university-wide partnerships, particularly with the Duke Global Health Institute, the Duke Clinical Research Institute, the School of Nursing, the Duke Margolis Center for Health Policy, as well as with other departments in the School of Medicine.

II. Description of the MS and PhD Programs

The MS and PhD degree programs will:

- Prepare students to investigate, address, and solve 'real world' healthcare problems.
- Provide students with analytical and methodological skills that can be applied to emerging and changing approaches to study design (e.g., adaptive design, step-wedge design) as well as more traditional methods (RCT).
- Focus on identifying the problem, formulating the question, and using diverse methodology to evaluate and implement in the face of uncertainty.
- Equip students with a multidisciplinary skillset anchored in project-based experiences to succeed in the growing interdisciplinary healthcare environment.

II.a. Strategic Objectives and Educational Goals for the MS and PhD Programs

Core competencies for either a Master of Science in Population Health Sciences or a PhD in Population Health Sciences should include a clear understanding of areas in health services research, epidemiology, and measurement science. We have used published core competencies in health services research and competencies as defined by the Council on Education for Public Health (CEPH) to develop our competencies for Population Health Sciences. The specific competencies differ for the MS and PhD programs, but all fall in the domains of knowledge, research methods, analytic skills, research planning, policy and systems, leadership, and communication (see Table 1).

Table 1. Core Competencies of the MS and PhD in Population Health Sciences.

Master's	PhD
Foundational Knowledge in Population Health Sciences	
Understand the organization, structure, and function of healthcare systems across state, national and international settings	
Master the concepts of health as a product of factors operating at multiple levels in dynamic ways over time	
Discuss health and illness from a population perspective	Understand and apply foundational knowledge and key theories in population health sciences

Master's	PhD
	Skilled at using various metrics used to measure population health status and disparities
Evidenced-Based Population Health Sciences & Research Methods	
Demonstrate familiarity with foundational concepts in population health sciences	
Analyze the strengths and weaknesses of a variety of research designs	
Show introductory knowledge on a range of population health sciences disciplines	Shows in-depth expertise in at least one concentration (e.g., Measurement Science, Epidemiology, Health Services Research)
Selects appropriate interventional, observational, or qualitative study designs	Selects appropriate interventional, observational, or qualitative study designs
Interpret research results of data analysis for population health sciences research, policy, or practice	Critically integrates multiple disciplines in designing and carrying out research on population health.
	Pose important population health sciences research questions
	Use or develop a conceptual model and theories to specify study constructs
	Display a mastery of applying study methodology and critical problem solving to a breadth of settings and situations
Quantitative and Analytic Skills	
Analyze quantitative and qualitative data using appropriate techniques and software	
Understand the basic analytical principles and their practical importance	Use appropriate analytical methods to delineate causal inferences
Understand the value of data quality, data management, and reproducibility	Know how to collect primary data obtained by survey, qualitative, or mixed methods
Know how to assemble secondary data from existing public and private sources.	Know how to assemble and link secondary data from existing public and private sources.
Understand appropriate methods for data presentation	
Research and Program Planning and Management	
Ensure ethical and responsible conduct of research	
Demonstrate an ability to develop an applied project	Demonstrate an ability to lead an independent research project
Design a population-based policy, program, or project	Write research-focused grant proposals
Explain basic principles and tools of resource management	Implement research protocols
General understanding of managing/budgeting projects	Ability to manage and budget research projects
Systems Thinking and Policy in Population Health Sciences	
Apply systems thinking tools to a public health issue	
Understands the basics of the policymaking process.	
Discuss and assess multiple dimensions of the policy-making process, including the roles of ethics and evidence	
Propose strategies to identify and engage stakeholders in coalitions and partnerships	Able to engage multiple stakeholders in the design and execution of a study to ensure in order to speed innovation and improve acceptability by end-users

Master's	PhD
Evaluate policies for their impact on population health	Evaluate policies for their impact on population health
Leadership and Team Practice	
Demonstrate an ability to equitably collaborate with multiple stakeholders	
Apply principles of leadership, governance and management	
Work collaboratively in teams across disciplines	
	Lead interdisciplinary teams and/or projects
Communication and Knowledge Transfer	
Communicate with practitioners, policymakers, the media, and other relevant audiences about findings and significance of research	
Summarizes and communicates the importance of a body of research for relevant audiences	
Understands how to engage networks, knowledge brokers, social media, and other avenues to disseminate research	
Select communication strategies for different audiences and sectors	Evaluate how potential end-users of one's research prefer to access and use those research findings

Students will participate in professional development seminars and experiential projects (i.e., practicums) with Duke University Health System and other healthcare organizations, community agencies, payers, government agencies, or the biomedical industry. The MS degree will include an individual, rigorous, applied thesis project working on a relevant population health topic.

Including the MS skills listed above, the PhD program will build upon the overall mission and strategic priorities of the departments and offer concentrations in:

- Epidemiology
- Measurement Science
- Health Services Research and Dissemination and Implementation Science.

Doctoral graduates will be prepared to independently conduct research in the above concentrations, and will master study methodology (e.g., both experimental and quasi-experimental) in population health sciences, including analyzing the distribution and determinants of health and disease, developing, implementing and evaluating health policies and systems of care to improve the health and quality of life of populations. To formalize their mastery, doctoral students will have research assistantships, an opportunity to teach, and a rigorous, dissertation project that researches a relevant topic in one of the three primary concentration areas.

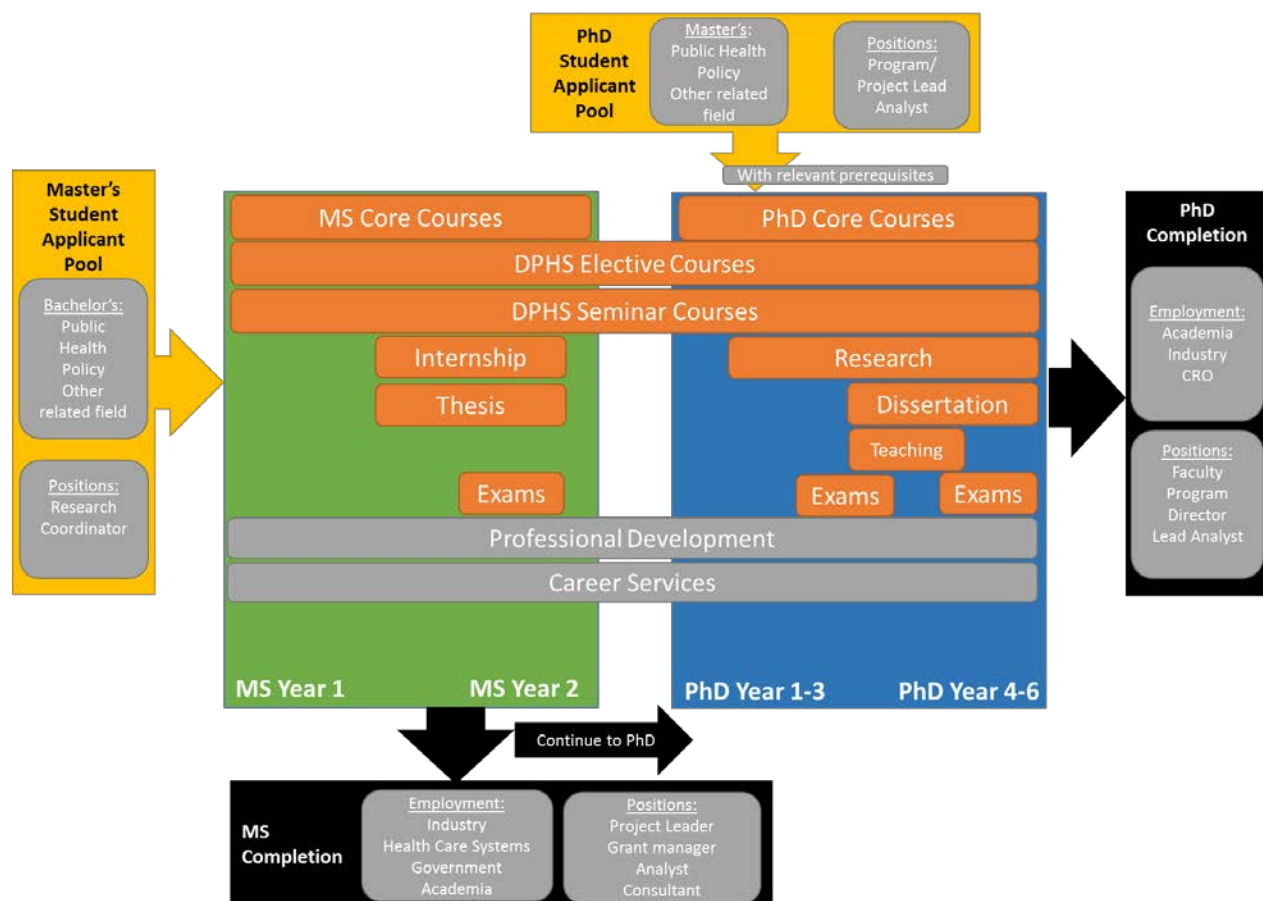
Areas of Excellence

The educational programs will have unique, distinguishing characteristics including:

- Expert, multidisciplinary, faculty members
- Funded fieldwork opportunities
- A rigorous, applied research thesis
- A flexible, tailored, curriculum
- A focus on applied, relevant research and skills
- A diverse cohort of students
- Professional development support including teaching and grant/proposal development

The MS in Population Health Sciences will be a two-year program, while the PhD in Population Health Sciences will be a four to six year program, depending on the student and whether they enter with relevant prerequisites. The programs will feature core, elective, and seminar courses, along with direct internship and research experiences, a written thesis, and examinations. Each degree stands alone, but students completing the MS will be prepared to enter our PHS PhD program or another related PhD program. Figure 1 shows the relationship between the two programs. We present the requirements, curriculum, and other information about each program in turn.

Figure 1: Requirements and flow of the Department of Population Health Science MS and PhD programs.



II.b. Degree requirements for the Master of Science

MS degree requirements include

- coursework
- applied practicum
- Capstone project (internship or mentored research experience, followed by thesis or master's paper)
- written comprehensive exams.

Courses. Coursework includes 40 units over four semesters, including required Graduate School training in Academic Integrity and Responsible Conduct of Research (AIRCR).

Course requirements include (detailed in Table 2):

- 4 courses in applied analytic methods (2 core courses with labs and 2 electives)
- 2 foundational courses in population health sciences
- 2 courses in population health sciences research methods and study design
- 2 seminar courses in professional development
- 2 general electives

In the above courses, 6 new core PHS courses will be created (and available to all Master's degree students at Duke): 2 courses in applied analytic methods for PHS, 2 courses in PHS research methods and design, and 2 courses focusing on topics in PHS.

The courses are described in detail in the next section.

Applied practicum. The applied practicum will be a group-based, real-world problem-solving experience. In this model, individuals or units within the healthcare system will bring to the program specific questions they need answered. These projects will be time-limited and of an appropriate size for students. An example problem such as "What is the impact of a fall reduction program in the emergency room?" Students will work as a group to identify the information needed, analyze data, and present results. We anticipate the healthcare system will identify approximately 2-4 healthcare challenges per year that students will work on.

Capstone project. The Capstone project will include an experience selected by the student that is approved by the Student's mentor and the PHS graduate program. It will be **either** (1) an internship in either an academic or non-academic setting (e.g., healthcare system, insurer, industry), or (2) a research experience mentored by a Duke faculty member. Students selecting an internship will complete a Master's Paper for their final Capstone project, while those choosing a mentored research experience will complete a research-focused thesis. A thesis will be formatted as a formal research study of a problem with methods, results, conclusions will the goal of being publishable quality and will be supervised by a DPHS faculty member.

Comprehensive examinations. Written comprehensive examinations will assess mastery of course content.

II.c. Curriculum for the MS

The following table shows the sequence of courses and learning experiences for the Master of Science in Population Health Sciences.

II.d. Brief descriptions of courses and learning opportunities for the MS

II.d.i. Core MS courses

The new core courses for the Master of Science are described briefly in Table 2. Appendix A includes full descriptions of all courses and electives.

II.d.ii. Analytic Elective courses

The Master of Science program requires two analytic elective courses and two general elective courses. The doctoral program requires one general elective course and one minor track courses.

Analytic electives. Our department will offer some electives for our MS and PhD students. Additionally, there are currently over 45 courses offered at Duke that would meet the analytic elective requirement and we plan to crosslist in our department (see Appendix A for potential electives and courses we may crosslist). Courses are thematically organized across core domains of Health services research, implementation science, comparative effectiveness, cost effectiveness, measurement science, epidemiology, statistics, and data science. Additionally, MS students may choose to take PhD-level courses within PHS to satisfy the analytic elective.

Table 2: Course Sequence for Population Health Science Masters of Science

Year 1	Fall (10.5 units)	Spring (10.5 units)
	PHS 500 Applied Analytic Methods for Population Health Sciences I (3 units)	PHS 501 Applied Analytic Methods for Population Health Sciences II (3 units)
	PHS 503: Introduction to SAS Programming for Population Health Sciences (1 unit)	PHS 504: Introduction to R Programming for Population Health Sciences (1 unit)
	PHS 505: Topics in Population Health Sciences I (3 units)	PHS 506: Topics in Population Health Sciences II (3 units)
	PHS 507: Population Health Sciences Research Methods and Study Design I (3 units)	PHS 508: Population Health Sciences Research Methods and Study Design II (3 units)
	PHS 509: Population Health Sciences Professional Development I (0.5 unit)	PHS 510: Population Health Sciences Professional Development II (0.5 unit)
Year 2	Fall (10 units)	Spring (9 units)
	Analytic Elective I (3 units)	Analytic Elective II (3 units)
	General Elective I (3 units)	General Elective II (3 units)
	Population Health Sciences Applied Practicum (1 unit)	
	Capstone Project (3 units)	Capstone Project (3 units)

II.d.iii. General Elective courses (MS)

General Elective Courses. These courses may be within or outside PHS (see Appendix A). We will also offer a new concentration track taken as electives. These classes are currently not available at Duke but do have faculty instructors identified, and will be made available to other Duke graduate programs.

II.d.iv. Applied Practicum (MS)

The practicum for the MS occurs in the fall semester of year 2 and is facilitated by two faculty members per small student group. This will be a group-based project using a real-world case problem. Students will use knowledge and analytic skills acquired in year 1 to conceptualize and propose a solution to the problem. Example topics include:

Examining the effects of a hospital-based intervention.

Implementation of a community-based program.

Examining in a large pharmacy benefit management company an adherence rate for a particular drug class

II.d.v. Capstone Project (MS)

All MS students will require a Capstone project, which will be **either** (1) an internship in either an academic or non-academic setting (e.g., healthcare system, insurer, industry), or (2) a research experience mentored by a Duke faculty member.. We will have someone employed by the Department identifying potential internships/research experiences and supporting students during the experience.

Internship/ Master's Paper. The internship experience will be structured throughout year 2 of the program. Students will have a specific project that includes formal consulting with an organization whose work is relevant to population health sciences. The Master's Paper will be required to describe a complete research project, even if conducted as part of a team, and cannot be a simple description of an internship/research experience. The Master's Paper will typically have less focus on data analysis and is less likely to result in a publication.

Mentored Research Experience/Thesis. For students with research career goals or an intention to enter into a PhD program, the internship may be part of a research project mentored by a PHS faculty member, and may include primary data collection and/or data analysis.

The thesis presents the project conducted during the research experience, describing the conduct and results of a research project. The thesis should resemble a publishable manuscript but it is not required to publish the thesis for graduation.

Whether the student chooses an Internship or a Mentored Research Experience, all MS students will be supervised by a DPHS faculty member, with two additional readers, all of whom must approve the final work. All papers and theses will be evaluated on the following criteria: (1) identification of an important population health problem; (2) development of a research plan or evaluation approach to address the problem; (3) implementation of rigorous research methods or evaluation plan; (4) presentation of findings. All theses must be problem-focused, and cannot be simply descriptions of an internship experience.

II.e. Distance-based learning opportunities (MS)

The MS program will not rely on technology-based distance learning.

II.f. Internship/Research Experience (MS)

We anticipate that many MS students will choose an internship with an outside organization. In order to facilitate this, we will have a full time coordinator to facilitate this integral part of the Master's program. Since the application has been under review, the following companies have

agreed to provide internship positions: GlaxoWelcome, Expresscripts, CoverMyMeds, Sanofi, Community Care of North Carolina, Duke Health System, and the Duke Center for Health Data Science. The administrative coordinator will ensure the internships are meeting program requirements and that students are achieving their goals at appropriate times. Internship/research experiences will vary, but all must include a project sufficient to meet the requirements of the MS thesis.

II.g. Student participation in independent and mentored study (MS)

All students in the MS program will participate in an independent project as their Capstone project. MS students will receive faculty mentored experience on both components of their Capstone Project (internship/research experience and subsequent thesis or master's paper).

II.h. Target audience for the proposed program (MS)

For the MS in PHS, we would look to social science (e.g., psychology, sociology), global health, business schools, and pre-medicine/pre-dental programs. The proposed program is designed to appeal to an array of students, researchers, policy makers, managers, analysts, and clinical practitioners who desire a more complete understanding of the diverse causes of health problems.

Detailed recruitment strategies for the various groups are described in V.e. Recruitment plan for meeting enrollment targets.

We anticipate that MS graduates will place in industry, non-profit health organizations, government organizations (CDC, NIH), and academic environments including faculty/researchers in Schools of Medicine and Public Health.

II.i. Degree requirements for a doctorate in Population Health Sciences

The PhD degree requirements include coursework, teaching experience, research engagement, a dissertation, and oral and written comprehensive exams. All PhD students will have an assigned advisor when they begin the program. This individual may go on to serve as his or her dissertation chair, or another individual may take on that role.

Courses. Required coursework will comprise 40 units over four semesters including required Graduate School training in Academic Integrity and Responsible Conduct of Research (AIRCR). Coursework will include:

- 4 core courses in population health sciences research methods
- 4 courses in population health sciences analytic methods
- 1 population health sciences theory
- 3 minor track courses to include concentration-specific theory and two electives
- 2 seminar courses in professional development
- 1 grant/proposal development seminar
- 1 teaching seminar

The courses are described in detail in the next section.

Teaching experience. All doctoral students will gain experience in teaching. This experience will vary based on student interests, but must include at least one lecture led solely by the student participation in a 1 credit teaching seminar. Other departments can leverage our doctoral students with the appropriate approval from both PHS and the other department/program.

Research engagement. All students will engage in a departmental research assistantship project, typically working on a faculty member's funded project.

Dissertation. All students will complete an independent research project and write a formal dissertation. Most dissertations will include three papers of sufficient quality for publication in a peer-reviewed journal appropriate to the topic.

Examinations. There will be three formal examinations.

1. A written comprehensive (qualifying) examination upon the completion of coursework (at the end of the standard year 2 for students who entered with prerequisites) to assess mastery of course content—passing is required for continuation in the program.
2. An oral preliminary exam of the student's dissertation proposal, which typically occurs in the spring of the third year.
3. A final oral exam of the completed dissertation in addition to the written dissertation document.

II.j. Curriculum for the PhD

The following table shows the sequence of courses and learning experiences for the Doctorate in Population Health Sciences. Prerequisites can be met through participation in the Master of Science program, or based on prior equivalent coursework that provides a mastery of skills covered in the following Master's courses: PHS 500, 501, 503 and 504 (Applied Analytic Methods and associated SAS and R programming labs), PHS 505 & 506 (Topics in Population Health Sciences), and PHS 507 & 508 (Research Methods and Study Design).

Table 3: Course Sequence for Population Health Sciences PhD

Year 1	Fall (10 units)	Spring (10 units)
	PHS 700: Population Health Sciences Research Methods I, Survey Design (3 units)	PHS 701: Population Health Sciences Research Methods II, Systematic Reviews and Meta-Analysis (3 units)
	PHS 720: Analytic Methods for Population Health Sciences III. Advanced Regression Methods in Population Health Sciences including Longitudinal and Clustered data (3 units)	PHS 721: Analytic Methods for Population Health Sciences IV, Health Informatics and Population Health Sciences Analytics (3 units)
	PHS 710: Population Health Sciences Theories (3 units)	Concentration-specific theory (3 units)
	PHS 801: Population Health Sciences Professional Development (1 unit)	PHS 802: Population Health Sciences Professional Development (1 unit)
Year 2	Fall (10 units)	Spring (10 units)
	PHS 703: Population Health Sciences Research Methods PhD III, Advanced Methods in Population Health Sciences Outcomes Research (3 units)	Concentration-specific analytic methods (3 units)
	PHS 722: Analytic Methods for Population Health Sciences V, Design and Analysis of Clinical Trials for Population Health Sciences (3 units)	Concentration-specific elective (3 units)
	Elective-specified concentration (3 units)	Elective (3 units)
	PHS 810: Population Health Sciences Teaching Seminar (1 unit)	PHS 811: Population Health Sciences Grant/Proposal Development (1 unit)
Year 3	Fall (3 units)	Spring (3 units)
	Dissertation (3 units)	Dissertation (3 units)
Year 4	Fall (3 units)	Spring (3 units)
	Dissertation (3 units)	Dissertation (3 units)

II.k. Brief descriptions of courses and learning opportunities for the PhD

II.k.i. Core PhD courses

The new core courses for the PhD are described in Table 3. Appendix A includes full descriptions of all courses and electives.

II.k.ii. Analytic Elective courses

The doctoral program requires one general elective course and one minor track elective course.

Analytic electives. As described above, our department will offer some electives for our PhD students. Additionally, there are currently over 45 courses offered at Duke that would meet the analytic elective requirement and we plan to crosslist in our department (see Appendix A for potential electives and courses we may crosslist).

II.k.iii. General Elective courses

General Elective Courses. As described above, these courses may be within or outside PHS (see Appendix A). We will also offer a new concentration track taken as electives. These classes are currently not available at Duke but do have faculty instructors identified, and will be made available to other Duke graduate programs.

II.k.iv. Concentration track courses

Within the PhD program, students will choose within their Concentration 1 theory course, 1 methods course, and 2 elective courses.

Measurement Science

1. Theory of measurement
2. Development and evaluation of health measures I
3. Development and evaluation of health measures II

Epidemiology

1. Epidemiological theory
2. Epidemiological methods I
3. Epidemiological methods II - Focus on surveillance and special study designs (cohort, case-control, nested)

Health Services Research and Dissemination and Implementation science

1. HSR theories
2. Decision Sciences Analysis in Population Health Sciences
3. Implementation science methods

II.k.i. Dissertation (PhD)

All PhD students will complete a dissertation, which reports a formal, independently conducted research project. Dissertations will address an important population health problem, use methods and knowledge specific to the student's minor area, and demonstrate an understanding of relevant population health sciences theories. The dissertation is meant to add something novel to the field and/or help address an unanswered question. They typically result in three peer-reviewed manuscripts. Example dissertations:

Measuring patient reported outcomes for children with obesity receiving treatment in a tertiary care clinic

The impact of a new community based telehealth system on diabetes control, complications and healthcare costs: a cluster randomized community trial

The introduction of physician assistant-led community health clinics and their impact on patient quality of care, cost of and patient satisfaction with diabetes care: results from a regional integrated medical health record system

Examination of the adoption and spread of the use of new medications (e.g., PCSK9, hepatitis C) into the healthcare system

Dissertations will be assessed by a committee that meets Graduate School requirements. This includes a committee chair from the faculty of DPHS and at least four other committee members, a majority of whom will be DPHS faculty. Detailed guidelines for the dissertation will be developed to cover different approaches that will be used in the program. In general, all dissertations will be assessed on: (1) identification of an important, original research question relevant to public health and the student's minor area; (2) use of innovative and appropriate research and statistical methods to address the question; (3) interpretation of findings in the context of other research findings; (4) use of findings to develop future research plans; and (5) quality of writing and presentation for diverse audiences.

Dissertations will not have specific publication requirements, given publication timelines. However, a dissertation will be of sufficient scope to generate three papers of high enough quality for publication in peer-reviewed journals. Students may opt for a dissertation structured as three distinct papers or a traditional monograph. The expectations of the dissertation quality and scope will not differ based on the structure of the dissertation itself.

II.I. Distance-based learning opportunities (PhD)

The PhD program will not rely on technology-based distance learning.

II.m. Student participation in independent and mentored study (PhD)

All students in the PhD program will participate in an independent project, as their dissertation. MS students will receive faculty mentored experience on their Capstone Project and subsequent thesis. PhD students will receive financial support for independent/mentored research through research assistantships funded by their PHS mentor's grants; student obtained funding (e.g., NIH predoctoral awards) or the department, through education reserves or training grants.

II.n. Target audience for the proposed program (PhD)

The PhD in Population Health Sciences will target students from three pools: current and recent Masters-level graduates seeking further training to attain their career goals, existing professionals pursuing training to advance their careers or branch into new specialties related to their current expertise, and on rare occasions students coming straight out of undergraduate.

Detailed recruitment strategies for the various groups are described in V.e. Recruitment plan for meeting enrollment targets.

II.o. Key faculty (MS and PhD)

DPHS currently has 33 faculty who will be available to teach and mentor in the proposed degree programs (Table 4). Eight faculty (22%) currently have appointments on the Graduate Faculty; 3 have full appointments and 5 have term appointments. All of our faculty meet requirements for appointment to the Graduate Faculty; the lack of formal degree programs has meant there has been no need for these appointments. We will begin obtaining Graduate Faculty appointments for all of our faculty prior to the onset of the MS program, ensuring all faculty are ready to serve as advisors and committee members.

Additionally, 3 members of the DPHS faculty were recently recruited from other institutions where they had significant responsibility for graduate education. Prior to joining Duke in July 2017, Bryce Reeve, PhD, was director of the PhD program in Health Policy and Management at

the University of North Carolina at Chapel Hill. Dr. Reeve served as committee chair for 5 doctoral students and as a committee member for an additional 13 doctoral students. Meira Epplein, PhD, joined Duke in May 2017 from Vanderbilt University where she served for two years as the Associate Director of Graduate Studies for the Epidemiology PhD program. In that capacity, she created a faculty advisor program for the students; established expectations in terms of obligations and timelines for both the students and the faculty mentors; co-authored the doctoral comprehensive exam each year; and taught a core course (Scientific Writing) as well as regularly guest lecturing in many of the other core courses. Asheley Skinner, PhD, joined Duke in 2016 from University of North Carolina at Chapel Hill where she was Associate Director of the DrPH Program in Public Health Leadership. Dr. Skinner has served as committee chair for 3 students and has served on more than 25 doctoral dissertation committees. Additionally, she taught multiple doctoral-level courses during her ten-year tenure at UNC.

In total, 6 faculty have chaired doctoral dissertation committees and more than two-thirds have served on such committees at Duke, University of North Carolina at Chapel Hill, or other institutions. More than 20 have chaired or served on master's thesis committees and nearly all faculty have mentored junior faculty, post-doctoral fellows and pre-doctoral students. Ten faculty have taught over the years in the Duke Clinical Research Training Program. Four faculty have previously taught in the Global Health program. Dr. Bosworth directed both a predoctoral and post-doctoral program and Drs. Skinner and Saunders recently submitted a pre-doctoral program in Population Health Sciences. Dr. Bosworth was recently awarded a K12 training grant to train junior faculty in Dissemination and Population Health Sciences.

Impact on Faculty Workload: We recognize that the onset of the MS and PhD programs is a substantial undertaking, and we are confident in our readiness to do so. We currently have 33 faculty, and anticipate more in the coming years. All faculty are expected to participate in educational activities. With the planned MS enrollment, each faculty would be required to serve as advisor to 2 MS students (one first year and one second year), and serve as second reader on two more. We have currently proposed 22 full 3-hour courses that would be based in DPHS, and 8 additional 1-hour courses. When both programs are fully running, and not accounting for the expected increase in our faculty ranks, this would require less than 1 course per year per faculty member. Five years after beginning, at peak PhD enrollment, the 15 PhD students would require only half of our faculty to chair a committee.

Faculty Preparedness: The absence of formal degree programs related to population health disciplines has limited teaching opportunities for DPHS faculty and yet several have extensive experience teaching at the master's or doctoral level, as described in Table 4.

We developed and distributed a teaching/mentoring needs assessment to our faculty, and we have received responses from more than two-thirds. The assessment covers important teaching foundations, including classroom methods, syllabus and curriculum design, student management, student assessment and evaluation, writing, and diversity and inclusion. A copy of this assessment is available as Appendix G. Using our assessment results, we will implement teaching training for our faculty in areas such as course development and design, innovative classroom management strategies, and team teaching methods, in formats such as individual and group consultations, and one-hour workshops. We will be implementing these resources with the help of the experts at Duke Learning Innovations.

We will also begin allowing faculty to further hone their teaching skills by offering a three-day summer institute program (June 2018) devoted to measurement science, qualitative methods, and dissemination and implementation science.

We will have a faculty retreat focused on teaching, similar to the previous two-day retreat the department had for research. The retreat will be an opportunity to bring in leaders of other programs at Duke and explore ways to ensure collaboration and use of best teaching methods. We are planning this retreat for the fall of 2018.

On behalf of the Chancellor's office, the department is sponsoring a Population Health Sciences symposium on April 3, 2018. The intended audience includes attendees from across Duke who are interested or engaged in population health topics, and also includes several guests from outside Duke, all experts in their fields. These guests include Susan Mullaney, President of Kaiser Permanente Washington, Clay Johnston, Dean of the Dell Medical School in Austin, TX, Amy Kilbourne, Director of VA's Quality Enhancement Research Initiative, and Morris Weinberger, Department Chair of Health Policy and Administration at UNC-Chapel Hill's Gillings School of Public Health. Information about the department and its proposed education programs will be provided to attendees and Duke faculty with shared interests will be invited to engage with the department.

We are initiating quarterly education meetings to reach out to potentially interested faculty across Duke to discuss courses related to population health science, as well as educational methods (e.g., best practices). In addition to individuals listed in the previous table, we will extend invitations through Duke University Population Research Institute, Duke Social Science Research Institute, the Nicholas School for the Environment, and other entities.

Educational biosketches for DPHS faculty are available in Appendix B.

Table 4. Participating faculty, including prior teaching and mentoring experience.

Name	Areas of Excellence	Graduate Faculty	Mentoring Experience							Teaching Experience					
			Undergraduate	Masters	PhD/Other Doctoral	MD/Other Clinical	Resident	Postdoctoral Fellow	Junior Faculty	Undergraduate	Masters	PhD	Medical School	Other Professional	Institutes /Workshops
<u>Professor</u>															
Hayden Bosworth, PhD	Health behavior, Health services research, Implementation science	Term	X	X	X	X	X	X	X		X				
Lesley Curtis, PhD	Health services research	Term		X	X			X	X		X			X	
F. Reed Johnson, PhD	Clinical decision sciences, Health measurement									X	X	X			X
Matthew Maciejewski, PhD	Health services research, Health economics, Health Policy			X	X			X	X		X				
Truls Ostbye, MPH, MD	Epidemiology, Health services research	Full		X	X	X	X	X	X		X	X	X		
Kathryn Pollak, PhD	Clinical decision sciences, Health behavior	Term		X	X					X	X	X			
Shelby Reed, PhD	Clinical decision sciences, Health measurement		X		X	X	X	X	X		X			X	X
Bryce Reeve, PhD	Health measurement, Stakeholder engagement		X	X	X		X	X	X		X	X			

Name	Areas of Excellence	Graduate Faculty	Mentoring Experience							Teaching Experience					
			Undergraduate	Masters	PhD/Other Doctoral	MD/Other Clinical	Resident	Postdoctoral Fellow	Junior Faculty	Undergraduate	Masters	PhD	Medical School	Other Professional	Institutes /Workshops
Gillian Sanders, PhD	Clinical decision sciences, Health services research, Health policy		X	X	X	X		X	X		X		X		
Shenglan Tang, MD, PhD	Epidemiology	Term		X	X			X	X		X				
Qingyi Wei, MD, PhD	Epidemiology		X	X	X		X	X	X		X				
Courtney Van Houtven, PhD	Health services research, Health economics		X	X				X	X		X				
Kevin Weinfurt, PhD	Health measurement, Bioethics	Full	X	X	X		X	X	X	X	X	X			
<u>Associate Professor</u>															
Amy Corneli, MPH, PhD	Bioethics, Health behavior, Qualitative and mixed methods							X	X		X	X			X
Matthew Dupre, PhD	Epidemiology, Health services research	Term	X	X	X	X	X	X	X						
Meira Epplein, PhD	Epidemiology				X			X	X			X		X	

Name	Areas of Excellence	Graduate Faculty	Mentoring Experience							Teaching Experience					
			Undergraduate	Masters	PhD/Other Doctoral	MD/Other Clinical	Resident	Postdoctoral Fellow	Junior Faculty	Undergraduate	Masters	PhD	Medical School	Other Professional	Institutes /Workshops
Jennifer Gierisch, PhD, MPH	Health behavior				X		X	X	X		X	X			
Brad Hammill, DrPH	Health services research, Biostatistics				X						X			X	
George Jackson, PhD	Epidemiology, Health services research, Implementation science			X	X			X	X		X				
Laura Richman, PhD	Health services research	Full	X	X	X			X		X	X	X			
Christian Simon, PhD	Bioethics														
Asheley Skinner, PhD	Health services research, Implementation science		X	X	X	X	X	X	X	X		X		X	
Karen Steinhauser, PhD	Health measurement														
Virginia Wang, PhD	Health services research				X		X	X	X		X	X			
<u>Assistant Professor</u>															
Dan Belsky, PhD	Epidemiology		X		X			X					X		X
Michaela Dinan, PhD	Health services research				X		X	X						X	

Name	Areas of Excellence	Graduate Faculty	Mentoring Experience							Teaching Experience					
			Undergraduate	Masters	PhD/Other Doctoral	MD/Other Clinical	Resident	Postdoctoral Fellow	Junior Faculty	Undergraduate	Masters	PhD	Medical School	Other Professional	Institutes /Workshops
Heather King, PhD	Qualitative and mixed methods, Evaluation														
Emily O'Brien, PhD	Epidemiology, Health services research				X	X		X			X			X	X
Sudha Raman, PhD	Epidemiology, Health services research			X	X			X						X	X
Juan M. González Sepúlveda, PhD	Health measurement				X										X
Valerie Smith, DrPH	Health services research, Biostatistics								X		X				
Corinna Sorenson, PhD, MPH, MHSA	Health services research, health economics, health policy		X	X	X				X		X				
Nina Sperber, PhD	Qualitative and mixed methods, Health services research, Health measurement			X	X			X			X				X
Leah Zullig, PhD	Implementation science		X		X	X			X	X	X				X

III. Relationship of New program with Other Duke Programs

III.a. Similar or Related programs at other universities as well as Duke

The Master of Science in Population Health Sciences has the potential to expand course offerings available to Duke graduate students in other programs. However, there is the potential we could compete for students, teaching faculty, and tuition revenue. The overall goal of all Duke Master's programs should be to match the student to the Duke program that best meets their needs. This goal will increase the overall satisfaction of all students entering Master's programs at Duke, thereby strengthening our reputation and increasing the total number of students applying to our programs.

Therefore, we have worked closely with groups that offer Master's programs with potential overlap, including the Duke Global Health Institute (MS in Global Health), the Department of Biostatistics & Bioinformatics (Master of Biostatistics and Master of Management in Clinical Informatics), the departments and institutes involved in data science (Master in Interdisciplinary Data Science), Duke Science and Society (MA in Bioethics and Science Policy, the Sanford School of Public Policy (Master of Public Policy) and others to ensure the program is unique enough to not have negative consequences, and to work toward a goal where we share information from interested students to match them appropriately. We have included letters of support (Appendix E) from the relevant partners and have representation from Duke Global Health Institute (Dr. Truls Ostbye) and Biostatistics and Bioinformatics (Dr. Steve Grambow) in our education program workgroup.

III.b. Distinguishing Features of the Proposed Program

III.b.i. Distinguishing Features from Other Programs in the Department of Population Health Sciences

There are no other degree programs currently offered by the Department.

III.b.ii. Distinguishing Features from Other Universities' Programs

We assessed the landscape of university-based public and population health entities to inform this proposal and to build an academic resource at Duke that addresses the challenge of improving population health. Particular attention was given to how existing public and population health entities (for example, schools, departments, institutes or centers) are structured within the university and/or the school of medicine, how they were subdivided, and how each entity addresses emerging areas of population health sciences research—considering the link between population health sciences and the clinical healthcare systems.

Thus, our objective was to understand the national landscape based on specific characteristics of top-ranked public or population health sciences departments, with a particular focus on universities with a population health entity housed in a school of medicine (SOM) as compared to a freestanding school of public health (SPH) with strong education and research programs.

To compare university-based population health academic entities, we compiled a list of the top 20 Schools of Medicine (SOM) in the research category and additional schools from the 20 top ranked School of Public Health (SPH), both from the 2017 US News and World Reports

rankings.⁵ We included additional schools with healthcare/clinical research focus (University of Wisconsin–Madison, Dartmouth College), and a recently formed school of medicine (University of Texas Austin). Publically available information was compiled for the above universities. Characteristics noted included rank (as per US News and World Report) of academic SOM, entities' location within and/or outside of the SOM, rank of SPH if present, start year, graduate degree programs, and divisions. The program characteristics are detailed in Appendix F. We profiled 20 universities based on rankings.

Eight universities were identified as nationally comparable peer institutions to Duke: Harvard University, University of Chicago, Cornell University, New York University, Northwestern University, Icahn University, University of Wisconsin-Madison, and the University of Texas – Austin. Similar to Duke's proposed Department of Population Health Sciences, these universities focused on public and population health sciences research and educational activities housed in a department within the school of medicine.

International findings–Notable features of the London School of Hygiene and Tropical Medicine (UK) were its well-developed distance learning and professional development for public health professionals. Notable features at the University of Toronto (Canada) were its established, large health policy, management and evaluation department/institute, including clinical epidemiology education and research programs, as well as a relatively new SPH. Population and clinical sciences are well represented in the University of Toronto divisions (for example: clinical epidemiology, health services research, quality improvement and patient safety).

National Observations:

- Location of entity within university – Of the US News and World Report 2015 ranking of the top 20 schools of medicine (SOM) (research category), 18 universities had public health (SPH), department, or university wide institute focused on public health or population health science. Eight universities had a SPH, 5 universities had a university-wide institute or center of public or population health science. Of the remaining universities without an SPH or similar entity, 5 housed a department of public health or population health sciences within the SOM (including Cornell University's Department of Healthcare Policy and Research that was formerly the Department of Public Health). The remaining university, other than Duke, was University of California–San Diego (UCSD); the UCSD SOM houses a Division of Global Public Health within the Department of Medicine. Within each school's SOM, almost all universities with and without a SPH had a non-clinical department or subdivision that focused on epidemiology, biostatistics, or clinical/translational research.
- Size – The size of the faculty group ranged from as few as 8 to 100+ for schools where the number of primary faculty in the population health entity were noted.
- History - Many of the schools of public health were established 50+ years ago. Schools, institutes and centers established in the last 10 years reflect new terminology, often using population health rather than public health.
- Education – Most population or public health entities offered an MPH, MS, PhD at the minimum, with <5 offering various other degrees including research and applied masters in healthcare management, health administration and clinical research degrees intended for physicians, as well as doctorates in public health.
- Research – Most departments, schools, and institutes had between 5-8 subdivisions.

⁵ U.S. News and World Report. "Best Medical Schools: Research. U.S News and World Report. <https://www.usnews.com/best-graduate-schools/top-medical-schools/research-rankings>. 15 August 2017.

The most common were epidemiology, biostatistics, health policy, behavioral health, and environmental health. Institutes, centers, and departments formed in the last 10 years included emerging the emerging fields of implementation and decision science, comparative effectiveness research, medical bioethics, and mental health. The full list of subdivisions are included in Appendix F. Each school had many smaller organizational units (such as centers) that focused on specific methods or disease topics.

- Programs with established links to clinical research with/within a health system – Many schools had active and visible research programs that evaluated the healthcare system, often focusing on national or state healthcare data (e.g. include Dartmouth's Institute for Health Policy and Clinical Practice), however finding a strong example of a symbiotic relationship between a population health research and education entity of the university and a healthcare system was difficult.
- Established population and public health entities often cross-cut university endeavors and drew from multiple disciplines, whether housed in a SOM or SPH.

State Observations:

- Of the NC universities with public or population health entities, The University of North Carolina School of Public Health (UNC SPH) is the most well established with large departments, as well as population health tracks in the SOM, the School of Pharmacy and the Cecil G. Sheps Center for Health Services Research (a unit of the University of North Carolina Division of Health Affairs). We discuss specific degrees below, but all of them differ based on the fundamental differences between Public Health and Population Health. Public health is community-focused, with particular focus on public health policies. Population health is concerned with the definition and measurement of health outcomes, the determinants of health and disparities in populations, and using data to improve health and health care. As the IOM states, there is need a for PHS, "a vision for creating outstanding scientists who can take knowledge, theory, and methods from diverse disciplines and work with interdisciplinary teams to address complex population health issues."
- We have recruited recent leaders from UNC who can ensure the unique contribution of Population Health Sciences, particularly in the context of the differences in the offerings. Bryce Reeve, PhD, was director of the PhD program in Health Policy and Management at the University of North Carolina at Chapel Hill. Asheley Skinner, PhD, joined Duke in 2016 from University of North Carolina at Chapel Hill where she was Associate Director of the DrPH Program in Public Health Leadership.
- One concern has been the cost differences between UNC and Duke. In addition to the important differences in the degree programs, UNC costs differ greatly only for in-state students. The out of state tuition at UNC is \$35,000/year which is comparable to the cost of our PHS Master's program. To offset costs for internal NC candidates, we will provide financial aid when appropriate to reduce competition based on costs.
- The MPH program at UNC SPH, like all such programs, is a professional degree program that emphasizes practice in public health or healthcare settings. In general, these degrees are geared for individuals who want careers as practitioners in public health or clinical settings, collaborating with individuals or groups to promote healthy behaviors and prevent disease in community populations. By contrast, the proposed MS in Population Health Science emphasizes finding solutions to diverse, public health challenges through application of robust research and analytical skills including use of varied data sources and hands-on data management and analysis. To that end, the applied methodological orientation of the proposed MS program is substantially different from the analytical content of the MPH.

- In addition to the MPH programs, the UNC SPH has other Master's degree programs, including the MSPH (Master of Science in Public Health) or MS in Biostatistics, Nutrition, Environmental Science, and Health Policy and Management. While these programs have a focus on research methods similar to the proposed MS, these programs are focused on specific content areas and the underlying theoretical frameworks, research methods, and approaches of those areas. The proposed MS in Population Health Sciences emphasizes a robust set of methodological skills that can be applied to a variety of population health problems.
- The proposed PhD program builds on the strong methodological orientation of the master's program and provides students the opportunity to specialize in one of 3 areas: epidemiology, measurement science, and implementation science. It is distinctly different from PhD programs in the UNC SPH in that it is integrated within the School of Medicine, creating a robust environment for collaborative work across clinical and scientific disciplines. As a result, our PhD students will gain experience communicating and working effectively with multidisciplinary teams.
- We will develop an FAQ web page that explains how our PHS program differs from UNC's public health degrees especially in methods and substance. The web page will highlight the availability of financial aid for prospective in-state students so that the PHS master's program is comparable to UNC's MPH. Out-of-state tuition at UNC SPH is approximately \$35,000 per year and the webpage will make clear the value proposition described above.
- Other notable educational offerings included Wake Forest University's Clinical and Population Translational Sciences (CPTS) program (granting degrees (MS) or certificates) and UNC Charlotte's PhD in health services research (established 2005) within the Department of Public Health Sciences.

III.b.iii. Distinguishing Features from Other Duke Programs

Our programs will train and prepare students to:

- Integrate population-level thinking in understanding and addressing health and disease.
- Critically evaluate scientific evidence and evaluate its potential impact on populations.
- Apply population-level strategies in clinical care, research, teaching, and health policy efforts
- Conduct research according to the highest scientifically rigorous and ethical standards and to serve the needs/values of the populations with which they interact.

