Proposal to Transfer UCI’s Department of Epidemiology to the Program in Public Health

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EXECUTIVE SUMMARY

Faculty in the Department of Epidemiology (DE) propose to transfer the department from the School of Medicine (SOM) to the Program in Public Health (PPH)\(^{1}\), a stand-alone academic unit within the Susan and Henry Samueli College of Health Sciences\(^{2}\) (SHSCOHS) that is currently being built out with attention to the college’s naming benefactors’ vision for interprofessional education and integrative health. The soon-to-be proposed UCI School of Population and Public Health (SPPH) is a critical component in achieving this goal, but also more broadly in improving the health of the population.

In the larger context of the future of public health at UCI, this proposed transfer is a deliberate strategy to ensure the successful launch of a new school of public health sometime during the 2021-22 academic year. Specifically, epidemiology is one of the five core disciplines of public health and all top 10 graduate schools of public health (as ranked by \textit{U.S. News & World Report}) includes an academic department of epidemiology. The department currently focuses on the interplay of genetic, other molecular, environmental, and nutritional factors on human health and disease, with an emphasis on diseases such as aging, cardiovascular disease, cancers, dementia, diabetes, liver and blood diseases, and obesity. As one of four founding departments in the future school, the DE will play a critical role in the development of the school and will contribute significantly, not only to the PPH’s eligibility for Council on Education for Public Health accreditation as a school, but also to the teaching and research enterprise of the nascent school. Further, the extramurally funded research portfolio of the department is impressive; despite the fact that it currently has the smallest faculty, it currently has the highest total amount of extramural research funding of the four departments. The expertise of the faculty and the level of

\(^{1}\) Academic units in public health, regardless of their organization into separate departments, are referred to as programs or schools.

research funding will be critical for growing a strong doctoral program and propelling the department and new school of public health into the top tier of national rankings. The transfer also will have more immediate benefits by promoting greater synergies in teaching, research, and public service within the academic unit, the PPH and across the SHSCOHS. The new organizational structure will address the needs for a critical mass of faculty, students, and staff, and eventually better access to shared resources, initiatives, and opportunities that are in alignment with the department’s mission and goals.

Based on the discipline’s historical inclusion of expertise in both epidemiology and biostatistics, DE faculty have voted to revise the unit’s name to *Department of Epidemiology and Biostatistics* (DEB). This proposed name change will be included in the pre-proposal for the planned school which will consist of four departments. This departmental transfer proposal has the support of the SHSCOHS vice chancellor for health affairs, SHSCOHS associate vice chancellor for academic affairs, and SOM dean (see Appendix A: Letters of Support Resources: Provost/EVC, SHSCOHS and SOM). DEB faculty, staff, and students are excited about the opportunity to contribute to the development of the proposed school and have actively been working towards this goal.
MISSION
The health of populations depends on many different factors, ranging from biologic to environmental to social factors. By definition, epidemiologists focus on populations rather than individuals. The focus on populations distinguishes epidemiology from medicine, which focuses on individuals. As a result, epidemiology is one of the essential disciplines to public health and to the emerging field of population health. Epidemiology is a quantitative, data-driven discipline that uses rigorous methods to collect, analyze, and interpret health-related data in human populations. Epidemiologists use this information to examine the distribution and determinants of disease, and to apply this information to develop disease prevention strategies to improve population health. Epidemiology is a field that not only develops and applies rigorous epidemiologic methods to address these needs, but also draws on and collaborates across other scientific disciplines, such as biostatistics, informatics, genomics, biology, economics, and environmental, social, and behavioral sciences, to improve population health. Given the discipline’s focus on populations, Department of Epidemiology and Biostatistics (DEB) faculty expect to play a key role in helping to define the emerging field of population health and to work with colleagues in the three other PPH departments to establish a highly-ranked school of public health.
The mission of the DEB is to improve population health through research, education, community engagement, and translation of discoveries into practice. This mission is supported by an interdisciplinary faculty that includes those with doctoral-level training in epidemiology, biostatistics, community health sciences, molecular biology, and bioinformatics. Faculty interests include cardiovascular disease, diabetes, obesity, cancer, aging, and cognition, as well as environmental, social, dietary, and genetic determinants of health. Additional details about faculty members’ research and other accomplishments are available in their biosketches (see Appendix C: Biosketches of Core Faculty Members) and in the research summaries that follow.

The multidisciplinary expertise of the faculty provides the department with the capability to address complex local, regional, and global problems and to provide training in several critical areas as follows:

- epidemiologic methods,
- biostatistics and bioinformatics
- cancer epidemiology,
- genetic epidemiology,
- environmental epidemiology,
- nutritional epidemiology,
- chronic disease epidemiology, and
- health disparities and community engagement.

**NEED FOR THE DEPARTMENT OF EPIDEMIOLOGY AND BIOSTATISTICS IN THE FUTURE SPPH**

In February 2019, the California Future Health Workforce Commission released their final report titled *Meeting the Demand for Health* with specific recommendations to reduce the shortage in health workforce in the state by 2030, and to increase investments in research on variables that can improve clinical care and population health, while also keeping health care costs affordable.³ The report included recommendations to align and expand education and training by bringing together schools and programs of public health, to better prepare California’s health workers. UC President Janet Napolitano co-chaired the Commission, which included America Bracho, CEO of Latino Health Access and member of the external advisory board of the UCI PPH. The Commission’s final report makes it clear that California needs more public health professionals now and in the future. The fully-built-out UCI school of population/public health, including the DEB, will help address this shortage by attracting the most qualified faculty and students, and increasing access to training and education across the broad fields of population and public health. The DEB clearly will play a critical role in addressing the state’s needs.

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Further, epidemiology and biostatistics will continue to play a key role in the School of Medicine (SOM), but also the Sue and Bill Gross School of Nursing (SON) and the currently-proposed School of Pharmacy and Pharmaceutical Sciences (SPPS). With DEB as part of the PPH in the short term, and part of the UCI School of Population and Public Health (SPPH) in the longer term, faculty anticipate many more opportunities to partner across the SHSCOHS, including greater participation in interprofessional education and enhancing the research mission, especially in building the evidence base related to integrative health strategies. The DEB will clearly play a critical role in achieving the SHSCOHS naming benefactors’ vision for interprofessional education and in advancing the evidence base for integrative health.

