

**Proposal Title:** Inequalities in Birth Outcomes in St. Louis: Increasing Maternal Health Content in the Brown School Public Health Program; PI: Rivera-Núñez

**Principal Investigator:** Zorimar Rivera-Núñez, PhD, Assistant Professor, Brown School, Public Health Program, Washington University

**Co-Investigator:** Anne Sebert Kuhlmann, PhD, Assistant Professor, College of Public Health and Social Justice, St. Louis University

**Introduction:** The health and well-being of neighborhoods are the foundation for urban sustainability. Urban sustainability is not only about achieving health but it relates to concepts such as social justice and socioeconomics (Talukder et al. 2015). Women and children are an essential piece of neighborhoods productivity and progress, and therefore a critical element on Public Health academic curriculums. The Brown School has successfully designed and executed a Master in Public Health (MPH) program in a very short time period. Our program has specialized areas such as epidemiology, global health, and health policy. In fall 2014 to include additional areas of public health, we designed a transdisciplinary solving course on Maternal and Child Health (MCH) to alleviate the student demand for MCH content in our curriculum. We are requesting the Ferguson Academic Seed Funding to 1) improve the content of this course, 2) bring additional external resources, and 3) augment the content on MCH activities and events at the Brown School.

**Purpose of the Proposed Project:** We propose to focus part of the content of the current MCH class on birth outcomes inequalities in the St. Louis Metropolitan area (STLMA). We will partner with the MCH Program at St. Louis University (SLU) to add depth to our MCH content. Additionally, this pilot funding will allow the MPH program to further evaluate the needs for a future MCH specialization within the MPH program.

**Goals of the Proposed Project:** The *goals* of this curriculum improvement are: 1) Train students to be evidence-based MCH providers, 2) Increase the interest of Brown School community in MC, 3) Integrate ST Louis' MCH challenges into the classroom and the Brown School Community

**Needs Assessment:** MCH inequalities are a serious public health issue that has many social and economic implications including poor health outcomes and increased health care cost. The Brown School has a unique set of disciplines, environment, and students to examine MCH issues within the current historic social context in the STLMA. Racial and ethnic disparities in MCH have long been described in the scientific literature (Blumenshine et al. 2010). Although these disparities have changed overtime by racial or ethnic group, they are still pervasive and associated with disadvantage at multiple levels (individual/family, neighborhood), time points (childhood, adulthood), and with health behaviors, in many cases socially patterned (Morenoff 2003, Buka et al 2003; Schempf et al. 2011). In St Louis, the highest proportion of very low birth weight babies can be attributed to black maternal race (Xaverius et al. 2014). Additionally, women residing in socioeconomically deprived areas are at increased risk of preterm birth (PTB: babies born at least three weeks before their due dates) (DeFranco et al. 2008). For example, in some areas of St. Louis, PTB rates are comparable with those of countries with severe public health issues such as Pakistan or Congo (WHO, 2012). PTB rates in some areas of St. Louis City are up to 20% of all births while Pakistan's and Congo's overall PTB rates are 15.8 and 16.7, respectively.

**Methodology:** A. Curriculum Changes: The current MCH class is divided in three modules: 1) Biology and Epidemiology, 2) Risk Factors for MCH and 3) Programs and Intervention. We propose to study St. Louis MCH disparities during the four weeks of the Risk Factors for MCH

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module. We will a) choose a relevant specific outcome for the STLMA (e.g., PTB), 2) examine social determinants present in the STLMA affecting the chosen outcome, 3) discuss methodological approaches to study neighborhoods health, 4) develop a conceptual framework for the risk factors affecting the chosen outcome.

**B. MCH Week:** Taking advantage of the new building inauguration (i.e., Hillman Hall), we propose to celebrate MCH Week (last week of October) with the following activities:

- i. Students will portrait part of their work in posters through the School.
- ii. Invited speakers on MCH; a) a leader from a local organization leading initiatives of MCH in St. Louis (e.g., Department of County Health, Flourish ), b) a well-known academician in the area of health disparities and reproductive health, or overall neighborhood health (e.g., Jeffrey Morenoff, University of Michigan; Lynn Rosenberg, Boston University).
- iii. Ignite at Lunch: Solving Infant Mortality in St. Louis: On an Ignite session (5-minute presentation) students enrolled in the MCH class will pitch ideas on how to improve Infant Mortality rates in the STLMA.

**C. Discussion Club on MCH:** each month during the 2015-2016 academic year students and faculty will get together to discuss a MCH issue in the St. Louis area. Discussion topics will be selected between faculty and students. Invited scholars and community leaders will be included according to topics.