These skills are complementary to other programs at Duke and provide opportunities for partnership without overlap and competition. Below, we discuss all relevant Master's degree programs at Duke and how we plan to collaborate, followed by a discussion of the distinctions between the PHS program and the extant Master's degree programs.

Master of Science in Global Health

The MS in Global Health shares some of the same core subjects areas offered in a traditional Master of Public Health program but the Master of Science in Global Health courses are taught through global lens with a focus on health disparities in low- and middle-income countries. We anticipate sharing a number of courses given we have identified three faculty members within the department of PHS with Global Health affiliations.

A MS in Population Health Sciences will differ from the MS in Global Health in that the former

will involve a more methodologically rigorous training and will focus on measurement science and dissemination/implementation. Similarly, applied methodology, qualitative methodology and evaluation and team-based research will be significant topics in both the Masters and Doctoral PHS program. The PHS programs will also focus on domestic healthcare systems whereas the global health focus is predominantly international. The Global program does not have a doctorate. However, given the related coursework between global health and PHS, it is anticipated that global health students may likely apply for a doctorate in PHS. Please see attached letter of support that outlines the mutual benefits and synergies of having a Master of Science in Global Health and a Master of Science in Population Health Sciences.

Please see the letter of support from Drs. Mary Story, Associate Director for Academic Programs and Randy Kramer, Interim Director of Duke Global Health Institute.

Quantitative Masters Programs at Duke Master's in Statistical Science (MSS)

The MSS is a 2-year program that provides education in statistical theory, methods, and computation and is similar to the first two years of the PhD program in Statistics. Courses and projects emphasize stochastic model-based approaches to problems of inference and prediction, highlighting Bayesian and machine learning methods. Students develop skills and expertise in modeling complex and potentially massive data sets and advanced computational methods while gaining exposure to a broad range of application contexts. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Master of Science in Computer Science (MSCS)

The MSCS is a 2-year program that provides theoretical and practical training in technologies and applications. There are 3 options for the degree: course only, with a required portfolio and oral exam, thesis, or project option with an oral defense. The program requires students complete 4 or 6 computer science courses, and at least 4 approved electives in a field related to CS or the student's area of concentration. This degree allows graduates to move into a research career or pursue a PhD. We will collaborate with this program through offering additional courses to students in both programs to broaden and better meet their educational needs.

Master in Statistical and Economic Modeling (MSEM)

The MSEM degree is a joint master's program of the Departments of Economics and Statistical Science. It prepares graduates in the critical areas of statistics and computation linked to economics, finance and related applications. Graduates can move into professional practice, R&D in commerce, industry and government, or pursue PhD work. It is a relatively small program, and in light of the fact that both economics and statistics now have large and mature Masters programs, there is an open question as to how active the joint program will be in the future. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Master of Management in Clinical Informatics (MMCi)

The MMCi is a 1-year graduate degree program developed through a partnership between the School of Medicine and The Fuqua School of Business to meet the demand for informaticians and IT-conversant health professionals. The program prepares graduates to operationalize, manage, and evaluate health IT in a variety of settings, including academia, government, and industry, and to succeed in managerial and executive positions in healthcare. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Master of Quantitative Management

The Fuqua School of Business recently launched a Master of Quantitative Management (MQM). While this degree is aimed at business students, it focuses on data science and analytics with an emphasis on communication skills. We have begun discussions on potential shared electives.

Clinical Research Training Program

The Clinical Research Training Program (CRTP) is an academic program of the School of Medicine that provides clinicians with didactic and practical training in the quantitative and methodological principles of clinical research. CRTP is designed to meet the needs of *clinicians* who will ultimately design and direct clinical and translational studies in their clinical specialties. It is designed for part-time study, which allows integration of the academic training provided by the program with a student's clinical training. The degree option leads to a Master of Health Sciences in Clinical Research, a professional degree awarded by the School of Medicine. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs. We have begun discussions on potential shared electives.

Please see the letter of support from Dr. Steven Grambow, Director of the CRTP.

Master of Biostatistics

The Duke Master's degree in Biostatistics provides students with the analytical, biological, and communication skills. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Please see the letter of support from Dr. Elizabeth Delong, Chair of the Department of Biostatistics and Bioinformatics in the Duke University School of Medicine.

Master in Interdisciplinary Data Science

The Master's program in Interdisciplinary Data Science, starting in fall 2018, is an interdisciplinary training within the quantitative sciences, exposure to problems in a variety of disciplines, and direct experience in interdisciplinary team-based science. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Please see letter of support from Dr. Tom Nechyba, Director of the Social Science Research Institute.

Master of Arts in Bioethics and Science Policy

The MA in Bioethics and Science Policy curriculum addresses the ethical, legal, and social policy concerns arising from advances in science and medical technology, particularly at the intersection of life sciences, biotechnology, medicine, politics, law, and philosophy. It also includes methodology courses, including foundational principlism, casuistic, communitarianism, virtue ethics, legal and political systems and analysis, deliberative decision-making, and data analysis. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Health Systems and Services (HSS) track of the Integrated Biology and Medicine (IBM) Program at Duke-NUS

This HSS IBM NUS doctoral program prepares scientists to become investigators in the fields of health services and clinical and community-based research. The primary disciplinary tracks at HSS include decision sciences and modelling, gerontology, health economics, implementation

science and clinical investigation. Dr. Truls Ostbye is a faculty member in this program and has been on the executive committee of the PHS education workgroup. This track involves six faculty members at Duke-NUS and is limited by the expertise of these faculties. Our PHS program involves both a master's and doctorate and includes these topics, but also a diverse and more in depth focus on epidemiology, dissemination and implementation science, and measurement science. In fact, there has been early discussion of the PHS faculty teaching additional courses at Duke-NUS.

Master of Public Policy

The Master of Public Policy program trains students for careers as public policy analysts, leaders and manager in careers in government, nonprofits and corporations. The curriculum includes microeconomics, data analysis, statistics and evaluation for public policy, ethical and policy analysis, and management and leadership. We will collaborate with this program by offering additional courses to students in both programs to broaden and better meet their educational needs.

Each of these Duke programs share commonalities with the proposed MS in Population Health Sciences, but ours does not duplicate. Two of the Master's degrees (MSEM and MSEC) are relatively small and topically focused within the discipline of Economics, the MMCi focuses specifically on health IT, and the MQM is aimed exclusively at business school students. Of the other degrees listed, the MSS and the MSCS have a basic science focus rooted in strong disciplines, whereas the MIDS program covers topics in these departments. A MS in PHS will certainly benefit from the strong offerings in c statistics, while MSS and MSCS will benefit from the applied methodology master's in population health sciences where they can be exposed to, and draw inspiration from applications that require those skills. The MEM and MQM are the most professional degrees, preparing students exclusively for careers in business. While MIDS expects to form strong partnerships with industry, our program emphasizes the broader uses of data science, often in areas where data is beginning to be recognized as important.

The department of PHS appreciates the need for students with deep training in statistics, methods and applied analytic methods. The interdisciplinary PHS' degree is broader than other degree programs and includes an emphasis on qualitative methodology. Interested students will not typically fit in a single discipline, and they will seek careers or further their training across diverse fields that require a combination of quantitative/qualitative skills and domain expertise. Unlike most of the other quantitative/qualitative programs, ours is focused on developing team-based skills—bringing together researchers and clinicians with diverse disciplinary expertise.

Our approach to Population Health Sciences requires we cultivate relationships with programs that have different educational focuses and that have not incorporated methodological approaches into their curricula. Consequently, other Duke departments have shown a strong interest in allowing their students to enroll in proposed PHS courses. For example, the Master's in Global Health lacks faculty to teach electives in methodology and we have initiated discussions regarding student's enrollment methodology courses. We expect such collaborations to grow by developing elective courses that can be cross-listed in other programs. We also believe there is potential for PHS students to form an interdisciplinary community of rigorously trained students who will benefit from interacting with students and faculty in other departments.

III.c. Reliance on other units at Duke

All courses required for either program are self-contained within the Department of Population Health Sciences (e.g., no need for courses outside our department). As a result, students will not need courses from other departments to meet requirements for either the Master's or Ph.D. program. Students can fulfill all of their degree requirements and graduate without taking courses outside of our department. While we have adequate numbers of faculty with prior experience to offer required courses, there are benefits in cross-listing courses with other programs and departments. Department of Population Health Sciences faculty will teach courses for Population Health Sciences. However, in the case of statistical programming, for example, where there is potential for overlap, we will agree that faculty within Biostatistics and Bioinformatics co-teach with faculty in Population Health Sciences. For electives, we will seek memorandums of understanding that allow students from other departments to take Population Health Sciences courses and vice versa. If a course is crosslisted but offered outside PHS involves more than 10 students from PHS, we will consider whether there is a need for PHS faculty to share teaching responsibilities. If this occurs, the course will use Population Health Sciences examples to reduce the potential for duplications. Currently, there are three PHS faculty with additional appointments in the Duke Global health Institute. The three Global Health courses these faculty currently teach will be available to students in the Department of Population Health Sciences. Related, we have discussed with Dr. Tom Nechyba (Co-Director of MIDS and Director of SSRI) the possibility of cross-listing the machine learning course offered through their program and offering courses in population health sciences to their students.

III.d. Anticipated consequences (positive or negative) to the sponsoring unit or to other programs at Duke

As mentioned previously, specific benefits to Duke include:

- The PhD program will complement other Duke programs with terminal Master's degrees (e.g., Global Health, SSRI), allowing students to continue their training at Duke.
- Course offerings will be expanded for existing programs through cross-departmental collaborations.
- Other departments and programs can financially benefit from collaborations through course cross-listing and sharing instructional costs.
- Increased intellectual collaborations and spillovers between students who study within the larger population health sciences landscape at Duke.
- Strengthening university-wide partnerships, particularly with the Duke Global Health Institute, the Duke Clinical Research Institute, the School of Nursing, the Duke Margolis Center for Health Policy, as well as with other departments in the School of Medicine

We have included brief overviews of Duke curricula that are similar to PHS in section III.b.iii, and have initiated conversations with directors of these programs regarding possible overlaps and opportunities for collaboration between PHS. Indeed, there is a potential for competition for students amongst similar Duke Master's programs, which we address in section III.a. However, this competition will likely have positive impacts--students seeking interest in the PHS MS may be introduced to other programs, and students choosing to attend are likely to have increased overall satisfaction with Duke programs, given a better match to their interests.

In summary, our view of Population Health Sciences— interdisciplinary and applied methodologically—distinguishes our program from those offered locally and at peer institutions. Population Health Sciences shares some intellectual foundations with several quantitatively oriented Master's programs at Duke, but PHS is interdisciplinary with an applied set of analytic methodologies and an integrated focus on epidemiology, measurement, dissemination and

implementation, sets us apart. PHS creates opportunities for exciting synergies with other existing methodologically focused programs at Duke.

IV. Market research for the proposed new program

Market position: The program's mission to meet internal training needs at Duke places the program in a unique position compared to other master's degree programs. The primary and most salient feature relevant to market position is that the PHS student market is meeting a strong need to train individuals who can work in teams in applied settings to effectively address pressing healthcare delivery problems. Unlike other programs, the goal of the PHS is to train individuals to ask appropriate questions and provide them with a 'toolbox' to answer the question - not teaching individual methods with the goal of finding an appropriate question to answer. PHS's student market is both internal and external, and with few exceptions, does not compete for potential students outside the institution who have many programs from which to choose. For this reason, revenue must be adequate to support instructional development/delivery and administrative functions as well as investments in technology and educational innovation required for the program to maintain its leadership position in clinical/translational research training.

Market research: We conducted an extensive review of the market for population health science researchers. As many industries are downsizing their staffing needs, public health employment is on the rise. Related, as the focus in health care shifts from volume to value, new career opportunities are emerging in this sector. Greater demands for services and access within the population is driving the creation of stable and lucrative positions. This burgeoning field looks after the health of communities or populations, as opposed to direct patient care in a hands-on capacity. The position of a population health analyst addresses these needs and has great advancement potential. Population health management researchers consider this larger picture and offer solutions for the entire community.

Under current health care legislation, including the Accountable Care Act (ACA), hospitals must manage health in their communities. John Clymer, executive director of the National Forum for Heart Disease and Stroke Prevention, says "hospitals have more accountability beyond just providing quality while patients are in acute care." Outcome measures will be attached to payment, as the healthcare system ultimately "transforms," explains Clymer. In this case, transformation equals jobs for our graduates.

Population health "encompasses public health, but it is more than just public health," says Clymer, who is also an adjunct assistant professor at Loma Linda University School of Public Health. These positions are in great demand. For example, David Nash, M.D., Dean at the Jefferson School of Population Health in Philadelphia, says that almost every week someone asks him to help him find a chief population health officer.

As Becker's Hospital Review wrote in 2014, "Organizations are looking for someone to help lead the charge and determine what it looks like to truly manage the health of a population in their markets." Bill Russell, senior vice president and chief information officer of St. Joseph Health in California and Texas, talks about the importance of population health science researchers and analysts—positions not traditionally a part of healthcare. "Using predictive models, they help us ask the right questions about trends in population health. We need data we can turn into information and take action. We also need to move data around in a secure fashion, for example, to another hospital."

Expertise will also be needed around digital channels and UX (or user experience), he says. That's because technology will alter the healthcare landscape in ways that gather or send information, he says. "Its use will increase around our critical populations with acute situations, such as congestive heart failure." For example, those patients will be sent home with prescribed technology that communicates data back to a help desk, says Russell.

Potential employers: We also conducted a survey of approximately 40 individuals at various healthcare companies, payors, and healthcare systems that may potentially offer both capstone internships and/or future employment. We received 25 surveys back, and of those who responded, there was a perceived need for well-trained individuals with a strong methodological background who conduct population health analyses. Over the last six months, approximately 15 potential students have requested information and expressed interest in both the Masters and Doctorate PHS program without any formal advertising.

"Because hospitals are going to get paid based upon outcomes, you can expect to find jobs in those institutions," says Barbara Duerst, associate program director at the University of Wisconsin-Madison School of Medicine and Public Health, which offers an MS degree program in population health. Hospitals must also forge collaborations with public health agencies, faith-based and community-based organizations, social service agencies and other health providers. "Federal, state and local public health agencies feel an increasing need to reverse growing chronic disease epidemics, and to prevent and protect people from infectious diseases—and potentially, even biological weapons," Clymer says. "Population health is about things that can be done in everyday life that have a very important bearing on people's health."

At the same time, outsourcing governmental services is becoming a general trend, he says. "Most states and some cities have nonprofit public health institutes doing work formerly done by government agencies," Clymer says. "That work includes operating health programs, along with grant-making and grants management and policy research. Public institutes are facile and can move faster, partner and collaborate with less red tape and fewer bureaucratic obstacles."

Thus, as indicated above, there is a clear need for well-trained population health researchers. Doctoral graduates will assume a multitude of positions after they graduate including post-doctoral fellows, faculty members and research scientists in graduate schools, medical schools, research institutes or schools of public health. Career opportunities in the biological sciences as they apply to public health have also grown in academia and in the biotechnology and pharmaceutical industries.

V. Financial Projections

The Master of Science in Population Health Sciences (PHS) offers an innovative model that facilitates inter-departmental (and inter-school) cooperation. Key features of the program will be centrally organized in the Department of Population Health Sciences, including all administrative matters and absorbing the fixed costs of admitting students. Yet all departments and schools across Duke will be welcomed to propose new courses (or modifications of existing courses) as the field of population health sciences develops. Our allocation of resources will incentivize innovation and our structure will lower the barriers of entry for smaller units that want to innovate but do not have the resources to offer an MS program that generates sufficient demand. As such, the PHS program can play an important role in stemming the tide of small and disconnected Duke Master's programs while providing the framework for units to build more integrated and connected program. Through the revenue-sharing model, a single course, or a

set of courses, offered through the PHS program (or in collaboration with it) can become a resource to the other Duke departments and simultaneously create intellectual connections across the university.

The PHS program diminishes the perception that departments and institutes are competing for scarce resources, particularly around faculty teaching. The alliances we will build are in line with Duke's intellectual priorities of greater interdisciplinary collaboration on problem-based applications with institutes.

V.a. Five-year business plan

The profit and loss (P&L) statement (Appendix C) provides a comprehensive overview of the education programs financial model. We anticipate deficits in the first two years (FY19-20) as we develop the program, reaching a surplus by FY21 that can be reinvested in our programs. The deficits have been reviewed by School of Medicine leadership, and will be covered by commitments to the Department of Population Health Sciences from the Chancellor. Certificate programs, short courses, and summer institutes are not included in this P&L, but these may provide additional funding sources to invest in course development, facilities, and mentoring.

The Master of Science program will grow in FY20 and FY21, ultimately reaching a maximum of 35 students in FY22. By FY20, 16 faculty will be required to teach coursework and mentor students. The doctoral program will take three new students/year in FY21-22, and will maintain 5 new doctoral students/year starting in FY23.

Revenue

Revenue in the form of tuition for Master's program is set according to the Duke Graduate School tuition, fees, and stipends (future years not reflected in the current projections provided by the Graduate School reflect a similar 4% increase/year), and is included as revenue in the P&L. Approximately 25% of this revenue is reduced in the form of scholarship, as described below in Section V.b.

Expenses

Faculty leadership costs include salary and fringe for a Director position (.30 FTE), and two Associate Directors at .20 FTE.

Faculty instructional costs are described in detail in Section V.c.

Staff costs include salary and fringe for a full-time Program Director to manage operations and serve as lead on recruitment and marketing efforts, a full-time business manager to manage budgets, tuition, student registration, course evaluations, and interactions with the graduate school, .25 FTE of a communications strategist to assist with marketing and communications, and a full-time administrative assistant.

Additional costs include PhD stipends (we anticipate supporting PhD students in the first two years, and then they will transition over to research funding in Years 3-5) according to the Duke Graduate School stipends for the medical sciences and nursing. Class space costs include 2 850 sq ft classrooms @ \$37.05 (the Duke School of Medicine blended rate), doctoral student workstations and a student collaborative space (total 125 sq ft/enrolled student). We are also in discussions with Duke Innovation and Entrepreneurship to potentially share classroom space, as they will be located on the floor above us in the Imperial Building on 215 Morris Street. They have one large and two small classrooms.

Program costs include faculty and student development, including courses in instructional and mentoring strategies as well as funds for conference and presentation travel for students.

Marketing, recruitment and events include travel to college fairs and professional meetings to engage faculty across programs and recruit students. We hope to initiate and/or participate in any programs that are Duke-wide and work together to recruit and direct the highest quality students into the appropriate graduate level programs at Duke, particularly those for which we will actively share courses, such as the Master of Science in Global Health and the Master of Science in Interdisciplinary Data Science.

Other operational expenses are calculated at 25% of the total expense (minus faculty leadership), and include any unforeseen expenses as we develop and implement the program.

The graduate school tuition tax is a blanket \$672/year per enrolled Master of Science and doctoral student.

The ESL fee is approximately \$1,100 per new student enrolled who requires the course. We conservatively estimate that ½ of our new students will require an ESL course.

SOM G&A is 5% of total expenses. All years include 2.5% salary inflation and 3% inflation on other expenses.

V.b. Financial aid, scholarships, fellowships, and outside funding

Financial aid will help recruit and support under-represented groups in population health sciences, including racial and ethnic minorities. The budget includes full tuition scholarships for 25% of master's students in support of racial and ethnic diversity, and other deserving top candidates. We are not clear what the distribution of aid will be, but assume the majority will cover tuition and fees for under-represented students. This support will also provide a bridge to the PhD program for students showing promise of doctoral-level training. As part of the program, a paid internship may partly offset tuition for some master's students.

Additionally, we anticipate working with industry and foundation partners to potentially offset the costs of financial aid, but have not included this in our business plan, as we have not secured those dollars. For example, we hope to collaborate with a statewide foundation or business to support 1-2 students per year as North Carolina population health sciences scholars. These programs would support students interested in issues that affect North Carolina, provide tuition support, and assistantship.

Per Duke graduate school requirements, all PhD students will have a guaranteed stipend for four years (five if they enter the program without a Master's degree) provided they are full-time and in good academic standing. Additionally, Duke PhD students' tuition and mandatory fees in their first five years of study are paid by either the Graduate School or external fellowships.

V.c. Instructional costs

The majority of DPHS faculty in the department will be required to teach at least one course per year in either the Master's or the Doctoral programs. Effort coverage for teaching will be uniform across faculty regardless of rank. Therefore, costs/course may vary based on faculty salaries. Instructional costs (per course) have been estimated at \$21,000—a benchmark based on .12

FTE for an average faculty salary of \$175,000. While we anticipate our core courses to be taught by Departmental faculty, opportunities to cross-list courses with other departments and institutes is paramount to our success. Our model is conservative and assumes our department will take on 100% of the costs of required courses, but we anticipate cost savings through cross-departmental collaboration.

V.d. Reliance on sponsoring unit and/or central Duke resources and infrastructure

V.d.i. Space - The Department of Population Health Sciences will be located on the second floor of the Imperial Building (anticipated move-in date November 2018). We will have a permanent 50-person classroom; touch down space for doctoral students, and a student collaborative space. Faculty and staff offices will be adjacent to this space, offering opportunities for interaction outside of the classroom. The large classroom will be equipped with AV, and have the capability of being broken into two smaller classrooms when needed. Additionally, Duke Innovation and Entrepreneurship is located upstairs, and the Duke Clinical Research Institute is across the street and both have offered to share classroom and meeting space providing opportunities for space cost offset and spillover classrooms if needed.

V.d.ii. Career Development Services - In the past academic year, we began discussions with other Masters programs (MMCI, Global health, CRTP) as well as the Office of Career Services to explore a more coordinated effort to increase careers opportunities for all our students. Our discussions have focused on coordinated career and internship fairs, and a collective infrastructure to exploit returns to scale from larger partnerships. In addition, we will explore extending these collaborations to Fuqua given their quantitative programs. We expect to intensify these efforts as we prepare to launch the Masters in Population Health Sciences.

Over time, we will build a strong alumni network that helps connect new Interdisciplinary Data Science graduates with potential employers in industry, government, the nonprofit sector and academia. Program staff will devote significant resources to forming and growing relationships between the program and potential employers, and cultivating an actively engaged alumni network willing to mentor students. The program will make every effort to connect students with opportunities that match their interests, and seek out employers with specific interests in recruiting Population Health Sciences students.

Indeed, we do not see these efforts as disconnected from the student's academic goals. We envision the capstone projects growing out of connections to industry, non-profits and governments who seek to engage with us around data services. Along these lines, we anticipate fruitful collaborations with university initiatives like The Center for Innovation and Entrepreneurship that actively connects with employers who rely on data scientists.

V.d.iii. Other services. We will rely on shared admissions (via the Graduate School) and the vast library services available to all Duke graduate students. Computational resources are central to the success of the PHS academic programs. We will connect students to the larger Duke computing research infrastructure through academic support. Additionally, for students using large data sets or accessing data that includes protected health information, the PHS electronic health data core infrastructure will be made available to them.

V.e. Recruitment plan for meeting enrollment targets

Target population: Our primary students will be undergraduates, existing professionals including clinical fellows, junior faculty, and other clinical and translational investigators at both

Duke University Medical Center (e.g., Medical Scientist Training Program) and outside the institution.

ENROLLMENT TARGETS:

		<u>FY-19</u>	<u>FY-20</u>	<u>FY-21</u>	<u>FY-22</u>	<u>FY-23</u>
Education						
	MS PHS new admits	0	25	30	35	35
	MS PHS student body	0	25	55	65	70
	PhD PHS new admits	0	0	3	5	5
	PhD PHS student body	0	0	3	8	13
	Total Student body	0	25	58	73	83

The Master's in Population Health Sciences will recruit students from two pools: current and recent undergraduates seeking further training to attain their career goals, and existing professionals, including clinicians, pursuing training to advance their careers or branch into new specialties related to their current area of expertise. Although the curriculum we propose will serve these two populations in similar ways—upon matriculation, the typical student experience will be largely indistinguishable, regardless of their starting point.—Our recruitment strategies do vary across the two populations, and we therefore discuss each in turn.

For both subsets of potential students, the Associate Chair of Education will develop and implement recruitment strategies, with advice from the faculty oversight board and assistance from select current students and alumni. Before discussing specifics, we should be explicit about the prerequisites and core competencies we expect of successful applicants. It is prudent to set strong pre-requisites when the program launches and then experiment with additional infrastructure to determine if preparation through intensive boot camp can fill in the gaps. Thus, our initial hard prerequisites will include at least one quantitative methods course with a particular focus on epidemiology, health services research, and measurement. As PHS becomes more established, we will explore mechanisms to accommodate more diverse student backgrounds to enrich the program, but would require pre-matriculation training. While we believe it is important to maintain flexibility around the precise student mix, we would like to learn from our initial experience, and will spell out the underlying principles that guide our learning.

The Master of Science and doctoral programs are not intended to exclusively serve recent Duke undergraduates; rather we want to attract recent graduates with relevant domain and/or technical backgrounds who are looking for a way to fill in gaps with their current skillset. Furthermore, this program is not intended to serve students with work experience; rather, we believe that being recent undergraduates will be strengthened by real world experience brought to the program; and the perspectives of more recently trained undergraduates will strengthen those bringing such experience. In addition, we do not envision a program exclusively tailored to either domestic or international students; rather, we believe the program will be strengthened by diversity of background, with the important caveat that the team-based approach does require

English language fluency. Overall, we aim for a mix of students in the program that will accomplish our goals.

Finally, we are aiming for a steady program size of 35 new students each year, but recognize that we may find ourselves in the position of having much larger qualified applicant pools. We may be tempted to expand the program, and may learn how to accomplish this; however, the current target size is one that lends itself well to individualized attention and to fulfilling the needs of student with diverse backgrounds and different goals.

It is our experience that you learn what makes a program like this work as you gain more knowledge. Over time, it becomes apparent what aspects can be systematized and scaled, and what needs a more personal approach. Scaling becomes easier when a majority of the features fall into the former category. For example, Data+, began as a small program but, as experience was gained, it has grown beyond its original target size.

V.e.i. Recruitment into the Master of Science program

- *Recent undergraduates*

We will target and recruit students from top colleges and universities similar to Duke in their attributes and quality (top-notch research faculty with strong undergraduate teaching and abundant opportunities for undergraduates to become part of research teams), and from selective liberal-arts colleges that provide students with similar opportunities. We will also be attentive to concerns about diversity and seek out opportunities to connect with under-represented groups (and institutions), including nearby Historically Black Colleges (HBCUs) such as NCCU and NC A&T. Our Vice Chair of Research, Kevin Weinfurt, PhD, who is co-leader of the Clinical and Translational Research Institute's Workforce Development Core at Duke, will further our Department's efforts in this regard. The Workforce Development Core has an agreement with NCCU to increase the pipeline of clinical research workers, and so our programs will capitalize and expand on this relationship. While we will welcome applicants from a wide variety of disciplinary backgrounds, we anticipate focusing our recruiting efforts on departments whose major requirements include broad and deep quantitative training. We will certainly recruit from social science departments that teach quantitative approaches, and consider graduates from global health, statistics, and mathematics programs. This does not preclude welcoming student applications from more interpretive or humanities-focused backgrounds, particularly as the program matures.

- *Existing professionals*

Our immediate geographic area provides plentiful recruiting opportunities among professionals working at higher educational institutions, in Research Triangle Park, and in non-profit, governmental, consulting, and technology institutions. Since our proposed program requires students to be physically present during standard business hours, we anticipate that local professionals with scheduling flexibility and/or employer interest in supporting further training will be our primary targets. We plan to focus our recruitment efforts on this local population by reaching out to large employers in the Triangle area and their professional workers. We also anticipate there will be select opportunities to attract professionals relocating to our region in connection with their spouse's or partner's decision to pursue educational or employment opportunities, and will ensure that our faculty colleagues at Duke and other local universities can provide information about the PHS when it may be of interest. Of course, both for recent undergraduates and for existing professionals, we will track our recruitment yields and adapt accordingly. Extensive discussions with our colleagues in informatics (MMCI), CRTP and Interdisciplinary Data Science (all have their own Masters degrees) have made us aware that

the latter pool—existing professionals— have technical backgrounds stronger than their five to ten years old transcripts infer. This has made us considerably more attentive to planning for future summer boot camps and modular infrastructures leading up to matriculation in the program. Our plan is to start with modest support for a boot camp aimed at these students

V.e.ii. Recruitment into the Doctoral Program

The Doctorate in Population Health Sciences will recruit students principally from three pools: current and recent Master's level graduates seeking further training in order to attain their career goals, existing professionals pursuing training to advance their careers or branch into new specialties related to their current expertise, and on a rare occasions coming straight out of undergraduate. Although the curriculum we propose will serve these three populations in similar ways – upon matriculation, the students' typical experiences in the program will be largely indistinguishable, regardless of their starting point. Our planned recruitment strategies do vary across the three populations, and we therefore discuss each in turn.

Students enrolled in the PHS MS will serve as a strong candidate pool for the PhD program. The mentorship teams within PHS will identify students who express the interest and aptitude for continued research training.

Current and recent Master's level graduate students from other Duke program will also provide a sizable pool of good candidate, especially the Duke MSc in Global Health. Currently there are around 35 MSc global graduates from Duke in Durham every year plus graduates from the MSc global health at Duke Kunshan. While these graduates have diverse pre-master backgrounds, including social and biological sciences and health professional training, they obtain strong research skills and project experience through their master's course. Several faculty members in the population health department have been, and are actively, involved in the teaching and supervision of these graduates. Furthermore, while the M.Sc. can be a terminal degree, a number of the more academically inclined students have expressed an interest in continuing to the doctoral level. Previously such candidates have sought Ph.D studies elsewhere in geography, sociology, epidemiology and public policy, but a PhD in population health sciences would be a more logical next step.

Other Duke Master's programs that may generate natural recruits include, but are not limited to psychology, anthropology, sociology, analytical political economy, computer science, economics and computation, statistical science, economics, political science, and biology. In addition, select Duke health professional graduates (medicine, nursing, physical therapy, physician assistants) with interest in an academic or research career may choose to apply.

Many PhD students may consider our program after some time in the work force. Individuals working as project leaders or similar roles with PhD-trained scientists may choose to further their own education. Our faculty have broad relationships with many organizations in academia, industry, and the nonprofit sector, all of which may serve as a source for potential candidates of this type.

Finally, there may be occasional students who begin the PhD program directly after completing their undergraduate degree, at Duke or another institution. We will not focus specifically on recruiting such students, but will consider them as we would other candidates.

VI. Student community

We realize that a key aspect of the student experience is ensuring students are integrated into the larger School of Medicine and Duke graduate student community. This issue is particularly salient as the program will be housed downtown at the Imperial Building (215 Morris Street). We will consistently evaluate the PHS student integration. We will use successful models that other programs (Global Health, MMCi, Biostatistics & Bioinformatics) have used. It is important to note that the Imperial Building is located strategically downtown, directly across the street from the new Duke Clinical Research Institute tower, as well as other programs including the School of Medicine Division of General Internal Medicine and Duke Innovation and Entrepreneurship (directly upstairs from PHS space). We have architectural renderings that include classroom and collaborative workspace that is well integrated with our faculty offices, fostering collaboration with faculty and the staff.

Because of the nature of the educational experience, many students will also be interacting directly with the Duke health care system, including the main location near the Duke West Campus. The nature of the program involves collaboration and students will be working closely with fellow students and faculty. Through our students enrolling in electives from other programs, PHS students will be further exposed to the larger School of Medicine, Duke University, and the overall Duke University graduate student community.

VI.a. Promotion of diversity among students

The Department of Population Health Sciences recognizes the need for diverse students, driven in large part by the Department's mission to study and identify determinants of health and the most effective means for improving health of the diverse US population. Our focus on diversity is aligned with that of all departments at The Duke University School of Medicine. Dr. Kevin Thomas (see letter of support), is Associate Dean of Diversity and will help direct qualified applicants to this training program. Furthermore, the School of Medicine has a new Chief Diversity Officer, Dr. Judy Seidenstein, indicating an increased diversity commitment by the Dean.

Because traditional public health and newer population health sciences programs have majority female representation, our diversity plan focuses on attracting a racially diverse pool of applicants, noted by our Student Services Coordinator and her having that specific directive. S/he will work closely with Historically Black Colleges (HBCUs), particularly those close to Duke's campus, to educate and attract high-caliber graduates who excel in the quantitative sciences and are interested in entering the health-field. Additionally, she plans to organize a support group of similar staff across Duke graduate programs to share ideas and potential under-represented candidates to increase diversity across all Duke graduate programs. We will rely heavily on the Duke Office for Institutional Equity for resources and support in recruiting racially diverse students, and will include them in our regular support group meetings and strategy sessions. We also will invite all qualified minority candidates for interviews as well as formal and informal interactions with minority faculty. Moreover, program information will contain a strong statement of our intent to actively recruit minority candidates. These activities follow Affirmative Action guidelines.

Our program will adhere to Duke University Policies on Equal Employment Opportunities. Candidates with disabilities will be invited to apply, provided they have the abilities and characteristics required to complete the training program. These standards consist of minimum

physical and cognitive abilities in six general categories: 1) Observations; 2) Communication; 3) Motor Function; 4) intellectual /Conceptual, Integrative, and Quantitative Abilities; 5) Behavioral and Social Attributes; and 6) Ethical and Legal Standards. Although these standards delineate the necessary physical and mental abilities of all candidates, they are not intended to deter candidates for whom reasonable accommodation will allow the completion of the program. Assessment of reasonable accommodation is provided through the offices of Employee and Occupational Health office and Disability Management Systems.

We also recognize the need for retention and plan to engage with fellow students and make friends across the diverse community. There are several examples that we will build on, including the Pratt School of Engineering resources for underrepresented groups and the Duke School of Medicine Minority Recruitment and Retention Committee.

Finally, financial aid will be key to recruiting and supporting under-represented groups. The budget includes full tuition scholarships for 25% of master's students to support racial and ethnic diversity, and other deserving top candidates. Financial aid will also be a bridge to the PhD program for students showing promise of doctoral-level training.

VI.b. Student support services

In addition to the collaborative touchdown space for students to work and collaborate outside the classroom, we plan to have regular social events to create support networks. During orientation, representatives from the Graduate School will present Duke-wide student resources. In addition, we will build a mentorship program where senior students will be paired with new students to provide guidance.

VI.c. International students and supportive resources

Because our primary focus is on the US healthcare system, we plan to have no more than 25% international student representation. However, for international students, we will adhere to the Graduate School language requirements, and budget for the appropriate course costs. We will also connect international students with groups across campus that provide community support. Part of our curriculum includes a professional development course, which will assist all students in preparing for an educational program, interviews and the workplace in the United States.

VI.d. Career development services

As mentioned above, we will offer a professional development course to Master's students each year and for the first two years for the PhD students. Professional development will cover having a professional presence, networking techniques, what American employers expect in the workplace, creating and maintaining a professional digital presence, learning how to master informational interviews, work/life balance, teaming at work, and developing competencies in communication, self-awareness, professional adaptability, and leadership.

Students can also take advantage of Duke's career development resources, including the Graduate School's Professional Development and Career Center. As our program grows, we plan to foster a strong alumni network via social media and other events held at Duke and other major cities across the US (in conjunction with other Duke alumni activities).

VI.e. Support for graduate student clubs and other co-curricular events

While our leadership believes that clubs and co-curricular events are an important part of the graduate school experience, we want our first few cohorts to grow clubs and events organically (with assistance from a few key faculty). We have budgeted for bi-annual club social events, at the beginning and end of the academic year.

VII. Program evaluation

We will build a comprehensive evaluation plan to assess individual program components (e.g., individual student performance, quality of instruction for individual courses) as well as the overall success of the Masters' and Doctoral programs (e.g., number of applications, quality and diversity of applications, faculty evaluation of quality and diversity of enrolled students, student evaluation of overall faculty and program quality, successful placement of graduates, suitability of program curriculum and instructional delivery methods, and overall financial health of the program). We anticipate these evaluation efforts will change as we gain experience in program administration and receive feedback through ongoing assessments. We will use quantifiable and behaviorally-based evaluation and assessment metrics to establish clear guidelines so that students and faculty understand program processes and how we're measuring advancement/success. We will consult with various Duke groups and resources with expertise in program assessment, program quality, and faculty development (e.g., SSRI Program Evaluation Team, Center for Instructional Technology, School of Medicine Faculty Development Program) to maximize the impact of our program evaluation, outcome assessment, and improvement efforts.

Per graduate school guidelines, we plan to conduct an initial review during the program's third year and commit to ongoing external evaluations every five years. We plan to establish an Executive Educational Advisory Committee comprised of academic (both from other faculties at Duke and from other universities) and industry leaders in the population health sciences that will convene on a semi-annual basis. They will review an outcome assessment report (see Appendix D) and we will seek their input and guidance on overall program health and improvements.

We envision that the program evaluation data and outcome assessments will come from key stakeholders, including students, alumni, faculty, internship/research experience advisors/mentors, our Executive Educational Advisory Committee, and possibly others. Data collection will come from a variety of approaches including in person interviews/discussions and standardized forms and/or surveys (using tools such as the Duke Qualtrics Survey Tool). Some data examples will include: student course evaluations, annual student progress report forms, final course grades, comments from collaborative research experiences (from both students and faculty), results and feedback from qualifying exams, results and feedback from preliminary exams, results and feedback from the dissertation and final oral exams, admissions and matriculation metrics (e.g., applications, enrollments, selectivity, yield, retention), both short (e.g., 3 months) and long (e.g., 2 and 5 years) term response from alumni about post-graduate employment and career trajectory.

Our goal is that prior to the end of the PhD program's third year, we will create a secure, integrated and robust evaluation database system (for both the Master's and PhD programs) that will incorporate our data and facilitate comprehensive analysis and reporting. We envision this tool will include a "dashboard" to provide program leadership with an easy to use, up-to-date overall 'picture' of each student's progress. Further, we anticipate this system will evolve to help track, manage, and improve major workflows.

We have outlined a detailed Student Learning Assessment Plan in Appendix D of the proposal.

Recruitment and Selection of Students. We will establish a record-keeping system to track applicant data and the selection process. Data will include gender, underrepresented minority, previous institutions, degree(s) and year(s), thesis topic and/or previous residency and fellowship training, offers of interviews, offers of admission, program entry, and program completion.

Evaluation of the Core Curriculum. The core curriculum has components that ensure students acquire research skills and a breadth of knowledge to excel in the multidisciplinary aspects of Population health sciences. We will survey students and faculty annually to ascertain whether the curriculum is meeting its stated purpose and the value of the overall curriculum.

Evaluation of the Didactic Research Curriculum. The didactic curriculum is a combination of components created especially for this program along with curricular components already offered at Duke, as described above. All courses external to the program will undergo the normal GME evaluation process and we will evaluate how each contributes to the knowledge and success of our students as viewed by participating faculty.

Evaluation of the Mentoring Experience and Mentoring Effectiveness. The process of mentoring is complex, encompassing different aspects and goals. Mentors will be expected to establish regular contact with their students and co-mentor(s) through frequent meetings. The meetings will provide opportunities to review the student's progress in fulfilling various program goals and provide guidance to the student in gaining multiple skills needed for successful clinical research. Each scholar will also meet with the program director and executive committee on a semiannual basis to review the student's progress; identify problems that may be interfering with their progress; and identify potential solutions. Workshop and internship leaders also will communicate with the program director regarding scholar performance. These evaluations will help ensure that students are receiving strong mentorship, are performing appropriately, and that the mentoring skills of our faculty are improving.

Evaluation of the Mentored Research Experience. The mentored research experience of each scholar will be evaluated for a number of factors:

1. Were the accrual goals of the study met and were the appropriate and necessary data gathered?
2. Was the data analysis accomplished in a timely and productive fashion?
3. Did the student produce abstract and journal articles stemming from their research? Were they accepted for presentation and publication?

Post-program Career Tracking. We will request information from former students annually regarding their ongoing activities; peer-reviewed publications; extramural funding; special awards; induction into professional societies; current professional position; and promotion status. We will facilitate this by inviting former scholars to informal gatherings at annual meetings and, when possible, by providing continuing advice, collaborations, and opportunities to former scholars.

Evaluation of Student Progress. Each student will meet the program director and the executive committee on a semiannual basis. Following the annual research symposium, the student will meet with the program director and mentors to review their prior year's progress. This evaluation will be based upon the student's narrative self-evaluation, the student's oral presentation at the research symposium, grades, an updated curriculum vitae, and copies of abstracts and publications. The mentors will prepare a narrative evaluation that reflects their full

assessment; this will be shared with the scholar and provided to the program director for review by the executive and advisory committees. At the program's completion, the student will prepare a summary of research experience, including accomplishments, future plans, and a critique of the program for review by the executive committee and submission to the advisory committee. The executive committee will assemble the accumulated evaluation forms and narratives and prepare an executive summary of each scholar's progress for submission to the advisory committee. Recommendations resulting from the advisory committee's review of the scholar's progress will be provided to the student.

Evaluation of the Design and Execution of the Program and Effectiveness of the Program Director. Evaluation of the program's design and execution and the effectiveness of the program director will be performed by the advisory committee, as described in the section concerning the selection and role of that committee. Similar measures have been effective in assuring trainee progress toward the goal of independence in clinical research careers at Duke, and we are confident they will be effective in this program.

VIII. Risk assessment

VIII.a. Enrollment and recruitment efforts

The Master's and Doctorate in Population Health Sciences welcomes students from many disciplinary backgrounds who seek training in population health sciences to address current and future healthcare challenges, including health professionals, science and social science majors and those with quantitative backgrounds who have decided to pursue population health sciences as an application. The Master of Science in Population Health Sciences will recruit students from both (1) an undergraduate population looking to expand quantitative expertise in population health sciences, and (2) existing professionals looking to expand their quantitative and methodological skills and branch into new areas and expertise in their current careers. Candidates for doctoral degree will come from four main groups (1) students who have completed a Master's degree within our Department and who are interested in becoming independent investigators, (2) students who have completed a Master's degree in a related discipline through another Department (e.g. Duke Masters in Global Health) who want to now focus on population health science as they pursue becoming an independent research investigator, (3) existing professionals who have determined that their career goals require obtaining the needed depth of training to become an independent investigator in population health sciences, and (4) undergraduate students whose quantitative skills, undergraduate research experiences, and academic goals/interest indicate that they will be successful transitioning directly to a PhD program.

At the outset, we aim to take a relatively conservative approach in our recruitment, focusing on applicants with strong quantitative backgrounds for both Master's and Doctoral programs. Students are expected to enter the program with a minimum of two analytics/ quantitative methodology/ statistics courses. We anticipate a number of applicants with "real-world" job experience aiming to return to graduate school for further training or to transition into population health science. Based on survey and discussions with the department, colleagues in industry, and other institutions, because of frequent inquiries about a Master's in Population health Science, and the reputation of faculty, we foresee no difficulties attracting an initial class of 10-12 well-qualified students for the first year then ramping up to 35 students each year thereafter once appropriate support infrastructures and preparation pipelines are in place. Once the program is well established, we intend to recruit individuals of more diverse academic

backgrounds.

External candidates: We will recruit external candidates through

- (1) Appropriate electronic and paper journal advertisements
- (2) Reaching out via email to those students who have taken the GRE (and achieved a certain score) and expressed an interest in population health/public health
- (3) Networking with population health science departments, division chiefs, and directors of fellowship programs
- (4) Duke Population Health Sciences website
- (5) Various professional conferences, including the Society of General Internal Medicine (SGIM), American Public Health Association (APHA), AcademyHealth, the Society for Medical Decision Making (SMDM), the International Society For Pharmacoeconomics and Outcomes Research (ISPOR), and the American Heart Association (AHA)
- (6) Recommendations from the advisory committee
- (7) External committee and faculty members who will actively recruit at various meetings/conferences

Internal candidates: We will recruit internal candidates through

- (1) Notices sent to deans, department chairs, and division chiefs at Duke and UNC-Chapel Hill informing them of the PHS doctoral program. It is our hope that individuals recruited to Duke will be identified as potential candidates for this program. We anticipate doctoral students will come from the Masters of PHS, global health, Kushnan, NUS
- (2) Email notification to all current faculty, house staff, and fellows in appropriate fields
- (3) Announcements at grand rounds, departmental meetings, and other forums
- (4) Contacts at local universities including North Carolina State University, University of North Carolina at Chapel Hill, as well as a number of local historically Black Colleges (HBCUs), including North Carolina Central, NC A&T, and Shaw University

For the first round of applications, we will use these recruitment tools broadly. To maximize our success we will ask mentors to directly contact potential applicants and encourage them to apply. Subsequent use of recruiting tools, especially advertisements in journals, will almost certainly be more selective. This will depend upon such factors as the disciplines and research interests of current scholars, institutional recruitment priorities, etc.