Finally, incorporation of the DEB into the current PPH will move the PPH one step closer to eligibility to be considered for Council on Education and Public Health (CEPH) accreditation with school status. All top-ranked (as ranked by U.S. News & World Report) and CEPH-accredited schools of public health include CEPH-required core competencies in five areas: epidemiology, biostatistics, environmental health sciences, health policy and management, and social and behavioral sciences\(^4\), as well as seven other interdisciplinary areas. DEB faculty will provide expertise in two of the core areas—epidemiology and biostatistics—and the curricula will address multiple competencies, including CEPH’s interdisciplinary and interprofessional education requirements.

Director and founding dean, Bernadette Boden-Albala, who joined UCI July 1, 2019, has administrative responsibility for the PPH and will lead the effort to establish the new SPPH. The proposed school initially will consist of four founding departments; the DEB, a new (proposed concurrently) Department of Environmental and Occupational Health (DEOH), and the existing Department of Population Health and Disease Prevention (DPHDP), which will split into the current department with focus on global health and biological determinants of health, and a new department with focus on social and behavioral determinants of health, tentatively titled Department of Health, Society, and Behavior (DHSB). These departments will be under the PPH until the SPPH is approved and reports to Dean Boden-Albala. These departments will form the core of UCI’s future school and together will seek CEPH accreditation as a school of public health.

The DEB, DPHDP, and proposed DHSB and DEOH focus on research and teaching activities that seek to improve the health and well-being of individuals, communities, and populations, and to achieve health equity. The fragmentation of these departments in different areas across campus has made it difficult to synergize and grow strong graduate programs that can compete

\(^4\)https://futurehealthworkforce.org

nationally and internationally against better-established schools and programs of public health. Specifically, even though faculty from these diverse programs have developed an extensive record of successful collaborations and research funding, the current situation, in which the four departments are not housed within a single academic unit, does not smoothly facilitate those interactions or cross-departmental training of students in population and public health sciences.

Transfer of the DEB from the SOM to the PPH (and, later, to the SPPH) will allow for significant contributions of epidemiology, and biostatistical research and teaching expertise to the overall population health enterprise of the college. This organizational adjustment is a critical step in developing the school of public health to promote attainment of global leadership in research, training, and service, by enabling the unit to meet the strategic goals listed below.

- Seek an understanding of the exacerbation and pathogenesis of environmentally-caused illnesses and develop approaches to prevent those illnesses. These advances will act as catalysts for engendering scientifically-based public health advances and public policy decisions. Working closely with UCI organized research units such as the Alzheimer’s Disease Research Center, the Institute for Clinical and Translational Science, Sue and Bill Gross Stem Cell Research Center, and the CFCCC to study the process of illness, from the patient through the molecular analysis, then back to the patient, with effective treatments for those diseases
- Perform research that ranges from the molecular to the population level and that utilizes state-of-the-art technologies and big data to elucidate relationships between exposures to environmental contaminants and other environmental factors and biochemical, genomic, psychosocial, physiological, and pathological changes in diverse populations
- Attract and retain a distinguished faculty with backgrounds that reflect California’s rich ethnic and cultural diversity and who are committed to transdisciplinary research on the effects of genetic, molecular, social, and environmental factors affecting human health and disease
- Offer advanced training to highly-qualified degree candidates, both domestic and international
- Train students on principles and methods used to study the distribution and determinants of disease in human populations such as diabetes, obesity, and other metabolic diseases, cardiovascular disease, cancer, aging, and cognition, as well as the environmental, social, dietary, and genetic determinants of health and health disparities
- Seek colleagues and collaborations throughout UCI, other UC campuses, and the world to maximize the department's resources and impact; for example, genetic epidemiology is one of fastest growing fields and works to discover the genetic basis of disease, including understanding how genetic factors interact with environmental and social factors to influence disease and well-being, and UCI has a rich history in genomics and was one of the national genome centers involved in the international Human Genome Project, DEB

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faculty have always had an emphasis on and understanding of the relevance of genomics to health and disease and will continue to excel in this area and be recognized as leaders in the field

- Lead the effort in integrative health by expanding work in nutrition and lifestyle factors and applying rigorous methods to evaluate a range of modalities and interventions
- Create new programs and structures to facilitate interdisciplinary, problem-based scholarship and teaching
- Successfully compete for NIH program project and graduate training grants

**Impact on Existing Units and Programs**

The DE/SOM and the DPHDP/PPH are the units most directly affected by this proposal, given the faculty composition of these two departments. Both units are based in the SHSCOHS.

Background on the development of DE and DPHDP are important to note in the context of this proposal, as the historical context has relevance for understanding impacts on existing units and programs. Briefly, plans for a school of public health were noted in the 2006 strategic plan for what was, at the time, the UCI College of Health Sciences. As part of that early plan, it was noted that inclusion of epidemiology would be critical for the development of a new school of public health.

Epidemiology was a long-standing sub-division within the SOM’s Department of Medicine. In 2008, the Division of Epidemiology was accorded status as a separate department (DE) under the SOM. In 2018 faculty in the DE voted to revise the unit’s name to *Department of Epidemiology and Biostatistics* (DEB) to better reflect the composition of the department. Current DEB faculty listed in Table 1 wish to contribute to developing the future school of public health and plan to transfer their FTE as part of the department transfer to the PPH. Ultimately, the DEB will consist of faculty with expertise in epidemiology, biostatistics, and population sciences.

