February 18, 2021

National Science Foundation
2415 Eisenhower Avenue
Alexandria, Virginia 22314

Dear Colleagues:

Comments Regarding the National Science Foundation Strategic Plan Update
On behalf of the Population Association of America (PAA) and the Association of Population Centers (APC), we appreciate the opportunity to submit comments to inform the effort to update the National Science Foundation (NSF) strategic plan.

PAA represents more than 3,000 population scientists, an interdisciplinary field that studies the causes and consequences of population change and composition. APC represents approximately 40 federally-funded centers that foster interdisciplinary population research, some with a particular area of focus, such as aging. Population scientists have made groundbreaking and meaningful contributions on a wide array of topics relevant to society, including the social and economic determinants of health and mortality, child and adolescent development, aging, migration, fertility, economic well-being, educational attainment, retirement, and post-disaster resiliency.

The current strategic plan for NSF (2018-22) is a cogent, yet expansive, document that provides valuable context for a research agenda that responds to both the opportunities and challenges confronting the scientific enterprise early in the 21st century. We would like to offer perspectives on how population science can contribute to this research and training agenda, and how the Foundation can support population scientists in carrying out a shared scientific mission.

Convergence Research (Strategic Objective 2.1/Societal Impacts)
Population scientists applaud and embrace the Foundation's growing emphasis on convergence research—which has also been forcefully reiterated by the new NSF Director—given that our discipline is inherently interdisciplinary and collaborative.

"Convergence research is a means of solving vexing research problems, in particular, complex problems focusing on societal needs. It entails integrating knowledge, methods, and expertise from different disciplines and forming novel frameworks to catalyze scientific discovery and innovation."

Population scientists represent a uniquely interested and experienced community of interdisciplinary scholars (demographers, anthropologists, economists, geographers, historians, public affairs and policy scholars, sociologists, and statisticians) who have engaged in collaborative and trans-disciplinary research for decades. Their activities and contributions have accelerated in recent years with the proliferation of big data and opportunities for data integration across multiple scientific domains for addressing societal needs. Population scientists provide crucial data and tools for calibrating big data to societal needs with basic scientific expertise about the appropriate demographic denominators, measurement of socio-demographic categories and accounting for demographic dynamics in behavioral and social models. In other words, population scientists and other social scientists need to be engaged at the outset with convergence programs seeking to address societal needs. Population scientists are ready and well-equipped to do so.

For example, population scientists are centrally engaged in scientific questions about scalar challenges and data linkages, as well as the ethical challenges of privacy protection. Some signature activities of population scientists in these domains include large-scale data integration of social and environmental data to understand climate impacts on humans, and the integration of large administrative data sets for understanding social and economic mobility. Moreover, population scientists are making vital contributions to integrative climate science through the Dynamics of Integrated Socio-Environmental Systems (DISES) and the Coastlines and People (CoPE) programs, which we note are housed within the Geosciences Directorate. These are but a few examples.

Population scientists have been engaged in many of the basic science questions implied in the convergence program, have the expertise in convergence-like research collaborations, and are keenly interested in engaging with the 10 Big Ideas. Transdisciplinary research programs that truly build a bridge between social and behavioral sciences and other directorates in the NSF require significant investments in collaboration and communication. We would recommend that NSF consider putting in place an intentional set of tiered granting structures that build from small grants to large grants and that will, in turn, generate a set of effective, innovative, and productive collaborations to demonstrate investment impacts and desired NSF program outcomes.

Training the Next Generation of Scientists (Strategic Objective 2.2/STEM Workforce)
Our population scientists also have significant experience contributing to training programs for pre-doctoral and postdoctoral fellowships that train the next generation of interdisciplinary scholars. At some institutions, such as the roughly 40 federally-funded population and/or aging centers, the training activities are explicitly interdisciplinary, because the centers exist precisely to foster collaboration and transdisciplinary engagement. Collaboration is not limited to the spectrum of social science disciplines that are typically represented in population research; in fact, it is usual to see population centers facilitate cooperation among such diverse disciplines as architecture, engineering, biology,

public health, medicine, computational science, and agriculture, to name a few. (Read individual profiles of some of the federally supported population centers here). While the seed funding for many of these centers derives from other federal agencies (including the National Institute on Aging and the Eunice Kennedy Shriver National Institute of Child Health and Human Development), they represent a type of model that NSF could consider for fostering innovation in enhancing transdisciplinary collaboration.

One practical consideration with regard to training pre- and post-doctoral scientists would be to better align research grants to coincide with training programs. Our population scientists' training program management experience strongly suggests that training programs typically require 4-5 years of investments for pre-doctoral trainees and 2-3 years of investment for postdoctoral fellows. These kinds of training opportunities should align with research grant awards that also extend to four or five years of support.

Some of our scientists have also found that the RAPID grant model—unleashed to help NSF quickly allocate resources to promising, near-term research initiatives to combat the COVID-19 crisis—might offer a helpful model for supporting early-career scientists. This is in addition to the other benefits of the RAPID grants model. The use of RAPID grants has continued potential to mobilize and address emerging social and behavioral challenges. We acknowledge and emphasize the importance of investment in NSF officials with expertise and skills to effectively judge potential merits of population science-adjacent projects. The success of RAPID grants has highlighted novel forms of convergence research where population scientists have demonstrated capacity to collaborate across disciplinary boundaries and NSF directorates. The continuance of RAPID grants has the potential to foster cross-disciplinary collaborations beyond traditional academic "silos", investments in smaller-scale data experiments, provide equitable opportunities for less established NSF researchers, and emphasize methodological innovations. RAPIDs can serve as non-traditional springboards for future, peer-reviewed, larger grant applications and convergence research with broad implications.

Ten Big Ideas: Mid-Scale Infrastructure
As we mentioned earlier, population scientists are already engaged in questions involving scalar challenges, for example data linkages and the potential for large-scale social data networks. The creation of the Mid-Scale Infrastructure program could offer opportunities for population scientists to leverage investments in structures and systems that would catalyze population research. Although considered mid-scale in proportion to other NSF-supported infrastructure, projects of this size represent a large-scale investment for population scientists. We are excited about the possibilities that this program could unleash. However, we believe that in order for the Mid-Scale Infrastructure program to be truly accessible to population scientists, the Foundation must be intentional in attracting proposals from social science disciplines and in ensuring that such proposals are evaluated

by diverse panels of experts that include meaningful and robust representation among experts from these disciplines.

Thank you for your consideration of these views. Should you have questions or need additional information, please do not hesitate to contact Suzanne Stokes Vieth of our staff at suzanne@popassoc.org.

Sincerely,
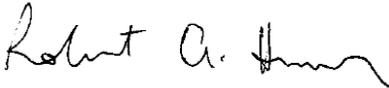
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