Selection of Students. Interested candidates will receive a brochure describing the program, including a list of mentors and research areas. Program information, and copies of all application materials, will be available on the Duke Department of Population Health Sciences website. Potential students who are clearly committed to pursuing an academic clinical research career.

Written Application. Applicants for both the Master's and Doctorate will be required to submit:

1. GRE or equivalent standard testing.
2. Official transcripts for all previous academic institutions.
3. A current curriculum vitae;
4. Three letters of support from current or past mentors or colleagues.
5. A 3-page personal statement, including (a) long-term career goals; (b) research interests and goals; and (c) how the program will help meet those goals, including plans to take elective courses and/or the degree option;

For doctorate applications, we will also require the following.

6. A brief (4-page) research proposal for a specific project to be accomplished during the program;
7. Mentor(s) selected from the available pool.

When all of the above materials have been received, the members of the Department of Population Health Sciences Admission Committee comprised of the Department Leadership (Chair, Associate Director of Education, and Associate Director of Research), three faculty members of the Department, and a student representative will review applicants. In addition, potential mentors named by the applicant will be asked to review the application. Reviewers will suggest other potential mentors based on their evaluation of the candidate's research interests and needs for career development. Reviewers will rate the application based on many factors, including grades, GRE scores, letters of recommendation, their personal statement, prior research experience, life circumstances, and fit with our program.

VIII.b. Implementation factors

To mediate any potential impacts we have put in a place an internal and external committee to provide advice and guidance. We have also have been conservative with our enrollment and time frame for initiating both programs. Lastly, we will consistently evaluate the programs and develop milestones to track success.

VIII.c. Reputational factors

We will continue to evaluate our reputation and have hired a communications strategist to help disseminate details on faculty, potential students, and the program. Disseminating information has involved identifying potential stakeholders (e.g. employers, faculty at other peer institutions) and serves the purpose as well as providing opportunities for identifying potential internships and sources of employment. Lastly, we will have an external advisory board consisting of five senior academicians from outside entities and five representative from industry. We anticipate engaging with them at least quarterly if not more frequently and will solicit feedback regarding the program and disseminating information.

VIII.d. Financial factors

Key methods for mitigating financial factors include increased marketing of the program and hiring a staff member to focus on recruitment. We will also conduct 3-day summer institute programs focusing on epidemiology, implementation science, and measurement science. Based upon market research, we anticipate roughly 20 students per program paying approximately \$2,000. These funds will be used to offset any potential loss in funding due to smaller than anticipated student recruitment, or could be used to improve the reputation of the program, and provide faculty additional teaching opportunities. Lastly, having approximately 40 faculty members in the department, we have begun providing them with handouts and information about the department and we would anticipate that our faculty would be one a significant recruiting method.

IX. Appendices

Appendix A: Description of PHS Courses and Potential Elective Courses Possibly Crosslisted in PHS¹

Core MS courses

PHS 500 Applied Analytic Methods for Population Health Sciences I.

This course introduces study design, descriptive statistics, and analysis of statistical models with one or two predictor variables. Topics include principles of study design, basic study designs, descriptive statistics, sampling, contingency tables, one- and two-way analysis of variance, simple linear regression, and analysis of covariance. Both parametric and nonparametric techniques are explored. Core concepts are taught through team-based case studies and analysis of research datasets taken from the population health sciences literature and demonstrated in concert with PHS 503 (Introduction to SAS Programming for Population Health Sciences). Computational exercises will primarily use the SAS Statistical Computing Platform. 3 units. Instructor: **Reeve**, Gonzalez, Reed, Raman, O'Brien, Ostbye, Smith.

PHS 501 Applied Analytic Methods for Population Health Sciences II. Continuation of PHS 500.

Course topics include analysis of multivariable statistical models with continuous, dichotomous and survival outcomes. Topics include mixed effects models, generalized linear models (GLM), basic models for survival analysis and regression models for censored survival data, clustered data. Both parametric and nonparametric techniques will be explored. Computational exercises will be performed using the SAS System and R Statistical Computing Platform. 3 units. Instructor: **Maciejewski**, Gonzalez, O'Brien, Smith.

PHS 503 Introduction to SAS Programming for Population Health Sciences. This course assumes minimal programming knowledge and will begin with an introduction to the organizational structure of statistical software packages and will then use the SAS Software System to provide an introduction to the core ideas of SAS programming, including: data step, procedures, macros, ODS, input/output, debugging, and strategies for program design. Students will be introduced to writing code for performing numerical and graphical analyses. Students will learn how to write maintainable code, to test code for correctness, and to apply basic principles of reproducibility. Programming techniques and their application will be closely connected with the methods and examples presented in the concurrent course (PHS 500). 1 hour concurrent with PHS 501. Instructor: Multiple

PHS 504 Introduction to R Programming for Population Health Sciences. This course introduces programming in focusing on the core ideas of the R Statistical Computing Platform (functions, objects, data structures, input/output, debugging, and best practices for program design). Students will be introduced to writing code for performing numerical and graphical analyses. Students will learn how to write maintainable code, to test code for correctness, and to apply basic principles of reproducibility. Programming and assignments will be closely connected with the methods and examples presented in the co-requisite applied analytics methods course. 1 hour concurrent with PHS 501. Instructor: Multiple

PHS 505 Topics in Population Health Sciences I. This course introduces the US healthcare system and population health sciences. It will provide foundational knowledge to understanding health and healthcare including an introduction to major diseases and disorders. Topics include

¹ The instructor names highlighted in **yellow** signify who the department has identified as the initial instructor. Additional instructors listed are other faculty who have expressed interest and are able to teach the course in subsequent years.

overall structure of the US healthcare system, insurance, Medicare, Medicaid, VA system, the ACA, mental health, health economics, and quality of care. 3 units. Instructor: Dinan/Bosworth, Sanders, Dupre, Curtis, Sorenson, Wang Reed, Jackson, Maciejewski, Zullig.

PHS 506 Topics in Population Health Sciences II. Continuation of topics introduced in PHS 505. Topics will include: definition and measurement of population health; an overview of determinants of health including medical care, socioeconomic status, the physical environment and individual behavior, and their interactions; an overview of health services research, dissemination and implementation science, epidemiology, and measurement sciences. 3 units. Instructor: Dupre, Sanders, Dinan, Sorenson, Wang, Reed, Belsky, Raman, Jackson, Ostbye, Richman, Zullig, Bosworth.

PHS 507 Population Health Sciences Research Methods and Study Design I. This course is the first of two-course sequence that provides the foundation for research methods used in population health. The course introduces critical concepts in research methods, including varying types of validity, reliability, and causal inference. Topics include sampling and interpretation of probability and nonprobability sampling; an introduction to measurement theory; threats to internal validity; experimental designs; and quasi-experimental designs. 3 units. Instructor: Pollak, Sperber, King, Gierisch, O'Brien, Jackson, Ostbye, Richman, Skinner, Corneli.

PHS 508 Population Health Sciences Research Methods and Study Design II. This is the second of a two-course sequence that provides the foundation for research methods used in population health. Topics include qualitative and mixed methods, and advanced designs relevant to population health. The course applies foundational design information to methods unique to population health, including pragmatic trials, administrative claims data, and electronic medical record data. The course culminates in development of a strong research question for a literature review, using the methods learned to critique research on a topic of their choosing. 3 units. Instructor: Curtis, Sperber, Steinhauer, Pollak, Hammill, Skinner,

PHS 509 Professional Development I. The purpose of this course is to give the student a holistic view of career choices and development and the tools they will need to succeed as professionals in the world of work. The fall semester will focus on creating a professional presence, networking techniques, what American employers expect in the workplace, creating and maintaining a professional digital presence and learning how to conduct and succeed at informational interviews. Practicum experiences will include interviewing and networking events with participation of Duke staff and faculty as well as external guests. 0.5 hour. Instructor: Consultant

PHS 510 Professional Development II. This a continuation of PHS 509 and will address issues of project and team management. This course will give the student a holistic view of career choices and development and the tools they will need to succeed as professionals in the world of work. 0.5 hour. Instructor: Consultant

Core PhD courses

PHS 700 Population Health Sciences Research Methods PhD I. Survey Design and Methods for Population Health Sciences. This course will cover research concepts associated with survey methods, including measurement, sampling, and complex survey designs. Instructor: Ostbye/Epplein, Sperber, Gonzalez, King, Reeve, Richman, Corneli.

PHS 701 Population Health Sciences Research Methods PhD II. Systematic Reviews and Meta-

Analysis for Population Health Sciences. This course will cover methods for conducting systematic reviews in population health, including techniques for literature search, abstraction, and synthesis. 3 units. Instructor: Sanders, Gierisch, Skinner.

PHS 703 Population Health Sciences Research Methods PhD III. Advanced Methods in Population Health Sciences Outcomes Research. This course will focus on advanced study designs specific to outcomes research in population health. 3 units. Instructors: O'Brien, Belsky, Maciejewski.

PHS 710 Population Health Sciences Theories. This course will present theoretical frameworks commonly used in population health sciences, with an emphasis on how to use them in research planning and design. 3 units. Instructor: Zullig, Steinhauser, Dupre, Curtis, Sorenson, King, Belsky, Gierisch.

PHS 720 Analytic Methods for Population Health Sciences III. Advanced Regression Methods for Population Health Sciences including longitudinal and clustered data. This course will focus on advanced regression methods commonly encountered in outcomes research in population health sciences. 3 units. Instructor: Smith, Hamill, Maciejewski.

PHS 721 Analytic Methods for Population Health Sciences IV. Health Informatics and Population Health Sciences Analytics. Course topics will include data curation, managing electronic health data and, large datasets (including Medicare, PCORNET, NIH collaborative data. Includes and methods for managing these data and using to improve practice and policy. 3 units. Instructor: Hammill/Raman, Dinan, Curtis.

PHS 722 Analytic Methods for Population Health Sciences V. Design and Analysis of Clinical Trials for Population Health Sciences. This course will focus on advanced topics in clinical trials design (e.g., futility analysis, stochastic curtailment, sequential monitoring, equivalence and non-inferiority trials, stepped wedge trials, cluster randomization, adaptive design trials, etc.) encountered in population health sciences research. 3 units. Instructor: Grambow, Smith.

PHS 801 Population Health Sciences Professional Development I. The purpose of this course is to give the student a holistic view of career choices and development and the tools they will need to succeed as professionals in the world of work. The fall semester will focus on creating a professional presence, networking techniques, what American employers expect in the workplace, creating and maintaining a professional digital presence and learning how to conduct and succeed at informational interviews. Instructor: Consultant.

PHS 802 Population Health Sciences Professional Development II. This a continuation of PHS 509 and will address issues of project and team management. This course will give the student a holistic view of career choices and development and the tools they will need to succeed as professionals in the world of work. Instructor: Consultant.

PHS 810 Population Health Sciences Teaching Seminar. This course will introduce graduate students to the practice and theory of teaching at the university level. The course will provide practical advice and tips. Discussion will include practical elements of teaching, including classroom climate, classroom management, and document management. Instructor: Skinner.

PHS 811 Population Health Sciences Grant Writing. Course focuses on how to develop a dissertation research prospectus and related grant proposals. Students will also develop oral presentations using their own developing prospectus or grant proposal. Instructor: Weinfurt,

Sanders, Steinhauser, Wang, Pollak, Reeve, Corneli.

Electives. The Master of Science program requires two analytic elective courses and two general elective courses. The doctoral program requires one general elective course in addition to the minor track courses.

There are approximately 45 courses offered outside of PHS that would meet the analytic elective requirement. Outside courses are thematically organized across core domains of Health Services Research, Implementation Science, Comparative Effectiveness, Cost Effectiveness, Measurement Science, Epidemiology, Statistics, and Data Science. Additionally, MS students may choose to take PhD-level courses within PHS to satisfy the analytic elective.

Examples of electives that the Department of PHS will offer to students are listed below. As the program matures, other electives will be offered through PHS. The remaining elective requirements will be satisfied through cross-listing with courses outside of the department.

PHS XXX Cost Effectiveness Analysis. This course covers performing the needed methods for designing, performing, and interpreting costs-effectiveness analysis. Topics include cost measurement and data sources, methods of economic evaluation, decision modeling, measurement of health care outcomes, patient utilities, and representation of uncertainty. We will also explore methods of incorporating such analyses into health policy. 3 units. Instructor: **Reed**, Sanders.

PHS 511 Introduction to Qualitative Research Methods. This introductory course focuses on the design and analysis of qualitative descriptive research. Topics to be covered include study designs, data collection methods, interviewing techniques, analytical approaches, ethical issues, and writing strategies. Students will develop research questions and question guides; practice conducting in-depth interviews, focus group discussions, and observations; and analyze and write up mock qualitative data. 3 units. Instructor: **Corneli/Sperber**, Steinhauser, Sorenson, King, Pollak, Gierisch, O'Brien.

PHS 512 Qualitative Research Design I. The purpose of the two-semester course is for students to gain hands-on experience in the development, conduct, analysis, and write up of qualitative research. During the first semester, students will learn about various approaches to qualitative research, study designs, data collection methods, interviewing techniques, analytical approaches, and ethical issues. Applying this information, students will work in groups to design their own qualitative research study and prepare a study protocol for IRB submission. 3 units. Instructor: **Corneli/Sperber**, Steinhauser, Sorenson, King, Pollak, Gierisch, O'Brien.

PHS 513 Qualitative Research Design II. During the second semester course, students will conduct their IRB-approved qualitative research study, applying the qualitative inquiry skills learned in the first semester course. Students will also learn and apply qualitative data management methods, conduct a rigorous analysis of their study data, and write up their findings. 3 units. Instructor: **Steinhauser**, Corneli, Sperber.

PHS XXX Genetics and Genomics in Population Health Sciences. The course will cover two topics. The first topic is how understanding of the human genome has been revolutionized by ten years of research using genome-wide association study (GWAS) methods and related techniques. The second topic is how this understanding can be applied to improve public health, including applications related to understanding etiology and identifying intervention targets, risk

stratification, and population surveillance. Instructor: Belsky, Wei.

PHS XXX Stated Preference Research. This course will focus on the conceptual framework that supports stated-preference research in contrast to patient-reported outcomes and health-state utility methods. Students will learn to identify appropriate uses of various types of preference-elicitation formats, and will get experience in conducting and critically evaluating empirical preference research. Instructor: Gonzalez, Johnson, Reed.

PHS XXX Stakeholder Engagement. A shift towards patient-centered outcomes research (PCOR) has taken hold in clinical research. At its core, PCOR seeks to provide evidence to answer important clinical questions about healthcare services/practices and facilitate optimal patient and caregiver involvement. PCOR explicitly takes into account the lived experience of the patients, integrating patient preferences and values to address questions like: *“Given my situation, will this treatment improve outcomes that are important to me like physical functioning and quality of life?”*, *“Given my values and preferences, which treatment choices (including no treatments) are best for me?”* or *“How will this treatment impact my family?”* Further, other stakeholders (eg. providers, policymakers, also have a “stake” in what and how research is conducted as it impacts their work. As a result, it is essential that researchers view patients and other key stakeholders as respected collaborators in the research process. This course will provide a practical foundation in strategies and approaches to meaningfully engage patients, their caregivers, and other stakeholders in the research process. Topics include: identifying stakeholder collaborators, methods for fostering meaningful engagement, how to support and train stakeholder collaborators, and building a stakeholder engagement into your research proposals. Instructor: Gierisch

PHS XXX Social Disparities, Stress, and Health. This course is designed to review theories and research examining stress and the role it plays in social disparities in health. The course will review basic concepts and models of stress as well as the mechanisms by which stress may influence health and explain social disparities. Principles of Social and Behavioral Research Introduces methodology to explore fundamental concepts and theories useful in understanding social and behavioral determinants of health. The course emphasizes quantitative research and social science methods applied to public health research. Social Sciences & Population Health The course introduces students to the theories and methods of social sciences in population health. Through weekly seminars and lectures, the course will cover: social epidemiological approaches to examining health disparities, behavioral science research methods, program planning & evaluation, ethnographic approaches, health communication, and community-based interventions. Instructor: Richman, Dupre

PHS XXX Population Health Economics. - This course introduces students to the key concepts in health economics, focusing on understanding demand for health and health care, the role of health insurance, health care markets, health care financing, and features of supply, such as consolidation, competition and the role of ownership structure in supply and quality. Students will learn why we treat health care markets differently than other markets in the economy, and understand the role of policy and government regulation to address market failure in health

care. For example, what is information asymmetry and why does it need to be considered in health?. Students will learn theories to understand how demand-side (patients) and supply-side (providers) incentives are intended to impact health behaviors and health care provision.

Instructor: **Van Houtven**, Maciejewski

PHS XXX – Improving Population Health-Policies and Programs. This course will examine policies and programs to address pressing and complex population health problems in the United States and abroad, such as obesity, end-of-life issues, and opioid abuse. Students will assess current population health challenges, mainly through use of case studies, and propose and assess innovative policy and programmatic solutions. The course will emphasize content knowledge of population health issues and policies, along with critical thinking, creativity and innovation, policy analysis skills, and written and verbal communication. Instructor: **Sorenson**

Potential Elective Courses Possibly Cross-listed in PHS

The courses below are selected from the following programs

- CLP -- Clinical Leadership Program
- COMPSCI -- Computer Science
- CRP -- Clinical Research Training Program
- ECON -- Economics
- GLHLTH -- Global Health
- MIDS -- Master's in Interdisciplinary Data Science (MIDS)
- MMCI -- Master of Management in Clinical Informatics
- POLSCI -- Political Science
- PSY -- Psychology
- SOCIOL -- Sociology
- STA -- Statistical Science
- UPGEN -- University Program in Genetics

Courses Organized by Population Health Sciences Domain

I. Health Services Research

A. CRP 248 Clinical Trials

II. Implementation Science

A. CLP 213 Health Care Organization and Policy

B. CLP 214 Population Health Management Approaches

C. CLP 215 Health Care Operations: Perspectives for Continuous Improvement

III. Comparative Effectiveness

A. CRP 262 - Systematic Reviews and Meta Analysis

B. CRP 266 - Concepts in Comparative Effectiveness Research

IV. Cost Effectiveness

- A. ECON 608D - Introduction to Econometrics
- B. ECON 612 - Time Series Econometrics
- C. ECON 613 - Applied Econometrics in Microeconomics
- D. ECON 620 - Game Theory with Applications of Economics and other Social Sciences
- E. ECON 703 - Econometrics I
- F. ECON 707 - Econometrics II
- G. ECON 756 - Health Economics: Supply
- H. ECON 757 - Health Economics: Demand
- I. GLHLTH 531 - Cost-Benefit Analysis for Health and Environmental Policy

V. Measurement Science

- A. POLSCI 732 - Research Design and Qualitative Methods (M)
- B. SOCIOL 699 - Qualitative Methods in Sociology
- C. SOCIOL 720 - Survey Research Methods

VI. Decision Science

- A. CRP 259 - Decision Sciences in Clinical Research
- B. MMC 517 - Spreadsheet Modeling and Decision Analysis
- C. MMC 540 - Managerial Analysis

VII. Epidemiology

- A. GLHLTH 635 - Critical Readings in Environmental Epidemiology
- B. GLHLTH 708 - Advanced Methods in Epidemiology
- C. GLHLTH 710 - Intermediate Epidemiology
- D. SOCIOL 720 - Survey Research Methods
- E. UPGEN 533 - Genetic Epidemiology

VIII. Statistics

- A. POLSCI 733 - Advanced Regression
- B. PSY 767 - Applied Correlation and Regression Analysis
- C. PSY 768 - Applied Structural Equation Modeling
- D. PSY 770 - Applied Multilevel Modeling
- E. SOCIOL 726S - Advanced Methods of Demographic Analysis
- F. STA 521L - Modern Regression and Predictive Modeling
- G. STA 523L - Programming for Statistical Science
- H. STA 601 - Bayesian and Modern Statistical Data Analysis

IX. Data Science

- A. COMPSCI 316 - Introduction to Database Systems
- B. COMPSCI 516 - Database Systems
- C. SOCIOL 728 - Advanced Methods: Introduction to Social Networks
- D. COMPSCI 570 - Artificial Intelligence
- E. COMPSCI 571D - Machine Learning
- F. COMPSCI 579 - Statistical Data Mining

- G. MIDS 5XX -- Data to Decision
- H. MIDS 5XX -- Data Marshaling & Management
- I. MIDS 5XX -- Data Visualization
- J. MIDS 5XX -- Data Science Seminar
- K. MMCI 538 - Data, Information and Knowledge Representation
- L. SOCIOL 728 - Advanced Methods: Introduction to Social Networks
- M. STA 561D - Probabilistic Machine Learning
- N. STA 571 - Advanced Probabilistic Machine Learning

Appendix B: Backgrounds and Bios of Key Faculty Participating in the Program

OMB No. 0925-0001/0002 (Rev. 08/12 Approved Through 8/31/2015)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Hayden B. Bosworth, PhD

eRA COMMONS USER NAME (credential, e.g., agency login): Hayden

POSITION TITLE: Professor of Medicine, Psychiatry, and Nursing Duke University/ Associate Director, Center for Health Services Research in Primary Care, Durham VAMC

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Brandeis University, Waltham, MA	B.A.	1992	Psychology
The Pennsylvania State Univ., University Park, PA	M.S.	1994	Human Development
The Pennsylvania State Univ., University Park, PA	Ph.D.	1996	Human Development
Duke University Medical Center	Post-doct	1997	Behavioral Medicine

A. Personal Statement [*Focus on teaching and mentoring experience. For those with less formal teaching experience, focus on how your research will provide mentorship and research opportunities for students, and will support your mentoring and teaching.*]

Dr. Bosworth is a Professor in the Department of Population Health Sciences, Professor of Medicine, Psychiatry, and Nursing at Duke University Medical Center. He is also the Associate Director of the Center for Health Service Research in Primary Care Center of Innovation (COIN) at the Durham VAMC and Adjunct Professor in the Department of Health Policy and Administration in the School of Public Policy at the University of North Carolina at Chapel Hill. Dr. Bosworth has served a direct role in the training of over 65 graduate students, post-doctoral fellows and faculty including 20 career development awardees. Dr. Bosworth has served as the Director of the Durham pre-doctoral program for 3 years and the post-doctoral program for 16 years. He has been teaching CRTP 249, Advance topics is Health Services Research the last 10 spring semester since and developed the inaugural CRTP 273, Dissemination and Implementation, which he has taught for the last four years. Dr. Bosworth is also the awardee of K12 training grant from NHLBI which will fund five faculty members to receive training in dissemination and implementation. Dr. Bosworth is the recipient of numerous awards including an American Heart Association established investigator award, a VA Senior Career Scientist Award, and Under Secretary's Award for Outstanding Achievement in Health Services Research. He has been the Principal Investigator of over 20 trials resulting in over 300 peer reviewed publications (more than half are with current or prior mentorees) publications and four books. His practice-focused mentees are well represented in both public and private sector public health organizations, including Denver Kaiser, Research Triangle Institute. His academic-focused mentees are now faculty at the University of North Carolina, University of Denver, University of Wisconsin, University of Pittsburgh, University of Washington at St. Louis, among others.

B. Relevant positions (limited to postgraduate only)

2006-	Research Professor of Psychiatry and Behavioral Sciences, Duke University
2006-	Research Professor of Nursing, Duke University
2006-	Adjunct Professor, Department of Health Policy & Administration, UNC
2009-	Tenure, Department of Medicine, Duke University Medical Center
2017-	Tenure, Department of Population Health Sciences, Duke University

C. Synergistic Activities

Education: Director of Post-doctoral Fellowship Program, Durham Veterans Affairs Medical Center for Health Services Research in Primary Care (10/98-4/2014, 11/16-6/17); Director of Pre-doctoral Fellowship Program, Durham Veterans Affairs Medical Center, Center for Health Services Research in Primary Care (11/98-3/02)

Professional Service: Member of the Agency of Healthcare Research and Quality (AHRQ) Study Review Section: Health Research Dissemination & Implementation (HRDI) (2001-2006); Member of the VA Health Services Research and Development Study Section (Chair, HSR 7 – Aging and Diminished Capacity in the Context of Aging (2014-); AD-hoc reviewer various NIH special emphasis panels including SBIR, NIDDK; Chair and Reviewer for American Heart Association, Established Investigator Award (2014-); Editorial Boards - The Gerontologist (2001 -); The Journal of Gerontology: Psychological Sciences (2001 -); Deputy Editor and member of Editorial board, *Journal of General Internal Medicine* (2005 -); Honorary Editorial Board, Patient Preference and Adherence (2007 -), American Psychological Association, Division Health Psychology and Adult Development (Fellow);

Research: Dr. Bosworth has extensive research experience, primarily in the area of medication adherence, chronic disease self-management, health care disparities, and methodologically dissemination and implementation science. He has served as principal/co-principal investigator on over 40 studies/trials and co-investigator on multiple awards from NIH, VA, CDC, industry, and foundations. Relevant for this proposal, Dr. Bosworth is Co-principal investigator on a Duke Bass Connections undergraduate training grant (2016-2018) as well as a recently funded KL2 program from NHLBI that will lead to training of junior faculty in Dissemination and implementation.

D. Five most relevant publications; selected from 302; h-index = 57 [Choose publications that demonstrate your experience and contribution to population health.]

1. **Bosworth HB**, Olsen MK, Dudley T, Orr M, Goldstein MK, Datta SK, McCant F, Gentry P, Simel DL, Oddone EZ. Patient education and provider decision support to control blood pressure in primary care: a cluster randomized trial. *Am Heart J*. Mar 2009;157(3):450-456. **PMCID19249414**
2. **Bosworth HB**, Olsen MK, Grubber JM, Neary AM, Orr MM, Powers BJ, Adams MB, Svetkey LP, Reed SD, Li Y, Dolor RJ, Oddone EZ. Two Self-management Interventions to Improve Hypertension Control: A Randomized Trial. *Ann Intern Med*. Oct 5 2009. **PMCID19920269**
3. **Bosworth HB.**, Powers BJ., Olsen MK., McCant F., Grubber J., Smith V., Gentry P., Rose, C., Van Houtven C., Wang V., Goldstein MK., Oddone EZ.(2011). Can Home Blood Pressure Management Improve Blood Pressure Control: Results from a Randomized Controlled Trial. *Archives of Internal Medicine*, 171 (13), 1173-1180; editorial *Arch Intern Med*. 2011;171(13):1181-1182.
4. Zullig L., Peterson ED., **Bosworth HB** (2013). Ingredients of Successful Interventions to Improve Medication Adherence. *JAMA*;310(24):2611-2PMID: 24264605
5. **Bosworth HB**, DuBard CA, Ruppenkamp J, Trygstad T, Hewson DL, Jackson GL. Evaluation of a Self-Management Implementation Intervention to Improve Hypertension Control Among Patients in Medicaid. *Translational Behavioral Medicine: Practice, Policy and Research*, 2011; 1, 191-199.

E. Courses taught in the previous 5 years [If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.]

2007-Present Clinical Research Training Program 249, Advance Topics in Health Services Research (Spring).
2 credits master's level course

2013-Present Clinical Research Training Program 273, Topics in Dissemination and Implementation Science (Fall). 2 credits master's level course

2017 Dissemination and Implementation, University of Basel, 2 credit master's level course

F. Mentoring [Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.]

Doctoral Student Committee Membership (>5): Served on >5 doctoral dissertation committees for students in Healthy Policy (PhD), and Pharmaceutical Policy (PhD) at UNC.

Master's Student Thesis Committee Membership (>20): Served on more than Master's student thesis committees for students. A majority of the students were physicians in the Duke Clinical Research Training program and Bioethics & Science Policy Program

Junior Faculty (>35): Have served as mentor and advisor to many junior faculty at Duke, UNC, VA and other universities including Vanderbilt and University of Colorado, including advising on K-awards and other projects.

Postdoctoral Fellows (>25): Have served as a formal mentor for numerous postdoctoral fellows, including those in health services research fellowships and clinical research fellowships.

Predoctoral Fellows (5): Mentored 5 students as part of a predoctoral fellowship in Health Services Research.

Career Development Awards (25): primary mentor 13 K awards/minority supplements, 13 as secondary mentor. Currently the primary mentor for 3 faculty members and secondary on 4.

Undergraduate Students, Medical Students, and Others (>5): Mentored numerous students in health policy and health services research from undergraduate, medical, and non-degree programs.

BIOGRAPHICAL SKETCH

NAME: Asheley Cockrell Skinner

POSITION TITLE: Associate Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of Alabama	BS	08/2001	Health Care Management
The University of North Carolina at Chapel Hill	PhD	05/2007	Health Policy and Administration
The University of North Carolina at Chapel Hill	Postdoctoral	06/2009	Health Care Quality and Outcomes

A. Personal Statement *[Focus on teaching and mentoring experience. For those with less formal teaching experience, focus on how your research will provide mentorship and research opportunities for students, and will support your mentoring and teaching.]*

Dr. Skinner is an Associate Professor in the Department of Population Health Sciences, and has served a direct role in the training of over 40 students, fellows, and junior faculty. She has previously served as the Associate Director of the DrPH Program in Public Health Leadership at the University of North Carolina at Chapel Hill, assisting in the development of this program while still a doctoral student. She currently oversees a new predoctoral fellowship program at the DCRI, which will train ~3 future health services researchers each year. Her practice-focused mentees are well represented in both public and private sector public health organizations, leading and directing programs at the Centers for Disease Control and Prevention, the General Accounting Office, and the Kellogg Foundation, among many others. Her academic-focused mentees are now new faculty at the University of North Carolina, Creighton University, and Wake Forest University.

B. Relevant positions (limited to postgraduate only)

2007-2009	Postdoctoral Fellow, School of Nursing, NRSA Training Grant in Health Care Quality and Patient Outcomes, the University of North Carolina at Chapel Hill
2009-2014	Research Assistant Professor, Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, the University of North Carolina at Chapel Hill
2014-2016	Associate Professor, Division of General Pediatrics and Adolescent Medicine, Department of Pediatrics, the University of North Carolina at Chapel Hill; and Associate Professor, Department of Health Policy and Administration, Gillings School of Global Public Health, the University of North Carolina at Chapel Hill
2016-	Associate Professor, Division of General Internal Medicine, Department of Medicine, Duke University

C. Synergistic Activities *[You may use different categories. Focus on activities that demonstrate your strengths in education and the field overall.]*

Education: Associate Director, DrPH Program in Public Health Leadership at the University of North Carolina at Chapel Hill (2015-2016); Director, DCRI Predoctoral Fellowship Program (2016-current); Training Director, Duke Center for Pediatric Obesity, American Heart Association Strategically Focused Research Network (2017-current).

Professional Service: Chair-Elect, Health Services Research Section, The Obesity Society (2016-2017); Associate Editor, *Journal of Primary Prevention* (2016-Present); PCORI Advisory Panel on Clinical Trials (CTAP), Post-Award Subcommittee (2015-Present); PCORI Grant Reviewer (2015-Present); Pediatric

Academic Societies Poster Review Facilitator (2015); The Obesity Society, Scientific Review Committee (2014-2016); Peer reviewer for ~20 journals (2003-current).

Research: Dr. Skinner has extensive research experience, primarily in the area of childhood obesity, but also in many other areas of public health. She received a K12 (Building Interdisciplinary Research Careers in Women's Health), focused childhood obesity treatment. She has served as principal investigator and co-investigator on multiple awards from NIH, CDC, and foundations.

D. Five most relevant publications; selected from 99; h-index = 20 *[Choose publications that demonstrate your experience and contribution to population health.]*

1. Roberts AW, Farley JF, Holmes GM, Sleath BL, Oramasionwu CU, Ringwalt C, **Skinner AC**. Controlled substance lock-in circumvention: Examining an unintended consequence of a burgeoning prescription drug abuse policy. (2016). *Health Affairs*, 35(10):1884-1892.
2. **Skinner AC**, Ringwalt C, Naumann RB, Roberts AW, Moss LA, Sachdeva N, Weaver MA, Farley JF. Reducing opioid misuse: Evaluation of a Medicaid Lock-In Program. (2016). *Journal of Pain*. Epub ahead of print.
3. **Skinner A.C.**, Perrin E.M., Skelton J.A. Prevalence of obesity and severe obesity in US children, 1999-2014. (2016). *Obesity*, 24(5):1116-23.
4. **Skinner A.C**, Perrin E.M, Moss L.A, Skelton J.A. Cardiometabolic risks and obesity severity in a nationally representative group of children and adolescents. (2015). *New England Journal of Medicine*, 373(14):1307-1317.
5. **Skinner A.C.**, Mayer M.L., Flower K., Perrin E.M., Weinberger M. Using BMI to determine risk for key poor health outcomes in children: How do the BMI cut offs fare? (2009). *Pediatrics*, 124(5): e905-12. [PMID: 19858150; PMCID: PMC2909481]

E. Courses taught in the previous 5 years *[If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.]*

2016-Present Facilitator, Duke Physician Assistant Program, Evidence Based Medicine Small Groups

2014-2016 Health Policy Research Methods I, 3 hours; PhD lecture providing foundations for research methods in health services research.

2010-2016 Literature Review and Appraisal, 3 hours; DrPH lecture to develop critical appraisal skills and literature review methods.

F. Mentoring *[Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.]*

Doctoral Student Committee Chair (3): Served as committee chair for three students in the DrPH Public Health Leadership Program.

Doctoral Student Committee Membership (>25): Served on >25 doctoral dissertation committees for students in Public Health (DrPH), Healthy Policy (PhD), and Pharmaceutical Policy (PhD).

Master's Student Thesis Committee Membership (2): Served on 2 Master's student thesis committees for students in Health Policy.

Junior Faculty (>5): Have served as mentor and advisor to many junior faculty at UNC and Duke, including advising on K-awards and other projects.

Postdoctoral Fellows (>10): Have served as a formal mentor for numerous postdoctoral fellows, including those in health services research fellowships and clinical research fellowships.

Predoctoral Fellows (5): Currently mentoring 5 students as part of a predoctoral fellowship in Health Services Research.

Residents (>5): Served as mentor and advisor for numerous resident projects, from both pediatrics and internal medicine.

Undergraduate Students, Medical Students, and Others (>5): Mentored numerous students in health policy and health services research from undergraduate, medical, and non-degree programs.

BIOGRAPHICAL SKETCH

NAME: **Gillian Denise Sanders Schmidler**

POSITION TITLE: Professor (tenured), Department of Population Health Sciences, Duke University School of Medicine

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Princeton University, Princeton, NJ	AB	06/1993	Mathematics
Stanford University, Stanford, CA	PHD	06/1998	Medical Informatics

A. Personal Statement

Dr. Sanders-Schmidler is a tenured Professor within the Department of Population Health Sciences and Director of the Duke Evidence Synthesis Group. Dr. Sanders-Schmidler's research focuses on the development of evidence-based decision models to evaluate the comparative effectiveness of alternative prevention, treatment, and management strategies for chronic diseases – and the translation of such models into formats/tools that patients, healthcare providers, and policymakers can use in their decision-making process. Dr. Sanders-Schmidler is Past President of the Society for Medical Decision Making (SMDM) and served as Director of Duke's Evidence-based Practice Center (EPC III) funded by the Agency for Healthcare Research and Quality (AHRQ) from 2009-2013 and is currently Director of EPC V (2014-2019). Dr. Sanders-Schmidler has extensive research expertise in both methodology and application of comparative effectiveness and patient-centered outcomes research and leading collaborative investigator teams to perform successful and high-quality systematic review of the literature.

B. Appointments

1998 - 2003 Assistant Professor, Stanford University, Stanford, CA
2003 - 2016 Associate Professor, Duke University, Durham, NC
2009 - 2013 Director Evidence-based Practice Center III, Duke University, Durham, NC
2013 - Director Evidence Synthesis Group, Duke University, Durham, NC
2014 - Director Evidence-based Practice Center V, Duke University, Durham, NC
2016 - Professor

C. Synergistic Activities

- **Education:** Chair of Education Committee for the Society for Medical Decision Making (SMDM), 2005-2006, Member of SMDM Education Committee, 1999-2002
- **Professional Service:** Society for Medical Decision Making (Trustee, Editorial Board, Co-Chair Scientific Review Committee SMDM Annual Meeting, Co-Chair SMDM Annual Meeting, Vice President, Chair Education Committee, President), Study Section member, Health Care Technology and Dissemination Sciences, Agency for Health Care Research and Quality, Co-chair Second Panel on Cost-Effectiveness in Health and Medicine, Faculty Council Duke Clinical Research Institute,
- **Research:** Dr. Sanders-Schmidler has extensive research experience as an independent investigator and leading collaborative interdisciplinary teams. She has been Principal Investigator on more than 38 research projects funded through public or private sources. These projects include four federally-funded R01 grants (funded in 2000 by Agency for Healthcare Research and Quality (AHRQ), in 2005 by NCI, in 2009 by AHRQ, and in 2016 by NHLBI) and large master IDIQ contracts with both AHRQ and the Patient Centered Outcomes Research Institute (PCORI).

D. Five most relevant publications; selected from 142; h-index = 10 ([complete bibliography](#))

1. **Sanders GD**, Bayoumi AM, Sundaram S, Bilir SP, Neukermans CP, Rydzak CE, Douglass LR, Lazzeroni LC, Holodniy M, Owens DK. Cost-Effectiveness of Screening for HIV in the Era of Highly Active Antiretroviral Therapy. *New England Journal of Medicine* 2005; 352(6): 570-585. PubMed PMID: 15703422.

2. **Sanders GD**, Hlatky MA, Owens DK. Cost-Effectiveness of Implantable Cardioverter-Defibrillators in Preventing Sudden Death. *New England Journal of Medicine* 2005 353(14): 1471-80. PubMed PMID: 15838066.
3. Gierisch JM, Myers ER, Schmit KM, Crowley MJ, McCrory DC, Chatterjee R, Coeytaux RR, Kendrick A, **Sanders GD**. Prioritization of research addressing management strategies for ductal carcinoma in situ. *Ann Intern Med*. 2014 Apr 1;160(7):484-91. doi: 10.7326/M13-2548. PubMed PMID: 24567146.
4. **Sanders GD**, Neumann PJ, Basu A, Brock DW, Feeny D, Krahm M, Kuntz KM, Meltzer DO, Owens DK, Prosser LA, Salomon JA, Sculpher MJ, Trikalinos TA, Russell LB, Siegel JE, Ganiats TG. Recommendations for Conduct, Methodological Practices, and Reporting of Cost-effectiveness Analyses: Second Panel on Cost-Effectiveness in Health and Medicine. *JAMA*. 2016 Sep 13;316(10):1093-103. doi: 10.1001/jama.2016.12195. Erratum in: *JAMA*. 2016 Nov 8;316(18):1924. PubMed PMID: 27623463.
5. Al-Khatib SM, Fonarow GC, Joglar JA, Inoue LYT, Mark DB, Lee KL, Kadish A, Bardy G, **Sanders GD**. Primary Prevention Implantable Cardioverter Defibrillators in Patients With Nonischemic Cardiomyopathy: A Meta-analysis. *JAMA Cardiology*. Published online March 29, 2017. doi:10.1001/jamacardio.2017.0630

E. Courses taught in the previous 5 years

Course Lecturer, "Secondary Data Analysis" Clinical Research Training Program (CRTP) 242, "Principles of Clinical Research" (Duke University, Durham NC)

Course Lecturer, "Involving Stakeholders in Research" Clinical Research Training Program (CRTP) 242, "Principles of Clinical Research" (Duke University, Durham NC)

Course Director, "Decision Models" Duke Fuqua School of Business, Master of Management in Clinical Informatics, Duke University, Durham, NC.

Course Lecturer, "Ethics versus efficiency in health care", Duke Medicine Global Health & Health Policy Week (Duke University, Durham NC)

Course Lecturer, "Technology Assessment and Cost Effectiveness Analysis", Duke Medicine Introduction to Healthcare Markets & Policy (Duke University, Durham NC)

F. Mentoring

- **Undergraduate Honor Thesis (2):** Primary mentor for one student's Stanford Honors Thesis in Economics (awarded Stanford University Firestone Medal for Excellence in Undergraduate Research [1 of 27 awardees from 1,736 undergraduates] and awarded 2nd prize, Lee Lusted National Student Research Competition, Twenty-fourth Annual Meeting, Society for Medical Decision Making in October 2002). Secondary mentor for a second student for her Honors Thesis Human Biology (awarded Firestone Medal for Excellence in Undergraduate Research (1 of 29 awardees from 1,865 undergraduates))
- **Medical Student, Scholars Program (1):** Primary mentor on a Medical Scholars project at Stanford for one student
- **Masters of Health Research and Policy (5):** Primary mentor for 3 students and secondary mentor for an additional 2 students within Stanford's Master of Health Research and Policy program.
- **Doctoral Student Committee (1):** Served on doctoral dissertation committee for 1 student in Medical Informatics at Stanford University (PhD)
- **Clinical Fellows (4):** Served as methodological mentor for 4 clinical fellows (supported through T32s) as Duke University
- **Mid-Career Faculty (3):** Served as primary mentor for three mid-career KM1 and K18 awardees at Duke University

BIOGRAPHICAL SKETCH

NAME: **Steven Charles Grambow**

POSITION TITLE: Assistant Professor, Department of Biostatistics and Bioinformatics, Duke University School of Medicine

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
California State University, Chico, CA	BS	05/1991	Mathematics
University of Kentucky, Lexington, KY	MS	05/1996	Statistics
University of Kentucky, Lexington, KY	PHD	12/1998	Statistics

A. Personal Statement

Dr. Grambow is an Assistant Professor in the Department of Biostatistics and Bioinformatics and has served a direct role in the research training of 28 students, fellows, and junior faculty. He currently serves as the Director of the Clinical Research Training Program (CRTP), Vice Chair of Education in the Department of Biostatistics and Bioinformatics, providing administrative support to all departmental degree programs (Master of Biostatistics, PhD in Biostatistics, Master of Management in Clinical Informatics, and CRTP), and Co-Director of the Duke Clinical and Translational Science Institute (CTSI) Education & Workforce Development Core. He is a past Chair of the Section on Teaching Statistics in the Health Sciences of the American Statistical Association and has extensive teaching experience as a course director and guest lecturer within CRTP, as well as a guest lecturer and workshop leader international math and science teaching experience as a U.S. Peace Corps Volunteer in the country of Kenya. He has led numerous seminars and short courses both at the Duke University School of Medicine and the Department of Veterans Affairs.

As a collaborative statistical scientist, Dr. Grambow has extensive experience serving as a lead statistical investigator across a diverse range of population health investigations utilizing different clinical research designs and associated statistical methods. Recent collaborative areas include randomized controlled trials (RCTs) utilizing web and mobile health behavior interventions in the areas of weight loss, cardiovascular disease risk reduction through hypertension control, and smoking cessation.