**Table 1: Core faculty members in the DEB after transfer to PPH**

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Expertise</th>
<th>Current Home Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bernadette Boden-Albala, M.P.H., Dr.P.H.</td>
<td>Director and Founding Dean, Professor</td>
<td>social epidemiology, cardiovascular disease, social determinants of health in stroke patients and those at high risk for stroke, network analysis and intervention research</td>
<td>Population Health and Disease Prevention</td>
</tr>
<tr>
<td>Karen L. Edwards, Ph.D.</td>
<td>Professor and Chair</td>
<td>genetic epidemiology, chronic diseases, diet and nutritional epidemiology, Gene x Environment interactions, ethical, legal and social issues of genomic information in public health and clinical research and practice</td>
<td>Epidemiology</td>
</tr>
<tr>
<td>Rufus D. Edwards, Ph.D.</td>
<td>Professor</td>
<td>human exposures to air pollution, indoor air pollution, paint emissions, Emissions of climate altering pollutant species, health co-benefits</td>
<td>Epidemiology (FTE under Public Health)</td>
</tr>
</tbody>
</table>
It is relevant to this proposal that all of the tenure-line FTE faculty in the DE have SOM FTEs. As part of the process, faculty currently in the department have been given the option to remain in the SOM. Two Senate members and one non-Senate member of the department faculty with long ties to the SOM have chosen to remain in the SOM. Two of these faculty members contribute expertise in biostatistics and their departure leaves a significant gap, not only in the teaching program, but also in the research enterprise. Further, these three departing faculty result in a substantial reduction in the current total number of FTEs, leaving five faculty (4.0 FTE) in the department plus a current open recruitment (1.0 FTE) that should be filled by March, 2020.

The current DEB proposal does not request any resources for faculty FTEs with the understanding that the development of the school proposal will include faculty resources based on filling important gaps in competencies and expertise required for accreditation (see Appendix A: Resource Commitments from P/EVC).

After transfer of the tenured faculty members, the primary faculty compliment will include six faculty with full tenure-line FTEs and one tenured and one tenure-line faculty with 0.5 FTE each in the department. The remaining faculty members are in residence, adjunct, or joint without salary. The adjunct and joint without salary faculty will not teach the same course load as the
Senate faculty. Although faculty in the DPHDP who focus on epidemiologic design and methods will be invited to join or affiliate with the department upon its transfer, there remains a need for additional faculty with expertise in these areas. Thus, replacement of these 2.0 FTEs in the department is vital, as the need for expertise in biostatistics and epidemiologic methods is critical to pursuing the mission of the department, growth of the M.S. and Ph.D. programs, enhancing the research agenda, and in establishing a strong CEPH-accredited school of public health.

The PPH was established in 2003, housed in the then-named UCI College of Health Sciences. The DPHDP was established in 2008 and currently serves as the academic and administrative home for all faculty appointed in the PPH. The PPH is the CEPH-accredited unit and includes the public health educational programs (B.S., B.A., M.S., M.P.H., and Ph.D.). The DPHDP is the only department in the PPH and includes faculty with broad expertise across multiple public health disciplines, including several faculty with primary research activities in epidemiology. There is one faculty member who will move immediately as part of transfer of the department (listed in Table 1). Also, the DEB will be the primary home for the director and founding dean.

Bringing together the resources and expertise of four departments within a unified structure will (a) facilitate communication and interdisciplinary work, (b) provide additional support for research and teaching activities, and (c) immediately improve faculty members’ ability to synergize course offerings and a unified curriculum. For example, the formation of a curriculum committee spanning all four departments will improve the student experience by expanding options for undergraduate and graduate course topics, enhance course coverage, and streamline and reduce course redundancies. The DEB already has begun working to improve the curriculum in epidemiology by creating a new three-quarter sequence in epidemiologic methods that aligns and sequences two existing courses (one in the DEB and the other in DPHDP), and has added a third course in the sequence to ensure mastery of critical skills taught in the first two quarters. This series was offered for the first time during the 2018-2019 academic year. Feedback from DEB and DPHDP students has thus far indicated that the modified sequencing and new capstone course are filling a meaningful gap that existed previously.

Importantly, faculty from DEB also will be able to contribute directly to the existing undergraduate and professional degree programs in public health (especially the M.P.H. emphasis in epidemiology, the B.S. in Public Health Sciences, and the M.P.H. emphasis in biostatistics that is currently administered by the DPHDP and the Department of Statistics). DEB faculty will work closely with DPHDP and the Department of Statistics to ensure that the M.P.H. emphasis in biostatistics continues to meet accreditation standards and offers a rigorous curriculum. As mentioned above, there is potential for positive impact by reducing redundancy in course offerings across departments. For example, the chair of the DEB will be able to partner with other department chairs and the dean to establish a uniform curriculum plan. The by-
product of these efficiencies likely will be more course offerings, reduction of instructional costs (e.g., fewer instructors or larger class sizes for core courses across departments), more robust curriculum, increased financial support, and a stronger research experience for students, especially those at the graduate level. Using this as a model going forward, course offerings in the new school will complement rather than duplicate activities across campus and can enhance existing activities that have not been able to reach a critical mass.

**PROFILE OF THE PROPOSED DEPARTMENT**

*Administrative structure and faculty membership*

The administrative structure and reporting for the DEB after the transfer are depicted in Appendix D (see Appendix D: Administrative Structure of the DEB). The DEB will reside under the leadership of the director and founding dean for the future SPPH. The chair of the DEB will report to the director and founding dean, who has direct-line reporting to the provost and executive vice chancellor (P/EVC) and dotted-line reporting to the vice chancellor for health affairs.

Core and affiliated DEB faculty include those listed in Table 1 and Appendix E (see Appendix E: Faculty Affiliated with the DEB), respectively. Affiliated faculty will continue to have joint without salary (or analogous) appointments in the department after it is transferred.

Currently, faculty in the SOM have fiscal-year (11-month) appointments, while faculty in the PPH have academic-year (nine-month) appointments. Current individual faculty in DEB will have the option to retain their 11-month appointment and remain on the SOM Health Sciences Compensation Plan (HSCP), or move off of the HSCP and participate in the Negotiated Salary Trial Program (NSTP). If they choose to continue in the HSCP, they will have dual appointments (51%/49%) in the SOM and PPH. Each member of the faculty will be presented with options regarding her/his compensation plan and appointment term. The director/founding dean and all central administrators have committed to the premise that no harm will come to faculty as a result of the department transfer.

The DE is currently following bylaws established for the SOM; but, upon the first month of transfer to the PPH, the faculty will adopt departmental bylaws including consideration of department-level committees (i.e., department curriculum committee). School-wide bylaws will be included in the future SPPH pre-proposal.

Upon approval of the department transfer, the PPH will submit a substantive change request to CEPH and seek certification of the additional epidemiology graduate degrees (M.S. and Ph.D.) under the program’s current accreditation. It is important to note that CEPH accreditation requires that, for the graduate programs offered, there be a threshold of Senate faculty FTE with
expertise to cover all degrees and concentrations. As indicated above, a gap in biostatistics expertise exists and will require attention as we move to form a school of public health.

