



Big Data Health Science Center

University of South Carolina

Request for Proposals for Pilot Projects

Overview

University of South Carolina Big Data Health Science Center (BDHSC) is seeking proposals for the conduct and uptake of pilot research projects focusing on the Big Data analytics in addressing critical issues related to health behavior, healthcare, and population health.

1. Timeline

- Announcement Release Date: January 10, 2022
- Application Receipt Date: April 15, 2022 by 5 p.m.
- Notification of Outcome: All applicants will receive notification by June 30, 2022
- Earliest Project Start Date: August 16, 2022

2. Purpose

The purpose of this RFP is to invite pilot project applications on the utilization of Big Data analytics in health-related research. The primary goals of this pilot project program will be to promote interdisciplinary collaboration in Big Data health science research and support meritorious applications that can leverage existing data to address critical issues related to health behavior, clinical care, healthcare delivery, and population health. Interdisciplinary research that involves linking and integrating data sets from multiple sources are particularly encouraged. Existing data may include, but are not limited to electronic health records data, social media data, geospatial data, genomic data, or bio-nanomaterial data.

3. Background

Radical transformation is required in the US healthcare system to promote more effective and affordable approaches to personalized medicine and population health. Healthcare costs have outgrown the overall economy for several decades, yet health remains suboptimal, and the number of people with multiple chronic conditions continues to escalate. Life expectancy in the US has declined for three years in a row compared to other developed countries. The NIH-Wide Strategic Plan (2016-2020) asserts that our nation and the world stand at a unique moment of opportunity in biomedical research, and data science is an integral contributor. The generation of massive, rich data sets in healthcare (e.g., electronic health records, genomic data) and the emergence of advanced information, communication, and computational technologies -- collectively referred to as "Big Data analytics" -- offer an invaluable opportunity to improve the quality and efficiency of healthcare.

NIH issued its first Strategic Plan for Data Science in May 2018 and suggested that the Big Data approach

will advance uniquely our understanding of disease prevention, identification, control, treatment, and delivery in the coming decades and will be key to reducing national and global health disparities. However, several critical gaps exist in utilizing such an approach, including the growing costs of managing data, “siloes” data resources with limited integration and interconnectivity, and an underutilization of Big Data approaches for clinical decision-making and research. A key reason for these gaps is a lack of data-science talent and limited leadership in the development, implementation, and evaluation of Big Data health analytics. The shortage of data scientists is projected to increase from 100,000 in 2012 to 240,000 by 2020. In response to this talent gap, academic institutions across the US, including several Ivy league universities and our aspirant peer institutions, have created data-science programs housed either in a Business or Engineering School, but few, if any, are currently focused on healthcare analytics.

With the support of UofSC excellence Initiative, the UofSC Big Data Health Science Center (BDHSC) aims to transform UofSC into a global leader in the focused field of Big Data health science analytics. To accomplish this mission, BDHSC has developed program activities around the following five strategic objectives: (1) Infrastructural and capacity building; (2) Professional development; (3) Community Engagement; (4) Academic training; and (5) Methodological advances. This pilot project program will serve the BDHSC mission by supporting and promoting interdisciplinary Big Data Health-related research across UofSC system. A total of 20 pilot projects were funded in 2020 and 2021 through a two-layer review process. The funded pilot projects can be found at BDHSC website: <https://bigdata.sc.edu/>.

4. Research Objectives and Scope

The purpose of the pilot project program is to stimulate and promote interdisciplinary research in Big Data health sciences by supporting meritorious applications that utilize existing data sources in order to address critical issues related to health behavior, patient care, healthcare delivery, and population health. The program will support research that uses a variety of data sources, including electronic health records data, social media data, geospatial data, genomic data, bio-nanomaterial data, and other publicly available or acquirable data. The issues to be addressed by the pilot projects can also include a variety of health outcomes at individual, community, health system or population levels.

5. Eligibility

Eligible applicants include all full-time faculty of the University of South Carolina system. Interdisciplinary collaboration across departments/schools/colleges is strongly encouraged. Each faculty can only serve as a lead PI on one application but can participate as Co-PI or Co-investigator on other applications in response to this request. BDHSC faculty are eligible to apply but are strongly encouraged to team up with non-BDHSC faculty.

BDHSC will accept resubmission of unfunded proposals that were submitted in 2020 or 2021 if the original proposal was substantially revised. A one-page introduction to resubmission is required for the resubmission.

BDHSC will not accept duplicate or highly overlapping applications that are currently funded or under review by extramural or intramural programs (e.g., UofSC ASPIRE).

This initiative will not support applications that propose to collect new data or develop a new data repository. Applications that propose only methodological or technological development, instrument

purchase, analysis of data from a single behavioral or clinical trial or parallel analyses of separate trials are considered non-responsive to this request.

6. Funds Specifications

BDHSC anticipates funding **8 to 10** applications in 2022 but the final number of awards depends on the number of meritorious applications, scientific programmatic interest, and availability of funds. Each application can request funds around \$30,000. An applicant may request a project period of 12 months beginning August 16, 2022. Under certain conditions and with justification, a longer project duration may be requested but only 12-month budget is allowed by each application.

7. Budget Information

Budgets will be presented in general categories and include detailed justification. Although BDHSC intends to fund projects as closely as possible to the requested amount, it reserves the right to alter the amount depending on the number of proposals received and funds available.