B. Appointments

1999 -	Assistant Professor, Department of Biostatistics and Bioinformatics, Duke University School of Medicine
1999 - 2003	Director, Biostatistics Unit, Center for Health Services Research in Primary Care, Durham VA Medical Center, Durham, NC
1999 - 2008	Lead Statistician, Epidemiologic Research and Information Center (ERIC), Durham VA Medical Center, Durham, NC
1999 - 2013	Statistician, Center for Health Services Research in Primary Care, Durham VA Medical Center, Durham, NC
2002 - 2005	Statistician, Duke General Clinical Research Center, Duke University School of Medicine, Durham, NC
2004 - 2007	Director, Information Technology Group, Center for Health Services Research in Primary Care, Durham VA Medical Center, Durham, NC
2016 -	Co-Director, Duke Clinical and Translational Science Institute (CTSI) Education & Workforce Development Core, Duke University School of Medicine

C. Synergistic Activities

- **Education:** Director, CRTP (2012-Present); Vice Chair of Education, Duke Department of Biostatistics and Bioinformatics (2013-Present); Associate Director, CRTP (2009-2012); Faculty of the Year, CRTP (2007), Faculty, CRTP (2000-Present)
- **Professional Service:** Committee Member, Duke University Provost's Advisory Committee for Online Education (2014-2017); External Review Committee Member, University of Kentucky Doctoral Degree

in Epidemiology and Biostatistics Program Review (2016); External Review Committee Member, University of California at San Francisco Master of Advanced Study (MAS) Degree in Clinical Research Program Review (2016); Chair, Section on Teaching Statistics in the Health Sciences, American Statistical Association (2013); Co-Chair, Design and Analysis Subcommittee, NHLBI Early Adult Reduction of weight through Lifestyle intervention (EARLY) Trials Network (2009-2015). He has also served as a Data Safety Monitoring Board (DSMB) Statistician on 60+ Phase 1-3 RCTs in multiple therapeutic areas, including various liver diseases, cardiac surgery, and hypertension.

- **Research:** Dr. Grambow has extensive research experience as a collaborative statistical scientist over the past 17 years, serving as Principal Investigator or Co-Investigator on 35+ research projects funded through a variety of sources (e.g., VA, NIH, DOD, RWJ, AHA, Pharma) across a broad range of clinical research/disease areas (e.g., ALS, prostate cancer, colorectal cancer, teledermatology, substance abuse, smoking cessation, medication adherence, diet/weight loss, palliative care, cardiovascular disease risk reduction, osteoarthritis) with awards totaling more than \$60 million in aggregate.

D. Five most relevant publications; selected from 68; h-index = 31 ([complete bibliography](#))

1. Enders FT, Lindsell CJ, Welty LJ, Benn EKT, Perkins SM, Mayo MS, Rahbar MH, Kidwell KM, Thurston SW, Spratt H, **Grambow SC**, Larson J, Carter RE, Pollock BH, Oster RA (2017). Statistical competencies for medical research learners: What is fundamental? *Journal of Clinical and Translational Science*, 1–7.
2. Svetkey, L. P., Batch, B. C., Lin, P.-H., Intille, S. S., Corsino, L., Tyson, C. C., Bosworth H. B., **GRAMBOW, S. C.**, Voils, C., Loria, C., Gallis, J. A., Schwager, J., Bennett, G. B. (2015). Cell phone intervention for you (CITY): A randomized, controlled trial of behavioral weight loss intervention for young adults using mobile technology. *Obesity*, 23(11), 2133–2141. PMCID: [PMC4636032](#)
3. Zafar SY, Malin JL, **Grambow SC**, Abbott DH, Kolimaga JT, Zullig LL, Weeks JC, Ayanian JZ, Kahn KL, Ganz PA, Catalano PJ, West DW, Provenzale D. Chemotherapy use and patient treatment preferences in advanced colorectal cancer: a prospective cohort study. *Cancer*. 2013 Feb 15;119(4):854-62. PubMed PMID: [22972673](#); PubMed Central PMCID: [PMC3548062](#).
4. Yancy WS Jr, Westman EC, McDuffie JR, **Grambow SC**, Jeffreys AS, Bolton J, Chalecki A, Oddone EZ. A randomized trial of a low-carbohydrate diet vs orlistat plus a low-fat diet for weight loss. *Arch Intern Med*. 2010 Jan 25;170(2):136-45. PubMed PMID: [20101008](#).
5. Lash SJ, Stephens RS, Burden JL, **Grambow SC**, DeMarce JM, Jones ME, Lozano BE, Jeffreys AS, Fearer SA, Horner RD. Contracting, prompting, and reinforcing substance use disorder continuing care: a randomized clinical trial. *Psychol Addict Behav*. 2007 Sep;21(3):387-97. PubMed PMID: [17874889](#).

E. Courses taught in the previous 5 years

- 2001 - Course Director, *Introduction to Statistical Methods* (CRP 241), CRTP (students taught = 867)
- 2005 - Course Director, *Online Core in Clinical Research Certificate Program*, CRTP (students taught = 62)
- 2015 - Course Director, *Statistical Analysis* (CRP 245), CRTP (students taught = 112)
- 2013-2014 Course Director, *R Programming Boot Camp* (CRP 267/CRP 272), CRTP (students taught = 18)

F. Mentoring

- **Doctoral Student Committee Membership (1):** Served on doctoral dissertation committee for student in Nursing (PhD).
- **Master of Health Sciences in Clinical Research (MHSc) Student Thesis Committee Chair (6):** Served as committee chair on 6 research project/thesis committees for students in the Clinical Research Training Program.
- **Master of Health Sciences in Clinical Research (MHSc) Student Thesis Committee Member (17):** Served as committee statistical member on 17 research project/thesis committees for students in the Clinical Research Training Program (4 of these are currently in progress).
- **Master of Biostatistics Student Thesis Committee Member (4):** Served as committee member on 4 research project/thesis committees for students in the Duke Master of Biostatistics Program.
- **Junior Faculty (2):** Currently serving as statistical mentor to two current KL2 scholars at Duke University School of Medicine.

BIOGRAPHICAL SKETCH

NAME: Østbye, Truls

POSITION TITLE: Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	MM/YYYY	FIELD OF STUDY
University of Bergen, Bergen, Norway	MD	06/1979	Medicine
Rana Hospital , Mo I Rana, Nordland, Norway	Resident	06/1980	Medicine/Surgery
Harvard University, Boston, MA	MPH	05/1983	Biostatistics
Dalhousie University, Halifax, Nova Scotia, Canada	Fellow	09/1987	Community & Family Medicine
Faculty of Public Health of the Royal Colleges of Physicians, London, England	Fellow	12/1999	Public Health
Edinburgh Business School, Edinburgh, Scotland	MBA	06/2000	Business Administration
University of Bergen, Bergen, Norway	PhD	11/2000	Public Health

A. Personal Statement

Dr. Ostbye is Professor in Community and Family Medicine, and has served a direct role in the research training of over 100 students, fellows and junior faculty at the University of Bergen, University of Western Ontario, Duke University, Duke-Kunshan and Duke-NUS Singapore.

He has been the vice chair medical education in the department of epidemiology and biostatistics at the University of Western Ontario, and vice chair of research in community and family medicine at Duke. He has taught courses in epidemiology and research methodology to graduate epidemiology students, medical students and residents. His primary teaching function has been as a research mentor and supervisor for medical students, graduate students, residents, junior and clinical faculty undertaking research projects.

He has over 30 years of experience as a health services researcher and chronic disease epidemiologist, having authored more than 430 peer-reviewed publications (**h-index 66**), 25 of these related to innovation in education. He has served as a principal investigator for numerous large longitudinal observational studies and intervention trials. In particular, he has led a series of epidemiological studies using data from population surveys, claims and clinical assessments relating to aging, and been the PI of 4 NIH R01 behavioral intervention studies relating to obesity.

B. Positions

1980 - 1981	General Practitioner, Austrheim Health Center, Austrheim
1981 - 1984	Executive Officer, Directorate of Organization and Management
1984 - 1985	Special Medical Officer, National Institute of Public Health/Department of Health
1985 - 1986	Lecturer in Epidemiology, Wellington Clinical School, University of Otago
1988 - 1999	Assistant/ Associate/ Full Professor, Department of Epidemiology and Biostatistics, Faculty of Medicine, University of Western Ontario, London, ON
1992 - 1993	Vice Chair, Medical Education, Department of Epidemiology and Biostatistics, Faculty of Medicine, University of Western Ontario, London, ON
1997 - 1998	Acting Chair, Department of Epidemiology and Biostatistics, Faculty of Medicine, University of Western Ontario, London, ON
2000 -	Professor, Department of Community and Family Medicine, Duke University, Durham, NC
2005 - 2011	Vice Chair (Research), Community and Family Medicine, Duke University, Durham, NC
2006 -	Professor, Health Services and Systems Research, Duke-NUS Graduate Medical School, Durham, NC

Teaching related Honors

1995–2017	Canadian Who's Who (University of Toronto Press)
1997	Senior EFPO Faculty Fellowship, The Educating Future Physicians for Ontario Project. Toronto
1997	Teaching Excellence Award, Department of Epidemiology and Biostatistics, University of Western Ontario

1995 Pro Cultura Visiting Professorship, Pro Cultura Foundation, Hungary
1987–1988 Lalia B. Chase Fellowship, Dalhousie Medical Research Foundation

C. Mentoring

MSc primary supervisor (24): 15 Epidemiology (University of Western Ontario), 1 Clinical Research (Duke); 8 Global Health (Duke)

PhD primary supervisor (4): 3 Epidemiology (University of Western Ontario), 1 Health Services Research (Duke-NUS)

Junior/ Clinical Faculty mentorship (>20): mentor and research advisor junior and clinical faculty at Duke, Duke-NUS, University of Western Ontario and University of Bergen, including mentorship on K-awards.

Postdoctoral Fellows (21): formal mentor for postdoctoral and visiting international fellows, including those in health services research fellowships and clinical research fellowships.

Residents (>10): mentor and advisor for resident projects, primarily from Family Medicine

3rd year (research year) Medical Student; primary mentor(19): Mentored 3rd year Duke and Duke-NUS medical students in their yearlong population health research projects

Member, MSc / PhD, 3rd year medical student advisory or examination committees (approx.. 60) Duke University, University of Western Ontario, Duke-NUS, Duke-Kunshan, University of Bergen.

D. Contribution to Science

1. With the increasing proportion of elderly, it is important to identify and understand risk factors for cognitive and physical impairment and decline as well as factors promoting healthy aging. Based on several large, national, longitudinal surveys of the elderly, Prof. Ostbye has made contributions towards the definitions of dementia, cognitive impairment and decline, identification of risk factors for Alzheimer's disease and other dementias as well as consequences of dementia and frailty. He has also conducted several studies of the impact of cognitive, physical, and behavioral problems in the elderly on family caregiver health.

2. Obesity is a major public health problem in North America. Based on a series of large epidemiological studies, Prof Ostbye has documented and assessed the effect of obesity on a broad range of adverse outcomes ranging from mortality, chronic disease (including gout, diabetes), and work place injuries to increased health care costs, reduced use of clinical preventive services, and reduced sexual quality of life.

3. Obesity is difficult to prevent and even more difficult to treat. Multicomponent, theory-based, behavioral interventions targeting unhealthy eating, lack of physical activity, and cognitive and motivational barriers are needed. Prof Ostbye has led a number of large behavioral intervention studies targeting a range of at risk populations: obese workers, mothers' postpartum, overweight mothers and their children, teenagers and children in family day care homes.

4. Good quality communication between physicians and their patients is essential to achieve healthy behavior. Through several studies of communication between doctors and their adult and teen obese patients, our team has documented that such communication is related to positive health outcomes but often is lacking. Through tailored, focus training in communication based on motivational interviewing, Prof. Ostbye with colleagues shown that not only can good communication be learned but also that such training of physicians can improve patient health outcomes.

5. Optimal use of clinical preventive services is important from both a patient health and a health care cost perspective. Prof Ostbye has shown both serious overutilization (for example of breast cancer screening among the very old) and underutilization (among obese adults). Their work on time and resource barriers to the provision of clinical preventive services and chronic disease management have documented the impossibility of providing even guideline-recommended, evidence based care under the current primary care model. Two of the studies, documenting the impossibility of providing even evidence based, recommended preventive services and chronic disease management, have been cited over 1,100 and 500 times, respectively.

Complete List of Published Work: <https://www.ncbi.nlm.nih.gov/pubmed/>

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BIOGRAPHICAL SKETCH

NAME: Lesley H. Curtis

POSITION TITLE: Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Washington University, St. Louis, MO	B.A.	05/1987	Economics
University of Rochester, Rochester, NY	M.S.	05/1991	Public Policy Analysis
University of Rochester, Rochester, NY	Ph.D.	05/2000	Health Services Research

A. Personal Statement

Dr. Curtis is Professor in the Department of Population Health Sciences and has served a direct role in the training of over 12 post-graduate fellows and more than 10 faculty. Under Dr. Curtis's guidance, research fellows have published more than 30 first-author, peer-reviewed manuscripts, including papers in JAMA, Circulation, the Journal of the American College of Cardiology. As a scholar, she oversees a broad portfolio of projects that use observational data to answer questions related to health care delivery, comparative effectiveness, safety, and patient-centered outcomes across a broad array of clinical conditions and clinical care settings. An expert in the use of Medicare claims data for health services and clinical outcomes research, she has led the linkage of Medicare claims with several large clinical registries and epidemiological cohort studies including the Framingham Heart Study and the Cardiovascular Health Study. She has served on the American Heart Association/American College of Cardiology Task Force on Practice Guidelines and on the American Heart Association's Task Force on Performance Measures, working to continuously improve the incorporation of evidence into health care delivery. Dr. Curtis has worked with colleagues to develop technical and governance systems for the NIH Health Care Systems Collaboratory's distributed research network and the Food and Drug Administration's (FDA) Sentinel Distributed Database, a near real-time safety surveillance initiative that leverages data from 18 national health plans and more than 160 million covered lives. She currently serves as Co-Lead of the Data Core for the FDA's Sentinel Initiative, Co-PI of the NIH Health Care Systems Collaboratory, and director of the Distributed Research Network Operations Center for PCORI's National Clinical Research Network (PCORnet), working with health systems and patient networks to develop a harmonized data infrastructure that leverages electronic health record data for robust observational and interventional research.

B. Relevant positions

1996-2000	Associate Provost, University of Rochester, Rochester, NY
2000-2007	Research Associate/Director, CERTs Data Center, Duke Clinical Research Institute, Duke University Medical Center, Durham, NC
2003-2007	Assistant Research Professor, Duke Clinical Research Institute, Duke University, Durham, NC
2007-2013	Associate Professor in Medicine, Duke University School of Medicine, Durham, NC
2013-2017	Professor in Medicine, Duke University School of Medicine, Durham, NC
2016-2017	Director, Center for Population Health Sciences, Duke University School of Medicine, Durham, NC

2017-present Professor and Interim Chair, Department of Population Health Sciences, Duke University School of Medicine, Durham, NC

C. Synergistic Activities

Education: Course Co-Director with Matthew Maciejewski, PhD: Duke University, Clinical Research Training Program: CRP 266 Methods of Comparative Effectiveness Research (2012-2015). Small Group Instructor. PHYASST 255. Evidence-Based Medicine I, Duke University Physician Assistant Program, Department of Community and Family Medicine (2008-2016). Course Co-Director with Shelby Reed, PhD: Duke University, Department of Economics: ECON 195S.80 Applied Methods in Health Care Analysis (2005-2007).

Professional Service: Grant reviewer (Agency for Healthcare Research and Quality, National Institutes of Health, Patient Centered Outcomes Research Institute, American Heart Association); Member, American Heart Association/American College of Cardiology Task Force on Practice Guidelines, Chair, Duke Health Population Health Coordinating Group.

Research: Dr. Curtis has extensive research experience leading collaborative, interdisciplinary and multi-institutional teams. She has received RO1 funding from the National Heart Lung Blood Institute and from the National Institute on Aging and received a large research contract from the Agency for Healthcare Research and Quality. She currently co-leads the NIH Healthcare Systems Collaboratory coordinating center and leads the Patient-Centered Outcomes Research Institute's national clinical research network (PCORnet) distributed network.

D. Five most relevant publications; selected from 227; h-index=48

Curtis LH, Greiner MA, Hammill BG, Kramer JM, Whellan DJ, Schulman KA, Hernandez AF. Early and long-term outcomes of heart failure in elderly persons, 2001-2005. *Arch Intern Med*. 2008;168(22):2481-2488.

Hammill BG, Hernandez AG, Peterson ED, Fonarow GC, Schulman KA, **Curtis LH**. Linking inpatient clinical registry data to Medicare claims data using indirect identifiers. *Am Heart J*. 2009;157(6):995-1000.

Curtis LH, Hammill BG, Schulman KA, Cousins SW. Risks of mortality, myocardial infarction, bleeding, and stroke associated with therapies for age-related macular degeneration. *Arch Ophthalmology* 2010 Oct;128(10):1273-9. Erratum in: *Arch Ophthalmol*. 2010 Dec;128(12):1623.

Curtis LH, Whellan DJ, Hammill BG, Hernandez AF, Anstrom KJ, Shea AM, Schulman KA. Incidence and prevalence of heart failure in elderly persons, 1994-2003. *Arch Intern Med*. 2008;168(4):418-424.

Curtis LH, Brown J, Platt R. Four health data networks illustrate the potential for a shared national multipurpose big-data network. *Health Aff (Millwood)*. 2014 Jul;33(7):1178-86

E. Courses taught

2012-2015	Course Co-Director with Matthew Maciejewski, PhD, Clinical Research Training Program (CRTP) 266, "Comparative Effectiveness Research" (Duke University, Durham NC)
2008-2016	Small Group Instructor. PHYASST 255. Evidence-Based Medicine I, Duke University Physician Assistant Program, Department of Community and Family Medicine
2005-2007	Course Co-Director with Shelby Reed, PhD: Duke University, Department of Economics: ECON 195S.80 Applied Methods in Health Care Analysis

F. Mentoring

Doctoral Student Committee Membership (3): Served on doctoral dissertation committees for a student in Healthy Policy (UNC) and currently serving on doctoral dissertation committees for a student in Statistical Sciences (Duke) and for a student in Biostatistics (Duke).

Master's Student Thesis Committee Membership (3): Served on 3 Master's student thesis committees for students in the Clinical Research Training Program.

Junior Faculty (>5): Have served as mentor and advisor to many junior faculty at Duke, including advising on K-awards and other projects.

Postdoctoral Fellows (>10): Have served as a formal mentor for numerous postdoctoral fellows, including those in health services research fellowships and clinical research fellowships.

BIOGRAPHICAL SKETCH

NAME: Weinfurt, Kevin Phillip

POSITION TITLE: Professor of Population Health Sciences

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Loyola University, Chicago, IL	B.S.	5/1992	Psychology
Linacre College, Oxford, England		1995	History of Science, Philosophy of Mind
Georgetown University, Washington, D.C.	Ph.D.	12/1997	Experimental Psychology

A. Personal Statement

Dr. Weinfurt is Professor and Vice Chair for Research in the Department of Population Health Sciences in the Duke University School of Medicine. Dr. Weinfurt is also Professor of Psychiatry and Behavioral Science at Duke University Medical Center and a faculty member of the Duke Clinical Research Institute; Professor of Psychology and Neuroscience; and a Faculty Associate of the Trent Center for the Study of Medical Humanities and Bioethics. Dr. Weinfurt conducts research on measuring patient-reported outcomes, medical decision making, and bioethics. He was a principal investigator in the NIH PROMIS Network, where he led the development of the SexFS to measure male and female sexual function and satisfaction. He serves as the President of the PROMIS Health Organization and is on the Board of Directors for the International Society for Quality of Life Research. Dr. Weinfurt is currently co-chair of the coordinating center for the NIH Health Systems Research Collaboratory and co-chair of NIDDK's Symptoms of Lower Urinary Tract Dysfunction Research Network. He has conducted conceptual and empirical work on a variety of research ethics issues, including conflicts of interest, informed consent, the use of central IRBs, and comparative effectiveness trials. As an educator, Dr. Weinfurt co-directs Duke's masters-level Clinical Research Training Program and has taught undergraduate courses in introductory psychology, judgment and decision making, the psychology of medical decision making; and graduate courses in multivariate statistics and patient-reported outcomes research.

B. Relevant Positions

1998-1999	Assistant Professor, Department of Psychiatry, Georgetown University Medical Center, Washington, DC Assistant Professor, Department of Medicine (Clinical Economics Research Unit), Georgetown University Medical Center, Washington, DC
1999-2005	Adjunct Professor, Department of Psychology, Georgetown University, Washington, DC Assistant Professor, Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, Durham, NC Assistant Professor, Department of Psychology and Neuroscience, Duke University, Durham, NC
2006-2011	Associate Professor, Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, Durham, NC Associate Professor, Department of Psychology and Neuroscience, Duke University, Durham, NC
1999-	Deputy Director, Center for Clinical and Genetic Economics, Duke Clinical Research Institute, Duke University School of Medicine, Durham, NC
2011-	Professor, Department of Psychiatry and Behavioral Sciences, Duke University School of Medicine, Durham, NC Professor, Department of Psychology and Neuroscience, Duke University, Durham, NC
2012-	Co-Director, Duke Clinical Research Training Program
2017	Professor and Vice Chair for Research, Department of Population Health Sciences, Duke

C. Synergistic Activities

Education: Faculty member, Duke Clinical Research Training Program (master's level; 2013-present); Co-director of the Duke Clinical Research Training Program (2012-present); Instructor in NIH's Introduction to the Principles and Practice of Clinical Research Course (2015-present); Principal investigator in charge of education and training for the NIH Health Systems Research Collaboratory (2015-present); co-director of the Workforce Development Core for the Duke's Clinical and Translational Science Institute.

Professional Service: Grant reviewer and study section chair (Center for Scientific Review, National Cancer Institute, National Institute of Diabetes and Digestive and Kidney Diseases, National Center for Complementary and Integrative Medicine); Associate editor (*Clinical Trials*, *American Journal of Bioethics: Empirical Bioethics*); journal reviewer (*JAMA*, *NEJM*, *Annals of Internal Medicine*, *JCO*, *Medical Care*, and others); Scientific co-chair, 2017 meeting of the International Society for Quality of Life Research; Member, Board of Directors, PROMIS Health Organization (2008-present); President, PROMIS Health Organization (2016-present); member, PCORI Clinical Trials Advisory Panel (2017); ad hoc member, advisory panel committees for Food and Drug Administration (2016-present); invited instructor, Food and Drug Administration (2016).

Research: Dr. Weinfurt has led NIH- and industry-supported research in patient-reported outcomes, bioethics, and medical decision making. Dr. Weinfurt has significant experience with large, multidisciplinary research teams, having past or current leadership roles in research networks funded by NIH's Common Fund, NCATS, and NIDDK. Dr. Weinfurt is currently co-chair of the coordinating center for the NIH Health Systems Research Collaboratory and co-chair of NIDDK's Symptoms of Lower Urinary Tract Dysfunction Research Network. Dr. Weinfurt's research crosses many therapeutic boundaries and includes studies of people with cancer, cardiovascular disease, lower urinary tract symptoms, multiple sclerosis, and sexual dysfunction.

D. Five most relevant publications; selected from 151; h-index = 50 [Choose publications that demonstrate your experience and contribution to population health.]

1. **Weinfurt KP**, Hall MA, King NM, Friedman JY, Schulman KA, Sugarman J. Disclosure of financial relationships to participants in clinical research. *N Engl J Med*. 2009 Aug 27;361(9): 916-921. PMID: 19710491 PMCID: PMC2765249
2. **Weinfurt KP**, Seils DM, Lin L, et al. Research participants' high expectations of benefit in early-phase oncology trials: Are we asking the right question? *J Clin Oncol*. 2012 Dec 10;30(35):4396-4400. PMID: 23091107; PMCID: PMC3615308
3. **Weinfurt KP**, Lin L, Bruner DW, Cyranowski JM, Dombeck CB et al. Development and Initial Validation of the PROMIS® Sexual Function and Satisfaction Measures Version 2.0. *J Sex Med*. 2015 Sept; 12(9):1961-74. PMID: 26346418
4. **Weinfurt K**, Bollinger JM, Brelsford KM, Bresciani M, Lampron Z, Lin L, Topazian RJ, Sugarman J. Comparison of approaches for notification and authorization in pragmatic clinical research evaluating commonly used medical practices. *Medical Care*. 2017 Jun 23. PMID: 28650924.
5. **Weinfurt et al.** Pragmatic clinical trials embedded in healthcare systems: generalizable lessons from the NIH Collaboratory. *BMC Med Res Methodology*. 2017 Sep 18;17(1):144. PMID: 28923013

E. Courses taught in the previous 5 years [If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.]

CRP271 – Patient-Reported Outcomes in Clinical Research; CRP247- Clinical Research Seminar; CRP253- Research Ethics and Conduct.

PSY122- Psychology of Thinking; PSY320-Multivariate Statistics (Graduate); PSY161AS-Medical Decision Making; PSY11 Introductory Psychology; PSY11B- Intro to Psychology: Social Science Perspective; PSY170HS-Judgement and Decision Making; PSY194-Research Independent Study;

PUBPOL196DS- Medical Decision Making

F. Mentoring *[Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.]*

Predoctoral Student Committee Membership: Served on 4 doctoral dissertation committees for students in the psychology and neuroscience program.

Master's Student Thesis Committee Membership: Served on several Master's student thesis committees for students. A majority of the students were in the psychology program at Duke.

Junior Faculty: Have served as mentor and advisor to 2 faculty members at Duke.

Postdoctoral Fellows: Have served as a formal mentor for 5 postdoctoral fellows in the clinical research training program at Duke.

Career Development Awards: primary mentor in 2 K awards supplements.

Undergraduate Students, Medical Students, and Others: Mentored numerous students in psychology and neurosciences, business school and clinical research from undergraduate, medical, and non-degree programs.

BIOGRAPHICAL SKETCHNAME: **Bryce B. Reeve**eRA COMMONS USER NAME (credential, e.g., agency login): **BBREEVE**POSITION TITLE: **Professor of Population Health Sciences (proposed; currently Temporary Instructor, Director for Center of Health Measurement****EDUCATION/TRAINING**

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
The University of North Carolina at Chapel Hill	B.S.	12/1994	Psychology
The University of North Carolina at Chapel Hill	M.A.	12/1999	Quantitative Psychology
The University of North Carolina at Chapel Hill	Ph.D.	06/2000	Quantitative Psychology

A. Personal Statement

Dr. Reeve recently joined the Departments of Population Health Sciences and Pediatrics within the Duke University School of Medicine UNC-Chapel Hill where he was a tenured Professor in the Gillings School of Global Public Health. Trained in psychometric methods, Dr. Reeve's work focuses on enhancing the application of patient-reported data in clinical research and practice to improve the quality of care for pediatric and adult patients with chronic diseases. This includes the development of patient-reported questionnaires using qualitative and quantitative methodologies and integration of patient-reported data in research and healthcare delivery to inform decision-making. From 2000 to 2010, Dr. Reeve served as Program Director for the U.S. National Cancer Institute. In that role, he was instrumental in the development and support for the PROMIS and the PRO-CTCAE initiatives. From 2010 to 2017, he served as Professor of Health Policy and Management within the Gillings School of Global Public Health at the University of North Carolina at Chapel Hill. He currently serves, or has served, as PI on two NIH-funded R01 grants, a NIH U01 grant, a NIH U19 grant, a NIH R25 grant, and a PCORI-funded contract. From 2011-2013, Dr. Reeve served as President of the International Society for Quality of Life Research. In 2015, he received the John Ware and Alvin Tarlov Career Achievement Prize in Patient-Reported Outcomes Measures. Started in 2017, Dr. Reeve serves as Director of a new Center of Health Measurement within Duke University School of Medicine. The Center focuses on enhancing the use of patient-centered outcomes in clinical research and healthcare settings.

B. Positions

2000 -- 2010 Program Director, U.S. National Cancer Institute, National Institutes of Health
2010 -- 2015 Associate Professor, Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
2010 -- 2017 Member, Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill
2011 -- Adjunct Professor, Department of Psychology, University of North Carolina at Chapel Hill
2014 -- 2017 Research Fellow, Cecil G. Sheps Center for Health Services Research, UNC at Chapel Hill
2015 -- 2017 Professor, Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
2017 -- Adjunct Professor, Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
2017 -- Professor, Department of Population Health Sciences, Duke University School of Medicine
2017 -- Professor, Department of Pediatrics, Duke University School of Medicine
2017 -- Director, Center for Health Measurement, Duke University School of Medicine

C. Synergistic Activities

Education: Co-Director, Cancer Care Quality Training Program, University of North Carolina at Chapel Hill; Director, PhD Program in Health Policy and Management, University of North Carolina at Chapel Hill (2017).

Professional Service: Member, ALLIANCE Health Outcomes Committee (2010-2017); Member, PatientsLikeMe Scientific Advisory Board (2013-2015); Member, PROMIS Health Organization (PHO) Board of Directors (2012-2016); Member, Healthy People 2020 Health-Related Quality of Life & Well-Being Workgroup (2012-2015); Member, NCI Symptom Management and Health-Related Quality of Life Steering Committee (2010-2014); Advisor, European Organization for Research and Treatment of Cancer (EORTC)'s Patient-Reported Outcomes and Behavioral Evidence Project (2008-2014); President, International Society for Quality of Life (ISOQOL) Research (2011-2013); Advisory Committee Member, FDA's Reproductive Health Drugs' Drug Review (2010); Board of Directors, International Society for Quality of Life (ISOQOL) Research (2007-2010).

Research: Dr. Reeve has extensive research experience as an independent investigator and leading collaborative interdisciplinary teams. Trained in psychometrics, his work focuses on enhancing the use of patient-reported outcomes (PROs) in clinical research and practice to improve the quality of care for pediatric and adult patients. This includes the development of PRO measures using qualitative and quantitative methodologies and integration of PRO data in research and healthcare delivery to inform decision-making. He has served as PI on two NCI-funded R01 grants, a NIH-funded U01 and U19 grant, and a PCORI contract.

D. Five most relevant publications, selected from 201; h-index = 40

1. **Reeve BB**, Edwards LJ, Jaeger BC, Hinds PS, Dampier C, Gipson DS, Selewski DT, Troost JP, Thissen D, Barry V, Gross HE, DeWalt DA. Assessing responsiveness over time of the PROMIS® Pediatric symptom and function measures in cancer, nephrotic syndrome, and sickle cell disease. *Quality of Life Research* (2017, in press).
2. **Reeve BB**, Thissen DM, Bann CM, Mack N, Treiman K, Sanoff HK, Roach N, Magnus BE, He J, Wagner LK, Moultrie R, Jackson KD, Mann C, McCormack LA. Psychometric evaluation and design of patient-centered communication measures for cancer care settings. *Patient Education and Counseling* 2017;100(7):1322-1328.
3. **Reeve BB**, Wyrwich KW, Wu AW, Velikova G, Terwee CB, Snyder CF, Schwartz C, Revicki DA, Moynour CM, McLeod LD, Lyons JC, Lenderking WR, Hinds PS, Hays RD, Greenhalgh J, Gershon R, Feeny D, Fayers PM, Cella D, Brundage M, Ahmed S, Aaronson NK, Butt Z; on behalf of the International Society for Quality of Life Research (ISOQOL). ISOQOL recommends minimum standards for patient-reported outcome measures used in patient-centered outcomes and comparative effectiveness research. *Quality of Life Research* 2013;22:1889-1905.
4. **Reeve BB**, Potosky AL, Smith AW, Han PK, Hays RD, Davis WW, Arora NK, Haffer SC, Clauser SB. Impact of cancer on health-related quality of life of older Americans. *Journal of the National Cancer Institute* 2009;101:860-8.
5. **Reeve BB**, Hays RD, Bjorner JB, Cook KF, Crane PK, Teresi JA, Thissen D, Revicki DA, Weiss DJ, Hambleton RK, Liu H, Gershon R, Reise SP, Lai JS, Cella D, Group PC. Psychometric evaluation and calibration of health-related quality of life item banks: plans for the Patient-Reported Outcomes Measurement Information System (PROMIS). *Medical Care* 2007;45:S22-31.

E. Courses taught in the previous 5 years:

2014-2017	Course Instructor: HPM 794 (3-hour, PhD-level course, spring): <i>Patient-Reported Outcomes Measurement and Application in Healthcare Research and Practice</i>
2012-2013	Course Instructor: HPM 768 (3-hour, PhD-level course, spring): <i>Informed Decision Making in Cancer Care</i>
2011-2013	Course Instructor: HPM 873 (1-hour, PhD-level course, fall and spring): <i>Research Seminar in Health Policy Management</i>

F. Mentoring

Doctoral Student Committee Chair (5): Served as committee chair for four students in the PhD Program and one student in the DrPH program for Health Policy and Management.

Doctoral Student Committee Membership (12): Served on 13 doctoral dissertation committees for students in Public Health (DrPH) and Healthy Policy (PhD).

Master's Student Thesis Committee Membership (3): Served on 3 Master's student thesis committees for students in Health Policy.

Junior Faculty (5): Have served as mentor and advisor to five junior faculty at UNC and Duke, including advising on K-awards and other projects.

Postdoctoral Fellows (2): Have served as a formal mentor for two postdoctoral fellows in health services research fellowships.

Residents (6): Served as mentor and advisor for numerous resident projects, from pediatrics, oncology, and internal medicine.

Undergraduate Student, (1): Mentored one student in health policy and health services research.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Epplein, Meira

eRA COMMONS USER NAME (agency login): eppleinm

POSITION TITLE: Associate Professor of Population Health Sciences

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of North Carolina at Chapel Hill, NC	BA	06/1994	East Asian Studies
University of Washington, Seattle, WA	MA	06/1997	International Studies/China
University of Washington, Seattle, WA	MS	03/2005	Epidemiology
University of Washington, Seattle, WA	PHD	08/2007	Epidemiology
University of Hawaii, Honolulu, HI	Postdoctoral Fellow	07/2009	Cancer Control Research Training in Multiethnic Hawaii

A. PERSONAL STATEMENT

Dr. Epplein is an Associate Professor in the Department of Population Health Sciences and Department of Medicine at Duke University, and is the Co-Leader of the Cancer Control and Population Sciences Program of the Duke Cancer Institute. Her research program includes large, international consortia she has built, and thus she has gained significant experience in leading colleagues to manage both biospecimen collaborations and data harmonization. She helped develop and taught in the epidemiology PhD program at Vanderbilt University for seven years, and personally mentored 5 PhD students, 2 post-doctoral fellows, and 2 junior faculty members. As a successful K-to-R01 awardee, she has been invited to give career development talks on behalf of NCI and to several internal and external groups, and this also led to her standing membership on the National Cancer Institute IRG Subcommittee J, Career Development, which reviews many types of career development awards (including K01, K07, K08, K22, K23, K24, and K99-R00). She is prepared and enthusiastic to serve as a primary mentor for trainees in this training program.

B. APPOINTMENTS

1996 – 2001 China Program Officer, The National Bureau of Asian Research, Seattle, WA

2001 – 2002 Administrative Coordinator, Cancer Prevention Program, Fred Hutchinson Cancer Research Center, Seattle, WA

2002 – 2004 Graduate Research Assistant, Cancer Prevention Program, Fred Hutchinson Cancer Research Center, Seattle, WA

2004 – 2007 International Research Project Manager, Public Health Sciences Division, Fred Hutchinson Cancer Research Center, Seattle, WA

2005 – 2006 Teaching Assistant, University of Washington, Epidemiology Department, Seattle, WA

2007 – 2009 Post-doctoral Fellow, Cancer Control Research Training in Multiethnic Hawaii (R25 CA90956), University of Hawaii, Honolulu, HI

2009 – 2015 Assistant Professor, Division of Epidemiology, Vanderbilt University, Nashville, TN

2009 – 2017 Member, Vanderbilt-Ingram Cancer Center, Nashville, TN

2009 – 2017 Member, Institute for Medicine and Public Health, Vanderbilt University, Nashville, TN

2013 – 2017 Member, Digestive Disease Research Center, Vanderbilt University, Nashville, TN

2013 – 2017 Member, Vanderbilt Institute for Global Health, Vanderbilt University, Nashville, TN

2015 – 2017 Associate Professor (tenured), Division of Epidemiology, Vanderbilt University, Nashville, TN

2017 – Adjunct Associate Professor, Division of Epidemiology, Vanderbilt University, Nashville, TN

2017 – Associate Professor, Department of Population Health Sciences, Duke University, Durham, NC

2017 – Co-Leader, Cancer Control and Population Sciences, Duke Cancer Institute, Durham, NC

C. SYNERGISTIC ACTIVITIES

Education: Member, Epidemiology Doctoral Program Admissions Committee, Vanderbilt University 2011-2016; Associate Director for Epidemiology Graduate Studies, Institute for Medicine and Public Health, Vanderbilt University 2012-2013; Member, Honor fellowships Committee, Vanderbilt Graduate School 2014; Grant Reviewer for trainees in: the Vanderbilt Institute for Research Development and Ethics of the Vanderbilt Institute of Global Health, Vanderbilt Training Program in Molecular and Genetic Epidemiology of Cancer, and Vanderbilt Institute for Clinical and Translational Research 2013-2017

Professional Service: Ad Hoc Reviewer, Special Emphasis Panels on: Small Grants Program for Cancer Epidemiology; NCI Omnibus: Oncogenesis, Cancer Risk, and Prevention (R21, R03); NCI Omnibus: Prevention, Nutrition, Biomarkers, and Epidemiology (R21, R03); Bridging the Gap Between Cancer Mechanism and Population Science and Core Infrastructure and Methodological Research for Cancer Epidemiology Cohorts, National Cancer Institute, NIH (U01) (2012-present); Chair, International Issues in Cancer Special Interest Group (2015–2017), Member, Executive Committee (2015–2017), and Co-Chair, Annual Meeting, March 11-14, 2017, Seattle, WA, American Society for Preventive Oncology (ASPO); Standing Member, National Cancer Institute IRG Subcommittee J, Career Development, NIH (2016-present); Editorial Board Member, *Cancer Epidemiology, Biomarkers & Prevention* (2016-present);

Research: Dr. Epplein has extensive experience in the area of cancer epidemiology and prevention, with a focus on modifiable risk factors and health disparities. Her ongoing research program is focused on infection, inflammation, and cancer. She is currently PI of two R01s – both large, collaborative grants from the NIH that each build a consortium of experts and studies focused on a greater understanding of the genetic diversity of the bacteria *Helicobacter pylori* and its association with cancer. Through this work she has established the importance of the understanding of *H. pylori* as a heterogeneous exposure, and one that interacts with other potentially modifiable factors such as diet and aspirin use, in its association with the development of gastrointestinal cancer. She is also actively engaged in developing a local cohort for the study of infection and cancer, which will also present many opportunities for training junior faculty and post-doctoral fellows.

D. FIVE MOST RELEVANT PUBLICATIONS

1. **Epplein M**, Signorello LB, Zheng W, Peek RM Jr, Michel A, Williams SM, Pawlita M, Correa P, Cai Q, Blot WJ. Race, African ancestry, and *Helicobacter pylori* infection in a low-income United States population. *Cancer Epidemiology Biomarkers and Prevention*. 2011 May;20(5):826-34. PubMed PMID: [21357376](#); PubMed Central PMCID: [PMC3089670](#).
2. **Epplein M**, Signorello LB, Zheng W, Cai Q, Hargreaves MK, Michel A, Pawlita M, Fowke JH, Correa P, Blot WJ. *Helicobacter pylori* prevalence and circulating micronutrient levels in a low-income United States population. *Cancer Prevention Research*. 2011 Jun;4(6):871-8. PubMed PMID: [21436385](#); PubMed Central PMCID: [PMC3107911](#).
3. **Epplein M**, Pawlita M, Michel A, Peek RM Jr, Cai Q, Blot WJ. *Helicobacter pylori* protein-specific antibodies and risk of colorectal cancer. *Cancer Epidemiology Biomarkers and Prevention*. 2013 Nov;22(11):1964-74. PubMed PMID: [24045925](#); PubMed Central PMCID: [PMC3828745](#).
4. Cai H, Ye F, Michel A, Murphy G, Sasazuki S, Taylor PR, Qiao YL, Park SK, Yoo KY, Jee SH, Cho ER, Kim J, Chen SC, Abnet CC, Tsugane S, Cai Q, Shu XO, Zheng W, Pawlita M, **Epplein M**. *Helicobacter pylori* blood biomarker for gastric cancer risk in East Asia. *International Journal of Epidemiology* 2016; 45(3):774-81. PubMed PMID: [27170766](#); PMCID in process.
5. Wang T, Cai H, Zheng W, Michel A, Pawlita M, Milne G, Xiang YB, Gao YT, Li HL, Rothman N, Lan Q, Shu XO, **Epplein M**. A Prospective Study of Urinary Prostaglandin E2 Metabolite, *Helicobacter pylori* antibodies, and gastric cancer risk. *Clinical Infectious Diseases* 64(10):1380-86, 2017. PMCID in process.

E. COURSES TAUGHT IN THE PREVIOUS 5 YEARS

2011 – 2016 Course Instructor, EPID 315: Scientific Writing I (Core Epidemiology PhD class), Vanderbilt University

- 2011 – 2016 Invited Lecturer on polytomous regression, EPI 321: Applied Epidemiological Methods in Regression I (Core Epidemiology PhD class), Vanderbilt University
- 2012 – 2014 Invited Lecturer on scientific writing for the “Clinical Investigator Toolbox”: Introduction to Clinical Research elective for 2nd year Internal Medicine residents, Vanderbilt University Medical Center
- 2015 – 2016 Invited Lecturer on grant writing -- Research Strategy: Nuts and Bolts, for two training programs: the R25 training program entitled The Molecular and Genetics Epidemiology of Cancer, Vanderbilt University Medical Center; and the Vanderbilt Institute for Research Development and Ethics of the Vanderbilt Institute for Global Health

F. MENTORING

- **Doctoral Student Committee Membership (2):** Served on doctoral dissertation committee for one student in epidemiology (PhD) and one student in biostatistics (PhD).
- **Junior Faculty (2):** Primary mentor to an assistant professor of epidemiology who now is on a K12 and has re-submitted an NIH K07; primary mentor to a one-year visiting assistant professor of preventive medicine from Chonnam National University Medical School in Korea.
- **Predoctoral Fellows (3):** Mentored international students directly under my supervision during 1-year fellowship in the United States (2 from China and 1 from Germany).
- **Postdoctoral Fellows (2):** Current mentor to 2 postdoctoral fellows in epidemiology.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Laura Smart Richman			
eRA COMMONS USER NAME (credential, e.g., agency login)			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing include postdoctoral training and residency training if applicable)</i>			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Maryland, MD	B.S.	05/92	Psychology
University of Virginia, VA	M.A.	05/94	Psychology
University of Virginia, VA	Ph.D.	05/97	Psychology
University of California, San Francisco	Postdoctoral Fellow	08/99	Health Psychology

A. Personal Statement

Dr. Richman is an Associate Professor in the Department of Population Health Sciences and has extensive mentoring and teaching experience. She has served as a mentor for 34 undergraduate, Masters, and PhD students and has taught numerous courses at both the undergraduate and graduate level, including Research Methods and Psychosocial Determinants of Health. Her undergraduate mentees have secured placement at top medical schools and PHD psychology programs including Duke, Stanford, University of Washington, and University of Pittsburgh and her academic-focused PhD students have secured faculty positions at UNC, Asheville and a postdoc at Columbia University, Mailman School of Public Health.

B. Relevant positions

1997-1999 Postdoctoral NIMH Fellowship, Health Psychology, University of California, San Francisco
1999-2001 Associate Research Scientist, New England Research Institutes, Inc., Watertown, MA
2001-2003 Research Associate, Health and Social Behavior Dept, Harvard School of Public Health, Boston, MA
2001-2003 Adjunct Assistant Professor, Dept of Psychology, Brandeis University, Waltham, MA
2003-2004 Visiting Assistant Professor, Dept of Psychology, Duke University, Durham, NC
2004-2010 Assistant Research Professor, Dept. of Psychology, Duke University, Durham, NC
2010-2017 Assistant Professor, Dept. of Psychology, Duke University, Durham, NC
2017-present Associate Professor, Dept. of Population Health Sciences, Duke School of Medicine, Durham, NC

C. Synergistic Activities

Professional Service:

Peer Reviewer, Journal of Personality and Social Psychology, Journal of Experimental Social Psychology, Social Science and Medicine, Health Psychology, Journal of Personality, Social Justice Research, Journal of Social Issues, Emotion, The Journal of Positive Psychology, European Journal of Social Psychology, Group Processes and Intergroup Relations, Psychology & Health; Consulting Editor, Personality and Social Psychology Bulletin

Peer Review panel for the National Institute on Minority Health and Health Disparities (NIMHD) 2016 – present; Ad hoc reviewer of proposals for the Social Psychology Program, National Science Foundation (2012 - present); Reviewer APA Dissertation Research Awards (2006 – present)

Reviewer of grant applications for Netherlands Organization for Health Research and Development (2012 – present); Faculty advisory board, Bass Connections Global Alliance on Disability and Healthcare Innovation (2015 – current), Strategic Planning Committee for the Duke Consortium on Social Equity (2014 – 2015), Academic Council (2012 – 2014), Undergraduate Curriculum Committee, Dept of Psychology & Neuroscience, Duke University (2008 – 2016).