**Research**

The faculty at DEB are productive researchers whose work strengthens the knowledge base for developing, implementing, evaluating, and disseminating information important to our community, to prevent and reduce disease incidence, morbidity, and mortality. Currently, our research focuses on addressing the interplay of genetic, other molecular, environmental, social, nutritional, and lifestyle factors on human health and disease, with an emphasis on diseases such as aging, cardiovascular disease, cancers, dementia, diabetes, liver and blood diseases, and obesity. The faculty are experts in their individual areas of emphasis and together cover the core and emerging areas critical to a top-ranked department of epidemiology. They have received numerous awards and honors for their outstanding achievements and, as such, are sought by investigators nationwide. As a result, DEB faculty engage in multi-center research with colleagues from around the country. They also engage in cross-disciplinary research within UCI and participate or collaborate with other campus-wide research centers such as the Institute for Interdisciplinary Salivary Bioscience Research (IISBR), and the Institute for Memory Impairments and Neurological Disorders (UCI MIND) and the CFCCC. The productivity and expertise of the faculty is clearly demonstrated by their success in obtaining extra-mural funding for their research, with over $18.8M in the last five years. Appendix F: Active Extramural Research Grants of Proposed Core Faculty lists current active grant funding. All DEB faculty have active research programs. It is particularly noteworthy that DEB, with the smallest number of faculty, has the highest level of extramural research funding of the four proposed departments in the future school. This level of research funding and expertise will be critical for growing a strong doctoral program and in propelling the department and new school of public health into nationally top-ranked positions. Additional details about faculty members’ research and other accomplishments are available in their Biosketches (See Appendix C: Biosketches of Core Faculty Members) and in the research summaries that follow.

**Genomic and Molecular Epidemiology**

Department Chair Karen Edwards: Genetic epidemiology of cardio-metabolic, neurologic diseases and cancer. Edwards’ work focuses on evaluating the interplay between genetic and environmental, including dietary, factors. She uses a range of methods and study designs in her genetic epidemiologic work (family and twin studies, case-control and cohort studies, meta-analysis) that includes diverse populations. She also uses mixed methods approaches that include key informant interviews, focus groups, and participant surveys in her other (NIH funded research. Results from this study highlight the need for strong policies governing genomic information and applications that are acceptable to participants, researchers and IRBs. Her work
demonstrates that policies must balance protecting human subjects and facilitating research while ensuring that health disparities are not worsened by a focus on genomic information. Edwards is a pioneer in the field of public health genomics, which focuses on understanding the ethical, legal and social implications of genomic research in populations. She has worked at local, state and federal levels, served on several NIH and Centers for Disease Control and Prevention (CDC) working groups and is a leading expert in this field. She has an extensive body of work focused on understanding the knowledge, perceptions and attitudes of genomic research and their implications in general and more specifically in individuals and families with cancer. The American Society of Human Genetics (ASHG) recognized Edwards’ achievements in the field where she was one of a handful of investigators featured at the national meeting in 2018. The ASHG is the premier national and global professional society for genomic research. Finally, she holds two significant roles in the CFCCC: 1) Co-leader for the cancer control program, and 2) Associate Director for Population Sciences within the Cancer Center. She collaborates with a number of colleagues in the department, the PPH, schools within the SHISCOHS, the CFCCC and investigators across

Assistant Professor Trina Norden-Krichmar: Mechanisms underlying the causes of human diseases through the analysis of genomic, transcriptomic, and environmental data. The majority of her research involves studies of genetic factors in human disease in various ethnicities, including underserved and/or underrepresented populations. Her expertise is in bioinformatics-influenced fields, such as translational medical genomics, functional genomics, and environmental genomics. Her main areas of research include: 1) Gene expression analysis and determination of gene regulation mechanisms using RNA data. 2) Genetic factors in human disease using DNA data. 3) Metagenomics and metatranscriptomics. This research relies heavily on computational methods to analyze, integrate and interpret the various sources of biological data for the study of medical and environmental applications of genomics. Her research has been applied to many human diseases including addiction, alcohol-induced liver diseases, obesity, longevity and cancer. She collaborates with a number of colleagues in the department, the SOM, SPPS and the CFCCC and investigators throughout the country on her NIH funded work.

Associate Professor in Residence Hannah Park: Cancer epidemiology, environmental exposures, epigenetics, biomarkers. In her latest funded study, she is working to identify DNA methylation markers for pesticide exposure and eventual assessment of these markers in breast cancer. Development of DNA methylation markers for pesticides and other exposures will enable both efficient prospective studies for their role in cancer and, importantly, analyses of previously established cohorts that have archived DNA and years of outcomes data already available. Park combines her experience in molecular biology and epigenetics focuses to understand the role of these factors in breast and other cancers. She has been involved in a number of large collaborative projects across the UC system, including serving as a co-investigator for the NIH All of Us Research Program, co-investigator for the California Teachers Study, as the UCI site
Director for the Athena Breast Health Network, and as a co-investigator for the UC-wide WISDOM study. The WISDOM study is a revolutionary research program funded by the Patient-Centered Outcomes Research Institute (PCORI) with the goal to test the safety and efficacy of personalized breast screening vs. annual screening. Park works with a number of colleagues within the department, the SOM and the CFCCC and multiple outside institutions.

Biostatistics and Chronic Disease Epidemiology

Associate Professor Luohua Jiang: Biostatistics, epidemiology, and diabetes research. In particular, she has been working in the field of translating evidence-based interventions into large-scale applications for chronic diseases of public health interest. The major areas of her NIH funded research focus are: 1) population studies and health disparities in minorities, 2) prevention, behavioral and psychological studies, and 3) translational interventions. She is the only faculty member in the proposed school who is a doctoral prepared biostatistician. As a biostatistician, her primary research interest is to apply and develop appropriate statistical models to decipher complicated and massive data collected to solve challenging public health problems. Her work in translating evidence-based diabetes prevention and management interventions into large-scale public health practice applications for Native Americans is particularly impressive. Her expertise in this area is well recognized and she provides statistical leadership and/or consulting to multiple federally funded studies focusing on reducing health disparities by implementing and evaluating community-based chronic disease interventions designed for minority populations. She also has formal medical training, which uniquely positions her to address many challenging questions that bear on reducing and eliminating health disparities and improving population health. She collaborates with a number of colleagues within the department, the PPH, SOM and the CFCCC and investigators throughout the country.