Allowable Costs

- Stipends and fringe benefits for undergraduate and graduate students, post-doctoral fellows, and technicians
- Up to one month of salary and fringe may be included for the PI or UofSC-based Co-I if used directly to work on this project; **Salary support can be divided among investigators but the total support cannot be more than one month.**
- Costs of data acquisition and integration
- Data management and analytic software
- Technical consultancy (**no more than 10% of the total budget unless justified otherwise**)
- Project supplies
- Travel *essential* to conduct the project or present the research findings; justification must be provided
- Graduate student tuition and insurance

Unallowable Costs

- Costs in connection with degree requirements for faculty
- Administrative costs (secretary, clerk, custodian)
- Personal protective equipment
- Food (for use in research/as subject incentives)
- Professional dues
- Undergraduate student tuition
- Indirect costs

8. Application Procedure

1. Develop a proposal narrative (up to **six pages**) that provides:
 - A brief discussion of the background and significance of the proposed idea, including its relation to the present state of knowledge in the field.

- A detailed narrative of the project that includes the objectives, significance of the research, the research task and expected accomplishments of the project, the specific outcomes/deliverables of the project, a discussion of potential future external funding sources, and a timeline.
 - A maximum of **one** page should be devoted to discussing how the research that you complete will promote career development, expand research into a new area, and/or provide preliminary data to be competitive for extramural funding.
 - Proposal should be single-spaced with margins not less than one-half (.5) inch and using a font size not less than 11 pt. Recommended fonts include Arial, Georgia, Helvetica, and Palatino Linotype. **References are not included in the narrative page limit.**
 - Attach a cover sheet that includes the project title, the total budget request, the PIs' names, colleges/schools/departments, and e-mail addresses, and a brief summary of the proposed work. The cover sheet is not included in the page limit for the proposal narrative.
 - Up to one page introduction for resubmission of previously unfunded applications to BDHSC pilot project program. The introduction is not included in the page limit for the proposal narrative.
2. Attach the following supporting documentation, none of which is included in the narrative page limitation, to the end of the proposal narrative:
- Bibliography, if applicable/ appropriate
 - Two-page biographical sketch/cv of the principal investigator(s) and also of the co-investigator(s), if any, that includes:
 - Education
 - Professional experience
 - Evidence of scholarship: most significant refereed journal articles, books, and book chapters, etc.
 - Significant accomplishments and contributions
 - Other information as appropriate
 - Current and pending support. Include current grant funding and pending grant funding.
 - A detailed budget and budget justification for total project costs consistent with the list of allowable costs shown above.
 - Appendices are allowed if highly relevant (e.g., letters of support for data access); however, do not use appendices to circumvent page limits.
3. Submit the completed proposal packet:
- **Application Receipt Date: Thursday, April 15, 2022.**
 - *Applications submitted after 5:00 PM on the due date will be returned without review.*
 - Please submit all required documents to Ms. Miranda Cole, BDHSC Project Coordinator via email mc95@mailbox.sc.edu (preferably in a single PDF file) by 5:00pm on the due date

9. Review Process

Applications that are complete and responsive to this announcement will be evaluated for merit by UofSC faculty and external reviewers (layer 1 review). Each application will be reviewed by at least three reviewers who have the expertise in the areas of proposed research. The reviewers will provide an overall score and written comments for each application per the review criteria (see below). The BDHSC Steering Committee members will review the applications along with the score and written comments and make

funding decisions based on the quality of the proposals and responsiveness to the BDHSC mission and properties.

Review Criteria

Applications will be rated using the following criteria:

Scientific Merit and Innovation:

- Does the proposal provide a compelling argument for the research?
- Does the proposed project represent a significant contribution to the investigator's field of study? If so, how?
- Does the proposal provide well-defined milestones and deliverables?
- Is there a strong evidence of meaningful collaboration across different disciplines?

Quality of Proposal- Clarity:

- Does the proposal provide a clear statement of overall project objectives?
- Are the proposed methodologies appropriate and accurate?
- Does the proposal provide a sound justification with clear and specific budget information?
- Is the text of the proposal well-written?

Leverage - Impact on the Field, Potential for Securing Extramural Funding:

- Will the project lead to further scholarly activity (manuscripts, conference presentations)?
- Does the project offer significant opportunities that will lead to extramural funding?
- Does the project help build research networks?
- Does the project address at least one of the BDHSC strategic goals?

Feasibility - Rationale and Utilization of Proposed Budget:

- Does the team demonstrate adequate knowledge and experience in working with the data involved in the proposed research?
- Is the timeline proposed reasonable and realistic?
- Is the timeline for data acquisition realistic?
- Are the approaches for data acquisition, linkage, and integration feasible?

Resubmission (if applicable):

- Is the resubmission responsive to the previous review? If any of the issues from previous review were not addressed in the resubmission, does the resubmission provide a reasonable justification?
- Are the revisions made to the previous submission well explained and justified?
- Is there an evidence that meaningful efforts have been taken to revise the previous proposal?

10. Communications

For questions regarding this RFP and proposal submission, please contact Ms. Miranda Cole at mc95@mailbox.sc.edu; 309-269-6891.

For more information about the UofSC Big Data Health Science Center, please email mc95@mailbox.sc.edu or visit our website: <https://bigdata.sc.edu/>