Research: Dr. Richman has extensive research experience examining the health effects of social disadvantage, with a focus on the impact of stigma on health behavior and physiological stress responses. She has served as principal investigator and co-investigator on awards from NIH, NIGMS, NIEHS, and NIH to conduct this research.

D. Five most relevant publications

- 1) Richman, L. S., Blodorn, A., Major, B. (2016). An identity-based motivational model of the effects of perceived discrimination on health-related behaviors. *Group Processes and Intergroup Relations*, 19, 415-425.
- 2) Richman, L.S. & Hatzenbuehler, M. (2014). A multi-level analysis of stigma and health: Implications for research and policy. *Policy Insights from Behavioral and Brain Sciences*, 1, 213-221.
- 3) Richman, L. S. & Lattanner, M. (2014). Self-regulatory processes underlying structural stigma and health. *Social Science & Medicine*, 103, 94-100.
- 4) Richman, L. S., Boynton, M. H., Costanzo, P., & Banas, K. (2013). Interactive effects of discrimination and racial identity on alcohol-related thoughts and use. *Basic and Applied Social Psychology*, 35, 396-407.
- 5) Pascoe, E., & Richman, L. S. (2009). Perceived discrimination and health: A meta-analytic review. *Psychological Bulletin*, 135, 531-554.

E. Courses taught in the previous 5 years

Race, Class, and Society (Graduate and Undergraduate); Energy Behavior Among Low-Income Consumers (Graduate & Undergraduate, Service-learning Interdisciplinary program); Stereotyping and Stigma (Graduate & Undergraduate); Psychosocial Determinants of Health (Graduate & Undergraduate); Research Methods (Undergraduate); Introduction to Social Psychology (Undergraduate)

F. Mentoring

Undergraduate Honors Thesis Advisor (16): Served as committee chair for 16 undergraduate thesis students

Masters Thesis Committees (4): Served as a primary advisor or committee member for 4 Master level thesis in Psychology & Neuroscience.

PhD Advising (4): Served as the primary mentor and doctoral dissertation chair for four students in Psychology & Neuroscience.

Doctoral Dissertation Committees (13): Served on 13 dissertation committees for students in Psychology & Neuroscience, Sociology, and School of Nursing.

Postdoctoral Fellows (3): Served as a formal mentor for three postdoctoral fellows with degrees in Psychology & Neuroscience and Public Health.

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Matthew Leonard Maciejewski			
eRA COMMONS USER NAME mlmaciej			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Georgetown University	B.S.F.S.	1991	International Economics
University of Minnesota	Ph.D.	1998	Health Services Research

A. Personal Statement

Dr. Maciejewski is a Professor within the Department of Population Health Sciences, Adjunct Professor in the Schools of Public Policy and Pharmacy at the University of North Carolina at Chapel Hill, and Research Career Scientist at the Durham VA HSR&D Center for Innovation. Dr. Maciejewski has served a direct role in the training of over 5 post-doctoral fellows and 25 doctoral and Master's students. He has been teaching CRTP 266, Comparative Effectiveness Research, for 5 years in the Duke Clinical Research Training Program. Dr. Maciejewski's research focuses on the evaluation of programs and interventions for improving chronic disease care and obesity and understanding cost barriers to medication and health care use. Dr. Maciejewski is a Member of AcademyHealth's Methods Council, an editorial board member of Health Services Research and a Statistical Associate Editor at JAMA.

B. Appointments

1998 – 2006	Associate Professor (2005-2006), Assistant Professor (1998-2005), Department of Health Services, School of Public Health and Community Medicine, University of Washington,
1998 – 2006	Research Health Scientist, Health Services Research and Development, VA Puget Sound Health Care System, Seattle, WA
2006 – 2008	Associate Professor, Division of Pharmaceutical Outcomes and Policy, School of Pharmacy, University of North Carolina, Chapel Hill NC
2006 – Present	Research Career Scientist, Research Health Scientist (2006-2010), Health Services Research and Development, Durham VA Medical Center, Durham NC
2006 – Present	Adjunct Professor, Adjunct Associate Professor (2006-2011), Department of Health Policy and Administration, School of Public Health, University of North Carolina, Chapel Hill NC
2007 – Present	Professor, Associate Professor (2007-2011), Division of General Internal Medicine, Department of Medicine, Duke University Medical Center, Durham, NC
2008 – Present	Adjunct Professor, Adjunct Associate Professor (2008-2011), Division of Pharmaceutical Outcomes and Policy, School of Pharmacy, University of North Carolina, Chapel Hill NC

C. Synergistic Activities

- **Education:** Led methods workshops for 5 years at AcademyHealth on propensity scores and using electronic health records.
- **Professional Service:** AcademyHealth (Methods Council, 2016-present; Executive Committee of Planning Committee 2012-2013); Ad hoc reviewer for Agency of Healthcare Research and Quality (AHRQ) Study Review Section: and various NIH special emphasis panels (2000-present); Editorial Boards – Health Services Research (2016 -); Statistical Associate Editor, JAMA (2017 -)
- **Research:** Dr. Maciejewski has extensive research experience as an independent investigator and leading collaborative interdisciplinary teams. He has been Principal Investigator on more than 15 research projects funded by VA HSR&D, AHRQ, CMS and NIDA, including 3 federally-funded R01 grants (2 funded in 2000 and 2012 by Agency for Healthcare Research and Quality (AHRQ) and 1 in 2016 by NIDA).

D. Five most relevant publications; selected from 183; h-index = 39 ([complete bibliography](#))

1. Maciejewski M.L., D.E. Arterburn, L. Van Scoyoc, V.A. Smith, W.S. Yancy, H. Weidenbacher, E.H. Livingston, M.K. Olsen. 2016. "Bariatric Surgery and Long-Term Durability of Weight Loss", *JAMA Surgery*, 151(11): 1046-1055.
2. **Maciejewski M.L.**, D. Wansink, J. Lindquist, J. Parker, J.F. Farley. 2014. "Value-Based Insurance Design Program In North Carolina Increased Medication Adherence But Was Not Cost Neutral", *Health Affairs*, 33(2): 300-308.
3. **Maciejewski M.L.** and D.E. Arterburn. 2013. Invited Commentary. "Cost-effectiveness of Bariatric surgery", *JAMA*, 310(7): 742-743.
4. **Maciejewski M.L.**, E.H. Livingston, V.A. Smith, W.G. Henderson, L.C. Kahwati, D.E. Arterburn. 2012. "Health Expenditures among High Risk Patients following Gastric Bypass and Matched Controls", *JAMA Surgery (formerly Archives of Surgery)*, 147(7): 633-640. PMID:22802057
5. **Maciejewski M.L.**, E.H. Livingston, V.A. Smith, A.L. Kavee, W.G. Henderson, L.C. Kahwati, D.E. Arterburn. 2011. "Survival among high risk patients following bariatric surgery," *JAMA*, 305: 2419-2426. doi:10.1001/jamacardio.2017.0630

E. Courses taught in the previous 5 years

2012-Present Course Director, Clinical Research Training Program (CRTP) 266, "Comparative Effectiveness Research" (Duke University, Durham NC)

F. Mentoring

- **Junior Faculty (>5):** Have served as mentor and advisor to >5 faculty at Duke, UNC, VA and other universities including University of Washington.
- **Postdoctoral Fellows (>5):** Have served as a formal mentor for >5 postdoctoral fellows, including those in health services research fellowships and clinical research fellowships.
- **Doctoral Student Committee Membership (7):** Served on doctoral dissertation committees at the University of Washington and University of North Carolina-Chapel Hill (PhD).
- **Masters Student Thesis Committee Chair (8):** Served as committee chair on thesis committees for students at the University of Washington, the University of North Carolina-Chapel Hill and the Clinical Research Training Program at Duke University.
- **Master of Health Sciences in Clinical Research (MHSc) Student Thesis Committee Member (3):** Served as committee member on 3 thesis committees.
- **Junior Faculty (1):** Currently serving as statistical mentor to 1 current KL2 scholars at Duke University School of Medicine.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Pollak, Kathryn I

eRA COMMONS USER NAME (credential, e.g., agency login): polla007

POSITION TITLE: Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Pitzer College, Claremont, CA		NA	Psychology
California State University, Fullerton, CA	B.A.	12/91	Psychology
University of Houston, Houston, TX	M.A.	12/94	Social Psychology
University of Houston, Houston, TX	Ph.D.	11/96	Social Psychology

A. Personal Statement

Dr. Pollak is a Professor in the Department of Population Health Sciences in the Duke School of Medicine. She is a social psychologist who has been developing and evaluating behavioral interventions for the past 19 years. She also is one of the Co-Leaders of Cancer Control and Population Sciences at the Duke Cancer Institute. She has worked in palliative care for the past 15 years and has been examining patient-physician communication for the past 12 years and teaching communication for the past 5 years. She has been Principal Investigator on 6 R01s. She was a standing member on PRDP, an NIH study section, while simultaneously chairing another study section for F32's for two years. She has mentored over 15 graduate students, medical students, postdoctoral fellows, medicine fellows, and residents over her tenure at Duke. She has taught various courses including Methodology and Statistics at the undergraduate level. She also gave guest lectures at UNC School of Public Health in Health Theory and also in Intervention Development. She has published 120 articles, many of which were with mentees.

B. Positions and Honors

1996-1997	Postdoctoral Fellow, Center for Health Promotion Research and Development, School of Public Health, University of Texas-Houston, Houston, TX
1997-1998	NCI Postdoctoral Fellow, Center for Health Promotion Research and Development, School of Public Health, University of Texas-Houston, Houston, TX
1998-2006	Assistant Research Professor, Department of Community and Family Medicine, Duke University School of Medicine
1998-Present	Cancer Control Scientist, Cancer Prevention, Detection and Control Research, Duke Comprehensive Cancer Center (now Duke Cancer Institute)
2001-2009	Adjunct Assistant Professor, Department of Health Behavior and Health Education, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC
2006-2009	Associate Professor, Department of Community and Family Medicine, Duke University School of Medicine
2009-Present	Adjunct Associate Professor, Department of Health Behavior and Health Education, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

2009-Present	Associate Professor with tenure, Department of Community and Family Medicine, Duke University School of Medicine
2015-2017	Professor with tenure, Department of Community and Family Medicine, Duke University School of Medicine
2017-Present	Professor with tenure, Department of Population Health Sciences, Duke University School of Medicine

C. Contributions to Science

Importance of physician communication on patient outcomes: For the past 15 years, I have been examining the relationship of physician communication and patient outcomes. Some of my seminal papers reported on physicians' use of Motivational Interviewing techniques and patient weight and satisfaction. I discovered that when physicians communicated with more empathy, had a more collaborative style, and supported patient autonomy, patients were more likely to lose weight (paper cited 64 times and covered by *The New York Times*) and reported higher satisfaction (cited 30 times) with their physician. This work has helped spur the integration of Motivational Interviewing into health care encounters. Based on my work, I have been asked to write two Editorials for *Patient Education and Counseling* one on how physicians can alter their communication slightly to be more effective and the other on what elements of MI are most predictive of patient change.

Pollak, K. I., Alexander, S. C., Coffman, C. J., Tulsky, J. A., Lyna, P., Dolor, R. J., ... & Østbye, T. (2010). Physician communication techniques and weight loss in adults: Project CHAT. *American Journal of Preventive Medicine*, 39(4), 321-328. PMID: 20837282. PMCID: PMC2939864.

Pollak, K. I., Alexander, S. C., Tulsky, J. A., Lyna, P., Coffman, C. J., Dolor, R. J., ... & Østbye, T. (2011). Physician empathy and listening: associations with patient satisfaction and autonomy. *The Journal of the American Board of Family Medicine*, 24(6), 665-672. PMID: 22086809. PMCID: PMC3363295.

Pollak, K. I., Jones, J., Lum, H. D., De La Cruz, S., Felton, S., Gill, A., & Kutner, J. S. (2015). Patient and caregiver opinions of motivational interviewing techniques in role-played palliative care conversations: A pilot study. *Journal of Pain and Symptom Management*, 50(1), 91-98. PMID: 25701055. PMCID: PMC4492861.

Tulsky, J. A., Beach, M. C., Butow, P. N., Hickman, S. E., Mack, J. W., Morrison, R. S., ... & **Pollak, K. I.** (2017). A research agenda for communication between health care professionals and patients living with serious illness. *JAMA Internal Medicine*. PMID: 28672373.

Physicians can improve their communication: I worked with Dr. James Tulsky on a trial in which we taught oncologists how to address patient negative emotions. Our 60-minute tailored computer-based intervention improved physician responses to negative emotions and also improved patient trust. I was Senior Author on our outcomes paper that has been cited 61 times. I also published a paper describing which physicians are most likely to respond to negative emotion and found that those who self-identified as more socio-emotional were more empathic in their clinical practice (cited 143 times and covered by *The New York Times*).

Tulsky, J. A., Arnold, R. M., Alexander, S. C., Olsen, M. K., Jeffreys, A. S., Rodriguez, K. L., ... & **Pollak, K. I.** (2011). Enhancing communication between oncologists and patients with a computer-based training program: a randomized trial. *Annals of Internal Medicine*, 155(9), 593-601. PMID: 22041948. PMCID: PMC3368370.

Pollak, K. I., Arnold, R. M., Jeffreys, A. S., Alexander, S. C., Olsen, M. K., Abernethy, A. P., ... & Tulsky, J. A. (2007). Oncologist communication about emotion during visits with patients with advanced cancer. *Journal of Clinical Oncology*, 25(36), 5748-5752. PMID: 18089870.

Complete List of Published Work in My Bibliography: <http://1.usa.gov/21108Po>

E. Courses taught

Undergraduate Research Methods

Statistics

Social Psychology

Psychology of Gender

Psychology of Personality

F. Mentoring

Doctoral Student Committee Membership – three

Master's Student Thesis Committee - two

BIOGRAPHICAL SKETCH
DO NOT EXCEED FIVE PAGES.

NAME: Dinan, Michaela Ann

eRA COMMONS USER NAME (credential, e.g., agency login): dinan001

POSITION TITLE: Assistant Professor of Population Health Sciences

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Virginia, Charlottesville VA	BS	05 / 2003	Biology
University of North Carolina, Chapel Hill, NC	PhD	05 / 2011	Health Policy
Duke University, Durham NC	Fellow	07 / 2013	Health Outcomes

A. Personal Statement

Dr. Dinan is currently an assistant professor in the Department of Population Health Sciences with additional appointments at the Duke Cancer Institute and the Duke Clinical Research Institute. Dr. Dinan is also co-leader of the Health Care Delivery Focus Area of the Cancer Control and Population Sciences program at the Duke Cancer Institute as well as Adjunct Assistant Professor in the Department of Health Policy and Management at UNC's School of Global Public Health. Dr. Dinan has taught as a small group instructor in the Evidence Based Medicine course for Duke's Physician's Assistant training program for 5 years. Dr. Dinan has 14 years of research experience through her work at Duke, which has been published in more than 50 peer-reviewed journal articles including the Journal of the American Medical Association, the Journal of Clinical Oncology, the Journal of General Internal Medicine, and Medical Care, among others. Given her experience with large secondary real-world databasses, her expertise in health services in oncology, and her ongoing collaborations with multidisciplinary clinicians, Dr. Dinan's research portfolio is ideal for offering opportunities for multiple students to take on additional research projects under Dr. Dinan's tutelage and supervision.

Dr. Dinan has acted as the primary mentor for predoctoral students, medical residents, and clinical fellows including participation as a dissertation committee member on two doctoral student dissertation committees. Her trainees have demonstrated a successful record of accomplishment in their research by obtaining independent during the course of their training, acceptance of peer-reviewed abstracts as both poster and podium presentations, peer-reviewed published manuscripts of their completed research, and successful placement in post-doctoral positions upon completion of their degrees.

B. Relevant positions

Positions and Employment

2009-2010	Teaching Assistant: Duke University Department of Economics
2010	Teaching Assistant: UNC Department of Health Policy and Management
2011-2013	Research Fellow: Duke Clinical Research Institute-CCGE
2013-2015	Medical Instructor: Duke Clinical Research Institute, Duke Cancer Institute
2015-	Assistant Professor: Duke Clinical Research Institute, Duke Cancer Institute

C. Synergistic Activities

Professional Service: Dr. Dinan serves as co-leader of the Health Care Delivery focus area for the Duke Cancer Control and Population Sciences Program. Dr. Dinan co-founded the Health Services Research Oncology Group (HSROG) at Duke, a trans-disciplinary effort to bring together clinician and health services experts across oncology disciplines to combine perspectives, ideas, resources, and work to improve the efficacy with which improvements in the care of patients with cancer across a diverse spectrum of challenges. Dr. Dinan also serves on the cardio-oncology working group as well. Dr. Dinan has served as a reviewer for the National Institute for Health Research Post-Doctoral Fellowship Program, Duke Cancer Institute 5th Annual Cancer Research Pilot Study Grants, and on the Scientific Review Committee for the AACR International Conference on the Science of Cancer Health Disparities in Racial/Ethnic Minorities and the Medically Underserved.

Research: Dr. Dinan has extensive research experience, primarily in the area of secondary data analysis of large claims databases, oncology outcomes and costs, as well as health care disparities. She has served as principal/co-principal investigator on over 10 studies including multiple awards from AHRQ, industry, and foundations.

D. Five most relevant publications; selected from 52

1. Dinan, MA, Curtis LH, Hammill BG, Patz EF, Abernethy AP, Shea AM, Schulman KA. Changes in the use and costs of diagnostic imaging among Medicare beneficiaries with cancer, 1999-2006. JAMA. 2010 Apr 28;303(16):1625-31.
2. Dinan MA, Mi X, Reed SD, Lyman GH, Curtis LH. Association Between Use of the 21-Gene Recurrence Score Assay and Receipt of Chemotherapy Among Medicare Beneficiaries With Early-Stage Breast Cancer, 2005-2009. JAMA oncology. 2015 Nov;1(8):1098-109.
3. Dinan, MA, Curtis, LH, Carpenter, WR, Biddle AK, Abernethy, AP, Patz, EF, Schulman, KA, Weinberger, M. Stage Migration, Selection Bias, and Survival Associated With the Adoption of PET Among Medicare Beneficiaries With Non-Small-Cell Lung Cancer, 1998-2003. JCO. 2012 Aug 1;30(22):2725-30. Epub 2012 Jul 2.
4. Dinan, MA, Mi, X, Reed, SD, Hirsch, BR, Lyman, GH, Curtis, LH. Initial Trends in the Use of the 21-Gene Recurrence Score Assay for Patients With Breast Cancer in the Medicare Population, 2005-2009. JAMA Oncology. May 2015. Vol 1, No. 2.
5. Robinson TJ, Thomas S, Dinan MA, Roman S, Sosa JA, Hyslop T. How Many Lymph Nodes Are Enough? Assessing the Adequacy of Lymph Node Yield for Papillary Thyroid Cancer. J Clin Oncol. 2016 Aug 15. [Epub ahead of print]

E. Courses taught in the previous 5 years

2011-2015 Small Group Instructor for Evidence Based Medicine Course in Duke's Physician Assistant training program

2010 Teaching Assistant for Applications and Concepts in Health Policy and Management UNC PhD program: HPM 735

2010 Teaching Assistant for Disaster Management Program UNC Master program: HPM 420, 421, 422, 423

2010 Teaching Assistant for Disaster Management Program UNC Master program: HPM 420, 421, 422, 423

2009-2010 Teaching Assistant for Duke's Economics Honors Senior Research Workshop: ECON 202S

F. Mentoring

Doctoral Student Committee Membership (2): Served on 2 doctoral dissertation committees for students in Healthy Policy (PhD) at UNC.

Clinical Fellows (2): Have served as a formal mentor for 2 clinical fellows interested in outcomes research, one cardiology and one surgery.

Predoctoral Fellows (2): Mentored 2 students as part of a predoctoral fellowship in Health Services Research at the DCRI.

Residents (1): co-primary mentor an internal medicine resident interested in oncology outcomes research.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Matthew E. Dupre	POSITION TITLE Associate Professor of Medicine		
eRA COMMONS USER NAME (credential, e.g., agency login) MEDUPRE	Associate Professor of Sociology		
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
St. Anselm College	B.A.	05/95	Sociology
Duke University	M.A.	12/01	Sociology
Duke University	Ph.D.	09/05	Sociology
University of North Carolina at Chapel Hill	Postdoctoral	09/05-10/07	Epidemiology

A. Personal Statement

Dr. Dupre is an Associate Professor in the Department of Population Health Sciences and the Department of Sociology. He is also Senior Fellow at the Center for the Study of Aging and Human Development and faculty at Duke Clinical Research Institute. As a medical sociologist and social epidemiologist, Dr. Dupre has advanced several areas of interdisciplinary research: (i) the impact of race and socioeconomic status on trajectories of chronic disease and mortality, (ii) the role of social stressors in the development and progression of cardiovascular disease (CVD), (iii) stratification models of CVD risks and subsequent outcomes, and (iv) the social determinants of longevity in an international context. A unifying thread in this program of research is his attention to multidisciplinary collaboration, heterogeneity in individual and population health, and the use of rigorous statistical methods to unravel causal pathways. Dr. Dupre's studies have appeared in many leading journals, including *JAMA*, *American Journal of Epidemiology*, *American Journal of Public Health*, *Annals of Internal Medicine*, *Archives of Internal Medicine*, *BMJ*, and the *Journals of Gerontology*. Since 2012, his work has been cited more than 1,200 times and he is routinely interviewed/quoted by major media outlets in the United States and abroad. Dr. Dupre has served as an advisor to the *National Academy of Sciences'* Committee on Population Aging, as an NIH study section member, and as an Associate Editor for multiple journals. Dedication to the mentorship of students and junior faculty remains a cornerstone in his academic career. Dr. Dupre has served on multiple doctoral dissertation committees, as a practicum preceptor for the MPH degree (UNC), and as a mentor on a NIA/T32 Training Grant in the Demography of Aging at the Duke Population Research Institute. He has also served as an Approved Mentor for third-year medical students and a Faculty Mentor for the Population Health Improvement Leadership Program in CFM at Duke University.

B. Relevant Positions

2005-07	Postdoctoral Fellow, Carolina Population Center, University of North Carolina at Chapel Hill
2007-09	Visiting Assistant Professor, Department of Sociology, Duke University
2009-12	Research Scientist, Duke Population Research Institute and Duke Clinical Research Institute
2010-	Senior Fellow, Center for Aging and Human Development, Duke University
2011-	Faculty Research Scholar, Center for Population Health & Aging, Duke University
2012-14	Assistant Professor, Department of Community and Family Medicine, Duke University
2012-14	Assistant Professor, Department of Sociology, Duke University
2014-	Associate Professor, Department of Community and Family Medicine, Duke University
2014-	Associate Professor, Department of Sociology, Duke University
2017-	Associate Professor, Department of Population Health Sciences, Duke University

C. Synergistic Activities

Education: Dissertation Committee Member, PhD degrees (2013-present); Practicum Preceptor, Masters of Public Health (MPH) degree, UNC Gillings School of Global Public Health (2014-2015); Mentor, Third-Year Medical Student Research at Duke University Medical Center (2014-present); Mentor, NIA/T32 Training Grant in the Demography of Aging, Duke Population Research Institute (2015-present); Invited Panelist, NIH Career Development Awards, Duke Office for Faculty Mentoring (2014)

Professional Service: Associate Editor, *Journal of Health and Social Behavior* (2012-2015); Associate Editor, *BMC Geriatrics* (2011-present); NIH study section reviewer (2016-present); Institutional Review Board (IRB) member for DUHS (2016-2017); Scientific Review Committee, American Public Health Association's Section on Aging & Public Health (2016); Advisor to the National Academy of Sciences' Committee on Population Aging (2010); DCH Faculty Representative, Duke Enterprise Data Unified Content Explorer (DEDUCE; 2013-2017); Presentation Judge, Scientific Research Symposium of the Alpha Omega Alpha Medical Society (2016-present); Peer reviewer for >30 scientific journals (2005-present).

Research: Dr. Dupre has extensive research experience in the social determinants of health and illness, focusing primarily on how cumulative exposure to social stressors impact inequalities in cardiovascular disease (CVD) onset and survival. He has served as principal investigator and (co)investigator on multiple awards from NIH, industry, and foundations. Dr. Dupre is currently the recipient of a K01 award (NHLBI) to examine the non-clinical factors associated with 30-day hospital readmission in adults with CVD.

(<https://scholars.duke.edu/display/per6795362>)

D. Five most relevant publications; h-index = 20

1. **Dupre, ME**, Moody J, Nelson A, Willis JM, Fuller L, Easterling D, Smart AJ, Silberberg M. Place-Based initiatives to improve health in disadvantaged communities: Cross-sector characteristics and networks of local actors in North Carolina. *American Journal of Public Health*. 2016;106(9):1548-55.
2. **Dupre, ME**, George LK, Liu G, Peterson ED. The cumulative impact of unemployment on risks for acute myocardial infarction. *Archives of Internal Medicine*. 2012;172(22):1731-1737. PMID: 23401888
3. **Dupre, ME**, George, LK, Liu, G, and Peterson, ED. Association between divorce and risks for acute myocardial infarction. *Circulation: Cardiovascular Quality and Outcomes*. 2015;8(3): 244-251. PMCID: PMC4439317
4. **Dupre, ME**, Gu D, Warner DF, Zeng Y. Frailty and type of death among older adults in China: Prospective cohort study. *BMJ*. 2009;338:b1175. PMCID: PMC2667569.
5. **Dupre, ME**, Beck AN, Meadows SO. Marital trajectories and mortality among U.S. adults. *American Journal of Epidemiology*. 2009;170(5):546-555. PMCID: PMC2732990

DI. Courses taught in the previous 5 years

DII. Mentoring

Doctoral Student Committee Membership (2): Served on doctoral dissertation committees for students in Duke's School of Nursing (PhD) and North Carolina A&T State University (PhD).

Master's Student Thesis Committee Membership (1): Served as preceptor for Masters of Public Health (MPH) degree in Public Health Leadership Program, Gillings School of Global Public Health, University of North Carolina at Chapel Hill.

Junior Faculty (>5): Served as mentor and advisor to numerous junior and visiting faculty at Duke and UNC on various methodological and substantive projects.

Postdoctoral Fellows (>5): Served as informal mentor and advisor on methodological projects for numerous cardiology fellows.

Residents (1): Served as mentor and advisor for the Population Health Improvement Leadership (PHIL) Program in the Department of Community and Family Medicine at Duke University.

Undergraduate Students, Medical Students, and Others (>10): Informally advised numerous students in sociology and methodology from undergraduate, medical, and non-degree programs.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Pollak, Kathryn I

eRA COMMONS USER NAME (credential, e.g., agency login): polla007

POSITION TITLE: Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Pitzer College, Claremont, CA		NA	Psychology
California State University, Fullerton, CA	B.A.	12/91	Psychology
University of Houston, Houston, TX	M.A.	12/94	Social Psychology
University of Houston, Houston, TX	Ph.D.	11/96	Social Psychology

A. Personal Statement

Dr. Pollak is a Professor in the Department of Population Health Sciences in the Duke School of Medicine. She is a social psychologist who has been developing and evaluating behavioral interventions for the past 19 years. She also is one of the Co-Leaders of Cancer Control and Population Sciences at the Duke Cancer Institute. She has worked in palliative care for the past 15 years and has been examining patient-physician communication for the past 12 years and teaching communication for the past 5 years. She has been Principal Investigator on 6 R01s. She was a standing member on PRDP, an NIH study section, while simultaneously chairing another study section for F32's for two years. She has mentored over 15 graduate students, medical students, postdoctoral fellows, medicine fellows, and residents over her tenure at Duke. She has taught various courses including Methodology and Statistics at the undergraduate level. She also gave guest lectures at UNC School of Public Health in Health Theory and also in Intervention Development. She has published 120 articles, many of which were with mentees.

B. Positions and Honors

1996-1997	Postdoctoral Fellow, Center for Health Promotion Research and Development, School of Public Health, University of Texas-Houston, Houston, TX
1997-1998	NCI Postdoctoral Fellow, Center for Health Promotion Research and Development, School of Public Health, University of Texas-Houston, Houston, TX
1998-2006	Assistant Research Professor, Department of Community and Family Medicine, Duke University School of Medicine
1998-Present	Cancer Control Scientist, Cancer Prevention, Detection and Control Research, Duke Comprehensive Cancer Center (now Duke Cancer Institute)
2001-2009	Adjunct Assistant Professor, Department of Health Behavior and Health Education, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC
2006-2009	Associate Professor, Department of Community and Family Medicine, Duke University School of Medicine
2009-Present	Adjunct Associate Professor, Department of Health Behavior and Health Education, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

2009-Present	Associate Professor with tenure, Department of Community and Family Medicine, Duke University School of Medicine
2015-2017	Professor with tenure, Department of Community and Family Medicine, Duke University School of Medicine
2017-Present	Professor with tenure, Department of Population Health Sciences, Duke University School of Medicine

C. Contributions to Science

Importance of physician communication on patient outcomes: For the past 15 years, I have been examining the relationship of physician communication and patient outcomes. Some of my seminal papers reported on physicians' use of Motivational Interviewing techniques and patient weight and satisfaction. I discovered that when physicians communicated with more empathy, had a more collaborative style, and supported patient autonomy, patients were more likely to lose weight (paper cited 64 times and covered by *The New York Times*) and reported higher satisfaction (cited 30 times) with their physician. This work has helped spur the integration of Motivational Interviewing into health care encounters. Based on my work, I have been asked to write two Editorials for *Patient Education and Counseling* one on how physicians can alter their communication slightly to be more effective and the other on what elements of MI are most predictive of patient change.

Pollak, K. I., Alexander, S. C., Coffman, C. J., Tulsky, J. A., Lyna, P., Dolor, R. J., ... & Østbye, T. (2010). Physician communication techniques and weight loss in adults: Project CHAT. *American Journal of Preventive Medicine*, 39(4), 321-328. PMID: 20837282. PMCID: PMC2939864.

Pollak, K. I., Alexander, S. C., Tulsky, J. A., Lyna, P., Coffman, C. J., Dolor, R. J., ... & Østbye, T. (2011). Physician empathy and listening: associations with patient satisfaction and autonomy. *The Journal of the American Board of Family Medicine*, 24(6), 665-672. PMID: 22086809. PMCID: PMC3363295.

Pollak, K. I., Jones, J., Lum, H. D., De La Cruz, S., Felton, S., Gill, A., & Kutner, J. S. (2015). Patient and caregiver opinions of motivational interviewing techniques in role-played palliative care conversations: A pilot study. *Journal of Pain and Symptom Management*, 50(1), 91-98. PMID: 25701055. PMCID: PMC4492861.

Tulsky, J. A., Beach, M. C., Butow, P. N., Hickman, S. E., Mack, J. W., Morrison, R. S., ... & **Pollak, K. I.** (2017). A research agenda for communication between health care professionals and patients living with serious illness. *JAMA Internal Medicine*. PMID: 28672373.

Physicians can improve their communication: I worked with Dr. James Tulsky on a trial in which we taught oncologists how to address patient negative emotions. Our 60-minute tailored computer-based intervention improved physician responses to negative emotions and also improved patient trust. I was Senior Author on our outcomes paper that has been cited 61 times. I also published a paper describing which physicians are most likely to respond to negative emotion and found that those who self-identified as more socio-emotional were more empathic in their clinical practice (cited 143 times and covered by *The New York Times*).

Tulsky, J. A., Arnold, R. M., Alexander, S. C., Olsen, M. K., Jeffreys, A. S., Rodriguez, K. L., ... & **Pollak, K. I.** (2011). Enhancing communication between oncologists and patients with a computer-based training program: a randomized trial. *Annals of Internal Medicine*, 155(9), 593-601. PMID: 22041948. PMCID: PMC3368370.

Pollak, K. I., Arnold, R. M., Jeffreys, A. S., Alexander, S. C., Olsen, M. K., Abernethy, A. P., ... & Tulsky, J. A. (2007). Oncologist communication about emotion during visits with patients with advanced cancer. *Journal of Clinical Oncology*, 25(36), 5748-5752. PMID: 18089870.

Complete List of Published Work in My Bibliography: <http://1.usa.gov/21108Po>

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing as Principal Investigator

U24NR014637 09/28/2013-06/30/2018

“Refinement and expansion of the Palliative Care Research Cooperative Group (PCRC)”

The PCRC aims to provide the infrastructure for high-quality end-of-life and palliative care research.

Role: Principal Investigator

R01CA166149 06/01/2013-05/31/2018

“SMS scheduled gradual reduction text messages to help pregnant smokers quit”

This five-year study is designed to test an SMS texting intervention to help pregnant women quit smoking.

Role: Principal Investigator

BIOGRAPHICAL SKETCH

NAME O'Brien, Emily C., Ph.D.			
eRA COMMONS USER NAME (credential, e.g., agency login) emily_obrien			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	MM/YY	FIELD OF STUDY
Duke University	B.S.	05/2006	Psychology
University of North Carolina at Chapel Hill	M.S.P.H.	12/2008	Epidemiology
University of North Carolina at Chapel Hill	Ph.D.	5/2012	Epidemiology
Duke University	Postdoctoral	8/2013	Health Outcomes

A. Personal Statement

I am a cardiovascular disease epidemiologist and health services researcher. I have worked with multiple trainees with clinical, methodological, and policy backgrounds in a range of disease areas. I am currently mentoring multiple pre- and postdoctoral fellows with clinical and research-focused backgrounds, each of whom have published multiple first-author papers and presented at national meetings under my guidance in the past year. As a faculty member in the School of Medicine, I have collaborated with senior and junior investigators to develop the study design and methodological approach for several projects focused on chronic disease, including the first nationwide registry of heterozygous familial hypercholesterolemia. I am currently a primary mentor in a new predoctoral fellowship program at the Duke Clinical Research Institute, which will train ~3 health services researchers annually. For the past 3 years, I have been an instructor in the Evidence-Based Medicine course of the Duke Physician Assistant program. In addition to multiple guest lectures for Duke and NC State University students, I am currently the course director for a clinical research seminar in the Clinical Research Training Program at the Duke University School of Medicine.

B. Relevant positions (limited to postgraduate only)

POSITIONS

2017 –	Assistant Professor of Population Health Sciences, Department of Population Health Sciences, Duke University School of Medicine, Durham, NC
2015 – 2017	Assistant Professor of Medicine, Division of Clinical Pharmacology, Duke University School of Medicine, Durham, NC
2013 – 2015	Medical Instructor, Division of Clinical Pharmacology, Duke University School of Medicine, Durham, NC
2012 – 2013	Postdoctoral Fellow, Health Services Research Division, Duke Clinical Research Institute, Durham, NC

C. Synergistic Activities

Education: Instructor, Evidence-based Medicine, Duke University Physician Assistant Program, (2015-present); Course director, Clinical Research Seminar, Duke University Clinical Research Training Program (2017 – present)

Professional Service: AHA Quality of Care and Outcomes Research Early Career Council (2015 – present; Medical Director, Research Forum, Duke Clinical Research Institute (2016 – Present); co-chair, Jackson Heart Study cardiovascular outcomes working group (2014-present); grant reviewer, Duke University SCORES program (2015 – present); member, Duke Clinical Research Institute faculty council (2017 – present); editorial board of *Circulation: Cardiovascular Quality and Outcomes* and *American Heart Journal* (2017 – present); statistical reviewer, *Stroke* (2016 – present); Reviewer for 17 peer-reviewed journals

Research: Dr. O'Brien has extensive research experience, primarily in the area of cardiovascular disease outcomes research, but also in many other areas of public health. She has served as the principal investigator and co-investigator on multiple awards from NIH, PCORI, and foundations.

D. Five most relevant publications; selected from 67; h-index = 15 [Choose publications that demonstrate your experience and contribution to population health.]

- a. **O'Brien EC**, Simon DN, Singer DE, Thomas L, Hylek EM, Gersh BJ, Ansell JE, Kowey PR, Mahaffey KW, Chang P, Fonarow GC, Piccini JP, Peterson ED. The ORBIT-AF Bleeding Score: a Simple Score to Assess Major Bleeding Risk in Atrial Fibrillation. *European Heart Journal* 2015;36(46):3258-64.
- b. **O'Brien EC**, Kim S, Hess PL, Fonarow GC, Kowey PR, Piccini JP, Peterson ED. Impact of the 2014 Atrial Fibrillation Guideline on the Proportion of Patients Recommended for Oral Anticoagulation. *JAMA Internal Medicine*. 2015; 175 (5); 848-50.
- c. **O'Brien EC**, Greiner MA, Fonarow GC, Xian YX, Smith E, Olson DW, Bhatt DL, Maisch L, Hannah D, Lindholm B, Pencina M, Peterson ED, Hernandez AF. Clinical Effectiveness of Statin Therapy after Ischemic Stroke: Primary Results from the PROSPER Study. *Circulation*. 2015; 132(15):1404-13.
- d. **O'Brien EC**, Xian Y, Xu H, Wu J, Saver JL, Smith EE, Schwamm LH, Peterson ED, Reeves MJ, Bhatt DL, Maisch L, Hannah D, Lindholm B, Olson D, Prvu Bettger J, Pencina M, Hernandez AF, Fonarow GC. Hospital Variation in Home-Time After Acute Ischemic Stroke: Insights From the PROSPER Study (Patient-Centered Research Into Outcomes Stroke Patients Prefer and Effectiveness Research). *Stroke*. 2016;47:2627-2633.
- e. Luo N, Fonarow GC, Lippmann SJ, Mi X, Heidenreich PA, Yancy CW, Greiner MA, Hammill BG, Hardy NC, Turner SJ, Laskey WK, Curtis LH, Hernandez AF, Mentz RJ, **O'Brien EC**. Early Adoption of Sacubitril/Valsartan for Patients With Heart Failure With Reduced Ejection Fraction: Insights From Get With the Guidelines-Heart Failure (GWTG-HF). *JACC Heart Fail*. 2017;5:305-309.

E. Courses taught in the previous 5 years [If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.]

- **Course Director**, Clinical Research Seminar, Duke University Clinical Research Training Program; 3 hours; MHS lectures discussing current methodological topics in clinical research (2017)
- **Co-instructor**, Evidence-Based Medicine, Duke University Physician's Assistant Program (2014, 2015, 2016)
- **Medical Director**, Duke Clinical Research Institute Research Forum (2015 – present)

F. Mentoring [Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.]

Doctoral Student Committee Membership (1): Served on doctoral dissertation committees for student in Healthy Policy and Management (PhD)

Clinical Fellow Mentor (3): Served on mentorship team for 2 clinical fellows and 1 MD student in the Duke Clinical Research Institute Fellowship program

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Leah L. Zullig

eRA COMMONS USER NAME (credential, e.g., agency login): Leah_Zullig

POSITION TITLE: Investigator / Assistant Professor of Medicine

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Appalachian State University; Boone, NC, U.S.A.	BS	12/2002	Health Promotion
East Tennessee State University; Johnson City, TN, U.S.A.	MPH	08/2004	Public Health Administration
University of North Carolina at Chapel Hill; Chapel Hill, NC, U.S.A.	PhD	05/2013	Health Policy and Management
Washington University in St. Louis; St. Louis, MO, U.S.A.	Fellowship	06/2017	Implementation Science

A. Personal statement

Dr. Zullig is an Assistant Processor in the Department of Population Health Sciences and has served in a direct role of teaching 13 students, mentoring 7 medical students and pre-doctoral fellows, and mentoring 3 junior faculty members. She is currently the Deputy Director of the Veterans Affairs Health Services & Research Post-Doctoral Fellowship Program. In that capacity Dr. Zullig oversees the recruitment and selection of postdoctoral scholars, as well as develops and executes a training curricula for the duration of their fellowship, and supervises placement with local mentors. She is also a member of the University of North Carolina, Chapel Hill Health Policy and Management Doctoral Program Advisory Committee and a participant in the Duke AHEAD program, the Academy for Health Profession Education and Academic Development.

Dr. Zullig is a frequent guest lecturer, workshop leader with both national and international experience. Dr. Zullig has developed and lead workshops in Tanzania, Switzerland, the Czech Republic, Israel, and Portugal. She has also co-developed and lead a summer short course for the University of Basel in Switzerland. She is currently teaching a doctoral course describing health services research methodology principles.

B. Relevant position (limited to postgraduate)

2017–	Assistant Professor, Department of Population Health Sciences, School of Medicine, Duke University, Durham, NC.
2014–2017	Assistant Professor, Division of General Internal Medicine, Department of Medicine, Duke University, Durham, NC.
2014–	Research Investigator, Durham Veteran Affairs Medical Center, Center for Health Services Research and Development (HSR&D) in Primary Care, Durham, NC.
2013–	Adjunct Assistant Professor, University of North Carolina, Department of Health Policy and Management, Chapel Hill, NC.
2011–2013	Pre-Doctoral Fellow, University of North Carolina, Cancer Care Quality Training Program, Chapel Hill, NC.

C. Synergistic activities

Education: Deputy Director of Post-doctoral Fellowship Program, Durham Veterans Affairs Medical Center for Health Services Research in Primary Care (2017-current); Member, Health Policy and Management PhD Program Advisory Committee (2013-current); Member, Graduate School Program Review Committee, Health Policy and Management, University of North Carolina (2011)

Professional service: Durham Veterans Affairs Medical Center Institutional Review Board (2015-2018); Steering Committee; Honorary Editorial Board Member, *Patient Preference and Adherence* (2015-current); European Society for Patient Adherence, Compliance, and Persistence (ESPACOMP) (2016-current); Secretary and Board Member, Association of Veterans Affairs Hematology and Oncology Association (2017)

Research: Dr. Zullig is a health services researcher and implementation scientist. Her overarching research interests address the reduction of healthcare disparities, developing cancer care quality monitoring systems, and promoting patient chronic disease self-management. She currently holds a Veterans Affairs Career Development Award in the area of colorectal cancer survivorship. Dr. Zullig has authored over 70 peer-reviewed publications. Relevant to the current application, Dr. Zullig is a co-investigator on a Duke Bass Connections undergraduate training grant (2016-2018).