Director and founding dean Bernadette Boden-Albala: Epidemiology, social epidemiology, neurology and stroke, and community intervention. Boden-Albala has long been considered a leader in the field of vascular neurology, particularly in health disparities and community intervention programs. Her research focuses on the relationship between ethnicity, disease, and outcomes, in support of identifying and remedying disparities in stroke and interventions amongst underrepresented social groups. She has a prominent record of accomplishment of research in this area with over 150 original publications since 1995. Her early work describes social drivers of health disparities, where she elaborated on the essential role of race/ethnicity and social network (family, friendship, community) on risk/recurrence of stroke. She is adept in integrating theory and methodology of social epidemiology into clinical practice and community engaged studies. For example, she proposed new practical theory, the “Task Specific Theory” which may instruct further community intervention programs. Inspired by the influential work on social networks, she moved from observational research to seek real world solutions. She initiated the SWIFT trial, which was an innovative approach to delivering educational
interventions to improve rapid treatment of recurrent strokes. The trial fielded an intensive educational intervention to build the capacity of stroke survivors to respond quickly in the event of a recurrent stroke. She collaborates with investigators throughout the country and around the world.

**Cancer**

Professor Sunmin Lee: Reducing health disparities among minority and immigrant populations. As a trained social epidemiologist, Lee has strong background and skills for quantitative and qualitative studies and mixed-methods studies. Lee is currently conducting an NIH funded clinical trial to improve early detection of colorectal cancer among understudied Asian populations and is using a shared decision making model. It is one of the first studies to use a shared decision making model at a primary care setting to promote cancer screening among Asian Americans. Based on the findings from the study, Lee plans to design and implement a clinical trial to promote early detection of multiple types of cancers among Asian Americans residing in Orange County. Dr. Lee also plays a significant role in the CFCCC, where she serves as co-leader for the cancer control program.

Assistant Professor in Residence Feng Liu-Smith: Skin Melanoma: gender difference in incidence and outcome; mechanism of sex hormones in melanoma development; pre-clinical drug development and therapeutic drug resistance. Main Contributions: The gender difference in melanoma incidence and outcome is not only caused by behavior differences but also caused by intrinsic genetic differences in men and women, which have not been well defined. Her expertise in molecular biology is used as a lens to understand these factors in populations. For example, she was the recipient of an NIH career development (K) award to study interactions between UV radiation and NADPH Oxidase gene family in melanoma. She has extramural funding for several other melanoma related projects. Her focus on understanding mechanisms of melanoma development combined with her training in epidemiology provides important new perspectives for prevention and translation from the bench to populations.

Professor Sora Tanjasiri: Community-based interventions to increase cancer prevention, early detection, and survivorship. She uses community-based participatory research (CBPR) approaches that include key informant interviews, focus group discussions, and participant surveys. Main Contributions: Designing and evaluating the effectiveness of lay health educator and navigator models to promote healthy eating, physical activity, smoking cessation and cancer screenings among ethnic/racial populations, especially Asian Americans and Pacific Islanders. Tanjasiri’s research focuses on community health promotion to reduce cancer health disparities among diverse populations, particularly Asian Americans and Pacific Islanders. She has served as PI or Co-PI on over two dozen extramurally funded cancer-related studies, including as multiple PI of the Bristol-Myers Squibb Foundation-funded project to optimize access to cancer care for Asian Americans. Tanjasiri serves as advisor to numerous non-profit organizations and
serves a critical role as the Associate Director of Cancer Health Disparities and Community Engagement of the CFCCC. She collaborates with colleagues within the department, the PPH, SOM, the CFCCC and stakeholders in Orange County and beyond.

**Nutritional, Lifestyle and Environmental Factors**

Assistant Professor Andrew Odegaard: Etiology and epidemiology of obesity, type 2 diabetes, and cardiovascular disease. He has focused on diet and lifestyle factors, throughout the life course of individuals, with the ultimate goal of contributing to and informing efforts related to the prevention and control of these diseases. He has also pursued research that addresses the complexity of these diseases, especially regarding the topic of obesity. For example, Odegaard is the PI for a five year multi-site randomized, dietary trial to evaluate the effect of artificially sweetened beverages on diabetes control in adults with type 2 diabetes. In a second extramurally funded project also focusing on the role of diet beverage intake, he is examining the relationship between diet beverage intake and micro and macrovascular outcomes also in people with diabetes. In this project, Odegaard and his team will examine an individual’s diet beverage habits in the context of their overall diet with incident microvascular outcomes (e.g. CKD), and macrovascular outcomes (CVD) using data from 4,400+ participants participating in five longitudinal cohort studies (ARIC, MESA, Jackson Heart Study, Framingham Offspring Study, Cardiovascular Health Study) across the country. In addition to research in the cardiometabolic realm, his background and training in epidemiology, nutrition and nutritional epidemiology has led him to examine the relationship between diet, lifestyle, and anthropometric factors with different cancers, Alzheimer’s disease and cognitive decline. In conducting this NIH funded research, Odegaard has employed observational and experimental study designs that aim to incorporate the most cutting edge ideas, technology and methods. Odegaard has a substantial extramurally funded research program and collaborates on multiple studies across UCI and with investigators from around the country.

Professor Rufus Edwards: Assessment of human exposures to air pollution emissions and subsequent health effects. These include populations in the industrialized world exposed to combustion byproducts from transportation, wildfires and tobacco smoke, and populations in less industrialized nations exposed to emissions from household solid fuel use for cooking and space heating. Assessment of human exposures plays a critical role in relating environmental concentrations, on which most current environmental epidemiology is based, to expression of disease within human populations. Briefly, his work is global in nature and he continues to focus on health impacts experienced by some of the most underserved and disadvantaged populations in the world. His work is funded by EPA, NSF and NIH and he collaborates with faculty members across multiple departments and schools and collaborates on multiple studies and with investigators and organizations from around the world.
As indicated above, faculty in the DEB collaborate with multiple schools, departments, and units across campus to harness research addressing the university’s clinical mission, as well as that of the SHSCOHS. Finally, the department makes substantial contributions to the overall research mission of the CFCCC by strengthening the knowledge base for developing, implementing, evaluating and disseminating information important to our community to prevent and reduce cancer incidence, mortality and morbidity. As noted above, almost all of the faculty members in the DEB contribute to the success of the CFCCC, where we work with colleagues across campus to examine genomic and environmental influences on cancer; develop innovative approaches to improve quality of life in children with cancer; test novel biobehavioral interventions in cancer survivors; conduct clinical trials to improve outcomes and prevent recurrence; and work to reduce disparities that impact those living in our community and beyond.