**D. MCH in Research Without Walls (RWow):** At the end of each academic year students portrait their culminating experience work or any other research through the walls of the Brown School as posters (RWow). Three winners are chosen by the Dean during a reception for students to reward their work. We propose to have a section on MHC and special monetary awards for the winners.

**Outcomes and Evaluation**

Objective	Activity	Evaluation	Outcome
Train students to be evidence-based MCH providers	~Discussions in the classroom ~Discussion of particular case studies by invited lecturers	~In class- exercises and homework	~ Increase MCH content and discussion on our MPH Program ~Expose students to well-known MCH scholars ~MCH Section on RWow ~Establish a collaboration with the SLU MCH Program
Increase the interest of Brown School students in MCH	~MCH Week ~Ignite at Lunch ~MCH Discussions Club	~Internal tracking of assistance and participation in MCH activities	~Provide evidence for increasing the number of MCH instructors in the MPH program
Integrate our neighborhood MCH challenges into our classroom and the Browns School Community	~MCH Week ~MCH Discussions Club ~Ignite at Lunch	~ Number of projects in RWow on MCH on St. Louis MCH ~Number of invited lectures on MCH St. Louis ~Internal tracking of assistance and participation in MCH activities	~Expose students to well-known MCH community leaders ~School-wide discussion of main MCH issues affecting the St. Louis area ~Establish a collaboration with SLU MCH Program

**Budget:** The Ferguson Academic Seed Funding will provide fees and travel for guest speakers, students’ monetary awards, posters and promotion materials, and light refreshments for certain activities including Maternal Health Week.

# Ferguson Academic Seed Fund

## Grant Application Project Member & Invited Scholar Bio Sketch Form

Invited Scholar: \_\_\_\_\_ Team member: **X** Both: \_\_\_\_\_

**Team Member Count:** 1 of 2

**Title:** Assistant Professor

**First Name:** Zorimar

**Last Name:** Rivera-Núñez

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**Webpage:** <http://brownschool.wustl.edu/Faculty/FullTime/Pages/Zorimar-Rivera-Nunez.aspx>  
<http://publichealth.wustl.edu/projects/studying-water-quality-in-haiti/>

**Affiliate Institution:** Washington University in St. Louis, Brown School, Public Health Program  
Institute of Public Health Scholar

### Short Biographical Sketch

Dr. Rivera-Núñez's research program incorporates different areas of environmental exposure assessment including biomarkers and susceptible populations. She has specific training and expertise working with large data sets including birth registry data for several outcomes (e.g., preterm birth, birth defects, cancer). As a National Academies postdoctoral research associate, Dr. Rivera-Núñez studied methodological issues in exposure assessment, including misclassification which has a profound impact on the prediction of health outcomes. As Assistant Faculty at the Brown School, she has expanded her research by integrating exposure assessment and geographical information systems into the study of birth outcomes. Currently, she has been examining the effect of toxic metals exposure in hormone levels from pregnant women in Puerto Rico, and evaluating the impact of nutrition programs and environmental exposures in Haiti. The ultimate goal of Dr. Rivera-Núñez's research program is to develop new and novel exposure assessment tools, with specific emphasis on improving the health of women, children, and other vulnerable populations. Her teaching agenda includes to increase maternal health content at the Brown School and to create a Maternal and Child Health Specialization within the Public Health Program. Recently, co-designed a maternal health class focused on pregnancy with maximum enrollment and excellent student evaluations.

# Ferguson Academic Seed Fund

## Grant Application Project Member & Invited Scholar Bio Sketch Form

Invited Scholar: \_\_\_\_\_ Team member: **X** Both: \_\_\_\_\_

**Team Member Count:** 2 of 2

**Title:** Assistant Professor

**First Name:** Anne

**Last Name:** Sebert Kuhlmann

**Email address:** sebertkuhlmann@slu.edu

**Affiliate Institution:** College of Public Health and Social Justice, St. Louis University

### Short Biographical Sketch

Dr. Sebert Kuhlmann's work focuses on the development and evaluation of community engagement interventions to improve maternal and reproductive health. She has over 10 years of experience as an evaluation consultant for both governmental and non-governmental large-scale maternal and reproductive health interventions across sub-Saharan Africa, India, and Latin America. In addition to her evaluation research, Dr. Sebert Kuhlmann is a dedicated teacher having taught both methodological courses such as Program Planning and Evaluation and Research Methods as well as topical courses like International Public Health. She recently co-taught a course on Pregnancy Outcomes: Biological, Social, and Environmental Determinants.