D. Five most relevant publications; selected from 82; h-index = 12

1. **Zullig LL**, Goldstein KM, Bosworth HB. "Changes in the Delivery of Veterans Affairs (VA) Cancer Care: Ensuring Delivery of Coordinated, Quality Cancer Care in a Time of Uncertainty." [in press with *Journal of Oncology Practice*]
2. **Zullig LL**, Liang Y, Arismendez SV, Trevino A, Bosworth HB, Turner BJ. "Trajectory of systolic blood pressure in a low-income, racial-ethnic minority cohort with diabetes and baseline uncontrolled hypertension." [in press with *Journal of Clinical Hypertension*] PMID: 28371157.
3. **Zullig LL**, Sims KJ, McNeil R, Williams CD, Jackson GL, Provenzale D, Kelley MJ. "Cancer incidence among patients of the United States Veterans Affairs (VA) healthcare system: 2010 update." [in press with *Military Medicine*]
4. Jackson GL, **Zullig LL**, Phelan SM, Provenzale D, Griffin JM, Clauser SB, Haggstrom DA, Jindal RM, MD, van Ryn M. "Patient characteristics associated with the level of patient-reported care coordination among male colorectal cancer patients in the Veterans Affairs Healthcare System." *Cancer*. 2015 Jul 1;121(13):2207-13. PMID: 25782082
5. **Zullig LL**, Peterson E, Bosworth HB. "Ingredients of successful interventions to improve medication adherence." *JAMA*. 2013 Dec 25;310(24):2611-2. PMID: 24264605

E. Courses taught in the previous 5 years

1. **Zullig, LL**. Doctoral Level Semester Course: "Advanced Health Services Research Methods and Applications." *Gillings School of Global Public Health, University of North Carolina*. Chapel Hill, NC; Fall semester 2017.
Role: Instructor.
2. **Zullig LL**, Bosworth HB. Master's Level Summer Short Course: "Dissemination and Implementation Science: An Intensive Primer." *School of Nursing, University Basel (Switzerland) and University of Leuven (Belgium)*. Basel, Switzerland; May-August 2017.
Role: Course designer and co-teacher.
3. **Zullig LL**, De Geest S, van Dijk L, Foster J, van den Bemt. Workshop: "Adaption of interventions: how to translate existing intervention to your own setting – a practical guide." *European Society for Patient Adherence, Compliance, and Persistence (ESPACOMP) Annual Meeting*. Lisbon, Portugal; November 17, 2016.
Role: Workshop designer and lead.

4. **Zullig LL**, Leader A. Workshop: “Inaugural Israeli hematology-oncology medication adherence conference.” Tel-Aviv, Israel; September 25-26, 2016.
Role: Workshop co-designer and co-leader.
5. **Zullig LL**, de Bruin M, van den Bemt B, van Dijk L, Schneider MP, De Geest S. Workshop: “Adopting and implementing evidence based adherence interventions in diverse clinical settings.” *European Society for Patient Adherence, Compliance, and Persistence (ESPACOMP) Annual Meeting*. Prague, Czech Republic; November 12, 2015.
Role: Workshop co-designer and lead.
6. **Zullig LL**, De Geest S, van Dijk L, de Bruin M, van den Bemt B, Schneider MP. Workshop: “Development, implementation and evaluation of large system, scalable adherence interventions.” *European Society for Patient Adherence, Compliance, and Persistence (ESPACOMP) Annual Meeting*. Lausanne, Switzerland; November 20, 2014.
Role: Workshop co-designer and lead.

F. Mentoring

Junior Faculty Membership (3): Served on the mentoring team for 3 junior faculty members on a K-23 and an NIH global health training grant supplementary project.

Doctoral Student Committee Membership (5): Served on 5 doctoral dissertation committees for students for students in Health Policy and Management (PhD) at the University of North Carolina and in Nursing (PhD) at the University of Leuven in Belgium.

Medical Student (2): Served as a field-based mentor for 2 medical students during their research year at Duke University.

Undergraduate Student (3): Served as a mentor for 3 undergraduate students as part of a year-long Bass Connections research collaborative project at Duke University.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Smith, Valerie

eRA COMMONS USER NAME (credential, e.g., agency login): VAS_15

POSITION TITLE: Assistant Professor and Biostatistician

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	START DATE MM/YYYY	END DATE MM/YYYY	FIELD OF STUDY
University of North Carolina at Chapel Hill, Chapel Hill, NC	BS		05/2007	Mathematical Decision Sciences
Stanford University, Palo Alto, CA	MS		12/2008	Statistics
University of North Carolina at Chapel Hill, Chapel Hill, NC	DRPH		05/2015	Biostatistics

A. Personal Statement

I am a biostatistician with extensive experience on large, longitudinal observational studies utilizing complex medical record data and also on randomized controlled trials. Through my research activities, I have many years of experience utilizing state of the art statistical methods in collaboration with health services researchers in many different fields, including physicians, economists, and health policy-focused investigators. I am also a faculty member with Duke University's Clinical Research Training Program, teaching observational study design and analysis as part of the statistical course series. I also have a history of successfully mentoring Veterans Affairs post-doctoral fellows and career development awardees and am currently serving as a statistical collaborator on a K award.

B. Appointments

2009 -	Biostatistician, Health Services Research & Development, Department of Veterans Affairs, Durham, NC
2011 - 2014	Research Assistant, Biometric Consulting Laboratory, University of North Carolina at Chapel Hill, Chapel Hill, NC
2016 – 2017	Assistant Professor, Division of General Internal Medicine, Department of Medicine, Duke University
2017-	Assistant Professor, Department of Population Health Sciences, Duke University

C. Synergistic Activities

- **Education:** Lecturer, CRTP Statistical Course (2017); Teaching Assistant, Stanford University (4 courses, 2008); Teaching Assistant, University of North Carolina (3 semesters, 2012-2014).
Professional Service: Committee Member, Academy Health Annual Meeting Methodology Committee (2014); Statistical Manuscript Reviewer for *Statistical Methods in Medical Research*, *Statistics in Medicine*, *Journal of the American Statistical Association*, *Statistical Science*, *Communication in Statistics: Theory and Methods*.
- **Research:** Dr. Smith has extensive research experience as a collaborative statistical scientist over the past 8 years, serving as statistician on over 18 studies. The studies have ranged over a number of content areas, including behavioral intervention trials, diet studies, smoking cessation, patterns of health care utilization, program evaluation, bariatric surgery, and supportive interventions for high risk older adults and their caregivers. Additionally, Dr. Smith has statistically supported and mentored research of nine post-doctoral fellows, career development awardees, and K awardees.

D. Five most relevant publications; selected from 32; h-index = 12 ([complete bibliography](#))

1. **Smith V.A.**, J.S. Preisser, B. Neelon, M.L. Maciejewski. (2014). "A marginalized two-part model for semicontinuous data", *Statistics in Medicine* 33(28): 4891-4903.
2. Arterburn D.E., M.K. Olsen, **V.A. Smith**, E.H. Livingston, L. Van Scoyoc, W.S. Yancy, G. Eid, H. Weidenbacher, M.L. Maciejewski. (2015). "Association between bariatric surgery and long-term survival", *JAMA* 313(1): 62-70.
3. Powers B.J., M.K. Olsen, **V.A. Smith**, R. Woolson, H.B. Bosworth, E.Z. Oddone. (2011). "Measuring blood pressure for decision making and quality reporting: where and how often?", *Annals of Internal Medicine*, 154: 781-8.
4. Crowley M.J., **V.A. Smith**, M.K. Olsen, S. Danus, E.Z. Oddone, H.B. Bosworth, B.J. Powers. (2011). "Treatment intensification in a hypertension telemanagement trial: clinical inertia or good clinical judgment?", *Hypertension*, 58: 552-558.
5. Neelon B., A.J. O'Malley, **V.A. Smith**. (2016). "Modeling zero-modified count and semicontinuous data in health services research, Part 1: Background and Overview", *Statistics in Medicine* 35(27): 5070-5093.

E. Courses taught in the previous 5 years

2012-2014 Teaching Assistant, *Categorical Data Analysis*, University of North Carolina (more than 200 students taught)

2017 Lecturer, *Statistical Analysis* (CRP 245)

F. Mentoring

- **Junior Faculty (4):** Currently supporting three Career Development Awardees at the VA and one K awardee at Duke University School of Medicine.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Sudha R Raman

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Temporary Instructor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Toronto, Toronto, Ontario, Canada	BSc	1998	Physical Therapy
Queen's University, Kingston, Ontario, Canada	MSc	2006	Epidemiology
University of North Carolina at Chapel Hill,	PhD	2011	Epidemiology
Duke University, Durham, NC, USA	Post doctoral	2017	Epidemiology/Health Services Research

A. Personal Statement

I am an Instructor in the Department of Population Health Science and have served in the training of health professional students and in the continuing education of pharmacoepidemiologists. My current research focus, which is to evaluating the benefits and harms of medication using real-world data, presents many opportunities for students to participate in the application of their skills either mitigating the potential impacts of confounding factors, using large database programming, or engaging with diverse research stakeholders (professional bodies, funders, industry sponsors).

B. Positions and Honors

List in chronological order previous positions, concluding with the present position. List any honors. Include present membership on any Federal Government public advisory committee.

Positions

2012-2013 **Post doctoral Fellow**, Depts of Pediatrics/Community and Family Medicine, Duke University, Durham, NC USA

2014-2017 **Post doctoral Fellow** Center for Pragmatic Health Systems Research, Duke University, Durham, NC USA

2017- **Temporary instructor** (pending appointment to Assistant Professor), Department of Population Health Sciences, Duke University, Durham, NC, USA (Started July 1, 2017)

C. Synergistic Activities *[You may use different categories. Focus on activities that demonstrate your strengths in education and the field overall.]*

Professional Service

Member - International Society of Pharmacoepidemiology (ISPE)

2009 - Abstract Reviewer

2011 – Pediatric special interest group

2016 – Competitively funded manuscript development working group co-leader with J Lund.

“Linking Electronic Health Data in Pharmacoepidemiology: Considerations for Feasibility, Planning, and Execution”

2017 – Instructor in two preconference courses.

Peer reviewer for ~11 journals (2005-current).

Research: Dr. Raman extensive research experience, primarily in the area of pharmacoepidemiology and health services research.

D. Five most relevant publications; selected from 16; h-index = 8 *[Choose publications that demonstrate your experience and contribution to population health.]*

Raman SR, Boyce W, Pickett W. Injury among 1107 Canadian students with self identified disabilities, *Disability and Rehabilitation* 2007;29(22):1727-35.

Raman SR, Marshall SW, Gaynes B, Haynes K, Naftal AJ, Stürmer T. An observational study of pharmacological treatment in primary care of children with ADHD in the United Kingdom. *Psychiatric Services* 2015;66(6):617-624.

Raman SR, Stürmer T, Gaynes B, Haynes K, Naftal AJ, Marshall SW. Stimulant treatment and injury among children with attention deficit hyperactivity disorder: an application of the self-controlled case series study design. *Injury Prevention* 2013;19(3):164-70.

Raman SR, Landry MD, Ottensmeyer CA, Hamdan E, Jacob S, Bouhaimed M. Keeping our children safe in motor vehicles: knowledge, attitudes, and practice among parents in Kuwait regarding child car safety. *International Journal of Injury Control and Safety Promotion*. 2013;20(4):358-67.

DeMeo SD*, **Raman SR**, Hornik CP, Wilson CC, Clark RH, Smith PB. Adverse events after routine immunization of extremely low birth weight infants. [published online June 1, 2015]. *JAMA Pediatrics*.doi:10.1001/jamapediatrics.2015.0418.

*Research trainee

E. Courses taught in the previous 5 years *[If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.]*

2015-2017 Facilitator, Duke Physician Assistant Program, Evidence Based Medicine Small Groups

2017 Instructor, Intermediate Pharmacoepidemiology: Approaches to Unmeasured Confounders
Instructor, Using Pharmacoepidemiology Database Resources to Address Drug Safety Research

33rd International Conference on Pharmacoepidemiology and Therapeutic Risk Management (ISPE), Montreal, Canada

F. Mentoring *[Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.]*

Advisor for a MSc (professional graduate program) student group: Allapat C, McFarland J, McGovern B, Penfold A, Siu G. Evaluating the Role of the Canadian Physical Therapist in Global Health: A SWOT analysis. Department of Physical Therapy, University of Toronto, Ontario, Canada

Medicine Fellows/Residents (2): Served as research co-advisor for 2 fellows (neonatal pediatrics).

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Shelby Derene Reed

eRA COMMONS USER NAME (credential, e.g., agency login): shelbyreed

POSITION TITLE: Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Maryland at Baltimore School of Pharmacy	BS	05/1993	Pharmacy
University of Maryland at Baltimore	PhD	12/1998	Pharmacy Administration
University of Washington Schools of Pharmacy and Medicine	Post PhD	10/2000	Health Services Research

A. Personal Statement

Dr. Reed has 20 years of experience leading multidisciplinary health outcomes research studies with a focus on economic and health policy evaluations. Dr. Reed has extensive expertise in designing and conducting trial-based and model-based cost-effectiveness analyses of diagnostics, drugs and patient-centered interventions. In evaluating health policy issues, she has developed computer models to evaluate the economic impact of trends in clinical trial design, changes in reimbursement policies, a new financing scheme to spur drug development for ultra-rare conditions, and the societal value of alternative approaches to identifying drug safety problems. Over the last several years, her research has increasingly focused on stated-preference studies to evaluate benefit-risk tradeoffs, patient-centered value, and their application in clinical decision making. She is the director of the newly-formed Preference Evaluation Research (PrefER) Group at the Duke Clinical Research Institute.

Dr Reed has a long history of bridging her research projects with mentoring medical students, residents and post-doctoral fellows. She has also mentored numerous junior faculty members at Duke University Medical Center on various projects they had initiated. In addition to project-related work, she has mentored many of these individuals with project conceptualization, grant writing, and career planning.

B. Positions and Employment

1998-1999	NIH Post-doctoral Training Fellow, Center for AIDS and STDs, University of Washington
1999-2000	Research Associate, Department of Pharmacy, University of Washington
2000-2007	Assistant Professor, Department of Medicine, Duke University Medical Center, Duke University
2004-2008	Visiting Instructor, Department of Economics, Duke University
2007-2014	Associate Professor, Department of Medicine, Duke University Medical Center, Duke University
2013-present	Member, Duke Cancer Institute
2014-present	Professor, Department of Medicine, Duke University Medical Center, Duke University
2017-present	Professor, Department of Population Health Science, Duke University Medical Center, Duke University

C. Synergistic Activities

- **Education:** Short Course Instructor, ISPOR, “Statistical Considerations in Health Economic Evaluations” with Bradley Hammil, PhD (2014- present) Small Group Instructor. PHYASST 255. Evidence-Based Medicine I, Duke University Physician Assistant Program, Department of Community and Family Medicine (2008-2016). Guest Lecturer, MP770 Frontiers in Biomedical Science (2013-2017). Course Co-Director with Lesley Curtis, PhD: Duke University, Department of Economics: ECON 195S.80 Applied Methods in Health Care Analysis (2005-2007).
- **Professional Service:** President, International Society for Pharmacoeconomics and Outcomes Research (ISPOR) (2017-2018); Chair, Finance Committee, ISPOR (2016-2017); Editorial Board, Health Services Research (2016-present); Guest Editor for themed section, *Value in Health* (2016-2017); Vice-Chair, ISPOR Awards Committee (2014-2015); Co-Chair, Workshop Review Committee, 20th Annual International Meeting Program, ISPOR (2015); Standing member, PCORI, Communication and Dissemination Research Review Panel (2013-2015); Vice-Chair (2015) Chair (2016), ISPOR Short Course Development & Quality Assurance Committee (2014-2016); PCORI, Phase I Grant Reviewer: Funding Cycle I. (2012); Editorial Advisory Board, *Value in Health* (2012-present); Chair, Vision 2020 Communications Working Group, ISPOR (2011-2013); Scientific Review Group member, NINR (2011); Special Emphasis Panel/Scientific Review Group member, NIH Common Fund (2011-2013); Director, Board of Directors (elected office), ISPOR (2009-2011); Member and Chair, Management Advisory Board, *Value in Health* (2009-2011); Chair, ISPOR Bernie O'Brien New Investigator Award Committee (2008-2013); Editorial Board member, *Pharmacoeconomics* (2004-2009)
- **Research:** Dr. Reed has extensive research experience leading collaborative interdisciplinary teams. She has led more than 80 research projects funded through public or private sources. She received R01 funding in 2009 from NIH to develop tools for economic analysis of disease management programs in heart failure.

D. Five most relevant publications; selected from 137; h-index = 36 ([complete bibliography](#))

1. **Reed SD**, Neilson MP, Gardner M, Li Y, Briggs AH, Polsky DE, Graham FL, Bowers MT, Paul SC, Granger BB, Schulman KA, Whellan DJ, Riegel BJ, Levy WC. TEAM-HF Cost-Effectiveness Model: A Web-Based Program Designed to Evaluate the Cost-Effectiveness of Disease Management Programs in Heart Failure. *Am Heart J*. 2015;170(5):951-60. PMC4638158
2. Havrilesky LJ, Secord AA, Ehrisman JA, Berchuck A, Valea FA, Lee PS, Gaillard S, Samsa G, Cella D, Weinfurt KP, Abernethy AP, **Reed SD**. A conjoint analysis of the preferences of women with ovarian cancer for attributes of treatment and disease. *Cancer*. 2014;120(23):3651-9. PMC4429767
3. **Reed SD**, Dinan MA, Schulman KA, Lyman GH. Cost-effectiveness of the 21-gene recurrence score assay in the context of multifactorial decision making for guiding chemotherapy in women with early-stage breast cancer. *Genet Med*. 2013;15:203-11. PMC3743447
4. Mühlbacher AC, Bethge S, **Reed SD**, Schulman KA. Patient preferences for features of health care delivery systems: A discrete-choice experiment. *Health Serv Res*. 2016;51(2):704-27. PMC4799904
5. Ramsey SD, Willke RJ, Glick HA, **Reed SD**, Augustovski F, Jonsson B, Briggs AH, Sullivan SD. ISPOR cost-effectiveness analysis alongside clinical trials II: An ISPOR good research practices task force report. *Value Health*. 2015;18(2):161-72

E. Teaching Experience

2014- present	Short Course Instructor, ISPOR, “Statistical Considerations in Health Economic Evaluations” with Bradley Hammil, PhD
2013- present	Guest Lecturer, MP770 Frontiers in Biomedical Science
2008-2016	Small Group Instructor. PHYASST 255. Evidence-Based Medicine I, Duke University Physician Assistant Program, Department of Community and Family Medicine
2005-2007	Course Co-Director with Lesley Curtis, PhD: Duke University, Department of Economics: ECON 195S.80 Applied Methods in Health Care Analysis

F. Mentoring

Doctoral Student Committee Membership (2): D.Phil thesis committee, University of Oxford, Oxford, UK; PhD thesis committee, Griffiths University, Brisbane, Australia.

Junior Faculty (>10): Served as mentor and advisor to numerous junior clinical and PhD faculty at Duke, including K-awards and advising and collaborating on research projects.

Postdoctoral Fellows (>10): Served as a formal and informal mentor for many postdoctoral fellows, including several enrolled in CRTP, including those in health economics, health policy and health services research.

Residents (>5): Served as mentor and advisor for numerous resident projects in cost-effectiveness analysis, health services research, stated-preference research and health policy.

Undergraduate Students, Medical Students, and Others (>5): Mentored numerous students in health policy and health services research from undergraduate, medical, and non-degree programs.

BIOGRAPHICAL SKETCH

NAME: Corneli, Amy Lynn

POSITION TITLE: Associate Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Georgia, Athens, GA	B.S.	06/1993	Health Promotion and Behavior
Emory University, Atlanta, GA	M.P.H.	05/1995	International Health
University of North Carolina at Chapel Hill (UNC), Chapel Hill, NC	Ph.D.	08/2004	Health Behavior and Health Education; Anthropology Minor

A. Personal Statement

Dr. Corneli is an Associate Professor in the Department of Population Health Sciences in the School of Medicine at Duke University. She is also a Faculty Member at the Duke Clinical Research Institute and a Faculty Associate in the Trent Center for Bioethics, Humanities, and History of Medicine. Dr. Corneli has extensive experience in conducting qualitative and mixed-method studies in health, primarily HIV prevention, and bioethics in multiple countries in sub-Saharan Africa, the Middle East, South and Southeast Asia, and North America. A substantial portion of Dr. Corneli's research portfolio has focused on engaging patients and their communities in qualitative research to inform the development, implementation, and interpretation of clinical research. Through these studies, she has mentored many junior researchers and conducted numerous site trainings on the preparation, conduct, analysis, and interpretation of qualitative data. In addition, Dr. Corneli serves as the lead social scientist for the Clinical Trials Transformation Initiative, and has led the development and implementation of over 10 social science research studies since 2015. In this capacity, she provides mentorship to three students/trainees who are part of the research team.

B. Positions

1995-1997	Research Associate, Program Against Micronutrient Malnutrition, Department of International Health, Emory University, Atlanta, GA
1997-2000	Fellow, Special Pathogens Branch, National Center for Infectious Diseases, Centers for Disease Control and Prevention (CDC), Atlanta, GA
2004-2005	Research Associate and Assistant Project Director, UNC/CDC Global AIDS Program in the Democratic Republic of Congo, Department of Epidemiology, UNC, Chapel Hill, NC
2005-2007	Associate Scientist, FHI 360, Durham, NC
2007-2013	Scientist I, FHI 360, Durham, NC
2013-2015	Scientist II, FHI 360, Durham, NC
2015-2016	Instructor—temporary, Department of Medicine, Division of General Internal Medicine, Duke University, Durham, NC
2016—Present	Associate Professor, Department of Medicine, Division of General Internal Medicine, School of Medicine, Duke University, Durham NC
2017—Present	Associate Professor, Department of Population Health Sciences, School of Medicine, Duke University, Durham NC

C. Synergistic Activities

Professional service: HPTN Ethics Working Group (2005—2009); Member, UNC Center for AIDS Research (CFAR) Community Advisory Board (2008—present); Reviewer, NIH Special Emphasis Panel on Disclosure of HIV-Status to Children in Low- and Middle-Income Country Settings (RFA-HD-12-197) (2012); Associate Editor, Journal of Empirical Research on Human Research Ethics (2013 —present); Reviewer, Center for AIDS

Research at the University of North Carolina at Chapel Hill, Developmental award grants (2014); Abstract reviewer, International Conference on HIV Treatment and Prevention Adherence (2014, 2015, 2016); Reviewer, NIH R25 on International Research Ethics Education (PAR-13-027) (2015); Member, Duke University CFAR Social and Behavioral Sciences Core (2016—present); Abstract mentor, International AIDS Conference (2016 and 2017); Director, Duke University CFAR Biomedical Prevention Scientific Working Group (2017—present); Reviewer, NIH Special Emphasis Panel on Improving the HIV Pre-Exposure Prophylaxis Cascade (RFA-MH-17-360 & RFA-MH-17-361) (2017); Member, Triangle PrEP Working Group (2017—present); Peer reviewer for 18 journals (2000—present).

Research: Dr. Corneli's research has primarily focused on the behavioral aspects of biomedical HIV prevention in sub-Saharan Africa. As a social scientist, she is interested in exploring the nuances and complexities of human behavior, sexuality, and HIV prevention decision-making, particularly as it relates to biomedical HIV prevention clinical trials and the uptake and use of proven biomedical HIV prevention products. Dr. Corneli also has a portfolio of empirical bioethics studies, primarily related to informed consent. She has served as principal investigator on research studies funded by NIH and USAID.

D. Five most relevant publications; selected from 40; h-index = 18 (My URL:

<http://www.ncbi.nlm.nih.gov/myncbi/browse/collection/42625930/?sort=date&direction=ascending>)

- a. Van Damme L, **Corneli A**, Ahmed K, Agot K, Lombaard J, Kapiga S, Malahleha M, Owino F, Manongi R, Onyango J, Temu L, Monedi MC, Mak'Oketch P, Makanda M, Reblin I, Makatu SE, Saylor L, Kiernan H, Kirkendale S, Wong C, Grant R, Kashuba A, Nanda K, Mandala J, Fransen K, Deese J, Crucitti T, Mastro TD, Taylor D; FEM-PrEP Study Group. Preexposure prophylaxis for HIV infection among African women. *N Engl J Med*. 2012; 367(5):411-22.
- b. **Corneli A**, Deese J, Wang M, Taylor D, Ahmed K, Agot K, Lombaard J, Manongi R, Kapiga S, Kashuba A, Van Damme L, for the FEM-PrEP Study Group. FEM-PrEP: Adherence patterns and factors associated with adherence to a daily, oral study product for pre-exposure prophylaxis. *JAIDS*. 2014; 66(3): 324-331.
- c. **Corneli A**, Sorenson J, Bentley ME, Henderson GE, Bowling JM, Nkhoma J, Moses A, Zulu C, Chilima J, Ahmed Y, Heilig CM, Jamieson DJ, van der Horst C. Improving participant understanding of informed consent in a HIV-prevention clinical trial: a comparison of methods. *AIDS Behav*. 2012; 16(2):412-21.
- d. **Corneli A**, Namey E, Mueller M, Tharaldson J, Sortijas S, Grey T, Sugarman J. Evidence-based strategies for shortening informed consent forms in clinical research. *Journal of Empirical Research on Human Research Ethics*. 2017; Feb;12(1):14-25.
- e. **Corneli A**, Piwoz E, Bentley ME, Moses A, Nkhoma JR, Tohill BC, Adair L, Mtimuni B, Ahmed Y, Duerr A, Kazembe P, van der Horst C; UNC Project BAN Study Team. Involving communities in the design of clinical trial protocols: the BAN Study in Lilongwe, Malawi. *Contemp Clin Trials*. 2007; 28(1):59-67.

E. Courses taught in the previous 5 years

1. Workshop Faculty: "Using Empirical Evidence to Reduce Consent Form Length: Research Update." PRIM&R. November 12-14, 2015.
2. Workshop Faculty: "Evidence-Based Ethical Problem Solving." PRIM&R. November 12-14, 2015.
3. Seminar Presenter, "Using Empirical Evidence to Reduce Consent Form Length." Schulman Associates IRB's 17th Annual Human Subjects Protection Conference. October 1, 2015.
4. Workshop Faculty: "Using Empirical Evidence to Reduce Consent Form Length." PRIM&R. December 5-8, 2014.
5. Facilitator, three-day workshop on qualitative research. NIH-Fogarty Global Health Fellows Program Orientation. National Institute of Health. July 10-12, 2014.
6. Instructor on conducting empirical research on research ethics. The Fogarty-funded training program in bioethics -- Advancing Research Ethics Training in Southern Africa. Stellenbosch University, Cape Town, South Africa. February, 2012.
7. Lecturer: "Applied Research Ethics in HIV/AIDS Research in Africa." Graduate level course: Ethics for Global Health Research. Duke Global Health Institute. 2017.
8. Lecturer: "Integrating formative and behavioral research into clinical trial design." Graduate level class on clinical trial design. Department of Epidemiology, Gillings School of Global Public Health, The University of North Carolina at Chapel Hill. Yearly: 2009-2017.
9. Lecturer: "Formative research designs." Graduate level class on qualitative research methods for *nutrition*. Department of Nutrition, Gillings School of Global Public Health, The University of North

Carolina at Chapel Hill. Yearly: 2012-2015.

F. Mentoring

1. Meredith Clement, MD. Fellow, Infections Disease. Research: Input from Positives for Prevention among Negatives: Qualitative Interviews to Better Understand Effective Outreach.
2. Sarahn Wheeler, MD. Assistant Professor of Obstetrics and Gynecology. Research: Understanding and Eliminating Barriers to 17-P for Preterm Birth Prevention in Non-Hispanic Black Women.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Sperber, Nina Rachel

eRA COMMONS USER NAME (credential, e.g., agency login): NINA.SPERBER

POSITION TITLE: Research Health Science Specialist, Center for Health Services Research in Primary Care, Durham VAMC; Assistant Professor, Duke University

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Virginia, Charlottesville, VA	BA	1992	Religious Studies
American University, Washington, DC	MA	1995	Applied Anthropology
University of North Carolina, Chapel Hill, NC	PhD	2010	Health Behavior
Duke University	Post- doctoral	2011	Health Services Research

A. Personal Statement

Dr. Sperber is an Assistant Professor in the Department of Population Health Sciences and a health services researcher at the Durham Center of Innovation (COIN), VA Healthcare System. Her work focuses on using qualitative and mixed methods to evaluate implementation of health services innovations in diverse contexts. She currently is PI of a study to evaluate implementation of the Veteran-Directed Home and Community-Based Services program and is working closely with a doctoral candidate from the UNC Gillings School of Global Public Health to conduct qualitative interviews and analyze data. Dr. Sperber is local PI for another multi-site study (Sara Knight, PhD PI) to assess how Veterans value receiving results from whole genome sequencing. She is working with this student to conduct focus groups that will be used to inform development of a survey. Dr. Sperber additionally co-leads a monthly group to provide support for use of qualitative methods within the COIN. She currently works with two Master's level researchers, and is helping them to develop manuscripts based on qualitative and mixed-method analyses. She has worked with other Master's researchers and doctoral students who have successfully published and obtained positions at RTI.

B. Relevant Positions (limited to postgraduate only)

2010-2011: AHRQ Fellow in Health Services Research, Center for Health Services Research in Primary Care, Durham Veterans Affairs Healthcare System and Duke University Medical Center, Durham, NC

2011-present: Research Health Science Specialist, Center for Health Services Research in Primary Care Durham Veterans Affairs Healthcare System and Medical Instructor, Duke University Medical Center, Durham, NC

2011-2016 Medical Instructor, Division of General Internal Medicine, Department of Medicine, Duke University

2017-present Assistant Professor, Department of Population Health Sciences, Duke University

C. Synergistic Activities

Research: Dr. Sperber has extensive experience in implementation science and research. Since her post-doctoral training in health services research, she has presented on implementation science and methods at AcademyHealth Annual Research Meeting, VA Quality Enhancement Research Initiative (QUERI)/Health Services Research and Development meeting, and the AcademyHealth Dissemination and Implementation Science meeting. Most of her work is in the areas of caregiving and precision medicine. Recently, she led an analysis and publication to synthesize implementation barriers and strategies from 6 multi-site projects that are part of the NHGRI-funded Implementing GeNomics In pracTice (IGNITE) consortium.

Service: Dr. Sperber has served as Associate Director of the Qualitative Methods Core for the Durham VA COIN. She co-facilitates monthly group meetings that include journal club, presentations, and workshops on qualitative methods for the COIN. She has served as Secretary of the local chapter of the American Evaluation Association for the past 3 years.

D. Five most relevant publications; selected from 24; h index=5

1. Orlando LA, **Sperber NR**, Voils CI, Nichols M, Myers RA, Wu RR, Rakhra-Burris T, Levy KD, Levy M, Pollin TI, Guan Y, Horowitz CR, Ramox M, Kimmel SE, Caitrin WM, Madden EB, Damschroder LJ. Developing a Common Framework for Evaluating the Implementation of Genomic Medicine Interventions in Clinical Care: The IGNITE Network's Common Measures Working Group. *Genetics in Medicine*. 2017.
2. **Sperber NR**, Carpenter JS, Cavallari LH, J. Damschroder L, Cooper-DeHoff RM, Denny JC, Ginsburg GS, Guan Y, Horowitz CR, Levy KD *et al*: Challenges and strategies for implementing genomic services in diverse settings: experiences from the Implementing GeNomics In pracTice (IGNITE) network. *BMC Medical Genomics* 2017, **10**(1):35.
3. Andrews SM, **Sperber NR**, Gierisch JM, Danus S, Macy SL, Bosworth HB, Edelman D, Crowley MJ. Patient perceptions of a comprehensive telemedicine intervention to address persistent poorly controlled diabetes (PPDM). *Patient Prefer Adherence*. 2017, 11:469.
4. Damschroder LJ, Reardon CM, **Sperber NR**, Robinson CH, Fickel JJ, Oddone EZ. Implementation Evaluation of the Telephone Lifestyle Coaching (TLC) Program: Organizational Factors Associated with Successful Implementation. *Translational Behavioral Medicine: Practice, Policy and Research*. 2016:1-9; doi: 10.1007/s13142-016-0424-6.
5. **Sperber NR**, Andrews SM, Voils CI, Green GL, Provenzale D, Knight S. Barriers and Facilitators to Adoption of Genomic Services for Colorectal Care within the Veterans Health Administration. *Journal of Personalized Medicine*. 2016, 6(2):16.

E. Workshops and classes taught in the previous 5 years

- 2017 Incorporating Evaluation Into Your Program Plan, Duke-Johnson and Johnson Nurse Leadership Fellows Workshop
- 2013/14 Guest lecturer, Qualitative and Mixed Methods, Duke Clinical Research Training Program

F. Mentoring

Doctoral Student (3): Have mentored three doctoral students on using qualitative methods, resulting in publication and conference presentations.

Career Development Awards (3): Have served as informal mentor for career development awardees on using qualitative methods.

Master's Research Analysts (3): Have mentored master's level researchers on using qualitative methods and using implementation and health behavior theory and frameworks in data collection and analysis.

BIOGRAPHICAL SKETCH

NAME: Corinna Sorenson

POSITION TITLE: Assistant Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Utah State University, Logan, UT	BS. (Honors)	05/1996	Psychology
University of Michigan, Ann Arbor, MI	M.P.H	05/1999	Public Health, Social & Behavioral Science
University of Michigan, Ann Arbor, MI	M.H.S.A	05/2000	Health Policy & Management
London School of Economics and Political Science, London, UK	Ph.D.	03/2015	Health Policy & Economics

A. Personal Statement

Dr. Sorenson is an Assistant Professor in the Department of Population Health Sciences and Adjunct Professor in the Sanford School of Public Policy. She currently serves as the Faculty Director of the Duke-Margolis Scholars in Health Policy and Management program, which provides innovative didactic and experiential learning and mentorship opportunities to prepare rising talent in public policy, business, law, nursing, and medicine to make an impact on health care delivery and policy. Besides overseeing the program, Dr. Sorenson has played a pivotal role in designing the program and expanding its availability to students across Duke University. In addition, she is the faculty co-lead for all education and training initiatives supported by the Duke-Margolis Center for Health Policy. Such efforts span undergraduate, graduate, and executive levels. Dr. Sorenson has extensive teaching experience in a range of health policy and health services research topics, and has served as a guest lecturer or workshop leaders at Duke University, the London School of Economics, and national and international meetings. Outside of academe, she has served in senior research consulting and policy roles in the U.S. and abroad. To date, Dr. Sorenson has served a direct role in the training and mentorship of over 10 junior (pre- and post-doctoral) researchers and policy analysts. Her diverse experience in various sectors, in complement to her content and research experience, has helped successfully prepare trainees for impactful careers in academia, industry, government agencies, and private businesses and foundations. Dr. Sorenson's practice-focused mentees are well represented in both public and private sector organizations, including Avalere Health, Medtronic, ADVI, General Electric, GAO, Kaiser Permanente, among others. Her academic-focused mentees are graduate students, research staff, or faculty at LSE, Columbia University, Yale, and University of Maryland.

B. Relevant positions

Aug 1997-Aug 1998	Project Coordinator, University of Michigan
May 1998-Dec 1998	Research Associate, Stanford University
May 1999-Sept 1999	Policy Analyst, University of Michigan
May 1999-Jan 2000	Evaluation Consultant, C.S. Mott Foundation
June 2000-June 2003	Senior Associate, Lewin Group
June 2003-Jan 2006	Senior Policy and Planning Analyst, U.S. Food and Drug Administration
Feb 2006-Feb 2008	Research Officer, London School of Economics and Political Science
Feb 2008-April 2014	Research Fellow, London School of Economics and Political Science
Sept 2009-Feb 2010	Visiting Research Scientist, Columbia University
Nov 2014-May 2016	Senior Manager, Avalere Health
July 2016-Present	Assistant Professor, Department of Population Health Sciences, School of Medicine Duke University
Jan 2017-Present	Adjunct Professor, School of Public Policy, Duke University
Jan 2017-Present	Faculty Director, Margolis Scholars Program, Duke-Robert J. Margolis, MD Center for Health Policy, Duke University

C. Synergistic Activities

Education: Faculty Director, Duke-Margolis Scholars in Health Policy and Management program (2017-present); Admissions Committee, Sanford School of Public Policy (2017-present).

Professional Service: Executive Committee Member, European Health Technology Institute for Socio-Economic Research (2007-2014); Deputy Editor, *Globalization and Health* (2006-2013); Scientific Review Committee, European Health Economics Society; Scientific Review Committee, International Health Economics Association (2011); Scientific Review Committee, Health Technology Assessment International (2012-2013); Leadership Committee, ISPOR Special Interest Group, Value-Based Health Care (2011-2013); Peer reviewer for over 20 journals (2007-current).

Research: Dr. Sorenson is a health services research and policy expert with extensive expertise in health technology assessment/value assessment, comparative effectiveness research, drug and device regulation and payment, and health policy evaluation. Her research in particular focuses on the design, evaluation, and implementation of innovative strategies – from new analytic tools to programs and policies – to enhance evidence-based decision making in health care practice and policy. Dr. Sorenson is widely published on the aforementioned topics and has presented her work at over 50 national and international scientific conferences and workshops.

D. Five most relevant publications

1. **Sorenson, C.** Valuing end of life in the US: The case of new cancer drugs. (2012). *Health Economics, Policy and Law*, 7(4): 411-430.
2. **Sorenson, C.**, Drummond, M., and Kahn, B. (2013). Medical technology as a key driver of rising health expenditures: Disentangling the relationship. *ClinicoEconomics and Outcomes Research*, 5: 223-234.
3. **Sorenson, C.** and Drummond, M. (2014). Improving medical device regulation: Europe and the US in perspective. *Milbank Quarterly*, 92(1): 112-148.
4. **Sorenson, C.**, Drummond, M., Toriba, A., Callea, G., and Mateus, C. (2015). The role of hospital payments in the adoption of new medical technologies: an international survey of current practice. *Health Economics, Policy and Law*, 10(2): 133-159.
5. **Sorenson, C.**, Lavezzari G., Daniel, G., Burkholder, R., Boutin M., Pezalla E., Sanders G., and McClellan M. (2017). Advancing value assessment in the United States: A multi-stakeholder perspective. *Value in Health*, 20(2): 299-307.

E. Courses taught in the previous 5 years

2009-2012 Lecturer and Seminar Leader, Cost-Effectiveness Analysis in Health Care, London School of Economics (Master's level course – 3 credits)

2009-2013 Co-Director and Seminar Leader, U.S. Health Policy, London School of Economics (Master's level course – 3 credits)

2016-2017 Co-Lecturer and Faculty Mentor, Fuqua Consulting Practicum, Fuqua School of Business, Duke University (Master's level course – 3 credits)

2017-present Co-Director, Public Policy Analysis, Sanford School of Public Policy, Duke University (Master's level course – 3 credits)

2017-present Director, Qualitative Research Methods, Sanford School of Public Policy, Duke University (Master's level course – 3 credits)

2018-present Co-Director, Policy and Management for High-Value Health Care, Sanford School of Public Policy, Duke University (Master's level course – 3 credits)

F. Mentoring

Master's Student Thesis Committee Membership (4): Served on 4 Master's student thesis committees for students in Health Policy and Health Economics.

Predoctoral Fellows (1): Mentored 1 student as part of a predoctoral fellowship in health policy.

Undergraduate Students, Post-graduate, and Others (>10): Mentored numerous students in health policy, health economics, and health services research from undergraduate and non-degree programs, as well as junior researchers working in public and private organizations.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Juan Marcos Gonzalez, Ph.D.

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Assistant Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Universidad de Puerto Rico, Rio Piedras, PR	B.A.	06/2003	Economics and Finance
University of Nevada, Reno, NV	M.S.	06/2005	Resource Economics
Colorado State University, Fort Collins, CO	Ph.D.	06/2008	Agricultural and Resource Economics

A. Personal Statement

Dr. Gonzalez is an Assistant Professor in the Department of Population Health Sciences. His work has focused on two main areas: transparency in benefit-risk evaluations of medical interventions, and collecting evidence on patients' and physicians' preferences for treatments to support shared decision making. He collaborated with industry to prepare the first catalog of preference elicitation methods to assess benefits and risks of medical devices as part of the Patient-Centered Benefit-Risk Assessment Framework (PCBRF) sponsored by the Medical Devices Consortium. The catalog was created as a resource for researchers, industry sponsors and FDA staff to consult as they consider preference information in the context of regulatory sciences. Dr. Gonzalez is also currently working with the Center for Devices and Radiological Health at FDA to support the training of staff for the review of stated-preference data in regulatory decisions. He was also part of the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Conjoint Analysis–Statistical Analysis, Reporting, and Conclusions Task Force. The group was in charge of the preparation of the first ISPOR guidance on good practice for dealing with issues associated with the analysis of preference data, and the interpretation of the analysis results.

B. Relevant positions

2008–2013 Research Economics, RTI Health Solutions, Research Triangle Institute
2008–2017 Senior Research Economist, RTI Health Solutions, Research Triangle Institute
2017–present Assistant Professor, Department of Population Health Sciences, Duke University

C. Synergistic Activities

- **Professional Service:** Member of the ISPOR Patient Preferences Special Interest Group (2015-); Founding member of the International Academy of Health Preference Research (IAHPR) (2014-); AD-hoc reviewer for Patient-Centered Outcomes Research Institute (PCORI) (2017); Member of Editorial board, *The Patient - Patient-Centered Outcomes Research* (2017 -).
- **Research:** Dr. Gonzalez has extensive experience in preference research. He has served as principal/co-principal investigator in over 10 studies sponsored by industry and foundations. Dr.

Gonzalez also co-led the first FDA-sponsored preference study. The study was referenced in recent FDA guidance on incorporating patient preferences in regulatory assessments of new health technologies, as an example of the recommended qualities of patient preference studies.

D. Five most relevant publications; selected from 32; h-index = 9 ([Complete bibliography](#))

1. **Gonzalez JM**, Ogale S, Morlock R, Posner J, Hauber AB, Sommer N, Grothey A. Patient and Physicians Preferences for Anticancer Drugs in the Treatment of Metastatic Colorectal Cancer: A Discrete-Choice Experiment. *Cancer Management and Research*. 2017. April 9:149-158
2. Marshall DA, **Gonzalez JM**, MacDonald KV, Johnson FR. Estimating preferences for complex health technologies: lessons learned and implications for personalized medicine. *Value Health*. 2017. Jan 20:17-24.
3. Ho MP, **Gonzalez JM**, Lerner HP, Neuland CY, Whang JM, McMurry-Heath M, Hauber AB, Irony T. Incorporating patient-preference evidence into regulatory decision making. *Surg Endosc*. 2015 Oct;29(10):2984-93. doi: 10.1007/s00464-014-4044-2.
4. **Gonzalez JM**, Johnson FR, McAteer H, Posner J, Mughal F. Comparing preferences for outcomes of psoriasis treatments among patients and dermatologists in the UK: results from a discrete-choice experiment. *Br J Dermatol*. 2016 Jun. doi: 10.1111/bjd.14798.
5. Mamounas E, Poulos C, Goertz HP, **Gonzalez JM**, Pugh A, Antao V. Neoadjuvant systemic therapy for breast cancer: factors influencing surgeons' referrals. *Ann Surg Oncol*. 2016 Oct;23(11):3510-7.
6. **Gonzalez JM**, Johnson FR, Runken MC, Poulos CM. Evaluating migraineurs' preferences for migraine treatment outcomes using a choice experiment. *Headache*. 2013;53(10):1635-50.

E. Courses taught in the previous 5 years

- 2016 Conjoint Analysis – Theory and Methods, Short Course at ISPOR 19th Annual European Congress: Intermediate course in stated-preference research
- 2014 Choice defines value: Interpretation of criteria weights in multi-criteria decision making, Workshop at ISPOR 17th Annual European Congress
- 2013 Choice defines value: New approaches to evaluating multiple treatment attributes and health outcomes, Workshop at ISPOR 18th Annual International Meeting

F. Mentoring

Doctoral Student Committee Membership: Served on doctoral dissertation committee for student in Health Policy and Management, at the University of North Carolina.

BIOGRAPHICAL SKETCH

NAME: Daniel W. Belsky

eRA COMMONS USER NAME (credential, e.g., agency login): Daniel_Belsky

POSITION TITLE: Assistant Professor, Department of Population Health Sciences

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Swarthmore College, Swarthmore PA	BA	05/2002	Psychology
University of North Carolina at Chapel Hill, Chapel Hill NC	PhD	05/2012	Public Health: Health Policy & Management
Duke University, Durham NC	PostDoc	09/2014	Aging & Genetics

A. Personal Statement.

My goal is to integrate behavioral and genome sciences in life-course research in order to understand causes of health disparities in aging and to devise novel interventions. As an interdisciplinary researcher working in public health, biology, and the social sciences, I am well positioned to mentor students with a range of research interests. A key focus on my research is building genetic tools to quantify inherited risks for chronic health conditions and biomarker-based tools to quantify health decline during the aging process. These tools provide excellent teaching and research opportunities for students. I work with several large datasets including the National Longitudinal Study of Adolescent to Adult Health, the US Health and Retirement Study, the Dunedin Longitudinal Study, and others, which provides fertile ground for student research. I am currently mentoring several students from Duke and UNC on paper projects using these and other data resources.