The joint FHLRE and other recruitments with the CFCCC currently are active and have generated interest from exceptional prospects, one of which will join UC1 in the 2020 academic year, with the others pending. These additions will significantly expand the research enterprise of the department, college, and CFCCC. Faculty in DEB will remain active mentors for SOM students, fellows, and M.D./Ph.D. scholars. Expansion of the program in epidemiology will intersect with integrative medicine and continue to support the efforts the SOM, SHSCOHS and health enterprise, the PPH, and the mission of the future SPPH.

Appendix F (see Appendix F: Active Extramural Research Grants of Proposed Core Faculty) lists DEB’s active grants and principal investigators, the direct costs allocated for each grant along with expected allocations for the remainder of each project. The department has collectively utilized $5.5M of active funding, with $3.4M for current awards projected in the coming years. As of September, 2019, DEB faculty have submitted 48 proposals which are pending review (see Appendix G: Proposals Submitted and Pending), with cumulative awards valued at nearly $49M. This level of research activity is on par with many larger and more established departments of epidemiology, including those at other UC campuses.

**Teaching**

The DEB will contribute to the future SPPH by providing oversight for the curriculum and disciplinary expertise in the area of epidemiology and biostatistics. Due to their interdisciplinary nature, the B.A. in Public Health Policy and the B.S. in Public Health Science will reside and be administered at the school level, but faculty from all departments under the future school will contribute to teaching and pedagogy for all instructional activities. The Master of Public Health (M.P.H.) is a professional degree and will also reside and be administered at the school level, however faculty content expertise will remain at the department level. Specifically, the DEB will provide guidance on curricular and programmatic activities for the M.P.H. emphasis in
Epidemiology and the M.P.H. emphasis in Biostatistics, but the M.S. degree in Epidemiology and the Ph.D. degree in Epidemiology will continue to reside in the department.

A new teaching workload policy is in development. The preliminary plan is for teaching workloads to be governed by a program/school-wide framework that will be applied to all faculty and modeled after the teaching workload policy of the School of Biological Sciences. The policy is under development with the input of faculty representatives from each of the four departments. The draft policy will be submitted with the future SPPH pre-proposal. Before implementation the final policy will be approved by vote of all eligible voting faculty. Once approved, the DEB chair will be responsible for implementing the policy at the departmental level and will be responsible for making teaching assignments for DEB faculty in service of the degrees under the jurisdiction of the department and in accordance with Academic Senate Regulation 750 and Appendix A to Academic Policy Manual - 245.

The campus recognizes the outstanding teaching performance and reputation for excellence of DEB faculty. For example, Professor Karen Edwards received the esteemed UCI SOM Excellence in Graduate Student Teaching Award in 2015. Professors Luohua Jiang and Trina Norden-Krichmar both received this honor in 2018. The department continues to work to refine the curriculum and to value high quality instruction and mentoring.

The DEB currently offers graduate instruction leading to the M.S. and Ph.D. degrees in epidemiology. The M.S. in Epidemiology is a thesis-based degree and graduates typically go on to further education or careers in research. The Ph.D. program will train well-qualified students to be independent investigators and contributors to epidemiology or related fields. Graduates typically go on to post-doctoral positions, faculty positions, or positions in government or industry (see Appendix H: Epidemiology Program Graduates). The coursework and structure of the program will not result in substantial changes after transfer of the department, but will allow for greater teaching and mentoring opportunities across the school, as well as expanded opportunities for faculty in the other departments of the proposed school of public health, to serve on thesis and advancement committees for students in the DEB. The transfer of the graduate programs from the SOM to the PPH will impact the college, as program support previously provided from the SOM will be expected from the SHSCOHS at similar levels until a stable and predictable support model is developed by the future school. The department plans to increase Ph.D. enrollments until reaching approximately 26 Ph.D. students and 10 master’s-level students, within six years or until a strategic plan for graduate student growth is determined at a school level.

Importantly, the existence of the professional M.P.H. degree with an emphasis in epidemiology, currently offered by the PPH, as well as the undergraduate degree programs in public health (B.S. in Public Health Sciences and B.A. in Public Health Policy), provides the faculty with
significant opportunities to expand graduate-level programming and meet these new targets for both master’s- and Ph.D.-level students in epidemiology. Table 2 presents DEB’s projections regarding growth in the epidemiology and biostatistics emphases of the M.P.H.

Table 2: M.P.H. Enrollment Projections by Academic Year

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<tr>
<td>Epidemiology and Biostatistics (52.5%)</td>
<td>25</td>
<td>48</td>
<td>60</td>
<td>79</td>
<td>105</td>
<td>131</td>
<td>157</td>
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<tr>
<td>Environmental Health (8%)</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td>16</td>
<td>20</td>
<td>24</td>
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<tr>
<td>Sociocultural Diversity and Health (37.5%)</td>
<td>18</td>
<td>34</td>
<td>44</td>
<td>57</td>
<td>75</td>
<td>94</td>
<td>113</td>
</tr>
<tr>
<td>Population Health and Disease Prevention- MPH/MD and MPH/JD (2%)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Total student enrollment</td>
<td>48</td>
<td>90</td>
<td>115</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td>300</td>
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The faculty also anticipates developing a new 4+1 program in which UCI undergraduates will have the option to continue their education at UCI and obtain an M.S. (or M.P.H.) in Epidemiology in one year (4 years undergraduate public health or related degree followed by 1 year in a Master’s Degree in Epidemiology). Faculty and administrators also are considering a similar initiative (1+5 plan) to attract the most talented UCI undergraduates for admission directly into the Ph.D. program in Epidemiology contingent upon completing an M.S. in Epidemiology in their first year of the program (1 year M.S. degree + 5 years Ph.D.). Expansion of DEB degree offerings to include the M.P.H. emphasis in epidemiology and also possibly the M.P.H. emphasis in biostatistics together with the M.S. and Ph.D. would provide us with the opportunity to address the need for training individuals for both research and practice-oriented careers in epidemiology and biostatistics. Oversight for the curriculum and disciplinary expertise for the M.P.H. emphases in epidemiology and biostatistics by DEB faculty is viewed as positive and necessary to ensure we continue to meet accreditation standards and to provide rigorous training in this area. It will raise the profile of epidemiology and biostatistics at UCI and will provide additional instructors, mentors and research opportunities for graduate students interested in these areas. Similarly, undergraduate students enrolled in the B.A. and B.S. degrees take a number of required and elective courses in epidemiology and biostatistics and will benefit by access to additional doctoral-trained faculty in these areas who can serve as mentors and provide research opportunities.