B. Relevant Positions

2012-14 Postdoctoral Fellow, NIA, Center for the Study of Aging and Human Development, Duke University
2014- Assistant Professor, Duke University & Duke University School of Medicine

C. Synergistic Activities

Education. Faculty mentor of interdisciplinary projects at the Duke Center for Child and Family Policy, Duke Center for the Study of Aging and Human Development, Duke University Population Research Institute, and Carolina Population Center. I mentor students on integration of genetic and biomarkers in social and developmental science.

Professional Service. Grant Reviewer (2016-2017, Center for Scientific Review: SSPB Study Section, Social Epigenomics Special Emphasis Panel, NIA standing review committee). Reviewer for >20 journals, including JAMA, JAMA Psychiatry, JAMA Pediatrics, PNAS, Nature Human Behavior, PLoS Genetics, Journals of Gerontology A, American Journal of Epidemiology, American Journal of Public Health, Psychological Science. Department of Medicine Institutional Review Board Member (2017). Executive Committee Member, Duke University Population Research Institute. External Scientific Committee Member, CALERIE biorepository.

Research. Dr. Belsky has research experience and substantial publication track record in the areas of psychiatric epidemiology, genetic epidemiology, aging and gerontology, and the social sciences. He is principal investigator of an R21 award from the National Institute on Aging, co-I on multiple other NIH grants, and an Early Career Fellow of the Jacobs Foundation.

D. Five most relevant publications; selected from 65 ([complete list at NCBI](#)); h-index = 23

1. Belsky DW, Moffitt TE, Houts RH, Bennett GG, Biddle AH, Blumenthal J, Evans JP, Houts RH, Sugden K, Williams B, Poulton R, Caspi A. Polygenic risk, rapid childhood growth, and the development of

obesity: Evidence from a 4-decade longitudinal study. *JAMA Pediatrics* 2012;166(6):515-21. PMC3534740.

2. Belsky DW, Moffitt TE, Baker T, Biddle AH, Evans JP, Harrington HL, Houts R, Meier MH, Sugden K, Williams B, Poulton R, Caspi A. Polygenic risk and the developmental progression to heavy, persistent smoking and nicotine dependence: Evidence from a 4-decade longitudinal study. *JAMA Psychiatry* 2013;70(5):534-42. PMC3644004.
3. Belsky DW, Moffitt TE, Caspi A. Genetics in population health science: Strategies and opportunities. *American Journal of Public Health* 2013;103 Suppl 1:S73-83. PMCID: PMC3786748.
4. Belsky DW, Caspi A, Houts R, Corcoran D, Cohen HJ, Danese A, Harrington HL, Israel S, Levine M, Schaefer J, Sugden K, Williams B, Yashin AI, Poulton R, Moffitt TE. Quantification of biological aging in young adults. *Proceedings of the National Academy of Sciences (Plus) USA* 2015; 112(30):E4104-4110. PMC4522793.
5. Belsky DW, Caspi A, Kraus W, Cohen HJ, Ramrakha S, Poulton R, Moffitt TE. Impact of early person-history characteristics on the Pace of Aging: Implications for clinical trials of therapies to slow aging and extend healthspan. *Aging Cell*, Published online April 12, 2017. PMC5506399

E. Courses Taught in Previous 5 Years

- | | |
|---------|--|
| 2017 | Duke University School of Medicine, Department of Medicine Faculty Development Academy: "Getting Paper Writing Done" |
| 2017 | NIA/Institute for Social Research Summer Institute on Genomics for Social Scientists: Polygenic Scores |
| 2015-16 | Duke University Summer Medical and Dental Education Program: Policy Analysis |
| 2012-14 | Undergraduate Academic Advisor, Duke University |
| 2013 | Workshop co-leader (with Karen Sugden) "An Introduction to Genetics for Developmental Scientists: Theory and Practice," Center for Developmental Science, University of North Carolina at Chapel Hill (4 sessions; September-October 2013) |
| 2012 | Workshop organizer & panelist "Integrating Genomics in Developmental Science Research," Center for Child and Family Policy Early Career Professional Development Group, Duke University (November 2012). |
| 2013-15 | Guest lecturer in courses in the departments of Psychology and Sociology and the School of Public Policy at Duke University |

F. Mentoring

Although I only recently transitioned to faculty at Duke in 2014, I have several years of experience serving as an informal mentor to graduate students and postdocs. One mentoring relationship was with Dustin Albert, then postdoc at Duke's Center for Child and Family Policy, now assistant professor at Bryn Mawr College. I mentored Dustin in genetics on a project looking at genetic analysis of a randomized trial of a behavioral intervention. That relationship yielded publications for Dustin in the journals *Developmental Psychopathology* and *Journal of Policy Analysis and Management*. A second mentoring relationship was with Salomon Israel, then postdoc in Psychology at Duke, now assistant professor at the Hebrew University in Jerusalem. I served as Sol's mentor on genome wide analyses of genetic data and we wrote two papers about how social and behavioral scientists can engage with such data - in the journals *Biodemography* and *Social Biology and Social Psychiatry and Psychiatric Epidemiology*. I have also mentored Duke Psychology and Neuroscience PhD student Jonathan Schaefer in aging research. His first aging paper was published last year in the *Journals of Gerontology B*. Currently, I mentor three postdocs in genetics, Lauren Gaydos at UNC (demography) and Leah Richmond-Raekert and Jasmin Wertz at Duke (psychology). I am also mentoring a PhD Student, Byrce Bartlett (Sociology) and an undergraduate (Rimel Mwanda, UNC Robterston Scholar) in aging biology. All students have paper projects ongoing. I am on multiple postdoc mentoring teams for students at the Duke Aging Center's T-32, providing expertise in life-course epidemiology and multi-biomarker assessment of aging phenotypes.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Gierisch, Jennifer M.

eRA COMMONS USER NAME (agency login): gierisch558

POSITION TITLE: Associate Professor, Department of Population Health Sciences

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of North Carolina, Chapel Hill, NC	BS	12/1995	Biology
UNC Gillings School of Global Public Health, Chapel Hill, NC	MPH	12/2000	Health Behavior
UNC Gillings School of Global Public Health, Chapel Hill, NC	PHD	12/2008	Health Behavior
Duke University Medical Center, Durham, NC	Postdoctoral Fellow	03/2011	Health Services Research

A. Personal Statement

Dr. Gierisch is a behavioral scientist and health services researcher with a special emphasis on stakeholder and community-engaged research methods, applied behavioral research, and evidence synthesis. She is an Associate Professor in the Department of Population Health Sciences at Duke, a Core Investigator with the Center of Innovation (COIN) for Health Services Research in Primary Care at the Durham Veteran Affairs Medical Center Health and an Adjunct Assistant Professor in the Department of Health Behavior at the UNC Gillings School of Global Public Health. At Duke, she co-leads the Duke Clinical Translational Science Institute's Community Engagement Core, the stakeholder-engaged research capacity building hub for the Duke CTSA. She also is the Associate Director of the Durham VA Evidence Synthesis Program and Fellowship Director of the Durham COIN Health Services Research and Development postdoctoral program. Dr. Gierisch has broad knowledge and expertise in community and stakeholder engagement, sustained behavior change, translational and practical intervention science, health behavior theory, and health communications (e.g., tailored communications, health coaching). She has designed and tested innovative interventions to enhance sustained change of complex health behaviors in the areas of smoking cessation, cancer screening, weight management, and physical activity. Further, she has established a track record of engaging diverse stakeholders to inform research agendas, methods, and dissemination activities.

B. Relevant Positions**Positions and Employment**

2011 - present Core Investigator, Durham Veteran Affairs Medical Center , Center of Innovation (COIN) in Health Services Research in Primary Care, Durham, NC

2011 – present Adjunct Assistant Professor, UNC Gillings School of Global Public Health, Department of Health Behavior, Durham, NC

2012 - 2016 Assistant Professor, Duke University Medical Center, Department of Medicine , Durham, NC

2014 - present Associate Director, Durham Veteran Affairs Medical Center , Evidence-based Synthesis Program, Durham, NC

2015 - present Associate Director, Duke CTSI Community Engagement Core, Durham, NC

2016 - 2017 Associate Professor, Duke University Medical Center, Department of Medicine , Durham, NC

2016 - present Associate Professor, Duke University Medical Center, Department of Population Health Sciences , Durham, NC

C. Synergistic Activities

Education: Course Instructor: Social and Behavioral Sciences in Public Health HBHE 600; University of North Carolina Gillings School of Global Public Health (2010). Course Instructor: Health Behavior Theoretical Foundations HBHE 816; University of North Carolina Gillings School of Global Public Health (2012). Lecturer: Principles of Clinical Research CRP 242; Duke University Clinical Research Training Program (2014-2017)

Professional Service: Grant reviewer, Tobacco-Related Disease Research Program Social Behavioral Prevention Research study section; Member, Society of Behavioral Medicine; Faculty Liaison, Durham VA HSR&D COIN Veteran Research Engagement Panel (VetREP); Fellowship Director, Durham VA HSR&D COIN; Internal reviewer Durham VA HSR&D COIN

Research: Dr. Gierisch has extensive research experience in behavior change and maintenance, translational intervention science, health behavior theory, health communications/health coaching, and stakeholder engagement. Her research focuses on appropriate uptake and maintenance of complex preventive health behaviors. She has designed and tested innovative interventions to enhance sustained change of complex health behaviors in the areas of smoking cessation, cancer screening, weight management, and physical activity. Consequently, she has been the PI or Co-I on 7 trials of health behavior change and is the lead behavioral scientist of the Prevention CREATE Interventions Core (CRE 12-305). Currently, she is the PI of a VA smoking cessation trial (IIR-300) and a Co-PI on an evidence synthesis study of women's telemedicine.

D. Five most relevant publications; selected from 55

Gierisch JM, Reiter PL, Rimer BK, Brewer NT. Standard definitions of adherence for infrequent yet repeated health behaviors. *Am J Health Behav.* 2010 Nov-Dec;34(6):669-79.

Gierisch JM, DeFrank JT, Bowling JM, Rimer BK, Matuszewski JM, Farrell D, Skinner CS. Finding the minimal intervention needed for sustained mammography adherence. *Am J Prev Med.* 2010 Oct;39(4):334-44.

Gierisch JM, Bastian LA, Calhoun PS, McDuffie JR, Williams JW Jr. Smoking cessation interventions for patients with depression: A systematic review and meta-analysis. *Journal of General Internal Medicine.* 2012; 27(3):351-60.

Gierisch, JM., Coeytaux RR., Peragallo Urrutia RP., Havrilesky LJ., Moorman PG., Lowery WJ., Dinan M, McBroom AJ., Hasselblad V, Sanders GD., Myers ER Oral contraceptive use and the risk of breast, cervical, colorectal, and endometrial cancer incidence: A systematic review. *Cancer Epidemiology, Prevention, and Biomarkers.* 2013;22:1931-1943.

Gierisch, JM., Myers, ER., Schmit, KM., Crowley, MJ., McCrory, DC., Chatterjee, R, Coeytaux, RR., Kendrick, A., Sanders, GD. Prioritization of research addressing management strategies for ductal carcinoma in situ. *Annals of Internal Medicine.* 2014; 160(7): 484-491.

E. Courses taught

2014-2017	Lecturer in Principles of Clinical Research CRP 242; Duke University Clinical Research Training Program (CRTP) 242; Durham NC
2012	Course Instructor of Health Behavior Theoretical Foundations HBHE 816; University of North Carolina Gillings School of Global Public Health; Chapel Hill, NC
2010	Course Instructor of Social and Behavioral Sciences in Public Health HBHE 600; University of North Carolina Gillings School of Global Public Health; Chapel Hill, NC

F. Mentoring

Doctoral Student Committee Membership: Served on doctoral dissertation committee for a student in Social Work (UNC)

Research Mentor: Served as the primary research mentor for two predoctoral candidates (1 UNC, 1 Duke); informally mentored students, residents, fellows, and faculty in the rigorous conduct of evidence synthesis (20).

Postdoctoral Fellows: Served as a part of mentorship team for 5 VA HSR&D postdoctoral fellows as Director

of the Health Services Research and Development Fellowship at the Durham VA COIN.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: Courtney Harold Van Houtven, PhD, MSc

eRA COMMONS USER NAME (credential, e.g., agency login): VANHO013

POSITION TITLE: Research Scientist, Durham VA HSR&D; Professor, General Internal Medicine, Duke University Medical Center; Professor, Department of Population Health Science, Duke School of Medicine

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of California at Davis, Davis, California	BSc	06/1989	Managerial Economics
University of Minnesota, St. Paul, Minnesota	MSc	12/1992	Applied Economics
University of North Carolina, Chapel Hill, NC	PhD	12/2000	Health Policy and Administration
Cecil G. Sheps Ctr for Health Services Research, University of North Carolina Chapel Hill, NC	Post-Doc	12/2002	Health Services Research

A. Personal Statement *[Focus on teaching and mentoring experience. For those with less formal teaching experience, focus on how your research will provide mentorship and research opportunities for students, and will support your mentoring and teaching.]*

Dr. Van Houtven has strong training in health economics and health services research and extensive experience leading research teams and conducting economic evaluations with multi-disciplinary research teams. She has published over 60 articles in top tier health policy and health economics journals such as *The Journal of Health Economics*, *Health Economics*, *Medical Care* and *Medical Care Research and Review*. A career development award from VA HSR&D provided additional skills in intervention research (2006-2012). Dr. Van Houtven recently completed an RCT testing the effectiveness of a skills training program for family caregivers of Veteran patients referred to community-based long-term care (VA HSR&D IIR 11-345). As a co-PI of a VA QUERI Program Project entitled Optimizing Function and Independence QUERI (IP1 HX002258-01 (S Hastings, Corresponding PI)), she leads implementation of a caregiver skills training program at 8 sites nationally. She also directs the partnered evaluation of the VA Caregiver Support Program with a team from the Durham VA HSR&D and the VA National Caregiver Support Program (6/1/14 – 5/31/19).

She is an experienced researcher who has focused on understanding how being a family caregiver of vulnerable persons affects health care utilization, expenditures, health, work, and wealth outcomes of care recipients and caregivers. She remains interested in understanding how to best to support families of persons with complex health care needs, and the net societal benefits of caregiver and long-term care policies more broadly. She has served on 9 PhD Committees and mentored 1 post-doctoral fellow's content expertise in economics of family caregiving, behavioral economics, and development of theory-driven family-centered intervention studies. Another primary mentee, an MD fellow, currently holds a dual faculty and research appointment at a prestigious university and maintains affiliation with the VA. Moreover, she has extensive mentoring experience with NIH K-grant awardee; HSR&D CDA awardee; junior investigators, specifically junior health economists; post doctorate fellows; pre doctorate fellows; and, PhD students. Also, she has participated in mentoring programs through Duke University and AcademyHealth, specifically the Path to independence program at Duke and AcademyHealth/Aetna Foundation Minority Scholars Program (2013-

2016). She has a combined 21 published articles with current and former mentees, and have effectively guided her mentees to subsequent research positions and grant applications that met their professional goals.

B. Relevant positions (limited to postgraduate only)

2003-present Health Research Scientist, Durham Veteran's Administration Health Services Research and Development in Primary Care, Durham, North Carolina (on leave for one year in 2007-2008)
2003-2010 Assistant Professor, Duke School of Medicine
2003-present Senior Fellow, Center for the Study of Aging and Human Development, Duke University
2007-present Research Fellow, Network for the Study of Pensions, Aging, and Retirement, University of Tilburg
2007-2008 Visiting Assistant Professor of Economics, Department of Economics, Tilburg University
2010-2017 Associate Professor, Department of Medicine, General Internal Medicine, Duke University Medical Center (December 1 2010)
2017-present Professor, Department of Medicine, General Internal Medicine, Duke University Medical Center
2017-present Professor, Department of Population Health Science, Duke School of Medicine

C. Synergistic Activities

Education: Faculty with Duke CRTP program

Professional Service: Chair, Academy Health Open Call for Abstracts session entitled, Costs, Outcomes, and Utilization of Long-Term Care, June 29, 2010. Chair 2015-2016, Long-term Care Services and Supports Interest Group, AcademyHealth, Lead Abstract Reviews for Society for Economics of the Household first annual conference (2017). Grant Reviewer for HS8A. Associate Editor for *Review of Economics of the Household* (2016-). Abstract reviewer for AcademyHealth's Aging, Disability, and End of Life Theme for Annual meeting (2016). Reviewer for VA QUERI program Partnered Evaluation Initiatives (2015-2016). Grant reviewer for the 2012 Pilot & Feasibility Study Grant Program at the University of Michigan (2012). Editorial Board Member for *Medical Care Research and Review* (2012-). Grant reviewer for the National Science Foundation, Economics Division (2011). Abstract Reviewer for AcademyHealth Long-Term Care Section and Health Economics Special Interest Group, Annual Meeting (2010). Abstract reviewer for Health Services Research and Development of Veteran's Affairs Annual Meeting (2005).

Research: Dr. Van Houtven has a strong training in health economics and health services research and extensive experience conducting research with multi-disciplinary research teams. Her research primarily focuses on long-term care and informal caregiving. She has experience estimating the effect of informal care on patient Medicare costs and utilization (Van Houtven and Norton, JHE, 2004; 2008). She has also modeled caregiver outcomes using longitudinal data and methods, carefully considering and addressing potential selection into and out of caregiving (Coe and Van Houtven, HE, 2010). She contributes careful consideration of the complexities of modeling treatment effects in populations for which appropriate control groups are difficult to identify, and methods such as instrumental variables estimation, to ensure unbiased estimation of treatment effects, particularly in observational studies, to projects in which she participates.

D. Five most relevant publications; selected from 59; h-index = 20 [Choose publications that demonstrate your experience and contribution to population health.]

Van Houtven, C. H., E. C. Norton. 2004. "Informal Care and Health Care Use of Older Adults." *Journal of Health Economics*. 23 (6): 1159-1180, PMID: 15556241

Van Houtven, C.H., N. B. Coe, and M. M. Skira, 2013. "Effect of Informal Care on Work and Wages" *Journal of Health Economics* 32: 240–252. <http://dx.doi.org/10.1016/j.jhealeco.2012.10.006>, PMID: 23220459

Coe, N. B. and **C. H. Van Houtven**¹. 2009. "Caring for Mom and Neglecting Yourself: The Health Effects of Caring for an Elderly Parent", *Health Economics* 18(9): 991-1010 (September), PMID: 19582755

Van Houtven, C.H., C. I. Voils, E. Z. Oddone, K. P. Weinfurt, J. Y. Friedman, K. A. Schulman, H. B. Bosworth. 2005. "Perceived Discrimination and Reported Delay of Pharmacy Prescriptions and Medical Tests." *Journal of General Internal Medicine*. 20(7): 578-583, PMID: 16050850; PMCID [PMC1490147](#)

Van Houtven, C. H., and E. C. Norton. 2008. "Informal Care and Medicare Expenditures: Testing for Heterogeneous Treatment Effects." *The Journal of Health Economics*. 27: 134-156, PMID: 17462764

E. Courses taught in the previous 5 years [*If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.*]

2016 – Present Clinical Research Training Program 266, Concepts in Comparative Effectiveness Research (Spring). 2 credits master's level course

F. Mentoring [*Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.*]

Doctoral Student Committee Membership (9): Served on 9 doctoral dissertation committees for students in Health Policy, Economics, and Pharmacy Policy (PhD) at UNC and for students at the Institute of Health Policy, Management and Evaluation at the University of Toronto.

Master's Student Thesis Committee Membership (3): Served on 3 master's student thesis committees for students in Health Policy at UNC and Clinical Research Training Program at Duke University.

Junior Faculty (5): Have served as mentor and advisor to many junior faculty at Duke and VA, including advising on K-awards, CDA awards and other projects.

Postdoctoral Fellows (2): Have served as a formal mentor for 2 postdoctoral fellows, including those in health services research fellowships and clinical research fellowships.

Career Development Awards (1): 2 as secondary mentor for K/CDA awards.

Undergraduate Students, Medical Students, and Others (1): Mentored 1st/2nd year PhD student in health policy and health services research at UNC.

BIOGRAPHICAL SKETCH**NAME: George Lee Jackson, Ph.D., MHA**

POSITION TITLE: Associate Professor, Department of Population Health Sciences, Duke University School of Medicine

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
University of North Carolina at Chapel Hill	BSPH	05/1996	Health Policy & Administration
University of North Carolina at Chapel Hill	MHA	05/1998	Health Administration
University of North Carolina at Chapel Hill	Ph.D.	12/2003	Epidemiology
Duke University – Durham, North Carolina	Post-Doc	2003-2005	Health Services Research

A. Personal Statement

Dr. Jackson is a **healthcare epidemiologist, health services researcher, and implementation scientist**. He is an Associate Professor in the Duke University Department of Population Health Sciences and Division of General Internal Medicine. Additionally, Dr. Jackson is a Research Health Scientist with the Center for Health Services Research in Primary Care (HSR&D Center) at the Durham, NC Veterans Affairs Medical Center. He Serves as the Director of the Implementation Science Lab/Core in the Durham HSR&D Center. Dr. Jackson also holds an appointment as an Adjunct Associate Professor in the Department of Health Policy and Management at the University of North Carolina at Chapel Hill. Dr. Jackson's research focuses on how the structure and processes of primary and specialty care impact health outcomes, especially for patients with diabetes, hypertension, and cancer. Dr. Jackson's team has conducted research utilizing clinical trial methods, analysis of large secondary databases for quasi-experimental analyses, and mixed-methods implementation science (combining qualitative data collection, primary quantitative data collection, and analysis of secondary data). When in graduate school, Dr. Jackson was the teaching assistant for classes including introductory epidemiology, medical care epidemiology, and epidemiology and health policy. He has taught health quality and frequently guest lectures in courses covering topics in health services research and epidemiology. He has also mentored learners at the graduate student, fellowship, and junior faculty levels.

B. Appointments

2003-2005	Post-Doctoral Fellow – Duke University Division of General Internal Medicine and Durham Veterans Affairs Medical Center, Center for Health Services Research in Primary Care
2005-	Research Health Scientist – Durham Veterans Affairs Medical Center, Center for Health Services Research in Primary Care
2006-2016	Adjunct Assistant Professor – Department of Health Policy and Management, School of Global Public Health, University of North Carolina at Chapel Hill
2008-2013	Assistant Professor – Division of General Internal Medicine, Department of Medicine, Duke University School of Medicine
2012-	Assistant Scientific Editor – <i>North Carolina Medical Journal</i>
2013-	Implementation Science Lab/Core Director – Durham Veterans Affairs Medical Center, Center for Health Services Research in Primary Care
2014-	Associate Professor – Division of General Internal Medicine, Department of Medicine, Duke University School of Medicine
2016-	Adjunct Associate Professor – Department of Health Policy and Management, School of Global Public Health, University of North Carolina at Chapel Hill
2017-	Associate Professor – Department of Population Health Sciences, Duke University

C. Synergistic Activities

- **Education:** Co-Instructor, CRP 267 – Quality Assurance: Duke University, Clinical Research Training Program, fall 2007; Dissertation Committee Member, 5 dissertation committees (4 completed, 1 in progress) at the University of North Carolina at Chapel Hill Department of Health Policy and Management; Teaching Assistant, EPID 212 – Medical Care Epidemiology: University of North Carolina at Chapel Hill, Department of Epidemiology, fall 1999 and fall 2000; Teaching Assistant, EPID 368 – Epidemiology and Health Policy: University of North Carolina at Chapel Hill, Department of Epidemiology, spring 2000; Teaching Assistant, EPID 160 – Principles of Epidemiology (summer-long, online course): University of North Carolina at Chapel Hill, Department of Epidemiology, summer 2001; Guest Lecturer in various courses in programs such as: Department of Epidemiology, Department of Health Policy and Management, and Division of Physical Therapy, University of North Carolina at Chapel Hill; Clinical Research Training Program, Duke University; Department of Human Sciences, North Carolina Central University
- **Professional Service:** Special Emphasis Panel: Agency for Healthcare Research and Quality, RFA-HS-13-003, Estimating the Costs of Supporting Primary Care Practice Transformation (R03) [2013]; Member – VA Quality Enhancement Research Initiative Service Directed Project Review Committee (standing study section member – R01 level implementation grants) [2014-2015]; Member – National Institute for Diabetes and Digestive and Kidney Diseases, Special Emphasis Panel, Pragmatic trials and natural experiments of implementing enhancements to diabetes care in healthcare practice (R18 and R34 applications) [2015]; Member and Chair (2015-2016) – AcademyHealth Dissertation of the Year Award Committee [2014-2016]; Member – Review Committee, AcademyHealth New Investigator Small Grant Program [2015-2016]; Member – VA HSR&D Medical Care and Clinical Management; Health Professional Behavior Study Section of the Scientific Merit Review Board [2016-present]
- **Research:** Dr. Jackson is a healthcare epidemiologist, health services researcher, and implementation scientist. His research focuses on how the structure and processes of primary and specialty care impact health outcomes, especially for patients with diabetes, hypertension, and cancer. He has been a principal investigator, co-principal investigator, or co-investigator on research and evaluation grants funded by the Department of Veterans Affairs, National Institutes of Health, Agency for Healthcare Research and Quality, Patient Centered Outcomes Research Institute, and Department of Defense. This includes being the principal investigator of R-01 level grants using clinical trial, secondary data analysis, and implementation science methods. Dr. Jackson has been first author of articles that have appeared in major journals such as the *Annals of Internal Medicine*, *JAMA Internal Medicine*, *Journal of Clinical Oncology*, and *Cancer*.

D. Five most relevant publications

1. **Jackson GL**, Melton DL, Abbott D, Zullig LL, Ordin DL, Grambow SC, Hamilton NS, Zafar SY, Gellad ZF, Provenziale D. Quality of nonmetastatic colorectal cancer care in the Department of Veterans Affairs. *Journal of Clinical Oncology*. 2010; 28(19): 3176-81. Erratum in: *J Clin Oncol*. 2010 Aug 10; 28(23):3797. [PMID: 20516431].
2. **Jackson GL**, Powers BJ, Chatterjee R, Prvu Bettger J, Kemper AR, Hasselblad V, Dolor RJ, Irvine RJ, Heidenfelder BL, Kendrick AS, Gray R, Williams JW. The Patient-Centered Medical Home: A Systematic Review. *Annals of Internal Medicine*. 2013;158(3):169-178. [PMID: 24779044].
3. **Jackson GL**, Edelman D, Olsen MK, Smith VA, Maciejewski ML. Benefits of Participation in Diabetes Group Visits After Trial Completion. *JAMA Internal Medicine*. 2013;173(7):590-592. [PMID:23478796].
4. **Jackson GL**, Weinberger M, Kirshner MA, Stechuchak KM, Melnyk SD, Bosworth HB, Coffman CJ, Neelon B, Van Houtven C, Gentry PW, Morris IJ, Rose CM, Taylor JP, May CL, Han B, Wainwright C, Alkon A, Edelman D. Open-Label Randomized Trial of Titrated Disease Management for Patients with Hypertension: Study Design and Baseline Sample Characteristics. *Contemporary Clinical Trials*. 2016;50(1):5-15. [PMID: 27417982].
5. Kinsinger LS, Anderson C, Kim J, Larson M, Chan SH, King HA, Rice KL, Slatore CG, Tanner NT, Pittman K, Monte RJ, McNeil RB, Grubber JM, Kelley MJ, Provenziale D, Datta SK, Sperber NS, Barnes LK, Abbott DH, Sims KJ, Whitley RL, Wu RR, **Jackson GL**. Implementation of Lung Cancer Screening: The Experience of the Veterans Health Administration. *JAMA Internal Medicine*. 2017;177(3):399-406. [PMID: 28135352].

E. Courses taught in the previous 5 years

Regular guest lecturer in courses in the School of Public Health at the University of North Carolina at Chapel Hill (e.g. Quality of Healthcare).

F. Mentoring

- **Doctoral Student Committee Membership (5):** Member of 5 dissertation committees in the Department of Health Policy and Management at the University of North Carolina at Chapel Hill.
- **Master of Health Sciences in Clinical Research (MHSc) Student Thesis Committee Chair (1):** Serving as committee chair on 1 research project/thesis committees for students in the Clinical Research Training Program.
- **Graduate Students and Fellows (7):** In addition to graduate students represented by dissertation/thesis committees, Dr. Jackson has worked with 7 students or fellows on the development of research papers. This includes serving as primary mentor for one post-doctoral fellow.
- **Junior Faculty (7):** Currently serving as a primary mentor for 1 K-awardee, secondary mentor for 2 VA career development awardees, consultant for 1 VA Career Development Award applications that appears to be funded, and secondary mentor for one VA Career Development Award application that has gotten a promising score. Dr. Jackson has also been the primary mentor for 1 additional Duke faculty member and secondary mentor for another Duke faculty member.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Virginia Wang

eRA COMMONS USER NAME (credential, e.g., agency login): vwang558

POSITION TITLE: Associate Professor, Duke University; Research Health Scientist, Durham VA HSR&D

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Tufts University	B.A.	05 / 1997	International Relations
University of North Carolina at Chapel Hill	M.S.P.H.	05 / 2003	Health Policy & Admin
University of North Carolina at Chapel Hill	Ph.D.	12 / 2008	Health Policy & Mgmt

A. PERSONAL STATEMENT

I am an Associate Professor in the Department of Population Health Sciences and the Division of General Internal Medicine at Duke University, and a Core Investigator in the Center for Health Services Research and Development at the Durham VA Health Care System. I have training in health services, policy, and organizational behavior research and a successful track record of collaboration with researchers across institutions. My role in training the new generation of population health scientists is evolving from research and career advice and peer mentorship, to substantive teaching and mentoring graduate students, fellows, and junior investigators in research development and methods. My research portfolio in comparative effectiveness research, policy and program evaluation in the areas of chronic disease, kidney disease, and health system impacts are highly relevant to student/trainee learning experiences. My ongoing collaborative research efforts ensure the relevancy of applying concepts, theories, and analytic skills to research and clinical practice to improve population health.

B. RELEVANT POSITIONS**Positions and Employment**

2005, 2007 Consultant, UNC Health Care
 2006-2008 Research Consultant, Department of Health Management & Policy, University of Michigan
 2008-2010 Post-Doctoral Fellow, Health Services Research & Development, Durham VA Medical Center
 2010-pres Research Health Scientist, Health Services Research & Development, Durham VA Medical Center
 2010-2017 Assistant Professor, Division of General Internal Medicine, Duke University School of Medicine
 2017-pres Associate Professor, Department of Population Health Sciences, Duke University School of Medicine

C. SYNERGISTIC ACTIVITIES

Education: Interviewer, Durham VA Health Services Research and Development Post-doctoral Fellowship Program (2014-present)

Professional Service: Grant Reviewer, National Institute of Diabetes and Digestive and Kidney Diseases (2017); Member, Department of Veteran Affairs Dialysis Workgroup National Dialysis Pilot Study (2009-2010); Research Advisor, Department of Veteran Affairs Dialysis Subcouncil (2011-2012); Editorial Board, *Health Care Management Review* (2015-present); Associate Editor for Epidemiology and Outcomes, *BMC Nephrology* (2016-present); Conference Abstract Referee, VA HSR&D/QUERI National Meetings (2015,

2017), Conference Abstract Referee, AcademyHealth Annual Research Meeting (2017 Organizational Behavior and Management section); Ad-hoc Journal Referee for ~10 journals (2008 – present)

Research: Dr. Wang has extensive research experience in the areas of organizational behavior, comparative effectiveness research, chronic disease, the Veterans Health Administration, the Medicare program, and implementation science. She received a K12 career development scholars award from the Agency for Healthcare Research and Quality, focused on comparative effectiveness research in provision of care for end-stage renal disease. She maintains an active research portfolio as principal and co-investigator on multiple awards from the NIH, VA, CMS, and foundations.

D. RELEVANT PUBLICATIONS

1. **V Wang**, ML Maciejewski, CJ Coffman, LL Sanders, SYD Lee, R Hirth, and J Messana. Impacts of geographic distance on peritoneal dialysis utilization: Refining models of treatment selection. *Health Services Research* 2017; 52: 35-55. PMID: 27060855.
2. **V Wang**, H Vilme, ML Maciejewski, and LE Boulware. The economic burden of chronic kidney disease and end-stage renal disease. *Seminars in Nephrology* 2016; 36:319-330. PMID: 27475662.
3. **V Wang**, SYD Lee, and ML Maciejewski. Inertia in health care organizations: A case study of peritoneal dialysis services. *Health Care Management Review* 2015; 40(3): 203-13. PMID: 24763206.
4. **V Wang**, ML Maciejewski, UD Patel, KM Stechuchak, DM Hynes, and M Weinberger. Comparison of outcomes for Veterans receiving dialysis care from VA and VA outsourced providers. *BMC Health Services Research* 2013; 13(1): 26. PMID: 23327632.
5. **V Wang**, SYD Lee, UD Patel, BJ Weiner, TC Ricketts, and M Weinberger. Geographic and temporal trends in peritoneal dialysis services in the United States between 1995 and 2003. *American Journal of Kidney Diseases* 2010; 55(6): 1079-1087. PMID: 20385435.

E. COURSES TAUGHT IN THE PREVIOUS 5 YEARS

F. MENTORING

Junior Faculty (4): Have served as ad hoc mentor and advisor to junior investigators/faculty at UNC and Duke, including advising on career development-awards and other projects.

Postdoctoral Fellows (6): Have served as ad hoc mentor for numerous postdoctoral fellows, including those in health services research fellowships and clinical research fellowships.

Residents (1): Serve as mentor and advisor for funded-resident project (internal medicine).

Doctoral Student Committee (1): Served as committee member for one student in the Duke School of Nursing PhD program.

Doctoral Student (1): Serve as ad hoc advisor for a PhD student dissertation (economics).

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: F. Reed Johnson, Ph.D.

eRA COMMONS USER NAME (credential, e.g., agency login): FRJOHNSON

POSITION TITLE: Professor, Department of Population Health Sciences

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Occidental College, Los Angeles, CA	B.A.	05/1970	Economics
Stony Brook University, NY	M.A.	05/1972	Economics
Stony Brook University, NY	Ph.D.	12/1974	Economics

A. Personal Statement

I have over 40 years of academic and research experience in health and environmental economics and currently am the most senior active expert in the field of health applications of stated-preference research. I have served on the faculties of several universities in the United States, Canada, and Sweden, as Distinguished Fellow at Research Triangle Institute, Adjunct Professor of Public Policy at the University of North Carolina, Chapel Hill, and currently as Professor in Medicine at the Duke Clinical Research Institute, Duke University. During the 1980s I helped pioneer development of basic nonmarket valuation techniques. These techniques now are widely used for benefit-cost and benefit-risk analysis in health economics.

I have nearly 20 years of undergraduate and graduate teaching experience at universities in the United States, Canada, and Sweden. I have served on PhD committees at the University of North Carolina, Chapel Hill, University of Pennsylvania, and the Stockholm School of Economics. I have served as formal and informal mentor to numerous students in economics, health economics, health services research, operations research, and epidemiology. I have taught numerous short courses at professional meetings, the University of North Carolina, Chapel Hill, Research Triangle Institute, the University of Stockholm, Duke University, and various pharmaceutical companies.

At Duke, I have worked closely with Dr. Shelby Reed to establish a new Preference Evaluation Research Group (PrefER) in the Duke Clinical Research Institute's Center for Clinical and Genetic Economics. My current research involves estimating general time equivalences among health states and patients' willingness to accept side-effect risks in return for therapeutic benefits in collaborations with leading clinical experts in orthopedics, neurology, psychiatry, oncology, dermatology, and cardiology.

B. Academic Positions

1974–1976 Assistant Professor of Economics, Illinois State University, Normal, IL
 1976–1977 Visiting Assistant Professor of Economics, Simon Fraser University, Burnaby, British Columbia
 1977–1992 Assistant, Associate, and Professor of Economics, U.S. Naval Academy, Annapolis, MD
 1984 Visiting Professor of Economics, Linköping University, Linköping, Sweden
 1985 Visiting Professor of Economics, Stockholm School of Economics and University of Stockholm, Stockholm, Sweden
 2001–2010 Adjunct Professor of Public Policy, University of North Carolina, Chapel Hill, NC
 2016–pres Professor in Medicine, Department of Population Health Sciences, Duke University

C. Synergistic Activities

Brookings Economic Policy Fellow, Office of Policy Analysis, U.S. Department of the Interior; Economist, Office of Policy, Planning, and Evaluation, U.S. Environmental Protection Agency; Principal Economist, Senior Fellow, and Distinguished Fellow, RTI Health Solutions, RTI International; Technical Advisory Panel, Diseases of the Most Impoverished, Bill and Melinda Gates Foundation; Co-editor, Value in Health; Editorial Board, The Patient; US Environmental Protection Agency Science Advisory Board; Johns Hopkins Diabetes Action Board; International Society for Pharmacoeconomics and Outcomes Research Health Science Policy Council; Founding member, International Academy of Health Preference Research.

D. Contributions to Population Health Sciences

I am widely acknowledged internationally as a leading researcher in applying discrete-choice experiment methods to quantify patients' and caregivers' preferences for health-care features, outcomes, and processes. I currently am the most senior expert in this field. Daniel McFadden received the Nobel Prize in Economics in 2000 for his contributions to the conceptual framework and statistical methods that are the foundation for choice-format stated-preference surveys. One of the most important applications of this approach is to solve the problem of what weights to assign to dissimilar beneficial and harmful outcomes in evaluating new health technologies. I led the first FDA-sponsored study to quantify patients' willingness to accept benefit-risk tradeoffs for novel treatments. The results are being used to inform reviews of regulatory submissions and are the basis for recent FDA draft guidance on incorporating patient preferences in regulatory assessments of new health technologies. In addition to making regulatory benefit-risk assessments more principled and transparent, my research has been influential in bridging the gap between patient-centered health care and evidence-based medicine. Rigorous quantification of informed patients' willingness to accept therapeutic tradeoffs provides an evidentiary basis for greater patient engagement in the delivery of health care.

1. **Johnson FR**, Hauber AB, Özdemir S, Siegel CA, Hass S, Sands BE. Are gastroenterologists less tolerant of treatment risks than patients? Benefit-risk preferences in Crohn's disease management. *J Manag Care Pharm*. 2010;16(8):616-28.
2. **Johnson FR**, Ozdemir S, Mohamed AF, Marshall D, Phillips K. How does cost matter in health-care discrete-choice experiments? *Health Econ*. 2011; 20(3):323-30.
3. **Johnson FR**, Lancsar E, Marshall D, Kilambi V, Mühlbacher A, Regier DA, Bresnahan BW, Kanninen B, and Bridges JFP. Constructing Experimental Designs for Discrete-Choice Experiments: Report of the ISPOR Conjoint Analysis Experimental Design Good Research Practices Task Force. *Value Health* 2013;16(1): 3-13. (Most-cited Article, 2013-2014, Value in Health)
4. Ho MP, Gonzalez JM, Lerner HP, Neuland CY, Whang JM, McMurry-Heath M, Hauber AB, Irony T.* Incorporating patient-preference evidence into regulatory decision making. *Surg Endosc*. 2015 Oct;29(10):2984-93. doi: 10.1007/s00464-014-4044-2.
*Original agreed-on authorship: **Johnson FR**, Gonzalez JM, Ho MP, Lerner HP, Neuland CY, Whang JM, McMurry-Heath M, Hauber AB, Irony T.
5. **Johnson FR**, Banzhaf MR, Desvousges WH. Willingness to pay for improved respiratory and cardiovascular health: a multiple-format stated-preference approach. *Health Econ*. 2000;9(4):295-317. (Second stated-preference application in health ever published.)

E. Teaching

Courses: Introduction to Economics, Economic Microtheory (undergraduate and graduate), Statistics, Econometrics, Comparative Economic Systems, Environmental Economics (undergraduate and graduate), Research Methods (undergraduate and graduate)

Short Courses in Health Applications of Stated-Preference Methods: International Society of Pharmacoeconomics and Outcomes Research (5 times), Society for Medical Decision Making (2 times), University of North Carolina, Chapel Hill (2 times), Johns Hopkins University, pharmaceutical companies (10 times). New course accepted in advanced methods accepted for International Society of Pharmacoeconomics and Outcomes Research, 2018.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. DO NOT EXCEED FIVE PAGES.

NAME: **Wei, Qingyi, MSc, MD, PhD**

eRA COMMONS USER NAME (agency login): qingyiwei

POSITION TITLE: Professor, Associate Director for Cancer Control and Population Sciences;
Co-Leader, Cancer Prevention, Detection and Control Program, DCI

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
Nanjing Medical College, Nanjing, P.R., China	Med./Medical Diploma	5/1983	Public Health
Chinese Academy of Preventive Medicine, Beijing, P.R., China	MS	5/1986	Toxicology
Johns Hopkins University, Baltimore, MD	PhD	6/1992	Epidemiology
Johns Hopkins University, Baltimore, MD	Post-doctoral Fellow	6/1993	Molecular Epidemiology

A. Personal Statement

I have the expertise in training post-doctoral fellows in the last 10 years. I was trained as a molecular epidemiologist, whose research focus is on genetic susceptibility to cancers in etiology research and clinical outcomes in translational studies. I have the leadership, training, expertise and motivation necessary to successfully carry out the proposed research project. I have a broad background in epidemiology, with specific training and expertise in developing biomarkers and applying them to molecular epidemiology studies. My recent research largely focuses on prost-genome-wide association studies, in which we are applying novel statistical approach to re-analyze the published GWAS datasets for various cancers, including cancers of the lung and skin. My research includes pathway analysis of genetic variants, such as those in DNA repair and apoptosis, in cancer risk assessment. As PI or co-Investigator on several NIH-funded grants, I laid the groundwork for genetic susceptibility to lung cancer, head and neck cancer and skin cancers as well as clinical outcomes of these cancers. In the last 10 years, I have trained a dozen of post-doctoral fellows who have a track record of publications and successful careers. As a result of these previous experiences, I am aware of the importance of training future clinical and translational researchers. The current application builds logically on my prior training experience translational research and training activities. The follow reviews summarize some of my early work.

B. Relevant Positions

1992-1993	Research Associate, Department of Biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, MD.
1993-1998	Assistant Epidemiologist and Assistant Professor (tenure-track), Department of Epidemiology, Division of Cancer Prevention and Population Sciences, The University of Texas M.D. Anderson Cancer Center, Houston, TX
1994-2013	Faculty Member, The University of Texas Graduate School of Biomedical Sciences, Houston, TX
1998-2003	Associate Professor (tenured), Department of Epidemiology, Division of Cancer Prevention and Population Sciences, The University of Texas M.D. Anderson Cancer Center, Houston, TX
2003-2013	Professor (tenured), Department of Epidemiology, Division of Cancer Prevention and Population Sciences, The University of Texas MD Anderson Cancer Center, Houston, TX
2011-2013	Texas 4000 Endowed Distinguished Professor, The University of Texas M.D. Anderson Cancer Center, Houston, TX
2013- present	Professor and Associate Director, Cancer Control and Population Sciences, Co-Leader of Cancer Control and Population Sciences Program, Duke Cancer Institute, Duke University Medical Center, Durham, NC

C. Synergistic Activities

Education: Participating in cause-teaching in School of Public Health of The University Texas Health Sciences Center in Houston; Mentoring visiting professors, visiting scholars, oncology fellows, post-graduate fellows, PhD and master students, medical student, and high school students.

Professional Service:

1. Grant Review Panelist for the Susan G. Komen Breast Cancer Foundation, 07/97
2. Ad Hoc Committee Member on NIH EDC-2 Study Section, 09/97
3. Special Review Committee/P01 Site Visit, Philadelphia, PA, 10/97
4. Special Review Committee/P01 Site Visit, Chapel Hill, NC, 04/99
5. Special Emphasis Panel Member, NIH ZRG1 RAD (01), 10/99
6. Hong Kong Research Grants Council External Assessor, 03/01
7. Special Emphasis Panel Member, NIH ZRG1 RAD (04), 03/01
8. Grant Reviewer for the Cancer Research Campaign-UK, 09/01
9. Special Emphasis Panel Member, NIH ZDE1 SRC (99), 11/01
10. Special Emphasis Panel Member, NIEHS ZES1 BKW-A (R1), 12/01
11. Special Review Panel Member, Department of Health, Taiwan, 01/02
12. Special Emphasis Panel Member, NIH-NCI SPORE (P50), ZCA1 GRB-V (M2), 02/02
13. Special Emphasis Panel Member, NIH ZRG1 SNEM-5 (02), 07/02
14. Center Grant (P30) Site Visit, NIH-NIEHS EHS (MT), 5/03
15. Special Emphasis Panel Member, NIH-NCI ZRG1 SNEM5 (02), 6/03
16. Special Emphasis Panel Member, NIH-NCI-E GRB-(SA), 10/03
17. Special Emphasis Panel Member, NIH-ZDE1 PZ15 (R21), 11/03
19. Grant Reviewer for Italian Association for Cancer Research, 04/03
20. Grant Reviewer for the Cancer Research-UK, 06/04,
21. EDRN Site Visit Member, NIH-NCI EDRN, 01/04
22. Cancer Biomarker Study Section, NIH ZRG1 CBSS (01), 02/04
23. Special Emphasis Panel Member, NIH-NCI SPORE (P50), NIH-ZCA1 SRRB-E (M1), 03/04
24. Site Visit Review of Duke Cancer Center Support Grant (CCSG), NCI-A RTRB-H (Y3), 06/04
25. Special Emphasis Panel Member, NIH-NIEHS SBRT (P42), ZES1-SET-A(S6), 10/04
26. P01 Review Cluster, NIH-NCI RPRS (G3), 02/05
27. Site Visit Review of NCI Intra Program, Laboratory of Cellular Carcino & Tumor Promotion, 06/05
28. Special Emphasis Panel Member, NIH-NCI ZDE1 PZ65 (R21), 07/05
29. Special Emphasis Panel Member, NIH-NIEHS SBRT ZES1 SET-A (TE), 08/05
30. Special Emphasis Panel Member, NIH-NIEHS ZES1 LWJ-D (K1), 10/05
31. Special Emphasis Panel Member, NIH-NIEHS ZES1 LWJ-A (P01), 10/06
32. Special Emphasis Panel Member, NIH-NIEHS ZES1 JAB-C (D1), DISCOVER, 03/07
33. Review Panel Member, Site Visit Review of NCI Intramural Program, The Occupational and Environmental Epidemiology Branch, 07/07
34. Grant Reviewer for UK Medical Research Council, 08/08
35. Grant Reviewer for The Netherlands Organisation for Health Research and Development, 12/08
36. Member, Environmental Health Sciences Review Committee (EHSRC), 2005 - 2009.
37. Ad hoc Member, Environmental Health Sciences Review Committee (EHSRC), 2010.
38. Ad hoc Member, Kidney, Nutrition, Obesity and Diabetes Study Section [KNOD], Population Sciences and Epidemiology (PSE) Integrated Review Group, 01/2011
39. Special Emphasis Panel Member, NIH-NCI ZRG1 PSE-C 04 M, 06/2011
40. Review Panel Member, Site Visit Review of NCI Intramural Program, The Occupational and Environmental Epidemiology Branch, 11/11
41. Special Emphasis Panel Member, NIH-NCI ZCA1 SRLB-J (M1) P, 03/2013
42. Chair, Special Emphasis Panel/Scientific Review Group, ZES1 SET-J (TR). Sept. 4, 2014
43. Ad hoc Member, CASE-EPIC Panel A Study Section, Oct. 29-30, 2014
44. Ad hoc Member, CASE-EPIC Panel A Study Section, Feb 26-28, 2015
45. Review Panel Member, Site Visit Review of NCI Intramural Program, The Occupational and Environmental Epidemiology Branch, July 27-29, 2015
46. NCI Program Project Review, Special Emphasis Panel, ZCA1 RPRB-B J1, Oct. 12-16, 2015
47. Site Visit Team Member, NCI Genetic Epidemiology Branch Site Visit, May 18-20, 2016

Research: Dr. Wei research directly addressed genetic susceptibility to environmentally induced cancers, such as sunlight-induced skin cancers (including melanoma) and tobacco-induced lung cancer and head and neck cancers. Most of skin cancers are the sunlight-related in the etiology, in which UV-light in the sunlight can cause damage to DNA in the skin cells. Unrepaired DNA damage or inefficient poor DNA repair will increase the risk of carcinogenesis of the skins arising from mutations as a result of fixation of the DNA damage induced by UV-light, particularly among the susceptible individuals defined as having inefficient or poor DNA repair capacity. Our research suggests that identifying the susceptible or at-risk sub-populations and avoidance of the sunlight in such populations are the key to prevent skin cancers. I directly documented the DNA repair capacity as a biomarker for genetic susceptibility to lung cancer and head and neck cancers. Repair of tobacco-induced DNA adducts in the lung epithelial cells is the central point of the etiology of carcinogenesis of the lung and head and neck in smokers. Our studies emphasized contextual factors of individual DNA repair capacity in the etiology and treatment response of these cancers. Through genome-wide association studies, our further studies provided the genetic basis for DNA repair phenotype and cancer susceptibility.

D. Five most relevant publications; selected from >500; h-index = 83 *[Choose publications that demonstrate your experience and contribution to population health.]*

1. **Wei Q**, Cheng L, Amos CI, Wang LE, Guo Z, Hong WK, Spitz MR. Repair of tobacco carcinogen-induced DNA adducts and lung cancer risk: a molecular epidemiologic study. *J Natl Cancer Inst.* 2000 Nov 1;92(21):1764-72. PMID: 11058619
2. **Wei Q**, Lee JE, Gershenwald JE, Ross MI, Mansfield PF, Strom SS, Wang LE, Guo Z, Qiao Y, Amos CI, Spitz MR, Duvic M. Repair of UV light-induced DNA damage and risk of cutaneous malignant melanoma. *J Natl Cancer Inst.* 2003 Feb 19;95(4):308-15. PMID: 12591987.
3. Wang LE, Xiong P, Zhao H, Spitz MR, Sturgis EM, **Wei Q**. Chromosome instability and risk of squamous cell carcinomas of head and neck. *Cancer Res.* 2008 Jun 1;68(11):4479-85. PMID: PMC3079380
4. Wang LE, Yin M, Dong Q, Stewart DJ, Merriman KW, Amos CI, Spitz MR, **Wei Q**. DNA repair capacity in peripheral lymphocytes predicts survival of patients with non-small-cell lung cancer treated with first-line platinum-based chemotherapy. *J Clin Oncol.* 2011 Nov 1;29(31):4121-8. PMID: PMC3675702
5. **Wei Q**, Yu D, Liu M, Wang M, Zhao M, Liu M, Jia W, Ma H, Fang J, Xu W, Chen K, Xu Z, Wang J, Tian L, Yuan H, Chang J, Hu Z, Wei L, Huang Y, Han Y, Liu J, Han D, Shen H, Yang S, Zheng H, Ji Q, Li D, Tan W, Wu C, Lin D. Genome-wide association study identifies three susceptibility loci for laryngeal squamous cell carcinoma in the Chinese population. *Nat Genet.* 2014 Oct;46(10):1110-4. PMID: 25194280

E. Courses taught in the previous 5 years *[If you have not taught any formal courses in the past 5 years, include other educational activities, such as seminars, workshops, short courses.]*

1. 1994-2012: Topics in Cancer Prevention, U.T. G.S.B.S. GS21-0631
2. 2010-2012: Cancer Epidemiology, U.T. S.P.H. RAS E-305,
3. 2011-2012: Dental Public Health (UT DENS 3932)

F. Mentoring *[Include counts of formal mentoring, such as committee participation, when possible. Describe other mentoring experience.]*

1. **Doctoral Student Committee Chair (3):** Served as committee chair for 3 students in PhD and 2 Master Programs of the School of Public Health.
2. **Master Student Committee Chair (2):** Served as committee chair for 3 students in PhD and 2 Master Programs of the School of Public Health.
3. **Doctoral Student Committee Membership (2):** Served on 2 doctoral dissertation committees for PhD students in Public Health.
4. **Master's Student Thesis Committee Membership (8):** Served on 8 Master's student thesis committees for students in Public Health.
5. **Junior Faculty 9):** Have served as mentor and advisor to many junior faculty at UNC and Duke, including advising on K-awards and other projects.
6. **Postdoctoral Fellows (35):** Have served as a formal mentor for numerous postdoctoral fellows,

including those in health services research fellowships and clinical research fellowships.

7. **Predoctoral Fellows (5):** Currently mentoring 1 student and other 4 graduated as part of a joint international predoctoral program in molecular epidemiology Research.
8. **Residents (1):** Served as mentor and advisor for medical fellow.
9. **Visiting scholars (25)**
10. **Undergraduate Students, Medical Students, and Others (>10):** Mentored numerous students in public health from undergraduate, medical, and non-degree programs.

Appendix C: Financial Projections

		<u>FY-20</u>	<u>FY-21</u>	<u>FY-22</u>	<u>FY-23</u>
Education					
Course credits offered (Master of Science)	0	21	52	52	52
MS - Number of faculty teaching	0	8	16	16	16
MS new admits	0	25	30	35	35
MS total student body	0	25	55	65	70
PhD course credits	0	0	20	40	40
PhD - Number of faculty teaching	0	0	6	12	12
PhD new admits	0	0	3	5	5
PhD total student body	0	0	3	8	13
Total student body (MS and PhD)	0	25	58	73	83
Total Number of faculty teaching	0	8	22	28	28
MS annual tuition per student	\$54,455	\$56,089	\$57,771	\$59,504	\$61,290
PhD annual tuition per student			WAIVER		
Revenues - Education					
MS	\$0	\$1,402,216	\$3,177,422	\$3,867,789	\$4,290,271
PhD	\$0	\$0	\$0	\$0	\$0
Gross Revenues - Education	\$0	\$1,402,216	\$3,177,422	\$3,867,789	\$4,290,271
Scholarships	\$0	\$350,554	\$794,356	\$966,947	\$1,072,568
Net Revenues - Education	\$0	\$1,051,662	\$2,383,067	\$2,900,842	\$3,217,703
Education Expenses					
Faculty Leadership	\$152,000	\$155,800	\$155,800	\$155,800	\$155,800
Faculty instructional cost	\$0	\$172,200	\$485,386	\$633,220	\$649,040
Staff cost	\$234,821	\$369,581	\$378,821	\$388,291	\$397,999
PhD stipends (stipend+fringe)	\$0	\$0	\$98,262	\$269,888	\$347,480
Space(student+classroom)	\$77,849	\$227,584	\$434,815	\$529,174	\$596,591
Program development	\$20,000	\$25,000	\$45,000	\$45,000	\$45,000
Marketing, recruitment, events	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Other operational expenses	\$146,168	\$262,541	\$424,521	\$530,343	\$572,977
Grad School Tuition Tax	\$0	\$16,800	\$38,976	\$49,056	\$55,776
ESL Classes	\$0	\$13,750	\$18,150	\$22,000	\$22,000
G&A	\$28,942	\$59,373	\$101,197	\$128,349	\$139,343
Total education expenses	\$607,780	\$1,246,829	\$2,125,127	\$2,695,322	\$2,926,206
Education Programs Surplus/(Deficit)	(\$607,780)	(\$195,167)	\$257,940	\$205,520	\$291,497

Appendix D: Department of Population Health Sciences Program Goals and Student Learning Assessment Plan

Intellectual Vision: The Department of Population Health Sciences' educational mission centers around preparing the next generation of leaders in population health sciences by educating both master and doctoral level students to advance the health of populations through the discovery and translation of knowledge into policy and practice.

General Data Collection Considerations: We will build a comprehensive evaluation plan to assess program outcomes. We anticipate these evaluation efforts will change as we gain experience in program administration and receive feedback through ongoing assessments. We will use quantifiable and behaviorally-based evaluation and assessment metrics to establish clear guidelines so that students and faculty understand program processes and how we are measuring success. We will consult with various Duke groups and resources with expertise in program assessment, program quality, and faculty development (e.g., SSRI Program Evaluation Team, Center for Instructional Technology, School of Medicine Faculty Development Program) to maximize the impact of our program evaluation, outcome assessment, and improvement efforts.

Student Learning Outcomes for the Master of Science in Population Health

I. Master of Science Program Goals and Associated Student Learning Outcomes

1. Train students to be **successful researchers** able to implement flexible, innovation-oriented methods in addressing population health questions.
 - a. Demonstrate proficiency in population health research methods and analysis.
 - b. Develop innovative problem-solving skills to address important population health research questions.
 - c. Demonstrate an ability to develop and manage population health programs or projects.
2. Train students to be **successful professionals** able contribute to and collaborate in interdisciplinary teams at government, industry, academic, and health system organizations.
 - a. Effectively participate in interdisciplinary clinical and translational research teams.
 - b. Demonstrate an ability to communicate research clearly and professionally in both written and oral forms to diverse audiences.
 - c. Successfully compete for employment that is challenging and respected within areas related to Population Health Sciences.

II. Master of Science Outcomes Assessment Plan:

Goal 1: Train students to be **successful researchers** able to implement flexible, innovation-oriented methods in addressing population health questions.

Table 1.

Outcome	Evidence of Outcome	Frequency Collected
Demonstrate proficiency in population health research methods and analysis.	Success in course work; results of written comprehensive examinations	Each semester; end of program
Develop innovative problem-solving skills to address important population health research questions.	Success in course work; applied practicum; capstone project/thesis	Each semester; end of program
Demonstrate an ability to develop and manage population health programs or projects.	Success in course work; applied practicum; capstone project/thesis	Each semester; end of program

Goal 2. Train students to be **successful professionals** able contribute to and collaborate in interdisciplinary teams at government, industry, academic, and health system organizations.

Table 2.

Outcome	Evidence of Outcome	Frequency Collected
Effectively participate in interdisciplinary clinical and translational research teams.	Comments/survey results of faculty and stakeholders from internship experiences	Annually; at conclusion of each collaborative or team research experience
Demonstrate an ability to communicate research clearly and professionally in both written and oral forms to diverse audiences.	Comments/survey results of faculty and stakeholders from internship experiences; results of capstone project/thesis	Annual; at conclusion of each collaborative or team research experience
Successfully compete for employment that is challenging and respected within areas related to Population Health Sciences.	Post-graduate survey	Annually

Student Learning Outcomes for the PhD in Population Health

I. PhD Program Goals and Associated Student Learning Outcomes

1. Train students in the practice of integrating and applying population health sciences knowledge to address wide-ranging health and disease issues and their determinants so they can develop into **independent researchers**.
 - a. Demonstrate expertise in an active area of research in the field of population health sciences (epidemiology, measurement science, health services research/implementation science) by being familiar with methodological developments and emerging research themes.
 - b. Critically evaluate the population health sciences literature and formulate a research hypothesis that reflects an understanding of foundational knowledge, appropriate study design, and analytic considerations.
 - c. Publish research findings in peer-reviewed journals.
 - d. Present research findings at national and/or international meetings.
2. Train students to apply population-level strategies in the conduct of clinical care, clinical and implementation research, teaching, and health policy efforts so they can effectively serve as interdisciplinary **research team members** in population health sciences.
 - a. Effectively participate in interdisciplinary research teams by providing population health sciences thought leadership and guidance.
 - b. Demonstrate an ability to communicate research clearly and professionally in both written and oral forms to diverse audiences.
 - c. Develop professional presentation and teaching skills.
 - d. Successfully compete for employment that is challenging and respected within areas related to Population Health Sciences.

II. Outcomes Assessment Plan:

Goal 1: Train students in the practice of integrating and applying population health sciences knowledge to address wide-ranging health and disease issues and their determinants so they can develop into **independent researchers**.

Table 3.

Outcome	Evidence of Outcome	Frequency Collected
Demonstrate expertise in an active area of research in the field of population health sciences (epidemiology, measurement science, health services research/implementation science) by being familiar with methodological developments and emerging research themes.	Results of qualifying exam; results of oral preliminary exam and dissertation defense; most course final exams	Each semester, plus at qualifying exam and at final defense
Critically evaluate the population health sciences literature and formulate a research hypothesis that reflects an understanding of foundational knowledge, appropriate study design, and analytic considerations.	Results of qualifying exam; results of oral preliminary exam and dissertation defense	At time of qualifying exam and at final defense
Publish research findings in peer-reviewed journals.	Annual student progress report form.	Annually
Present research findings at national and/or international meetings.	Annual student progress report form.	Annually

Goal 2: Train students to apply population-level strategies in the conduct of clinical care, clinical and translational research, teaching, and health policy efforts so they can effectively contribute to and collaborate in interdisciplinary scientific undertakings in population health sciences.

Table 4.

Outcome	Evidence of Outcome	Frequency Collected
Effectively participate in interdisciplinary research teams by providing population health sciences thought leadership and guidance.	Comments/survey results of faculty and stakeholders from internship experiences	Annually; at conclusion of each collaborative or team research experience
Demonstrate an ability to communicate research clearly and professionally in both written and oral forms to diverse audiences.	Comments/survey results of faculty and stakeholders from internship experiences	Annually; at conclusion of each collaborative or team research experience
Develop professional presentation and teaching skills.	Comments/survey results of faculty/stakeholders from (1) professional development course, (2) internship experiences, (3) dissertation committee	Annually
Successfully compete for employment that is challenging and respected within areas related to Population Health.	Post-graduate survey	Annually

III. How findings will be used to improve the program:

Our program leadership will produce a comprehensive assessment report. The first part of this report will be primarily analytical and will provide a statistical summary of all outcome metrics collected for the reporting period. The second part of the report will provide a broad, qualitative summary and discussion of student experiences, issues, and performance for the reporting period. The summary will also provide an interpretation of the statistical summary including what has been learned from the evaluation of the evidence, what strengths and/or weaknesses there are, and plans for addressing any areas of concern. If there were concerns and/or special plans for dealing with areas of concern from past reports, progress on these will also be addressed. Further, the report will detail any planned changes to the student learning outcome assessments detailed here to better measure program quality and student performance. Although these outcome assessments will be primarily focused on assessment of students (e.g., applications relative to enrollment, performance in the program, employment after the program) we will also examine faculty teaching/mentoring metrics and overall program success, as discussed in Program Evaluation (see section VII). We will also share this report with our Executive Educational Advisory Committee semi-annually and seek their input and guidance.

Appendix E: Letters of Support

Duke University

OFFICE OF THE CHANCELLOR

January 9, 2018

Lesley Curtis, PhD, Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

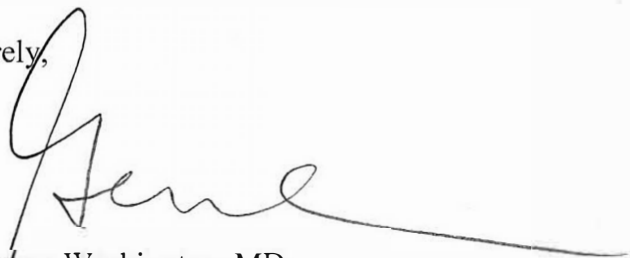
Dear Lesley and Hayden,

As you know, advancing population health is a priority for Duke Health and reflects our core belief that contributing to positive health outcomes is our responsibility. The foundation of population health at Duke includes *science* that develops methods and tools to advance health, *management* of the health of those who come to us for care, and *improvement* efforts that partner with many organizations to improve health in our community and region.

There are many determinants of health including the care provided by health systems like Duke Health. These determinants have a significant impact on individual and population health outcomes, and the need to have robust, evidence-based population health efforts across health systems, including ours, is paramount. Increasingly, health systems require a workforce that understands the determinants of health and has the tools and expertise to develop and evaluate programs that better manage and improve health. I am certain that the training programs proposed by your department will play a key role in training our healthcare workforce in these important areas.

I look forward to the initiation of these education programs, and for the opportunity for Duke Health to have broad and significant impact on the field of population health through these programs.

Sincerely,

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

A. Eugene Washington, MD
Chancellor for Health Affairs, Duke University
President and CEO, Duke University Health System



**DEPARTMENT OF HEALTH POLICY
AND MANAGEMENT**

1101 MCGAVRAN-GREENBERG HALL
CAMPUS BOX 7411
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MORRIS WEINBERGER, PhD
Chair

January 10, 2018

KRISTIN REITER, PhD
Associate Chair

REBECCA SLIFKIN, PhD
Associate Chair

Lesley Curtis, PhD, Chair
Hayden Bosworth, PhD, Vice Chair for Education
Department of Population Health Sciences
Duke University School of Medicine
2200 W. Main St.
Durham, NC 27705

Dear Lesley and Hayden,

I have been following the development of the education programs in the Department of Population Health Sciences closely and with great interest, and I am happy to provide you with this letter of support. I also agree to serve as a member of your Executive Board.

As you both know, our Department of Health Policy and Management trains the next generation of leaders in management, policy making, and research to address the complex challenges of health-care delivery and produce cutting-edge research. I believe the Duke DPHS's educational programs are distinct from, and are complements to, our Master's and PhD programs. As an example of the synergy across our institutions, several UNC doctoral students are already working within your department, and we enthusiastically support the idea of welcoming your students here. A cross-pollination of UNC and Duke students, along with the tremendous potential for our faculty collaborations, empower us to work together to prepare all students from Duke and UNC to make significant contributions to population health, both domestically and globally.

I look forward to working with you as a member of your Executive Board to strengthen our respective graduate programs and increase interaction to benefit our faculty and students. Please let me know if I can provide any additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Morris Weinberger". The signature is fluid and cursive, with a large, stylized "M" and "W".

Morris Weinberger, PhD
Vergil N. Slee Distinguished Professor of Healthcare Quality Management
Chair, Department of Health Policy and Management
Gillings School of Global Public Health
University of North Carolina at Chapel Hill

January 3, 2018

Lesley Curtis, PhD, Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

Dear Lesley and Hayden,

As Dean of the Duke University School of Medicine, I am providing my enthusiastic support of this proposal for the creation of a Masters and Doctoral Program in Population Health Sciences.

I have followed the development of this proposal closely, and believe it feeds a growing need to train scientists in the study of health of populations through the discovery and translation of knowledge into policy and practice with a highly quantitative focus. Through strong health system, academic and industry partnerships, this program will strengthen Duke's presence to provide a highly trained workforce in this area.

For those reviewing this proposal, I have reviewed the proposal and budget in detail with Drs. Curtis and Bosworth and they have integrated our feedback. The financial investment required to establish the educational program is reflected in the department's budget and the School is providing additional funds to support the department's educational training needs. We have ensured that space is available for training, and that School of Medicine faculty will have time for instruction and mentoring. We are satisfied with this proposal and approve it moving forward for graduate school review.

We look forward to welcoming the first cohort of students in the fall of 2019.

Sincerely,



Mary E. Klotman, MD
Dean, Duke University School of Medicine
Vice Chancellor for Health Affairs, Duke University

October 10, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

Dear Lesley and Hayden,

I was very interested to learn about the new Master of Science and Doctoral programs being proposed by the Department of Population Health Sciences. I appreciate the opportunity to speak with you and your workgroup, and am pleased to see it moving forward.

As you know, we have just completed the approval process for a new Master of Science degree in Interdisciplinary Data Science (MIDS). While our program is focused primarily on the use of marshaling, analyzing and visualizing “big data” across multiple disciplinary domains, I see many opportunities for collaboration and sharing resources. For example, our program will offer many courses that may be of interest (as electives) for your students, particularly those who plan to operate in environments where they are working with large datasets or with partners focused on data analytics and visualization. As we discussed, we could share electives in courses such as data marshaling, management and data visualization, while students in our program interested in careers in the healthcare field might be eager to enroll in your population health science courses. In addition, there is great potential for our students to participate in joint capstone experiences. These could make for truly exciting opportunities – as well as lead to new intellectual collaborations in the intersection of population health sciences, data science and social science.

I look forward to working with you and your students in the future.

Sincerely,



Thomas Nechyba, PhD
Director, Social Science Research Institute
Co-Director, Master of Science in Interdisciplinary Data Science (MIDS)



Department of Biostatistics and Bioinformatics

Elizabeth R. DeLong, PhD
Professor and Chair

October 12, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Duke University School of Medicine
Department of Population Health Sciences
2200 West Main Street, Suite 720A
Durham, NC 27707

Dear Lesley and Hayden,

I am pleased to express my support for the proposed Master's and Doctoral program in Population Health Sciences. As the Chair of the Department of Biostatistics and Bioinformatics in the Duke University School of Medicine, I believe there are a variety of ways in which these new degree programs can contribute to and complement other ongoing programs and initiatives at Duke, including our own departmental degree programs, in particular, the Clinical Research Training Program (CRTP).

Dr. Steve Grambow, Vice Chair of Education for our department and Program Director for CRTP, has been a contributing member of the Population Health Sciences education program development workgroup. He has been instrumental in efforts to ensure that the proposed programs complement our own existing programs and is in active discussions about the possibility of cross-listing courses between programs and exploring potential opportunities for our faculty to teach courses in the proposed MS and PhD programs related to biostatistics and biostatistical computing.

I am confident the Master's and Doctoral programs in Population Health Sciences will be a meaningful and important addition to the university's academic offerings, and I warmly endorse your proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'Elizabeth DeLong', written in a cursive style.

Elizabeth DeLong, PhD
Professor and Chair

October 12, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

Dear Lesley and Hayden,

I have followed the development of the proposed Master's and Doctoral programs in Population Health Sciences with significant interest. I am writing to express my strong support for this program moving forward.

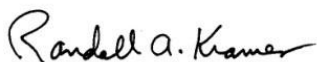
Department of Population Health Sciences education committee member, Dr. Truls Ostbye, a DGHI faculty member, has been involved in the educational program development workgroup for these programs, and has kept me abreast of your progress. Given the way the graduate program is structured, it promises to increase the offerings in population health sciences across the Duke campus.

As you know, the Duke Global Health Institute (DGHI) has a number of education programs at both the graduate and undergraduate levels. We feel that the Population Health Sciences Master's Program will complement our current Master's program, and provide an opportunity for future doctoral training for some of our Master's and undergraduate students.

We would also be interested in exploring potential course offerings in the electives that you plan for the MS degree, and see a potential to cross list electives with the MS in global health such as those focused on epidemiology, so that students in both Master's programs could benefit from additional course offerings.

I look forward to collaborating with you as you implement the program, and have appreciated the opportunity for our faculty to participate in the planning.

Sincerely,



Randall A. Kramer, PhD
Juli P. Grainger Professor of Global Environmental Health
Interim Director, Duke Global Health Institute

October 10, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

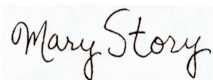
Dear Lesley and Hayden,

As Associate Director of Academic Programs in the Duke Global Health Institute (DGHI), I have met with both of you regarding your plans for the proposed Master's and Doctoral program in the Department of Population Health Sciences, and feel there are opportunities for synergy and collaboration across our education programs at DGHI and yours. The mutual immediate benefits, I see are a cross-listing of courses, thus increasing course options and exposure for all students, and a doctoral program for which our Master's students may considering entering upon their graduation.

Longer term, the strengths of both programs in DGHI and Population Health Sciences will enhance the educational opportunities of our students, and provide an overall increase in post-graduate learning opportunities in the health sciences, with a particular focus on research. These opportunities may include guest lectures and shared internships, and potential shared seminars and other networking opportunities for students both in and out of the classroom.

I look forward to collaborating with you and your faculty to enhance both of our programs, and am excited for this new educational opportunity at Duke.

Sincerely,



Mary Story, PhD RD
Professor of Global Health and Community and Family Medicine
Associate Director, DGHI Academic Programs



Clinical Research Training Program

Department of Biostatistics and Bioinformatics

October 10, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

Dear Lesley and Hayden,

Thank you for the opportunity to serve on the Department of Population Health Sciences Education Workgroup that has produced this application for a new Master of Science and Doctoral program in the graduate school. It has been a pleasure, and I am very pleased to express my full support for these degree programs.

As Director of the Duke Clinical Research Training Program (CRTP) and Vice Chair of Education for the Department of Biostatistics and Bioinformatics, I see a variety of ways in which our departmental programs (CRTP, Master of Biostatistics, PhD in Biostatistics, and Master of Management in Clinical Informatics) and your proposed educational programs can complement each other. Indeed, there is already a long standing relationship between CRTP and Population Health Sciences faculty, as over 8 of your current faculty serve as Course Directors in our program. Faculty from Population Health Sciences also regularly serve as mentors and/or committee members for our students' research project/thesis committees.

As we have discussed, I believe there are opportunities to cross-list courses between our programs, CRTP in particular. Because most CRTP students are MDs (3rd year medical students, clinical fellows, or junior faculty), the interaction of our clinical students and your students in the classroom setting would provide a rich learning environment.

I look forward to continuing to work with your team on these exciting new programs at Duke.

Sincerely,

A handwritten signature in black ink, appearing to read 'Steven C. Grambow', is written over a white background.

Steven C. Grambow, PhD
Director, Duke Clinical Research Training Program
Vice Chair of Education and Assistant Professor, Department of Biostatistics and Bioinformatics
Duke University School of Medicine

October 17, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

Dear Lesley and Hayden,

We are writing to express our enthusiastic support of the new Master of Science and doctoral program in Population Health Sciences at Duke University.

A key part of the Duke-Margolis Center for Health Policy's mission is helping to develop leaders in a workforce that can address the challenges of rising health care costs and access to care, while continuing to advance the development of new cures and other innovations in care. Such leadership requires combining expertise in health and health care with an understanding of policy and the new capabilities that health-related organizations need to achieve greater value in care. Duke-Margolis was founded as a university-wide center in part because addressing this educational challenge requires an interdisciplinary approach. New competencies related to health policy and value management are needed in a wide range of fields related to health and health care. We see these new programs, particularly the doctoral program in Population Health Sciences, as key in training graduates to address pressing issues in health and healthcare policy.

The Duke-Margolis Center has found substantial interest across Duke University in new educational approaches to address this challenge, in terms of undergraduate, graduate, and postgraduate/continuing education opportunities. Dr. Sanders Schmidler serves a key leadership role in the Duke-Margolis Center as our Deputy Director of Academics, and also as a full tenured Professor in the Department of Population Health Sciences. She has been a member of the Population Health Sciences education proposal workgroup, and plans to teach courses in PhD Research Methods and cost effectiveness analysis. Dr. Corinna Sorenson is also a faculty member in population health sciences and a Director of the Duke-Margolis Scholars Program, and will be involved in developing and teaching electives in improving health policies and programs and fostering collaboration with the Sanford School of Public Policy Master's program. In particular, we plan to leverage the doctoral program for Margolis Master's students graduating from Sanford who want to pursue a doctoral degree.

In summary, we see many ways that these new educational programs Population Health Sciences will train the workforce desperately needed in health policy. We look forward to continuing to work with your team to initiate this exciting new program at Duke, and finding ways to collaborate to meet the educational challenge the Duke-Margolis Center is facing.

Sincerely,



Mark M. McClellan, MD, PhD
Duke Margolis Center for Health Policy, Director
Robert J. Margolis, MD Professor of Business, Medicine and Policy



Gillian Sanders Schmidler, PhD
Professor of Population Health Sciences
Duke Margolis Center for Health Policy, Deputy Director Academics
Duke Evidence Synthesis Group/Evidence-based Practice Center, Director
Duke Clinical Research Institute



Robert M. Califf, MD MACC
Vice Chancellor for Health Data Science
Director, Center for Integrated Health Data Science
Donald F. Fortin, MD Professor of Cardiology

October 17, 2017

Lesley Curtis, PhD, Interim Chair
Hayden Bosworth, PhD, Vice Chair of Education
Department of Population Health Sciences

Dear Lesley and Hayden,

I have watched the development of the Department of Population Health Sciences with great interest, and am particularly excited about the new education programs your Department is proposing to initiate in the fall of 2019.

At the Duke Center for Health Data Science, we work at the intersection of basic science, medicine, statistical inference, machine learning, and software engineering to solve pressing problems in health and healthcare. The rapidly accelerating growth of computational capacity and analytical methods offers tremendous opportunities, but we need to develop effective human systems to translate this raw capability into better health and well-being.

Spanning Duke's campuses, our Center is designed to bring together the community, patients, clinicians, quantitative experts, students, and staff in multidisciplinary teams where their diverse talents and perspectives can be brought to bear on developing pragmatic, data-driven solutions that improve health and healthcare.

We see both Master of Science and doctoral graduates from your proposed program as key members of these interdisciplinary teams. Their rigorous quantitative training in implementation and measurement science and epidemiology will bring a level of expertise needed to solve complex healthcare problems through the use of data. In addition, we see many training opportunities for your students at our Center, and hope to incorporate them (and your faculty) into our research programs through specific internships and other capstone projects.

We look forward to working with you as you continue to develop and implement these much needed educational programs.

Sincerely,

Robert Califf, MD

A handwritten signature in black ink, appearing to read 'Robert M. Califf'.

Robert M. Califf, MD MACC
Vice Chancellor for Health Data Science

18	Cornell University				• ⁸		1927		•				• (SOM)		• (SOM)	• (SOM)		• (SOM)	• (SOM)
19	Northwestern				•			•	•				•	•					•
20	Icahn				•			•	•	•			•	•					•

Appendix F: Table A National Landscape assessment Results – (peer institutions in bold) (page 2)

		SPH ²		Other entity	SOM - department		Start yr ³	Graduate degrees granted					Formal subdivisions within SPH or entity						
Other		SPH	rank		Pop/ PH	Other ⁴		MPH	MS	PhD	DrPH	MHA	Bios	Epi	HP	SB	GH	HSR	Other
	University of Wisconsin–Madison	•			•		1984	•	•	•			•	•	•			•	
	Dartmouth College			•			1988	•	•	•				•	•			•	•
	University of Texas - Austin				•		2012										•	•	•
Local																			
	University of North Carolina -Chapel Hill	•	2			•	1940	•	•	•	•	•	•	•	•	•	•		•
	NC State					•	1999		•	•									
	Wake Forest				•		2007		•				•	•	•				•
	East Carolina				•			•											
	UNC Charlotte				•		2002		•	•		•						•	•
	Medical University South Carolina				•				•				•	•					
International																			
	London School of Hygiene and Tropical Medicine	•					1890		•	•			•	•	•	•	•	•	•
	University of Toronto	•		•			2008	•	•	•		•	•	•	•	•	•	•	•

Appendix F Table A Footnotes

¹SOM Ranking – source - <http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-medical-schools/research-rankings>

²SPH Ranking – source - <http://grad-schools.usnews.rankingsandreviews.com/best-graduate-schools/top-health-schools/public-health-rankings>

³ Such as a center or institute

⁴Departments within a SOM such as Epidemiology, Biostatistics or Health Services Research

⁵Start year of primary public or population health entity

⁶NYU’s College of Global Population Health has a similar structure to a traditional SPH, but is not considered a SPH by the US News ranking.

Abbreviations

Bios – Biostatistics and/or Bioinformatics	MPH - masters in public health	PH - public health
CER - Comparative effectiveness research	MS - masters of science	Pop - Population
GH - Global health/international health	PhD - doctor of philosophy	
Epi – Epidemiology (all types)	DrPH - doctorate in public health	
HP - Health policy	MHA - masters in health administration	
HP - Health policy and management		
HSR - Health services research, comparative effectiveness research, health care delivery research		
SB – Social/behavioral research		

Default Question Block

As you know, the Department of Population Health Sciences is in the process of developing Masters and PhD programs. The purpose of this survey is to better understand the teaching needs of our faculty. All responses are anonymous, so please be honest about your experience and needs. We want to be able to provide the strongest support for our faculty.

Although this survey is anonymous, please provide some information about yourself.

What is your current rank?

Full professor

Associate professor

Assistant professor

Instructor

Which of the following have you done?

Guest lectured

Taught a section of a survey course (e.g., 2-3 related lectures)

Been the primary instructor for a full (e.g., semester-long) course

Been the primary instructor for a professional workshop or institute

Mentored degree-seeking students

Mentored on research projects

Served on a dissertation committee

Chaired a dissertation committee

Other

None

How many time have you done the following?

	Once	2-5	6 or more
Guest lectured	☐	☐	☐
Taught a section of a survey course (e.g., 2-3 related lectures)	☐	☐	☐
Been the primary instructor for a full (e.g., semester-long) course	☐	☐	☐
Been the primary instructor for a professional workshop or institute	☐	☐	☐
Mentored degree-seeking students	☐	☐	☐
Mentored on research projects	☐	☐	☐
Served on a dissertation committee	☐	☐	☐
Chaired a dissertation committee	☐	☐	☐

With which kinds of learners have you worked?

Undergraduate

Masters

Doctoral (e.g., PhD)

Clinical students (e.g., MD)

Residents

Postdoctoral Fellows

Junior Faculty

Other

None

The next set of questions will ask you about your experience and comfort level with different aspects of teaching and mentoring.

a. Classroom methods

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Lecture-based courses	☐	☐	☐	☐	☐	☐	☐
A "flipped classroom" model	☐	☐	☐	☐	☐	☐	☐
Facilitating discussions	☐	☐	☐	☐	☐	☐	☐
Teaching large courses	☐	☐	☐	☐	☐	☐	☐
One-to-one teaching	☐	☐	☐	☐	☐	☐	☐

Please describe any other classroom skills you feel are particular strengths you could share with others

Please describe any other classroom skills you are particularly concerned about developing.

b. Syllabus and curriculum design

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Course development process	☐	☐	☐	☐	☐	☐	☐
Designing activities, assignments, and projects	☐	☐	☐	☐	☐	☐	☐
Syllabus design	☐	☐	☐	☐	☐	☐	☐
Developing interdisciplinary courses	☐	☐	☐	☐	☐	☐	☐
Developing team-taught courses	☐	☐	☐	☐	☐	☐	☐

Please describe any other syllabus or curriculum design skills you feel are particular strengths you could share with others

Please describe any other syllabus or curriculum design skills you are particularly concerned about developing.

c. Writing

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Designing effective writing assignments	☐	☐	☐	☐	☐	☐	☐
Integrating writing into a course	☐	☐	☐	☐	☐	☐	☐
Integrating writing into your teaching	☐	☐	☐	☐	☐	☐	☐
Having students assess each others' drafts	☐	☐	☐	☐	☐	☐	☐
Providing feedback and grading writing assignments	☐	☐	☐	☐	☐	☐	☐

Please describe any other writing skills you feel are particular strengths you could share with others

Please describe any other writing skills you are particularly concerned about developing.

d. Learners/learning

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Teaching first-year graduate students	☐	☐	☐	☐	☐	☐	☐

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Student learning styles and their implications for the classroom	☐	☐	☐	☐	☐	☐	☐
Building rapport	☐	☐	☐	☐	☐	☐	☐
Effective faculty advising	☐	☐	☐	☐	☐	☐	☐
Motivating students	☐	☐	☐	☐	☐	☐	☐
Students in crisis	☐	☐	☐	☐	☐	☐	☐

Please describe any other experiences with learners you feel are particular strengths you could share with others

Please describe any other experiences with learners you are particularly concerned about developing.

e. Student management

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Mentoring graduate students	☐	☐	☐	☐	☐	☐	☐
Integrating students into your research	☐	☐	☐	☐	☐	☐	☐

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Supervising graduate student research	☐	☐	☐	☐	☐	☐	☐
Helping graduate students understand research integrity	☐	☐	☐	☐	☐	☐	☐
Conflict management with graduate students	☐	☐	☐	☐	☐	☐	☐
Managing difficult discussions	☐	☐	☐	☐	☐	☐	☐
Relationship boundaries/hard & soft limits	☐	☐	☐	☐	☐	☐	☐

Please describe any other student management experiences you feel are particular strengths you could share with others

Please describe any other student management experiences you are particularly concerned about developing.

f. Student assessment and evaluation

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Grading group work	☐	☐	☐	☐	☐	☐	☐

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Classroom assessment techniques	☐	☐	☐	☐	☐	☐	☐
Designing performance assessments (projects, presentations, participation)	☐	☐	☐	☐	☐	☐	☐
Exam design	☐	☐	☐	☐	☐	☐	☐
Developing grading rubrics/approaches	☐	☐	☐	☐	☐	☐	☐
Assessing a student as a dissertation/thesis chair	☐	☐	☐	☐	☐	☐	☐
Assessing a student as a dissertation/thesis committee member	☐	☐	☐	☐	☐	☐	☐

Please describe any other student assessment and evaluation skills you feel are particular strengths you could share with others

Please describe any other student assessment and evaluation skills you are particularly concerned about developing.

g. Diversity and inclusion

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Connecting and engaging with a variety of students across learning styles and backgrounds	☐	☐	☐	☐	☐	☐	☐
Understanding unique needs of students with disabilities	☐	☐	☐	☐	☐	☐	☐
Understanding unique needs of international students	☐	☐	☐	☐	☐	☐	☐

Please describe any other diversity and inclusion skills you feel are particular strengths you could share with others

Please describe any other diversity and inclusion skills you are particularly concerned about developing.

Education Technology

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Powerpoint for teaching	☐	☐	☐	☐	☐	☐	☐

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Developing online teaching materials or course elements	☐	☐	☐	☐	☐	☐	☐
Working with librarians to adhere to guidelines for media (e.g., journal articles, other readings)	☐	☐	☐	☐	☐	☐	☐
Developing a course webpage	☐	☐	☐	☐	☐	☐	☐
Video conferencing/webcasting	☐	☐	☐	☐	☐	☐	☐

Please describe any other education technology skills you feel are particular strengths you could share with others

Please describe any other education technology skills you are particularly concerned about developing.

Scholarship

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Writing grants for teaching resources (e.g., training grants)	☐	☐	☐	☐	☐	☐	☐

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Presenting work at conferences	☐	☐	☐	☐	☐	☐	☐
Understanding scholarship of teaching	☐	☐	☐	☐	☐	☐	☐
Researching innovative teaching methods	☐	☐	☐	☐	☐	☐	☐

Please describe any other education scholarship skills you feel are particular strengths you could share with others

Please describe any other education scholarship skills you are particularly concerned about developing.

Administration and Career Development

Please indicate your skill and/or comfort level with each of the following:

	Very high	High	Average	Below Average	Low	Very Low	Don't Know/ Don't Use
Preparing a teaching dossier	☐	☐	☐	☐	☐	☐	☐
Fostering career development of colleagues	☐	☐	☐	☐	☐	☐	☐

Please describe any other education administration and career development skills you feel are particular strengths you could share with others

Please describe any other education administration and career development skills you are particularly concerned about developing.

Imagine that there is a faculty development program in which you would like to participate. The time and location of this program are both convenient to you. How likely would you be to participate in this program if it was offered in each of the following formats?

	Very likely	Somewhat likely	Unlikely	Very unlikely	Would not consider
Online course	☐	☐	☐	☐	☐
Video conference	☐	☐	☐	☐	☐
Individual consultation	☐	☐	☐	☐	☐
Group consultation	☐	☐	☐	☐	☐
1-hour session	☐	☐	☐	☐	☐
Half-day workshop	☐	☐	☐	☐	☐
Full day workshop	☐	☐	☐	☐	☐
A series of 4-5 workshops on related topics	☐	☐	☐	☐	☐
A year-long workshop that meets 1/2 day per week	☐	☐	☐	☐	☐

Imagine there is a monthly seminar series on educational development topics, given by fellow faculty and outside teaching experts. Which topics would be of greatest and least interest to you? Please drag and drop your choices to rank them.

Items

Lecture development

Innovative classroom
management strategies

Course development and
design

Team teaching methods

Education technology

Mentoring graduate
students

Managing student
challenges, conflicts, and
crises

Designing effective writing
assignments

Evaluating and grading
writing

Designing and grading
exams

Professional evaluation/
Promotion

More interesting**Less interesting**

What other educational development topics would you be most interested in learning more about?



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