The DEB is doing well with regard to diversity in the student body, however, faculty plan to use these new mechanisms along with other strategies, such as holistic review of applications to our graduate degree programs to continue recruiting a diverse student body. Faculty growth will support this projected growth in graduate students. Currently, the headcount includes seven Ph.D. and seven M.S. students who will continue to be mentored and supported by faculty following the transfer of the department. Initially, the M.S. and Ph.D. programs in epidemiology
will remain unchanged (see Appendix I: Epidemiology Graduate Program Requirements and Courses). However, upon transfer, the faculty will work on aligning courses across the four departments and are currently discussing and planning for updates to the curriculum to satisfy requirements for CEPH accreditation, including development of new courses to fill existing gaps in order to strengthen the core graduate and undergraduate curriculum in epidemiology and biostatistics. This will be required as PPH seeks accreditation as a school of public health. Necessary changes will require coordination among all four departments in the proposed school.

Transfer of the department and development of the proposed school will allow the expansion of course and degree offerings, particularly those that build critical skills for the workforce or fill gaps in new and emerging areas. At the direction of the founding dean for the school of public health, the DEB chair will maintain authority over course offerings, teaching load and assignments amongst DEB faculty. Under the PPH, the DEB will continue to lead the effort to redesign the epidemiology and biostatistics curriculum and to collaborate with DPHDP, DHSB, and DEOH to streamline courses that reduce redundancies between the four departments. The faculty anticipate developing new graduate-level courses and, with the transfer, will begin working to develop new undergraduate course offerings to fill critical gaps in the curriculum. Development of new self-sustaining programs and other revenue generating concepts will be a priority in the coming years as the number of faculty in the department grows.

Specifically, in consultation of the new founding dean and in line with the strategic plan of the future SPPH, the department plans to grow the degree programs in a careful and collaborative manner, which includes expanding the master’s and Ph.D. programs over the next five years. This will include not only increasing the number of students, but also the quality of students offered admission. The growth of the graduate program is based on the unit’s current faculty compliment and assumes the two FTE leaving the department will be replaced under the school pre-proposal process. As the department works to align curriculum and course offerings, it is likely that the department will be able to expand course offerings to address key areas such as cancer epidemiology, especially with the planned growth through the FHLRE hires and other active recruitments in DEB that are in process. Faculty will continue to support graduate students through grants, contracts, fellowships, and TA positions; but growth in the faculty FTE beyond the FHLRE hires will allow the unit to accelerate graduate program expansion beyond contemporary projections. There also will be opportunities to expand course offerings in epidemiology suited for undergraduate students as part of the structure under the PPH. Finally, it is critically important that faculty begin working to develop additional sources to support doctoral students, and a particularly important need is for an NIH T32 Training Grant. The competitiveness of extramurally funded research proposals from DEB faculty and their colleagues across the PPH, and later the school of public health, will be enhanced under the proposed new structure. Given the outstanding research strength and success of the DEB, faculty
in this department will be a logical choice to help lead the effort to obtain a training grant and to make substantial contributions to the extramurally funded research portfolio of the school.

**REQUIRED RESOURCES**

**Revenues/Resource Allocations**

The base/core budget (see Appendix J: Department of Epidemiology and Biostatistics Budget) includes permanent allocations from the campus (19900) for faculty salaries and fringe benefits plus indirect cost recovery (overhead return) from faculty with robust contracts and grants portfolios. Vacated FTE will revert back to the director and founding dean to reallocate based on unit needs. All faculty in the DEB are expected to compete for external grants to support their scholarly activity and their teaching load reflects this expectation. The budget assumes transfer of the funded faculty FTEs and fringe benefits from the SOM using campus-proposed composite benefit rates at current merit levels for those epidemiology/SOM faculty represented in Table 1.

The PPH and future school will provide unit income in the form of teaching assistantships. The Graduate Division will provide support for the Ph.D. program through the block model allocation formula and flexible funding support. During the transition to a school, the SHSCOHS will provide the Epidemiology Ph.D. program tuition and stipend support for up to three first-year Ph.D. students, of which two can be non-residents, at levels previously provided by the SOM, such that a predictable block model allocation and steady state is attained. The SHSCOHS will continue to provide funding similar to SOM Biomedical Education Assistance Program (BEAP) funding to faculty in DEB who are supporting doctoral students on grants as GSRs; this funding goes to the department to support Ph.D. students. (see Appendix K: Letter of Support for resources from SHSCOHS and SOM)

All financial resources currently under the operational purview of the current DE including faculty set-up discretionary, gifts/endowments, sales and service income, clinical income, research funds, operational and set-up reserves will transfer with the department to the PPH (see Appendix K: Letter of Support for resources from SHSCOHS and SOM)

The department is in a growth phase and has successfully competed for two new faculty positions in cancer epidemiology under the Faculty Hiring for Leveraged Research Excellence (FHLRE) program as part of the DEB’s important role in leading the population science component of the Chao Family Comprehensive Cancer Center (CFCCC).

**Faculty FTE**

This proposal does not request central resources for faculty FTEs or for faculty salaries beyond
The proposed faculty in the department includes nine faculty members on 11-month appointments participating in the HSCP and one faculty member on a nine-month appointment participating in the NSTP whose FTE officially resides in the DPHDP. As part of the transfer process, faculty from other departments may elect to move to DEB. Clinical faculty who have 11-month appointments may choose to remain on the HSCP through a dual appointment (51%/49%) in the SOM and PPH. Of the nine DEB faculty on 11-month on-scale appointments, we anticipate that all may potentially choose to remain on 11-month appointments and participate in the NSTP.

As noted above, teaching workloads will be governed by a new program/school-wide framework and implemented by the departmental chair who will continue to be responsible for making teaching assignments for DEB faculty in service of the degrees and in accordance with Academic Senate Regulation 750 and Appendix A to Academic Policy Manual - 245.

The budget proposal reflects faculty FTE allocated to DEB through FHLRE and recruitments with the CFCCC. The recruitments are active as of this writing and the chair anticipates arrival of these new recruitments in 2020. These additional FTEs are critical for the success of the Cancer Center renewal and will help reach a critical mass of faculty with doctoral training in biostatistics and cancer epidemiology who will be able to expand the research and teaching mission as the PPH pursues CEPH accreditation as a school of public health. The DEB will continue to pursue opportunities to expand the faculty and to recruit outstanding and diverse faculty in key areas. We intend to submit proposals for central hiring initiatives to expand the department by recruiting outstanding mid-career and senior epidemiology and biostatistics researchers and educators.

ICR will continue to augment funding for departmental operations, administrative costs associated with research activities in the unit, faculty incentives to submit research proposals, and growth of faculty and graduate students.

The DEB does not anticipate funding PPH undergraduate instructional costs (lecturers, unit 18 appointments, In-Residence Faculty teaching expectations, and related student services), which are expected to be funded at the school level. However, upon transfer to the PPH, the DEB will contribute to undergraduate teaching and will benefit from participation in this activity. Importantly, doctoral students in DEB will now have the ability to serve as TAs for undergraduate courses in the PPH. In addition, it is anticipated that two current M.P.H. emphases, epidemiology and possibly biostatistics, will transfer responsibility of faculty content expertise from the DPHDP to the DEB. Thus, the DEB will be responsible for the Ph.D. and M.S. in Epidemiology, and possibly two M.P.H. emphases, one in epidemiology and one in biostatistics that will require additional faculty to administer degrees in these programs.
Administrative support

DE currently supports two full-time staff (management services officer and senior financial analyst), along with additional research staff and academics who manage daily operations of the unit and assist in supporting the graduate program. These salaries are covered using unrestricted funds generated from salary savings (credit-to-the-pool) and ICR. These fund sources may not be sustainable over time as reserves diminish or if federal funding decreases. Furthermore, as faculty transition from the HSCP to the campus NSTP, we do not expect to see salary savings at the levels previously generated on the HSCP. Research personnel and in-residence faculty are generally funded from contacts and grants, yet may receive temporary support from departmental funds as research awards expire and funds permit, which also affects the department’s carry-forward balances.

Of these two full-time staff, the department supports one senior finance analyst from salary savings and ICR. The senior analyst manages all pre- and post-award administration for the department faculty. Due to the likely increase in volume and workload with planned growth of departmental faculty and students and corresponding workload, the chair anticipates the need for additional staff to ensure departmental functioning remains adequate. Specifically, although some administrative support can be shared across departments in the soon-to-be proposed SPPH, there likely will be a need for additional pre- and post-award contract and grant assistance, and there is a need for purchasing and administrative support for DEB faculty. The DEB has been either relying on temporary services or funding a partial FTE of staff from other SOM departments for purchasing and reimbursement. The DEB budget includes central funding for a senior financial analyst (1.0 FTE).

Additionally, the Ph.D. and M.S. degrees comprising the graduate program in DEB have been receiving some administrative support from the SOM. This limited support will need to be supported once the department transfers to PPH; therefore, the DEB budget includes campus support for a graduate advisor (0.5 FTE) who will provide guidance to students and coordinate programmatic activities associated with the M.S. and Ph.D. degrees, and M.P.H emphases in epidemiology and biostatistics.

Additionally, the DEB budget includes permanent funding provided by the P/EVC Office to establish support for departmental operations (supplies, telephones, colloquia, equipment, travel). (See Appendix A: Resource Commitments from P/EVC.)
**Graduate Program Support**

As noted above, the DEB plans to expand the graduate program extensively in the coming years, steadily increasing enrollment of Ph.D. and master’s students to 26 and 10, respectively, within six years, while also contributing to the M.P.H. emphases in epidemiology and biostatistics as the cohort grows to 300 in six years. The budget projected Graduate Division support for the students in the Ph.D. in Epidemiology via the current block allocation and flexible funding model.

The department currently receives funds from the SOM to support the resident tuition for up to three first-year Ph.D. students ( ). As noted above, the SHSCOHS will continue to provide support for three Ph.D. students per year during transition to a school of public health through FY22, at which time the block allocation funding reaches a predictable level of support (Appendix K: Letter of Support – Resource Commitments from SHSCOHS).

In years 2-5, Ph.D. students are supported with a combination of grants and fellowships, departmental support, and the occasional TA position usually through the School of Biological Sciences. TA slots will be allocated to all doctoral programs within the future SPPH, including the epidemiology program, according to a distribution model that will be developed and agreed upon by the graduate directors and school leadership. Growth in the Ph.D. program is expected to yield the school additional TA and block resources from the campus.

**Facilities**

Current space for faculty, staff, research, and instruction, in addition to recent space commitments on the second and third floor of AIRB are adequate for current departmental needs, including the recruitment of two new senior faculty members with established research programs (FHLRE hires) with anticipated hire dates of winter 2020. As faculty and student growth is realized, additional space will be required. DEB and PPH administrators will continue to work with the SHSCOHS on plans for growth.
APPENDICES

Appendix A: Letters of Support Resources: Provost/EVC, SHSCOHS and SOM
Appendix B: Letters of Support: Faculty
Appendix C: Biosketches of Core Faculty Members
Appendix D: Administrative Structure of the DEB
Appendix E: Faculty Affiliated with the DEB
Appendix F: Active Extramural Research Grants of Proposed Core Faculty
Appendix G: Proposals Submitted and Pending
Appendix H: Epidemiology Program Graduates
Appendix I: Epidemiology Graduate Program Requirements and Courses
Appendix J: Department of Epidemiology and Biostatistics Budget